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**AMDT**  
**05/2017**  
**Effective date**  
**17 AUG 2017**  
**Publication date**  
**17 AUG 2017**

## wp-AMDT-2017-05

### 1. SIGNIFICANT INFORMATION AND CHANGES

#### 1.1 Singapore Changi Airport

- a. Revisions to vessel's maximum height AMSL allowed for all instrument approach procedures.
- b. Changes to the minimum net climb gradient to be applied by the pilots of flights departing from Runway 02L when the reported vessel height as advised by ATC is 33m or higher.
- c. Inclusion of flight planning requirements for RNAV-1 STARs and SIDs.

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 THIS AMENDMENT INCORPORATES INFORMATION CONTAINED IN THE FOLLOWING WHICH ARE HEREBY SUPERSEDED:

#### NOTAMs:

A1912/17 dated 23/06/17,  
A1913/17 dated 23/06/17,  
A1914/17 dated 23/06/17,  
A1915/17 dated 23/06/17,  
A1916/17 dated 23/06/17,  
A1917/17 dated 23/06/17,  
A1918/17 dated 23/06/17,  
A2047/17 dated 05/07/17,  
A2095/17 dated 10/07/17,  
A2096/17 dated 10/07/17,  
A2097/17 dated 10/07/17

#### AIP Supplements:

070/2017 dated 16/06/17

## Amended Pages

GEN 0.2-1:	: <i>replace.</i>
GEN 0.3-1/2:	: <i>replace.</i>
GEN 0.3-3/4:	: <i>replace.</i>
GEN 0.3-5:	: <i>replace.</i>
GEN 0.4-1/2:	: <i>replace.</i>
GEN 0.4-3:	: <i>replace.</i>
GEN 3.1-3/4:	: <i>replace.</i>
GEN 3.2-3/4:	: <i>replace.</i>
ENR 1.5-1/2:	: <i>replace.</i>
ENR 1.5-3/4:	: <i>replace.</i>
ENR 1.6-3/4:	: <i>replace.</i>
ENR 1.7-3/4:	: <i>replace.</i>
ENR 1.8-23/24:	: <i>replace.</i>

ENR 4.4-1/2: : *replace.*  
ENR 4.4-3/4: : *replace.*  
ENR 4.4-5/6: : *replace.*  
WAC-2860-Singapore-Island: : *replace.*  
AD 0.6-1/2: : *replace.*  
AD 0.6-3/4: : *replace.*  
AD 0.6-5/6: : *replace.*  
AD 0.6-7: : *replace.*  
AD 2.WSSS-1/2: : *replace.*  
AD 2.WSSS-11/12: : *replace.*  
AD 2.WSSS-13/14: : *replace.*  
AD 2.WSSS-27/28: : *replace.*  
AD 2.WSSS-29/30: : *replace.*  
AD 2.WSSS-31/32: : *replace.*  
AD 2.WSSS-33/34: : *replace.*  
AD 2.WSSS-35/36: : *replace.*  
AD 2.WSSS-37/38: : *replace.*  
AD 2.WSSS-39/40: : *replace.*  
AD 2.WSSS-41/42: : *replace.*  
AD 2.WSSS-43/44: : *replace.*  
AD 2.WSSS-45/46: : *replace.*  
AD 2.WSSS-47/48: : *replace.*  
AD 2.WSSS-49/50: : *replace.*  
AD 2.WSSS-51/52: : *replace.*  
AD 2.WSSS-53/54: : *replace.*  
AD 2.WSSS-55/56: : *replace.*  
AD 2.WSSS-57/58: : *replace.*  
AD 2.WSSS-59/60: : *replace.*  
AD 2.WSSS-61/62: : *replace.*  
AD 2.WSSS-63/64: : *replace.*  
AD 2.WSSS-65/66: : *replace.*  
AD 2.WSSS-67: : *insert.*  
AD-2-WSSS-ADC-2: : *replace.*  
AD 2.WSSL-5/6: : *replace.*  
AD 2.WSSL-7/8: : *replace.*  
AD 2.WSSL-13/14: : *replace.*  
AD 2.WSSL-15/16: : *replace.*  
AD 2.WSSL-19/20: : *replace.*  
AD-2-WSSL-ADC-1: : *replace.*  
AD-2-WSSL-ADC-2: : *replace.*  
AD-2-WSSL-AOC-1: : *replace.*  
AD-2-WSSL-AOC-2: : *replace.*  
AD-2-WSSL-VAC-1: : *replace.*  
AD-2-WSSL-VAC-2: : *replace.*  
AD-2-WSSL-VAC-3: : *replace.*  
AD-2-WSSL-VAC-4: : *replace.*  
AD-2-WSSL-VDC-1: : *replace.*  
AD-2-WSSL-VDC-2: : *replace.*  
AD 2.WSAP-7/8: : *replace.*  
AD 2.WSAP-9/10: : *replace.*  
AD 2.WSAT-3/4: : *replace.*  
AD 2.WSAT-5/6: : *replace.*  
AD 2.WSAG-3: : *replace.*

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

<b>NR/Year</b>	<b>Publication date</b>	<b>Date inserted</b>	<b>Inserted by</b>
5/2014	18 SEP 2014	18 SEP 2014	
6/2014	13 NOV 2014	13 NOV 2014	
1/2015	08 JAN 2015	08 JAN 2015	
2/2015	05 MAR 2015	05 MAR 2015	
3/2015	30 APR 2015	30 APR 2015	
4/2015	25 JUN 2015	25 JUN 2015	
5/2015	20 AUG 2015	20 AUG 2015	
6/2015	15 OCT 2015	15 OCT 2015	
07/2015	10 DEC 2015	10 DEC 2015	
01/2016	04 FEB 2016	04 FEB 2016	
02/2016	31 MAR 2016	31 MAR 2016	
03/2016	26 MAY 2016	26 MAY 2016	
04/2016	21 JUL 2016	21 JUL 2016	
05/2016	15 SEP 2016	15 SEP 2016	
06/2016	10 NOV 2016	10 NOV 2016	
01/2017	05 JAN 2017	05 JAN 2017	
02/2017	02 MAR 2017	02 MAR 2017	
03/2017	27 APR 2017	27 APR 2017	
04/2017	22 JUN 2017	22 JUN 2017	
05/2017	17 AUG 2017	17 AUG 2017	

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**GEN 0.3 RECORD OF CURRENT AIP SUPPLEMENTS**

<b>NR/Year</b>	<b>Subject</b>	<b>AIP section(s) affected</b>	<b>Period of validity (from/to)</b>	<b>Cancellation record</b>
218/2014	Paya Lebar Airport - Luffer Cranes	AD	01 AUG 2014 / 30 DEC 2017	
219/2014	Paya Lebar Airport - Luffer Cranes	AD	01 AUG 2014 / 31 DEC 2017	
220/2014	Paya Lebar Airport - Hammerhead and Luffer Cranes	AD	01 AUG 2014 / 31 DEC 2017	
221/2014	Paya Lebar Airport - Luffer Crane	AD	01 AUG 2014 / 31 DEC 2017	
222/2014	Paya Lebar Airport - Luffer Cranes	AD	01 AUG 2014 / 31 DEC 2017	
21/2015	Paya Lebar Airport - Saddle Crane	AD	02 JAN 2015 / 04 DEC 2017	
22/2015	Paya Lebar Airport - Luffer Cranes	AD	02 JAN 2015 / 09 DEC 2017	
23/2015	Paya Lebar Airport - Topless Cranes	AD	02 JAN 2015 / 31 DEC 2017	
24/2015	Paya Lebar Airport - Luffer Crane	AD	02 JAN 2015 / 31 DEC 2017	
25/2015	Paya Lebar Airport - Hammerhead Cranes	AD	02 JAN 2015 / 31 DEC 2017	
70/2015	Paya Lebar Airport - Luffer Cranes and Saddle Cranes	AD	16 APR 2015 / 19 AUG 2017	
71/2015	Paya Lebar Airport - Tower Cranes	AD	16 APR 2015 / 10 SEP 2017	
72/2015	Paya Lebar Airport - Tower Cranes	AD	16 APR 2015 / 10 SEP 2017	
73/2015	Paya Lebar Airport - Saddle Cranes	AD	16 APR 2015 / 09 OCT 2017	
74/2015	Paya Lebar Airport - Topless Cranes and Luffer Crane	AD	16 APR 2015 / 31 DEC 2017	
75/2015	Paya Lebar Airport - Hydraulic Crawler Cranes	AD	16 APR 2015 / 07 JAN 2018	
76/2015	Paya Lebar Airport - Tower Cranes	AD	16 APR 2015 / 31 MAR 2018	
77/2015	Paya Lebar Airport - Saddle Cranes	AD	16 APR 2015 / 01 MAY 2018	
109/2015	Singapore Changi Airport - Shortening of Runway 20C approach lighting to 720m to facilitate the construction of the northern end-around-taxiway	AD	02 OCT 2015 / 31 OCT 2018	
126/2015	Paya Lebar Airport - Luffer Crane	AD	01 JUL 2015 / 30 DEC 2017	
127/2015	Tengah Aerodrome - Topless Cranes and Luffer Crane	AD	01 SEP 2015 / 31 AUG 2017	
128/2015	Tengah Aerodrome - Topless Cranes	AD	01 SEP 2015 / 31 AUG 2017	
129/2015	Tengah Aerodrome - Luffer Crane	AD	01 JUL 2015 / 31 DEC 2017	
130/2015	Sembawang Aerodrome - Luffer Cranes	AD	01 JUL 2015 / 31 DEC 2017	
131/2015	Paya Lebar Airport - Topless Cranes	AD	01 JUL 2015 / 31 DEC 2017	
132/2015	Paya Lebar Airport - Cranes	AD	01 JUL 2015 / 12 APR 2018	
133/2015	Paya Lebar Airport - Luffer Crane and Topless Crane	AD	01 JUL 2015 / 30 JUN 2018	

<b>NR/Year</b>	<b>Subject</b>	<b>AIP section(s) affected</b>	<b>Period of validity (from/to)</b>	<b>Cancellation record</b>
134/2015	Paya Lebar Airport - Luffer Cranes	AD	01 JUL 2015 / 30 JUN 2018	
135/2015	Tengah Aerodrome - Luffer Cranes	AD	01 JUL 2015 / 30 JUN 2018	
140/2015	Paya Lebar Airport - Luffer Cranes	AD	03 AUG 2015 / 30 DEC 2017	
141/2015	Paya Lebar Airport - Saddle Crane	AD	03 AUG 2015 / 30 DEC 2017	
142/2015	Paya Lebar Airport - Topless Cranes	AD	03 AUG 2015 / 31 AUG 2018	
160/2015	Paya Lebar Airport - Luffer Cranes	AD	21 SEP 2015 / 15 AUG 2018	
161/2015	Paya Lebar Airport - Luffer Cranes	AD	21 SEP 2015 / 01 SEP 2018	
162/2015	Sembawang Aerodrome - Topless Cranes	AD	31 OCT 2015 / 31 OCT 2018	
004/2016	Singapore Changi Airport - Shortening of Runway 02C Approach Lighting System to 810M to Facilitate southern End-Round-Taxiway Construction	AD	01 JUN 2016 / 30 APR 2020	
025/2016	Paya Lebar Airport - Luffer Cranes	AD	04 MAR 2016 / 31 DEC 2017	
026/2016	Paya Lebar Airport - Topless Cranes	AD	04 MAR 2016 / 31 DEC 2017	
027/2016	Paya Lebar Airport - Topless Cranes and Luffer Cranes	AD	04 MAR 2016 / 31 DEC 2017	
028/2016	Paya Lebar Airport - Tower Cranes	AD	04 MAR 2016 / 26 MAR 2018	
029/2016	Paya Lebar Airport - Luffer Cranes	AD	04 MAR 2016 / 01 JUN 2018	
030/2016	Paya Lebar Airport - Saddle Cranes	AD	04 MAR 2016 / 17 JUN 2018	
031/2016	Paya Lebar Airport - Saddle Cranes	AD	04 MAR 2016 / 31 DEC 2018	
032/2016	Paya Lebar Airport - Luffer Crane	AD	04 MAR 2016 / 31 DEC 2018	
033/2016	Paya Lebar Airport - Luffer Crane	AD	04 MAR 2016 / 31 DEC 2018	
034/2016	Paya Lebar Airport - Saddle Cranes	AD	04 MAR 2016 / 31 DEC 2018	
037/2016	Paya Lebar Airport - Mobile Cranes and Crawler Cranes	AD	04 MAR 2016 / 07 JAN 2018	
039/2016	Paya Lebar Airport - Topless Cranes	AD	04 MAR 2016 / 31 JAN 2019	
058/2016	Paya Lebar Airport - Saddle Cranes	AD	04 AUG 2016 / 15 NOV 2017	
059/2016	Paya Lebar Airport - Luffer Crane	AD	04 AUG 2016 / 31 DEC 2017	
060/2016	Paya Lebar Airport - Luffer Crane	AD	04 AUG 2016 / 31 MAY 2018	
061/2016	Paya Lebar Airport - Luffer Crane and Topless Crane	AD	04 AUG 2016 / 29 JUN 2018	
062/2016	Paya Lebar Airport - Luffer Cranes	AD	04 AUG 2016 / 31 JUL 2018	
063/2016	Paya Lebar Airport - Topless Cranes	AD	04 AUG 2016 / 31 DEC 2018	
064/2016	Paya Lebar Airport - Topless Cranes	AD	04 AUG 2016 / 31 DEC 2018	
065/2016	Paya Lebar Airport - Luffer Crane	AD	04 AUG 2016 / 31 DEC 2018	

<b>NR/Year</b>	<b>Subject</b>	<b>AIP section(s) affected</b>	<b>Period of validity (from/to)</b>	<b>Cancellation record</b>
066/2016	Paya Lebar Airport - Piling Rig and Crawler Crane	AD	04 AUG 2016 / 01 AUG 2018	
067/2016	Paya Lebar Airport - Topless Cranes and Luffer Crane	AD	04 AUG 2016 / 31 MAR 2019	
068/2016	Paya Lebar Airport - Topless Cranes and Luffer Cranes	AD	04 AUG 2016 / 01 JUN 2019	
069/2016	Paya Lebar Airport - Saddle Cranes	AD	04 AUG 2016 / 30 JUN 2019	
070/2016	Paya Lebar Airport - Luffer Cranes and Topless Cranes	AD	04 AUG 2016 / 31 DEC 2019	
075/2016	Paya Lebar Airport - Topless Cranes	AD	04 AUG 2016 / 31 OCT 2017	
089/2016	Seletar Airport - Partial closure of Taxiway EC and Taxiway EC2 due to new aircraft stands and service road construction and associated works	AD	01 NOV 2016 / 31 MAR 2018	
014/2017	Paya Lebar Airport - Crawler Cranes	AD	10 JAN 2017 / 29 SEP 2017	
015/2017	Paya Lebar Airport - Mobile Crane	AD	10 JAN 2017 / 30 NOV 2017	
016/2017	Paya Lebar Airport - Topless Cranes	AD	10 JAN 2017 / 31 JAN 2018	
017/2017	Sembawang Aerodrome - Crawler Crane	AD	10 JAN 2017 / 28 FEB 2018	
018/2017	Paya Lebar Airport - Piling Machine	AD	10 JAN 2017 / 06 JUN 2018	
019/2017	Paya Lebar Airport - Topless Cranes	AD	10 JAN 2017 / 06 DEC 2018	
022/2017	Paya Lebar Airport - Topless Cranes	AD	10 JAN 2017 / 31 DEC 2018	
023/2017	Paya Lebar Airport - Luffer Crane	AD	10 JAN 2017 / 31 DEC 2018	
024/2017	Paya Lebar Airport - Topless Cranes and Luffer Cranes	AD	10 JAN 2017 / 31 DEC 2018	
025/2017	Paya Lebar Airport - Topless Cranes	AD	10 JAN 2017 / 21 NOV 2019	
026/2017	Paya Lebar Airport - Luffer Crane	AD	10 JAN 2017 / 08 DEC 2019	
034/2017	Singapore Changi Airport - Works schedule and movement area restrictions pertaining to diversion of airside services and soil improvement works	AD	24 MAR 2017 / 28 OCT 2017	
041/2017	Paya Lebar Airport - Luffer Crane	AD	13 APR 2017 / 31 DEC 2017	
042/2017	Sembawang Aerodrome - Crawler Cranes	AD	13 APR 2017 / 31 DEC 2017	
043/2017	Singapore Changi Airport - Crawler Cranes	AD	13 APR 2017 / 31 DEC 2017	
044/2017	Paya Lebar Airport - Mobile Cranes and Crawler Cranes	AD	13 APR 2017 / 07 JAN 2018	
045/2017	Sembawang Aerodrome - Topless Crane	AD	13 APR 2017 / 28 FEB 2018	
046/2017	Sembawang Aerodrome - Mobile Cranes	AD	13 APR 2017 / 15 MAR 2018	
047/2017	Paya Lebar Airport - Luffer Cranes and Topless Cranes	AD	13 APR 2017 / 31 AUG 2018	
048/2017	Paya Lebar Airport - Luffer Crane	AD	13 APR 2017 / 31 DEC 2018	
049/2017	Paya Lebar Airport - Mobile Cranes	AD	13 APR 2017 / 31 DEC 2018	

<b>NR/Year</b>	<b>Subject</b>	<b>AIP section(s) affected</b>	<b>Period of validity (from/to)</b>	<b>Cancellation record</b>
050/2017	Paya Lebar Airport - Luffer Crane	AD	13 APR 2017 / 31 DEC 2018	
051/2017	Paya Lebar Airport - Mobile Cranes	AD	13 APR 2017 / 05 MAR 2019	
052/2017	Paya Lebar Airport - Topless Cranes	AD	13 APR 2017 / 14 MAR 2019	
053/2017	Paya Lebar Airport - Luffer Crane	AD	13 APR 2017 / 14 MAR 2019	
054/2017	Paya Lebar Airport - Luffer Crane	AD	13 APR 2017 / 23 MAR 2019	
055/2017	Paya Lebar Airport - Topless Cranes and Luffer Crane	AD	13 APR 2017 / 31 MAR 2019	
056/2017	Paya Lebar Airport - Topless Cranes	AD	13 APR 2017 / 30 APR 2019	
057/2017	Paya Lebar Airport - Luffer Cranes	AD	13 APR 2017 / 14 JAN 2020	
058/2017	Paya Lebar Airport - Topless Cranes	AD	13 APR 2017 / 26 OCT 2020	
062/2017	Tengah Aerodrome - Topless Crane and Luffer Crane	AD	13 APR 2017 / 31 MAR 2018	
063/2017	Paya Lebar Airport - Topless Cranes and Luffer Crane	AD	13 APR 2017 / 15 APR 2019	
064/2017	Paya Lebar Airport - Mobile Crane	AD	27 APR 2017 / 31 AUG 2017	
065/2017	Paya Lebar Airport - Topless Cranes	AD	27 APR 2017 / 20 DEC 2017	
066/2017	Paya Lebar Airport - Luffer Cranes	AD	27 APR 2017 / 31 DEC 2017	
067/2017	Sembawang Aerodrome - Topless Crane	AD	27 APR 2017 / 01 FEB 2020	
068/2017	Paya Lebar Airport - Obstacles	AD	27 APR 2017 / 26 OCT 2020	
071/2017	Tengah Aerodrome - Crawler Crane	AD	11 JUL 2017 / 02 OCT 2017	
072/2017	Tengah Aerodrome - Mobile Crane	AD	11 JUL 2017 / 30 NOV 2017	
073/2017	Paya Lebar Airport - Crawler Crane	AD	11 JUL 2017 / 01 DEC 2017	
074/2017	Paya Lebar Airport - Mobile Crane	AD	11 JUL 2017 / 31 DEC 2017	
075/2017	Sembawang Aerodrome - Crawler Crane	AD	11 JUL 2017 / 17 APR 2018	
076/2017	Paya Lebar Airport - Crawler Crane	AD	11 JUL 2017 / 30 JUN 2018	
077/2017	Paya Lebar Airport - Luffer Cranes and Topless Cranes	AD	11 JUL 2017 / 31 AUG 2018	
078/2017	Paya Lebar Airport - Mobile Cranes and Crawler Cranes	AD	11 JUL 2017 / 30 NOV 2018	
079/2017	Paya Lebar Airport - Topless Crane	AD	11 JUL 2017 / 28 APR 2019	
080/2017	Paya Lebar Airport - Topless Cranes	AD	11 JUL 2017 / 29 APR 2019	
081/2017	Paya Lebar Airport - Luffer Crane	AD	11 JUL 2017 / 01 MAY 2019	
082/2017	Paya Lebar Airport - Topless Cranes	AD	11 JUL 2017 / 31 DEC 2019	
083/2017	Paya Lebar Airport - Topless Cranes	AD	11 JUL 2017 / 31 DEC 2019	
084/2017	Paya Lebar Airport - Luffer Cranes	AD	11 JUL 2017 / 31 DEC 2019	



<b>NR/Year</b>	<b>Subject</b>	<b>AIP section(s) affected</b>	<b>Period of validity (from/to)</b>	<b>Cancellation record</b>
085/2017	Paya Lebar Airport - Topless Cranes	AD	11 JUL 2017 / 01 JUN 2020	
087/2017	Singapore Changi Airport - Opening of new aircraft stands 464 to 469, Code E taxiway S2, S3 and Code E taxiway S4 at South Apron	AD	31 AUG 2017 UFN	
088/2017	Seletar Airport - Opening of aircraft stands D55, D56 and taxiways E1, EP, EC1 at northeast apron	AD	04 SEP 2017 UFN	
089/2017	Seletar Airport - Commissioning of runway guard lights	AD	04 SEP 2017 UFN	

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## GEN 0.4 CHECKLIST OF AIP PAGES

Part 1 – General (GEN)					
<b>GEN 0</b>		GEN 3.3-1	12 NOV 2015	ENR-1.6-11	21 JUL 2016
GEN 0.1-1	12 NOV 2015	GEN 3.3-2	21 JUL 2016	ENR 1.7-1	12 NOV 2015
GEN 0.1-2	10 NOV 2016	GEN 3.4-1	12 NOV 2015	ENR 1.7-2	12 NOV 2015
GEN 0.1-3	21 JUL 2016	GEN 3.4-2	02 MAR 2017	ENR 1.7-3	12 NOV 2015
GEN 0.2-1	17 AUG 2017	GEN 3.4-3	02 MAR 2017	ENR 1.7-4	17 AUG 2017
GEN 0.3-1	17 AUG 2017	GEN 3.4-4	02 MAR 2017	ENR 1.7-5	12 NOV 2015
GEN 0.3-2	17 AUG 2017	GEN 3.4-5	12 NOV 2015	ENR 1.7-6	12 NOV 2015
GEN 0.3-3	17 AUG 2017	GEN-3.4-7	21 JUL 2016	ENR 1.7-7	12 NOV 2015
GEN 0.3-4	17 AUG 2017	GEN-3.4-9	21 JUL 2016	ENR 1.7-8	12 NOV 2015
GEN 0.3-5	17 AUG 2017	GEN 3.5-1	12 NOV 2015	ENR 1.7-9	12 NOV 2015
GEN 0.4-1	17 AUG 2017	GEN 3.5-2	21 JUL 2016	ENR 1.8-1	12 NOV 2015
GEN 0.4-2	17 AUG 2017	GEN 3.5-3	12 NOV 2015	ENR 1.8-2	02 MAR 2017
GEN 0.4-3	17 AUG 2017	GEN 3.5-4	12 NOV 2015	ENR 1.8-3	12 NOV 2015
GEN 0.5-1	05 JAN 2017	GEN 3.5-5	15 SEP 2016	ENR 1.8-4	12 NOV 2015
GEN 0.6-1	27 APR 2017	GEN 3.5-6	12 NOV 2015	ENR 1.8-5	12 NOV 2015
GEN 0.6-2	15 SEP 2016	GEN 3.5-7	12 NOV 2015	ENR 1.8-6	12 NOV 2015
GEN 0.6-3	22 JUN 2017	GEN 3.5-8	22 JUN 2017	ENR 1.8-7	12 NOV 2015
<b>GEN 1</b>		GEN 3.5-9	22 JUN 2017	ENR 1.8-8	12 NOV 2015
GEN 1.1-1	10 NOV 2016	GEN 3.6-1	12 NOV 2015	ENR 1.8-9	12 NOV 2015
GEN 1.1-2	05 JAN 2017	GEN 3.6-2	12 NOV 2015	ENR 1.8-10	12 NOV 2015
GEN 1.2-1	15 SEP 2016	GEN 3.6-3	12 NOV 2015	ENR 1.8-11	12 NOV 2015
GEN 1.2-2	15 SEP 2016	GEN 3.6-4	12 NOV 2015	ENR 1.8-12	12 NOV 2015
GEN 1.2-3	27 APR 2017	GEN-3.6-5	21 JUL 2016	ENR 1.8-13	12 NOV 2015
GEN 1.2-4	27 APR 2017	<b>GEN 4</b>		ENR 1.8-14	12 NOV 2015
GEN 1.2-5	27 APR 2017	GEN 4.1-1	15 SEP 2016	ENR 1.8-15	12 NOV 2015
GEN 1.2-6	27 APR 2017	GEN 4.2-1	12 NOV 2015	ENR 1.8-16	12 NOV 2015
GEN 1.3-1	21 JUL 2016	GEN 4.2-2	12 NOV 2015	ENR 1.8-17	12 NOV 2015
GEN 1.3-2	12 NOV 2015	GEN 4.2-3	12 NOV 2015	ENR 1.8-18	12 NOV 2015
GEN 1.3-3	12 NOV 2015	GEN 4.2-4	12 NOV 2015	ENR 1.8-19	12 NOV 2015
GEN-1.3-5	21 JUL 2016	GEN 4.2-5	12 NOV 2015	ENR 1.8-20	12 NOV 2015
GEN-1.3-7	21 JUL 2016	GEN 4.2-6	12 NOV 2015	ENR 1.8-21	12 NOV 2015
GEN 1.4-1	12 NOV 2015	<b>Part 2 – EN-ROUTE (ENR)</b>		ENR 1.8-22	02 MAR 2017
GEN 1.4-2	12 NOV 2015	<b>ENR 0</b>		ENR 1.8-23	12 NOV 2015
GEN 1.4-3	12 NOV 2015	ENR 0.6-1	05 JAN 2017	ENR 1.8-24	17 AUG 2017
GEN 1.5-1	12 NOV 2015	ENR 0.6-2	02 MAR 2017	ENR 1.8-25	05 JAN 2017
GEN 1.6-1	12 NOV 2015	ENR 0.6-3	05 JAN 2017	ENR 1.8-26	05 JAN 2017
GEN 1.6-2	12 NOV 2015	ENR 0.6-4	27 APR 2017	ENR 1.8-27	05 JAN 2017
GEN 1.6-3	12 NOV 2015	ENR 0.6-5	27 APR 2017	ENR 1.8-28	05 JAN 2017
GEN 1.7-1	10 NOV 2016	ENR 0.6-6	27 APR 2017	ENR 1.8-29	05 JAN 2017
GEN 1.7-2	12 NOV 2015	<b>ENR 1</b>		ENR 1.8-30	05 JAN 2017
GEN 1.7-3	10 NOV 2016	ENR 1.1-1	12 NOV 2015	ENR 1.8-31	05 JAN 2017
GEN 1.7-4	10 NOV 2016	ENR 1.1-2	12 NOV 2015	ENR 1.9-1	27 APR 2017
GEN 1.7-5	10 NOV 2016	ENR 1.1-3	12 NOV 2015	ENR 1.9-2	27 APR 2017
<b>GEN 2</b>		ENR 1.1-4	12 NOV 2015	ENR 1.9-3	27 APR 2017
GEN 2.1-1	12 NOV 2015	ENR 1.1-5	12 NOV 2015	ENR 1.9-4	27 APR 2017
GEN 2.1-2	05 JAN 2017	ENR 1.1-6	12 NOV 2015	ENR 1.9-5	27 APR 2017
GEN 2.2-1	02 MAR 2017	ENR 1.1-7	12 NOV 2015	ENR 1.10-1	27 APR 2017
GEN 2.2-2	02 MAR 2017	ENR 1.1-8	12 NOV 2015	ENR 1.10-2	12 NOV 2015
GEN 2.2-3	02 MAR 2017	ENR 1.1-9	12 NOV 2015	ENR 1.10-3	12 NOV 2015
GEN 2.2-4	05 JAN 2017	ENR 1.1-10	10 NOV 2016	ENR 1.11-1	12 NOV 2015
GEN 2.2-5	10 NOV 2016	ENR 1.1-11	12 NOV 2015	ENR 1.12-1	12 NOV 2015
GEN 2.3-1	12 NOV 2015	ENR 1.1-12	12 NOV 2015	ENR 1.12-2	12 NOV 2015
GEN 2.3-2	12 NOV 2015	ENR 1.1-13	02 MAR 2017	ENR 1.12-3	12 NOV 2015
GEN 2.3-3	12 NOV 2015	ENR 1.1-14	02 MAR 2017	ENR 1.12-4	12 NOV 2015
GEN 2.4-1	12 NOV 2015	ENR 1.1-15	12 NOV 2015	ENR 1.13-1	12 NOV 2015
GEN 2.5-1	21 JUL 2016	ENR 1.1-16	12 NOV 2015	ENR 1.14-1	10 DEC 2015
GEN 2.5-3	21 JUL 2016	ENR 1.2-1	21 JUL 2016	ENR 1.14-2	15 SEP 2016
GEN 2.6-1	12 NOV 2015	ENR 1.3-1	12 NOV 2015	ENR-1.14-3 to ENR-1.14-4	15 SEP 2016
GEN 2.6-2	12 NOV 2015	ENR 1.4-1	12 NOV 2015	ENR-1.14-5 to ENR-1.14-6	15 SEP 2016
GEN 2.7-1	12 NOV 2015	ENR 1.5-1	12 NOV 2015	ENR-1.14-7 to ENR-1.14-8	15 SEP 2016
<b>GEN 3</b>		ENR 1.5-2	17 AUG 2017	<b>ENR 2</b>	
GEN 3.1-1	21 JUL 2016	ENR 1.5-3	17 AUG 2017	ENR 2.1-1	02 MAR 2017
GEN 3.1-2	21 JUL 2016	ENR 1.5-4	22 JUN 2017	ENR 2.1-2	02 MAR 2017
GEN 3.1-3	17 AUG 2017	ENR 1.6-1	12 NOV 2015	ENR 2.1-3	02 MAR 2017
GEN 3.1-4	21 JUL 2016	ENR 1.6-2	12 NOV 2015	ENR 2.1-4	12 NOV 2015
GEN 3.2-1	21 JUL 2016	ENR 1.6-3	12 NOV 2015	ENR-2.1-7	21 JUL 2016
GEN 3.2-2	31 MAR 2016	ENR 1.6-4	17 AUG 2017	ENR-2.1-9	02 MAR 2017
GEN 3.2-3	31 MAR 2016	ENR 1.6-5	02 MAR 2017	ENR-2.1-11A	21 JUL 2016
GEN 3.2-4	17 AUG 2017	ENR 1.6-6	02 MAR 2017	ENR-2.1-11B	21 JUL 2016
GEN 3.2-5	31 MAR 2016	ENR 1.6-7	02 MAR 2017	ENR-2.1-13	21 JUL 2016
GEN 3.2-6	31 MAR 2016	ENR 1.6-8	02 MAR 2017	ENR-2.1-15	22 JUN 2017
		ENR 1.6-9	02 MAR 2017	<b>ENR 3</b>	
		ENR-1.6-9	21 JUL 2016	ENR 3.1-1	02 MAR 2017
				ENR 3.1-2	02 MAR 2017
				ENR 3.1-3	10 NOV 2016

ENR 3.1-4	10 NOV 2016	ENR 4.4-1	17 AUG 2017	AD 2.WSSS-28	17 AUG 2017
ENR 3.1-5	12 NOV 2015	ENR 4.4-2	17 AUG 2017	AD 2.WSSS-29	17 AUG 2017
ENR 3.1-6	02 MAR 2017	ENR 4.4-3	17 AUG 2017	AD 2.WSSS-30	17 AUG 2017
ENR 3.1-7	02 MAR 2017	ENR 4.4-4	17 AUG 2017	AD 2.WSSS-31	17 AUG 2017
ENR 3.1-8	10 NOV 2016	ENR 4.4-5	17 AUG 2017	AD 2.WSSS-32	17 AUG 2017
ENR 3.1-9	12 NOV 2015	ENR 4.4-6	17 AUG 2017	AD 2.WSSS-33	17 AUG 2017
ENR 3.1-10	02 MAR 2017	ENR 4.5-1	12 NOV 2015	AD 2.WSSS-34	17 AUG 2017
ENR 3.1-11	02 MAR 2017			AD 2.WSSS-35	17 AUG 2017
ENR 3.1-12	10 NOV 2016			AD 2.WSSS-36	17 AUG 2017
ENR 3.1-13	12 NOV 2015	ENR 5.1-1	12 NOV 2015	AD 2.WSSS-37	17 AUG 2017
ENR 3.1-14	02 MAR 2017	ENR 5.1-2	12 NOV 2015	AD 2.WSSS-38	17 AUG 2017
ENR 3.1-15	12 NOV 2015	ENR 5.1-3	22 JUN 2017	AD 2.WSSS-39	17 AUG 2017
ENR 3.1-16	02 MAR 2017	ENR 5.1-4	12 NOV 2015	AD 2.WSSS-40	17 AUG 2017
ENR 3.1-17	12 NOV 2015	ENR 5.1-5	12 NOV 2015	AD 2.WSSS-41	17 AUG 2017
ENR 3.1-18	02 MAR 2017	ENR 5.1-6	12 NOV 2015	AD 2.WSSS-42	17 AUG 2017
ENR 3.1-19	02 MAR 2017	ENR-5.1-7	22 JUN 2017	AD 2.WSSS-43	17 AUG 2017
ENR 3.1-20	12 NOV 2015	ENR-5.1-9	22 JUN 2017	AD 2.WSSS-44	17 AUG 2017
ENR-3.1/ATS Chart	22 JUN 2017	ENR 5.2-1	26 MAY 2016	AD 2.WSSS-45	17 AUG 2017
ENR 3.3-1	02 MAR 2017	ENR 5.2-2	26 MAY 2016	AD 2.WSSS-46	17 AUG 2017
ENR 3.3-2	02 MAR 2017	ENR 5.3-1	05 JAN 2017	AD 2.WSSS-47	17 AUG 2017
ENR 3.3-3	02 MAR 2017	ENR 5.4-1	12 NOV 2015	AD 2.WSSS-48	17 AUG 2017
ENR 3.3-4	12 NOV 2015	ENR 5.5-1	12 NOV 2015	AD 2.WSSS-49	17 AUG 2017
ENR 3.3-5	12 NOV 2015	ENR 5.6-1	12 NOV 2015	AD 2.WSSS-50	17 AUG 2017
ENR 3.3-6	22 JUN 2017	ENR 5.6-2	12 NOV 2015	AD 2.WSSS-51	17 AUG 2017
ENR 3.3-7	02 MAR 2017			AD 2.WSSS-52	17 AUG 2017
ENR 3.3-8	02 MAR 2017			AD 2.WSSS-53	17 AUG 2017
ENR 3.3-9	12 NOV 2015	ENR 6-1	15 SEP 2016	AD 2.WSSS-54	17 AUG 2017
ENR 3.3-10	12 NOV 2015	ERC-6-1 En-Route Chart	22 JUN 2017	AD 2.WSSS-55	17 AUG 2017
ENR 3.3-11	12 NOV 2015	WAC-2860-Singapore-Island	17 AUG 2017	AD 2.WSSS-56	17 AUG 2017
ENR 3.3-12	02 MAR 2017			AD 2.WSSS-57	17 AUG 2017
ENR 3.3-13	02 MAR 2017			AD 2.WSSS-58	17 AUG 2017
ENR 3.3-14	12 NOV 2015			AD 2.WSSS-59	17 AUG 2017
ENR 3.3-15	02 MAR 2017			AD 2.WSSS-60	17 AUG 2017
ENR 3.3-16	02 MAR 2017	AD 0.6-1	17 AUG 2017	AD 2.WSSS-61	17 AUG 2017
ENR 3.3-17	12 NOV 2015	AD 0.6-2	17 AUG 2017	AD 2.WSSS-62	17 AUG 2017
ENR 3.3-18	12 NOV 2015	AD 0.6-3	17 AUG 2017	AD 2.WSSS-63	17 AUG 2017
ENR 3.3-19	02 MAR 2017	AD 0.6-4	17 AUG 2017	AD 2.WSSS-64	17 AUG 2017
ENR 3.3-20	02 MAR 2017	AD 0.6-5	17 AUG 2017	AD 2.WSSS-65	17 AUG 2017
ENR 3.3-21	02 MAR 2017	AD 0.6-6	17 AUG 2017	AD 2.WSSS-66	17 AUG 2017
ENR 3.3-22	02 MAR 2017	AD 0.6-7	17 AUG 2017	AD 2.WSSS-67	17 AUG 2017
ENR 3.3-23	02 MAR 2017			AD-2-WSSS-ADC-1	15 SEP 2016
ENR 3.3-24	02 MAR 2017			AD-2-WSSS-ADC-2	17 AUG 2017
ENR 3.3-25	12 NOV 2015	AD 1.1-1	12 NOV 2015	AD-2-WSSS-ADC-3	02 MAR 2017
ENR 3.3-26	02 MAR 2017	AD 1.1-2	12 NOV 2015	AD-2-WSSS-AOC-1	22 JUN 2017
ENR 3.3-27	22 JUN 2017	AD 1.1-3	12 NOV 2015	AD-2-WSSS-AOC-2	21 JUL 2016
ENR 3.3-28	02 MAR 2017	AD 1.1-4	12 NOV 2015	AD-2-WSSS-AOC-3	31 MAR 2016
ENR 3.3-29	02 MAR 2017	AD 1.2-1	12 NOV 2015	AD-2-WSSS-PATC-1	02 MAR 2017
ENR 3.3-30	02 MAR 2017	AD 1.3-1	12 NOV 2015	AD-2-WSSS-PATC-2	02 MAR 2017
ENR 3.3-31	22 JUN 2017	AD-1.3-3	21 JUL 2016	AD-2-WSSS-SID-1 to 1.1	02 MAR 2017
ENR 3.3-32	02 MAR 2017	AD 1.4-1	12 NOV 2015	AD-2-WSSS-SID-2 to 2.1	02 MAR 2017
ENR 3.3-33	02 MAR 2017	AD 1.5-1	12 NOV 2015	AD-2-WSSS-SID-3 to 3.1	10 NOV 2016
ENR 3.3-34	02 MAR 2017			AD-2-WSSS-SID-4 to 4.1	10 NOV 2016
ENR 3.3-35	02 MAR 2017			AD-2-WSSS-SID-5 to 5.1	02 MAR 2017
ENR 3.3-36	02 MAR 2017	AD 2.WSSS-1	27 APR 2017	AD-2-WSSS-SID-6 to 6.1	02 MAR 2017
ENR 3.3-37	02 MAR 2017	AD 2.WSSS-2	17 AUG 2017	AD-2-WSSS-SID-7 to 7.1	02 MAR 2017
ENR 3.3-38	02 MAR 2017	AD 2.WSSS-3	27 APR 2017	AD-2-WSSS-SID-8 to 8.1	02 MAR 2017
ENR 3.3-39	02 MAR 2017	AD 2.WSSS-4	27 APR 2017	AD-2-WSSS-SID-9 to 9.1	10 NOV 2016
ENR 3.3-40	02 MAR 2017	AD 2.WSSS-5	02 MAR 2017	AD-2-WSSS-SID-10 to 10.1	02 MAR 2017
ENR 3.3-41	02 MAR 2017	AD 2.WSSS-6	02 MAR 2017	AD-2-WSSS-SID-11 to 11.1	10 NOV 2016
ENR 3.3-42	02 MAR 2017	AD 2.WSSS-7	02 MAR 2017	AD-2-WSSS-SID-12 to 12.1	02 MAR 2017
ENR 3.4-1	12 NOV 2015	AD 2.WSSS-8	02 MAR 2017	AD-2-WSSS-SID-13 to 13.1	10 NOV 2016
ENR 3.4-2	12 NOV 2015	AD 2.WSSS-9	02 MAR 2017	AD-2-WSSS-SID-14 to 14.1	10 NOV 2016
ENR 3.4-3	12 NOV 2015	AD 2.WSSS-10	27 APR 2017	AD-2-WSSS-SID-15 to 15.1	02 MAR 2017
ENR 3.4-4	12 NOV 2015	AD 2.WSSS-11	17 AUG 2017	AD-2-WSSS-SID-16 to 16.1	02 MAR 2017
ENR-3.4-5	22 JUN 2017	AD 2.WSSS-12	22 JUN 2017	AD-2-WSSS-SID-17 to 17.1	02 MAR 2017
ENR-3.4-7	21 JUL 2016	AD 2.WSSS-13	17 AUG 2017	AD-2-WSSS-SID-18 to 18.1	02 MAR 2017
ENR 3.5-1	02 MAR 2017	AD 2.WSSS-14	17 AUG 2017	AD-2-WSSS-STAR-1 to 1.1	21 JUL 2016
ENR 3.5-2	02 MAR 2017	AD 2.WSSS-15	22 JUN 2017	AD-2-WSSS-STAR-2 to 2.1	21 JUL 2016
ENR-3.5-3	22 JUN 2017	AD 2.WSSS-16	27 APR 2017	AD-2-WSSS-STAR-3 to 3.1	21 JUL 2016
ENR 3.6-1	27 APR 2017	AD 2.WSSS-17	22 JUN 2017	AD-2-WSSS-STAR-4 to 4.1	21 JUL 2016
ENR 3.6-2	27 APR 2017	AD 2.WSSS-18	27 APR 2017	AD-2-WSSS-STAR-5 to 5.1	21 JUL 2016
ENR-3.6-3	05 JAN 2017	AD 2.WSSS-19	27 APR 2017	AD-2-WSSS-STAR-6 to 6.1	21 JUL 2016
ENR-3.6-5	21 JUL 2016	AD 2.WSSS-20	27 APR 2017	AD-2-WSSS-STAR-7 to 7.1	21 JUL 2016
ENR-3.6-7	22 JUN 2017	AD 2.WSSS-21	27 APR 2017	AD-2-WSSS-STAR-8 to 8.1	21 JUL 2016
ENR-3.6-9	22 JUN 2017	AD 2.WSSS-22	27 APR 2017	AD-2-WSSS-STAR-9 to 9.1	05 JAN 2017
		AD 2.WSSS-23	27 APR 2017	AD-2-WSSS-STAR-11 to 11.1	
		AD 2.WSSS-24	27 APR 2017		02 MAR 2017
		AD 2.WSSS-25	27 APR 2017	AD-2-WSSS-STAR-13 to 13.1	
ENR 4.1-1	02 MAR 2017	AD 2.WSSS-26	27 APR 2017		02 MAR 2017
ENR 4.1-2	02 MAR 2017	AD 2.WSSS-27	17 AUG 2017	AD-2-WSSS-STAR-14 to 14.1	05 JAN 2017
ENR 4.3-1	12 NOV 2015				

AD-2-WSSS-STAR-15 to 15.1	05 JAN 2017	AD 2.WSAT-7	12 NOV 2015
AD-2-WSSS-STAR-16 to 16.1	21 JUL 2016	AD 2.WSAT-8	12 NOV 2015
AD-2-WSSS-STAR-17 to 17.1	21 JUL 2016	AD-2-WSAT-ADC-1	12 NOV 2015
AD-2-WSSS-STAR-18 to 18.1	21 JUL 2016	AD 2.WSAG-1	12 NOV 2015
AD-2-WSSS-STAR-19 to 19.1	21 JUL 2016	AD 2.WSAG-2	31 MAR 2016
AD-2-WSSS-STAR-20 to 20.1		AD 2.WSAG-3	17 AUG 2017
	02 MAR 2017	AD 2.WMKJ-1	12 NOV 2015
AD-2-WSSS-STAR-21 to 21.1		AD 2.WIDD-1	12 NOV 2015
	02 MAR 2017	AD 2.WIDD-2	12 NOV 2015
AD-2-WSSS-IAC-1	05 JAN 2017	AD-2-WIDD-SID-1	12 NOV 2015
AD-2-WSSS-IAC-2	05 JAN 2017	AD-2-WIDD-SID-2	12 NOV 2015
AD-2-WSSS-IAC-5	05 JAN 2017	AD-2-WIDD-SID-3	12 NOV 2015
AD-2-WSSS-IAC-6	05 JAN 2017	AD-2-WIDD-SID-4	12 NOV 2015
AD-2-WSSS-IAC-7	05 JAN 2017	AD-2-WIDD-STAR-1	12 NOV 2015
AD-2-WSSS-IAC-9	05 JAN 2017	AD-2-WIDD-STAR-2	12 NOV 2015
AD-2-WSSS-IAC-10	05 JAN 2017	AD-2-WIDD-STAR-3	12 NOV 2015
AD-2-WSSS-IAC-11	05 JAN 2017	AD-2-WIDD-STAR-4	12 NOV 2015
AD-2-WSSS-IAC-12	05 JAN 2017	AD 2.WIDN-1	05 JAN 2017
AD-2-WSSS-VAC-1	10 NOV 2016	AD-2-WIDN-SID-1	12 NOV 2015
AD 2.WSSL-1	27 APR 2017	AD-2-WIDN-SID-2	12 NOV 2015
AD 2.WSSL-2	22 JUN 2017	AD-2-WIDN-SID-3	12 NOV 2015
AD 2.WSSL-3	15 SEP 2016	AD-2-WIDN-SID-4	12 NOV 2015
AD 2.WSSL-4	22 JUN 2017	AD-2-WIDN-STAR-1	12 NOV 2015
AD 2.WSSL-5	17 AUG 2017	AD-2-WIDN-STAR-2	12 NOV 2015
AD 2.WSSL-6	12 NOV 2015	AD-2-WIDN-STAR-3	21 JUL 2016
AD 2.WSSL-7	12 NOV 2015	AD-2-WIDN-STAR-4	12 NOV 2015
AD 2.WSSL-8	17 AUG 2017		
AD 2.WSSL-9	02 MAR 2017		
AD 2.WSSL-10	31 MAR 2016		
AD 2.WSSL-11	31 MAR 2016		
AD 2.WSSL-12	02 MAR 2017		
AD 2.WSSL-13	17 AUG 2017		
AD 2.WSSL-14	02 MAR 2017		
AD 2.WSSL-15	02 MAR 2017		
AD 2.WSSL-16	17 AUG 2017		
AD 2.WSSL-17	02 MAR 2017		
AD 2.WSSL-18	02 MAR 2017		
AD 2.WSSL-19	02 MAR 2017		
AD 2.WSSL-20	17 AUG 2017		
AD 2.WSSL-21	02 MAR 2017		
AD-2-WSSL-ADC-1	17 AUG 2017		
AD-2-WSSL-ADC-2	17 AUG 2017		
AD-2-WSSL-ADC-3	22 JUN 2017		
AD-2-WSSL-AOC-1	17 AUG 2017		
AD-2-WSSL-AOC-2	17 AUG 2017		
AD-2-WSSL-VAC-1	17 AUG 2017		
AD-2-WSSL-VAC-2	17 AUG 2017		
AD-2-WSSL-VAC-3	17 AUG 2017		
AD-2-WSSL-VAC-4	17 AUG 2017		
AD-2-WSSL-VDC-1	17 AUG 2017		
AD-2-WSSL-VDC-2	17 AUG 2017		
AD-2-WSSL-VFR-1	21 JUL 2016		
AD-2-WSSL-IFR-1	21 JUL 2016		
AD-2-WSSL-IFR-2	21 JUL 2016		
AD 2.WSAP-1	12 NOV 2015		
AD 2.WSAP-2	12 NOV 2015		
AD 2.WSAP-3	05 JAN 2017		
AD 2.WSAP-4	05 JAN 2017		
AD 2.WSAP-5	31 MAR 2016		
AD 2.WSAP-6	05 JAN 2017		
AD 2.WSAP-7	31 MAR 2016		
AD 2.WSAP-8	17 AUG 2017		
AD 2.WSAP-9	17 AUG 2017		
AD 2.WSAP-10	17 AUG 2017		
AD 2.WSAP-11	15 SEP 2016		
AD-2-WSAP-ADC-1	12 NOV 2015		
AD-2-WSAP-ADC-2	12 NOV 2015		
AD-2-WSAP-AOC-1	10 NOV 2016		
AD-2-WSAP-IAC-1	05 JAN 2017		
AD-2-WSAP-IAC-2	22 JUN 2017		
AD-2-WSAP-IAC-3	05 JAN 2017		
AD-2-WSAP-IAC-4	22 JUN 2017		
AD-2-WSAP-IAC-5	05 JAN 2017		
AD-2-WSAP-IAC-6	27 APR 2017		
AD 2.WSAT-1	12 NOV 2015		
AD 2.WSAT-2	12 NOV 2015		
AD 2.WSAT-3	12 NOV 2015		
AD 2.WSAT-4	17 AUG 2017		
AD 2.WSAT-5	17 AUG 2017		
AD 2.WSAT-6	17 AUG 2017		

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NOTAM are exchanged with other International NOTAM Offices (NOF) as follows:

NOF	NOTAM Series		NOF	NOTAM Series		NOF	NOTAM Series	
	Received	Sent		Received	Sent		Received	Sent
Abu Dhabi	A	A	Jakarta	AB	A	Port Moresby	A	A
Addis Ababa	A	A	Jeddah	AW	A	Praha	-	A
Almaty	K	-	Johannesburg	ABC	A	Pyongyang	A	-
Amman	A	-	Kabul	G	A	Riga	A	-
Amsterdam	A	A	Karachi	A	A	Rio de Janeiro	-	A
Ankara	ABC	A	Kathmandu	A	A	Roma	AW	A
Antananarivo	AB	A	Khartoum	A	-	Sanaa	A	A
Athinai	A	A	Kiev	A	-	Seoul	AG	A
			Kobenhavn	AB	-	Shannon	ABD HJNV	A
Baghdad	A	A	Kolkata	A	A	Sofia	A	A
Bahrain	A	A	Kuala Lumpur	AD	A	Stockholm	ABC	A
Baku	A	-	Kuwait	A	A	Taipei	A	A
Bangkok	AGHJ	A	Lisboa	A	-	Tallinn	A	-
Beijing	AEFG LUWY	A	Ljubljana	A	-	Tbilisi	G	-
Beograd	A	A	London	ABDF GHJMV	A	Tehran	A	A
Brisbane	DEFG HJKLN	A	Luqa	A	-	Tel Aviv	A	A
Brunei	B	A	Macao	A	A	Tirana	A	-
Bruxelles	A	A	Madrid	ABDE FG	A	Tokyo	ABCE FJ	A
Bucuresti	ABDM	A	Mahé	A	A	Tripoli	A	A
Budapest	AK	A	Male	A	A	Vientiane	A	A
	-		Manila	B	A	Vilnius	A	-
Cairo	-	A	Minsk	O	-	Washington	A	A
Chennai	A	A	Moskva	AEGJ KOPV	A	Wien	A	A
Christchurch	B	A	Mumbai	A	A	Windhoek	A	-
Colombo	A	A	Muscat	A	A	Yangon	A	A
Congo	B	-	Nadi	A	A	Yerevan	-	A
Damascus	A	-	Nairobi	A	-	Zurich	A	A
Dar es-Salaam	A	-	New Delhi	AG	A			
Dhaka	A	A	Nicosia	AN	-			
Frankfurt	A	A	Ottawa	ABYZ	A			
Harare	-	A						
Helsinki	A	A	Paris	AFRW	-			
Ho Chi-Minh	AJ	A	Phnom-Penh	A	-			
Hong Kong	A	A	Plaisance	A	A			

Pre-flight Information Bulletin (PIB), a recapitulation of valid NOTAM in plain language, can be retrieved from AIM-SG URL: <https://fpl-1.caasaim.gov.sg>

### 3.6 Aeronautical Information Circular (AIC)

Aeronautical Information Circular (AIC) contains information on the long-term forecast of major change in legislation, regulations, procedures or facilities; information of a purely explanatory or advisory nature liable to affect flight safety; and information or notification of an explanatory or advisory nature concerning technical, legislative or purely administrative matters which is inappropriate to the AIP or NOTAM, and is published as required.

Each AIC is numbered consecutively on a calendar year basis. The year, indicated by 2 digits, is a part of the serial number of the AIC. A checklist of current AIC is issued in the form of an AIC once a year.

### 3.7 Checklist and NOTAM List

A checklist of current NOTAM is issued monthly via the AFS. A monthly NOTAM List containing the plain language presentation of current NOTAM, information on the latest AIP Amendment, AIP Supplement, AIC issued and a checklist for AIP Supplements is also available online.

## 4 AIRAC SYSTEM

4.1 In order to control and regulate operationally significant changes requiring amendments to charts, route manuals, etc., such changes, whenever possible, will be issued on predetermined dates according to the AIRAC SYSTEM. This type of information will be published in an AIRAC AIP Supplement.

4.2 AIRAC information will be issued so that the information will be received by the user not later than 28 days, and for major changes not later than 56 days, before the effective date. The table below indicates AIRAC effective dates for Years 2016 to 2020:

AIRAC Effective Dates				
Year 2016	Year 2017	Year 2018	Year 2019	Year 2020
7 January	5 January	4 January	3 January	2 January
4 February	2 February	1 February	31 January	30 January
3 March	2 March	1 March	28 February	27 February
31 March	30 March	29 March	28 March	26 March
28 April	27 April	26 April	25 April	23 April
26 May	25 May	24 May	23 May	21 May
23 June	22 June	21 June	20 June	18 June
21 July	20 July	19 July	18 July	16 July
18 August	17 August	16 August	15 August	13 August
15 September	14 September	13 September	12 September	10 September
13 October	12 October	11 October	10 October	8 October
10 November	9 November	8 November	7 November	5 November
8 December	7 December	6 December	5 December	3 December
				31 December

4.3 A TRIGGER NOTAM will be issued 10 days before the effective date of the AIRAC AIP Supplement giving a brief description of the contents of the AIP Supplement, the effective date and the reference number of the AIRAC AIP Supplement. This trigger NOTAM will come into force on the same effective date as the AIRAC AIP Supplement and will remain in force until 14 days after the effective date.

4.4 A NIL AIRAC NOTAM will be issued one cycle before the AIRAC effective date if no information is submitted for publication of an AIRAC AIP Supplement for an AIRAC effective date. The NIL AIRAC NOTAM will remain current until the next AIRAC effective date.

## 5 PRE-FLIGHT INFORMATION SERVICE AT AERODROMES

Aerodrome	Briefing Coverage	Availability of Bulletins
SINGAPORE CHANGI	All route stages emanating from Singapore.	Pre-flight Information Bulletin (PIB) can be retrieved from AIM-SG URL -  <a href="https://fpl-1.caasaim.gov.sg">https://fpl-1.caasaim.gov.sg</a>
SELETAR		



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**k. Visual Approach Chart - ICAO**

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

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

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

**5 LIST OF AERONAUTICAL CHARTS AVAILABLE**

GEN 3.2.5 LIST OF AERONAUTICAL CHARTS AVAILABLE							
<i>Title of Chart Series</i>	<i>Scale</i>	<i>Name and/or number</i>		<i>Price (\$)</i>	<i>Date</i>		
← <b>World Aeronautical Chart</b> ICAO (WAC)	1:1 000 000	WAC 2860		In AIP	17 AUG 17		
<b>Enroute Chart</b> ICAO (ENRC)		ERC 6-1		In AIP	22 JUN 17		
<b>Instrument Approach Chart</b> ICAO (IAC)	1:400 000	<b>Singapore Changi</b>					
		RWY 02L - ICW ILS/DME	AD-2-WSSS-IAC-1	In AIP	05 JAN 17		
		RWY 02C - ICE ILS/DME	AD-2-WSSS-IAC-2	In AIP	05 JAN 17		
		RWY 20R - ICH ILS/DME	AD-2-WSSS-IAC-5	In AIP	05 JAN 17		
		RWY 20C - ICC ILS/DME	AD-2-WSSS-IAC-6	In AIP	05 JAN 17		
		RWY 20C - VTK DVOR/DME	AD-2-WSSS-IAC-7	In AIP	05 JAN 17		
		RWY 02L - RNAV(GNSS)	AD-2-WSSS-IAC-9	In AIP	05 JAN 17		
		RWY 02C - RNAV(GNSS)	AD-2-WSSS-IAC-10	In AIP	05 JAN 17		
		RWY 20R - RNAV(GNSS)	AD-2-WSSS-IAC-11	In AIP	05 JAN 17		
		RWY 20C - RNAV(GNSS)	AD-2-WSSS-IAC-12	In AIP	05 JAN 17		
		<b>Paya Lebar</b>					
		RWY 20 - PU DVOR/DME	AD-2-WSAP IAC-1	In AIP	05 JAN 17		
		RWY 02 - PU DVOR/DME	AD-2-WSAP IAC-2	In AIP	22 JUN 17		
		RWY 20 - IPS ILS/DME	AD-2-WSAP IAC-3	In AIP	05 JAN 17		
		RWY 02 - IPN ILS/DME	AD-2-WSAP IAC-4	In AIP	22 JUN 17		
		RWY 02 - RNAV(GNSS)	AD-2-WSAP-IAC-5	In AIP	05 JAN 17		
RWY 20 - RNAV(GNSS)	AD-2-WSAP-IAC-6	In AIP	27 APR 17				
<b>Visual Approach Chart</b> ICAO (VAC)	1:400 000	<b>Singapore Changi</b>		AD-2-WSSS-VAC-1	In AIP	10 NOV 16	
		<b>Seletar</b>					
		RWY 03	AD-2-WSSL-VAC-1	In AIP	17 AUG 17		
		RWY 21	AD-2-WSSL-VAC-2	In AIP	17 AUG 17		
		RWY 03	AD-2-WSSL-VAC-3	In AIP	17 AUG 17		
RWY 21	AD-2-WSSL-VAC-4	In AIP	17 AUG 17				
<b>Visual Departure Chart</b>	1:100 000	<b>Seletar</b>					
		RWY 03	AD-2-WSSL-VDC-1	In AIP	17 AUG 17		
		RWY 21	AD-2-WSSL-VDC-2	In AIP	17 AUG 17		
<b>Aerodrome Chart</b> ICAO (AC)		<b>Singapore Changi</b>		AD-2-WSSS-ADC-2	In AIP	17 AUG 17	
		<b>Seletar</b>		AD-2-WSSL-ADC-1	In AIP	17 AUG 17	
		<b>Paya Lebar</b>		AD-2-WSAP-ADC-1	In AIP	12 NOV 15	
<b>Aerodrome Obstacle Chart</b> ICAO TYPE A (AOC)	1:10 000	<b>Singapore Changi</b>					
		RWY 20R/02L	AD-2-WSSS-AOC-1	In AIP	22 JUN 17		
	1:10 000	RWY 20C/02C	AD-2-WSSS-AOC-2	In AIP	21 JUL 16		
	1:10 000	<b>Seletar</b>					
		RWY 03/21	AD-2-WSSL-AOC-1	In AIP	17 AUG 17		
1:20 000	<b>Paya Lebar</b>						
RWY 20/02	AD-2-WSAP-AOC-1	In AIP	10 NOV 16				
<b>Aerodrome Obstacle Chart</b> ICAO TYPE B (AOC)	1:25 000	<b>Singapore Changi</b>					
		RWY 02L/20R and 02C/20C	AD-2-WSSS-AOC-3	In AIP	31 MAR 16		
	1:12 500	<b>Seletar</b>					
RWY 03/21	AD-2-WSSL-AOC-2	In AIP	17 AUG 17				
<b>Precision Approach Terrain Chart</b> ICAO (PATC)	1:2 500	<b>Singapore Changi</b>					
		RWY 02L	AD-2-WSSS-PATC-1	In AIP	02 MAR 17		
		RWY 20C	AD-2-WSSS-PATC-2	In AIP	02 MAR 17		

## ENR 1.5 HOLDING, APPROACH AND DEPARTURE PROCEDURES

### 1 GENERAL

1.1 The holding, approach and departure procedures in use throughout the Singapore FIR are developed in accordance with the criteria contained in ICAO DOC 8168-OPS/611: Procedures for Air Navigation Services - Operations (PANS-OPS).

1.1.1 To ensure conformity with associated procedures, this section should be read in conjunction with section ENR 1.

1.1.2 An aircraft approaching an aerodrome under IFR for the purpose of making a landing shall conform to the holding and instrument approach procedures for the radio navigational aid employed as prescribed in the appropriate Instrument Approach charts AD-2-WSSS-IAC-1 to AD-2-WSSS-IAC-11.

1.1.3 Pilots will be expected to know the correct holding, approach and departure procedures.

*Note: Due to military operations above, below and adjacent to controlled airspace within the Singapore/Johor Airspace Complex, pilots unable to remain within 500ft of the vertical limits, or within the lateral limits of the controlled airspace are required to advise ATC immediately.*

### 1.2 HOLDING PROCEDURES

1.2.1 Initial approach tracks and holding patterns associated with Singapore Airports are detailed in charts ENR 3.6-5, ENR 3.6-7 and ENR 3.6-9. Holding patterns for other airfields are indicated on the applicable approach charts.

### 1.3 LOW LEVEL HOLDING AREAS

1.3.1 The holding areas for procedural traffic landing at Singapore Changi Airport or Seletar Airport depend on the runway in use at Singapore Changi Airport and are as follows:

- a. RWY 02L/02C - SAMKO Holding Area (SHA) - Lower/Upper limits - 3,500ft / FL140.
- b. RWY 20R/20C - NYLON Holding Area (NHA) - Lower/Upper limits - 2,500ft / FL140.

1.3.2 Details of these holding areas and those mentioned in paras 1.3.3 and 1.3.4 are given in sub-section ENR 3.6. They are also shown in charts ENR 3.6-7 and ENR 3.6-9.

1.3.3 An intermediate holding area - HOSBA Holding Area (HHA) - is also established. The lower/upper limits are 7,000ft/FL140.

1.3.4 A bad weather holding area - SINJON Holding Area - is established for Seletar bound commercial traffic. The lower/upper limits are 4 500ft/FL140.

### 1.4 HIGH LEVEL HOLDING AREAS

1.4.1 High Level Holding Areas are also established at NHA, SHA and HHA. The lower/upper limits are FL150/FL250. Details of these areas are given in sub-section ENR 3.6.

### 1.5 HOLDING SPEEDS

1.5.1 The maximum holding speed for all low level holding areas is 230kt.

1.5.2 The maximum holding speed for all high level holding areas is 265kt.

1.5.3 During conditions of turbulence, pilots could request ATC clearance to hold at speeds up to 280kt for both high and low level holding areas.

### 1.6 STANDARD INSTRUMENT DEPARTURE (SID) AND STANDARD INSTRUMENT ARRIVAL (STAR)

Pilots departing from and landing at Singapore Changi Airport should refer to the procedures in charts AD-2-WSSS-SID-1 to AD-2-WSSS-STAR-21.

## 2 ARRIVING FLIGHTS

### 2.1 INSTRUMENT APPROACH PROCEDURES

2.1.1 Pilots making instrument approaches to Singapore Changi Airport should refer to the procedures in charts AD-2-WSSS-IAC-1 to AD-2-WSSS-IAC-11.

**2.2 CATEGORY I ILS APPROACHES**

2.2.1 Category I ILS approaches are generally available on RWY 02L/20R and RWY 02C/20C at Singapore Changi Airport. Pilots making Category I ILS approaches to Singapore Changi Airport should refer to the procedures in charts AD-2-WSSS-IAC-1 to AD-2-WSSS-IAC-11.

**2.3 CATEGORY II ILS APPROACHES**

(refer to WSSS AD 2-22 for details)

**2.4 VISUAL APPROACH PROCEDURES**

2.4.1 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 20 and 3,000ft or more for landing on RWY 02; and
- e. the visibility at the aerodrome is 5km or more.

2.4.2 Notwithstanding para 2.4.1(d) and 2.4.1(e), 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.

2.4.3 Pilots may expect radar vectoring for separation and sequencing with other traffic prior to being cleared for a visual approach.

**2.5 INSTRUMENT APPROACHES TO SINGAPORE CHANGI AIRPORT - MAXIMUM VESSEL HEIGHT**

2.5.1 There are possible tall vessel movements in waters around Singapore Changi Airport. As these mobile vessels vary in height and location, they are only indicated as "possible vessel" obstacles in the instrument approach charts.

2.5.2 Information on the heights of these tall vessels are relayed to ATC by the Maritime and Port Authority of Singapore for ATC to decide on whether it should allow a particular instrument approach to Singapore Changi Airport.

**2.6 MAXIMUM VESSEL HEIGHT**

2.6.1 The vessel's maximum height allowed for each instrument approach procedure and its closest distance to runway threshold used in the design of the procedure are given in the following table:

Instrument Approach	North of Singapore Changi Airport		South of Singapore Changi Airport	
	MAX HGT AMSL	DIST from THR	MAX HGT AMSL	DIST from THR
a) RWY 02L - ICW ILS/DME	150m	5 370m	373m	13 100m
b) RWY 02L - ICW GP INOPERATIVE	150m	5 370m	373m	13 100m
c) RWY 02C - ICE ILS/DME	208m	6 650m	274m	9 730m
d) RWY 02C - ICE GP INOPERATIVE	208m	6 650m	274m	9 730m
e) RWY 20R - ICH ILS/DME	71m	2 110m	445m	16 360m
f) RWY 20R - ICH GP INOPERATIVE	71m	2 110m	445m	16 360m
g) RWY 20C - ICC ILS/DME	89m	2 650m	353m	13 730m
h) RWY 20C - ICC GP INOPERATIVE	89m	2 650m	353m	13 730m
i) RWY 20C - VTK DVOR/DME	89m	2 650m	353m	13 730m

### 3 DEPARTING FLIGHTS

#### 3.1 INTRODUCTION

- a. The Instrument Departure Procedures are only applicable for aircraft with all engines operating. It remains the responsibility of the operator to develop contingency procedures for the individual type of aeroplane and to conduct the necessary examination of obstacles throughout the areas concerned in relation to the certificated performance of the individual aeroplane type. It is also the responsibility of the operator to ensure that contingency procedures comply fully with the aeroplane performance requirements of ICAO Annex 6.
- b. The specific routes to be followed are depicted in SID charts AD-2-WSSS-SID-1 to AD-2-WSSS-SID-18. Altitude restrictions at fixes and/or DME specify ATC/airspace requirements.
- c. Minimum net climb gradient specifies obstacle clearance requirements.
- d. In the event that the minimum net climb gradient cannot be achieved pilots shall inform ATC. ATC shall hold departures if pilots indicate that they are unable to meet the required net climb gradient.

#### 3.2 RUNWAY 02L

- a. When there are no reports of vessel movement along the northern shipping channel or where the reported vessel height is less than 32m AMSL, the aircraft minimum net climb gradient shall be at 3.3%.
- b. Where the reported vessel height is 33m or higher, ATC shall advise departing pilots of the vessel height. Pilots on receipt of this information shall apply the minimum net climb gradient in accordance with the following table:

HGT OF VESSEL (metres AMSL)	Gradient (%)	MINIMUM CROSSING ALTITUDE OVER VESSEL	
		(metres)	(feet)
33	3.4	39	125
40	4.0	49	158
50	4.9	59	191
60	5.8	69	224
70	6.8	79	257
80	7.8	89	290
90	8.8	99	322
100	9.7	109	355
110	10.7	119	388
120	11.7	129	421
130	12.7	139	454
140	13.7	149	486

- c. After the aircraft has reached or passed the minimum crossing altitude over vessel, the minimum net climb gradient shall be 3.3%.

#### 3.3 RUNWAY 02C

- a. When there are no reports of vessel movement along the northern shipping channel or where the reported vessel height is less than 69m AMSL, the aircraft minimum net climb gradient shall be at 3.3%.
- b. Where the reported vessel height is 70m or higher, ATC shall advise departing pilots of the vessel height. Pilots on receipt of this information shall apply the minimum net climb gradient in accordance with the following table:

HGT OF VESSEL (metres AMSL)	Gradient (%)	MINIMUM CROSSING ALTITUDE OVER VESSEL	
		(metres)	(feet)
70	3.4	89	292
80	3.8	99	325
90	4.3	109	358
100	4.7	119	390

HGT OF VESSEL (metres AMSL)	Gradient (%)	MINIMUM CROSSING ALTITUDE OVER VESSEL	
		(metres)	(feet)
110	5.1	129	423
120	5.5	139	456
130	6.0	149	489
140	6.4	159	522

- c. After the aircraft has reached or passed the minimum crossing altitude over vessel, the minimum net climb gradient shall be 3.3%.

### 3.4 **RUNWAYS 20C AND 20R**

3.4.1 All departures on Runway 20C shall be on a minimum net climb gradient of 7% until reaching or passing 2,500ft. Thereafter, the minimum net climb gradient shall be 3.3%.

3.4.2 All departures on Runway 20R shall be on a minimum net climb gradient of 6% until reaching or passing 2,500ft. Thereafter, the minimum net climb gradient shall be 3.3%.

(Please also refer to charts AD-2-WSSS-SID-1 to AD-2-WSSS-SID-18: Standard Instrument Departures for Runway 20C and Runway 20R).

### 3.5 **DETERMINATION OF CLIMB GRADIENT BY OPERATORS**

3.5.1 The minimum net climb gradients specified above need not apply to operators who wish to calculate their own climb gradients based on actual lift-off point, provided the calculation ensures the following:

- i. The most penalising obstacle is taken into account under both all engines operating procedures as well as one engine out procedures; and
- ii. The required minimum obstacle clearance (MOC) is met under all engines operating procedures.

3.5.2 For the above calculations, operators shall use the following information:

- a. The most penalising obstacle is a tall vessel which is on the extended centre line of the runway. (ATC shall advise pilots of the height of the tall vessel).
- b. The required MOC in 3.5.1 (ii) is 0.8% of the distance **d** from the departure end of runway (DER) to the obstacle, in accordance with Vol II of ICAO Doc 8168: Procedures for Air Navigation Services Operations (PANS-OPS) where, in the case of Singapore Changi Airport, the DER is defined as the end of the clearway.
- c. The distance **d** for departure Runways 02L and 02C is measured from the DER to the shipping channel north of Changi. The distance **d** for departure Runways 20C and 20R is measured from the DER to the boundary of the restricted waters south of Changi wherein tall vessels of height above 49m AMSL are not permitted. The distance **d** for the various departure runways is as follows:

DEP RWY	02L	02C	20C	20R
Distance <b>d</b>	1 100m	2 590m	9 670m	12 830m

**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:
- Proceed according to the current flight plan, at the last assigned flight level, to the clearance limit and thereafter at the flight plan level.
  - Arrive at the destination as close as possible to ETA.
  - Commence descent as close as possible to EAT (or ETA if no EAT has been acknowledged).
  - 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
- Aircraft Unable to Receive**  
Pilots shall adopt the complete RTF failure procedures specified in para 1.8.
  - 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, MABAL 2A and ELALO 1A, flight shall proceed to SHA after SANAT
  - b. Commence descent from SHA at or as close as possible to the ETA as indicated on the flight plan.
  - 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:

1. Proceed straight ahead to NYLON Holding Area (NHA) climbing to the last assigned altitude. At NHA, climb/descend to maintain 7,000ft;
2. 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;



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**2.4      *APPROACH AND LANDING***

- 2.4.1      A QNH altimeter setting shall be made available in the routine approach and landing instructions.
- 2.4.2      A QFE altimeter setting will be made available on request but reports to ATC are to be made in altitude.
- 2.4.3      Vertical displacement of aircraft during approach is effected by reference to flight level until reaching the transition level below which vertical displacement is controlled by reference to altitude.

**2.5      *MISSED APPROACH***

- 2.5.1      The relevant portions of paragraphs 2.1, 2.2, 2.3 and 2.4 shall be applied in case of a missed approach.

**3            *PROCEDURES APPLICABLE TO OPERATORS AND PILOTS*****3.1        *Flight Planning***

- 3.1.1      The level(s) at which a flight is to be conducted shall be specified in a flight plan;
- a.      In terms of flight level(s) if the flight is to be conducted at or above the transition level, and
  - b.      In terms of altitude(s) if the flight is to be conducted in the vicinity of an aerodrome and at or below the transition altitude.

*Note: 1:*

*Short flights in the vicinity of an aerodrome may often be conducted only at altitude below the transition altitude.*

*Note: 2:*

*Flight levels are specified in a plan by number, and not in terms of feet as is the case with altitudes.*

**4 TABLES OF CRUISING LEVELS**

**4.1 SEMI-CIRCULAR SYSTEM OF CRUISING LEVELS WITHIN THE SINGAPORE FIR**

4.1.1 The pilot-in-command of an IFR flight at or above 3,000ft within controlled airspace and above FL250 in uncontrolled airspace shall select a level corresponding to the appropriate magnetic track as indicated in para 4.2. The Quadrantal Height Rule as contained in para 4.4 will continue to be used for all flights below FL250 in uncontrolled airspace of the Singapore FIR.

4.1.2 FL250 in uncontrolled airspace will be held vacant to serve as a buffer.

**4.2 IFR FLIGHTS - CRUISING LEVELS WITHIN THE SINGAPORE FIR**

T R A C K			
000° to 179°		180° to 359°	
Flight Level	Altitude (feet)	Flight Level	Altitude (feet)
30	3 000	40	4 000
50	5 000	60	6 000
70	7 000	80	8 000
90	9 000	100	10 000
110	11 000	140	14 000
130	13 000	160	16 000
150	15 000	180	18 000
170	17 000	200	20 000
190	19 000	220	22 000
210	21 000	240	24 000
230	23 000	260	26 000
250	25 000	280	28 000
270	27 000	310	31 000
290	29 000	350	35 000
330	33 000	390	39 000
370	37 000	430	43 000
410	41 000	470	47 000
450	45 000	510	51 000
490	49 000	etc.	etc.
etc.	etc.		

## 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
<b>NYLON</b> 013657N 1040624E	203°	Left	220 knots	1	FL140 3,000ft	Singapore Approach 124.05MHz (PRI) 132.15MHz (SRY)
<b>LAVAX</b> 010950N 1042714E	269°	Left	220 knots	1	FL140 7,000ft	Singapore Approac 124.05MHz (PRI) 132.15MHz (SRY)
<b>REMES</b> 004342N 1035735E	348°	Right	220 knots	1	FL140 6,000ft	Singapore Approach 124.6MHz (PRI) 132.15MHz (SRY)
<b>BOBAG</b> 010230N 1032954E	083°	Right	220 knots	1	FL140 6,000ft	Singapore Approac 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, L644, M753, M771, M904, N891, N892, Q801, Q802, Q803 and T611 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 4.4 NAME-CODE DESIGNATIONS FOR SIGNIFICANT POINTS

Name-code designator	Co-ordinates	ATS route or other route	Terminal Area
1	2	3	4
ABVIP	010008N 1035032E		SID-WSSS
ABVON	012028.18N 1035827.03E		IAC-WSSS
ADMIM	005733N 1033033E		SID-WSSS
ADNIK	011651.19N 1035655.43E		IAC-WSSS
AGOBA	015840N 1083000E	<a href="#">M761</a>	
AGROT	010108N 1035808E		SID-WSSS
AGVAR	014719N 1034145E		SID-WSSS
AKIPO	011356.27N 1035541.59E		IAC-WSSS
AKMET	015355N 1034339E		SID-WSSS
AKMON	081256N 1101308E	<a href="#">L625</a> , <a href="#">M768</a>	
AKOMA	014522N 1035443E	<a href="#">B469</a> , <a href="#">Y339</a>	SID-WSSS, IAC-WSSS
ANBUS	011556N 1032102E	<a href="#">P501</a>	
ANITO	001700S 1045200E	<a href="#">B338</a> , <a href="#">B470</a> , <a href="#">P501</a>	SID-WSSS
ANUMA	011053.11N 1035424.35E		IAC-WSSS
APIPA	010618.43N 1035228.35E		IAC-WSSS
ARAMA	013654N 1030712E	<a href="#">A464</a> , <a href="#">P501</a>	STAR-WSSS
AROSO	020846N 1032421E	<a href="#">Y339</a> , <a href="#">Y342</a>	SID-WSSS
ARUPA	003140N 1084846E	<a href="#">N875</a>	
ASISU	055906N 1132046E	<a href="#">M768</a> , <a href="#">M772</a>	
ASUNA	005948N 1030954E	<a href="#">R469</a>	STAR-WSSS
ATETI	012540N 1083000E	<a href="#">G580</a>	
ATKAX	000512N 1065946E		SID-WSSS
ATPOM	002425N 1052114E	<a href="#">M635</a>	
ATRUM	013256N 1040057E		SID-WSSS
BAVAL	004518N 1040242E	<a href="#">B469</a>	
BAVUS	000000N 1090000E	<a href="#">L504</a>	
BETBA	013302N 1035331E		STAR-WSSS
BIBVI	024336N 1040618E		STAR-WSSS
BIDAG	073101N 1135544E	<a href="#">M772</a>	
BIDUS	013554.05N 1035754.86E		IAC-WSSS, STAR-WSSS
BIKTA	024337N 1034308E	<a href="#">B469</a>	
BIPOP	013122N 1041018E		IAC-WSSS, STAR-WSSS
BOBAG	010230N 1032954E	<a href="#">R469</a> , <a href="#">M630</a> , <a href="#">N502</a> , <a href="#">P501</a>	HLDG ID, SID-WSSS, STAR-WSSS
BOBOB	022206N 1070558E	<a href="#">M761</a> , <a href="#">M767</a> , <a href="#">N875</a>	
BOKIP	010421N 1034353E		SID-WSSS, STAR-WSSS

Name-code designator	Co-ordinates	ATS route or other route	Terminal Area
1	2	3	4
BONSU	011928N 1033710E	<a href="#">A576</a>	
BUNTO	024008N 1055953E	<a href="#">G334</a>	
BUVAL	033622N 1034341E	<a href="#">L629, Y333</a>	
DAKIX	070854N 1145054E	<a href="#">L649</a>	
DAMOG	041225N 1050014E	<a href="#">M771, N875</a>	
DIVSA	011105N 1040303E		SID-WSSS
DOGRA	010525N 1041423E		SID-WSSS
DOKTA	012606N 1041040E		SID-WSSS
DOLOX	044841N 1052247E	<a href="#">L629, M771, T612</a>	
DONDI	011252N 1035855E		SID-WSSS
DOSNO	004757N 1041409E		SID-WSSS
DOSPA	011459N 1040441E		SID-WSSS
DOVAN	011938N 1041249E		STAR-WSSS
DOVOL	033047N 1034923E	<a href="#">L635, Y334</a>	
DUBSA	034901N 1044540E	<a href="#">L635, M771</a>	
DUDIS	070000N 1064834E	<a href="#">L644, M771</a>	
EGOLO	031934N 1040047E	<a href="#">L642</a>	
EGORA	013621.37N 1040607.23E		IAC-WSSS
ELALO	041240N 1043329E	<a href="#">Q802, Q803</a>	HLDG ID, STAR-WSSS
ELALU	013439.87N 1040524.21E		IAC-WSSS
ELBEB	012844.66N 1040254.38E		IAC-WSSS
ELBEX	013148.96N 1040314.18E		IAC-WSSS
ELGAP	012820.28N 1040146.15E		IAC-WSSS
ELGOR	033014N 1054818E	<a href="#">M758, N875</a>	
ELMIN	012549.68N 1040140.51E		IAC-WSSS
EMTAP	011655.88N 1035657.47E		IAC-WSSS
ENLES	010931.51N 1035349.83E		IAC-WSSS
ENREP	045223N 1041442E	<a href="#">L642, M753, M763, M904, N875, N891</a>	
ENSUN	012602.56N 1040048.10E		IAC-WSSS
ERVOT	011120.09N 1035435.85E		IAC-WSSS
ESBIT	012212.07N 1040008.64E		IAC-WSSS
ESBUM	045210N 1042830E	<a href="#">Q801, Q802</a>	
ESLUX	011844.31N 1035840.44E		IAC-WSSS
ESPIT	020011N 1072624E	<a href="#">M646, N875</a>	
ESPOB	070000N 1053318E	<a href="#">L642, Q801</a>	
EXOMO	010425.49N 1040933.17E		IAC-WSSS
HOSBA	011948N 1042418E	<a href="#">G580, W401</a>	HLDG ID

<i>Name-code designator</i>	<i>Co-ordinates</i>	<i>ATS route or other route</i>	<i>Terminal Area</i>
1	2	3	4
IBIBI	011503N 1035707E		SID-WSSS
IBIVA	011351N 1035637E		SID-WSSS
IBIXU	011621N 1035740E		SID-WSSS
IBULA	005036N 1043600E		STAR-WSSS
IDMAS	004900N 1041848E	<a href="#">B338</a>	
IDSEL	032432N 1035544E	<a href="#">M758, T611, T612, Y335</a>	
IDUNA	012305.80N 1035933.58E		IAC-WSSS
IDURO	012639.84N 1040103.94E		IAC-WSSS
IDVAS	012934.66N 1040217.75E		IAC-WSSS
IGARI	065610N 1033506E	<a href="#">R208, M765, N891</a>	
IGNON	010847N 1041257E		STAR-WSSS
IGULA	013232.27N 1040332.66E		IAC-WSSS
IKAGO	003816N 1052931E		STAR-WSSS
IKIMA	004314N 1045500E		HLDG ID, STAR-WSSS
IKUKO	054512N 1031324E	<a href="#">R208</a>	
IKUMI	055338N 1035509E	<a href="#">N891</a>	
IPDOL	045111N 1035920E	<a href="#">Q803, T611</a>	
IPNAK	013711.93N 1040530.83E		IAC-WSSS
IPRIX	070000N 1040755E	<a href="#">M753, Q802, T611</a>	
KADAR	000647S 1074342E	<a href="#">M774</a>	SID-WSSS
KAKSA	011702.58N 1035757.92E		IAC-WSSS
KAMIN	023442N 1085536E	<a href="#">G334, M646</a>	
KANLA	034556N 1043606E		STAR-WSSS
KARTO	011124N 1053343E		HLDG ID, STAR-WSSS,
KASPO	011507.15N 1035709.20E		IAC-WSSS
KETOD	031042N 1040942E	<a href="#">M761, Y336</a>	
KEXAS	011019N 1044818E		STAR-WSSS
KEXOL	043930N 1040942E	<a href="#">Q803</a>	
KIBOL	025229N 1042805E	<a href="#">G334, N892</a>	
KIKOR	002244S 1070524E	<a href="#">L644</a>	
KILOT	030217N 1044023E	<a href="#">M761, N892</a>	STAR-WSSS
KIMER	011105.74N 1035527.30E		IAC-WSSS
LAGOT	071632N 1113243E	<a href="#">M768, N884</a>	
LAGUS	011915.29N 1035854.00E		IAC-WSSS
LAPOL	012622N 1034435E	<a href="#">G579</a>	
LASIN	011538.25N 1035722.39E		IAC-WSSS
LAVAX	010950N 1042714E		HLDG ID, STAR-WSSS,

<i>Name-code designator</i>	<i>Co-ordinates</i>	<i>ATS route or other route</i>	<i>Terminal Area</i>
1	2	3	4
LAXOR	094937N 1144829E	<a href="#">L649</a> , <a href="#">M772</a> , <a href="#">N884</a>	
LEBIN	031438N 1060604E	<a href="#">N875</a> , <a href="#">N884</a>	
LEDOX	011642N 1035651E		SID-WSSS
LEGAS	011524N 1035618E		SID-WSSS
LEGOL	012053N 1034723E	<a href="#">G579</a>	
LELIB	012729N 1032450E	<a href="#">A464</a> , <a href="#">W401</a>	SID-WSSS, STAR-WSSS
LELON	011243.51N 1035608.62E		IAC-WSSS
LEND A	024124N 1043932E	<a href="#">N884</a>	
LEPNA	010648.29N 1035338.82E		IAC-WSSS
LETGO	011411N 1035548E		SID-WSSS
LIDVA	010505.67N 1035255.38E		IAC-WSSS
LIPRO	025342N 1051128E	<a href="#">M761</a> , <a href="#">N884</a>	
LUSMO	033341N 1065534E	<a href="#">L625</a> , <a href="#">M758</a> , <a href="#">N884</a>	
LUXOL	011802.73N 1035823.38E		IAC-WSSS
MABAL	032826N 1051236E	<a href="#">M758</a> , <a href="#">N892</a>	HLDG ID, STAR-WSSS
MABLI	041717N 1061247E	<a href="#">L635</a> , <a href="#">L644</a> , <a href="#">N892</a>	
MANIM	031431N 1040553E	<a href="#">N891</a>	
MASBO	020248N 1025251E	<a href="#">A457</a>	SID-WSSS
MASNI	012037N 1033746E	<a href="#">A464</a>	
MELAS	070520N 1080911E	<a href="#">N892</a>	
MESOG	020103N 1031240E	<a href="#">B466</a>	
MUMSO	034420N 1053213E	<a href="#">N875</a> , <a href="#">N892</a>	
NIMIX	012452N 1075926E	<a href="#">G580</a> , <a href="#">N875</a>	
NIVAM	023650N 1040228E	<a href="#">G219</a>	
NODIN	081100N 1161142E	<a href="#">M522</a>	
NOPAT	042313N 1044756E	<a href="#">L629</a> , <a href="#">N875</a>	
NYLON	013656.90N 1040623.80E		HLDG ID, IAC-WSSS, SID-WSSS, STAR-WSSS
OB DAB	031153N 1040538E	<a href="#">N891</a>	
OB DOS	002503N 1065551E	<a href="#">L504</a> , <a href="#">M774</a>	STAR-WSSS
OB GET	012307N 1064531E	<a href="#">G580</a> , <a href="#">L644</a>	
OB LOT	014256N 1064147E	<a href="#">L644</a> , <a href="#">M646</a>	
ODONO	063613.82N 1030129.41E	<a href="#">M904</a>	
OLKIT	045010N 1115118E	<a href="#">M758</a>	
OLSAM	020059N 1063824E	<a href="#">L644</a>	
OMBAP	023116N 1063242E	<a href="#">L644</a>	
OMLIV	025512N 1062812E	<a href="#">L644</a>	
ONAPO	032116N 1062318E	<a href="#">L644</a>	

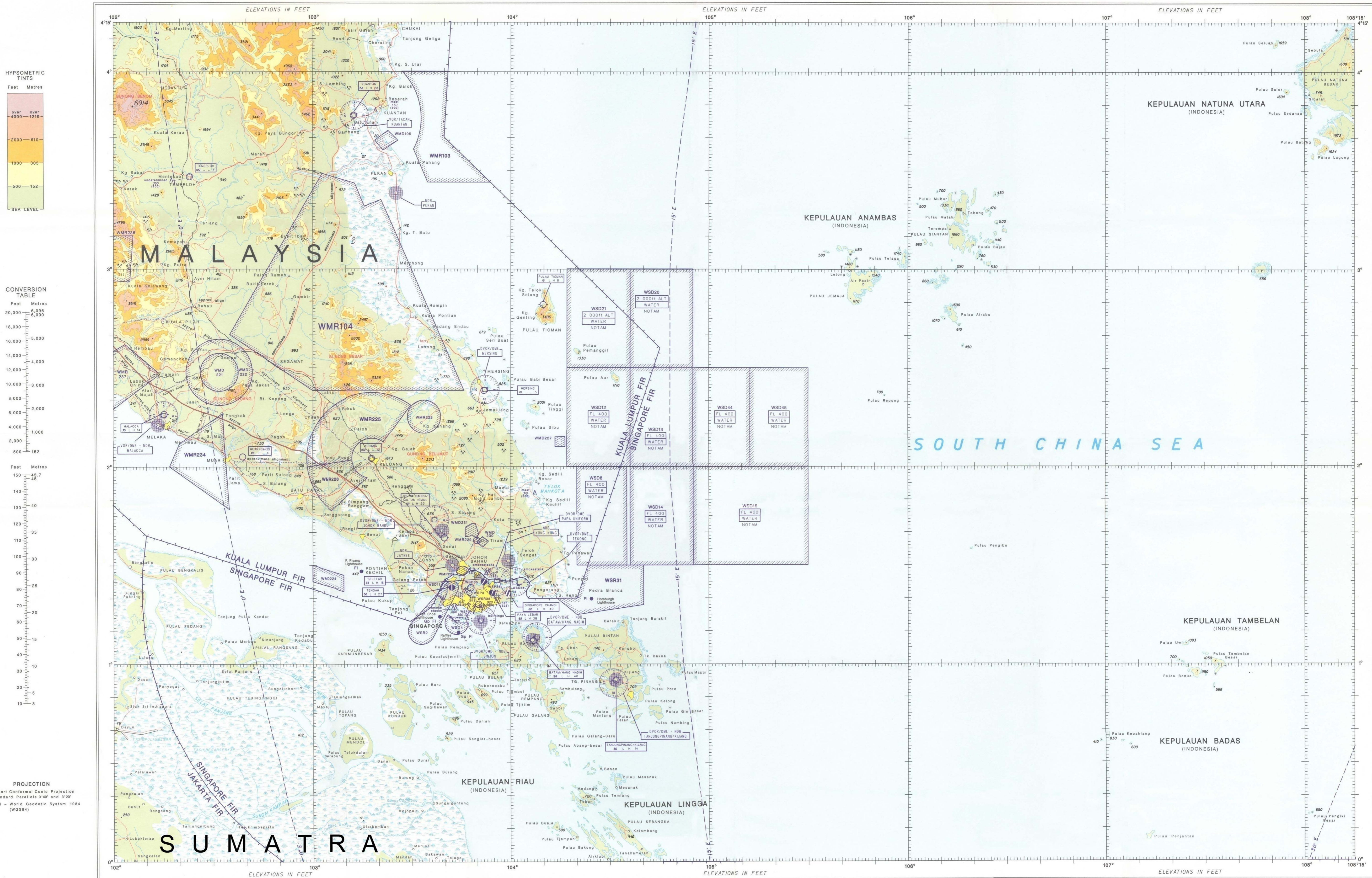


<i>Name-code designator</i>	<i>Co-ordinates</i>	<i>ATS route or other route</i>	<i>Terminal Area</i>
1	2	3	4
OPULA	033155N 1062118E	<a href="#">L644</a>	
OTLON	030752N 1042006E	<a href="#">M761</a> , <a href="#">M771</a>	
PADLI	030918N 1033133E	<a href="#">B469</a> , <a href="#">Y332</a> , <a href="#">Y333</a> , <a href="#">Y334</a> , <a href="#">Y335</a> , <a href="#">Y336</a>	
PALGA	011059N 1034759E		STAR-WSSS
PAMSI	010459N 1034845E		STAR-WSSS
PARDI	003400S 1041300E	<a href="#">G579</a> , <a href="#">N502</a>	
PASPU	015915N 1040618E		STAR-WSSS,
PEKLA	023437N 1040618E	<a href="#">N892</a>	
PIBAP	023023N 1040618E		STAR-WSSS
PIMOK	012648N 1032008E	<a href="#">A576</a> , <a href="#">W401</a>	,
POSUB	012725N 1040748E		STAR-WSSS,
RAXIM	030318N 1041713E	<a href="#">M771</a>	
REDUK	021957N 1030459E	<a href="#">R325</a>	
REKOP	013306N 1030521E	<a href="#">A576</a>	
REMES	004342N 1035735E	<a href="#">G579</a>	HLDG ID, STAR-WSSS
REPOV	001623N 1040300E	<a href="#">G579</a>	HLDG ID, STAR-WSSS
ROBMO	025440N 1035700E	<a href="#">L642</a>	
RUVIK	011422N 1042033E		SID-WSSS, STAR-WSSS
SABIP	020940N 1075044E	<a href="#">M646</a> , <a href="#">M761</a>	
SABKA	015051N 1031713E	<a href="#">A457</a>	SID-WSSS
SAMKO	010529.5N 1035254.9E	<a href="#">R469</a> , <a href="#">W407</a>	HLDG ID, STAR-WSSS,
SANAT	010749N 1035930E		STAR-WSSS,
SUKRI	012306N 1025904E	<a href="#">M630</a>	
SUMLA	080242N 1160054E	<a href="#">M754</a>	
SURGA	003657S 1063119E	<a href="#">M635</a>	
SUSAR	035848N 1051547E	<a href="#">L635</a> , <a href="#">N875</a>	
TAROS	004200N 1021607E	<a href="#">R469</a>	
TAXUL	035035N 1034037E	<a href="#">M763</a> , <a href="#">Y332</a>	
TEGID	085656N 1155143E	<a href="#">M767</a>	
TERIX	041521N 1093456E	<a href="#">L517</a> , <a href="#">M758</a> , <a href="#">M767</a>	
TIDAR	065230.15N 1024959.82E	<a href="#">M904</a>	
TODAM	063138N 1123536E	<a href="#">M767</a> , <a href="#">M768</a>	
TOKIM	012933N 1040315E		SID-WSSS
TOMAN	012147N 1054717E	<a href="#">G580</a> , <a href="#">L625</a> , <a href="#">M646</a> , <a href="#">M767</a>	SID-WSSS, STAR-WSSS
TOPOM	012955N 1040227E		SID-WSSS
TOPOR	014412N 1025330E	<a href="#">W534</a>	
UDONI	004818N 1040806E	<a href="#">B470</a>	

<i>Name-code designator</i>	<i>Co-ordinates</i>	<i>ATS route or other route</i>	<i>Terminal Area</i>
1	2	3	4
UGPEK	033647N 1040752E	<a href="#">L635, N891</a>	
UPRON	060903.41N 1032039.98E	<a href="#">M904, Q803</a>	
URIGO	032505N 1040647E	<a href="#">M758, N891</a>	
VABRI	013114.96N 1040357.78E		IAC-WSSS
VENIX	002156S 1060521E		SID-WSSS
VENLI	062848N 1024900E	<a href="#">M765</a>	
VENPA	002141N 1044955E		SID-WSSS
VEPLI	035223N 1040542E	<a href="#">L629, L642</a>	,
VERIN	023332N 1062425E	<a href="#">L625</a>	
VILEV	012729.10N 1040222.42E		IAC-WSSS
VINIK	083830N 1161348E	<a href="#">M522, M754</a>	
VISAT	032620N 1043134E	<a href="#">M758, M771</a>	

# WORLD AERONAUTICAL CHART

## ICAO 1:1,000,000



**CAUTION**  
Consult respective NOTAMS and AIPs of States concerned for the latest aeronautical information AND the Civil Aviation Authority of Singapore does not accept responsibility for any errors or omissions in the information shown outside of Singapore Territory.

**MAGNETIC INFORMATION FOR THE YEAR 2000**  
Aeronautical Information: Jan 1999

Primary road	_____	City or large town	____
Secondary road	_____	Town, village	____
Expressway	_____	Small river, large river	____
Single railway	_____	Lake, dam	____
Spot elevation accurate, approximate	586 440	Pipeline	_____
Highest known elevation	6914	Swamp	_____
Boundary, international	_____	Coral Reef, Mine	_____
Contour	_____	Sand, rock wash	_____

**AERODROMES**

- Major
- Civil Land
- Military Land
- Aerodrom with no facilities
- Major Aerodromes portrayed have a hard surface runway length of 3000 feet or more.

**VERTICAL OBSTRUCTIONS**

- Obstacle
- Lighted obstacle
- Lighted group obstacles
- 913 Elevation of top above mean sea level (AMSL)
- (780) Height of top above ground level (AGL)
- All reported vertical obstructions cannot be portrayed due to chart scale. Obstructions shown are at least 500 feet AGL, in and around major populated places the pattern is further reduced to enhance clarity.
- CAUTION - Vertical obstructions have been extracted from the most reliable sources available. However, there is no assurance that all are shown or that their locations or heights are exact.

**RADIO NAVIGATION AIDS**

- NDB
- VOR/DME
- VOR/TACAN
- VOR/PTAC

**MISCELLANEOUS**

- Transmission line
- isogonic line
- Prohibited, Restricted or Danger area

**VISUAL AIDS**

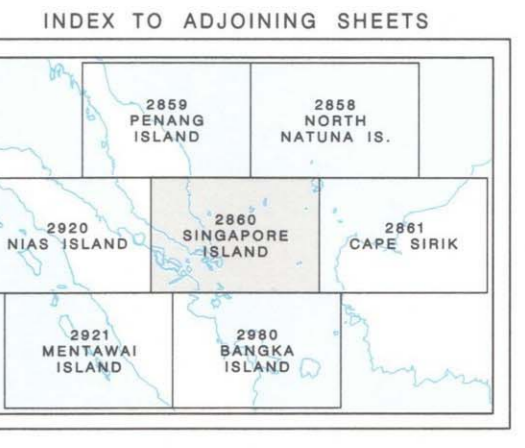
- Flashing light
- Flashing Group
- Flashing
- Marine light
- Flashing light
- Marine lights are white unless colours are stated.

**GLOSSARY**

Gunung, Gunung	mountain
Kampung, Kg	village
Kepulauan	island group
Pulau	island
Selangai	strait
Sungai, S	river, stream
Tanjung, Tanjung, Tg	point, cape
Teluk, Tk	lake

Compiled by the Mapping Unit from the following sources:  
(a) Digital Chart of the World, Edition 1, July 1992  
(b) 1:50,000 Topographic Map of Singapore (1988)  
(c) Magnetic Information for the year 2000, as supplied by the Geometric Branch, Military Survey, UK  
(d) Aeronautical Information as supplied by the Civil Aviation Authority of Singapore  
(e) OAC L-10, Edition 78565

**NOTE**  
Due to congestion in the Singapore area, only selected Navigation Aids and Restricted Airspace are shown.



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<a href="#">WSAT AD 2.10</a>	AERODROME OBSTACLES	AD 2.WSAT-2
<a href="#">WSAT AD 2.11</a>	[NIL] METEOROLOGICAL INFORMATION PROVIDED	NIL
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<a href="#">WSAT AD 2.13</a>	DECLARED DISTANCES	AD 2.WSAT-3
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<a href="#">WSAT AD 2.16</a>	[NIL] HELICOPTER LANDING AREA	NIL
<a href="#">WSAT AD 2.17</a>	ATS AIRSPACE	AD 2.WSAT-4
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<a href="#">WSAT AD 2.22</a>	[NIL] FLIGHT PROCEDURES	NIL
<a href="#">WSAT AD 2.23</a>	[NIL] ADDITIONAL INFORMATION	NIL
<a href="#">WSAT AD 2.24</a>	CHARTS RELATED TO AN AERODROME	AD 2.WSAT-8
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<a href="#">WSAG AD 2.3</a>	OPERATIONAL HOURS	AD 2.WSAG-1
<a href="#">WSAG AD 2.4</a>	[NIL] HANDLING SERVICES AND FACILITIES	NIL
<a href="#">WSAG AD 2.5</a>	[NIL] PASSENGER FACILITIES	NIL
<a href="#">WSAG AD 2.6</a>	RESCUE AND FIRE FIGHTING SERVICES	AD 2.WSAG-1
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<a href="#">WSAG AD 2.8</a>	APRON, TAXIWAYS AND CHECK LOCATIONS/POSITIONS DATA	AD 2.WSAG-1
<a href="#">WSAG AD 2.9</a>	[NIL] SURFACE MOVEMENT GUIDANCE AND CONTROL SYSTEM AND MARKINGS	NIL
<a href="#">WSAG AD 2.10</a>	AERODROME OBSTACLES	AD 2.WSAG-2
<a href="#">WSAG AD 2.11</a>	[NIL] METEOROLOGICAL INFORMATION PROVIDED	NIL
<a href="#">WSAG AD 2.12</a>	RUNWAY PHYSICAL CHARACTERISTICS	AD 2.WSAG-2
<a href="#">WSAG AD 2.13</a>	DECLARED DISTANCES	AD 2.WSAG-2
<a href="#">WSAG AD 2.14</a>	[NIL] APPROACH AND RUNWAY LIGHTING	NIL
<a href="#">WSAG AD 2.15</a>	OTHER LIGHTING, SECONDARY POWER SUPPLY	AD 2.WSAG-2
<a href="#">WSAG AD 2.16</a>	[NIL] HELICOPTER LANDING AREA	NIL
<a href="#">WSAG AD 2.17</a>	ATS AIRSPACE	AD 2.WSAG-2
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<a href="#">WSAG AD 2.19</a>	RADIO NAVIGATION AND LANDING AIDS	AD 2.WSAG-3
<a href="#">WSAG AD 2.20</a>	[NIL] LOCAL TRAFFIC REGULATIONS	NIL
<a href="#">WSAG AD 2.21</a>	[NIL] NOISE ABATEMENT PROCEDURES	NIL
<a href="#">WSAG AD 2.22</a>	[NIL] FLIGHT PROCEDURES	NIL
<a href="#">WSAG AD 2.23</a>	[NIL] ADDITIONAL INFORMATION	NIL
<a href="#">WSAG AD 2.24</a>	[NIL] CHARTS RELATED TO AN AERODROME	NIL
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<a href="#">WMKJ AD 2.2</a>	[NIL] AERODROME GEOGRAPHICAL AND ADMINISTRATIVE DATA	NIL
<a href="#">WMKJ AD 2.3</a>	[NIL] OPERATIONAL HOURS	NIL
<a href="#">WMKJ AD 2.4</a>	[NIL] HANDLING SERVICES AND FACILITIES	NIL
<a href="#">WMKJ AD 2.5</a>	[NIL] PASSENGER FACILITIES	NIL
<a href="#">WMKJ AD 2.6</a>	[NIL] RESCUE AND FIRE FIGHTING SERVICES	NIL
<a href="#">WMKJ AD 2.7</a>	[NIL] SEASONAL AVAILABILITY - CLEARING	NIL
<a href="#">WMKJ AD 2.8</a>	[NIL] APRONS, TAXIWAYS AND CHECK LOCATIONS DATA	NIL
<a href="#">WMKJ AD 2.9</a>	[NIL] SURFACE MOVEMENT GUIDANCE AND CONTROL SYSTEM AND MARKINGS	NIL
<a href="#">WMKJ AD 2.10</a>	[NIL] AERODROME OBSTACLES	NIL
<a href="#">WMKJ AD 2.11</a>	[NIL] METEOROLOGICAL INFORMATION PROVIDED	NIL
<a href="#">WMKJ AD 2.12</a>	[NIL] RUNWAY PHYSICAL CHARACTERISTICS	NIL
<a href="#">WMKJ AD 2.13</a>	[NIL] DECLARED DISTANCES	NIL
<a href="#">WMKJ AD 2.14</a>	[NIL] APPROACH AND RUNWAY LIGHTING	NIL
<a href="#">WMKJ AD 2.15</a>	[NIL] OTHER LIGHTING, SECONDARY POWER SUPPLY	NIL
<a href="#">WMKJ AD 2.16</a>	[NIL] HELICOPTER LANDING AREA	NIL
<a href="#">WMKJ AD 2.17</a>	ATS AIRSPACE	AD 2.WMKJ-1
<a href="#">WMKJ AD 2.18</a>	[NIL] ATS COMMUNICATION FACILITIES	NIL
<a href="#">WMKJ AD 2.19</a>	[NIL] RADIO NAVIGATION AND LANDING AIDS	NIL
<a href="#">WMKJ AD 2.20</a>	[NIL] LOCAL TRAFFIC REGULATIONS	NIL
<a href="#">WMKJ AD 2.21</a>	[NIL] NOISE ABATEMENT PROCEDURES	NIL
<a href="#">WMKJ AD 2.22</a>	[NIL] FLIGHT PROCEDURES	NIL
<a href="#">WMKJ AD 2.23</a>	[NIL] ADDITIONAL INFORMATION	NIL
<a href="#">WMKJ AD 2.24</a>	[NIL] CHARTS RELATED TO AN AERODROME	NIL
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<a href="#">WIDD AD 2.2</a>	[NIL] AERODROME GEOGRAPHICAL AND ADMINISTRATIVE DATA	NIL
<a href="#">WIDD AD 2.3</a>	[NIL] OPERATIONAL HOURS	NIL
<a href="#">WIDD AD 2.4</a>	[NIL] HANDLING SERVICES AND FACILITIES	NIL
<a href="#">WIDD AD 2.5</a>	[NIL] PASSENGER FACILITIES	NIL
<a href="#">WIDD AD 2.6</a>	[NIL] RESCUE AND FIRE FIGHTING SERVICES	NIL
<a href="#">WIDD AD 2.7</a>	[NIL] SEASONAL AVAILABILITY - CLEARING	NIL
<a href="#">WIDD AD 2.8</a>	[NIL] APRONS, TAXIWAYS AND CHECK LOCATIONS DATA	NIL
<a href="#">WIDD AD 2.9</a>	[NIL] SURFACE MOVEMENT GUIDANCE AND CONTROL SYSTEM AND MARKINGS	NIL
<a href="#">WIDD AD 2.10</a>	[NIL] AERODROME OBSTACLES	NIL
<a href="#">WIDD AD 2.11</a>	[NIL] METEOROLOGICAL INFORMATION PROVIDED	NIL
<a href="#">WIDD AD 2.12</a>	[NIL] RUNWAY PHYSICAL CHARACTERISTICS	NIL
<a href="#">WIDD AD 2.13</a>	[NIL] DECLARED DISTANCES	NIL
<a href="#">WIDD AD 2.14</a>	[NIL] APPROACH AND RUNWAY LIGHTING	NIL
<a href="#">WIDD AD 2.15</a>	[NIL] OTHER LIGHTING, SECONDARY POWER SUPPLY	NIL
<a href="#">WIDD AD 2.16</a>	[NIL] HELICOPTER LANDING AREA	NIL
<a href="#">WIDD AD 2.17</a>	ATS AIRSPACE	AD 2.WIDD-1
<a href="#">WIDD AD 2.18</a>	ATS COMMUNICATION FACILITIES	AD 2.WIDD-1
<a href="#">WIDD AD 2.19</a>	[NIL] RADIO NAVIGATION AND LANDING AIDS	NIL
<a href="#">WIDD AD 2.20</a>	[NIL] LOCAL TRAFFIC REGULATIONS	NIL
<a href="#">WIDD AD 2.21</a>	[NIL] NOISE ABATEMENT PROCEDURES	NIL
<a href="#">WIDD AD 2.22</a>	[NIL] FLIGHT PROCEDURES	NIL

<a href="#">WIDD AD 2.23</a>	[NIL] ADDITIONAL INFORMATION	NIL
<a href="#">WIDD AD 2.24</a>	CHARTS RELATED TO AN AERODROME	AD 2.WIDD-2
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<a href="#">WIDN AD 2.2</a>	[NIL] AERODROME GEOGRAPHICAL AND ADMINISTRATIVE DATA	NIL
<a href="#">WIDN AD 2.3</a>	[NIL] OPERATIONAL HOURS	NIL
<a href="#">WIDN AD 2.4</a>	[NIL] HANDLING SERVICES AND FACILITIES	NIL
<a href="#">WIDN AD 2.5</a>	[NIL] PASSENGER FACILITIES	NIL
<a href="#">WIDN AD 2.6</a>	[NIL] RESCUE AND FIRE FIGHTING SERVICES	NIL
<a href="#">WIDN AD 2.7</a>	[NIL] SEASONAL AVAILABILITY - CLEARING	NIL
<a href="#">WIDN AD 2.8</a>	[NIL] APRONS, TAXIWAYS AND CHECK LOCATIONS DATA	NIL
<a href="#">WIDN AD 2.9</a>	[NIL] SURFACE MOVEMENT GUIDANCE AND CONTROL SYSTEM AND MARKINGS	NIL
<a href="#">WIDN AD 2.10</a>	[NIL] AERODROME OBSTACLES	NIL
<a href="#">WIDN AD 2.11</a>	[NIL] METEOROLOGICAL INFORMATION PROVIDED	NIL
<a href="#">WIDN AD 2.12</a>	[NIL] RUNWAY PHYSICAL CHARACTERISTICS	NIL
<a href="#">WIDN AD 2.13</a>	[NIL] DECLARED DISTANCES	NIL
<a href="#">WIDN AD 2.14</a>	[NIL] APPROACH AND RUNWAY LIGHTING	NIL
<a href="#">WIDN AD 2.15</a>	[NIL] OTHER LIGHTING, SECONDARY POWER SUPPLY	NIL
<a href="#">WIDN AD 2.16</a>	[NIL] HELICOPTER LANDING AREA	NIL
<a href="#">WIDN AD 2.17</a>	ATS AIRSPACE	AD 2.WIDN-1
<a href="#">WIDN AD 2.18</a>	ATS COMMUNICATION FACILITIES	AD 2.WIDN-1
<a href="#">WIDN AD 2.19</a>	[NIL] RADIO NAVIGATION AND LANDING AIDS	NIL
<a href="#">WIDN AD 2.20</a>	[NIL] LOCAL TRAFFIC REGULATIONS	NIL
<a href="#">WIDN AD 2.21</a>	[NIL] NOISE ABATEMENT PROCEDURES	NIL
<a href="#">WIDN AD 2.22</a>	[NIL] FLIGHT PROCEDURES	NIL
<a href="#">WIDN AD 2.23</a>	[NIL] ADDITIONAL INFORMATION	NIL
<a href="#">WIDN AD 2.24</a>	CHARTS RELATED TO AN AERODROME	AD 2.WIDN-1

*Note: The following sections in this chapter are intentionally left blank:  
AD 0.1, AD 0.2, AD 0.3, AD 0.4, AD 0.5.*

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**AD 2 AERODROMES****WSSS — SINGAPORE / SINGAPORE CHANGI INTL****WSSS AD 2.1 AERODROME LOCATION INDICATOR AND NAME**

WSSS — SINGAPORE / SINGAPORE CHANGI INTL

**WSSS AD 2.2 AERODROME GEOGRAPHICAL AND ADMINISTRATIVE DATA**

1	<i>ARP coordinates and site at AD</i>	012133.16N 1035921.57E (Control Tower)
2	<i>Direction and distance from (city)</i>	17.2km North-East from City Centre (The Fullerton Hotel, Singapore)
3	<i>Elevation/Reference temperature</i>	6.66 M / 32.6°C
4	<i>Geoid Undulation (AD elevation position)</i>	10.29 M
5	<i>MAG VAR /Annual change</i>	0°26' E (2015) / Negligible
6	<i>AD Administration, address, telephone, telefax, AFS</i>	
CHANGI AIRPORT GROUP (SINGAPORE) PTE LTD Singapore Changi Airport P.O.Box 168, SINGAPORE 918146 Tel: (65)65956868 AFS: WSSSYAYX		
7	<i>Types of traffic permitted</i>	IFR
8	<i>Remarks</i>	
a.	Not available to all non-scheduled civil aircraft types of 40-seater or below except in special circumstances. Aircraft larger than the above category shall not plan their arrival between 0900-1559UTC.	
b.	Aircraft shall leave nose-in position (90 degrees) with the aid of aircraft tow tractors. Reverse thrust or variable pitch propellers shall not be used. Aircraft operators shall make suitable arrangements.	
c.	Prior permission required for aircraft not equipped with radiotelephony.	
d.	A subsonic jet aircraft, unless otherwise exempted, is not permitted to operate in Singapore unless it possesses a noise certificate stating that it meets the noise standards of ICAO Annex 16, Volume 1, Chapter 3, or equivalent. The noise certificate may also take the form of a suitable statement contained in another document approved by the State of Registry of the aircraft.	
e.	RVR minima for CAT II ILS operations is limited to 350m due to runway and taxiway light spacing requirements on the airfield.	
f.	Frangible poles are installed for the purpose of identifying 90m away from the centreline of RWY 02L/20R and RWY 02C/20C	

**WSSS AD 2.3 OPERATIONAL HOURS**

Operational Hours		
1	Aerodrome Operator	H24
2	Customs and Immigration	H24
3	Health and Sanitation	H24
4	AIS Briefing Office	H24
5	ATS Reporting Office	H24
6	MET Briefing Office	H24
7	Air Traffic Services	H24

**WSSS AD 2.4 HANDLING SERVICES AND FACILITIES**

1	<i>Cargo Handling Facilities</i>	Cargo terminals equipped with advanced storage stacker, material and pallet container handling systems, computerised cargo information, data and documentation systems. By arrangement with airlines.
2	<i>Fuel / Oil Types</i>	JET A1 (for aircraft). Oils: Various by arrangement with fuel companies.
3	<i>Fuelling Facilities / Capacity</i>	Hydrant refueling
4	<i>Hangar space for visiting aircraft</i>	By arrangement with SIA Engineering Company (SIAEC) or ST Aerospace Services Co.
5	<i>Repair facilities for visiting aircraft</i>	Maintenance and repairs for commercial aircraft up to and including A380 is by arrangement.
6	<i>Remarks</i>	<p>a. Marshalling Service: No pilot shall taxi an aircraft on its own into a gate/stand without the aid of a docking system or a marshaller.</p> <p>b. Oxygen and related servicing: Oxygen for all cabin and aircraft system. No CO<sub>2</sub> recharging facilities.</p>

**WSSS AD 2.5 PASSENGER FACILITIES**

1	<i>Hotels</i>	Transit area and adjacent to airport terminal.
2	<i>Restaurants</i>	Transit and public areas of terminal building.
3	<i>Transportation</i>	Buses, taxis, MRT train and car rental service.
4	<i>Medical Facilities</i>	Available at airport.
5	<i>Bank and Post Office</i>	Available at airport.
6	<i>Tourist Office</i>	Available at airport.
7	<i>Remarks</i>	Internet address : <a href="http://www.changiairport.com.sg">http://www.changiairport.com.sg</a> for airport and flight information, shops and restaurants, facilities and services, flight connections and tourist information.

**WSSS AD 2.6 RESCUE AND FIRE FIGHTING SERVICES**

1	<i>AD category for fire fighting</i>	CAT10 (No facilities for foaming of runways)
2	<i>Rescue equipment</i>	Adequately provided as recommended by ICAO.
3	<i>Capability for removal of disabled aircraft</i>	Specialised aircraft recovery equipment available for up to and including A380 size aircraft operation.
4	<i>Remarks</i>	All Airport Emergency Service personnel are trained in rescue and fire-fighting as well as medical first-aid.

**WSSS AD 2.7 SEASONAL AVAILABILITY - CLEARING**

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

**2.2 TERMINAL 1 AIRCRAFT STANDS**

Aircraft types that can be parked at stands (→) are as follows:

Stands	D30	D32	D34	D35	D36	D37	D38	D40	D41	D42	D42L & D42R	D44	D46	D47	D48	D49
A300		→		→	→	→		→	→			→	→	→	→	→
A310		→		→	→	→		→	→			→	→	→	→	→
A319	→	→	→	→	→	→	→	→	→		→	→	→	→	→	→
A320	→	→	→	→	→	→	→	→	→		→	→	→	→	→	→
A321	→	→	→	→	→	→	→	→	→		→	→	→	→	→	→
A332		→	→		→	→		→	→	→		→	→	→	→	→
A333		→	→		→	→		→	→	→		→	→	→	→	→
A342		→	→		→	→		→	→			→	→	→	→	→
A343		→	→		→	→		→	→	→		→	→	→	→	→
A345		→	→					→	→			→	→	→	→	→
A346		→	→										→			→
A359		→	→						→	→		→	→	→	→	→
A380													→			→
B707		→							→			→				
B717		→		→	→	→	→		→			→	→	→	→	
B727		→							→			→				
B737	→	→	→	→	→	→	→	→	→		→	→	→	→	→	→
B747		→	→					→	→				→	→	→	→
B74S		→							→				→	→	→	→
B757		→		→	→	→		→	→			→	→	→	→	→
B762		→	→	→	→	→		→	→	→		→	→	→	→	→
B763		→	→	→	→	→		→	→	→		→	→	→	→	→
B772		→	→		→	→		→	→	→		→	→	→	→	→
B773		→	→						→	→		→				→
B773ER		→	→						→	→		→				→
B788		→	→					→	→	→		→	→			→
B789		→	→			→		→	→	→		→	→		→	→
BA146		→														
DC10					→	→			→			→	→	→	→	→
DC9		→														
F100		→		→	→	→	→		→			→		→	→	
IL62		→		→	→	→			→			→	→	→	→	→
IL86		→		→	→	→			→			→	→	→	→	→
IL96		→		→	→	→			→			→	→	→	→	→
L101					→	→			→			→	→	→	→	→
MD11					→	→			→			→	→	→	→	→
MD80		→		→	→	→	→		→			→	→	→	→	→
MD82		→		→	→	→	→		→			→	→	→	→	→
MD83		→	→	→	→	→	→		→	→		→	→	→	→	→
MD88		→		→	→	→	→		→			→	→	→	→	→

←

### 2.3 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	E24L	E24R	E26	E27	E27L	E27R	E28
A300				✈	✈	✈		✈		✈	✈			✈				✈			
A310				✈	✈	✈	✈	✈		✈	✈			✈				✈			
A319	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈		✈	✈	✈		✈	✈	
A320	✈	✈	✈	✈	✈	✈	✈	✈		✈	✈	✈	✈		✈	✈	✈		✈	✈	
A321			✈		✈									✈		✈	✈	✈		✈	✈
A332			✈	✈	✈			✈		✈	✈	✈	✈	✈				✈	✈		✈
A333			✈	✈	✈			✈		✈	✈	✈	✈	✈				✈	✈		✈
A342			✈	✈	✈			✈		✈	✈			✈				✈			
A343			✈	✈	✈			✈		✈	✈			✈	✈			✈	✈		✈
A345			✈	✈	✈			✈		✈	✈			✈				✈			
A346				✈	✈			✈													
A359			✈	✈	✈			✈		✈	✈	✈	✈	✈				✈	✈		✈
A380					✈			✈		✈											
B707																		✈			
B727				✈	✈	✈		✈		✈	✈			✈				✈			
B737	✈	✈	✈	✈	✈	✈	✈	✈		✈	✈	✈	✈		✈	✈	✈		✈	✈	
B747			✈	✈	✈			✈		✈	✈	✈	✈	✈				✈			✈
B748					✈			✈		✈											
B74S				✈	✈			✈		✈	✈			✈				✈			
B757				✈	✈	✈		✈		✈	✈			✈				✈			
B762	✈	✈	✈	✈	✈	✈		✈		✈	✈	✈	✈	✈				✈	✈		✈
B763	✈	✈	✈	✈	✈	✈		✈		✈	✈	✈	✈	✈				✈	✈		✈
B772			✈	✈	✈			✈		✈	✈	✈	✈	✈				✈	✈		✈
B772LR			✈							✈											
B773				✈	✈	✈		✈		✈				✈	✈			✈	✈		✈
B773ER				✈	✈			✈		✈				✈	✈			✈	✈		✈
B788			✈	✈	✈			✈		✈	✈	✈	✈	✈				✈	✈		✈
B789			✈	✈	✈			✈		✈	✈	✈	✈	✈				✈	✈		✈
DC10				✈	✈	✈		✈		✈	✈							✈			
DC9																					
F70				✈	✈	✈	✈	✈	✈	✈	✈			✈							
F100																			✈		
IL62																			✈		
IL86																			✈		
IL96																			✈		
L101				✈	✈	✈		✈		✈	✈							✈			
MD11				✈	✈	✈		✈		✈	✈							✈			
MD80																			✈		
MD82																			✈		
MD83															✈	✈					
MD88																			✈		



**2.4 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	→	→	→	→	→		→	→	→	→	→	→		→		→		→	
A332		→			→				→	→	→	→	→	→	→	→	→	→	
A333		→			→				→	→	→	→	→	→	→	→	→	→	
A342		→			→				→	→				→	→	→	→	→	
A343		→			→				→	→	→		→	→	→	→	→	→	
A345		→			→				→	→				→	→	→	→	→	
A346											→							→	
A359		→				→					→	→		→	→	→	→	→	
A380		→									→							→	
B707												→		→			→	→	
B727		→			→			→	→	→		→		→	→	→	→	→	
B737	→	→	→	→	→		→	→	→	→	→	→		→		→		→	
B747		→			→				→	→	→	→	→	→	→	→	→	→	
B748		→									→							→	
B74S		→			→				→	→				→	→	→	→	→	
B757		→			→				→	→		→		→	→	→	→	→	
B762		→			→	→			→	→	→	→	→	→	→	→	→	→	
B763		→			→	→			→	→	→	→	→	→	→	→	→	→	
B772		→		→	→				→	→	→	→	→	→	→	→	→	→	
B772LR														→		→		→	
B773										→	→			→	→	→	→	→	
B773ER										→	→			→	→	→	→	→	
B788		→		→	→	→					→	→	→	→	→	→	→	→	
B789		→		→	→	→					→	→	→	→	→	→	→	→	
DC10					→					→				→	→	→	→	→	
DC9												→		→	→	→			
F70		→			→				→	→		→		→	→	→	→	→	
L101					→					→				→	→	→	→	→	
MD11					→					→				→	→	→	→	→	
MD87												→		→					

Stands	F35L	F35R	F52L	F52R	F56L	F56R	F59L	F59R
A319	→	→	→	→	→	→	→	→
A320	→	→	→	→	→	→	→	→
A321	→	→	→	→	→	→	→	→
B737	→	→						
B737(100-500)			→	→	→	→	→	→
B737(600-900)			→	→	→	→		→
MD83			→	→	→	→	→	→

**2.5 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		✈		✈	✈		✈	✈	✈	✈		✈	✈	✈	✈	✈	✈	✈
B789	✈	✈		✈	✈		✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈
B757		✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈		
B767		✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈		
B772	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈
B772LR											✈			✈				
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	✈	✈	✈	✈	✈		✈	✈	✈	✈
B789	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈
B757		✈	✈	✈	✈	✈	✈	✈	✈	✈
B767		✈	✈	✈	✈	✈	✈	✈	✈	✈
B772	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈
B773		✈		✈	✈	✈	✈	✈	✈	✈
B773ER		✈		✈	✈	✈	✈	✈	✈	✈

APRON/ ACFT STANDS	PUSHBACK PROCEDURES	PHRASEOLOGY USED BY SINGAPORE GROUND
← D37	<p>The aircraft (on idle thrust) shall be pushed back onto Taxilane N3 to face North until its nose wheel is at the intersection of the aircraft stand lead-in line and Taxilane N3 centreline. The aircraft may breakaway from there.</p> <p><u>Alternate Pushback Procedure</u></p> <p>The aircraft (on idle thrust) shall be pushed back onto Taxilane N3 to face North until the nose of the aircraft is behind the stopbar behind aircraft stand D34 on Taxilane N2. The aircraft may breakaway from there.</p>	Standard pushback approved.  Pushback approved, to face North on Taxilane N2.
← D38	The aircraft (on idle thrust) shall be pushed back onto Taxilane N3 to face North until the nose of the aircraft is behind the stopbar behind aircraft stand D37. The aircraft may breakaway from there.	Standard pushback approved.
<b><u>T1 EAST</u></b>		
D40	<p>The aircraft (on idle thrust) shall be pushed back:</p> <ul style="list-style-type: none"> <li>• onto Taxilane A6 to face North until its nose wheel is at "EOP B D40, D40L, D40R" position. The aircraft may breakaway from there.</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>• onto Taxilane A6 to face South until its nose wheel is at "EOP A D40, D40L, D40R" position. The aircraft may breakaway from there.</li> </ul>	Pushback approved, to face North.  Pushback approved, to face South.
D40L, D40R	<p>The aircraft (on idle thrust) shall be pushed back:</p> <ul style="list-style-type: none"> <li>• following the pushback line onto Taxilane A6 to face North until its nose wheel is at "EOP B D40, D40L, D40R" position. The aircraft may breakaway from there.</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>• following the pushback line onto Taxilane A6 to face South until its nose wheel is at "EOP A D40, D40L, D40R" position. The aircraft may breakaway from there.</li> </ul>	Pushback approved, to face North.  Pushback approved, to face South.
← D41	The aircraft (on idle thrust) shall be pushed back onto Taxilane A6 to face North (or South) until its nose wheel is at the intersection of the aircraft stand lead-in line and Taxilane A6 centreline. The aircraft may breakaway from there.	Pushback approved, to face North (or South).
← D42	The aircraft (on idle thrust) shall be pushed back onto Taxilane A6 to face North (or South) until its nose wheel is at the intersection of the aircraft stand lead-in line and Taxilane A6 centreline. The aircraft may breakaway from there.	Pushback approved, to face North (or South).
← D42L, D42R	The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane A6 to face North (or South) until its nose wheel is at the intersection of the aircraft stand pushback line and Taxilane A6 centreline. The aircraft may breakaway from there.	Pushback approved, to face North (or South).
← D44, D46, D47	The aircraft (on idle thrust) shall be pushed back onto Taxilane A6 to face North (or South) until its nose wheel is at the intersection of the aircraft stand lead-in line and Taxilane A6 centreline. The aircraft may breakaway from there.	Pushback approved, to face North (or South).

APRON/ ACFT STANDS	PUSHBACK PROCEDURES	PHRASEOLOGY USED BY SINGAPORE GROUND
D48	<p>The aircraft (on idle thrust) shall be pushed back:</p> <ul style="list-style-type: none"> <li>• onto Taxilane A6 to face North until the nose of the aircraft is behind the stopbar line behind aircraft stand D48. The aircraft may breakaway from there.</li> </ul> <p><u>OR</u></p> <ul style="list-style-type: none"> <li>• onto Taxilane A6 to face South until its nose wheel is at the intersection of the aircraft stand lead-in line and Taxilane A6 centreline. The aircraft may breakaway from there.</li> </ul>	<p>Pushback approved, to face North.</p> <p>Pushback approved, to face South.</p>
D49	<p>The aircraft (on idle thrust) shall be pushed back:</p> <ul style="list-style-type: none"> <li>• onto Taxilane A6 to face North until its nose wheel is at the "EOP D49" position. The aircraft may breakaway from there.</li> </ul> <p><u>OR</u></p> <ul style="list-style-type: none"> <li>• onto Taxilane A6 to face South until its nose wheel is at the intersection of the aircraft stand lead-in line and Taxilane A6 centreline. The aircraft shall then be towed forward until its nose wheel is at the "EOT D49" position behind aircraft stand D49. The aircraft may breakaway from there.</li> </ul>	<p>Pushback approved, to face North.</p> <p>Pushback approved, to face South.</p>
<b><u>T2 NORTH</u></b>		
E8	<p>The aircraft (on idle thrust) shall be pushed back onto TWY A4 to face East until its nose wheel is at "EOP 14" position. The aircraft shall then be towed forward to "EOT 15" position. The aircraft may breakaway from there.</p>	<p>Standard pushback approved.</p>
E10	<p>The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane A6 to face North until its nose wheel is at the "EOP 19" position. The aircraft may breakaway from there.</p>	<p>Standard pushback approved.</p>
E11	<p>The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane A6 to face North until its nose wheel is at the intersection of Taxilane A6 and Taxilane A5 centreline. The aircraft shall then be towed forward following Taxilane A5 centreline to "EOT 16" position. The aircraft may breakaway from there.</p> <p><u>Alternate Pushback Procedure</u></p> <p>The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane A6 to face North until its nose wheel is at the "EOP 19A" position behind aircraft stand E24. The aircraft shall then be towed forward to "EOT 18B" position behind aircraft stand E26. The aircraft may breakaway from there.</p>	<p>Standard pushback approved.</p> <p>Pushback approved, to face North on Taxilane A6.</p>
E12	<p>The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane A5 to face North until its nose wheel is at the intersection of the aircraft stand pushback line and Taxilane A5 centreline. The aircraft shall then be towed forward until its nose wheel is at the "EOT 16" position. The aircraft may breakaway from there.</p> <p><u>Alternate Pushback Procedure</u></p> <p>The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane A5 followed by Taxilane A6 to face North until its nose wheel is at the intersection of Taxilane A6 and Taxilane A5 centreline. The aircraft may breakaway from there.</p>	<p>Standard pushback approved.</p> <p>Pushback approved, to face North on Taxilane A6.</p>
E20	<p>The aircraft (on idle thrust) shall be pushed back following the pushback line until its nose wheel is at the "EOP 17" position. The aircraft shall then be towed forward following the tow line onto Taxilane A6 to face North until its nose wheel is at the "EOT 18A" position. The aircraft may breakaway from there.</p>	<p>Standard pushback approved.</p>

APRON/ ACFT STANDS	PUSHBACK PROCEDURES	PHRASEOLOGY USED BY SINGAPORE GROUND
← E22	The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane A6 to face North until its nose wheel is at "EOP 19" position. The aircraft shall then be towed forward until its nose wheel is at the "EOT 18" position. The aircraft may breakaway from there.	Standard pushback approved.
← E24	The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane A6 to face North until its nose wheel is at the intersection of the aircraft stand pushback line and Taxilane A6 centreline. The aircraft may breakaway from there.	Standard pushback approved.
← E24L, E24R	The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane A6 to face North until its nose wheel is at the intersection of the aircraft stand pushback line and Taxilane A6 centreline. The aircraft may breakaway from there.	Standard pushback approved.
← E26	The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane A6 to face North until its nose wheel is at the intersection of the aircraft stand pushback line and Taxilane A6 centreline. The aircraft may breakaway from there.	Standard pushback approved.
← E27	The aircraft (on idle thrust) shall be pushed back onto Taxilane A6 to face North (or South) until its nose wheel is at the intersection of the aircraft stand lead-in line and Taxilane A6 centreline. The aircraft may breakaway from there.	Pushback approved, to face North (or South).
← E27L, E27R	The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane A6 to face North (or South) until its nose wheel is at the intersection of the aircraft stand pushback line and Taxilane A6 centreline. The aircraft may breakaway from there.	Pushback approved, to face North (or South).
← E28	The aircraft (on idle thrust) shall be pushed back onto Taxilane A6 to face North (or South) until its nose wheel is at the intersection of the aircraft stand lead-in line and Taxilane A6 centreline. The aircraft may breakaway from there.	Pushback approved, to face North (or South).
<b><u>T2 CENTRAL</u></b>		
← E1	The aircraft (on idle thrust) shall be pushed back following the pushback line to face East until its nose wheel is at the "EOP E1" position. The aircraft shall then be towed forward onto Taxilane B2 until its nose wheel is at the "EOT E1, E2, F30, F31" position. The aircraft may breakaway from there.	Standard pushback approved.
← E2	The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane B2 to face East until its nose wheel is at the intersection of the aircraft stand pushback line and Taxilane B2 centreline. The aircraft shall then be towed forward to "EOT E1, E2, F30, F31" position. The aircraft may breakaway from there.	Standard pushback approved.
← E3	The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane B2 to face East until its nose wheel is at the intersection of the aircraft stand pushback line and Taxilane B2 centreline. The aircraft may breakaway from there.	Standard pushback approved.

APRON/ ACFT STANDS	PUSHBACK PROCEDURES	PHRASEOLOGY USED BY SINGAPORE GROUND
← E4	<p>The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane B2 to face East until its nose wheel is at the "EOP E4, F33" position. The aircraft may breakaway from there.</p> <p><u>Alternate Pushback Procedure</u></p>	Standard pushback approved.
← E4	<p>The aircraft (on idle thrust) shall be pushed back onto Taxilane B1 to face South until its nose wheel is at the "EOP A E4, F33" position. The aircraft may breakaway from there.</p> <p><u>Alternate Pushback Procedure</u></p>	Pushback approved, to face South on Taxilane B1.
← E4	<p>The aircraft (on idle thrust) shall be pushed back onto Taxilane B3 to face North until its nose wheel is at the "EOP B E4, F33" position. The aircraft may breakaway from there.</p>	Pushback approved, to face North on Taxilane B3.
← E5, E6	<p>The aircraft (on idle thrust) shall be pushed back onto Taxilane B1 to face North until its nose wheel is at the intersection of the aircraft stand lead-in line and Taxilane B1 centreline. The aircraft shall then be towed forward until the nose of the aircraft is behind the stopbar behind aircraft stand E6. The aircraft may breakaway from there.</p>	Standard pushback approved.
E7	<p>The aircraft (on idle thrust) shall be pushed back onto Taxilane B1 to face North until the nose of the aircraft is behind the stopbar behind aircraft stand E6. The aircraft may breakaway from there.</p>	Standard pushback approved.
← F30	<p>The aircraft (on idle thrust) shall be pushed back following the pushback line to face East until its nose wheel is at the "EOP F30" position. The aircraft shall then be towed forward onto Taxilane B2 until its nose wheel is at the "EOT E1, E2, F30, F31" position. The aircraft may breakaway from there.</p>	Standard pushback approved.
← F31	<p>The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane B2 to face East until its nose wheel is at "EOP F31" position. The aircraft shall then be towed forward to "EOT E1, E2, F30, F31" position. The aircraft may breakaway from there.</p>	Standard pushback approved.
← F32	<p>The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane B2 to face East until its nose wheel is at the intersection of the aircraft stand pushback line and taxilane B2 centreline. The aircraft may breakaway from there.</p>	Standard pushback approved.
← F33	<p>The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane B2 to face East until its nose wheel is at the "EOP E4, F33" position. The aircraft may breakaway from there.</p> <p><u>Alternate Pushback Procedure</u></p>	Standard pushback approved.
← F33	<p>The aircraft (on idle thrust) shall be pushed back onto Taxilane B1 to face South until its nose wheel is at the "EOP A E4, F33" position. The aircraft may breakaway from there.</p> <p><u>Alternate Pushback Procedure</u></p>	Pushback approved, to face South on Taxilane B1.
← F33	<p>The aircraft (on idle thrust) shall be pushed back onto Taxilane B3 to face North until its nose wheel is at the "EOP B E4, F33" position. The aircraft may breakaway from there.</p>	Pushback approved, to face North on Taxilane B3.
← F34	<p>The aircraft (on idle thrust) shall be pushed back onto Taxilane B3 to face South until its nose wheel is at the intersection of the aircraft stand lead-in line and Taxilane B3 centreline. The aircraft shall then be towed forward until the nose of the aircraft is behind the stopbar behind aircraft stand F35. The aircraft may breakaway from there.</p>	Standard pushback approved.

APRON/ ACFT STANDS	PUSHBACK PROCEDURES	PHRASEOLOGY USED BY SINGAPORE GROUND
← F35, F35R	The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane B3 to face South until its nose wheel is at the intersection of the aircraft stand pushback line and Taxilane B3 centreline. The aircraft may breakaway from there.	Standard pushback approved.
F35L	The aircraft (on idle thrust) shall be pushed back onto Taxilane B3 to face South until the nose of the aircraft is behind the stopbar behind aircraft stand F35. The aircraft may breakaway from there.	Standard pushback approved.
F36	The aircraft (on idle thrust) shall be pushed back onto Taxilane B3 to face South until the nose of the aircraft is behind the stopbar behind aircraft stand F35. The aircraft may breakaway from there.	Standard pushback approved.
<b>T2 SOUTH</b>		
← F37	The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane C2 to face South until its nose wheel is at the "EOT 4" position. The aircraft may breakaway from there.	Standard pushback approved.
← F37	<p><u>Alternate Pushback Procedure</u></p> <p>The aircraft (on idle thrust) shall be pushed back onto TWY C1 to face East until its nose wheel is at the "EOP 5" position. The aircraft may breakaway from there.</p>	Pushback approved, to face East on TWY C1.
← F40	The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane C6 to face South until its nose wheel is at the "EOP 2" position. The aircraft shall then be towed forward until its nose wheel is at the "EOT 3" position. The aircraft may breakaway from there.	Standard pushback approved.
← F41	<p>The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane C2 to face South until its nose wheel is at the intersection of the aircraft stand pushback line and Taxilane C2 centreline. The aircraft shall then be towed forward until its nose wheel is at the "EOT 4" position. The aircraft may breakaway from there.</p> <p><u>Alternate Pushback Procedure</u></p>	Standard pushback approved.
← F41	The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane C2 to face South, following Taxilane C2 centreline onto Taxilane C6 until its nose wheel is at the intersection of Taxilane C2 and Taxilane C6 centreline. The aircraft may breakaway from there.	Pushback approved, to pushback onto Taxilane C6.
← F42	<p><u>Main pushback procedure (for all aircraft wingspan)</u></p> <p>The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane C2 to face South until its nose wheel is at the intersection of the aircraft stand pushback line and Taxilane C2 centreline. The aircraft shall then be towed forward until its nose wheel is at the "EOT 4" position. The aircraft may breakaway from there.</p>	Standard pushback approved.
← F42	<p><u>Alternate pushback procedure (for all aircraft types except A380)</u></p> <p>The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane C2 to face South, following Taxilane C2 centreline onto Taxilane C6 until its nose wheel is at the intersection of Taxilane C2 and Taxilane C6 centreline. The aircraft may breakaway from there.</p>	Pushback approved, to pushback onto Taxilane C6.
← F42	<p><u>Alternate pushback procedure (for A380 aircraft)</u></p> <p>The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane C2 to face South until its nose wheel is at the "EOP 4A" position. The aircraft shall then be towed forward following the tow line until its nose wheel is at the "EOT 4B" position on Taxilane C6, behind aircraft stand F59. The aircraft may breakaway from there.</p>	Pushback approved, to pushback onto Taxilane C6.

APRON/ ACFT STANDS	PUSHBACK PROCEDURES	PHRASEOLOGY USED BY SINGAPORE GROUND
← F50	The aircraft (on idle thrust) shall be pushed back following the pushback line until its nose wheel is at the "EOP 1" position. The aircraft shall then be towed forward following the tow line onto Taxilane C6 to face South until its nose wheel is at the "EOT 3" position. The aircraft may breakaway from there.	Standard pushback approved.
← F52	The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane C6 to face South until its nose wheel is at the "EOP 2" position. The aircraft shall then be towed forward until its nose wheel is at the "EOT 3" position. The aircraft may breakaway from there.	Standard pushback approved.
← F52L	The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane C6 to face South until its nose wheel is at the intersection of the aircraft stand pushback line and Taxilane C6 centreline. The aircraft may breakaway from there.	Standard pushback approved.
← F52R	The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane C6 to face South until its nose wheel is at the intersection of the aircraft stand pushback line and Taxilane C6 centreline. The aircraft shall then be towed forward until its nose wheel is at the "EOT" position. The aircraft may breakaway from there.	Standard pushback approved.
← F54	The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane C6 to face South until its nose wheel is at the intersection of Taxilane C2 and Taxilane C6 centreline. The aircraft may breakaway from there.	Standard pushback approved.
← F56	The aircraft (on idle thrust) shall be pushed back onto Taxilane C6 to face South until its nose wheel is at the intersection of the aircraft stand lead-in line and Taxilane C6 centreline. The aircraft may breakaway from there.	Standard pushback approved.
← F56L, F56R	The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane C6 to face South until its nose wheel is at the intersection of the aircraft stand pushback line and Taxilane C6 centreline. The aircraft may breakaway from there.	Standard pushback approved.
← F58	The aircraft (on idle thrust) shall be pushed back onto Taxilane C6 to face North (or South) until its nose wheel is at the intersection of the aircraft stand lead-in line and Taxilane C6 centreline. The aircraft may breakaway from there.	Pushback approved, to face North (or South).
← F59	The aircraft (on idle thrust) shall be pushed back onto Taxilane C6 to face North (or South) until its nose wheel is at the intersection of the aircraft stand lead-in line and Taxilane C6 centreline. The aircraft may breakaway from there.	Pushback approved, to face North (or South).
← F59L, F59R	The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane C6 to face North (or South) until its nose wheel is at the intersection of the aircraft stand pushback line and Taxilane C6 centreline. The aircraft may breakaway from there.	Pushback approved, to face North (or South).
← F60	The aircraft (on idle thrust) shall be pushed back onto Taxilane C6 to face North (or South) until its nose wheel is at the intersection of the aircraft stand lead-in line and Taxilane C6 centreline. The aircraft may breakaway from there.	Pushback approved, to face North (or South).
<b><u>T4 APRON</u></b>		
G1	The aircraft (on idle thrust) shall be pushed back onto Taxilane L5 to face South until the nose of the aircraft is behind the stopbar behind aircraft stand G6 on Taxilane L5. The aircraft may breakaway from there.	Pushback approved, to face South.
← G2	The aircraft (on idle thrust) shall be pushed back onto Taxilane L5 to face North until its nose wheel is at the "EOP-G2" position. The aircraft may breakaway from there.	Pushback approved, to face North on Taxilane L5.
← G3, G4	The aircraft (on idle thrust) shall be pushed back onto Taxilane L5 to face North until its nose wheel is at the intersection of the pushback line and centreline of Taxilane L5. The aircraft may breakaway from there.	Pushback approved, to face North on Taxilane L5.



APRON/ ACFT STANDS	PUSHBACK PROCEDURES	PHRASEOLOGY USED BY SINGAPORE GROUND
←   G5, G6, G7, G8, G9, G10, G11, G12, G13	The aircraft (on idle thrust) shall be pushed back onto Taxilane L5 to face North or South until its nose wheel is at the intersection of the pushback line and centreline of Taxilane L5. The aircraft may breakaway from there.	Pushback approved, to face North or South on Taxilane L5.
←   G14, G15  ← 	The aircraft (on idle thrust) shall be pushed back onto Taxilane L5 to <ul style="list-style-type: none"> <li>• face North until its nose wheel is at the intersection of the pushback line and centreline of Taxilane L5. The aircraft may breakaway from there.</li> </ul> <p><u>OR</u></p> <ul style="list-style-type: none"> <li>• face South until its nose wheel is at the intersection of the pushback line and centreline of Taxilane L5. The aircraft shall then be towed forward along the centreline of Taxilane L5 until its nose wheel is at the "EOT-G14, G15" position behind aircraft stand G14. The aircraft may breakaway from there.</li> </ul>	Pushback approved, to face North on Taxilane L5.  Pushback approved, to face South on Taxilane L5.
G16, G17	The aircraft (on idle thrust) shall be pushed back onto Taxilane L5 to face North until its nose is behind the stopbar behind aircraft stand G15. The aircraft may breakaway from there.	Pushback approved, to face North on Taxilane L5.
←   G18, G18L, G18R, G19, G19L, G19R	The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane L4 centreline to face East until its nose wheel is at the intersection of the aircraft stand pushback line and Taxilane L4 centreline. The aircraft may breakaway from there.	Standard pushback approved.
←   G20, G20L, G20R	The aircraft (on idle thrust) shall be pushed back onto Taxilane L4 centreline to face East until its nose wheel is at the intersection of the aircraft stand pushback line and centreline of Taxilane L4. The aircraft may breakaway from there.	Pushback approved, to face East on Taxilane L4.
←   G21, G21R	The aircraft (on idle thrust) shall be pushed back to face East until its nose wheel is at the "EOP" position. The aircraft shall then be towed forward until its nose wheel is at the "EOT" position on Taxilane L4 centreline. The aircraft may breakaway from there.	Standard pushback approved.
←   G21L	The aircraft (on idle thrust) shall be pushed back onto Taxilane L4 centreline to face East until its nose wheel is at the intersection of the aircraft stand pushback line and centreline of Taxilane L4. The aircraft shall then be towed forward along the centreline of Taxilane L4 until its nose wheel is at the "EOT" position. The aircraft may breakaway from there.	Pushback approved, to face East on Taxilane L4.
<b><u>EAST REMOTE</u></b>		
←   200  ← 	The aircraft (on idle thrust) shall be pushed back: <ul style="list-style-type: none"> <li>• onto Taxilane C6 to face North until its nose wheel is at the intersection of the aircraft stand lead-in line and Taxilane C6 centreline. The aircraft shall then be towed forward until its nose wheel is at the intersection of aircraft stand 201 lead-in line and Taxilane C6 centreline. The aircraft may breakaway from there.</li> </ul> <p><u>OR</u></p> <ul style="list-style-type: none"> <li>• onto Taxilane C6 to face South until its nose wheel is at the intersection of the aircraft stand lead-in line and Taxilane C6 centreline. The aircraft may breakaway from there.</li> </ul>	Pushback approved, to face North.  Pushback approved, to face South.

APRON/ ACFT STANDS	PUSHBACK PROCEDURES	PHRASEOLOGY USED BY SINGAPORE GROUND
200L	<p>The aircraft (on idle thrust) shall be pushed back:</p> <ul style="list-style-type: none"> <li>• following the pushback line onto Taxilane C6 to face North until its nose wheel is at the intersection of the aircraft stand pushback line and Taxilane C6 centreline. The aircraft shall then be towed forward until its nose wheel is abeam aircraft stand 200. The aircraft may breakaway from there.</li> </ul> <p><u>OR</u></p> <ul style="list-style-type: none"> <li>• following the pushback line onto Taxilane C6 to face South until its nose wheel is at the intersection of the aircraft stand pushback line and Taxilane C6 centreline. The aircraft may breakaway from there.</li> </ul>	<p>Pushback approved, to face North.</p> <p>Pushback approved, to face South.</p>
200R	<p>The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane C6 to face North (or South) until its nose wheel is at the intersection of the aircraft stand pushback line and Taxilane C6 centreline. The aircraft may breakaway from there.</p>	<p>Pushback approved, to face North (or South).</p>
201	<p>The aircraft (on idle thrust) shall be pushed back onto Taxilane C6 to face North (or South) until its nose wheel is at the intersection of the aircraft stand lead-in line and Taxilane C6 centreline. The aircraft may breakaway from there.</p>	<p>Pushback approved, to face North (or South).</p>
202	<p>The aircraft (on idle thrust) shall be pushed back:</p> <ul style="list-style-type: none"> <li>• onto Taxilane C6 to face North until its nose wheel is at the intersection of the aircraft stand lead-in line and Taxilane C6 centreline. The aircraft may breakaway from there.</li> </ul> <p><u>OR</u></p> <ul style="list-style-type: none"> <li>• onto Taxilane C6 to face South until its nose wheel is at the intersection of the aircraft stand lead-in line and Taxilane C6 centreline. The aircraft may breakaway from there.</li> </ul>	<p>Pushback approved, to face North.</p> <p>Pushback approved, to face South.</p>
202L, 202R	<p>The aircraft (on idle thrust) shall be pushed back onto Taxilane C6 to face North (or South) until its nose wheel is at the intersection of the aircraft stand pushback line and Taxilane C6 centreline. The aircraft may breakaway from there.</p>	<p>Pushback approved, to face North (or South).</p>
203	<p>The aircraft (on idle thrust) shall be pushed back:</p> <ul style="list-style-type: none"> <li>• onto Taxilane C6 to face North until the nose of the aircraft is behind the stopbar behind aircraft stand 203. The aircraft may breakaway from there.</li> </ul> <p><u>OR</u></p> <ul style="list-style-type: none"> <li>• onto Taxilane C6 to face South until its nose wheel is at the intersection of the aircraft stand lead-in line and Taxilane C6 centreline. The aircraft may breakaway from there.</li> </ul>	<p>Pushback approved, to face North.</p> <p>Pushback approved, to face South.</p>
<b><u>SOUTH-EAST REMOTE</u></b>		
205	<p>The aircraft (on idle thrust) shall be pushed back:</p> <ul style="list-style-type: none"> <li>• onto TWY C7 to face North until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY C7 centreline. The aircraft shall then be towed forward until its nose wheel is at the intersection of aircraft stand 206 lead-in line and TWY C7 centreline. The aircraft may breakaway from there.</li> </ul> <p><u>OR</u></p> <ul style="list-style-type: none"> <li>• onto TWY C7 to face South until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY C7 centreline. The aircraft may breakaway from there.</li> </ul>	<p>Pushback approved, to face North.</p> <p>Pushback approved, to face South.</p>

APRON/ ACFT STANDS	PUSHBACK PROCEDURES	PHRASEOLOGY USED BY SINGAPORE GROUND
←   206, 207, 208	The aircraft (on idle thrust) shall be pushed back onto TWY C7 to face North (or South) until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY C7 centreline. The aircraft may breakaway from there.	Pushback approved, to face North (or South).
209	The aircraft (on idle thrust) shall be pushed back:	
←	<ul style="list-style-type: none"> <li>• onto TWY C7 to face North until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY C7 centreline. The aircraft may breakaway from there.</li> </ul>	Pushback approved, to face North.
←	<u>OR</u>	
←	<ul style="list-style-type: none"> <li>• onto TWY C7 to face South until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY C7 centreline. The aircraft shall then be towed forward until its nose wheel is at the intersection of aircraft stand 208 lead-in line and TWY C7 centreline. The aircraft may breakaway from there.</li> </ul>	Pushback approved, to face South.
<b><u>NORTH REMOTE</u></b>		
300	The aircraft (on idle thrust) shall be pushed back:	
←	<ul style="list-style-type: none"> <li>• onto TWY NC2 to face East until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY NC2 centreline. The aircraft shall then be towed forward until its nose wheel is at the intersection of aircraft stand 301 lead-in line and TWY NC2 centreline. The aircraft may breakaway from there.</li> </ul>	Pushback approved, to face East.
←	<u>OR</u>	
←	<ul style="list-style-type: none"> <li>• onto TWY NC2 to face West until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY NC2 centreline. The aircraft may breakaway from there.</li> </ul>	Pushback approved, to face West.
← 	301 The aircraft (on idle thrust) shall be pushed back onto TWY NC2 to face East (or West) until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY NC2 centreline. The aircraft may breakaway from there.	Pushback approved, to face East (or West).
302	The aircraft (on idle thrust) shall be pushed back:	
←	<ul style="list-style-type: none"> <li>• onto TWY NC2 to face East until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY NC2 centreline. The aircraft may breakaway from there.</li> </ul>	Pushback approved, to face East.
←	<u>OR</u>	
←	<ul style="list-style-type: none"> <li>• onto TWY NC2 to face West until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY NC2 centreline. The aircraft shall then be towed forward until its nose wheel is at the intersection of aircraft stand 301 lead-in line and TWY NC2 centreline. The aircraft may breakaway from there.</li> </ul>	Pushback approved, to face West.

APRON/ ACFT STANDS	PUSHBACK PROCEDURES	PHRASEOLOGY USED BY SINGAPORE GROUND
303	<p>The aircraft (on idle thrust) shall be pushed back:</p> <ul style="list-style-type: none"> <li>• onto TWY NC2 to face East until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY NC2 centreline. The aircraft shall then be towed forward until its nose wheel is at the intersection of aircraft stand 304 lead-in line and TWY NC2 centreline. The aircraft may breakaway from there.</li> </ul> <p><u>OR</u></p> <ul style="list-style-type: none"> <li>• onto TWY NC2 to face West until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY NC2 centreline. The aircraft may breakaway from there.</li> </ul>	<p>Pushback approved, to face East.</p> <p>Pushback approved, to face West.</p>
304, 305	<p>The aircraft (on idle thrust) shall be pushed back onto TWY NC2 to face East (or West) until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY NC2 centreline. The aircraft may breakaway from there.</p>	<p>Pushback approved, to face East (or West).</p>
306	<p>The aircraft (on idle thrust) shall be pushed back:</p> <ul style="list-style-type: none"> <li>• onto TWY NC2 to face East until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY NC2 centreline. The aircraft may breakaway from there.</li> </ul> <p><u>OR</u></p> <ul style="list-style-type: none"> <li>• onto TWY NC2 to face West until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY NC2 centreline. The aircraft shall then be towed forward until its nose wheel is at the intersection of aircraft stand 305 lead-in line and TWY NC2 centreline. The aircraft may breakaway from there.</li> </ul>	<p>Pushback approved, to face East.</p> <p>Pushback approved, to face West.</p>
307, 308	<p>The aircraft (on idle thrust) shall be pushed back:</p> <ul style="list-style-type: none"> <li>• onto TWY NC2 to face East until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY NC2 centreline. The aircraft shall then be towed forward until the nose of the aircraft is behind the stopbar behind aircraft stand 309. The aircraft may breakaway from there.</li> </ul> <p><u>OR</u></p> <ul style="list-style-type: none"> <li>• onto TWY NC2 to face West until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY NC2 centreline. The aircraft may breakaway from there.</li> </ul>	<p>Pushback approved, to face East.</p> <p>Pushback approved, to face West.</p>
309	<p>The aircraft (on idle thrust) shall be pushed back:</p> <ul style="list-style-type: none"> <li>• onto TWY NC2 to face East until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY NC2 centreline. The aircraft may breakaway from there.</li> </ul> <p><u>OR</u></p> <ul style="list-style-type: none"> <li>• onto TWY NC2 to face West until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY NC2 centreline. The aircraft shall then be towed forward until the nose of the aircraft is behind the stopbar behind aircraft stand 307. The aircraft may breakaway from there.</li> </ul>	<p>Pushback approved, to face East.</p> <p>Pushback approved, to face West.</p>

APRON/ ACFT STANDS	PUSHBACK PROCEDURES	PHRASEOLOGY USED BY SINGAPORE GROUND
310	<p>The aircraft (on idle thrust) shall be pushed back:</p> <ul style="list-style-type: none"> <li>• onto TWY NC2 to face East until the nose of the aircraft is behind the stopbar behind aircraft stand 309. The aircraft may breakaway from there.</li> </ul> <p><u>OR</u></p> <ul style="list-style-type: none"> <li>• onto TWY NC2 to face West until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY NC2 centreline. The aircraft shall then be towed forward until the nose of the aircraft is behind the stopbar behind aircraft stand 307. The aircraft may breakaway from there.</li> </ul>	<p>Pushback approved, to face East.</p> <p>Pushback approved, to face West.</p>
<b><u>NORTH-EAST REMOTE</u></b>		
400, 401, 402, 403, 404	The aircraft (on idle thrust) shall be pushed back onto Taxilane A6 to face North (or South) until its nose wheel is at the intersection of the aircraft stand lead-in line and Taxilane A6 centreline.	Pushback approved, to face North (or South).
<b><u>SOUTH APRON</u></b>		
461	The aircraft (on idle thrust) shall be pushed back onto TWY S1 to face west until its nose wheel is at "EOP" position. The aircraft shall then be towed forward until its nose wheel is at the "EOT" position. The aircraft may breakaway from there. There shall be no simultaneous aircraft pushback from aircraft stands 462, 462L, 462R, 463, 463L and 463R.	Pushback approved, to face West.
462	The aircraft (on idle thrust) shall be pushed back onto TWY S1 to face west until its nose wheel is at the intersection of the aircraft stand pushback line and TWY S1 centreline. The aircraft may breakaway from there. There shall be no simultaneous aircraft pushback from aircraft stands 461, 462L, 462R, 463, 463L and 463R.	Pushback approved, to face West.
462L	The aircraft (on idle thrust) shall be pushed back onto TWY S1 to face west until its nose wheel is at the intersection of the aircraft stand pushback line and TWY S1 centreline. The aircraft may breakaway from there. There shall be no simultaneous aircraft pushback from aircraft stands 461, 462, 462R, 463, 463L and 463R.	Pushback approved, to face West.
462R	The aircraft (on idle thrust) shall be pushed back onto TWY S1 to face west until its nose wheel is at the intersection of the aircraft stand pushback line and TWY S1 centreline. The aircraft may breakaway from there. There shall be no simultaneous aircraft pushback from aircraft stands 461, 462, 462L, 463, 463L and 463R.	Pushback approved, to face West.
463	The aircraft (on idle thrust) shall be pushed back onto TWY S1 to face west until its nose wheel is at the intersection of the aircraft stand pushback line and TWY S1 centreline. The aircraft may breakaway from there. There shall be no simultaneous aircraft pushback from aircraft stands 461, 462, 462L, 462R, 463L and 463R.	Pushback approved, to face West.
463L	The aircraft (on idle thrust) shall be pushed back onto TWY S1 to face west until its nose wheel is at the intersection of the aircraft stand pushback line and TWY S1 centreline. The aircraft may breakaway from there. There shall be no simultaneous aircraft pushback from aircraft stands 461, 462, 462L, 462R, 463 and 463R.	Pushback approved, to face West.
463R	The aircraft (on idle thrust) shall be pushed back onto TWY S1 to face west until the nose of the aircraft is behind the stopbar behind aircraft stand 463L. The aircraft may breakaway from there. There shall be no simultaneous aircraft pushback from aircraft stands 461, 462, 462L, 462R, 463 and 463L.	Pushback approved, to face West.
<b><u>WEST CARGO</u></b>		

APRON/ ACFT STANDS	PUSHBACK PROCEDURES	PHRASEOLOGY USED BY SINGAPORE GROUND
←   502, 503, 504, 505, 506, 507, 508, 509, 510	The aircraft (on idle thrust) shall be pushed back onto TWY WC to face North (or South) until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY WC centreline. The aircraft may breakaway from there.	Pushback approved, to face North (or South).
←   511	The aircraft (on idle thrust) shall be pushed back:  • onto TWY WC to face North until the nose of the aircraft is behind the stopbar behind aircraft stand 511. The aircraft may breakaway from there.  <u>OR</u>  • onto TWY WC to face South until the nose wheel of the aircraft is at the intersection of the aircraft stand lead-in line and TWY WC centreline. The aircraft shall then be towed forward until the nose wheel is at the "EOT" position behind aircraft stand 510. The aircraft may breakaway from there.	Pushback approved, to face North.          Pushback approved, to face South.
←   512	The aircraft (on idle thrust) shall be pushed back:  • onto TWY WC to face North until the nose of the aircraft is behind the stopbar behind aircraft stand 511. The aircraft may breakaway from there.  <u>OR</u>  • onto TWY WC to face South until the nose wheel of the aircraft is at the intersection of the aircraft stand lead-in line and TWY WC centreline. The aircraft shall then be towed forward until the nose wheel is at the "EOT" position behind aircraft stand 510. The aircraft may breakaway from there.	Pushback approved, to face North.          Pushback approved, to face South.
←   513	The aircraft (on idle thrust) shall be pushed back:  • onto TWY WC to face North until the nose wheel of the aircraft is at the intersection of the aircraft stand lead-in line and TWY WC centreline. The aircraft may breakaway from there.  <u>OR</u>  • onto TWY WC to face South following TWY WC centreline onto Taxilane WD until the nose of the aircraft is behind the stopbar behind aircraft stand 515 on Taxilane WD. The aircraft may breakaway from there.	Pushback approved, to face North.          Pushback approved, to face South.
514	The aircraft (on idle thrust) shall be pushed back:  • onto TWY WC to face North until the nose of the aircraft is behind the stopbar behind aircraft stand 513. The aircraft may breakaway from there.  <u>OR</u>  • onto TWY WC to face South following TWY WC centreline onto Taxilane WD until the nose of the aircraft is behind the stopbar behind the aircraft stand 515 on Taxilane WD. The aircraft may breakaway from there.	Pushback approved, to face North.          Pushback approved, to face South.
515	The aircraft (on idle thrust) shall be pushed back onto Taxilane WD to face South until the nose of the aircraft is behind the stopbar behind aircraft stand 515. The aircraft may breakaway from there.	Standard pushback approved.

APRON/ ACFT STANDS	PUSHBACK PROCEDURES	PHRASEOLOGY USED BY SINGAPORE GROUND
← 516	The aircraft (on idle thrust) shall be pushed back onto Taxilane WD to face South until its nose wheel is at the intersection of the aircraft stand lead-in line and Taxilane WD centreline. The aircraft shall then be towed forward until the nose of the aircraft is behind the stopbar behind aircraft stand 515. The aircraft may breakaway from there.	Standard pushback approved.
← 516L, 516R	The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane WD to face South until its nose wheel is at the intersection of the aircraft stand pushback line and Taxilane WD centreline. The aircraft shall then be towed forward until the nose of the aircraft is behind the stopbar behind aircraft stand 515. The aircraft may breakaway from there.	Standard pushback approved.
← 517	The aircraft (on idle thrust) shall be pushed back onto Taxilane WD to face South until its nose wheel is at the "EOP 517" position. The aircraft shall then be towed forward until the nose of the aircraft is behind the stopbar behind aircraft stand 515. The aircraft may breakaway from there.	Standard pushback approved.
← 517L	The aircraft (on idle thrust) shall be pushed back onto Taxilane WD to face South until its nose wheel is at the "EOP 517L" position. The aircraft shall then be towed forward until the nose of the aircraft is behind the stopbar behind aircraft stand 515. The aircraft may breakaway from there.	Standard pushback approved.
← 517R	The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane WD to face South until its nose wheel is at the intersection of the aircraft stand pushback line and Taxilane WD centreline. The aircraft shall then be towed forward until the nose of the aircraft is behind the stopbar behind aircraft stand 515. The aircraft may breakaway from there.	Standard pushback approved.
<b><u>EAST CARGO</u></b>		
← 600	The aircraft (on idle thrust) shall be pushed back onto Taxilane EA to face South until its nose wheel is at the intersection of the aircraft stand lead-in line and Taxilane EA centreline. The aircraft may break away from there.	Standard pushback approved.
← 600L, 600R	The aircraft (on idle thrust) shall be pushed back onto Taxilane EA to face South until its nose wheel is at the intersection of the aircraft stand pushback line and Taxilane EA centreline. The aircraft may break away from there.	Standard pushback approved.
← 601, 602	The aircraft (on idle thrust) shall be pushed back onto Taxilane EA to face South until its nose wheel is at the intersection of the aircraft stand lead-in line and Taxilane EA centreline. The aircraft may breakaway from there.	Standard pushback approved.
← 603	The aircraft (on idle thrust) shall be pushed back onto Taxilane EA to face South until its nose wheel is at the intersection of the aircraft stand lead-in line and Taxilane EA centreline. The aircraft shall then be towed forward until its nose wheel is at the "EOT" position behind aircraft stand 602. The aircraft may breakaway from there.	Standard pushback approved.
← 604	The aircraft (on idle thrust) shall be pushed back onto Taxilane EA to face South until its nose wheel is at the "EOP" position behind aircraft stand 604. The aircraft shall then be towed forward until its nose wheel is at the "EOT" position behind aircraft stand 602. The aircraft may breakaway from there.	Standard pushback approved.
← 605	The aircraft (on idle thrust) shall be pushed back onto Taxilane EC to face West until its nose wheel is at the "EOP" position on Taxilane EC. The aircraft shall then be towed forward following Taxilane EC centreline onto Taxilane EA until its nose wheel is at the "EOT" position behind aircraft stand 602. The aircraft may breakaway from there.	Standard pushback approved.

APRON/ ACFT STANDS	PUSHBACK PROCEDURES	PHRASEOLOGY USED BY SINGAPORE GROUND
← 611, 612 	<p>The aircraft (on idle thrust) shall be pushed back to face North until its nose wheel is at the "EOP" position. The aircraft shall then be towed forward following Taxilane EC centreline onto Taxilane EA until its nose wheel is at the "EOT" position behind aircraft stand 602. The aircraft may breakaway from there. Engine start-up is not permitted during standard pushback.</p> <p><u>Alternate pushback procedure</u></p>	Standard pushback approved.
← 	<p>The aircraft (on idle thrust) shall be pushed back to face North until its nose wheel is at the "EOP" position. Engine start-up is permitted only on the port engine. The aircraft shall then be towed forward following Taxilane EC centreline onto Taxilane EA until its nose wheel is at the "EOT" position behind aircraft stand 602. The aircraft may breakaway from there. <b>This alternate pushback procedure can only be exercised if the auxiliary power unit of the aircraft is unserviceable.</b></p>	Alternate pushback approved.



## **4 ADVANCED MULTILATERATION SYSTEM**

### **4.1 INTRODUCTION**

4.1.1 The Multilateration System is a new surveillance system which is able to detect and identify all Mode S equipped aircraft and vehicles moving on the airport surface even during bad weather conditions such as heavy rain. It will integrate with the current radar-based ground surveillance system as part of the Advanced-Surface Movement Guidance and Control System (A-SMGCS) at Singapore Changi Airport. This will enhance the efficiency and safety at the airport.

### **4.2 CARRIAGE OF MODE-S SSR TRANSPONDER**

4.2.1 Carriage and operation of Mode-S transponder is required for all civil aircraft operating at Singapore Changi Airport. The Mode-S transponder shall comply, at least, to the requirements of Level 2 as prescribed in ICAO Annex 10 Volume IV (Amendment 77 or later) Standards and Recommended Practices.

### **4.3 MULTILATERATION SYSTEM OUTLINE**

4.3.1 The Multilateration System uses multiple receivers to pick up “squitters” transmitted by aircraft or vehicle Mode S transponders. It calculates the position of an aircraft or a vehicle by comparing the time its “squitter” arrives at each receiver.

4.3.2 The System will derive the identity of an aircraft by selectively interrogating its transponder to receive its assigned Mode A code or extracting its aircraft identification [that is, the ICAO callsign used in flight and inserted in the Flight Management System (FMS) or the Transponder Control Panel], if available, from its squitter. For transponder equipped vehicles, the system will derive their respective identities from the unique Mode S addresses contained in their squitters.

### **4.4 AIRCRAFT REQUIREMENTS**

4.4.1 The Multilateration System is essentially passive. It relies on aircraft transponders squittering at all times when moving on the airfield. At present, some aircraft checklist procedures instruct pilots to turn off the transponder shortly after leaving the runway on arrival and, not to switch it on until reaching the runway holding point for departure. This is in line with the requirement that Mode A/C transponders should not transmit on the ground, which does not apply to Mode S transmissions.

4.4.2 For the Multilateration System to work effectively, all aircraft Mode S transponders need to transmit Mode S squitters at all times when moving on the airfield, starting immediately prior to pushback, and for arrival aircraft until they are stationary at the aircraft stands. The Mode S transponders should not respond to All-Call interrogations, but should respond to addressed interrogations.

### **4.5 PROCEDURES/ACTIONS REQUIRED BY PILOTS**

4.5.1 The Multilateration System needs to receive squitters and to acquire the Mode A code of a Mode S equipped aircraft at all times when it is on the ground. This is to enable detection and identification of the aircraft (from its Mode A code or ICAO callsign) as soon as it pushes back. Hence, the following actions from pilots are required.

#### 4.5.2 Pre-Pushback / Taxi

- a. Pilots will be required to enter an assigned Mode A code at start-up. This code will be either a discrete or non-discrete code (a conspicuity code, e.g. 1000).
- b. Pilots shall ensure that the aircraft transponder is operating (that is, XPNDR or the equivalent according to specific installation, AUTO if available, not OFF or STBY) and the assigned Mode A code is selected prior to the request for pushback or taxi, whichever is earlier.
- c. Whenever the aircraft is capable of reporting aircraft identification, the aircraft identification must also be entered prior to the request for pushback or taxi, whichever is earlier, through the FMS or the Transponder Control Panel. Flight crew must use the 3-letter ICAO designator of the operator, followed by flight identification number (for example, BAW123, SIA002).

#### 4.5.3 After Landing

- a. Pilots shall ensure that the aircraft transponder is operating (that is, XPNDR or the equivalent according to specific installation, AUTO if available, not OFF or STBY) after landing, and continuously until the aircraft is stationary at the aircraft stand.
- b. Pilots shall ensure that the assigned Mode A code is not changed until the aircraft is stationary at the aircraft stand. (The system requires it for identification of the aircraft).

**5 AIRFIELD GROUND LIGHTING CONTROL AND MONITORING SYSTEM (AGLCMS) AND MARKINGS**

**5.1 INTRODUCTION**

5.1.1 The taxiing guidance system at Singapore Changi Airport consists of stop bars and selectable segments of green taxiway centreline lights. The system is designed to provide pilots with visual guidance while taxiing during night operations and during periods of low visibility. It is controlled by the Ground Movement Controller (GMC) at Changi Control Tower using the Airfield Ground Lighting Control and Monitoring System (AGLCMS).

**5.2 ROUTE SELECTION AND PRIORITY**

5.2.1 When a taxiing route is selected on the AGLCMS, corresponding segments of taxiway centreline lights on the manoeuvring area are switched on automatically. When two or more routes are selected, the system will give priority to the first route and activate red stopbar lights across conflicting routes, as necessary. A segment of the centreline lights of the conflicting routes that cut across the first route will also be suppressed. The GMC has the option of over-riding the taxiing route priority by selecting or deselecting the appropriate stopbar lights.

5.2.2 All taxiing guidance lights on taxiways leading to the runways terminate at the runway holding positions where, by default, red stopbar lights remain on unless deselected by the runway controller. When deselected, these stopbar lights will re-activate automatically after 50 seconds. Pilots shall not cross any lighted red stopbar lights.

5.2.3 Pilots shall enter / cross the runway or taxiway only when both the following conditions are met:  
The crew have

- a. received positive ATC clearance to enter / cross the runway or taxiway, and
- b. observed that the red stop-bar lights are turned off.

**5.3 INFORMATION AND MANDATORY SIGNS/MARKINGS**

5.3.1 When following the directional guidance provided by the green taxiway centreline lights and red stop bar lights, pilots are advised to also navigate their taxi route with reference to information and mandatory signs/markings provided at the airport so as to maintain situational awareness of their whereabouts at all times.

**5.4 TAXI INSTRUCTIONS USING THE GREEN TAXIWAY CENTRELINE LIGHTS**

5.4.1 ATC will use the phraseology "Taxi on the greens ....." when issuing a clearance to pilots to taxi along the directional guidance provided by the green taxiway centreline lights.

**WSSS AD 2.10 AERODROME OBSTACLES**

<b>IN APPROACH / TKOF AREAS</b>			<b>IN CIRCLING AREA AND AT AD</b>		
<i>RWY/Area affected</i>	<i>OBST type, ELEV, Markings/LGT</i>	<i>Coordinates</i>	<i>OBST type, ELEV, Markings/LGT</i>	<i>Coordinates</i>	
1	2	3	1	2	
a) RWY 20R APCH RWY 02L TKOF	Mast HGT ranging fm 98ft AMSL and above.	Shipping channel aprx 1290m from THR RWY 20R.	a) Surface wind direction sleeves	LOC at each end of RWY adjacent to GP hut	
b) RWY 20C APCH RWY 02C TKOF	Mast HGT ranging fm 98ft AMSL and above.	Shipping channel aprx 2630m from THR RWY 20C.	b) PAR hut	Besides RWY 02L/20R, opposite the PTB	
c) RWY 02L/20R APCH RWY 02L/20R TKOF RWY 02C/20C APCH RWY 02C/20C TKOF	ILS LLZ co-located with LLZ antennas.	Within the RWY strip.	c) Frangible PAR reflectors	Located at ends of RWY 02L/20R	
d) RWY 20R APCH	Two antennae, HGT 72ft AMSL, marked and LGTD	012311N 1035928E	d) GP huts co-located with GP antennas	Within the RWY strip	
e) RWY 20R APCH	Antenna, HGT 88ft AMSL, marked and LGTD	012315N 1035931E	e) Antenna, HGT 82ft AMSL, marked and LGTD	012036N 1035819E	
f) RWY 02L APCH	Antenna, HGT 82ft AMSL, marked and LGTD	012051N 1035827E	f) Antenna, HGT 85ft AMSL, marked and LGTD	012039N 1035821E	

<b>IN APPROACH / TKOF AREAS</b>			<b>IN CIRCLING AREA AND AT AD</b>		
<i>RWY/Area affected</i>	<i>OBST type, ELEV, Markings/LGT</i>	<i>Coordinates</i>	<i>OBST type, ELEV, Markings/LGT</i>	<i>Coordinates</i>	
1	2	3	1	2	
g) RWY 02L APCH	Pole, HGT 128ft AMSL, marked and LGTD	011859N 1035748E	g) Antenna, HGT 78ft AMSL, marked and LGTD	012042N 1035823E	
h) RWY 02L APCH	Pole, HGT 160ft AMSL, marked and LGTD	012058N 1035814E	h) Antenna, HGT 82ft AMSL, marked and LGTD	012053N 1035827E	
i) RWY 02L APCH	Pole, HGT 131ft AMSL, marked and LGTD	012038N 1035848E	i) Antenna, HGT 78ft AMSL, marked and LGTD	012049N 1035826E	
j) RWY 20L APCH	Shipping channel	Aprx1600m from THR RWY 20L.	j) Frangible poles, HGT 9ft AMSL	Installed APRX 200m from centre of RET to identify 58m away from TWY WP CL towards RWY 02L/20R	

Obstacles in the APCH/TKOF areas, circling area and at the aerodrome are shown on the AOC, IAC and VAC.

## WSSS AD 2.11 METEOROLOGICAL INFORMATION PROVIDED

1	<i>Associated MET Office</i>	Singapore Changi (WSSS)
2	<i>Hours of service</i>	H24
3	<i>Office responsible for TAF preparation</i> <i>Periods of validity</i>	Singapore Changi (WSSS) 12, 30
4	<i>Type of landing forecast, Interval of issuance</i>	TREND
5	<i>Briefing/consultation provided</i>	P
6	<i>Flight documentation, Language used</i>	Charts or Tabular forms, English
7	<i>Charts and other information available for briefing or consultation</i>	S, U, P
8	<i>Supplementary equipment available for providing information</i>	HRPT: High Resolution Picture Transmission APT: Automatic Picture Transmission MDWR: MET Doppler Weather Radar MAINT: Second WED of every month BTN 0200-0900 ALTN period: THU following the second WED.
9	<i>ATS units provided with information</i>	Singapore ACC, Singapore RCC
10	<i>Additional information</i>	Tel: 65422837 (MET Office)

## WSSS AD 2.12 RUNWAY PHYSICAL CHARACTERISTICS

<b>Designations RWY NR</b>	<b>TRUE BRG</b>	<b>Dimensions of RWY</b>	<b>Strength (PCN) and surface of RWY and SWY</b>	<b>THR coordinates (THR Geoid Undulation)</b>	<b>THR elevation and highest elevation of TDZ of precision APCH RWY</b>
1	2	3	4	5	6
02L	023.02°	4000 M x 60 M	72/F/B/W/U Bituminous concrete	012056.26N 1035838.83E (10.29 M)	6.66 M 6.23 M
20R(Threshold displaced by 740m southwards)	203.02°	4000 M x 60 M	72/F/B/W/U Bituminous concrete	012233.95N 1035920.06E (10.29 M)	4.01 M 4.31 M
02C	023.03°	4000 M x 60 M	72/F/B/W/U Bituminous concrete	011943.51N 1035905.86E (10.28 M)	4.32 M 4.52 M
20C	203.03°	4000 M x 60 M	72/F/B/W/U Bituminous concrete	012143.37N 1035956.46E (10.28 M)	4.58 M 4.56 M

Slope of RWY-SWY Transverse / Longitudinal	SWY Dimensions (m)	CWY Dimensions (m)	STRIP dimensions (m)	OFZ	Remarks
7	8	9	10	11	12
RWY 02L 0.76 / 0.24%	60 X 60	270 X 150	4240 X 300	Yes	Scheduled closure of runways (see below)
RWY 20R 1.45 / 0.25%	60 X 60	270 X 150	4240 X 300		
RWY 02C 1.50 / 0.03%	60 X 60	60 X 150	4240 X 300		
RWY 20C 1.38 / 0.07%	60 X 60	60 X 150	4240 X 300		

Remarks (continued from above)

**Scheduled Closure of RWY 02L/20R**

- 1a) BTN 1630-2200 on every MON and THU of the month (*preventive maintenance work*).  
In the event of an emergency, RWY will be re-opened within 30 minutes.
- 1b) BTN 0225-0240 0630-0635 1000-1005 2300-2305 daily (*inspection*).  
In the event of an emergency, RWY will be re-opened within 5 minutes.

**Scheduled Closure of RWY 02C/20C**

- 2a) BTN 1630-2200 on every first, second and fourth WED of the month (*preventive maintenance work*).  
In the event of an emergency, RWY will be re-opened within 30 minutes.
- 2b) BTN 0300-0315 0650-0655 1020-1025 2320-2325 daily (*inspection*).  
In the event of emergency, RWY will be re-opened within 5 minutes.

## WSSS AD 2.13 DECLARED DISTANCES

RWY Designator	Intersection Departures	TORA (m)	TODA (m)	ASDA (m)	LDA (m)	Remarks
1	2	3	4	5	6	7
20R	Not applicable	4000	4270	4060	3260	Thr displaced by 740m southwards
	W2	3850	4120	3910	Not applicable	
	W3	3050	3320	3110	Not applicable	
	W4	2600	2870	2660	Not applicable	
	W5	2150	2420	2210	Not applicable	
02L	Not applicable	4000	4270	4060	4000	Nil
	W8	3850	4120	3910	Not applicable	
	W7	3050	3320	3110	Not applicable	
	W6	2600	2870	2660	Not applicable	
20C	Not applicable	4000	4060	4060	4000	Nil
	E2	3850	3910	3910	Not applicable	
	E3	3425	3485	3485	Not applicable	
	E4	2750	2810	2810	Not applicable	
	E5	2250	2310	2310	Not applicable	
02C	Not applicable	4000	4060	4060	4000	Nil
	E10	3850	3910	3910	Not applicable	
	E9	3345	3405	3405	Not applicable	
	E8	3205	3265	3265	Not applicable	
	E7	2555	2615	2615	Not applicable	
	E6	2105	2165	2165	Not applicable	

Note: Intersection departures are allowed subject to the following:

- a. initiated by pilot and approved by ATC, traffic permitting.
- b. ATC is able to keep aircraft visual at all times

**WSSS AD 2.14 APPROACH AND RUNWAY LIGHTING**

<i>RWY</i>	<i>APCH LGT Type, LEN, Intensity</i>	<i>THR LGT colour WBAR</i>	<i>PAPI (MEHT)</i>	<i>TDZ LGT LEN</i>	<i>RWY Centreline LGT, LEN, spacing, colour, INTST</i>	<i>RWY Edge LGT, LEN, spacing, colour, INTST</i>	<i>RWY End LGT colour</i>	<i>SWY LGT colour</i>
1	2	3	4	5	6	7	8	9
<b>02L</b>	CAT II High Intensity approach lighting (900m) consisting of extended centreline and Red row barrettes, 2 crossbars, 2 approach beacons and sequenced flashing lights.	Green supplemented by Green wing-bar and 2 THR ident lights.	PAPI 003° located either side of RWY, 422m behind RWY THR. 2 White LGT and 2 Red LGT (20.0m), 3 White LGT and 1 Red LGT (24.0m), 4 White LGT (26.4m). ACFT with eye-to-wheel height greater than 8m are advised to fly with 2 White and 2 Red LGT visible so as to achieve sufficient wheel clearance.	White	Inset High Intensity centreline lights as follow: From THR to 900m from RWY end: White, 300m to 900m from RWY end: ALTN Red/ White, 300m to RWY end: Red.	Bi-directional raised White/Amber edge lights.	Red	Elevated Red
<b>20R</b>	CAT I High Intensity approach lighting (900m) distance coded centreline lights showing variable White and crossbars at 150m, 300m, 450m, 600m and 750m.	Green supplemented by Green wing-bar and 2 THR ident lights.	PAPI 003° located either side of RWY, 410m from THR. 2 White LGT and 2 Red LGT (20.0m), 3 White LGT and 1 Red LGT (22.6m), 4 White LGT (25.0m). ACFT with eye-to-wheel height greater than 8m are advised to fly with 2 White and 2 Red LGT visible so as to achieve sufficient wheel clearance.	Nil	Inset High Intensity centreline lights as follow: From THR to 900m from RWY end: White, 300m to 900m from RWY end: ALTN Red/ White, 300m to RWY end: Red.	Red RWY edge lights in the direction of Rwy 20R before the displaced THR. Bi-directional raised White/Amber edge lights after the displaced THR.	Red	Elevated Red
<b>02C</b>	CAT I High Intensity reduced approach lighting (810m) consisting of centreline barrettes showing variable White, 1 crossbar, 2 approach beacons and sequenced flashing lights.	Green supplemented by Green wing-bar and 2 THR ident lights.	PAPI 003° located either side of RWY, 418m from THR. 2 White LGT and 2 Red LGT (19.8m), 3 White LGT and 1 Red LGT (23.7m), 4 White LGT (26.2m). ACFT with eye-to-wheel height greater than 8m are advised to fly with 2 White and 2 Red LGT visible so as to achieve sufficient wheel clearance.	Nil	Inset High Intensity centreline lights as follow: From THR to 900m from RWY end: White, 300m to 900m from RWY end: ALTN Red/ White, 300m to RWY end: Red.	Bi-directional raised White/Amber edge lights.	Red	Elevated Red

<i>RWY</i>	<i>APCH LGT Type, LEN, Intensity</i>	<i>THR LGT colour WBAR</i>	<i>PAPI (MEHT)</i>	<i>TDZ LGT LEN</i>	<i>RWY Centreline LGT, LEN, spacing, colour, INTST</i>	<i>RWY Edge LGT, LEN, spacing, colour, INTST</i>	<i>RWY End LGT colour</i>	<i>SWY LGT colour</i>
1	2	3	4	5	6	7	8	9
<b>20C</b>	CAT II High Intensity reduced approach lighting (720m) consisting of extended centreline and Red row barrettes, 2 crossbars, 2 approach beacons and sequenced flashing lights.	Green supplemented by Green wing-bar and 2 THR ident lights.	PAPI 003° located left side of RWY, 418m from THR. 2 White LGT and 2 Red LGT (19.8m), 3 White LGT and 1 Red LGT (23.7m), 4 White LGT (26.2m). ACFT with eye-to-wheel height greater than 8m are advised to fly with 2 White and 2 Red LGT visible so as to achieve sufficient wheel clearance.	White	Inset High Intensity centreline lights as follow: From THR to 900m from RWY end: White, 300m to 900m from RWY end: ALTN Red/White, 300m to RWY end: Red.	Bi-directional raised White/Amber edge lights.	Red	Elevated Red

### WSSS AD 2.15 OTHER LIGHTING, SECONDARY POWER SUPPLY

1	<i>ABN/IBN location, characteristics and hours of operation</i>	ABN: 012209.22N 1035858.47E (western side of RWY 02L/20R) ALTN FLG W G EV 2.3 SEC, OPR hours HN + IMC IBN: 012301.28N 1035959.52E (top of building N of SIA hangar) FLG G 'CH' EV 7 SEC, OPR hours HN + IMC
2	<i>LDI location and LGT Anemometer location and LGT</i>	Pressure tube anemometer and wind vane situated 345m west of middle of RWY 02L/20R. Cup anemometers and wind vanes at ends and middle of both runways. Windsocks at ends of both runways. Transmissometers at both ends and in the middle of both runways
3	<i>TWY Edge and Centreline Lighting</i>	RWY 02L/20R and RWY 02C/20C: Blue lights on TWY curved edges and apron TWY edges and Green centreline lights on all TWY.
4	<i>Secondary power supply/switch-over time</i>	Automatic standby generator power supply AVBL for airfield lighting with switchover time of 1 second during Category II low visibility operations.
5	<i>Remarks</i>	Vehicles painted yellow or displaying chequered red/white or orange/white flag at highest point of vehicle

### WSSS AD 2.16 HELICOPTER LANDING AREA

Refer to [ENR 3.4](#)

**WSSS AD 2.17 ATS AIRSPACE**

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

**WSSS AD 2.18 ATS COMMUNICATION FACILITIES**

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

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

## WSSS AD 2.19 RADIO NAVIGATION AND LANDING AIDS

<i>Type of aid and Variation</i>	<i>Ident</i>	<i>Frequency</i>	<i>OPR Hr</i>	<i>Position of Transmitting Antenna Coordinates</i>	<i>DME Transmitting Antenna Elevation / Remarks</i>
1	2	3	4	5	6 & 7
SINJON DVOR/DME	SJ	113.5 MHz CH82X	H24	011319.28N 1035120.08E	201° MAG 14.5km from THR RWY 02 (Paya Lebar). Antenna HGT: 194ft AMSL. Coverage 200NM. EM: F1. Maintenance period: Third Thursday of every month between 0200-0600
TEKONG DVOR/DME	VTK	116.5 MHz CH112X	H24	012455.36N 1040120.17E	023° MAG 6.4km from THR RWY 20C (Singapore Changi). Antenna HGT: 150ft AMSL. Coverage 200NM. EM: F1 Maintenance Period: Third Friday of every month between 0200-0600
RWY 20C ILS LLZ	ICC	109.7MHz	H24	011932.48N 1035901.20E	Located 368m (1207ft) from THR RWY 02C, along RWY centreline. Course width 3.38°. EM: A0/A2. Maintenance Period: May - October Second Friday of every month between 1600-2300 November - April Second Friday of every month between 0200-0900
RWY 20C ILS GP	-	333.2MHz	H24	012131.73N 1035955.72E	Located 338m (1109ft) from THR RWY 20C on left side of RWY, 120m (394ft) from RWY centreline. GP angle 3°. HGT of ILS reference datum: 17m (56ft) EM: A0/A2
RWY 20C ILS DME	ICC	CH34X	H24	012131.73N 1035955.72E	DME co-located with GP. EM: P9
RWY 20C ILS MM	-	75MHz	H24	012211.94N 1040008.52E	Located 957m (3140ft) from THR RWY 20C along extended centreline of RWY. No back beam.



<i>Type of aid and Variation</i>	<i>Ident</i>	<i>Frequency</i>	<i>OPR Hr</i>	<i>Position of Transmitting Antenna Coordinates</i>	<i>DME Transmitting Antenna Elevation / Remarks</i>
1	2	3	4	5	6 & 7
RWY 02C ILS LLZ	ICE	108.3MHz	H24	012154.41N 1040001.08E	Located 368m (1207ft) from THR RWY 20C, along RWY centreline. Course width 3.38°. 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	011952.11N 1035913.68E	Located 338m (1109ft) from THR RWY 02C on left side of RWY, 120m (394ft) from RWY centreline. GP angle 3°. HGT of ILS reference datum: 18m (58ft) EM: A0/A2
RWY 02C ILS DME	ICE	CH20X	H24	011952.11N 1035913.68E	DME co-located with GP. EM: P9
RWY 02C ILS MM	-	75MHz	H24	011915.04N 1035853.83E	Located 945m (3100ft) from THR RWY 02C along extended centreline of RWY. No back beam.
RWY 20R ILS LLZ	ICH	108.9MHz	H24	012045.23N 1035834.17E	Located 368m (1207ft) from THR RWY 02L, along centreline of the RWY. Course width 3.38°. EM: A0/A2. Maintenance Period: May - October First Saturday of every month between 0200-0900 November - April First Friday of every month between 0200-0900
RWY 20R ILS GP	-	329.3MHz	H24	012225.54N 1035912.29E	Located 330m (1083ft) from displaced THR RWY 20R on right side of the RWY, 120m (394ft) from RWY centreline. GP angle 3°. HGT of ILS REF datum: 17m (56ft) EM: A0/A2
RWY 20R ILS DME	ICH	CH26X	H24	012225.54N 1035912.29E	DME co-located with GP. Rwy 20R ILS DME not available beyond 15 degrees west of RWY 20R centreline below 2500ft. EM: P9
RWY 20R ILS MM	-	75MHz	H24	012307.50N 1035934.23E	Located 1122m (3681ft) from displaced THR RWY 20R, along centreline of the RWY.
RWY 02L ILS LLZ	ICW	110.9MHz	H24	012307.03N 1035934.03E	Located 1105m (3625ft) from displaced THR RWY 20R, along centreline of RWY. Course width 2.81°. EM:A0/A2 Maintenance Period: May - October First Friday of every month between 0200-0900 November - April First Saturday of every month between 0200-0900
RWY 02L ILS GP	-	330.8MHz	H24	012108.34N 1035838.94E	Located 343m (1125ft) from THR RWY 02L on left side of RWY, 143m (469ft) from RWY centreline. GP angle 3°. HGT of ILS Reference datum: 18m (58ft) EM:A0/A2
RWY 02L ILS DME	ICW	CH46X	H24	012108.34N 1035838.94E	DME co-located with GP EM:P9
RWY 02L ILS MM	-	75MHz	H24	012027.53N 1035826.70E	Located 957m (3140ft) from THR RWY 02L along extended centreline of RWY. No back beam.

## WSSS AD 2.20 LOCAL TRAFFIC REGULATIONS

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

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

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

#### 2.1 INTRODUCTION

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

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

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

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

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

- 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	Exercise caution due to similar RWY alignment
Approach Lights	RWY 02 Modified Calvert High INTST with centreline and 3 crossbars. High INTST white LGT with brilliancy control and sequenced flashing lights.	RWY 02L Precision APCH LGT CAT II. Extended centreline with red side row barettes, 2 crossbars, 2 APCH beacons and sequenced flashing lights.	
	RWY 20 Modified Calvert High INTST with centreline and 3 crossbars. High INTST white LGT with brilliancy control and sequenced flashing lights.	RWY 20R Precision APCH LGT CAT I. Centreline barettes flashing white, 2 APCH beacons and sequenced flashing lights. (refer to chart AD-2-WSS-ADC-2)	

Aeronautical Service	PAYA LEBAR Airport	SINGAPORE CHANGI Airport	Significant Differences and Remarks
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 AD-2-WSS-1AC-1 to AD-2-WSS-1AC-11 and the Precision Approach Terrain Charts for RWY 02L and RWY 20C at AD-2-WSS-PATC-1 and AD-2-WSS-PATC-2 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.

## **2 RUNWAY UTILISATION**

### **2.1 Runway-in-use**

2.1.1 The runway-in-use (Departure/Arrival) is selected by Aerodrome Control as the optimum for general purposes and to maximise runway utilisation. If the assigned runway is unsuitable for a particular operation, the pilot can obtain permission from ATC to use another runway but should anticipate delay.

### **2.2 Departures**

2.2.1 Pilots should arrange their taxi such that they are ready to depart without delay on reaching the runway holding point. As standard ICAO wake turbulence separation is being applied, pilots are to advise ATC early if more time is needed for the aircraft to be ready for departure. When informed, ATC will be able to make changes in the departure sequence, if necessary, to minimise delays to other succeeding departures.

2.2.2 Pilots should complete cockpit checks prior to line-up for departure and keep any checks on the runway to a minimum.

2.2.3 Conditional line-up clearance may be used by ATC to facilitate an expeditious flow of traffic. On receipt of line-up clearance, pilots should taxi into position promptly without delay. Unless given instructions to line-up and wait, pilots should be ready and prepared to depart without stopping. On receipt of take-off clearance, pilots to commence take-off roll without delay.

### **2.3 Clearance for Immediate Take-Off**

2.3.1 A pilot receiving the ATC instruction 'cleared for immediate take-off' is required to act as follows:

- a. if waiting clear of the runway, taxi immediately on to it and begin take-off run immediately without stopping the aircraft;
- b. if already lined-up on the runway, take-off without delay;
- c. if unable to comply with the instruction, inform ATC immediately.

### **2.4 Arrivals - Minimum Runway Occupancy Time (ROT)**

2.4.1 Arriving aircraft upon landing are reminded that it is imperative to vacate the runway as quickly as practicable to enable ATC to apply minimum spacing on final approach and minimise the occurrence of "go-arounds".

2.4.2 To achieve minimum ROT and reduce missed approaches due to occupied runway, pilots should vacate the runway via the first available exit taxiway corresponding to operational requirements, or as instructed by ATC. If an exit taxiway other than the first available exit taxiway is required, pilots shall advise the Tower Controller on first contact.

2.4.3 To enhance planning, pilots can make reference to the Landing Exit Distance (LED), the distance from threshold to the furthest edge of the exit taxiway:

RWY	Exit Taxiway (LED in metres)	Remarks
20R	<u>W6*(1655)</u> , <u>W7*(2123)</u> and W8 (3061)	Note 1: Recommended exit taxiways are bold and underlined.  Note 2: * Indicates Rapid Exit Taxiway (RET) and maximum design ground speed for the exit taxiway is 50kts.
20C	<u>E6*(1948)</u> , <u>E7*(2391)</u> and E8 (3152)	
02L	<u>W5*(1966)</u> , <u>W4*(2491)</u> and W3* (2876)	
02C	<u>E5*(2055)</u> , <u>E4*(2565)</u> and E3* (3267)	

- 2.4.4 Pilots can expect initial taxi instructions from the Runway Controller before clearing the exit taxiway. Aircraft vacating the runway-in-use should not stop on the exit taxiway until the entire aircraft has passed the runway holding point.
- 2.4.5 BTN 0830-1030 daily estimated delays of about 15 minutes can be expected for arrivals into Singapore Changi Airport.

## 2.5 Land after Procedures

- 2.5.1 Normally, only one aircraft is permitted to land or take-off on the runway-in-use at any one time. However, when the traffic sequence is two successive landing aircraft, the second aircraft may be allowed to land before the first aircraft has cleared the runway-in-use provided:
- the runway is long enough;
  - during daylight hours;
  - the second aircraft will be able to see the first aircraft clearly and continuously until it is clear of the runway;
  - the second aircraft has been warned.

2.5.2 ATC will provide this warning in the landing clearance as shown in para 2.7.

2.5.3 Responsibility for ensuring adequate separation between the two aircraft rests with the pilot of the second aircraft.

## 2.6 Special Landing Procedures

2.6.1 Special landing procedures may be in force at Singapore Changi Airport in conditions shown as follows:

- When the runway-in-use is temporarily occupied by other traffic, landing clearance may be issued to an arriving aircraft provided that at the time the aircraft crosses the threshold of the runway-in-use the following separation distances will exist:
  - Landing following landing - The preceding landing aircraft will be clear of the runway-in-use or will be at least 2,500m from the threshold of the runway-in-use.
  - Landing following departure - The departing aircraft will be airborne and at least 2,500m from the threshold of the runway-in-use, or if not airborne, will be at least 2,500m from the threshold of the runway-in-use.

2.6.2 These procedures will be used only under the following conditions:

- during daylight hours;
- visibility of at least 5km;
- cloud ceiling of 1,500ft in the departure/missed approach area;
- ATC is satisfied that the pilot of the next arriving aircraft will be able to observe continuously the relevant traffic;
- no unfavourable surface wind conditions (including significant tailwind, windshear, turbulence, etc);
- when the runway is dry and free of all precipitants such that there is no evidence that the braking action may be adversely affected.

## 2.7 Phraseology

2.7.1 When issuing a landing clearance following the application of these procedures, ATC will issue the second aircraft with the following instructions:

.... (call sign) .... after the landing / departing .... (Aircraft Type) Runway .....(Designator) cleared to land.

## 3 AIRPORT COLLABORATIVE DECISION MAKING (A-CDM) MODE OF OPERATIONS

3.1 A-CDM aims to optimise airport operations by having an efficient turnaround process and improving the predictability of operational events. It also helps to improve gate management, flight punctuality, reduce apron taxiway and holding point congestion which is beneficial to all airport partners. A-CDM involves sharing of accurate and timely operational information amongst airport partners through different airport systems and improving work processes by implementing a set of operational procedures.

3.2 The A-CDM procedures apply to all scheduled flights departing Singapore Changi Airport except for VVIP, CASEVAC, SAR and aircraft on special tasks. ATC shall have full discretion in conduct of such operations.

3.3 Definition of commonly used terms in A-CDM

- a. Target Off Block Time (TOBT) – The time an aircraft operator (AO) or ground handling agent (GHA) estimates that an aircraft will be ready, all doors closed, boarding bridge removed, pushback vehicle available and ready to start-up / pushback immediately upon receipt of clearance from ATC.
- b. Target Start Up Approval Time (TSAT) – The time provided by ATC that an aircraft can expect start-up / push back approval.
- c. Calculated Take Off Time (CTOT) – A time calculated as a result of tactical slot allocation, at which a flight is expected to become airborne.

**4 A-CDM PRE-DEPARTURE PROCEDURES**

4.1 Singapore Changi Airport's A-CDM portal will automatically calculate a system TOBT for each departure flight taking into account the estimated or actual in-block time (EIBT / AIBT), minimum turnaround time (MTT) and scheduled time of departure (STD)

4.2 If the calculated TOBT (EIBT / AIBT + MTT) is earlier than STD, the system will take the STD as TOBT.

4.3 If the calculated TOBT (EIBT / AIBT + MTT) is later than STD, the amount of turnaround delay that system predicts is equal to TOBT – STD.

4.4 AO are required to assess the system generated TOBT at 40 minutes prior to departure and update it if the prediction of departure readiness is different. Thereafter, TOBT needs to be monitored and updated constantly if it is expected to differ by 5 minutes or more until the flight commences pushback. AO can consider delegating the responsibility of TOBT submission to their ground handling agent (GHA) subject to prior internal arrangements between AO and GHA.

4.5 TOBT shall be updated through the following systems:

- a. Airport Operations Centre System (AOCS) A-CDM web based portal; or
- b. Gate Message Input Display (GMID) at boarding rooms;

4.6 AO/GHA is encouraged to update TOBT through ONLY one of the above systems in order to avoid any chance of a miscommunication.

4.7 TOBT information is available through the following channels:

- a. AOCS A-CDM portal;
- b. GMID;
- c. Aircraft Docking Guidance System (ADGS) at contact stands;
- d. Radio communication with GHA or AO.

4.8 The Pre-Departure Sequencer (PDS) will calculate the TSAT automatically by taking into account factors such as TOBT, calculated take-off time (CTOT), variable taxi times (VTT), wake turbulence category, departure separation, etc. A pre-departure sequence is determined from the calculated TSATs, thus the accuracy of TOBT is vital to an optimal TSAT.

4.9 Flights with an invalid or expired TOBT will be instructed by ATC to update TOBT when requesting for clearance. For non-compliant flights, delays can be expected. AO or GHA are strongly encouraged to update TOBT as soon as any expected delay to the aircraft readiness for pushback is made available to avoid unnecessary hold-ups.

4.10 TSAT information is available through the following channels:

- a. AOCS A-CDM portal;
- b. GMID;
- c. ADGS at contact stands;
- d. Radio communication with GHA or AO;
- e. ATC - Upon issuance of ATC clearance (for flights parked at aircraft stands without ADGS).

**5 A-CDM START-UP PROCEDURES**

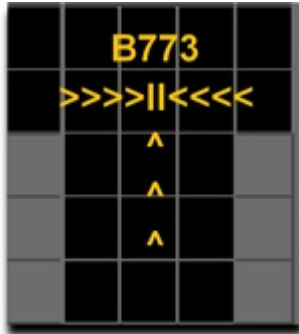



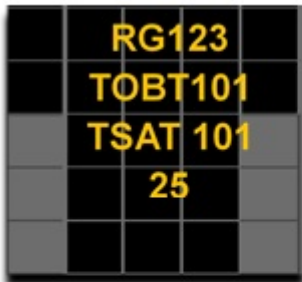

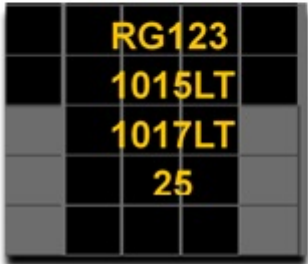
5.1 Pilot shall ensure aircraft is ready for pushback at TOBT.

5.2 Pilot to maintain communication with the AO / GHA as they are responsible for updating the TOBT. Notify the AO / GHA to update the TOBT if it is expected to differ by 5 minutes or more.



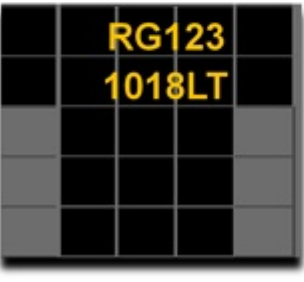
- 5.3 Pilot to contact Ground Movement Planner (Clearance Delivery) and request for ATC clearance within 5 minutes of TOBT using the following phraseology:
- Callsign
  - Destination
  - Proposed flight level and alternate level, if any
  - Parking position
- a. Pilot shall only request for ATC clearance provided aircraft is ready to pushback at TOBT. Any updates to TOBT after receipt of ATC clearance will result in cancellation of clearance issued as the ATC clearance validity is based on the initial TOBT.
- 5.4 ATC will advise the pilot whether the proposed flight level or other alternate flight level is available and an ATC clearance will be issued accordingly. If pre-departure coordination with an adjacent unit or centre is required, the pilot will be instructed to standby.
- 5.5 ATC will update TSAT changes if any, during issuance of ATC clearances. Note that TSAT displayed on ADGS may not be final and can be revised due to en-route clearance restrictions, ground congestion or flow measures.
- 5.6 Pilot shall request for pushback from Ground Movement Control within 5 minutes of TSAT after obtaining ATC clearance, or as directed by ATC.
- a. ATC may swap pushback sequence based on real-time readiness of aircrafts to maximise apron and runway capacity and reduce the overall delay to traffic as and when required.
- b. At the end of pushback, the departing aircraft must have all engines started and be ready to taxi immediately, unless otherwise instructed by ATC.
- Note: The first aircraft to taxi may not necessarily be the first aircraft to take-off as distances between aircraft stands and the departure runway vary.
- 5.7 A flight issued with gate hold (TSAT>TOBT) but chooses to commence pushback before the assigned time will be allowed to do so subject to traffic. However, the flight should not expect an earlier departure time as the planned pre-departure sequence will be maintained.
- 5.8 If a flight is unable to pushback by TSAT + 5 minutes due to the aircraft being unready, ATC clearance and TSAT will be cancelled. Pilot must notify the AO / GHA to update the TOBT for a new TSAT before requesting for a new ATC clearance. This also applies to aircraft returning back to blocks after pushback.
- a. ATC will inform the aircraft when a clearance is cancelled using the phraseology; "(Callsign of aircraft) your ATC clearance and TSAT is cancelled (reason). Update TOBT before requesting for new clearance".
- b. Flight may also have its ATC clearance cancelled if it develops a technical problem after pushback and is unable to taxi for prolonged duration.
- 5.9 Non-compliance of initial TSAT may result in an aircraft losing its existing position in the pre- departure sequence. Delay can be expected as a result of re-sequencing based on new TOBT input.
- 5.10 If delay in pushback is due to ground traffic movement or ATC clearance restrictions, the ATC clearance and TSAT will remain valid even if it exceeds TSAT + 5 minutes. TOBT need not be updated for such situations.
- 5.11 In the event that A-CDM mode of operations need to be cancelled due to any reason, the termination will be communicated to relevant parties through email by the airport operator and a NOTAM will be issued by ATC. Pilot shall follow the non-CDM procedures detailed in para 12.

## **6 A-CDM INFORMATION VIA AIRCRAFT DOCKING GUIDANCE SYSTEM (ADGS)**

- 6.1 All contact stands in Singapore Changi Airport will have ADGS. The fundamental operation and usage of ADGS still remain the same for flight crew. Additional information which includes TOBT, TSAT and TOBT count-down timer will be displayed in local times as part of the improvements to support A-CDM operations.

Aircraft Docking Guidance System (ADGS)	
Description	Display on ADGS
<p><b>Aircraft arrival to stand</b></p> <ul style="list-style-type: none"> <li>No change in existing functionality and display</li> </ul>	
<p><b>40 minutes prior to TOBT</b></p> <ul style="list-style-type: none"> <li>ADGS will display TOBT submitted by AO / GHA and a count down timer (2 digits) to TOBT in minutes</li> <li>As ADGS can only display up to 7 characters per line, the displayed message will be scrolling.</li> <li>Timings displayed will be in Local Time (LT)</li> <li>TOBT timings will change instantly if there is an update done by AO / GHA</li> </ul>	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Snapshot 1</p>  </div> <div style="text-align: center;"> <p>Snapshot 2</p>  </div> </div> <div style="text-align: center; margin-top: 20px;"> <p>Snapshot 3</p>  </div>
<p><b>25 minutes prior to TOBT</b></p> <ul style="list-style-type: none"> <li>ADGS will display TSAT derived by PDS</li> <li>As ADGS can only display up to 7 characters per line, the displayed message will be scrolling.</li> <li>TSAT timings may change as the PDS is continuously optimising push back times based on real time traffic conditions</li> </ul>	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Snapshot 1</p>  </div> <div style="text-align: center;"> <p>Snapshot 2</p>  </div> </div> <div style="text-align: center; margin-top: 20px;"> <p>Snapshot 3</p>  </div>



Aircraft Docking Guidance System (ADGS)	
Description	Display on ADGS
<p><b>Aircraft departure from stand</b></p> <ul style="list-style-type: none"> <li>ADGS will display the actual off-block time (AOBT)</li> <li>As ADGS can only display up to 7 characters per line, the displayed message will be scrolling</li> <li>TOBT, TSAT and TOBT countdown timer will be removed</li> <li>AOBT display will be removed 3 minutes after AOBT</li> </ul>	<p style="text-align: center;">Snapshot 1</p> 
	<p style="text-align: center;">Snapshot 2</p> 
	<p style="text-align: center;">Snapshot 3</p> 

## 7 CONTACT AND INFORMATION

7.1 Please contact the airport operator, Changi Airport Group (CAG), at [a-cdm@changiairport.com](mailto:a-cdm@changiairport.com) for application of AOCs A-CDM and GMID account or if you have any queries.

7.2 Aircraft operators may also contact their ground handling agent directly on queries regarding TOBT submission.

## 8 ASSIGNMENT OF FLIGHT LEVELS TO AIRCRAFT DEPARTING FROM SINGAPORE CHANGI AIRPORT

8.1 Assignment of flight levels to departing aircraft is made on a best-planned-best-served basis (with reference to TOBT for ATC clearance request detailed in para 5.3). Aircraft will normally be assigned the level requested unless an alternate level is offered after coordination with the adjacent ATC centres.

8.2 Departing flights from Singapore requesting FL280 or FL320 on L759, M770, N571, N571/N877 or P628 will be cleared as follows:

- a. Aircraft departing Singapore will be cleared to FL280;
- b. Succeeding aircraft on the same route will be cleared to FL280 with 10min longitudinal separation provided there is no closing speed with the preceding aircraft;
- c. Additional longitudinal separation as appropriate shall be imposed by ATC when the succeeding aircraft is faster than the preceding aircraft on the same route;
- d. The first aircraft from either Singapore or Kuala Lumpur to be over GUNIP on N571 or N571/N877, the Kuala Lumpur/Bangkok FIR boundary on M770 or L759 and VPL on P628 can expect its requested flight level

## 9 DELAY IN PUSHBACK AND/OR TAXIING DUE TO OTHER AIRCRAFT

9.1 Delays may be expected for the second aircraft to pushback and to taxi when two or more aircraft are parked either adjacent to one another or close together. However, it will retain its ATC clearance even if the 5 minutes grace period allowed for under para 5.8 is exceeded.

Note: The TSAT may not be able to predict delays arising from apron congestion as traffic movement on ground is dynamic and situations may change on a real time basis depending on aircraft readiness. ATC will facilitate pushback as soon as possible when traffic permits.

## 10 DELAY IN TAKE-OFF DUE TO RESTRICTIONS IN THE ATC CLEARANCE

10.1 The ATC clearance may require an aircraft to arrive at a reporting point at a specified time and level or to depart a number of minutes behind a preceding traffic to establish the appropriate longitudinal separation. Such delay will not deprive a departing aircraft of its ATC clearance even though the 5 minutes grace period allowed for under para 5.8 is exceeded.

## **11 DELAY DUE TO OVERFLIGHTS**

11.1 These are flights operating through Singapore FIR without landing at Singapore Changi Airport. Depending on their positions, a departing aircraft requesting the same level may have to accept an alternate level or may have to delay its departure in order to establish the prescribed separation.

## **12 NON-CDM MODE OF OPERATIONS**

12.1 The non-CDM procedures is applicable for non-scheduled flights departing Changi Airport or when TOBT and TSAT references used in A-CDM mode of operations become unavailable due to system issues or maintenance.

12.2 If TOBT cannot be submitted or it is unavailable through different channels stated in para 4.5,

- a. Pilots shall notify ATC when the aircraft is ready to pushback within 5 minutes.
- b. ATC will advise the pilot whether the proposed flight level or other alternate flight level is available and an ATC clearance will be issued accordingly. If pre-departure coordination with an adjacent unit or centre is required, the pilot will be instructed to standby.
- c. Once flight level is accepted by the pilot and an ATC clearance issued, the aircraft must be pushed back within 5 minutes from the time the ATC clearance is accepted unless other ATC restrictions are imposed. The ATC clearance will be cancelled on expiry of the 5 minutes grace period. This also applies to situations when aircraft return to blocks after pushback or develop technical issues and is unable to continue taxi.
- d. Pilots who are ready to depart following the cancellation of an ATC clearance will adopt the procedures as if it is the first time they are ready to depart.

12.3 If TSAT is unavailable through different means stated in para 4.10,

- a. AO and GHA shall continue to submit TOBT and pilots shall request for ATC clearance 5 minutes within TOBT stated in para 5.3
- b. ATC will revert to the gate hold procedures stated in para 13 and issue estimated pushback times accordingly.

## **13 GATE HOLD PROCEDURES FOR DEPARTING AIRCRAFT (DURING NON-CDM MODE OF OPERATIONS)**

13.1 Whenever there are about five to seven departing aircraft at the runway holding point, subsequent pushback of departures will be regulated such that the Ground Movement Planner (GMP) on VHF frequency 121.65MHz will start to issue pilots with Expected Pushback Time (EPT) as TSAT used in A-CDM operations is not available. The determination of EPT will take into account an aircraft's parking stand as well as taxi time to the runway-in-use holding point.

13.2 When an EPT is issued, pilots will be instructed to either remain on GMP frequency or to monitor Singapore Ground Movement Control frequencies (124.3MHz, 121.725MHz or 121.85MHz). It should be noted that when instructed to monitor the Singapore Ground Movement Control frequencies, pilots shall not establish contact with the Singapore Ground Movement Control, rather, pilots shall maintain listening watch on the assigned Singapore Ground Movement Control frequency and wait for pushback instruction. This is to prevent unnecessary frequency congestion.

13.3 A flight issued with an EPT but chooses to commence pushback before the assigned time will be allowed to do so subject to traffic. However, the flight should not expect an earlier departure time as the planned pre-departure sequence will be maintained.

13.4 In a situation when a departing aircraft is occupying a gate that has been assigned to an arriving aircraft, the departing aircraft will be instructed by GMP to contact Singapore Ground Movement Control for pushback for the purpose of better gate utilisation.

13.5 To maximise runway utilisation, departure sequence will be planned on the basis of increasing runway throughput so as to enhance overall efficiency.

## **14 GROUND MOVEMENT PLANNER ON VHF 121.65MHz**

14.1 The frequency shall be used for aircraft pre-flight checks and ATC clearances. Pilot-in-command to make his initial call from the parked position on this frequency.

**15 GROUND MOVEMENT CONTROL ON VHF 124.3MHZ, 121.85MHZ AND 121.725MHZ**

- 15.1 This frequency shall be used for aircraft start-up/push-back clearance.
- 15.2 Unless otherwise instructed by ATC, the pilot-in-command shall prior to starting engines listen out on the Ground Movement Control frequency on 124.3MHz, 121.85MHz or 121.725MHz.
- 15.3 The pilot-in-command shall:
- a. Request and obtain taxi instructions prior to taxiing;  
*Note: ATC clearance, including the assigned SSR code will normally be issued prior to push back. Pilot shall squawk the SSR code immediately when airborne.*
  - b. Change from Ground Movement Control frequency to the Runway Control frequency when instructed (118.6MHz or 118.25MHz). It should be noted that when instructed to monitor Singapore Tower frequencies, pilots shall not establish contact with Singapore Tower; rather, pilots shall maintain a listening watch on the assigned Singapore Tower frequency and wait for instruction. This is to prevent unnecessary frequency congestion.
- 15.4 Departing aircraft will be instructed when to change from 118.6MHz or 118.25MHz to Singapore Departure frequency 120.3MHz.
- 15.5 In the case of the aircraft having landed, the pilot-in-command shall change from 118.6MHz or 118.25MHz to 124.3MHz, 121.85MHz or 121.725MHz immediately upon instructed by ATC after clearing the runway. He shall maintain watch on 124.3MHz, 121.85MHz or 121.725MHz for taxiing and parking instructions until he arrives at his aircraft stand.

**16 TAXIING**

- 16.1 Taxi clearance given by Singapore Ground Movement Control will relate to movement on the manoeuvring area, but excluding the marshalling area.
- 16.2 Aircraft taxiing on the manoeuvring area will be regulated by ATC to avoid or reduce possible conflict and will be provided with traffic information and alerting service. ATC shall apply taxiing clearance limits whenever necessary.
- 16.3 The taxiway routes to be used by aircraft after landing or when taxiing for departure will be specified by ATC. The issuance by ATC of a taxi route to an aircraft does not relieve the pilot-in-command of the responsibility to maintain separation with other aircraft on the manoeuvring area or to comply with ATC directions intended to regulate aircraft on the manoeuvring area.
- 16.4 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.

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## **17 TAKE-OFF AND LANDING**

- 17.1 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
- 17.2 The pilot-in-command shall not take-off or land without a clearance from Aerodrome Control.
- 17.3 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.
- 17.4 After landing, the pilot-in-command shall vacate the runway by the shortest suitable route and to contact Singapore Ground Movement Control who will issue specific taxi route instructions to its assigned aircraft stand.
- 17.5 Aircraft with radio communication failure shall vacate the runway and stop on the taxiway and watch for light signals from Aerodrome Control.

## 18 STANDARD INSTRUMENT DEPARTURE (SID) AND STANDARD INSTRUMENT ARRIVAL (STAR)

### 18.1 INTRODUCTION

- 18.1.1 The SIDs and STARs for Singapore Changi Airport require aircraft to be GNSS-equipped and approved with navigation systems that meet the ICAO RNAV-1 navigation specification in accordance to the ICAO Performance Based Navigation Manual (Doc 9613).
- 18.1.2 To avoid proliferation of SIDs and STARs, the basic RNAV SIDs and STARs follow similar tracks as the RNAV-1 (GNSS) SIDs and STARs using the same set of SIDs and STARs identification.
- 18.1.3 Operators / pilots who are not approved to operate on the RNAV-1 (GNSS) SIDs and STARs shall notify ATC and operate on the alternate basic RNAV SIDs and STARs or expect radar vectors from ATC.

### 18.2 ARRIVALS

- 18.2.1 Arriving aircraft from the various ATS routes shall plan for the respective RNAV-1 STARs with the associated flight planning requirement as shown below:

ATS Route	RNAV-1 STAR	Remarks and Flight Planning Requirement
A464 (southbound to Singapore)	ARAMA	Default STAR shall be ARAMA. When traffic permits and WSSS Runway 20 is in use, ATC will offer LELIB STAR. Pilots are to request for the STAR from Singapore ATC when the flight is within 120 DME SJ and Runway 20 is in use. Flight shall still remain under the control of WMKK ATC.
A576 (southbound to Singapore)	Not applicable	Southbound flight landing at WSSS are not permitted to flight plan via A576.
G579	REPOV	NIL
G580	KARTO	NIL
L504	OBDOS	NIL
L642	ELALO	ESPOB Q801 Q802 ELALO
M635	SURGA	NIL
M646	KARTO	NIL
M751 / B469	Not applicable	M751 VPK B469 90 DME PU PIBAP PASPU. After PASPU, expect radar vectors.
M753	ELALO	IPRIX Q802 ELALO
M767	KARTO	NIL
M774	OBDOS	NIL
M904	ELALO	UPRON Q803 ELALO
N891	ELALO	N891 ENREP direct ELALO
N892	MABAL	NIL
R469	ASUNA	NIL
Note: The LEBAR STAR serves as a transition option to the STARs listed above. This is to facilitate arrivals joining downwind to the west of Singapore Changi Airport. ATC may clear arrivals to join the LEBAR STAR when air traffic permits.		

- 18.2.2 All RNAV-1 (GNSS) STARs terminate at the initial approach fix (IAF). Arrivals can expect radar vectors to intercept the localizer for an ILS approach to the respective runways.

### 18.3 DEPARTURES

- 18.3.1 All departing aircraft will be cleared on the appropriate RNAV-1 (GNSS) SIDs and shall climb initially to 3,000ft.
- 18.3.2 RNAV-1 (GNSS) SIDs will be assigned to departures from Singapore Changi Airport that flight plan on the following ATS routes:

ATS Route	RNAV-1 SID	Remarks and Flight Planning Requirements
A457	MASBO	NIL
B470	ANITO	NIL
G580 / M646	TOMAN	NIL
L504	BAVUS	NIL
L625 / N884	TOMAN	NIL
M635	VENIX	NIL

ATS Route	RNAV-1 SID	Remarks and Flight Planning Requirements
M751	MERSING	NIL
M753	MERSING	VMR L642 ENREP M753 Expect radar vectors or further ATC clearance on approaching VMR.
M771	MERSING	VMR DOLOX M771 Expect radar vectors or further ATC clearance on approaching VMR.
M774	KADAR	NIL
N884	Not applicable	Not available for flight planning between VMR and LUSMO. Flight plan via TOMAN L625 LUSMO N884.
N891	MERSING	VMR ENREP N891 Expect radar vectors or further ATC clearance on approaching VMR.
R469	ADMIM	NIL
Y339	AROSO	Flight planning permitted for flights departing from or overflying Singapore to destinations north of Kuala Lumpur and Subang Airports. For flights operating at FL220 and below, to flight plan on A457.

#### 18.4 VERTICAL AND SPEED RESTRICTIONS

18.4.1 Pilots shall comply with an ATC assigned level. Pilots shall also adhere to the vertical and speed restrictions depicted on the SIDs and STARs. ATC clearance will take precedence when the ATC clearance does not allow the pilots to adhere to the vertical and speed restrictions depicted on the SIDs and STARs.

#### 18.5 OPERATORS' PROCEDURES

18.5.1 The operator shall ensure that in-flight procedures, crew manuals and training programmes are established in accordance with RNAV-1 (GNSS) navigation requirements.

18.5.2 Pilots shall inform ATC when on-board equipment does not meet the RNAV-1 (GNSS) navigation requirements. Pilots can then expect radar vector from ATC.

### 19 COORDINATES OF SID/STAR WAYPOINTS (WGS84 DATUM)

Name	Latitude	Longitude	Radius/Distance from VTK	Radius/Distance from SJ
ABVIP	010008N	1035032E	VTK R-203.5/ D27.0	SJ R-183.5 / D13.2
ADMIM	005733N	1033033E	VTK R-228.4/ D41.2	SJ R-232.8 / D26.1
AGROT	010108N	1035808E	VTK R-187.7 / D24.0	SJ R-150.8 / D14.0
AGVAR	014719N	1034145E	VTK R-318.8 / D29.8	SJ R-344.3 / D35.3
AKMET	015355N	1034339E	VTK R-328.6 / D34.0	SJ R-349.3 / D41.3
AKOMA	014522N	1035443E	VTK R-342.0 / D21.4	SJ R-006.2 / D32.0
ALFA	013033N	1034942E	VTK R-295.7 / D12.9	SJ R-354.8 / D17.2
ANITO	001700S	1045200E	VTK R-153.4 / D113.4	SJ R-146.0 / D108.6
ARAMA	013654N	1030712E	VTK R-282.4 / D55.5	SJ R-298.0 / D50.0
AROSO	020846N	1032421E	VTK R-319.9 / D57.4	SJ R-334.0/ D61.7
ASUNA	005948N	1030954E	VTK R-244.1 / D57.3	SJ R-252.0 / D43.6
ATKAX	000512N	1065946E	VTK R-113.9 / D195.5	SJ R-109.7 / D200.6
ATRUM	013256N	1040057E	VTK R-357.3 / D8.0	SJ R-026.1 / D21.8
BAVUS	000000N	1090000E	VTK R-105.9 / D310.5	SJ R-103.4 / D317.3
BETBA	013302N	1035331E	VTK R-316.1/ D11.3	SJ R-006.3 / D19.8
BIBVI	024336N	1040618E	VTK R-003.5 / D78.4	SJ R-009.6 / D91.1
BIDUS	013554N	1035755E	VTK R-326.0 / D13.2	SJ R-006.9 / D22.6
BIPOP	013122N	1041018E	VTK R-054.5 / D11.0	SJ R-046.8 / D26.2
BOBAG	010230N	1032954E	VTK R-234.7 / D38.6	SJ R-243.2 / D24.0
BOKIP	010421N	1034353E	VTK R-220.5 / D27.0	SJ R-219.5 / D11.6
BTM	010813N	1040758E	VTK R-158.2 / D17.9	SJ R-107.0 / D17.5
DIVSA	011105N	1040303E	VTK R-172.9 / D13.9	SJ R-100.8 / D11.9
DOGRA	010525N	1041423E	VTK R-146.2 / D23.5	SJ R-108.9 / D24.4
DOKTA	012606N	1041040E	VTK R-083.0 / D9.4	SJ R-057.0 / D23.2
DONDI	011252N	1035855E	VTK R-191.3/ D12.3	SJ R-093.4 / D7.6

Name	Latitude	Longitude	Radius/Distance from VTK	Radius/Distance from SJ
DOSNO	004757N	1041409E	VTK R-160.8 / D39.0	SJ R-137.8 / D34.1
DOSPA	011459N	1040441E	VTK R-161.4 / D10.5	SJ R-082.9 / D13.5
DOVAN	011938N	1041249E	VTK R-114.6 / D12.7	SJ R-073.9 / D22.5
ELALO	041240N	1043329E	VTK R-010.6 / D169.9	SJ R-013.4 / D183.3
HOSBA	011948N	1042418E	VTK R-102.5 / D23.6	SJ R-079.0 / D33.7
IBIBI	011503N	1035707E	VTK R-203.1 / D10.7	SJ R-073.4 / D6.0
IBIVA	011351N	1035637E	VTK R-203.1 / D12.0	SJ R-084.3 / D5.3
IBIXU	011621N	1035740E	VTK R-203.2 / D9.3	SJ R-064.4 / D7.0
IBULA	005036N	1043600E	VTK R-134.5 / D48.7	SJ R-116.8 / D50.2
IGNON	010847N	1041257E	VTK R-144.1 / D19.8	SJ R-101.8 / D22.2
IKAGO	003816N	1052931E	VTK R-117.7 / D99.8	SJ R-109.5 / D104.4
IKIMA	004314N	1045500E	VTK R-127.6 / D67.9	SJ R-115.1 / D70.5
JB (JAYBEE)	013000N	1034242E	VTK R-285.1 / D19.3	SJ R-332.6 / D18.6
KADAR	000647S	1074342E	VTK R-112.4 / D240.5	SJ R-109.0 / D245.8
KANLA	034556N	1043606E	VTK R-013.8 / D144.5	SJ R-016.5 / D158.3
KARTO	011124N	1053343E	VTK R-098.3 / D93.5	SJ R-091.1 / D102.6
KEXAS	011019N	1044818E	VTK R-107.2 / D49.2	SJ R-093.0 / D57.2
KILOT	030217N	1044023E	VTK R-022.0 / D104.5	SJ R-024.4 / D119.0
LAVAX	010950N	1042714E	VTK R-120.1 / D30.0	SJ R-095.5 / D36.2
LEDOX	011642N	1035651E	VTK R-208.6 / D9.4	SJ R-058.5 / D6.5
LEGAS	011524N	1035618E	VTK R-207.9 / D10.8	SJ R-067.3 / D5.4
LELIB	012729N	1032450E	VTK R-274.0 / D36.6	SJ R-298.0 / D30.0
LETGO	011411N	1035548E	VTK R-207.3 / D12.1	SJ R-079.1 / D4.6
MABAL	032826N	1051236E	VTK R-030.1 / D142.1	SJ R-031.2 / D157.2
MASBO	020248N	1025251E	VTK R-299.0 / D78.3	SJ R-310.2 / D76.6
NYLON	013657N	1040624E	VTK R-023.0 / D13.0	SJ R-032.9 / D30.0
OBDOS	002503N	1065551E	VTK R-108.9 / D184.5	SJ R-104.7 / D190.7
PALGA	011059N	1034759E	VTK R-223.8 / D19.3	SJ R-235.1 / D4.1
PAMSI	010459N	1034845E	VTK R-212.3 / D23.6	SJ R-197.2 / D8.7
PASPU	015915N	1040618E	VTK R-008.3 / D34.5	SJ R-018.3 / D48.1
PIBAP	023023N	1040618E	VTK R-004.4 / D65.3	SJ R-011.1 / D78.1
POSUB	012725N	1040748E	VTK R-069.0 / D6.9	SJ R-049.8 / D21.7
PU	012524N	1035600E	VTK R-275.2 / D5.4	SJ R-021.1 / D13.0
REMES	004342N	1035735E	VTK R-185.2 / D41.2	SJ R-167.9 / D30.2
REPOV	001623N	1040300E	VTK R-178.6 / D68.2	SJ R-168.3 / D57.9
RUVIK	011422N	1042033E	VTK R-118.8 / D21.9	SJ R-088.0 / D29.2
RWY 02C DER	012152N	1040000E	VTK R-203.5 / D3.3	SJ R-046.0 / D12.2
RWY 02L DER	012305N	1035933E	VTK R-224.1 / D2.5	SJ R-040.6 / D12.8
RWY 20C DER	011935N	1035902E	VTK R-203.3 / D5.8	SJ R-051.5 / D10.0
RWY 20R DER	012047N	1035835E	VTK R-213.7 / D4.9	SJ R-044.8 / D10.4
SABKA	015051N	1031713E	VTK R-300.4 / D51.2	SJ R-317.7 / D50.7
SAMKO	010530N	1035255E	VTK R-203.5 / D21.1	SJ R-168.0 / D8.0
SANAT	010749N	1035930E	VTK R-186.1 / D17.1	SJ R-123.7 / D9.9
SJ (SINJON)	011319N	1035120E	-	-
SURGA	003657S	1063119E	VTK R-129.1 / D193.3	SJ R-124.6 / D194.3
TOKIM	012933N	1040315E	VTK R-022.7 / D5.0	SJ R-036.7 / D20.1
TOMAN	012147N	1054717E	VTK R-091.7 / D106.2	SJ R-085.9 / D116.5
TOPOM	012955N	1040227E	VTK R-012.8 / D5.1	SJ R-034.2 / D20.0
VENIX	002156S	1060521E	VTK R-130.6 / D163.5	SJ R-125.3 / D164.3
VENPA	002141N	1044955E	VTK R-142.3 / D79.6	SJ R-131.2 / D78.1
VMR	022318N	1035218E	VTK R-351.2 / D58.8	SJ R-000.9 / D69.6
VTK (TEKONG)	012455N	1040120E	-	-

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← 20

**SID / STAR PHRASEOLOGIES**

20.1

SID / STAR phraseologies allow ATC and pilot to communicate and understand detailed clearance information that would otherwise require long and potentially complex transmissions. To eliminate safety risk due to a

mismatch between ATC and pilot expectations when SID / STAR phraseologies are used, and what certain terms may mean, ICAO has published Amendment 7-A to Doc 4444, PANS- ATM to harmonise the core phraseologies that positively reinforce the lateral, vertical and speed requirements embedded in a SID or STAR that will continue to apply, unless explicitly cancelled or amended by the controller.

20.2 The core phraseologies are:

- i. CLIMB VIA SID TO (level)
- ii. DESCEND VIA STAR TO (level)

20.3 These require the aircraft to:

- i. Climb / descend to the cleared level in accordance with published level restrictions;
- ii. Follow the lateral profile of the procedure; and
- iii. Comply with published speed restrictions or ATC-issued speed control instructions as applicable.

20.4 Phraseologies for removal of speed or level restrictions are:

- i. CLIMB VIA SID TO (level), CANCEL SPEED RESTRICTION(S)
- ii. DESCEND VIA STAR TO (level), CANCEL LEVEL RESTRICTION(S) AT (point(s))

20.5 These phraseologies mean that:

- i. The lateral profile of the procedure continue to apply and
- ii. Speed or level restrictions which have not been referred to will continue to apply.

20.6 Phraseologies for variations to the lateral profile of the SID / STAR are:

- i. PROCEED DIRECT (waypoint), or
- ii. VECTORING

20.7 These phraseologies mean that speed and level restrictions associated with the bypassed waypoints are cancelled.

20.8 Phraseology to clear aircraft to return to SID / STAR is: REJOIN SID / STAR

20.9 This phraseology means that speed and level restrictions associated with the waypoint where the rejoin occurs, as well as those associated with all subsequent waypoints must be complied with.

20.10 The term 'VIA' will no longer be used when issuing lateral routing clearances.

## **21 ARRIVING AIRCRAFT**

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

## **22 LIGHT AIRCRAFT OPERATIONS**

22.1 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.

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

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

## **← 23 SIMULTANEOUS INDEPENDENT PARALLEL APPROACHES**

←

### **23.1 Introduction**

23.1.1 Simultaneous independent parallel approaches will be implemented daily between 0000UTC and 1500UTC to optimize runway utilization and enhance air traffic efficiency.



**23.2 Procedures for simultaneous independent parallel approaches**

- 23.2.1 To ensure safe operations between aircraft on parallel approaches, Normal Operating Zones (NOZs) are established for each extended runway centreline and a No Transgression Zone (NTZ) is established between the NOZs.
- 23.2.2 ATC will vector arriving flights into Singapore Changi Airport from the final waypoint of the respective STARs to the respective NOZs.
- 23.2.3 Within the NOZ, ATC shall provide a minimum vertical separation of 1,000ft or 3NM surveillance separation between pairs of aircraft until both aircraft are established on the ILS Localizer course.
- 23.2.4 ATC is not required to provide separation between aircraft on adjacent ILS Localizers and will monitor aircraft for deviation from the approach path.
- 23.2.5 Aircraft can expect to maintain altitude 3,500ft till Glide Path Interception for Runway 20R / 02L and 2,500ft till Glide Path Interception for Runway 20C / 02C. This is to ensure the necessary vertical separation prior to establishing on the respective ILS Localizer course.
- 23.2.6 Aircraft can expect the following radiotelephony phraseology when intercepting the ILS:
- a. to intercept the Localizer before clearing for ILS  
**“TURN LEFT (RIGHT) HEADING (three digits) MAINTAIN (altitude) REPORT ESTABLISHED ON THE LOCALIZER RUNWAY (number) LEFT (CENTRE / RIGHT)”**  
followed by ...  
**“MAINTAIN (altitude), CLEARED FOR ILS APPROACH RUNWAY (number) LEFT (CENTRE/RIGHT)”**  
or
  - b. to intercept ILS  
**“TURN LEFT (RIGHT) HEADING (three digits) MAINTAIN (altitude) CLEARED FOR ILS APPROACH RUNWAY (number) LEFT (CENTRE / RIGHT)”**
- 23.2.7 Aircraft can expect to maintain speed 180kt at base turn or earlier till 8NM from touchdown.

**23.3 Break-out manoeuvre**

- 23.3.1 When an aircraft is observed to have not established on the appropriate Localizer course or deviated from its course towards the NTZ, ATC will instruct the aircraft to return immediately to the correct Localizer course with the following radiotelephony phraseology:  
**“YOU HAVE CROSSED THE LOCALIZER, TURN LEFT (or RIGHT) IMMEDIATELY AND RETURN TO THE LOCALIZER”**  
or  
**“TURN LEFT (or RIGHT) TO RETURN TO LOCALIZER COURSE”**
- 23.3.2 When ATC observed aircraft to be penetrating or will penetrate the NTZ, ATC will instruct the aircraft on the adjacent Localizer course to alter course to avoid the deviating aircraft with the following radiotelephony phraseology:  
**“TRAFFIC ALERT, TURN LEFT (or RIGHT) IMMEDIATELY HEADING (degrees), CLIMB AND MAINTAIN (altitude)”**

**23.4 Pilot notification and conditions for operations**

- 23.4.1 Simultaneous approaches to parallel runways operation will be broadcasted on ATIS during the active period.
- 23.4.2 Simultaneous approaches to the parallel runways will be suspended in the event of adverse weather or any other conditions that may affect the safe conduct of such approaches to the parallel runways.

## 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.
- 1.3 Handheld laser device, long range acoustic device and alternating amplified bird cries of distress are used for bird dispersal within Singapore Changi Airport.

## WSSS AD 2.24 CHARTS RELATED TO AN AERODROME

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

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AERODROME CHART - ICAO

01° 21' 33"N  
103° 59' 22"E

AERODROME ELEVATION 6.66m

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

SINGAPORE/SINGAPORE CHANGI

**PAPI 3° (MEHT)\***

Pilot's eye height over the threshold when the following PAPI lights come into view.	02L	20R	02C	20C
2 White lights and 2 red lights	20.0m	20.0m	19.8m	19.8m
3 White lights and 1 red light	24.0m	22.6m	23.7m	23.7m
4 White lights	26.4m	25.0m	26.2m	26.2m

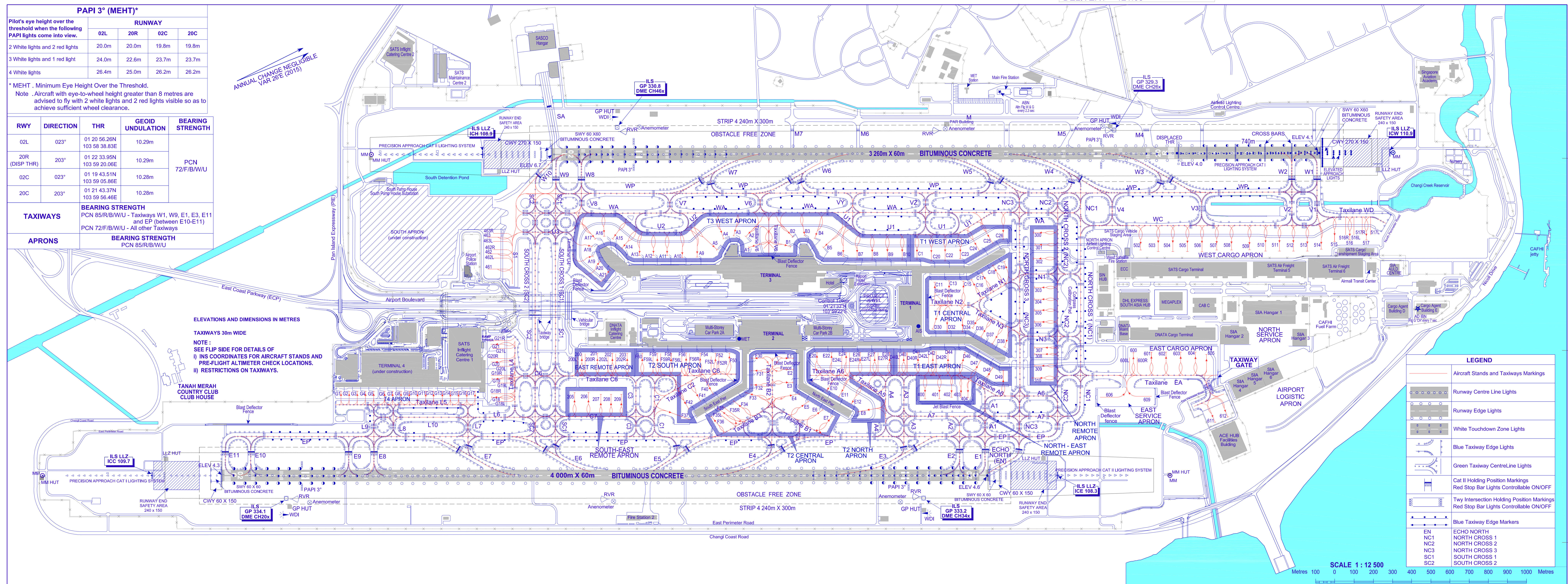
\* MEHT - Minimum Eye Height Over the Threshold.  
Note: Aircraft with eye-to-wheel height greater than 8 metres are advised to fly with 2 white lights and 2 red lights visible so as to achieve sufficient wheel clearance.

RWY	DIRECTION	THR	GEOID UNDULATION	BEARING STRENGTH
02L	023°	01 20 56.28N 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

ANNUAL CHANGE NEGLIGIBLE  
VAR 26E (2015)



**ELEVATIONS AND DIMENSIONS IN METRES**  
TAXIWAYS 30m WIDE  
NOTE:  
I) INS COORDINATES FOR AIRCRAFT STANDS AND PRE-FLIGHT ALTIMETER CHECK LOCATIONS.  
II) RESTRICTIONS ON TAXIWAYS.

TANAH MERAH COUNTRY CLUB CLUB HOUSE

**LEGEND**

- Aircraft Stands and Taxiways Markings
- Runway Centre Line Lights
- Runway Edge Lights
- White Touchdown Zone Lights
- Blue Taxiway Edge Lights
- Green Taxiway Centre Line Lights
- Car II Holding Position Markings
- Red Stop Bar Lights Controllable ON/OFF
- Twy Intersection Holding Position Markings
- Red Stop Bar Lights Controllable ON/OFF
- Blue Taxiway Edge Markers

EN ECHO NORTH  
NC1 NORTH CROSS 1  
NC2 NORTH CROSS 2  
NC3 NORTH CROSS 3  
SC1 SOUTH CROSS 1  
SC2 SOUTH CROSS 2

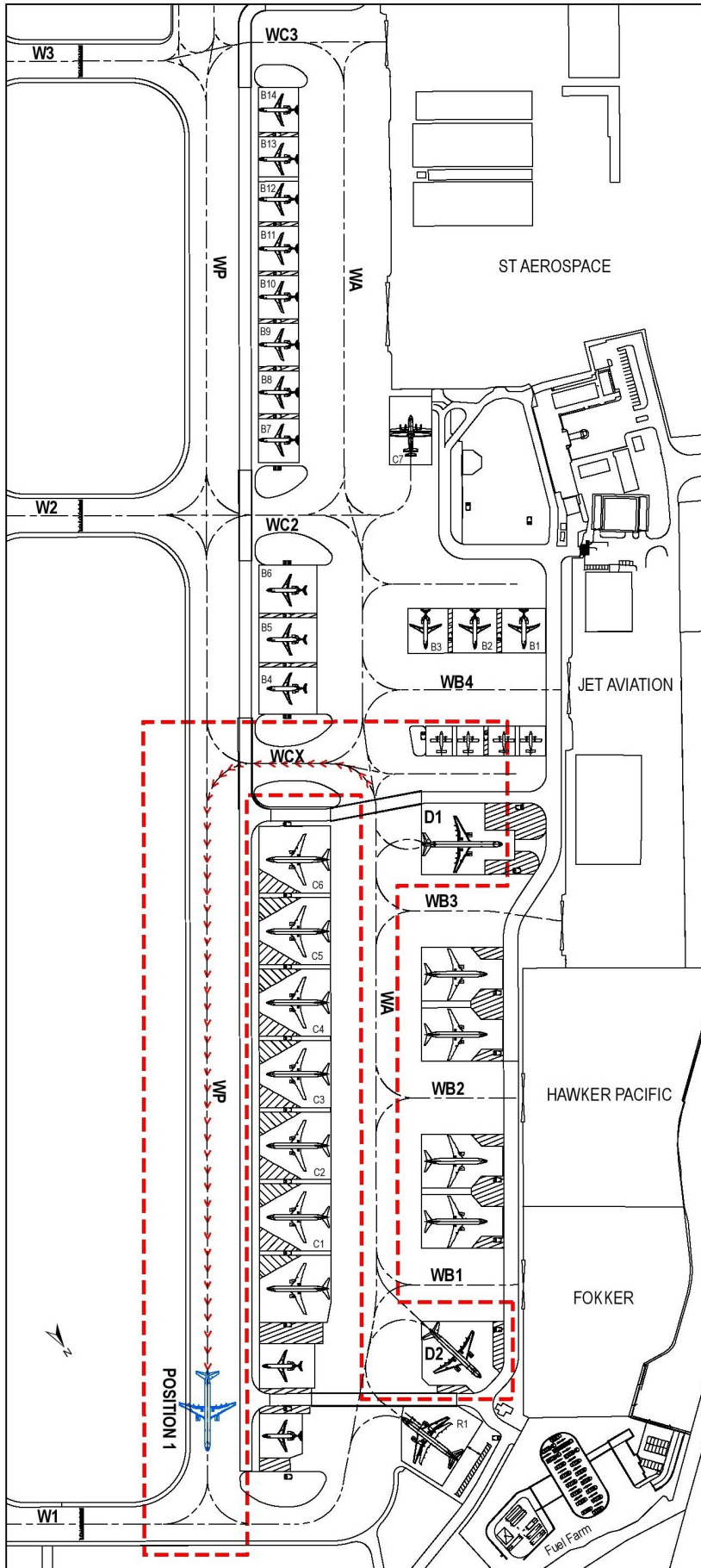
Metres 100 0 100 200 300 400 500 600 700 800 900 1000 Metres

SCALE 1:12 500



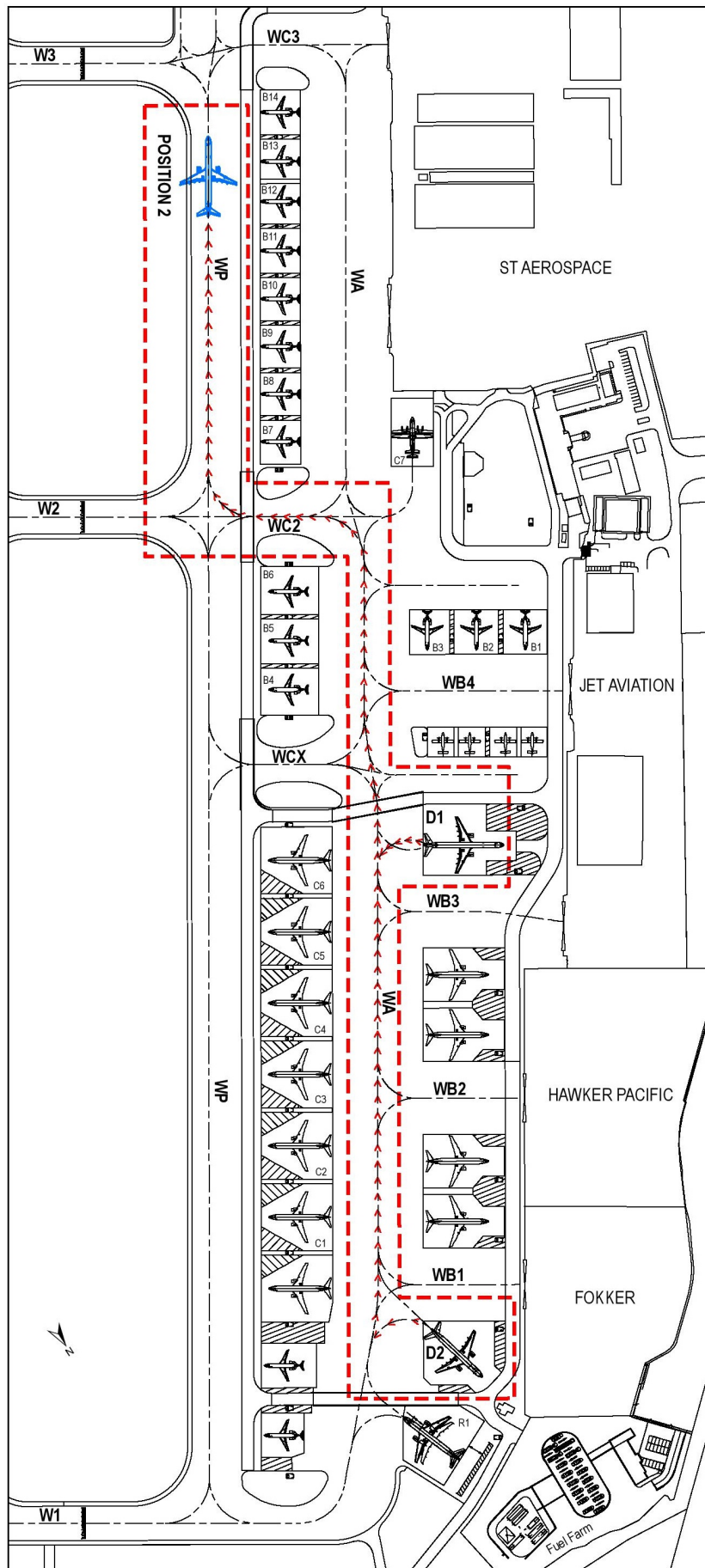
<b>SURFACE MOVEMENT GUIDANCE AND CONTROL SYSTEM AND MARKINGS</b>		
<b>Aircraft Stands</b>	<b>Pushback / Tow Forward Procedures</b>	<b>Phraseology Used By SELETAR GROUND</b>
<b>C1/C2/C3/ C4/C5/C6</b>	<p><b>PUSHBACK</b> The aircraft (on idle thrust) shall be pushed back onto TWY WA to face North (or South) until its nose wheel is at the intersection of the aircraft stand lead-in line and the centreline of TWY WA. The aircraft may breakaway from there.</p> <p><b>TOW FORWARD</b> The aircraft (on idle thrust) shall be towed forward onto the centreline of TWY WP to face North (or South) until its nose wheel is at the intersection of the aircraft tow-out line and TWY WP centreline. The aircraft may breakaway from there.</p>	<p>Pushback approved, to face North (or South)</p> <p>Tow forward approved, to face North (or South)</p>
<b>C7</b>	<p><b>PUSHBACK</b> The aircraft (on idle thrust) shall be pushed back onto TWY WA to face North (or South) until its nose wheel is at the intersection of the aircraft stand lead-in line and the centreline of TWY WA. The aircraft may breakaway from there.</p>	<p>Pushback approved, to face North (or South)</p>
<b>C50/C51/C52</b>	<p><b>PUSHBACK</b> The aircraft (on idle thrust) shall be pushed back onto TWY ES to face North (or South) until its nose wheel is at the intersection of the aircraft stand lead-in line (or pushback line) and the centreline of TWY ES. The aircraft may breakaway from there.</p>	<p>Pushback approved, to face North (or South)</p>
<b>D1/D2</b> (for B757-200 and C130)	<p><b>PUSHBACK AND TOW FORWARD TO TWY WP</b> The tow-crew shall request from Seletar Ground (vehicular) on 122.9MHz for departure pushback approval. Upon receiving the approval, the aircraft shall be pushed back onto TWY WA to face South until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY WA centreline. The aircraft shall then be towed forward to TWY WP until the tow tug towing the aircraft is at the intermediate holding position short of TWY W1 (see chart AD 2.WSSL-6) or TWY W3 (see chart AD 2.WSSL-7). Once the tow tug is disengaged, the aircraft will request start up approval from Seletar Ground (aircraft) on 121.6MHz. The aircraft shall breakaway from there.</p> <p><b>FOR LANDED B757-200/C130 AIRCRAFT EXITING VIA TWY W1</b> After landing, B757-200/C130 aircraft exiting TWY W1 shall stop when its nose is at the information marking "B757/C130 HOLD FOR TOW" on TWY W1. The aircraft shall be on tow starting from this point onwards until they park inside the aircraft stands.</p> <p><b>FOR LANDED B757-200/C130 AIRCRAFT EXITING VIA TWY W2</b> After landing, B757-200/C130 aircraft exiting TWY W2 shall stop when its nose is at the information marking "B757/C130 HOLD FOR TOW" on TWY W2. The aircraft shall be on tow starting from this point onwards until they park inside the aircraft stands.</p> <p><b>FOR LANDED B757-200/C130 AIRCRAFT EXITING VIA TWY W3</b> After landing, B757-200/C130 aircraft exiting TWY W3 shall stop when its nose is at the information marking "B757/C130 HOLD FOR TOW" on TWY W3. The aircraft shall be on tow starting from this point onwards until they park inside the aircraft stands.</p>	<p>1) Tow approved to intermediate holding position on TWY WP short of TWY W1 to face North; or</p> <p>2) Tow approved to intermediate holding position on TWY WP short of TWY W3 to face South</p> <p>Not applicable</p> <p>Not applicable</p> <p>Not applicable</p>
<b>D50 /D51/ D52/D53/ D54</b>	<p>The tow crew shall request from Seletar Ground (vehicular) on 122.9MHz for pushback approval. Upon receiving the approval, the aircraft shall be pushed back onto TWY EN to face South until its nose wheel is at the intersection of the aircraft stand pushback line and TWY EN centreline. The aircraft shall then be towed from there.</p>	<p>Pushback approved to face South</p>

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





### PROCEDURES FOR PUSHBACK OF AIRCRAFT FROM AIRCRAFT STANDS D1/D2 AND TOW FORWARD TO TWY WP POSITION 2 TO FACE SOUTH



## WSSL AD 2.10 AERODROME OBSTACLES

IN APPROACH / TKOF AREAS			IN CIRCLING AREA AND AT AD	
<i>RWY/Area affected</i>	<i>Obstacle type Elevation Markings/LGT</i>	<i>Coordinates</i>	<i>Obstacle type Elevation Markings/LGT</i>	<i>Coordinates</i>
a	b	c	a	b
RWY 03 TKOF RWY 21 APCH	1) Mast HGT ranging from 98ft AMSL and above in shipping channel	Approximately 1525m from THR RWY 21	1) Power station chimney 407ft AMSL	012656.8N1035251.7E
	2) Steel structure 300ft AMSL	012709.78N1035318.74E	2) Radio masts 237ft AMSL	within 500m radius of 012337N1035144E
	3) Chimney 276ft AMSL	012700.18N1035321.93E	3) Radio mast 217ft AMSL	012258.8N1035113.8E
	4) Chimney 273ft AMSL	012651.81N1035330.23E	4) Surface Wind Direction Sleeves	located at the northern and southern ends of RWY.
	5) Chimney 286ft AMSL	012646.99N1035331.46E	5) Radio masts 232ft AMSL	within 100m radius of 012454N1035259E
	6) Mobile cranes 330ft AMSL	within area bounded by 012627.24N1035313.00E 012607.79N1035333.95E 012614.23N1035337.07E 012623.93N1035316.02E	6) Radar tower 177ft AMSL marked/LGTD	012537.79N1035306.74E (reclaimed land north of RWY)
	7) Silo, 342 ft AMSL, mark and lighted	012659.1N1035325.3E	7) Mobile cranes 420ft AMSL	within area bounded by 012711.78N1035223.74E 012729.78N1035223.74E 012729.78N1035247.74E 012656.78N1035247.74E

Obstacles in the approach / TKOF areas, circling area and at the aerodrome are shown on the AOC and VAC

## WSSL AD 2.11 METEOROLOGICAL INFORMATION PROVIDED

1	<i>Associated MET Office</i>	Seletar
2	<i>Hours of service</i>	H24
3	<i>Office responsible for TAF preparation, Periods of validity</i>	Singapore Changi, 30 hours
4	<i>Type of landing forecast, Interval of issuance</i>	METAR, SPECI between 2100-1500 and 1500-2100 (on request). AD warning of adverse weather (H24)
5	<i>Briefing/consultation provided</i>	Nil
6	<i>Flight documentation, Language(s) used</i>	Tabular forms, English
7	<i>Charts/other information available for briefing or consultation</i>	Nil
8	<i>Supplementary equipment available for providing information</i>	MDWR (Met Doppler Weather Radar) Maintenance Period: Second WED of every month between 0200-0900. In case of bad weather, THU following the second WED between 0200-0900.
9	<i>ATS units provided with information</i>	Nil
10	<i>Additional information</i>	TEL: 64815978 (MET Office)

Type of Aid and Variation	Ident	Frequency	Opr Hr	Coordinates	DME Elevation/Remarks
1	2	3	4	5	6
SELETAR NDB	SEL	220 KHz	H24	012448.50N 1035210.16E	BRG 152° DIST 0.44km from ARP Seletar. Coverage 50NM. EM: A0/A2

## WSSL AD 2.20 LOCAL TRAFFIC REGULATIONS

### 1 LOCAL FLYING RESTRICTIONS:

- 1.1 Fixed-wing aircraft operations including circuit flying and training operations are restricted to the west of Seletar runway. Helicopter operations are confined to the west of Seletar runway between sunset and sunrise, subject to the restrictions in paragraph 1.3 below.
- 1.2 Circuit Heights:  
Light aircraft 800ft (west of Seletar runway only);  
Other aircraft 1,000ft - 1,500ft (west of Seletar runway only);  
Helicopter-only area east of runway up to 600ft AGL
- 1.3 Circuit Flying and Training Operations are not permitted between 1400-2300 daily.
- 1.4 Pilots are required to keep clear of PAYA LEBAR CTR and SEMBAWANG ATZ.

### 2 TEST/TRAINING FLIGHTS

- 2.1 Flight notification shall be given prior to departure. Flight notification by means of RTF should be avoided.
- 2.2 For circuits and landings or flights to Light Aircraft Training Areas A, B and C, locally based operators shall submit details of their flight by electronic mail using the Seletar Test / Training Form which can be retrieved from webpage:  
<https://fpl-1.caasaim.gov.sg>
- ← 2.3 For test/currency maintenance flight in the fixed-wing circuit, the operator shall contact Seletar Tower Manager, giving at least 2 days' advance notice from the date of flight. The Tower Manager will then liaise with the host slot-time operator during which the test/currency maintenance flight is to be conducted. The advance notice will enable the host slot-time operator to adjust its training programme to accommodate the flight.
- 2.4 Flight details should contain the following information:
- a. Aircraft identification;
  - b. Name and contact number of pilot;
  - c. Number of persons on board;
  - d. ETD;
  - e. Flight duration;
  - f. Total endurance;
  - g. Area of flight (Light Aircraft Training Areas A, B or C)
- 2.5 For flights other than those classified in para 2.2 and 2.3 above, a flight plan shall be filed.
- 2.6 Light aircraft engaged in flying training shall maintain VHF communication.
- 2.7 Light aircraft flying on airways shall, in addition to radio communication apparatus, be equipped with a radio compass.
- 2.8 All fixed wing aircraft are to use the runway for take-off and landing. After landing, the pilot-in-command shall vacate the runway as soon as possible via TWY W1, W2 or W3, or in accordance with instructions from Aerodrome Control.
- 2.9 Fixed-wing circuit patterns are left hand for RWY 03 and right hand for RWY 21 (arrival and departure).
- 2.10 All light aircraft training flights shall not descend below 200ft on Seletar QNH when on final approach to land or for a touch-and-go landing unless a landing/touch-and-go clearance has been obtained from ATC. If no such

clearance has been obtained from ATC by 200ft the aircraft shall break-off its approach and carry out a go-around procedure.

### 3 **WRONG APPROACHES AND LANDINGS OF AIRCRAFT BOUND FOR SELETAR AERODROME AND SEMBAWANG MILITARY AERODROME**

#### 3.1 **INTRODUCTION**

3.1.1 The attention of all pilots is drawn to the existence of RSAF Sembawang Aerodrome, 3NM to the west of Seletar Aerodrome. The runway at Sembawang is orientated in almost the same direction as the runway at Seletar Aerodrome i.e. 03/21 for Seletar Aerodrome and 05/23 for Sembawang. Due to the close proximity of these two runways, pilots are cautioned against mistaking Sembawang Aerodrome for Seletar Aerodrome and thus making an inadvertent visual landing or approach to land at Sembawang.

3.1.2 Erroneous approaches or landings usually occurred in marginal weather conditions. In almost every instance, the prevailing weather at the time of the incident contributed towards a hasty and erroneous identification of the correct aerodrome.

3.1.3 There is intensive local flying at both aerodromes during the day and night. As pilot training is the major activity at both aerodromes, the risk of collision is very great if a wrong approach or landing is made at either of the two aerodromes.

#### 3.2 **POINTS TO BEAR IN MIND WHEN APPROACHING SELETAR AD OR SEMBAWANG AD**

3.2.1 The following points are highlighted to serve as a guide to assist pilots in identifying Seletar AD or Sembawang AD and should be remembered and followed:

- a. The runways at Seletar and Sembawang are almost identically aligned. Extra vigilance, therefore, is required when approaching either aerodrome, or when commencing an approach to land.
- b. Make full use of available navigational and landing aids, and positively identify each aid used.
- c. Adhere strictly to the joining instructions issued by ATC.

#### 3.3 **AERODROME CHARACTERISTICS OF SELETAR AND SEMBAWANG AERODROMES**

Aeronautical Service	Seletar AD	Sembawang AD	Significant Differences and Remarks
RWY Designation	03/21	05/23	Exercise caution due to almost similar RWY alignment
Location	Adjacent to the Straits of Johor on the eastern bank of Seletar River. Seletar AD is situated APRX 3NM NW of Paya Lebar AP.	APRX 3NM west of Seletar AD and 3NM inland from the Straits of Johor	Seletar RWY commences almost from the edge of the shore. Also note that Sembawang AD is inland and not next to the sea.
RWY LGT	White/Amber RWY edge LGT	Nil	Sembawang AD has no RWY LGT
Approach LGT	Simple approach LGT available for RWY 03 approach, consisting of 4 rows of barettes and 1 crossbar (5th row). RWY 03 - white, elevated, uni-directional approach LGT and white, omni-directional CGL on top of elevated approach LGT. Approach LGT available for RWY 21 approach, consisting of 1 row of inset approach LGT (1st row) and 4 rows of barettes. RWY 21 - white, inset and elevated, uni-directional approach LGT and white, omni-directional CGL on top of elevated approach LGT. Simple touchdown zone LGT for both RWY 03 and RWY 21 approach consisting of 2 pairs of white, inset, uni-directional LGT	Nil	No visual approach slope indicator at Sembawang AD
IBN	Flashing Green 'SL'	Flashing R 'AG' EV 20 SEC HN and IMC	Nil
ABN	ALTN Flashing W G EV 2.5 SEC	Nil	Sembawang AD has no ABN

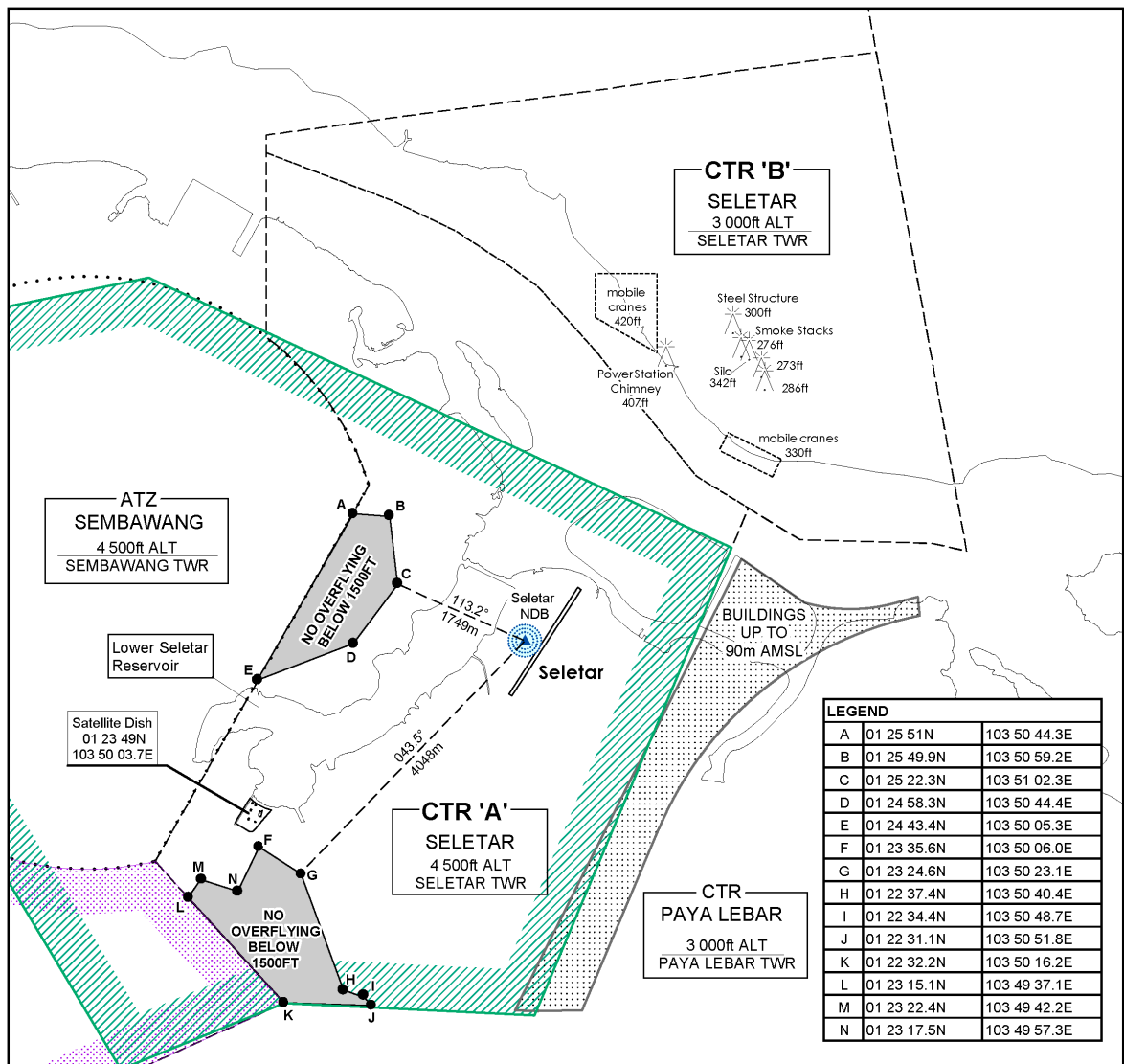
<b>Aeronautical Service</b>	<b>Seletar AD</b>	<b>Sembawang AD</b>	<b>Significant Differences and Remarks</b>
Parking Apron	Relatively large aircraft parking apron to the west of RWY, connected to the RWY by three taxiways	Small aircraft parking apron	Differences in size and location of the parking apron

## WSSL 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 Aircraft are restricted from overflying the built-up residential areas around Seletar Airport that are bounded by the following points, at any altitude below 1,500ft (see Charts AD-2-WSSL-VAC-1, AD-2-WSSL-VAC-2, AD-2-WSSL-VAC-3 AND AD-2-WSSL-VAC-4):

<b>POINT</b>	<b>COORDINATES</b>
A	012551.0N 1035044.3E
B	012549.9N 1035059.2E
C	012522.3N 1035102.3E
D	012458.3N 1035044.4E
E	012443.4N 1035005.3E
F	012335.6N 1035006.0E
G	012324.6N 1035023.1E
H	012237.4N 1035040.4E
I	012234.4N 1035048.7E
J	012231.1N 1035051.8E
K	012232.2N 1035016.2E
L	012315.1N 1034937.1E
M	012322.4N 1034942.2E
N	012317.5N 1034957.3E

1.3 The map below shows the location of the satellite dishes as well as the overflight restriction areas west and south of Seletar Control Zone.



1.4 Aircraft types which are unable to safely manoeuvre clear of the built-up residential areas are not allowed to operate at Seletar Airport. As a visual reference, pilots may wish to use the satellite dish located south of 012349.0N 1035003.7E (Lower Seletar Reservoir) as a guide when making approaches for Runway 03.

1.5 Freighter flights are not permitted between 1400-2300.

1.6 No engine run up shall be permitted between 1400-2300.

## WSSL AD 2.22 FLIGHT PROCEDURES

### 1 PROCEDURES FOR ARRIVALS INTO SELETAR AERODROME

#### 1.1 Introduction

1.1.1 Aircraft on VFR flight plan, routing via Tebrau City Mall (013259N1034748E) to Seletar shall follow the joining procedures as described in paragraph 1.2 and illustrated in charts AD-2-WSSL-VAC-1, AD-2-WSSL-VAC-2 and AD-2-WSSL-VFR-1.

1.1.2 Aircraft returning from Light Aircraft Training Areas shall follow the joining procedures as described in paragraph 1.3 and illustrated in charts AD-2-WSSL-VAC-1 and AD-2-WSSL-VAC-2.

1.1.3 Aircraft on IFR flight plan, routing via JB or KK to Seletar shall be vectored under radar for a visual approach. Paya Lebar Approach shall provide the radar service. When Paya Lebar Approach is closed, Singapore Approach shall provide the service. Unless authorised by ATC, pilots shall follow the joining procedures as described in

- 
- 1.7.3 At night ATC shall not permit landing on RWY 21 when vessels of mast height above 30m are reported.
- 1.7.4 Aircraft making approaches into Seletar are required to keep clear of Sembawang ATZ.
- 1.7.5 Aircraft are restricted from overflying built-up residential areas around Seletar Airport (charts AD-2-WSSL-VAC-1 to AD-2-WSSL-VAC-4 refer) at an altitude of below 1,500ft. Aircraft types which are unable to safely manoeuvre clear of the built-up residential areas are not allowed to operate at Seletar Airport.

## **2 DEPARTURES FROM SELETAR AERODROME**

- 2.1 Aircraft departing Seletar on RWY 21 are required to keep clear of Sembawang ATZ.
- 2.2 The pilot-in-command or the operator of IFR flight operating out of Seletar is required to file via KK under Item 15 of the flight plan.

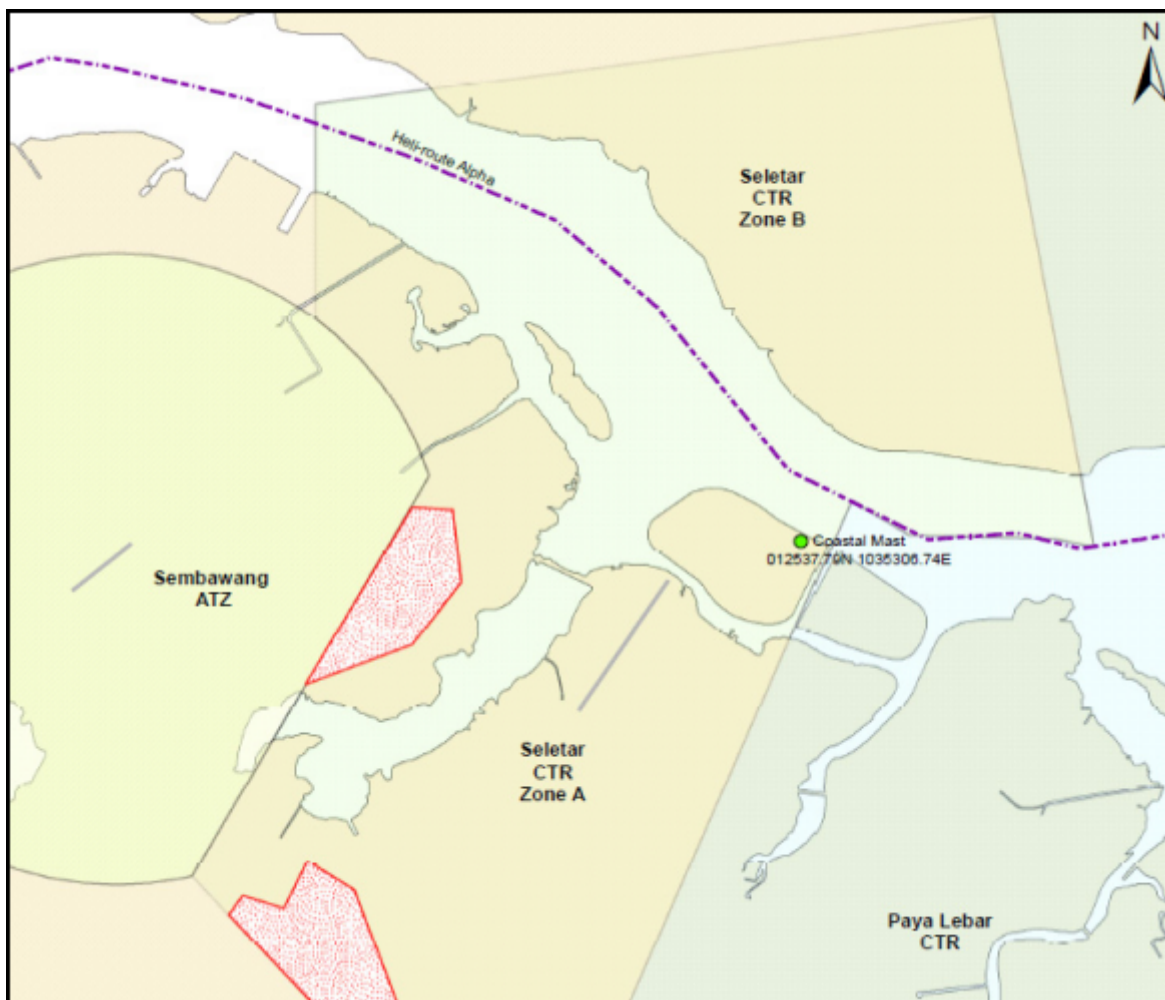
## WSSL AD 2.23 ADDITIONAL INFORMATION

### ← 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 Seletar Airport includes the following:
  - Cattle egrets (weighing approximately 300g each)
  - Brahminy kites (weighing approximately 600g each)
- 1.2 There could be an increase in bird activities during the usual migratory months of September to April. During this period, migratory birds may use the airport as their feeding ground.
- 1.3 Handheld laser device, long range acoustic device and alternating amplified bird cries of distress are used for bird dispersal within Seletar Airport.

### 2 HELICOPTER CROSSING SELETAR NORTHERN EXTENDED CENTRELINE

- 2.1 Due to flying activities in Seletar Control Zone, all helicopters flying on Heli-route Alpha and intending to cross the northern extended centreline of Seletar Aerodrome shall obtain a positive clearance from Seletar Tower on 118.45MHz prior to crossing (see chart below).
- 2.2 For eastbound crossing, all helicopters are to hold over the western tip of Seletar Island until a clearance has been issued by Seletar Tower.
- 2.3 For westbound crossing, all helicopters are to hold on Heli-route Alpha abeam the coastal mast until a clearance has been issued by Seletar Tower.
- 2.4 The holding altitude is 200 feet or otherwise instructed by ATC.





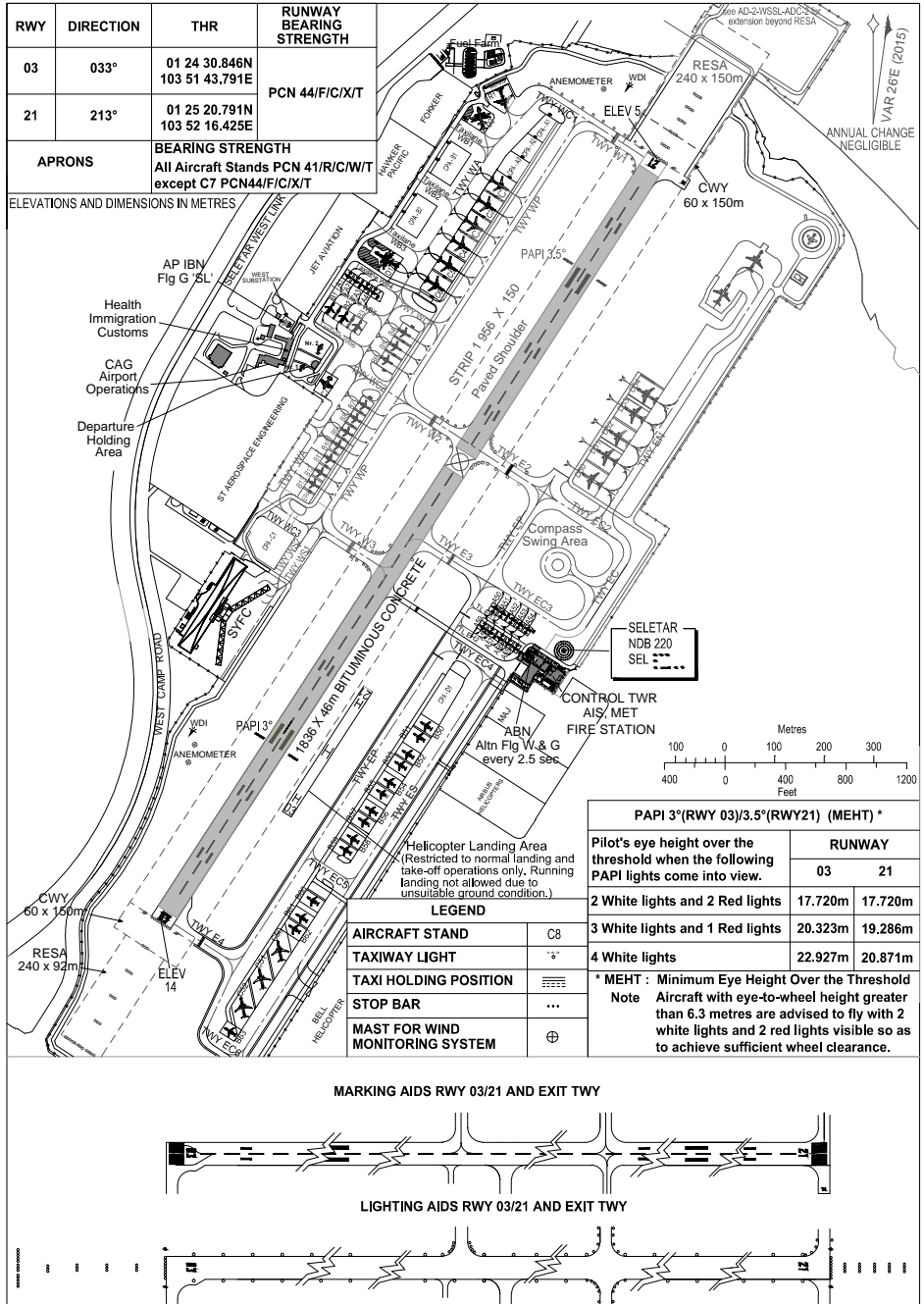
AERODROME CHART - ICAO

01° 25' 01.04"N  
103° 52' 03.52"E

ELEV 14m

TWR 118.45  
121.6

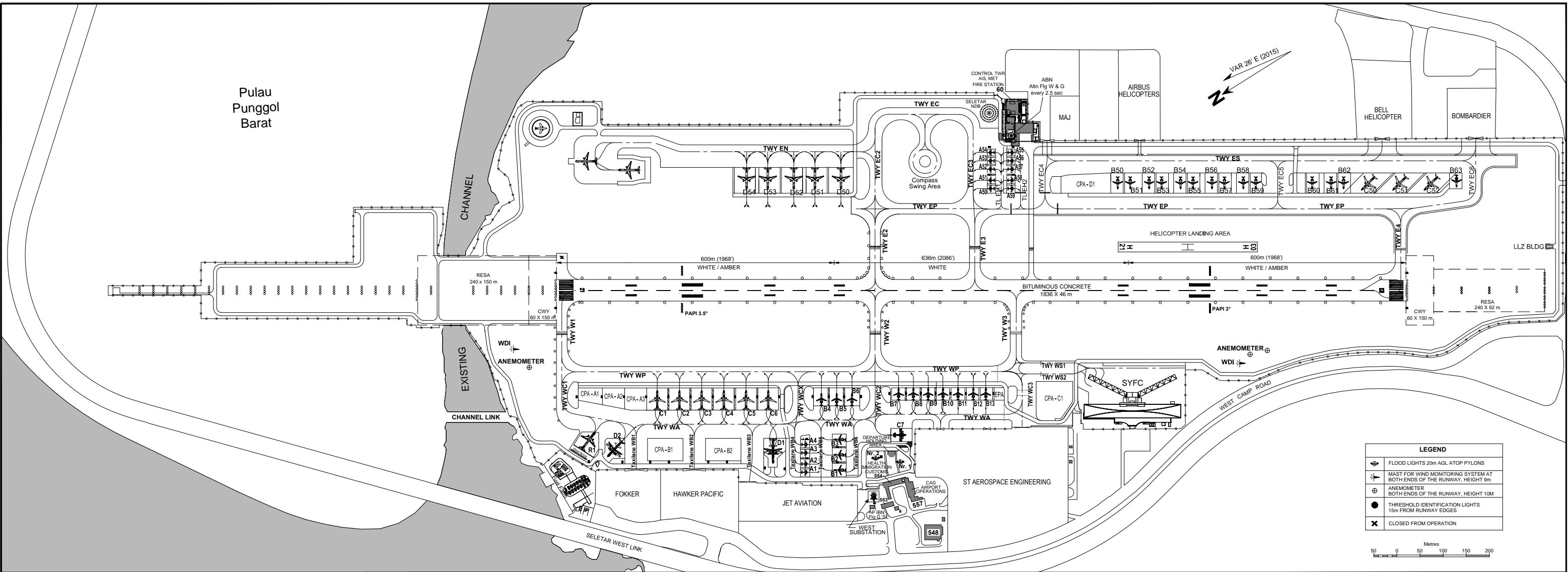
SINGAPORE/SELETAR



## INS COORDINATES FOR AIRCRAFT STANDS

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

### SELETAR AERODROME LAYOUT OF SIGNIFICANT AERODROME BUILDINGS AND APRON FACILITIES



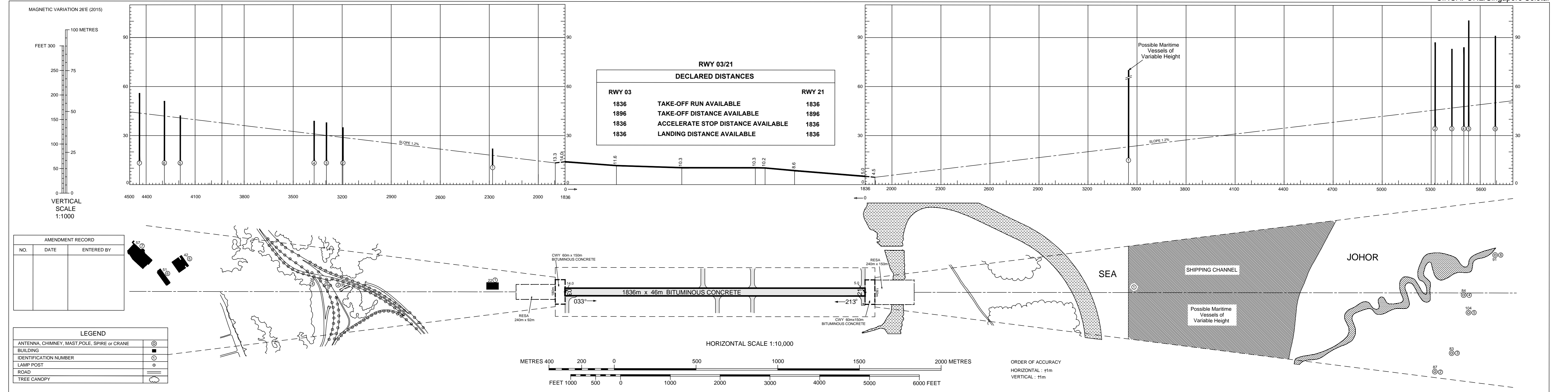
CHANGES : New Anemometer added at the southern end of Runway.

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DIMENSIONS AND ELEVATIONS IN METRES

**AERODROME OBSTACLE CHART - ICAO  
TYPE A (OPERATING LIMITATIONS)**

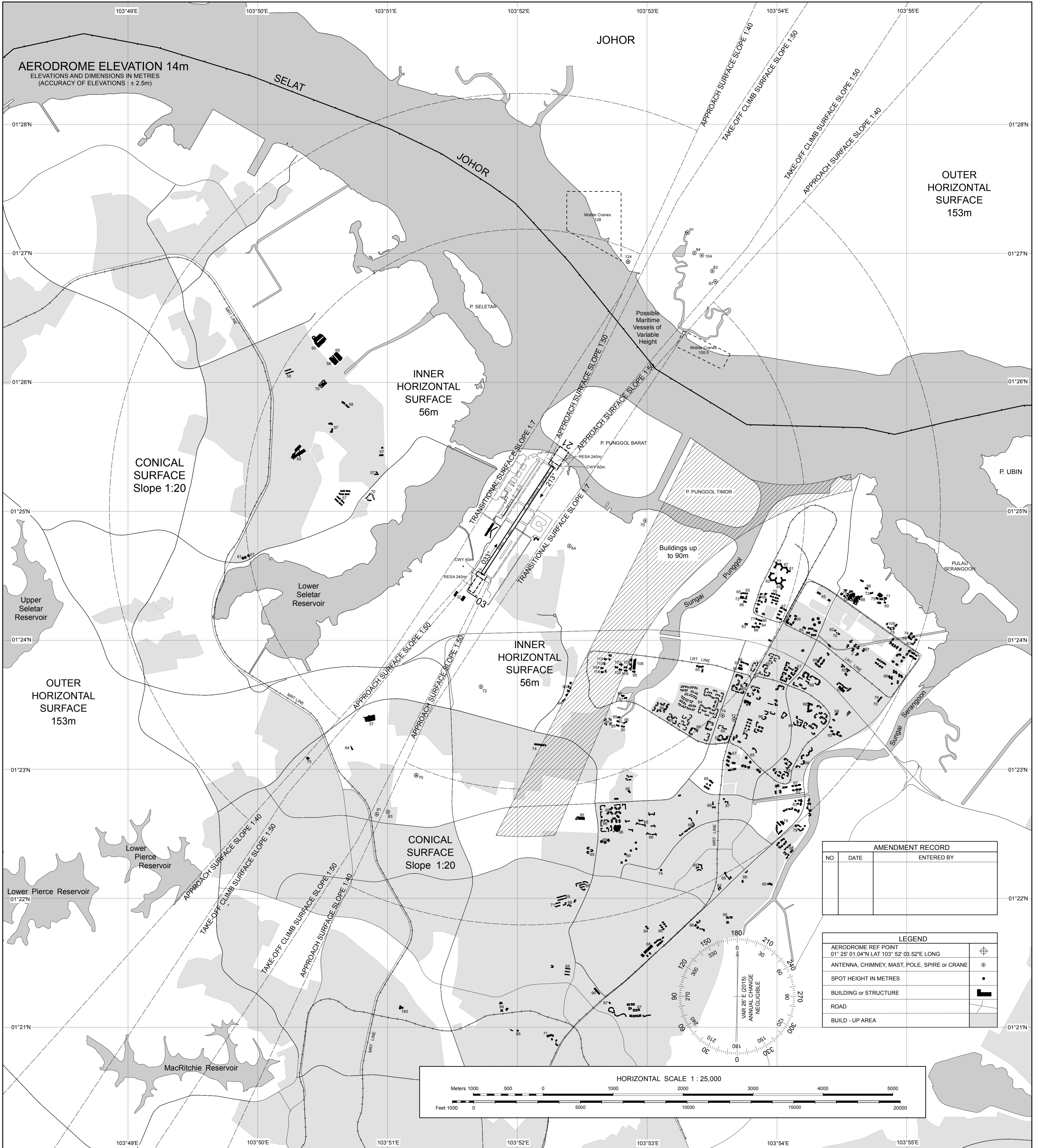
SINGAPORE/Singapore Seletar



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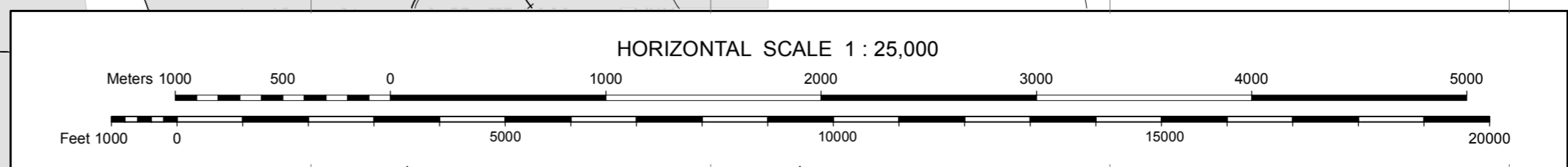
**AERODROME OBSTACLE CHART - ICAO  
TYPE B**

SINGAPORE / Seletar



AMENDMENT RECORD		
NO	DATE	ENTERED BY

LEGEND	
AERODROME REF POINT 01° 25' 01.04"N LAT 103° 52' 03.52"E LONG	
ANTENNA, CHIMNEY, MAST, POLE, SPIRE or CRANE	
SPOT HEIGHT IN METRES	
BUILDING or STRUCTURE	
ROAD	
BUILD - UP AREA	



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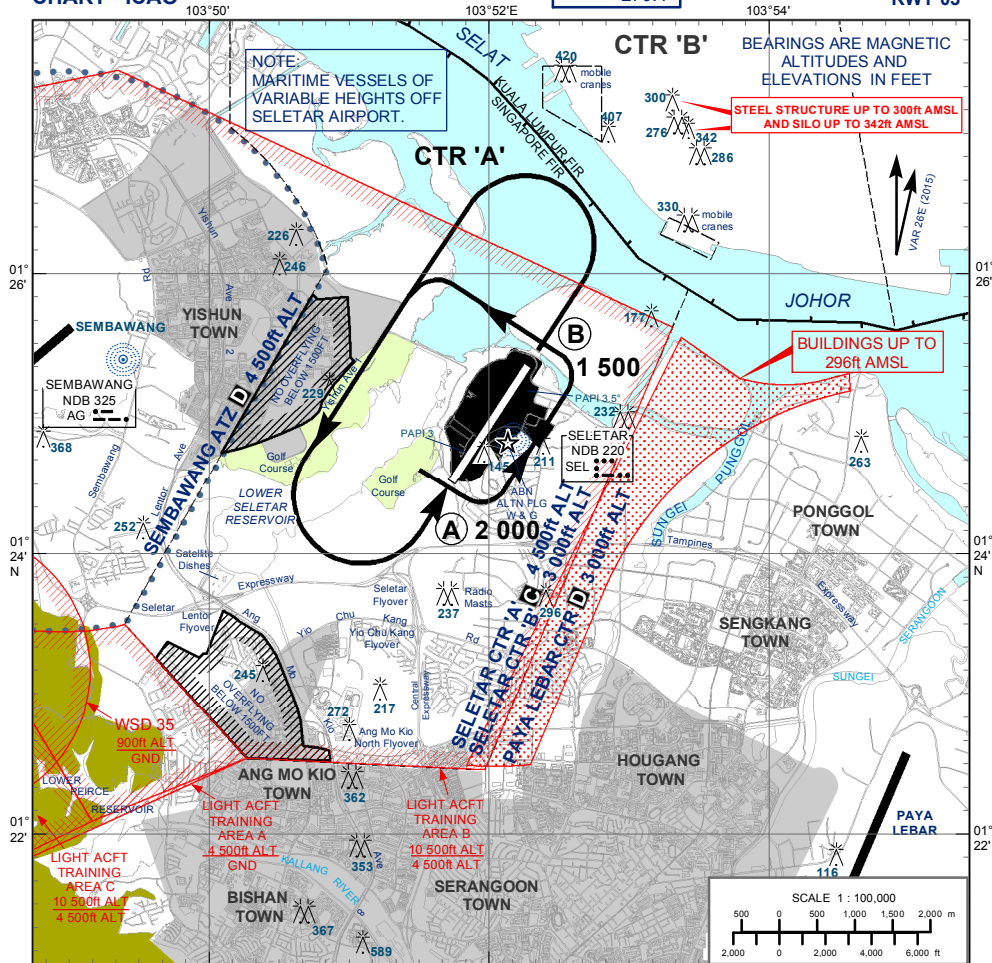
**VISUAL  
APPROACH  
CHART - ICAO**

AD ELEV 46 ft

APP 120.3  
TWR 118.45  
270.4

**SINGAPORE/SELETAR**

**RWY 03**



**JOINING PROCEDURE - RWY 03**

- 1) Join overhead at 2 000ft ALT or as cleared by ATC and at a speed of not more than 170kt.
- 2) When over Position A, join the circuit crossing the upwind end of the runway (Position B) at 1 500ft ALT or above or at the altitude cleared by ATC.
- 3) Joining aircraft shall give way to circuit traffic already on downwind.

**CAUTION**

- a) Pilots are required to keep clear of Sembawang ATZ.
- b) Pilots should not fly to the east of the runway. This is to keep clear of tall buildings up to 296ft AMSL to the east of Seletar CTR. (See area shaded in red).



Built-up residential areas - No overflying below 1 500ft. Aircraft types which are unable to safely manoeuvre clear of the restricted areas are not allowed to operate at Seletar Airport.

PAPI 3°	RUNWAY	
	03	21
2 white lights and 2 red lights (MEHT)*	15.2m	15.3m
3 white lights and 1 red light	17.1m	16.6m
4 white lights	18.8m	18.0m

\*MEHT : Minimum Eye Height Over the Threshold.

Note : Aircraft with eye-to-wheel height greater than 6.3 metres are advised to fly with 2 white and 2 red lights visible so as to achieve sufficient wheel clearance.

Note:

- 1) Pilots are to be advised of the steel structure 300ft AMSL and the Silo 342ft AMSL 2nm north of the airfield.
- 2) Pilots are required to keep their turns within Seletar Control Zone.
- 3) Pilots are required to keep clear of Sembawang CTR and Paya Lebar CTR.

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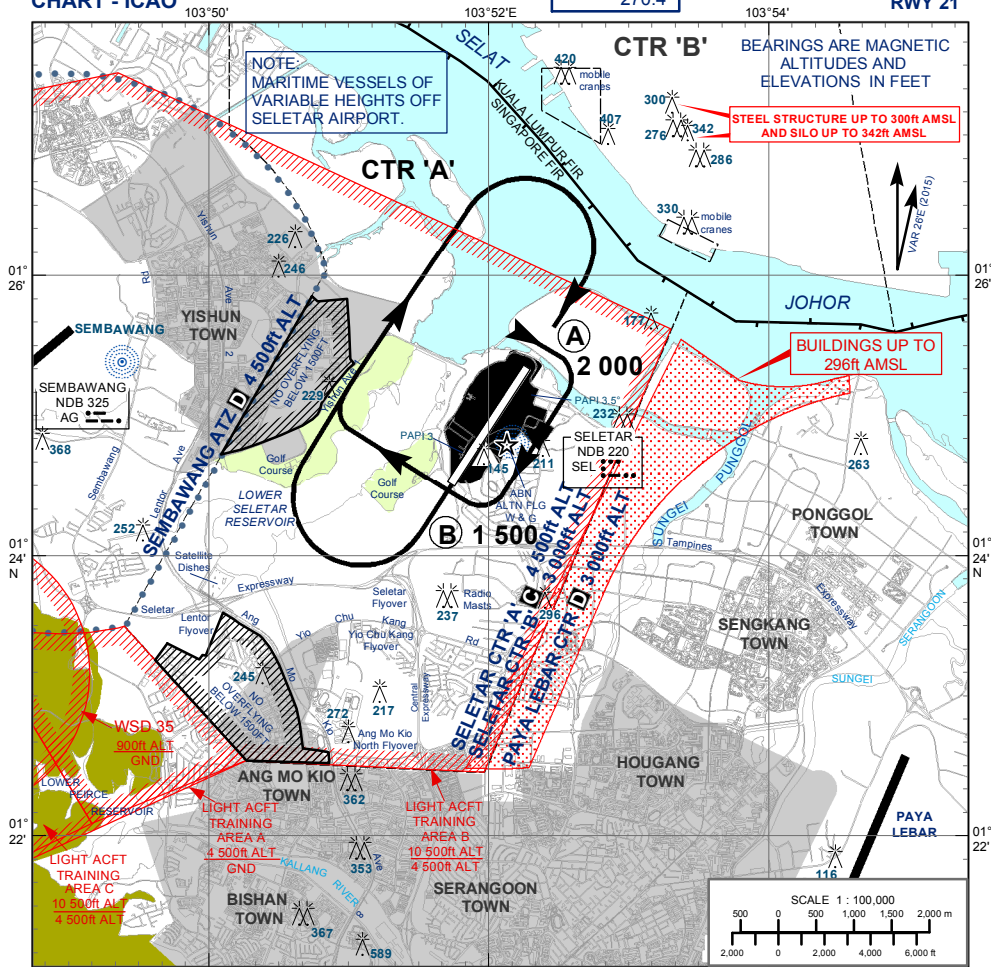
**VISUAL  
APPROACH  
CHART - ICAO**

AD ELEV 46 ft

APP	120.3
TWR	118.45
	270.4

**SINGAPORE/SELETAR**

**RWY 21**



**JOINING PROCEDURE - RWY 21**

- 1) Join overhead at 2 000ft ALT or as cleared by ATC and at a speed of not more than 170kt.
- 2) When over Position A, join the circuit crossing the upwind end of the runway (Position B) at 1 500ft ALT or above or at the altitude cleared by ATC.
- 3) Joining aircraft shall give way to circuit traffic already on downwind.

**CAUTION**

- a) Pilots are required to keep clear of Sembawang ATZ.
- b) Pilots should not fly to the east of the runway. This is to keep clear of tall buildings up to 296ft AMSL to the east of Seletar CTR. (See area shaded in red).



Built-up residential areas - No overflying below 1 500ft. Aircraft types which are unable to safely manoeuvre clear of the restricted areas are not allowed to operate at Seletar Airport.

Pilot's eye height over the threshold when the following PAPI lights come into view	PAPI 3.5° RUNWAY	
	03	21
2 white lights and 2 red lights (MEHT)*	15.2m	15.3m
3 white lights and 1 red light	17.1m	16.6m
4 white lights	18.8m	18.0m

\*MEHT: Minimum Eye Height Over the Threshold.

Note : Aircraft with eye-to-wheel height greater than 6.3 metres are advised to fly with 2 white and 2 red lights visible so as to achieve sufficient wheel clearance.

- Note:
- 1) Pilots are to be advised of the steel structure 300ft AMSL and the Silo 342ft AMSL, 2nm north of the airfield.
  - 2) Pilots are required to keep their turns within Seletar Control Zone.
  - 3) Pilots are required to keep clear of Sembawang CTR and Paya Lebar CTR.

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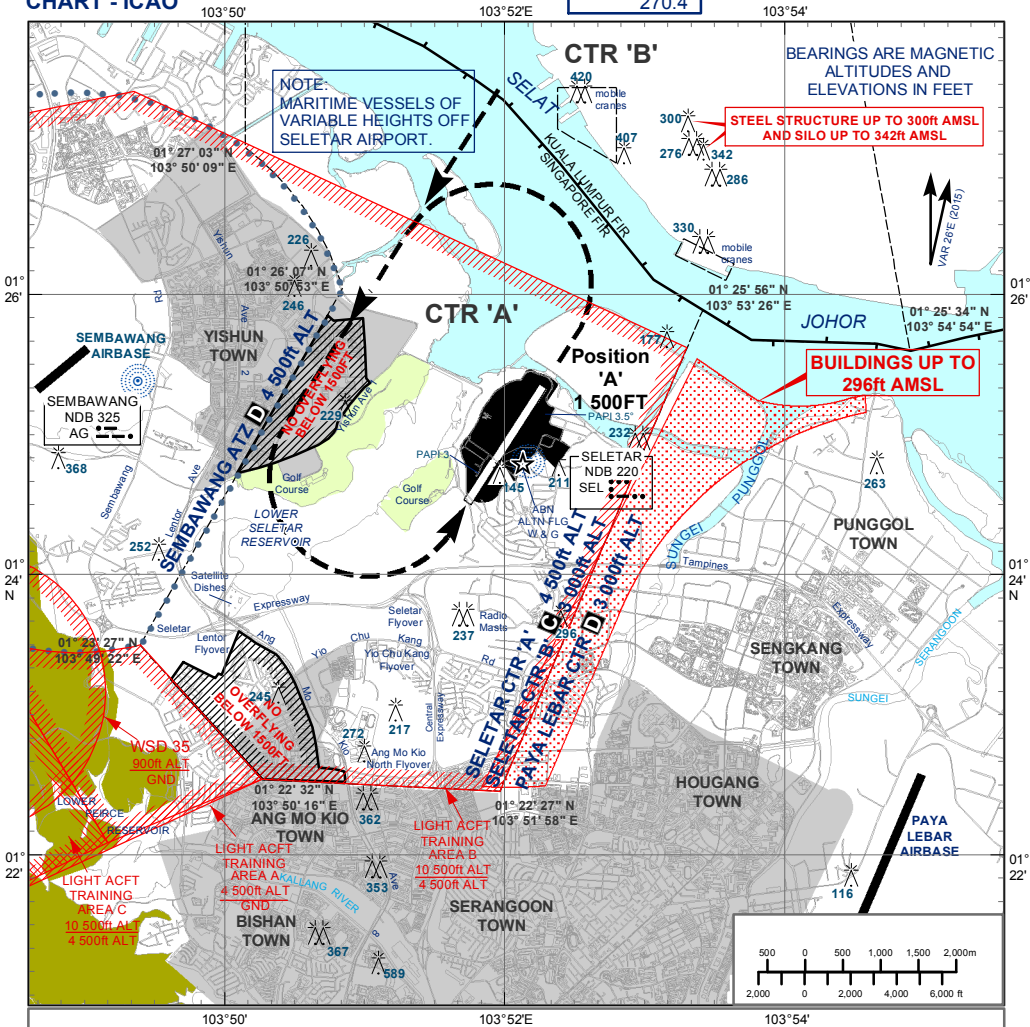
**VISUAL  
APPROACH  
CHART - ICAO**

AD ELEV 46 ft

APP	120.3
TWR	118.45
	270.4

**SINGAPORE/SELETAR**

**RWY 03**



**ADVISORY JOINING PROCEDURES FROM JB AND KK - RWY 03**

**Straight-in Approach**

- 1) Join downwind at 2 000ft at a speed of not more than 170kt.
- 2) When downwind, descend from 2 000ft to 2 000ft for a visual approach or as cleared by ATC. Pilots should have runway in sight.
- 3) Joining aircraft shall give way to circuit traffic already on downwind.

**Circling Approach**

- 1) Join downwind at 2 000ft at a speed of not more than 160kt.
- 2) When passing over position 'A', descend from 2 000ft to 1 500ft and turn left for downwind Runway 03. At downwind, descend for a visual approach or as cleared by ATC. Pilots should have runway in sight.
- 3) Joining aircraft shall give way to circuit traffic already on downwind.

**CAUTION**

- a) Pilots are required to keep clear of Sembawang ATZ and Paya Lebar CTR. Turns should therefore be kept within Seletar CTR.
- b) Pilots should not fly to the east of the runway. This is to keep clear of tall buildings up to 296ft AMSL there. Pilots should have all relevant obstructions in sight, including the steel structure 300ft AMSL and the Silo 342ft AMSL 2nm north of the airfield.
- c) Built-up residential areas - No overflying below 1 500ft. Aircraft types which are unable to safely manoeuvre clear of the restricted areas are not allowed to operate at Seletar Airport.

PAPI 3°	RUNWAY	
	03	21
Pilot's eye height over the threshold when the following PAPI lights come into view		
2 white lights and 2 red lights (MEHT)	15.2m	15.3m
3 white lights and 1 red light	17.1m	16.6m
4 white lights	18.8m	18.0m

\*MEHT: Minimum Eye Height Over the Threshold.

Note : Aircraft with eye-to-wheel height greater than 6.3 metres are advised to fly with 2 white and 2 red lights visible so as to achieve sufficient wheel clearance.

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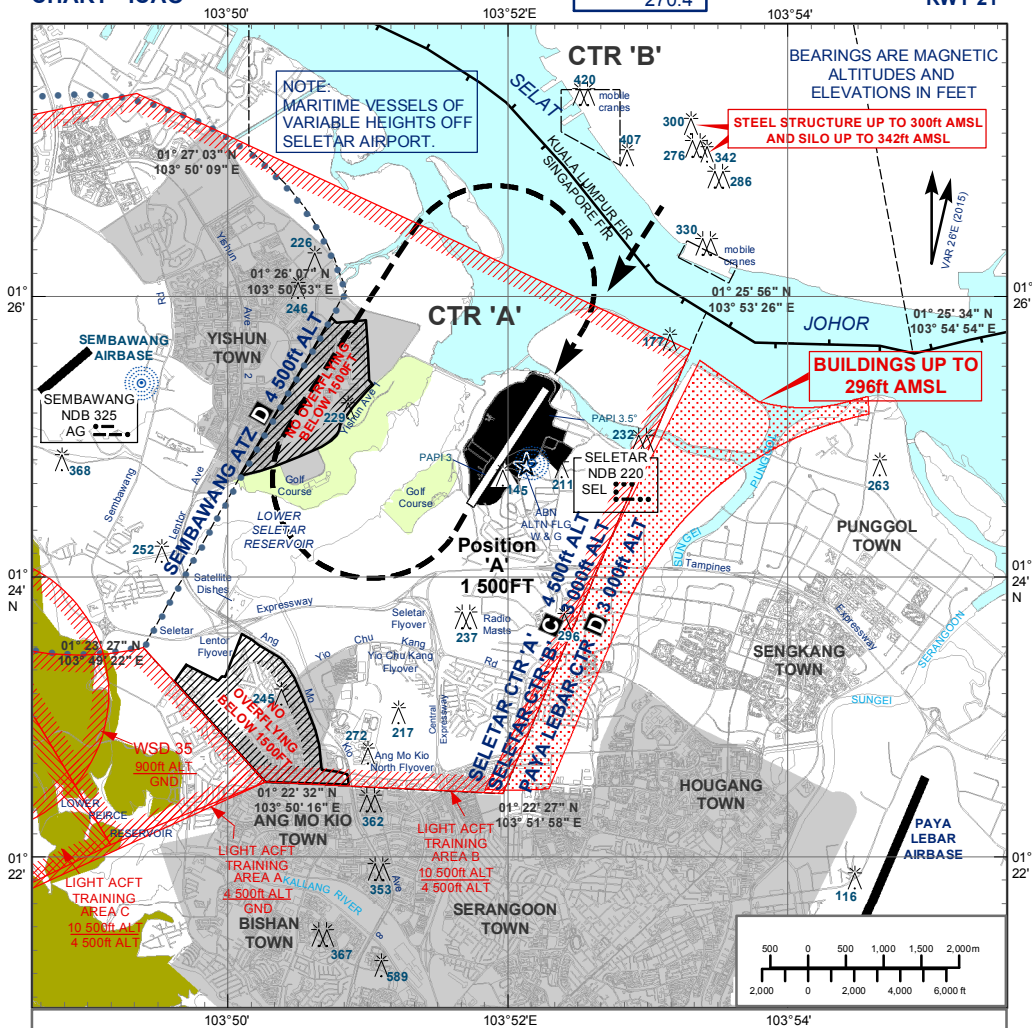
**VISUAL  
APPROACH  
CHART - ICAO**

AD ELEV 46 ft

APP 120.3  
TWR 118.45  
270.4

**SINGAPORE/SELETAR**

**RWY 21**



**ADVISORY JOINING PROCEDURES FROM JB AND KK - RWY 21**


**Straight-in Approach**

- 1) Join direct for a visual approach Runway 21, descending from 2 000ft at a speed of not more than 170kt, or as cleared by ATC. Pilots should have runway in sight.
- 2) Joining aircraft shall give way to circuit traffic already on downwind.

**Circling Approach**

- 1) Overfly the runway at 2 000ft at a speed of not more than 160kt.
- 2) When passing over position 'A', descend from 2 000ft to 1 500ft and turn right for downwind Runway 21. At downwind, descend for a visual approach or as cleared by ATC. Pilots should have the runway in sight.
- 3) Joining aircraft shall give way to circuit traffic already on downwind.

**CAUTION**

- a) Pilots are required to keep clear of Sembawang ATZ and Paya Lebar CTR. Turns should therefore be kept within Seletar CTR.
- b) Pilots should not fly to the east of the runway. This is to keep clear of tall buildings up to 296ft AMSL there. Pilots should have all relevant obstructions in sight, including the steel structure 300ft AMSL and the Silo 342ft AMSL 2nm north of the airfield.
- c)  Built-up residential areas - No overflying below 1 500ft. Aircraft types which are unable to safely manoeuvre clear of the restricted areas are not allowed to operate at Seletar Airport.

Pilot's eye height over the threshold when the following PAPI lights come into view	PAPI 3.5° RUNWAY	
	03	21
2 white lights and 2 red lights (MEHT)*	15.2m	15.3m
3 white lights and 1 red light	17.1m	16.6m
4 white lights	18.8m	18.0m

\*MEHT : Minimum Eye Height Over the Threshold

Note : Aircraft with eye-to-wheel height greater than 6.3 metres are advised to fly with 2 white and 2 red lights visible so as to achieve sufficient wheel clearance.

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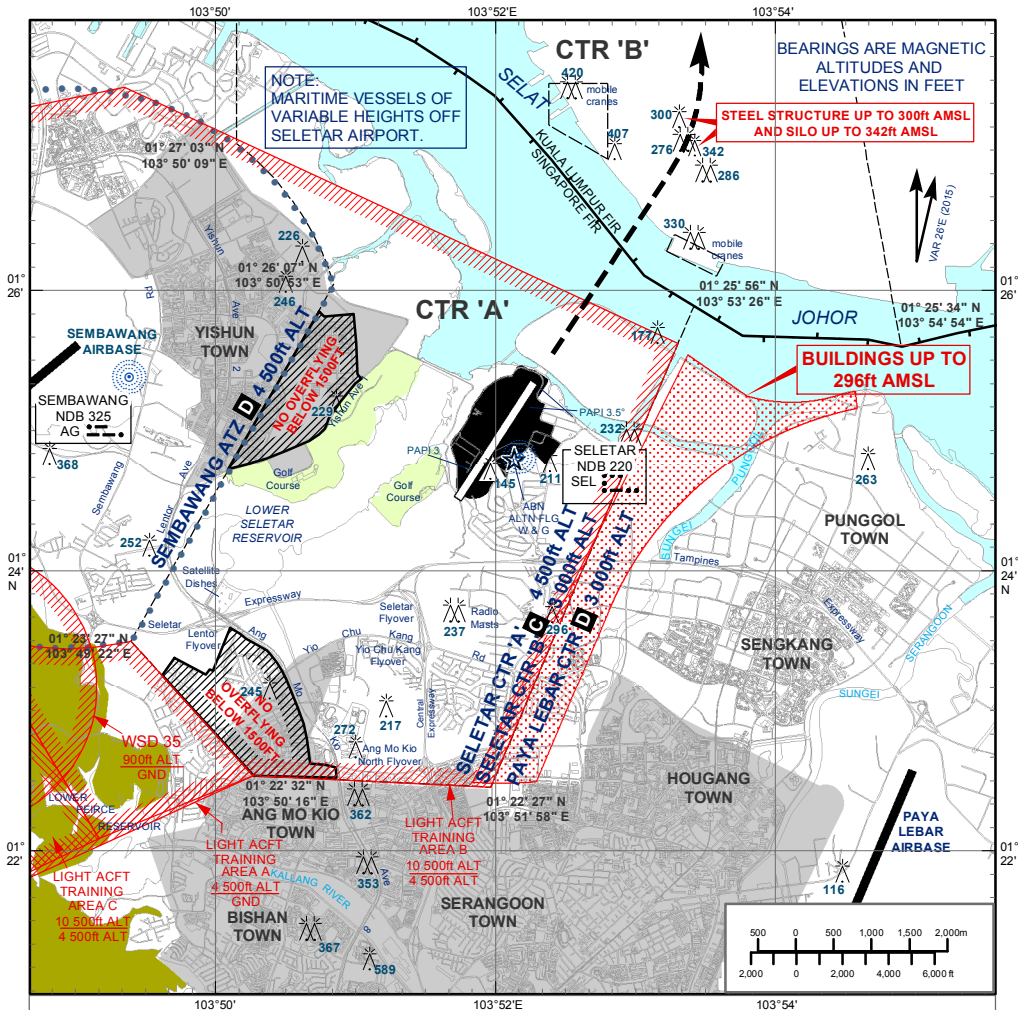
**VISUAL  
DEPARTURE  
CHART**

AD ELEV 46 ft

TWR 118.45  
270.4

SINGAPORE/SELETAR


RWY 03



**ADVISORY DEPARTURE PROCEDURE FOR RUNWAY 03**

On departure, pilots of both fixed-wing and rotary-wing aircraft should climb ahead to an altitude cleared by ATC. Pilots can expect a radar heading to leave Seletar CTR. Where a radar heading is not given, pilots shall navigate to the next waypoint in accordance with their clearance.

**CAUTION**

- a) Pilots are required to keep clear of Sembawang ATZ and Paya Lebar CTR. Turns should therefore be kept within Seletar CTR.
- b) Pilots should not fly to the east of the runway. This is to keep clear of tall buildings up to 296ft AMSL there. Pilots should have all relevant obstructions in sight, including the steel structure 300ft AMSL and the Silo 342ft AMSL 2nm north of the airfield.
- c)  Built-up residential areas - No overflying below 1 500ft. Aircraft types which are unable to safely manoeuvre clear of the restricted areas are not allowed to operate at Seletar Airport.

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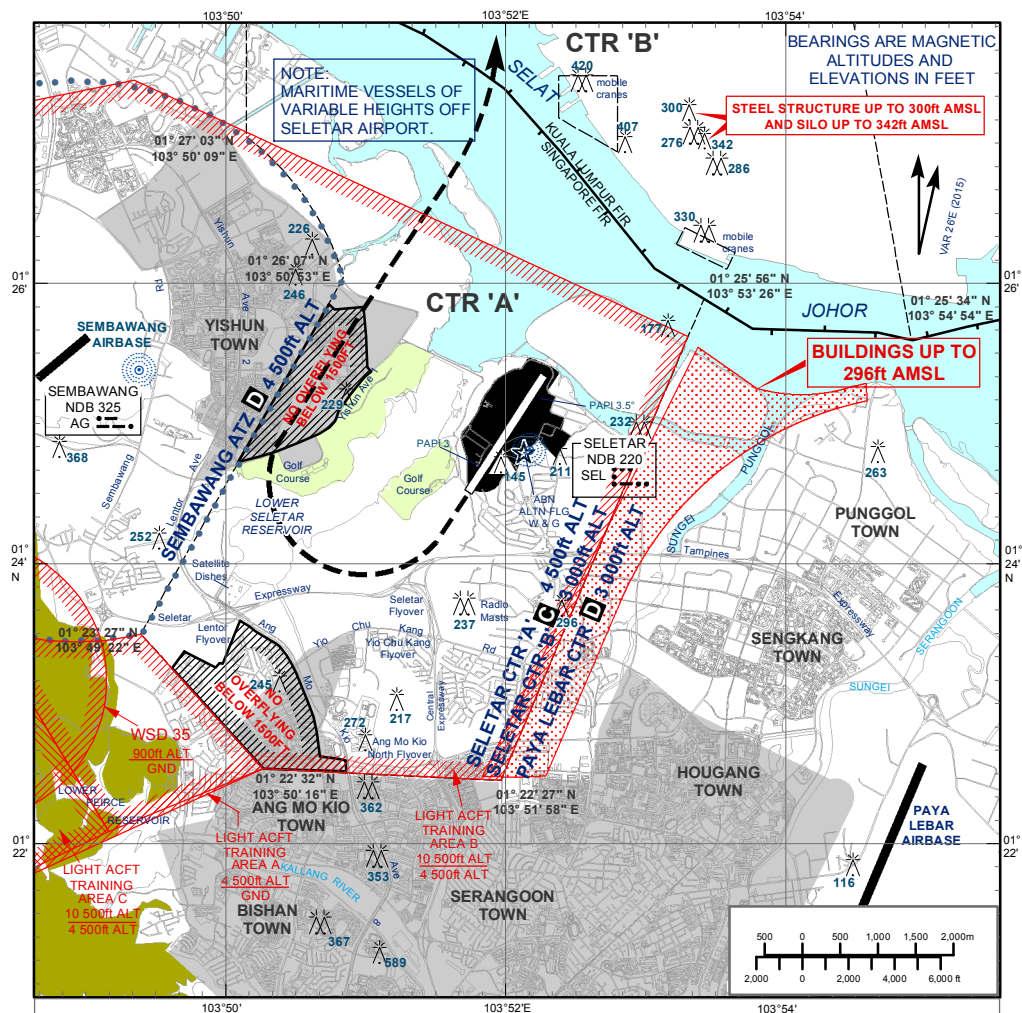
VISUAL  
DEPARTURE  
CHART

AD ELEV 46 ft

TWR 118.45  
270.4

SINGAPORE/SELETAR

RWY 21




## ADVISORY DEPARTURE PROCEDURES FOR RUNWAY 21

On departure, pilots can expect climb to an initial altitude cleared by ATC. Pilots of fixed-wing aircraft can expect to turn right to join the circuit pattern till end of downwind and then expect a radar heading to leave Seletar CTR. Where a radar heading is not given, pilots shall navigate to the next waypoint in accordance with their ATC clearance.

Pilots of rotary-wing aircraft can expect to turn left after departure to join the helicopter circuit pattern till end of downwind. Thereafter, they can expect further en-route clearance.

**CAUTION**

- Pilots are required to keep clear of Sembawang ATZ and Paya Lebar CTR. Turns should therefore be kept within Seletar CTR.
- Pilots should not fly to the east of the runway. This is to keep clear of tall buildings up to 296ft AMSL there. Pilots should have all relevant obstructions in sight, including the steel structure 300ft AMSL and the Silo 342ft AMSL 2nm north of the airfield.
-  Built-up residential areas - No overflying below 1 500ft. Aircraft types which are unable to safely manoeuvre clear of the restricted areas are not allowed to operate at Seletar Airport.

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**WSAP AD 2.14 APPROACH AND RUNWAY LIGHTING**

<i>RWY Designator</i>	<i>APCH LGT type LEN INTST</i>	<i>THR LGT colour WBAR</i>	<i>VASIS (MEHT) PAPI</i>	<i>TDZ LGT LEN</i>	<i>RWY Centre Line LGT LEN, spacing, colour, INTST</i>	<i>RWY edge LGT LEN, spacing colour, INTST</i>	<i>RWY END LGT colour WBAR</i>	<i>SWY LGT LEN colour</i>
1	2	3	4	5	6	7	8	9
02/20	Sequenced FLG LGT. Modified Calvert High INTST White LGT with brilliancy control.	Green	PAPI on 3° glide slope	-	Nil	White with Amber	Red	Red

**WSAP AD 2.15 OTHER LIGHTING, SECONDARY POWER SUPPLY**

<i>WDI/Taxiway/Stopway</i>	Lighted
IBN	012120.6N 1035410.0E; Flashing Red 'PL'; Operating hours HN and IMC

**WSAP AD 2.17 ATS AIRSPACE**

1	<i>Designation and Lateral Limits</i>	<b>PAYA LEBAR CTR</b> 011100N 1035134E 013300N 1040149E 013200N 1035344E 012534N 1035454E thence along international BDRY to 012544N 1035320E 012227N 1035158E 012232N 1035016E 012100N 1034654E 012025N 1034539E 011835N 1034459E thence southwards on 180° to 011100N 1034559E and eastwards to join up with 011100N 1035134E.
2	<i>Vertical Limits</i>	GND to 3000 FT ALT
3	<i>Airspace Classification</i>	D
4	<i>ATS Unit Call Sign, Language(s)</i>	PAYA LEBAR TOWER (Singapore APP outside the opr hours of PAYA LEBAR TOWER), English
5	<i>Transition Altitude</i>	11000 FT (3,350m)
6	<i>Remarks</i>	Northern Transit Corridor: RSAF military aircraft (with the exception of trainer aircraft) using the northern transit corridor will enter the airspace over Johor at or above 5,000ft. RSAF trainer aircraft using the northern corridor will enter the airspace over Johor at or above 2,000ft.

## WSAP AD 2.18 ATS COMMUNICATION FACILITIES

Service designation	Call sign	Frequency	Hours of operation	Remarks
APP	PAYA LEBAR APPROACH	119.9 MHz 298.0 MHz *255.8 MHz #127.7 MHz	BTN 2300-1100 SUN-MON to THU-FRI;  BTN 2300-0500 FRI-SAT; and  on SUN, Public holidays and outside the above	* for monitoring aircraft operating in Light Aircraft Training Areas.  # for monitoring aircraft operating in Light Aircraft Training Areas and Seletar outbound/inbound traffic.
TWR	PAYA LEBAR TOWER	118.05 MHz 263.1 MHz		Nil
GND	PAYA LEBAR GROUND	121.7 MHz 296.0 MHz		
PAR	PAYA LEBAR TALKDOWN	119.9 MHz †269.0 MHz ◆240.5 MHz	times PPR from RSAF HQ via Paya Lebar Operations.	† for Talkdown 1, ◆for Talkdown 2 Maint Period: BTN 0001-1100 First THU of EV month
SRE	PAYA LEBAR DIRECTOR	283.0 MHz		Maint Period: BTN 0001-1100 Second THU of EV month
Flight Information Service	SINGAPORE RADAR	119.1 MHz	H24	Nil
ACC	SINGAPORE RADAR	P123.7 MHz S127.3 MHz  P133.25 MHz S135.8 MHz  P134.4 MHz S128.1 MHz 255.4 MHz	H24	for AWY B469, G219, G334, R208, L625, L629, L635, L642, M751, M753, M758, M761, M763, M771, N884, N891, N892.  for AWY A457, A464, A576, B466, R325 (all northbound) and R469.  for AWY A464, A576, G579, (all southbound), B470, G220, N875 and in area in the immediate vicinity of Singapore.  Radar Maint Period: Monthly - EV third SAT BTN 1601-2359

## WSAP AD 2.19 RADIO NAVIGATION AND LANDING AIDS

Type of Aid and MAG Variation	IDENT	FREQ	OPR Hour	Position of transmitting Antenna Coordinates	DME transmitting Antenna Elevation / Remarks
TACAN	PLA	CH110X	BTN 2300-1100 from SUN-MON to THU-FRI, BTN 2300-0500 FRI-SAT; and on SUN, Public holiday and outside the above times PPR from RSAF HQ via Paya Lebar Operations.	012224.00N 1035451.00E	030° MAG 2.375km from ARP.  Maint Period: BTN 0001-0900 Second SAT of EV month  RWY 02 step-down fix revised to 4.4 DME at 1060ft.
PAPA UNIFORM DVOR/DME	PU	115.1 MHz CH98X	H24	012523.99N 1035559.74E	020° MAG 9km from THR RWY 02 Antenna Hgt: 190ft AMSL. Coverage 200NM. Maint Period: BTN 0200-0600 Third WED of EV month
SINJON DVOR/DME	SJ	113.5 MHz CH82X	H24	011319.28N 1035120.08E	201° MAG 14.5km from THR RWY 02 (Paya Lebar). Antenna HGT: 194ft AMSL Coverage 200NM Maint Period: BTN 0200-0600 Third THU of EV month
ILS LLZ RWY 02	IPN	109.3MHz	H24	012246.41N 1035503.64E	LOC 401m from THR RWY 20 along centreline of RWY. Course width 3 DEG. Maint Period: BTN 0001-0900 First SUN of EV month

<i>Type of Aid and MAG Variation</i>	<i>IDENT</i>	<i>FREQ</i>	<i>OPR Hour</i>	<i>Position of transmitting Antenna Coordinates</i>	<i>DME transmitting Antenna Elevation / Remarks</i>
ILS GP RWY 02	-	332.00MHz	H24	012050.42N 1035410.11E	GP angle 3 DEG.
ILS DME RWY 02	IPN	CH30X	H24	012050.42N 1035410.11E	DME co-located with GP
ILS LLZ RWY 20	IPS	111.5MHz	H24	012027.24N 1035404.48E	LOC 462m from THR RWY 02 along centreline of RWY. Course width 3 deg. Maint Period: BTN 0001-0900 Second SUN of EV month
ILS GP RWY 20	-	332.90MHz	H24	012227.29N 1035451.29E	GP angle 3 deg.
ILS DME RWY 20	IPS	CH52X	H24	012227.29N 1035451.29E	DME co-located with GP

## **WSAP AD 2.20 LOCAL TRAFFIC REGULATIONS - DESIGNATION OF PAYA LEBAR AIRPORT AS AN ALTERNATE AD FOR SINGAPORE CHANGI AIRPORT**

### **1 INTRODUCTION**

- 1.1 Paya Lebar Airport is designated as an alternate aerodrome to Singapore Changi Airport.
- 1.2 As Paya Lebar Airport is a joint civil/military aerodrome, its use as a planned alternate aerodrome for Singapore Changi Airport is subjected to certain restrictions and limitations. It also has limited ground, baggage and passenger handling facilities for civilian aircraft operations, such as passenger boarding bridges.

### **2 MANNING OF PAYA LEBAR AIRPORT**

- 2.1 The airport is open from 2300-1100 on SUN-MON to THU-FRI and 2300-0500 on FRI-SAT. It is closed on Sundays and Public Holidays. Outside the stipulated operating hours and during airport closure, Paya Lebar Airport will be opened at 30 minutes' notice to accept diversion flights into the aerodrome.
- 2.2 Airline operators are requested to inform the Airport Manager and the Duty Tower Controller or SATCC Watch Manager at Singapore Changi Airport as soon as it is known that their service will require the use of Paya Lebar Airport. Revised ETAs and/or ETDs are to be notified as soon as known.
- 2.3 The airport will hold off all departures and arrivals when the aerodrome visibility falls below 3km, or when the aerodrome prevailing cloud base is lower than 500ft. This is a safety consideration to avoid aircraft from carrying out a missed approach under an adverse weather condition. For maintenance/test flights scheduled to depart and arrive back to the airport, such departures may be held off when the aerodrome visibility falls below 6km, or when the aerodrome prevailing cloud base is lower than 1,000ft.

### **3 OPERATIONAL SERVICES**

- 3.1 Air-ground-air communications maintained by Paya Lebar Airport for aerodrome/approach control service are listed in page WSAP AD 2-7.

### **4 PASSENGER CLEARANCE**

- 4.1 All Customs, Health and Immigration clearances will be carried out at Singapore Changi Airport.
- 4.2 The diverting aircraft Airline's Coordinator and its ground handling agency staff shall be present to provide assistance when an aircraft is required to land at Paya Lebar Airport.

### **5 SECURITY**

- 5.1 All airline personnel, including ground handlers and support staff who have to proceed to Paya Lebar Airport must wear their Singapore Changi Airport passes at a prominent position for entry to the aircraft parking area. All personnel not in possession of the laminated Singapore Changi Airport pass will be denied entry into Paya Lebar Airport by the RSAF Security Guard. Entry into the airport by both the airline personnel and service equipment is via the main gate. The Airline Engineering Coordinator shall be responsible for the proper positioning of the ground servicing equipment and vehicles in the Apron Area where arriving aircraft are to be parked.

5.2 The security of civil aircraft parked in the Apron is the responsibility of the aircraft owner and any security service obtained shall first be cleared with the Paya Lebar Airport flight security.

## **6 AIRCRAFT STAND ALLOCATION**

6.1 Nine aircraft parking positions in Apron C and on taxiway fillets are available for civil aircraft. A separation of 40 feet between wing-tips should be maintained.

6.2 Aircraft parking positions will be issued by the Paya Lebar Tower and the Airline Engineering Coordinator shall provide the marshalling services. Close coordination between the Airline Engineering Coordinator and the Tower Controller is essential in regard to aircraft parking and positioning of servicing equipment in and around the parking apron.

## **7 AIRCRAFT REFUELLING**

7.1 ST Airport Services Pte Ltd (STARS) is the assigned aircraft fuelling agency. However, prior arrangement must be made between the airline and STARS for such services. The refuelling rate available is 350 imperial gallons per minute (IGPM).

## **8 GROUND OPERATIONS**

8.1 Singapore Airport Terminal Services (SATS) and DNATA Singapore Pte Ltd (DNATA) will provide all ground services at one hour's prior notice except engineering services which will be provided by Singapore Airlines.

## **9 FULL EMERGENCY/CRASH PROCEDURE**

9.1 In the event of a Full Emergency being declared on a civil aircraft diverted to Paya Lebar AP, Full Emergency/Crash Procedures applicable to Singapore Changi AP will equally apply to Paya Lebar AP.

9.2 Alerting of all outside organisations such as the Singapore Civil Defence Force, Police, MINDEF and ambulance services shall be carried out by the Singapore Changi AP Tower Controller.

## **10 METEOROLOGICAL AND AERONAUTICAL INFORMATION SERVICE**

10.1 Meteorological service is available 24 hours at the 6th floor of the Old Operations Building, Paya Lebar Airport.

10.2 Aeronautical Information Service is available at Singapore Changi Airport.

## **11 ATC SERVICE OUTSIDE STIPULATED OPERATING HOURS**

11.1 Radar service will not be available at Paya Lebar Airport outside its stipulated operating hours.

# **WSAP AD 2.22 FLIGHT AND GROUND PROCEDURES**

## **1 DEPARTURE AND ARRIVAL PROCEDURES**

1.1 The designated runway for departures is RWY 02 and for arrivals is RWY 20.

1.2 The airport will hold off all departures and arrivals when the aerodrome visibility falls below 3km, or when the aerodrome prevailing cloud base is lower than 500ft. This is a safety consideration to avoid aircraft from carrying out a missed approach and overflying the populace under an adverse weather condition.

## **2 STANDARD INSTRUMENT DEPARTURES**

November 1 Departure - Climb to maintain 3,000ft on RWY heading for PU DVOR/DME. At PU DVOR/ DME, turn left heading 010. Contact Paya Lebar APP on 119.9MHz or 298.0MHz or as instructed by ATC.

November 2 Departure - Climb to maintain 3,000ft on RWY heading for PU DVOR/DME. At PU DVOR/ DME, maintain heading 020. Contact Paya Lebar APP on 119.9MHz or 298.0MHz or as instructed by ATC.

November 3 Departure - Climb to maintain 3,000ft on RWY heading for PU DVOR/DME. At PU DVOR/ DME, turn left heading 360. Contact Paya Lebar APP on 119.9MHz or 298.0MHz or as instructed by ATC.

## **3 STANDARD ARRIVALS**

When Paya Lebar is VMC - Expect radar vector to RWY 20 for visual straight-in approach.

When Paya Lebar is IMC - Expect radar vector to RWY 20 for ILS or PU DVOR/DME approach.



**WSAT AD 2.12 RUNWAY PHYSICAL CHARACTERISTICS**

<i>Designation RWY NR</i>	<i>TRUE &amp; MAG BRG</i>	<i>Dimensions of RWY (m)</i>	<i>Strength (PCN) and surface of RWY and SWY</i>	<i>THR coordinates</i>	<i>THR elevation and highest elevation of TDZ of precision APCH RWY</i>
1	2	3	4	5	6
18	184.5	2743 x 46	PCN 110 F/A/W/T	-	50 FT
36	004.5	2743 x 46	PCN 110 F/A/W/T	-	50 FT

12	<i>Remarks</i>	<p>a. Intensive fixed wing flying operation east of runway.</p> <p>b. Helizone adjacent east of runway up to 800ft QNH.</p> <p>c. Arrestor Barrier both ends of runway.</p> <p>d. Hookwire cable installed 366m inwards from each end of runway.</p> <p>e. Intense bird activity after rain, and up to 2 hour after dusk and dawn.</p>
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**WSAT AD 2.13 DECLARED DISTANCES**

<i>RWY Designator</i>	<i>TORA (m)</i>	<i>TODA (m)</i>	<i>ASDA (m)</i>	<i>LDA (m)</i>	<i>Remarks</i>
1	2	3	4	5	6
18	2743	3115	2743	2743	Nil
36	2743	3030	2743	2743	Nil

**WSAT AD 2.14 APPROACH AND RUNWAY LIGHTING**

<i>RWY</i>	<i>APCH LGT Type, LEN INTST</i>	<i>THR LGT colour WBAR</i>	<i>VASIS (MEHT) PAPI</i>	<i>TDZ LGT LEN</i>	<i>RCL LGT, LEN, spacing, colour, INTST</i>	<i>RWY edge LGT, LEN, spacing, colour, INTST</i>	<i>RWY End LGT, colour WBAR</i>	<i>SWY LGT, LEN colour</i>	<i>Remarks</i>
1	2	3	4	5	6	7	8	9	10
18	High INTST white centre line and two bars, superimposed omni-directional RED 'T' PAPI Sequenced flashing lights	Green	4 units PAPI on each side of RWY at 3.0° Glide Slope	Nil	Nil	High INTST omni-directional white variable INTST	Red	Nil	Distance to run markers illuminated
36	High INTST white centre line and five bars, superimposed omni-directional RED 'T' PAPI Sequenced flashing lights	Green	4 units PAPI on each side of RWY at 3.0° Glide Slope	Nil	Nil	High INTST omni-directional white variable INTST	Red	Nil	Distance to run markers illuminated

**WSAT AD 2.15 OTHER LIGHTING, SECONDARY POWER SUPPLY**

<i>TWY Lighting</i>	blue edge lights
<i>IBN</i>	012400N 1034254E, FLG R 'TN', operating hours HN and IMC.
<i>Remarks</i>	WDI lighted. Dispersal area floodlights

### WSAT AD 2.17 ATS AIRSPACE

1	<i>Designation and Lateral Limits</i>	<b>TENGAH ATZ</b> 010842N 1034336E thence clockwise around the arc of radius 14 NM centred on 012242N 1034203E to 011351N 1033117E thence east along the Singapore - Kuala Lumpur FIR boundary to 012728N 1034302E 012620N 1034544E 012150N 1034524E 011845N 1034414E 010842N 1034336E.
2	<i>Vertical Limits</i>	SFC to 3000 FT ALT
3	<i>Airspace Classification</i>	D
4	<i>ATS Unit Callsign Language(s)</i>	TENGAH APPROACH English
5	<i>Transition altitude</i>	11000 FT (3,350m)
6	<i>Remarks</i>	Controlling Authority: Tengah Approach  During Aerodrome operating hours: Contact Tengah APP on 130.0 MHz, 263.4 MHz or 122.0 MHz  Outside Aerodrome operating hours: Contact SATCC (RSAF element) on 123.4MHz or 288.2MHz

### WSAT AD 2.18 ATS COMMUNICATION FACILITIES

<i>Service designation</i>	<i>Call sign</i>	<i>Frequency P - Primary S - Secondary</i>	<i>Hours of operation</i>	<i>Remarks</i>
APP	TENGAH APPROACH	P130.0 MHz P263.4 MHz S122.0 MHz	BTN 2300-1100 SUN/MON to THU/FRI; and	Nil
TWR	TENGAH TOWER	P122.0 MHz P282.5 MHz S263.4 MHz	On SUN, Public holidays and outside the above times, PPR from RSAF HQ via Tengah Ops.	
	TENGAH GROUND	122.0 MHz 337.8 MHz		
	TENGAH TALKDOWN	130.0 MHz 290.8 MHz 328.5 MHz		
Flight Information Service	SINGAPORE RADAR	119.1 MHz	H24	Nil

<i>Service designation</i>	<i>Call sign</i>	<i>Frequency P - Primary S - Secondary</i>	<i>Hours of operation</i>	<i>Remarks</i>
ACC	SINGAPORE RADAR	P123.7 MHz S127.3 MHz	H24	for AWY B469, G219, G334, R208, L625, L629, L635, L642, M751, M753, M758, M761, M763, M771, N884, N891 and N892.
		133.8 MHz	0000-1430	
		P133.25 MHz S135.8 MHz	H24	for AWY A457, A464, A576, B466, R325 (all northbound) and R469.
		P134.4 MHz S128.1 MHz 255.4 MHz		for AWY A464, G579, A576 (all southbound), B470, G220, N875 and in area in the immediate vicinity of Singapore
	SINGAPORE RADIO	6556 kHz 11297 kHz	H24	SEA 1, SATCOM SER AVBL SSB suppressed carrier
		5655 kHz 8942 kHz 11396 kHz		SEA 2, SATCOM SER AVBL SSB suppressed carrier
6556 kHz		SEA 3, SATCOM SER AVBL SSB suppressed carrier		
APP	SINGAPORE APPROACH	P120.3 MHz S124.6 MHz	H24	TAR - Intermediate approach to Singapore Changi airport and other airports in Singapore - DEP from all airports in Singapore  Maint Period: Monthly EV first THU 0000-0900 (ASR I) and EV fourth SAT 1601-2359 (ASR II)

## WSAT AD 2.19 RADIO NAVIGATION AND LANDING AIDS

<b>RADIO NAVIGATION AND LANDING AIDS</b>					
<i>Type of Aid</i>	<i>IDENT</i>	<i>FREQ</i>	<i>OPR Hour</i>	<i>Coordinates</i>	<i>Remarks</i>
TACAN	TNG	CH86X	2300-1100 from SUN/MON to THU/FRI; SUN, Public holidays and outside the above times prior permission required from RSAF HQ via Tengah Operations.	012336.00N 1034242.00E	043° MAG 0.55km from ARP  Maint Period: 0001-0900 second SAT of EV month
SINJON DVOR/DME	SJ	113.5 MHz CH82X	H24	011319.28N 1035120.08E	201° MAG 14.5km from THR RWY 02 (Paya Lebar)  Antenna HGT: 194ft AMSL. Coverage 200NM  Maint Period: 0200-0600 third THU of EV month
ILS LLZ RWY 36	ITN	108.1 MHz	H24	012408.43N 1034234.34E	Located 260m from THR RWY 18 along centreline of RWY. Course width 3°
ILS GP RWY 36	-	334.7 MHz	H24	012240.84N 1034231.01E	GP antenna 3°

RADIO NAVIGATION AND LANDING AIDS					
ILS DME RWY 36	ITN	CH18X	H24	012241.02N 1034226.67E	DME co-located with GP
ILS LLZ RWY 18	ITS	111.3 MHz	H24	012221.63N 1034224.98E	Located 290m from THR RWY 36 along centreline of RWY. Course width 3°
ILS GP RWY 18	-	332.3 MHz	H24	012351.64N 1034237.33E	GP antenna 3°
ILS DME RWY 18	ITS	CH50X	H24	012350.04N 1034236.38E	DME co-located with GP

**WSAG AD 2.18 COMMUNICATION FACILITIES**

<i>Service designation</i>	<i>Call sign</i>	<i>Frequency</i>	<i>Hours of operation</i>	<i>Remarks</i>
1	2	3	4	5
APP	PAYA LEBAR APPROACH	127.7 MHz 255.8 MHz	BTN 2300-1100 SUN/MON to THU/FRI and BTN 2300-0500 FRI/SAT. Prior permission required on SUN and Public holidays	Nil
TWR	SEMBAWANG TOWER	129.7 MHz 239.0 MHz		Nil
GND	SEMBAWANG GROUND	277.1 MHz 118.8 MHz		Nil
Flight Information Service	SINGAPORE RADAR	119.1 MHz	H24	Nil
ACC	SINGAPORE RADAR	123.7 MHz 127.3 MHz	H24	for AWY B469, G219, G334, R208, L625, L629, L635, L642, L644, M751, M753, M758, M761, M763, M771, N884, N891, N892.
		133.25 MHz 135.8 MHz		for AWY A457, A464, A576, B466, R325 (all northbound) and R469.
		134.4 MHz 128.1 MHz 255.4 MHz		for AWY A464, A576, G579 (all southbound), B470, L644, N875 and in the area in the immediate vicinity of Singapore.
		124.05 MHz	0000-1530	Flow control service provided for ARR / DEP ACFT.
		MAINT Period: Monthly - EV 3rd SAT 1601-2359		
ACC	SINGAPORE RADIO	6556 kHz 11297 kHz	H24	SEA 1. Emission A3AJ. SSB suppressed carrier. SATCOM SER AVBL.
		5655 kHz 8942 kHz 11396 kHz		SEA 2. Emission A3AJ. SSB suppressed carrier. SATCOM SER AVBL.
		6556 kHz		SEA 3. Emission A3AJ. SSB suppressed carrier. SATCOM SER AVBL.
APP	SINGAPORE APPROACH	P120.3 MHz S124.6 MHz	H24	TAR - Intermediate approach to Singapore Changi AP and other airports in Singapore. DEP from all airports in Singapore.
	SINGAPORE ARRIVAL	119.3 MHz		TAR - Intermediate and final approach to Singapore Changi Airport.
ASR I MAINT Period: Monthly - EV 1st SAT 1601-2359 ASR II MAINT Period: Monthly - EV 4th SAT 1601-2359				

**WSAG AD 2.19 RADIO NAVIGATION AND LANDING AIDS**

<i>Type of Aid</i>	<i>IDENT</i>	<i>Frequency</i>	<i>OPR HR</i>	<i>Coordinates</i>	<i>Remarks</i>
1	2	3	4	5	6
SEMBAWANG NDB	AG	325 kHz	H24	012524.00N 1034924.00E	198° MAG 0.54km from ARP Coverage 30NM. MAINT Period: Monthly - EV 2nd FRI 0200-0400. For training approaches in VMC only.

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