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**AMDT**  
**04/2018**  
**Effective date**  
**19 JUL 2018**  
**Publication date**  
**19 JUL 2018**

## wp-AMDT-2018-04

### 1. Significant information and changes

#### 1.1 Singapore FIR

- a. Implementation of Departure Clearance (DCL) via datalink for flights departing from Singapore Changi Airport to destinations in Peninsular Malaysia (via ATS Routes A457 and B466), Thailand (via ATS Routes B466 and B469/M751), Indonesia (via ATS Routes A457, R469 and B470), Australia and New Zealand (via ATS Route B470), and flights with allocated Calculated Take-Off Time (CTOT) under Bay of Bengal Cooperative Air Traffic Flow Management (BOBCAT).

### 2. This amendment incorporates information contained in the listed NOTAMs and AIP Supplements which are hereby superseded:

NOTAM:

A1197/18 dated 29/03/18

A1198/18 dated 29/03/18

A1783/18 dated 15/05/18

A1809/18 dated 16/05/18

A2666/18 dated 13/07/18

A2667/18 dated 13/07/18

A2668/18 dated 13/07/18

A2669/18 dated 13/07/18

AIP supplement:

013/2018 dated 29/03/18

## Amended Pages

GEN 0.2-1/2:	: <i>replace.</i>
GEN 0.3-1/2:	: <i>replace.</i>
GEN 0.3-3/4:	: <i>replace.</i>
GEN 0.4-1/2:	: <i>replace.</i>
GEN 0.4-3:	: <i>replace.</i>
GEN 1.2-1/2:	: <i>replace.</i>
GEN 1.2-3/4:	: <i>replace.</i>
GEN 3.2-3/4:	: <i>replace.</i>
GEN 3.5-3/4:	: <i>replace.</i>
GEN 3.5-5/6:	: <i>replace.</i>
GEN 3.5-9:	: <i>replace.</i>
ENR 1.1-13/14:	: <i>replace.</i>
ENR 3.1-7/8:	: <i>replace.</i>
ENR 3.1-13/14:	: <i>replace.</i>
ENR-3.1/ATS Chart:	: <i>replace.</i>
ENR 3.3-3/4:	: <i>replace.</i>
ENR 3.3-7/8:	: <i>replace.</i>
ENR 3.3-11/12:	: <i>replace.</i>

ENR 3.3-19/20: : *replace.*  
ENR 3.3-21/22: : *replace.*  
ENR 3.3-29/30: : *replace.*  
ENR 4.4-1/2: : *replace.*  
ENR 4.4-3/4: : *replace.*  
ENR 5.1-1/2: : *replace.*  
ENR 5.1-3/4: : *replace.*  
ENR 5.1-5: : *replace.*  
ERC-6-1 En-Route Chart: : *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-5/6: : *replace.*  
AD 2.WSSS-7/8: : *replace.*  
AD 2.WSSS-9/10: : *replace.*  
AD 2.WSSS-11/12: : *replace.*  
AD 2.WSSS-13/14: : *replace.*  
AD 2.WSSS-29/30: : *replace.*  
AD 2.WSSS-31/32: : *replace.*  
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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-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: : *insert.*  
AD-2-WSSS-ADC-2: : *replace.*  
AD-2-WSSS-AOC-3: : *replace.*  
AD-2-WSSS-IAC-9: : *replace.*  
AD-2-WSSS-IAC-10: : *replace.*  
AD 2.WSSL-7/8: : *replace.*  
AD 2.WSSL-11/12: : *replace.*  
AD 2.WSSL-13/14: : *replace.*  
AD 2.WSSL-15/16: : *replace.*  
AD 2.WSSL-17/18: : *replace.*  
AD 2.WSSL-19/20: : *replace.*  
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AD-2-WSSL-ADC-2: : *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-1/2: : *replace.*  
AD 2.WSAP-3/4: : *replace.*  
AD 2.WSAP-5/6: : *replace.*  
AD 2.WSAP-7/8: : *replace.*  
AD 2.WSAP-9/10: : *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	
06/2017	12 OCT 2017	12 OCT 2017	
07/2017	07 DEC 2017	07 DEC 2017	
01/2018	01 FEB 2018	01 FEB 2018	
02/2018	29 MAR 2018	29 MAR 2018	
03/2018	24 MAY 2018	24 MAY 2018	
04/2018	19 JUL 2018	19 JUL 2018	

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**AIP AMENDMENT**

<b><i>NR/Year</i></b>	<b><i>Publication date</i></b>	<b><i>Date inserted</i></b>	<b><i>Inserted by</i></b>

**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>
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	
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	
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	
039/2016	Paya Lebar Airport - Topless Cranes	AD	04 MAR 2016 / 31 JAN 2019	
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	
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	
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	
047/2017	Paya Lebar Airport - Luffer Cranes and Topless Cranes	AD	13 APR 2017 / 31 AUG 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>
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	
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	
063/2017	Paya Lebar Airport - Topless Cranes and Luffer Crane	AD	13 APR 2017 / 15 APR 2019	
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	
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	
085/2017	Paya Lebar Airport - Topless Cranes	AD	11 JUL 2017 / 01 JUN 2020	
095/2017	Paya Lebar Airport - Topless Crane and Luffer Cranes	AD	26 SEP 2017 / 31 DEC 2019	
098/2017	Paya Lebar Airport - Topless Cranes	AD	26 SEP 2017 / 31 DEC 2019	
102/2017	Paya Lebar Airport - Crawler Cranes	AD	26 SEP 2017 / 24 JUL 2018	
105/2017	Paya Lebar Airport - Luffer Crane and Saddle Crane	AD	29 SEP 2017 / 31 DEC 2018	
108/2017	Paya Lebar Airport - Topless Crane and Luffer Cranes	AD	30 SEP 2017 / 06 JUL 2020	
110/2017	Paya Lebar Airport - Piling Rig and Crawler Crane	AD	24 OCT 2017 / 16 OCT 2018	
111/2017	Paya Lebar Airport - Crawler Cranes	AD	24 OCT 2017 / 20 OCT 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>
112/2017	Paya Lebar Airport - Topless Cranes	AD	24 OCT 2017 / 30 OCT 2018	
113/2017	Paya Lebar Airport - Topless Cranes	AD	24 OCT 2017 / 18 OCT 2019	
114/2017	Paya Lebar Airport - Luffer Crane	AD	24 OCT 2017 / 20 OCT 2019	
115/2017	Paya Lebar Airport - Topless Cranes	AD	24 OCT 2017 / 24 OCT 2019	
119/2017	Paya Lebar Airport - Crawler Cranes	AD	10 DEC 2017 / 31 DEC 2018	
120/2017	Paya Lebar Airport - Flat Top Cranes	AD	10 DEC 2017 / 30 JUN 2019	
121/2017	Paya Lebar Airport - Topless Cranes and Luffer Cranes	AD	10 DEC 2017 / 30 SEP 2020	
122/2017	Paya Lebar Airport - Luffer Cranes	AD	10 DEC 2017 / 31 DEC 2020	
123/2017	Paya Lebar Airport - Luffer Cranes	AD	10 DEC 2017 / 31 DEC 2020	
124/2017	Paya Lebar Airport - Luffer Crane	AD	10 DEC 2017 / 31 DEC 2020	
125/2017	Paya Lebar Airport - Topless Cranes	AD	10 DEC 2017 / 18 DEC 2019	
126/2017	Paya Lebar Airport - Luffer Cranes	AD	10 DEC 2017 / 19 DEC 2019	
003/2018	Paya Lebar Airport - Luffer Crane	AD	22 JAN 2018 / 31 DEC 2019	
004/2018	Paya Lebar Airport - Crawler Cranes and Boring Rigs	AD	22 JAN 2018 / 31 DEC 2019	
005/2018	Paya Lebar Airport - Topless Cranes	AD	22 JAN 2018 / 29 FEB 2020	
006/2018	Paya Lebar Airport - Topless Crane and Luffer Crane	AD	22 JAN 2018 / 28 FEB 2021	
009/2018	Singapore Changi Airport - Works schedule and movement area restrictions pertaining to Changi East Development works	AD	24 MAR 2018 / 27 OCT 2018	
011/2018	RSAF aerial flypast prior to and on Singapore's National Day, 09th August 2018	AD/ENR	26 MAY 2018 / 11 AUG 2018	
012/2018	Aerial displays in conjunction with the Republic of Singapore Air Force (RSAF) 50th Anniversary	AD/ENR	02 AUG 2018 / 12 AUG 2018	
015/2018	Paya Lebar Airport - Luffer Crane	AD	06 APR 2018 / 31 DEC 2019	
016/2018	Paya Lebar Airport - Luffer Crane and Topless Cranes	AD	06 APR 2018 / 01 JAN 2020	
017/2018	Paya Lebar Airport - Luffer Crane	AD	06 APR 2018 / 15 MAR 2020	
018/2018	Paya Lebar Airport - Topless Cranes and Luffer Crane	AD	25 APR 2018 / 27 OCT 2020	
019/2018	Paya Lebar Airport - Luffer Crane	AD	06 APR 2018 / 31 DEC 2020	
020/2018	Paya Lebar Airport - Mobile Crane	AD	06 APR 2018 / 03 FEB 2021	
021/2018	Paya Lebar Airport - Luffer Crane and Saddle Cranes	AD	06 APR 2018 / 31 DEC 2022	
022/2018	Seletar Airport - Partial closure of taxiway EC, EC2 and permanent diversion of perimeter roadway R9N	AD	02 JUL 2018 PERM	
023/2018	Paya Lebar Airport - Mobile Crane	AD	20 JUN 2018 / 31 AUG 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>
024/2018	Paya Lebar Airport - Crawler Cranes	AD	20 JUN 2018 / 29 JAN 2019	
025/2018	Paya Lebar Airport - Crawler Cranes	AD	20 JUN 2018 / 29 JAN 2019	
026/2018	Paya Lebar Airport - Crawler Cranes	AD	20 JUN 2018 / 30 APR 2020	
027/2018	Paya Lebar Airport - Mobile Crane	AD	20 JUN 2018 / 10 MAY 2020	
028/2018	Paya Lebar Airport - Saddle Cranes	AD	20 JUN 2018 / 31 DEC 2022	
029/2018	Paya Lebar Airport - Luffer Cranes	AD	20 JUN 2018 / 31 DEC 2021	
030/2018	Paya Lebar Airport - Luffer Crane and Topless Cranes	AD	20 JUN 2018 / 31 DEC 2021	
031/2018	Singapore Changi Airport - Updated information and data for Runway 02R/20L	AD	31 JUL 2018 PERM	



**GEN 0.4 CHECKLIST OF AIP PAGES**

<b>Part 1 – General (GEN)</b>							
<b>GEN 0</b>		GEN 3.3-1	12 NOV 2015	ENR 1.7-1	12 NOV 2015		
GEN 0.1-1	12 NOV 2015	GEN 3.3-2	21 JUL 2016	ENR 1.7-2	12 NOV 2015		
GEN 0.1-2	12 OCT 2017	GEN 3.4-1	12 NOV 2015	ENR 1.7-3	12 NOV 2015		
GEN 0.1-3	21 JUL 2016	GEN 3.4-2	02 MAR 2017	ENR 1.7-4	17 AUG 2017		
GEN 0.2-1	19 JUL 2018	GEN 3.4-3	02 MAR 2017	ENR 1.7-5	12 NOV 2015		
GEN 0.2-2	01 FEB 2018	GEN 3.4-4	02 MAR 2017	ENR 1.7-6	07 DEC 2017		
GEN 0.3-1	19 JUL 2018	GEN 3.4-5	12 NOV 2015	ENR 1.7-7	12 NOV 2015		
GEN 0.3-2	19 JUL 2018	GEN 3.4-7	21 JUL 2016	ENR 1.7-8	12 NOV 2015		
GEN 0.3-3	19 JUL 2018	GEN 3.4-9	21 JUL 2016	ENR 1.7-9	12 NOV 2015		
GEN 0.3-4	19 JUL 2018	GEN 3.5-1	12 NOV 2015	ENR 1.8-1	07 DEC 2017		
GEN 0.4-1	19 JUL 2018	GEN 3.5-2	12 OCT 2017	ENR 1.8-2	29 MAR 2018		
GEN 0.4-2	19 JUL 2018	GEN 3.5-3	19 JUL 2018	ENR 1.8-3	29 MAR 2018		
GEN 0.4-3	19 JUL 2018	GEN 3.5-4	19 JUL 2018	ENR 1.8-4	29 MAR 2018		
GEN 0.5-1	05 JAN 2017	GEN 3.5-5	19 JUL 2018	ENR 1.8-5	29 MAR 2018		
GEN 0.6-1	24 MAY 2018	GEN 3.5-6	12 NOV 2015	ENR 1.8-6	29 MAR 2018		
GEN 0.6-2	15 SEP 2016	GEN 3.5-7	12 NOV 2015	ENR 1.8-7	29 MAR 2018		
GEN 0.6-3	22 JUN 2017	GEN 3.5-8	22 JUN 2017	ENR 1.8-8	29 MAR 2018		
<b>GEN 1</b>		GEN 3.5-9	19 JUL 2018	ENR 1.8-9	29 MAR 2018		
GEN 1.1-1	10 NOV 2016	GEN 3.6-1	12 NOV 2015	ENR 1.8-10	29 MAR 2018		
GEN 1.1-2	07 DEC 2017	GEN 3.6-2	12 NOV 2015	ENR 1.8-11	29 MAR 2018		
GEN 1.2-1	15 SEP 2016	GEN 3.6-3	12 NOV 2015	ENR 1.8-12	29 MAR 2018		
GEN 1.2-2	19 JUL 2018	GEN 3.6-4	12 NOV 2015	ENR 1.8-13	29 MAR 2018		
GEN 1.2-3	19 JUL 2018	GEN 3.6-5	21 JUL 2016	ENR 1.8-14	29 MAR 2018		
GEN 1.2-4	19 JUL 2018	<b>GEN 4</b>		ENR 1.8-15	29 MAR 2018		
GEN 1.2-5	24 MAY 2018	GEN 4.1-1	15 SEP 2016	ENR 1.8-16	29 MAR 2018		
GEN 1.2-6	24 MAY 2018	GEN 4.2-1	24 MAY 2018	ENR 1.8-17	29 MAR 2018		
GEN 1.3-1	21 JUL 2016	GEN 4.2-2	12 NOV 2015	ENR 1.8-18	29 MAR 2018		
GEN 1.3-2	12 NOV 2015	GEN 4.2-3	12 NOV 2015	ENR 1.8-19	29 MAR 2018		
GEN 1.3-3	29 MAR 2018	GEN 4.2-4	12 NOV 2015	ENR 1.8-20	29 MAR 2018		
GEN-1.3-5	21 JUL 2016	GEN 4.2-5	12 NOV 2015	ENR 1.8-21	29 MAR 2018		
GEN-1.3-7	21 JUL 2016	GEN 4.2-6	12 NOV 2015	ENR 1.8-22	29 MAR 2018		
GEN 1.4-1	12 NOV 2015	<b>Part 2 – EN-ROUTE (ENR)</b>		ENR 1.8-23	24 MAY 2018		
GEN 1.4-2	12 NOV 2015	<b>ENR 0</b>		ENR 1.8-24	29 MAR 2018		
GEN 1.4-3	12 NOV 2015	ENR 0.6-1	05 JAN 2017	ENR 1.8-25	29 MAR 2018		
GEN 1.5-1	12 NOV 2015	ENR 0.6-2	29 MAR 2018	ENR 1.8-26	29 MAR 2018		
GEN 1.6-1	07 DEC 2017	ENR 0.6-3	29 MAR 2018	ENR 1.8-27	29 MAR 2018		
GEN 1.6-2	07 DEC 2017	ENR 0.6-4	29 MAR 2018	ENR 1.8-28	29 MAR 2018		
GEN 1.6-3	07 DEC 2017	ENR 0.6-5	29 MAR 2018	ENR 1.8-29	29 MAR 2018		
GEN 1.7-1	10 NOV 2016	ENR 0.6-6	27 APR 2017	ENR 1.8-30	29 MAR 2018		
GEN 1.7-2	12 NOV 2015	<b>ENR 1</b>		ENR 1.9-1	07 DEC 2017		
GEN 1.7-3	10 NOV 2016	ENR 1.1-1	12 NOV 2015	ENR 1.9-2	01 FEB 2018		
GEN 1.7-4	10 NOV 2016	ENR 1.1-2	12 NOV 2015	ENR 1.9-3	27 APR 2017		
GEN 1.7-5	10 NOV 2016	ENR 1.1-3	12 NOV 2015	ENR 1.9-4	27 APR 2017		
<b>GEN 2</b>		ENR 1.1-4	12 NOV 2015	ENR 1.9-5	27 APR 2017		
GEN 2.1-1	12 NOV 2015	ENR 1.1-5	12 NOV 2015	ENR 1.10-1	01 FEB 2018		
GEN 2.1-2	12 OCT 2017	ENR 1.1-6	12 NOV 2015	ENR 1.10-2	29 MAR 2018		
GEN 2.2-1	02 MAR 2017	ENR 1.1-7	12 NOV 2015	ENR 1.10-3	29 MAR 2018		
GEN 2.2-2	02 MAR 2017	ENR 1.1-8	12 NOV 2015	ENR 1.11-1	12 NOV 2015		
GEN 2.2-3	02 MAR 2017	ENR 1.1-9	12 NOV 2015	ENR 1.12-1	12 NOV 2015		
GEN 2.2-4	05 JAN 2017	ENR 1.1-10	10 NOV 2016	ENR 1.12-2	12 NOV 2015		
GEN 2.2-5	10 NOV 2016	ENR 1.1-11	12 NOV 2015	ENR 1.12-3	12 NOV 2015		
GEN 2.3-1	12 NOV 2015	ENR 1.1-12	12 NOV 2015	ENR 1.12-4	12 NOV 2015		
GEN 2.3-2	12 NOV 2015	ENR 1.1-13	19 JUL 2018	ENR 1.13-1	12 NOV 2015		
GEN 2.3-3	12 NOV 2015	ENR 1.1-14	02 MAR 2017	ENR 1.14-1	10 DEC 2015		
GEN 2.4-1	12 NOV 2015	ENR 1.1-15	29 MAR 2018	ENR 1.14-2	15 SEP 2016		
GEN 2.5-1	21 JUL 2016	ENR 1.1-16	12 NOV 2015	ENR-1.14-3 to ENR-1.14-4	15 SEP 2016		
GEN 2.5-3	21 JUL 2016	ENR 1.2-1	21 JUL 2016	ENR-1.14-5 to ENR-1.14-6	15 SEP 2016		
GEN 2.6-1	12 NOV 2015	ENR 1.3-1	12 NOV 2015	ENR-1.14-7 to ENR-1.14-8	15 SEP 2016		
GEN 2.6-2	12 NOV 2015	ENR 1.4-1	12 NOV 2015	<b>ENR 2</b>			
GEN 2.7-1	12 NOV 2015	ENR 1.5-1	12 NOV 2015	ENR 2.1-1	02 MAR 2017		
<b>GEN 3</b>		ENR 1.5-2	17 AUG 2017	ENR 2.1-2	02 MAR 2017		
GEN 3.1-1	21 JUL 2016	ENR 1.5-3	17 AUG 2017	ENR 2.1-3	02 MAR 2017		
GEN 3.1-2	21 JUL 2016	ENR 1.5-4	22 JUN 2017	ENR 2.1-4	12 NOV 2015		
GEN 3.1-3	24 MAY 2018	ENR 1.6-1	12 NOV 2015	ENR-2.1-7	21 JUL 2016		
GEN 3.1-4	24 MAY 2018	ENR 1.6-2	12 NOV 2015	ENR-2.1-9	29 MAR 2018		
GEN 3.2-1	21 JUL 2016	ENR 1.6-3	12 NOV 2015	ENR-2.1-11A	21 JUL 2016		
GEN 3.2-2	31 MAR 2016	ENR 1.6-4	17 AUG 2017	ENR-2.1-11B	21 JUL 2016		
GEN 3.2-3	31 MAR 2016	ENR 1.6-5	29 MAR 2018	ENR-2.1-13	21 JUL 2016		
GEN 3.2-4	19 JUL 2018	ENR 1.6-6	29 MAR 2018	ENR-2.1-15	29 MAR 2018		
GEN 3.2-5	31 MAR 2016	ENR 1.6-7	29 MAR 2018	<b>ENR 3</b>			
GEN 3.2-6	31 MAR 2016	ENR 1.6-8	29 MAR 2018	ENR 3.1-1	02 MAR 2017		
		ENR-1.6-9	21 JUL 2016	ENR 3.1-2	02 MAR 2017		
		ENR-1.6-11	21 JUL 2016	ENR 3.1-3	10 NOV 2016		
				ENR 3.1-4	10 NOV 2016		
				ENR 3.1-5	12 NOV 2015		

ENR 3.1-6	02 MAR 2017	ENR 4.4-2	19 JUL 2018	AD 2.WSSS-30	19 JUL 2018	
ENR 3.1-7	19 JUL 2018	ENR 4.4-3	19 JUL 2018	AD 2.WSSS-31	19 JUL 2018	
ENR 3.1-8	10 NOV 2016	ENR 4.4-4	07 DEC 2017	AD 2.WSSS-32	07 DEC 2017	
ENR 3.1-9	12 NOV 2015	ENR 4.4-5	17 AUG 2017	AD 2.WSSS-33	01 FEB 2018	
ENR 3.1-10	02 MAR 2017	ENR 4.4-6	17 AUG 2017	AD 2.WSSS-34	19 JUL 2018	
ENR 3.1-11	02 MAR 2017	ENR 4.5-1	12 OCT 2017	AD 2.WSSS-35	19 JUL 2018	
ENR 3.1-12	10 NOV 2016			AD 2.WSSS-36	29 MAR 2018	
ENR 3.1-13	19 JUL 2018	<b>ENR 5</b>			AD 2.WSSS-37	19 JUL 2018
ENR 3.1-14	02 MAR 2017	ENR 5.1-1	12 NOV 2015	AD 2.WSSS-38	19 JUL 2018	
ENR 3.1-15	12 NOV 2015	ENR 5.1-2	19 JUL 2018	AD 2.WSSS-39	29 MAR 2018	
ENR 3.1-16	02 MAR 2017	ENR 5.1-3	19 JUL 2018	AD 2.WSSS-40	19 JUL 2018	
ENR 3.1-17	12 NOV 2015	ENR 5.1-4	19 JUL 2018	AD 2.WSSS-41	19 JUL 2018	
ENR 3.1-18	02 MAR 2017	ENR 5.1-5	19 JUL 2018	AD 2.WSSS-42	29 MAR 2018	
ENR 3.1-19	02 MAR 2017	ENR-5.1-7	22 JUN 2017	AD 2.WSSS-43	29 MAR 2018	
ENR 3.1-20	12 NOV 2015	ENR-5.1-9	22 JUN 2017	AD 2.WSSS-44	29 MAR 2018	
ENR-3.1/ATS Chart	19 JUL 2018	ENR 5.2-1	26 MAY 2016	AD 2.WSSS-45	29 MAR 2018	
ENR 3.3-1	07 DEC 2017	ENR 5.2-2	26 MAY 2016	AD 2.WSSS-46	29 MAR 2018	
ENR 3.3-2	02 MAR 2017	ENR 5.3-1	05 JAN 2017	AD 2.WSSS-47	19 JUL 2018	
ENR 3.3-3	19 JUL 2018	ENR 5.4-1	12 NOV 2015	AD 2.WSSS-48	19 JUL 2018	
ENR 3.3-4	12 NOV 2015	ENR 5.5-1	12 NOV 2015	AD 2.WSSS-49	19 JUL 2018	
ENR 3.3-5	12 NOV 2015	ENR 5.6-1	24 MAY 2018	AD 2.WSSS-50	19 JUL 2018	
ENR 3.3-6	22 JUN 2017	ENR 5.6-2	12 NOV 2015	AD 2.WSSS-51	19 JUL 2018	
ENR 3.3-7	19 JUL 2018			AD 2.WSSS-52	19 JUL 2018	
ENR 3.3-8	02 MAR 2017	<b>ENR 6</b>			AD 2.WSSS-53	19 JUL 2018
ENR 3.3-9	07 DEC 2017	ENR 6-1	15 SEP 2016	AD 2.WSSS-54	19 JUL 2018	
ENR 3.3-10	07 DEC 2017	ERC-6-1 En-Route Chart	19 JUL 2018	AD 2.WSSS-55	19 JUL 2018	
ENR 3.3-11	29 MAR 2018	WAC-2860-Singapore-Island	17 AUG 2017	AD 2.WSSS-56	19 JUL 2018	
ENR 3.3-12	19 JUL 2018			AD 2.WSSS-57	19 JUL 2018	
ENR 3.3-13	07 DEC 2017	<b>Part 3 – AERODROMES (AD)</b>			AD 2.WSSS-58	19 JUL 2018
ENR 3.3-14	07 DEC 2017	<b>AD 0</b>			AD 2.WSSS-59	19 JUL 2018
ENR 3.3-15	07 DEC 2017			AD 2.WSSS-60	19 JUL 2018	
ENR 3.3-16	07 DEC 2017	AD 0.6-1	19 JUL 2018	AD 2.WSSS-61	19 JUL 2018	
ENR 3.3-17	07 DEC 2017	AD 0.6-2	19 JUL 2018	AD-2-WSSS-ADC-1	15 SEP 2016	
ENR 3.3-18	07 DEC 2017	AD 0.6-3	19 JUL 2018	AD-2-WSSS-ADC-2	19 JUL 2018	
ENR 3.3-19	19 JUL 2018	AD 0.6-4	19 JUL 2018	AD-2-WSSS-ADC-3	12 OCT 2017	
ENR 3.3-20	07 DEC 2017	AD 0.6-5	19 JUL 2018	AD-2-WSSS-AOC-1	07 DEC 2017	
ENR 3.3-21	19 JUL 2018	AD 0.6-6	19 JUL 2018	AD-2-WSSS-AOC-2	29 MAR 2018	
ENR 3.3-22	19 JUL 2018	AD 0.6-7	19 JUL 2018	AD-2-WSSS-AOC-3	19 JUL 2018	
ENR 3.3-23	07 DEC 2017			AD-2-WSSS-PATC-1	01 FEB 2018	
ENR 3.3-24	07 DEC 2017	<b>AD 1</b>			AD-2-WSSS-PATC-2	01 FEB 2018
ENR 3.3-25	07 DEC 2017	AD 1.1-1	12 NOV 2015	AD-2-WSSS-SID-1 to 1.1	07 DEC 2017	
ENR 3.3-26	07 DEC 2017	AD 1.1-2	12 NOV 2015	AD-2-WSSS-SID-2 to 2.1	07 DEC 2017	
ENR 3.3-27	07 DEC 2017	AD 1.1-3	12 NOV 2015	AD-2-WSSS-SID-3 to 3.1	07 DEC 2017	
ENR 3.3-28	07 DEC 2017	AD 1.1-4	12 NOV 2015	AD-2-WSSS-SID-4 to 4.1	07 DEC 2017	
ENR 3.3-29	19 JUL 2018	AD 1.2-1	12 NOV 2015	AD-2-WSSS-SID-5 to 5.1	07 DEC 2017	
ENR 3.3-30	07 DEC 2017	AD 1.3-1	12 NOV 2015	AD-2-WSSS-SID-6 to 6.1	07 DEC 2017	
ENR 3.3-31	07 DEC 2017	AD-1.3-3	21 JUL 2016	AD-2-WSSS-SID-7 to 7.1	07 DEC 2017	
ENR 3.3-32	07 DEC 2017	AD 1.4-1	12 NOV 2015	AD-2-WSSS-SID-8 to 8.1	07 DEC 2017	
ENR 3.3-33	07 DEC 2017	AD 1.5-1	12 NOV 2015	AD-2-WSSS-SID-9 to 9.1	07 DEC 2017	
ENR 3.3-34	07 DEC 2017			AD-2-WSSS-SID-10 to 10.1	07 DEC 2017	
ENR 3.3-35	07 DEC 2017	<b>AD 2</b>			AD-2-WSSS-SID-11 to 11.1	07 DEC 2017
ENR 3.3-36	07 DEC 2017	AD 2.WSSS-1	19 JUL 2018	AD-2-WSSS-SID-12 to 12.1	07 DEC 2017	
ENR 3.3-37	07 DEC 2017	AD 2.WSSS-2	17 AUG 2017	AD-2-WSSS-SID-13 to 13.1	07 DEC 2017	
ENR 3.3-38	07 DEC 2017	AD 2.WSSS-3	27 APR 2017	AD-2-WSSS-SID-14 to 14.1	07 DEC 2017	
ENR 3.3-39	07 DEC 2017	AD 2.WSSS-4	01 FEB 2018	AD-2-WSSS-SID-15 to 15.1	07 DEC 2017	
ENR 3.3-40	07 DEC 2017	AD 2.WSSS-5	19 JUL 2018	AD-2-WSSS-SID-16 to 16.1	07 DEC 2017	
ENR 3.3-41	07 DEC 2017	AD 2.WSSS-6	19 JUL 2018	AD-2-WSSS-SID-17 to 17.1	07 DEC 2017	
ENR 3.3-42	07 DEC 2017	AD 2.WSSS-7	19 JUL 2018	AD-2-WSSS-SID-18 to 18.1	07 DEC 2017	
ENR 3.3-43	07 DEC 2017	AD 2.WSSS-8	02 MAR 2017	AD-2-WSSS-STAR-1 to 1.1	12 OCT 2017	
ENR 3.4-1	12 NOV 2015	AD 2.WSSS-9	02 MAR 2017	AD-2-WSSS-STAR-2 to 2.1	12 OCT 2017	
ENR 3.4-2	12 OCT 2017	AD 2.WSSS-10	19 JUL 2018	AD-2-WSSS-STAR-3 to 3.1	12 OCT 2017	
ENR 3.4-3	01 FEB 2018	AD 2.WSSS-11	12 OCT 2017	AD-2-WSSS-STAR-4 to 4.1	12 OCT 2017	
ENR 3.4-4	12 NOV 2015	AD 2.WSSS-12	19 JUL 2018	AD-2-WSSS-STAR-5 to 5.1	12 OCT 2017	
ENR-3.4-5	22 JUN 2017	AD 2.WSSS-13	19 JUL 2018	AD-2-WSSS-STAR-6 to 6.1	12 OCT 2017	
ENR-3.4-7	21 JUL 2016	AD 2.WSSS-14	12 OCT 2017	AD-2-WSSS-STAR-7 to 7.1	12 OCT 2017	
ENR 3.5-1	02 MAR 2017	AD 2.WSSS-15	07 DEC 2017	AD-2-WSSS-STAR-8 to 8.1	12 OCT 2017	
ENR 3.5-2	02 MAR 2017	AD 2.WSSS-16	07 DEC 2017	AD-2-WSSS-STAR-9 to 9.1	12 OCT 2017	
ENR-3.5-3	29 MAR 2018	AD 2.WSSS-17	12 OCT 2017	AD-2-WSSS-STAR-11 to 11.1		
ENR 3.6-1	27 APR 2017	AD 2.WSSS-18	12 OCT 2017		12 OCT 2017	
ENR 3.6-2	27 APR 2017	AD 2.WSSS-19	12 OCT 2017	AD-2-WSSS-STAR-13 to 13.1		
ENR-3.6-3	05 JAN 2017	AD 2.WSSS-20	12 OCT 2017		12 OCT 2017	
ENR-3.6-5	07 DEC 2017	AD 2.WSSS-21	07 DEC 2017	AD-2-WSSS-STAR-14 to 14.1		
ENR-3.6-7	07 DEC 2017	AD 2.WSSS-22	07 DEC 2017		12 OCT 2017	
ENR-3.6-9	07 DEC 2017	AD 2.WSSS-23	07 DEC 2017	AD-2-WSSS-STAR-15 to 15.1		
		AD 2.WSSS-24	07 DEC 2017		12 OCT 2017	
		AD 2.WSSS-25	07 DEC 2017	AD-2-WSSS-STAR-16 to 16.1		
		AD 2.WSSS-26	07 DEC 2017		12 OCT 2017	
		AD 2.WSSS-27	07 DEC 2017	AD-2-WSSS-STAR-17 to 17.1		
		AD 2.WSSS-28	07 DEC 2017		12 OCT 2017	
		AD 2.WSSS-29	07 DEC 2017			
<b>ENR 4</b>						
ENR 4.1-1	02 MAR 2017					
ENR 4.1-2	02 MAR 2017					
ENR 4.3-1	12 NOV 2015					
ENR 4.4-1	19 JUL 2018					

AD-2-WSSS-STAR-18 to 18.1	12 OCT 2017	AD 2.WSAT-8	12 NOV 2015
AD-2-WSSS-STAR-19 to 19.1	12 OCT 2017	AD-2-WSAT-ADC-1	12 NOV 2015
AD-2-WSSS-STAR-20 to 20.1	12 OCT 2017	AD 2.WSAG-1	12 NOV 2015
AD-2-WSSS-STAR-21 to 21.1	12 OCT 2017	AD 2.WSAG-2	31 MAR 2016
AD-2-WSSS-IAC-1	01 FEB 2018	AD 2.WSAG-3	07 DEC 2017
AD-2-WSSS-IAC-2	01 FEB 2018	AD 2.WMKJ-1	12 NOV 2015
AD-2-WSSS-IAC-5	01 FEB 2018	AD 2.WIDD-1	12 NOV 2015
AD-2-WSSS-IAC-6	01 FEB 2018	AD 2.WIDD-2	12 NOV 2015
AD-2-WSSS-IAC-7	01 FEB 2018	AD-2-WIDD-SID-1	12 NOV 2015
AD-2-WSSS-IAC-9	19 JUL 2018	AD-2-WIDD-SID-2	12 NOV 2015
AD-2-WSSS-IAC-10	19 JUL 2018	AD-2-WIDD-SID-3	12 NOV 2015
AD-2-WSSS-IAC-11	01 FEB 2018	AD-2-WIDD-SID-4	12 NOV 2015
AD-2-WSSS-IAC-12	01 FEB 2018	AD-2-WIDD-STAR-1	12 NOV 2015
AD-2-WSSS-VAC-1	01 FEB 2018	AD-2-WIDD-STAR-2	12 NOV 2015
AD 2.WSSL-1	01 FEB 2018	AD-2-WIDD-STAR-3	12 NOV 2015
AD 2.WSSL-2	12 OCT 2017	AD-2-WIDD-STAR-4	12 NOV 2015
AD 2.WSSL-3	07 DEC 2017	AD 2.WIDN-1	05 JAN 2017
AD 2.WSSL-4	07 DEC 2017	AD-2-WIDN-SID-1	12 NOV 2015
AD 2.WSSL-5	12 OCT 2017	AD-2-WIDN-SID-2	12 NOV 2015
AD 2.WSSL-6	12 NOV 2015	AD-2-WIDN-SID-3	12 NOV 2015
AD 2.WSSL-7	12 NOV 2015	AD-2-WIDN-SID-4	12 NOV 2015
AD 2.WSSL-8	19 JUL 2018	AD-2-WIDN-STAR-1	12 NOV 2015
AD 2.WSSL-9	12 OCT 2017	AD-2-WIDN-STAR-2	12 NOV 2015
AD 2.WSSL-10	07 DEC 2017	AD-2-WIDN-STAR-3	21 JUL 2016
AD 2.WSSL-11	12 OCT 2017	AD-2-WIDN-STAR-4	12 NOV 2015
AD 2.WSSL-12	19 JUL 2018		
AD 2.WSSL-13	19 JUL 2018		
AD 2.WSSL-14	19 JUL 2018		
AD 2.WSSL-15	19 JUL 2018		
AD 2.WSSL-16	17 AUG 2017		
AD 2.WSSL-17	19 JUL 2018		
AD 2.WSSL-18	19 JUL 2018		
AD 2.WSSL-19	19 JUL 2018		
AD 2.WSSL-20	17 AUG 2017		
AD 2.WSSL-21	02 MAR 2017		
AD-2-WSSL-ADC-1	19 JUL 2018		
AD-2-WSSL-ADC-2	19 JUL 2018		
AD-2-WSSL-ADC-3	12 OCT 2017		
AD-2-WSSL-AOC-1	17 AUG 2017		
AD-2-WSSL-AOC-2	19 JUL 2018		
AD-2-WSSL-VAC-1	19 JUL 2018		
AD-2-WSSL-VAC-2	19 JUL 2018		
AD-2-WSSL-VAC-3	19 JUL 2018		
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AD-2-WSSL-VDC-1	19 JUL 2018		
AD-2-WSSL-VDC-2	19 JUL 2018		
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	19 JUL 2018		
AD 2.WSAP-2	19 JUL 2018		
AD 2.WSAP-3	19 JUL 2018		
AD 2.WSAP-4	19 JUL 2018		
AD 2.WSAP-5	19 JUL 2018		
AD 2.WSAP-6	12 OCT 2017		
AD 2.WSAP-7	19 JUL 2018		
AD 2.WSAP-8	19 JUL 2018		
AD 2.WSAP-9	19 JUL 2018		
AD 2.WSAP-10	19 JUL 2018		
AD 2.WSAP-11	12 OCT 2017		
AD-2-WSAP-ADC-1	12 NOV 2015		
AD-2-WSAP-ADC-2	12 OCT 2017		
AD-2-WSAP-AOC-1	10 NOV 2016		
AD-2-WSAP-IAC-1	01 FEB 2018		
AD-2-WSAP-IAC-2	01 FEB 2018		
AD-2-WSAP-IAC-3	01 FEB 2018		
AD-2-WSAP-IAC-4	01 FEB 2018		
AD-2-WSAP-IAC-5	01 FEB 2018		
AD-2-WSAP-IAC-6	01 FEB 2018		
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	07 DEC 2017		
AD 2.WSAT-6	17 AUG 2017		
AD 2.WSAT-7	12 NOV 2015		

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## GEN 1.2 ENTRY, TRANSIT AND DEPARTURE OF AIRCRAFT

### 1 INTRODUCTION

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

### 2 APPLICATION FOR SLOTS AT SINGAPORE CHANGI AIRPORT

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

### 3 CIVIL SCHEDULED FLIGHTS

#### 3.1 GENERAL

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

#### 3.2 APPLICATION FOR TRAFFIC LANDINGS AND UPLIFTS (SCHEDULED FLIGHTS)

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

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

3.2.3 In addition, airline operators are also required to apply for CAAS' approval for any revisions to their schedule filings for the season, ad-hoc changes to flight schedules and flight cancellations. Such applications should be filed through the CAAS Air Transport Licensing and Administration System (ATLAS) at <https://appserver1.caas.gov.sg/ATLAS> 5 working days before flight changes take place.

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

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

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

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

#### 3.3 DOCUMENTARY REQUIREMENTS FOR CLEARANCE OF AIRCRAFT

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

3.3.2 *Aircraft Documents Requirements (arrival/departure)*

Required by	General Declaration	Passenger Manifest	Cargo Manifest
Immigration	2	2	-
Customs	1	1	1
Health	1	1	-

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

### 4 CIVIL NON-SCHEDULED FLIGHTS

#### 4.1 PROCEDURES

##### 4.1.1 Overflights

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

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

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

##### 4.1.2 Non-Traffic or Technical Landings

4.1.2.1 Prior notification is necessary. Subject to the observance of the terms of the Convention on International Civil Aviation, Singapore facilitates such non-traffic or technical landings by civil aircraft registered in any ICAO

Contracting States with which Singapore has diplomatic relations provided adequate advance notification shall have been given.

- 4.1.2.2 Notification by flight plan addressed to the Singapore Air Traffic Control Centre (WSJCZQZX) if received at least 2 hours in advance of the aircraft's arrival at Singapore Changi Airport or Seletar Aerodrome or 2 hours prior to entering the Singapore Flight Information Region whichever is the earlier will normally be accepted as advance notification in this respect.
- 4.1.2.3 All business aviation aircraft shall park in a nose-in position and be pushed back with the aid of an aircraft tow-bar and tow-tractor. Reverse thrust or variable pitch propellers shall not be used. The aircraft must carry its own tow-bar. The aircraft operator may make arrangements with the ground handling agent to provide the tow-bar. The aircraft shall be required to be towed to another aircraft stand should the need arise.
- 4.1.2.4 All passengers of the business aviation flight will have to clear CIQ via the Commercially-Important- Persons facility located at Terminal 2.
- 4.1.2.5 All business aviation flights must engage a ground handling agent at Singapore Changi Airport.
- 4.1.2.6 In all other cases, prior permission must be sought and obtained through diplomatic means from the Ministry of Foreign Affairs, Republic of Singapore.
- 4.1.2.7 All non-traffic aircraft are to submit a copy of the Certificate of Airworthiness to CAAS, after each landing, by facsimile at 6545 6519 or by email to [CAAS\\_AFO\\_FOS@caas.gov.sg](mailto:CAAS_AFO_FOS@caas.gov.sg)

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

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

- ← 4.1.3.3 All applications must be submitted via <https://appserver1.caas.gov.sg/ATLAS>

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

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

4.1.3.6 All business aviation aircraft shall park in a nose-in position and be pushed back with the aid of an aircraft tow-bar and tow-tractor. Reverse thrust or variable pitch propellers shall not be used when parking or pushing back aircraft. The aircraft operator must ensure that an appropriate tow-bar for the aircraft type is available to facilitate push back operations from the aircraft stand. The aircraft operators may use their own tow-bar or approach ground handling agents in either Seletar or Singapore Changi Airport to secure the appropriate tow-bar.

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

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

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

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

#### 4.1.3.11 **Permit Fees**

##### (a) Normal Permits

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

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

##### (b) Express Permits

Operators who wish to obtain a permit under 3 working days, but at least 24 hours before the flight, should contact the Duty Officer at +65 98331775 and submit a complete application via this weblink: <https://appserver1.caas.gov.sg/ATLAS>. The following fee shall be paid:

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

*Note 1: "Working Day" means:*

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

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

##### Definitions:

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

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

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

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

## **4.2 DOCUMENTARY REQUIREMENTS FOR CLEARANCE OF AIRCRAFT**

4.2.1 Same requirements as for SCHEDULED FLIGHTS.

## **4.3 PERMIT CONDITIONS**

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



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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	19 JUL 18
<b>Instrument Approach Chart</b> ICAO (IAC)		<b>Singapore Changi</b>			
	1:400 000	RWY 02L - ICW ILS/DME	AD-2-WSSS-IAC-1	In AIP	01 FEB 18
	1:400 000	RWY 02C - ICE ILS/DME	AD-2-WSSS-IAC-2	In AIP	01 FEB 18
	1:400 000	RWY 20R - ICH ILS/DME	AD-2-WSSS-IAC-5	In AIP	01 FEB 18
	1:400 000	RWY 20C - ICC ILS/DME	AD-2-WSSS-IAC-6	In AIP	01 FEB 18
	1:400 000	RWY 20C - VTK DVOR/DME	AD-2-WSSS-IAC-7	In AIP	01 FEB 18
	1:400 000	RWY 02L - RNAV(GNSS)	AD-2-WSSS-IAC-9	In AIP	19 JUL 18
	1:400 000	RWY 02C - RNAV(GNSS)	AD-2-WSSS-IAC-10	In AIP	19 JUL 18
	1:400 000	RWY 20R - RNAV(GNSS)	AD-2-WSSS-IAC-11	In AIP	01 FEB 18
	1:400 000	RWY 20C - RNAV(GNSS)	AD-2-WSSS-IAC-12	In AIP	01 FEB 18
		<b>Paya Lebar</b>			
	1:400 000	RWY 20 - PU DVOR/DME	AD-2-WSAP IAC-1	In AIP	01 FEB 18
	1:400 000	RWY 02 - PU DVOR/DME	AD-2-WSAP IAC-2	In AIP	01 FEB 18
	1:400 000	RWY 20 - IPS ILS/DME	AD-2-WSAP IAC-3	In AIP	01 FEB 18
	1:400 000	RWY 02 - IPN ILS/DME	AD-2-WSAP IAC-4	In AIP	01 FEB 18
	1:400 000	RWY 02 - RNAV(GNSS)	AD-2-WSAP-IAC-5	In AIP	01 FEB 18
	1:400 000	RWY 20 - RNAV(GNSS)	AD-2-WSAP-IAC-6	In AIP	01 FEB 18
<b>Visual Approach Chart</b> ICAO (VAC)	1:400 000	<b>Singapore Changi</b>		AD-2-WSSS-VAC-1	In AIP 01 FEB 18
		<b>Seletar</b>			
	1:100 000	RWY 03	AD-2-WSSL-VAC-1	In AIP	19 JUL 18
	1:100 000	RWY 21	AD-2-WSSL-VAC-2	In AIP	19 JUL 18
	1:100 000	RWY 03	AD-2-WSSL-VAC-3	In AIP	19 JUL 18
	1:100 000	RWY 21	AD-2-WSSL-VAC-4	In AIP	19 JUL 18
<b>Visual Departure Chart</b>		<b>Seletar</b>			
	1:100 000	RWY 03	AD-2-WSSL-VDC-1	In AIP	19 JUL 18
	1:100 000	RWY 21	AD-2-WSSL-VDC-2	In AIP	19 JUL 18
<b>Aerodrome Chart</b> ICAO (AC)		<b>Singapore Changi</b>		AD-2-WSSS-ADC-2	In AIP 19 JUL 18
		<b>Seletar</b>		AD-2-WSSL-ADC-1	In AIP 19 JUL 18
		<b>Paya Lebar</b>		AD-2-WSAP-ADC-1	In AIP 12 NOV 15
<b>Aerodrome Obstacle Chart</b> ICAO TYPE A (AOC)		<b>Singapore Changi</b>			
	1:10 000	RWY 20R/02L	AD-2-WSSS-AOC-1	In AIP	07 DEC 17
	1:10 000	RWY 20C/02C	AD-2-WSSS-AOC-2	In AIP	29 MAR 18
		<b>Seletar</b>			
	1:10 000	RWY 03/21	AD-2-WSSL-AOC-1	In AIP	17 AUG 17
		<b>Paya Lebar</b>			
	1:20 000	RWY 20/02	AD-2-WSAP-AOC-1	In AIP	10 NOV 16
<b>Aerodrome Obstacle Chart</b> ICAO TYPE B (AOC)		<b>Singapore Changi</b>			
	1:25 000	RWY 02L/20R and 02C/20C	AD-2-WSSS-AOC-3	In AIP	19 JUL 18
		<b>Seletar</b>			
	1:12 500	RWY 03/21	AD-2-WSSL-AOC-2	In AIP	19 JUL 18
<b>Precision Approach Terrain Chart</b> ICAO (PATC)		<b>Singapore Changi</b>			
	1:2 500	RWY 02L	AD-2-WSSS-PATC-1	In AIP	01 FEB 18
	1:2 500	RWY 20C	AD-2-WSSS-PATC-2	In AIP	01 FEB 18

**4 TYPES OF SERVICES**

- 4.1 The Meteorological Office and Meteorological Watch Office at Singapore Changi Airport operate H24 and provide the following services for civil aviation:
- a. Full meteorological documentation and briefing for current operational planning for all flights operating out of Singapore Changi Airport;
  - b. Area meteorological watch over the Singapore FIR with the supply of meteorological information including SIGMET information to aircraft in flight through the Singapore ATS radio channels (see subsection AD 2.11);
  - c. HF RTF VOLMET broadcasts of meteorological information (see page GEN 3.5-7), Aviation weather report with trend statement, strong low level vertical wind shear report and aerodrome warnings are also included in VHF ATIS broadcasts for Singapore Changi Airport (see page GEN 3.4-3);
  - d. Meteorological information for ATS
- 4.2 Weather briefing by a forecaster is available H24 to qualified flight operations personnel at the Meteorological Office at Singapore Changi Airport or via telephone at (65)65425059 / (65)65422837. Weather information is available online via our Aviation Intranet at URL <http://www.weather.gov.sg/> (see paragraph 9.2 for further details).
- 4.3 The Meteorological Office at Seletar Aerodrome operates H24 and provides meteorological documentation without briefing for international and general aviation flights operating out of Seletar Aerodrome.
- ← 4.4 Details of documentation supplied for each flight are determined by arrangement between the operator and the Meteorological Office. In general, the pilot-in-command is provided with documentation comprising one or more fixed-time prognostic streamline/istotach/spot temperature charts of standard isobaric surfaces appropriate to the cruising level (ICAO model IS), one of fixed-time prognostic significant weather chart code form and appropriate aerodrome forecasts in TAF code form.
- 4.5 Routine aerodrome forecasts received from other Meteorological Offices are normally included in meteorological documentation without modification. When a required aerodrome forecast is not received, a provisional forecast may be issued by the Meteorological Office providing the documentation.
- 4.6 After documentation has been issued and until take-off (i.e. the latest ETD notified to the Meteorological Office), the Meteorological Office at Singapore Changi Airport makes available amendments to the documentation. It is the responsibility of the operator's local representative or the pilot-in-command to obtain any pre-departure amendment(s) from the Meteorological Office at Singapore Changi Airport. The pilot-in-command may request pre-departure amendment(s) through the Singapore Changi Airport Control Tower.
- 4.7 Climatological Summaries for Singapore Changi (WSSS-48698) are available from the Meteorological Service Singapore.

**4.8 OBSERVING SYSTEMS AND OPERATING PROCEDURES AT SINGAPORE CHANGI AIRPORT AND SELETAR AERODROME****4.8.1 SINGAPORE CHANGI AIRPORT****4.8.1.1 RWY 02L/20R (Runway 1)**

4.8.1.1.1 Surface wind is measured by three cup anemometers and wind vanes located as follows:

	<u>DIST FROM END OF RWY</u>	<u>DIST FROM RWY CENTRELINE</u>
(i) One set at	470 metres north of RWY 02L	130 metres
(ii) One set at	middle of runway	130 metres
(iii) One set at	470 metres south of RWY 20R	130 metres

4.8.1.1.2 RVR observations are made by means of three sets of transmissometers, located as follows:

	<u>DIST FROM END OF RWY</u>	<u>DIST FROM RWY CENTRELINE</u>
1st set	370 metres north of RWY 02L	110 metres
2nd set	Middle of runway	110 metres
3rd set	360 metres south of RWY 20R	110 metres

RVR is reported in steps of 25 metres between 0 and 400 metres, 50 metres between 400 and 800 metres and 100 metres between 800 and 1,500 metres.

**4.8.1.2 RWY 02C/20C (Runway II)**

4.8.1.2.1 Surface wind is measured by three cup anemometers and wind vanes located as follows:

	<u>DIST FROM END OF RWY</u>	<u>DIST FROM RWY CENTRELINE</u>
(i) One set at	450 metres north of RWY 02C	130 metres
(ii) One set at	middle of runway	130 metres
(iii) One set at	450 metres south of RWY 20C	130 metres

4.8.1.2.2 RVR observations are made by means of three sets of transmissometers, located as follows:

	<u>DIST FROM END OF RWY</u>	<u>DIST FROM RWY CENTRELINE</u>
1st set	400 metres north of RWY 02C	110 metres
2nd set	Middle of runway	110 metres
3rd set	400 metres south of RWY 20C	110 metres

RVR is reported in steps of 25 metres between 0 and 400 metres, 50 metres between 400 and 800 metres and 100 metres between 800 and 1,500 metres.

4.8.1.2.3 Surface wind is also measured by an ultrasonic wind sensor located at the meteorological station, which is situated at 345 metres west of middle of RWY 02L/20R. Surface wind report in METAR and SPECI is taken from this measurement.

**4.8.1.3 Wind Shear Observations (Singapore Changi Airport)**

4.8.1.3.1 Horizontal low level wind shear observations are measured continuously by a system of 13 wind sensors located in Singapore Changi airport and its vicinity.

4.8.1.3.2 ATC will pass to all aircraft taking off or landing for the next 1/2 hour from the time of report whenever microburst or wind shear of intensity 15 knots or greater is observed/reported.

4.8.1.3.3 The phraseology used by ATC to warn pilots of the presence of wind shear of intensity between 15 and 30 knots is:

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

4.8.1.3.4 The phraseology used by ATC to warn pilots of the presence of wind shear of intensity greater than 30 knots is:

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

4.8.1.3.5 The presence of wind shear will also be broadcast in the ATIS for the next half an hour.

**4.8.2 SELETAR AERODROME**

4.8.2.1 Surface wind is measured by cup anemometers and wind vanes at ends of runway. Surface wind report in METAR and SPECI is taken from measurements of cup anemometer and wind vane at RWY 03.

4.8.2.2 Wind Shear Observations (Seletar Aerodrome)

4.8.2.2.1 ATC will pass to all aircraft taking off or landing for the next 1/2 hour from the time of report whenever microburst or windshear of intensity 15 knots or greater is observed/reported.

4.8.2.2.2 The phraseology used by ATC to warn pilots of the presence of wind shear of intensity between 15 and 30 knots is:

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

4.8.2.2.3 The phraseology used by ATC to warn pilots of the presence of wind shear of intensity greater than 30 knots is:

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

**5 NOTIFICATION REQUIRED FROM OPERATORS**

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

**6 AIRCRAFT REPORTS REQUIRED FROM OPERATORS****6.1 AIREP**

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

**6.2 REPORTING OF LOW LEVEL WIND SHEAR**

- 6.2.1 Pilots encountering wind shear shall report to ATC as soon as possible.
- 6.2.2 When reporting wind shear on radiotelephony, the information should be transmitted in this order:
- a. Aircraft callsign;
  - b. WIND SHEAR report;
  - c. Time (of wind shear occurrence);
  - d. Position (of wind shear);
  - e. Intensity (moderate, strong or severe);
  - f. Average height of wind shear layer.
- 6.2.3 On receipt of a wind shear report from a pilot, ATC will pass it to other aircraft in the vicinity. The following phraseology will be used:
- “WIND SHEAR WARNING  
ARRIVING (or DEPARTING) ..... (type of aircraft)  
REPORTED ..... (moderate, strong, severe)  
WIND SHEAR IN APPROACH (or DEPARTURE)  
RUNWAY ..... (number) AT ..... (time)  
HEIGHT OF WIND SHEAR LAYER ..... (feet)”
- 6.2.4 The presence of wind shear as reported by a pilot will also be broadcast in the ATIS for the next half an hour unless subsequent reports indicate that wind shear no longer exists.

**6.3 AIRCRAFT ATS/MET REPORTING POINTS IN THE SINGAPORE FIR**

- 6.3.1 Aircraft Meteorological Observations shall be made in relation to and transmitted in flight by all aircraft at the following selected Air Traffic Services position reporting points within the Singapore FIR except when:
- a. The flight duration is less than 2 hours, or
  - b. The altitude of the flight path is less than 5 000ft, or
  - c. The aircraft is less than 1 hour's flying time from the next intended point of landing.
- 6.3.2 The aircraft ATS/MET reporting points listed below are indicated in page ENR 3.1/ATS Chart.
- 6.3.3 The position of the mean wind or spot wind, to the nearest whole degree latitude and longitude, shall be recorded and transmitted in flight.

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

**7 VOLMET SERVICE**

**TABLE GEN 3.5.7 VOLMET SERVICE**

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

**9 OTHER AUTOMATED METEOROLOGICAL SERVICES**

- 9.1 Besides VOLMET and ATIS broadcasts, airline operators can obtain access to various operational meteorological information through our Aviation Weather Services Portal and automated faxing service.
- 9.2 The Aviation Weather Services Portal is free to airlines and flight operators with flights departing from Singapore Changi or Seletar Airports. It is accessible via the "Login" link at URL <http://www.weather.gov.sg/>. A registered user account is required for the access. For registration, please email to [MSS\\_Aviation\\_Enquiries@nea.gov.sg](mailto:MSS_Aviation_Enquiries@nea.gov.sg)

**TABLE 3.5.9 AVIATION WEATHER SERVICES PORTAL**

<i>Service Name</i>	<i>Information Available</i>	<i>Area, Route and Aerodrome Coverage</i>	<i>Telephone and Telefax numbers Remarks</i>
1	2	3	4
Aviation Weather Services Portal	METAR, SPECI, TAF, AD Warning, Wind Shear Warning, SIGMET, Tropical Cyclone Warnings/Advisories, Volcanic Ash, Radioactive Fallout and Haze Information Advisories	All METAR, SPECI, TAF, SIGMET, Tropical Cyclone Warnings/Advisories, Volcanic Ash, Radioactive Fallout Advisories received from designated major centres around the world. AD Warning and Wind Shear Warning for WSSS and WSSL. Haze Information/Advisories for Southeast Asia Region	
	Latest Himawari-8 composite and true colour satellite images every 20 minutes	Southeast Asia and full globe	
	Latest Himawari-8 IR and hourly cloud top height satellite images every 10-minutes	Asia Pacific	
	Latest images from other satellites such as EUMETSAT, NOAA and Feng-Yun weather satellites	Europe, US Polar, America and Asia Pacific	
	Low-to-Mid-Level Significant Weather charts	Low-Medium level (Surface-FL450) covering southern ASEAN region	
	WAFS (World Area Forecast System) SIGWX charts	Medium-High level covering Asia, Middle East, Africa, America and Europe	
	Prognostic Wind-Temperature charts	Standard levels covering Europe, America, Asia-Pacific regions and the southern ASEAN region.	
	Weather Radar images	Latest Singapore Changi Airport 70km, 240km and 480km range rain intensity radar plots.	
	WAFS Washington model gridded data	Full globe forecast of winds, temperature, turbulence potential, icing potential and horizontal extent of cumulonimbus clouds	
Take-off conditions	Singapore Changi Airport		
Climb and Descent winds forecast	Selected airports over Asia Pacific, Europe, Africa and North America		

*Note: Details of meteorological briefing at aerodromes are given in the individual aerodrome sections, i.e. AD 2*

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## **8 DATA LINK SERVICES IN SINGAPORE FIR**

### **8.1 INTRODUCTION**

- 8.1.1 Data link services are available to FANS 1/A compatible aircraft (which are compliant to RTCA DO- 258A or ED EUROCAE 100A) on ATS Routes G334, L504, L517, L625, L642, L644, L649, M646, M753, M758, M761, M767, M768, M771, M772, M904, N875, N884, N891 and N892 in the Singapore FIR daily on a 24-hour basis.
- 8.1.2 The introduction of data link services does not affect current procedures for non-data link equipped aircraft operating in the same airspace.

### **8.2 BACKGROUND**

- 8.2.1 Controller Pilot Data Link Communications (CPDLC) and Automatic Dependent Surveillance (ADS) data link applications will be used to provide services to FANS 1/A equipped aircraft, in particular within the Singapore FIR beyond the range of existing radar / ADS-B and VHF voice communications. Area Navigation (RNAV) routes suitable for ADS-C and / or CPDLC logon are described in ENR 3.3.
- 8.2.2 Messages will be transferred by VHF and satellite data link.
- 8.2.3 CPDLC supports the following services:
- a. Emergency alerting;
  - b. Pilot to Controller downlink of position reports and clearance requests;
  - c. Controller to Pilot uplink of ATC clearances and instructions; and
  - d. Free text as a supplement to pre-formatted message elements.
- ← 8.2.4 Pre-Departure Clearance (PDC) via CPDLC is available on selected ATS routes/destinations as described in WSSS AD 2.22 paragraph 8.4.
- 8.2.5 Automatic Dependent Surveillance (ADS) supports automatic reporting by the aircraft Flight Management System (FMS) of aircraft position and intent information. The FMS reports the required information in accordance with parameters selected by the ground system.

### **8.3 LOGON PROCEDURES**

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

## **8.4 APPLICATION OF CPDLC**

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

## **8.5 APPLICATION OF ADS**

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

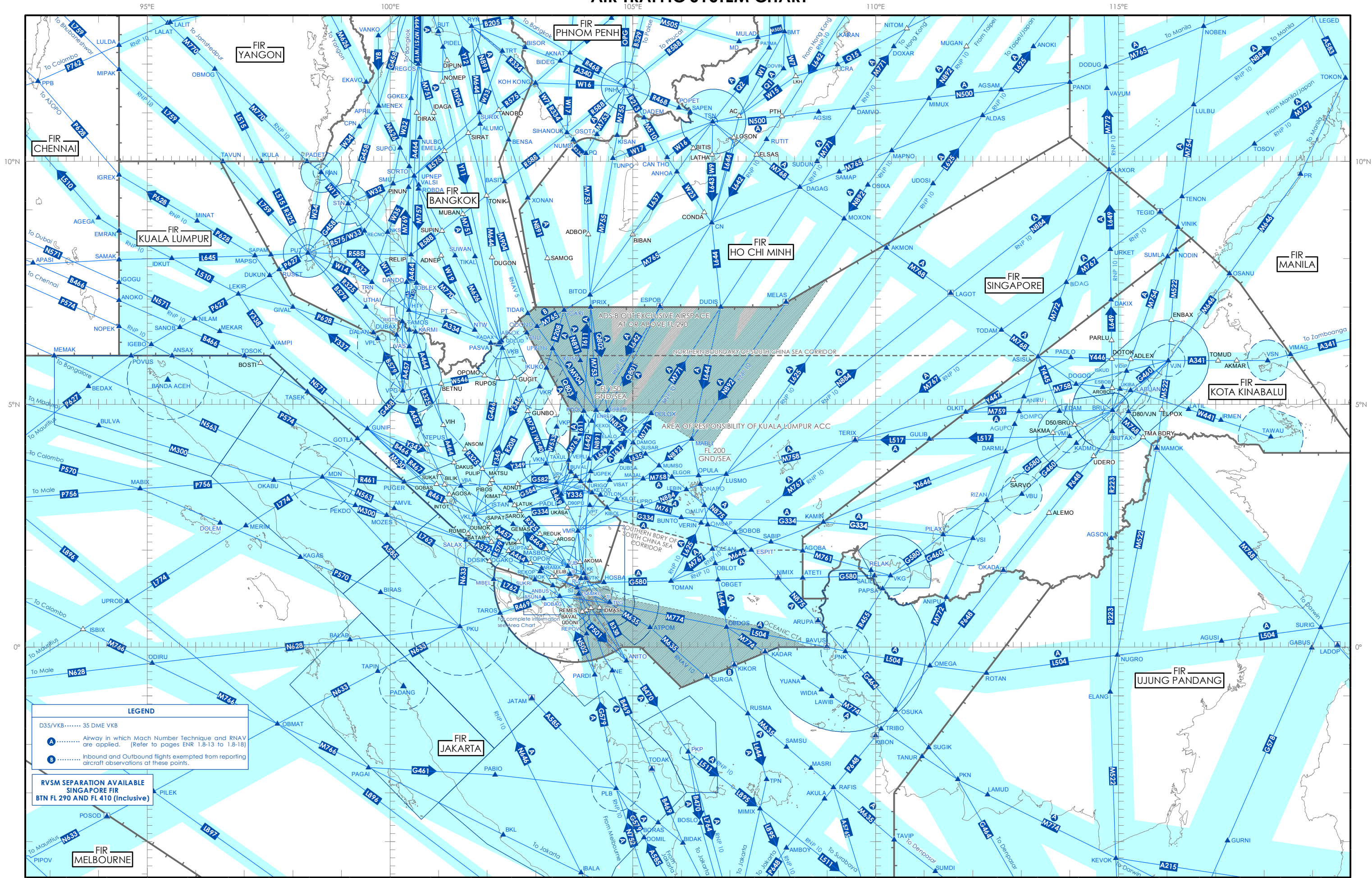
Route Designator {RNP Type}	[Route Usage Notes]								
Significant Point Name	Significant Point Coordinates								Remarks
{RNP Type}	Track MAG ↓ ↑	Dist NM	(COP)	Upper limit Lower limit	MNM FLT ALT	Lateral limits NM	FL series ↓      ↑		Controlling unit Frequency {Airspace class} Remarks
1	2	3	4	5	6	7	8	9	10
<b>B469</b>	Route availability: (1) H24								
▲ PEKAN DVOR/DME (VPK)	032259N 1032524E								(4)
	335° 155°	14.9NM		FL 460 7500 FT ALT	8000 FT	10	Odd <sup>(1)</sup>	Even <sup>(1)</sup>	[Class A –ABV FL150 Class B –BLW FL150]
Δ PADLI	030918N 1033133E								
	335° 155°	17.1NM		FL 460 7500 FT ALT	8000 FT	10	Odd <sup>(1)</sup>	Even <sup>(1)</sup>	[Class A –ABV FL150 Class B –BLW FL150]
▲ 90DME (90 DME PU)	025341N 1033836E								
	335° 155°	11.0NM		FL 460 7500 FT ALT	8000 FT	10	Odd <sup>(1)</sup>	Even <sup>(1)</sup>	[Class A –ABV FL150 Class B –BLW FL150]
▲ BIKTA	024337N 1034308E								
	335° 155°	22.2NM		FL 460 7500 FT ALT	8000 FT	10	Odd <sup>(1)</sup>	Even <sup>(1)</sup>	[Class A –ABV FL150 Class B –BLW FL150]
▣ MERSING DVOR/DME (VMR) (58 DME PU)	022318N 1035218E								
	356° 176°	27.9NM		FL 460 3000 FT ALT	4000 FT		Odd <sup>(1)</sup>	Even <sup>(1)</sup>	[Class A –ABV FL150 Class B –BLW FL150] (2)
Δ 30DME (30 DME PU)	015520N 1035405E								
	356° 176°	9.9NM		FL 460 2000 FT ALT	4000 FT		Odd <sup>(1)</sup>	Even <sup>(1)</sup>	[Class A –ABV FL150 Class B –BLW FL150] (2)
Δ AKOMA (20 DME PU)	014522N 1035443E								
	356° 176°	10.0NM		FL 460 2000 FT ALT	4000 FT		Odd <sup>(1)</sup>	Even <sup>(1)</sup>	[Class A –ABV FL150 Class B –BLW FL150] (2)
Δ 10DME (10 DME PU)	013523N 1035522E								
	356° 176°	10.0NM		FL 460 GND	4000 FT		Odd <sup>(1)</sup>	Even <sup>(1)</sup>	[Class A –ABV FL150 Class B –BLW FL150] (2)
▲ PAPA UNIFORM DVOR/DME (PU)	012523.99N 1035559.74E								(5)
	201° 021°	12.9NM		FL 460 3000 FT ALT	4000 FT		Odd <sup>(1)</sup>	Even <sup>(1)</sup>	[Class A –ABV FL150 Class B –BLW FL150] (3)
▲ SINJON DVOR/DME (SJ)	011319N 1035120E								
	157° 337°	30.2NM		FL 460 2000 FT ALT	4000 FT	10	Odd <sup>(1)</sup>		[Class A –ABV FL150 Class B –BLW FL150]
Δ BAVAL (30 DME SJ)	004518N 1040242E								
	159° 339°	61.5NM		FL 460 2000 FT ALT	5000 FT	10	Odd <sup>(1)</sup>		[Class A –ABV FL150 Class B –BLW FL150]
Δ FIRJ1 (WSJC/WIIZ FIR BDRY)	001230S 1042424E								
	154° 334°	19.1NM		FL 460 2000 FT ALT	5000 FT	10	Odd <sup>(1)</sup>		[Class A –ABV FL150 Class B –BLW FL150]
▲ SINGKEP NDB (NE)	002858.79S 1043433.57E								
<p>← <u>Route Remarks:</u> Flight Planning Flights overflying Singapore to destinations beyond Jakarta FIR are to flight plan via B470 ANITO</p> <p>Singapore ACC FREQ: P123.7MHz, S127.3MHz</p> <p><u>Point/Segment Remarks:</u> (2) <b>Lateral Limits:</b> The eastern and western airway sectors are enclosed by a line joining 022830N 1035504E 015100N 1041436E 013542N 1041442E 012550N 1040109E to a point 5NM west of PU DVOR/DME and northwards to a point 5NM west of VMR DVOR/DME.</p> <p>(3) Within the lateral limits of Paya Lebar CTR.</p> <p>(4) Eastbound Flight (report FL and flight condition over North CTR boundary). Westbound Flight (report FL and flight condition over VPK).</p> <p>(5) Kuala Lumpur/Singapore FIR BDRY APRX 0.5NM north of PU.</p>									

Route Designator {RNP Type}		[Route Usage Notes]							
Significant Point Name	Significant Point Coordinates								Remarks
{RNP Type}	Track MAG ↓ ↑	Dist NM	(COP)	Upper limit Lower limit	MNM FLT ALT	Lateral limits NM	FL series ↓      ↑		Controlling unit Frequency {Airspace class} Remarks
1	2	3	4	5	6	7	8	9	10
<b>B470</b>	Route availability: (1) H24								
▲ SINJON DVOR/DME (SJ)	011319N 1035120E								
	145° 325°	30.1NM		FL 460 2000 FT ALT	3000 FT		Odd <sup>(1)</sup>	Even <sup>(1)</sup>	[Class A –ABV FL150 Class B –BLW FL150] <sup>(2)</sup>
Δ UDONI (30 DME SJ)	004818N 1040806E								
	145° 325°	60.9NM		FL 460 2000 FT ALT	5000 FT		Odd <sup>(1)</sup>	Even <sup>(1)</sup>	[Class A –ABV FL150 Class B –BLW FL150] <sup>(2)</sup>
FIRJ2 (WSJC/WIIZ FIR BDRY)	000224S 1044205E								<sup>(3)</sup>
	145° 325°	17.6NM		FL 460 2000 FT ALT	5000 FT		Odd <sup>(1)</sup>	Even <sup>(1)</sup>	[Class A –ABV FL150 Class B –BLW FL150] <sup>(2)</sup>
▲ ANITO	001700S 1045200E								
<p><u>Route Remarks:</u> Singapore ACC FREQ: P134.4MHz S128.1MHz</p> <p><u>Point/Segment Remarks:</u> (2) <b>Lateral Limits:</b> The lateral limits of this airway commence from 5NM either side of a line joining SJ DVOR/DME to OI NDB funnelling out from the SJ DVOR/DME on a 7½° tolerance to intersect the boundary of a similarly projected airway from OI NDB but on a 12° tolerance. One way routeing from Singapore to Soekarno-Hatta and to destinations beyond. Two-way routeing Singapore/Pangkal Pinang for flights below FL200.</p> <p>(3) Not a REP. Reduced separation minima will be applied on B470 south of ANITO between RNAV-equipped aircraft using MNT.</p>									

Route Designator {RNP Type}		[Route Usage Notes]									
Significant Point Name		Significant Point Coordinates								Remarks	
{RNP Type}		Track MAG ↓ ↑	Dist NM	(COP)	Upper limit Lower limit	MNM FLT ALT	Lateral limits NM	FL series ↓      ↑		Controlling unit Frequency {Airspace class} Remarks	
1		2	3	4	5	6	7	8	9	10	
<b>R208</b>		Route availability: (1) H24									
▲ IGARI		065612N 1033506E									
		197° 017°	73.9NM		FL 460 FL 240	FL 250	20	Odd <sup>(1)</sup>	Even <sup>(1)</sup>	[Class A]	
▲ IKUKO (FIR BDRY)		054512N 1031324E									
<p><i>Route Remarks:</i> Portion of R208 within the Singapore FIR to be released to Lumpur ACC daily subject to coordination BTN Singapore ACC and Lumpur ACC. 15 min longitudinal separation.</p> <p>Singapore ACC FREQ: P127.3MHz, S123.7MHz</p> <p>Lumpur ACC FREQ: P132.6MHz</p>											

Route Designator {RNP Type}		[Route Usage Notes]							
Significant Point Name	Significant Point Coordinates								Remarks
{RNP Type}	Track MAG ↓ ↑	Dist NM	(COP)	Upper limit Lower limit	MNM FLT ALT	Lateral limits NM	FL series ↓      ↑		Controlling unit Frequency {Airspace class} Remarks
1	2	3	4	5	6	7	8	9	10
<b>R325</b>	Route availability: (1) H24								
Δ REDUK	021957N 1030459E								
	319° 139°	52.9NM		FL 460 5500 FT ALT	6000 FT	8	Odd <sup>(1)</sup>	Even <sup>(1)</sup>	[Class A – ABV FL150 Class B – BLW FL150]
▲ JOHOR BAHRU DVOR/DME (VJB)	013950.4N 1033939.2E								
<i>Route Remarks:</i> Flight planning not permitted for northbound FLT departing from Singapore to airports beyond Kuala Lumpur operating above FL200.									

# AIR TRAFFIC SYSTEM CHART



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Route Designator {RNP Type}		[Route Usage Notes]				
Significant Point Name	Significant Point Coordinates			FL series		Remarks
{RNP Type}	Initial Track MAG ↓ ↑	Great Circle Dist NM	Upper limit Lower limit	↓	↑	Controlling unit Frequency {Airspace class} Remarks
1	2	3	4	5	6	7
<b>L625</b>	Route availability: (1) H24					
▲ AKMON	081254N 1101306E					(6)
(10)	035° -	340.6NM	FL 460 FL 135			[Class A] (2) (3)
▲ LUSMO	033341N 1065534E					(7)
(10)	027° -	67.5NM	FL 460 FL 135			[Class A] (2) (3) (4)
▲ VERIN	023332N 1062425E					(6)
(10)	027° -	80.5NM	FL 460 FL 245			[Class A] (2) (5)
▲ TOMAN	012147N 1054717E					(6)
<u>Route Remarks:</u> Uni-directional for north-east bound flights from TOMAN to AKMON. No PDC Flight Levels FL310, FL320, FL350, FL360, FL390, FL400 applicable. Other levels available with prior approval.						
<u>Point/Segment Remarks:</u>						
(2) <b>Lateral Limits:</b> 10NM either side of line joining TOMAN to LUSMO and 25NM either side of the line joining LUSMO to AKMON.						
(3) ADS-C and CPDLC services are available to suitably equipped aircraft operating outside radar cover within the Singapore FIR.						
(4) Segment from VERIN to LUSMO use: P134.7 MHz S134.15 MHz						
(5) Segment from TOMAN to VERIN use: P134.2 MHz S133.35 MHz						
(6) NIL						
(7) VMR 069° 196.3NM						

Route Designator {RNP Type}		[Route Usage Notes]					Remarks
Significant Point Name {RNP Type}		Significant Point Coordinates		Upper limit Lower limit	FL series		Controlling unit Frequency {Airspace class} Remarks
		Initial Track MAG ↓ ↑	Great Circle Dist NM		↓	↑	
1		2	3	4	5	6	7
<b>L629</b>		Route availability: (1) H24					
▲ DOLOX	044841N 1052247E						
		43.1NM	FL 460 FL 240			Odd <sup>(1)</sup>	[Class A] <sup>(2)</sup>
▲ NOPAT	042313N 1044756E						
		52.2NM	FL 460 FL 240			Odd <sup>(1)</sup>	[Class A] <sup>(2)</sup>
▲ VEPLI	035223N 1040542E						
		27.2NM	FL 460 FL 240			Odd <sup>(1)</sup>	[Class A] <sup>(2)</sup>
▲ BUVAL (WSJC/MMFC FIR BDRY)	033622N 1034341E						
		22.6NM	FL 460 FL 240			Odd <sup>(1)</sup>	[Class A] <sup>(2)</sup>
▲ PEKAN DVOR/DME (VPK)	032259N 1032524E						
<p><u>Route Remarks:</u>  <b>Lateral Limits:</b>                      10NM either side of line joining VPK DVOR/DME to BUVAL and 25NM either side of line joining BUVAL to DOLOX.</p> <p>Singapore ACC FREQ:                      P123.7 MHz                      S127.3 MHz</p> <p><u>Point/Segment Remarks:</u>                      (2) NIL</p>							

Route Designator {RNP Type}		[Route Usage Notes]				
Significant Point Name	Significant Point Coordinates		Upper limit Lower limit		FL series	Remarks
{RNP Type}	Initial Track MAG ↓ ↑	Great Circle Dist NM	FL 460 FL 240	Odd <sup>(1)</sup>	↓      ↑	Controlling unit Frequency {Airspace class} Remarks
1	2	3	4	5	6	7
<b>L644</b>	Route availability: (1) H24					
▲ DUDIS (WSJC/VVTS FIR BDRY)	070000N 1064836E					(7)
(10)	192° -	165.8NM	FL 460 FL 240	Odd <sup>(1)</sup>		[Class A] (2) (3)
▲ MABLI	041717N 1061247E					(7)
(10)	169° -	45.9NM	FL 460 FL 240	Odd <sup>(1)</sup>		[Class A] (4)
▲ OPULA	033155N 1062118E					(7)
(10)	169° -	10.8NM	FL 460 FL 240	Odd <sup>(1)</sup>		[Class A] (4)
▲ ONAPO	032116N 1062318E					(7)
(10)	169° -	26.4NM	FL 460 FL 240	Odd <sup>(1)</sup>		[Class A] (4)
▲ OMLIV	025512N 1062812E					(7)
(10)	169° -	24.2NM	FL 360 FL 240	Odd <sup>(1)</sup>		[Class A] (5)
▲ OMBAP	023116N 1063242E					(7)
(10)	169° -	30.7NM	FL 460 FL 240	Odd <sup>(1)</sup>		[Class A] (5)
▲ OLSAM	020059N 1063824E					(7)
(10)	169° -	18.3NM	FL 460 FL 240	Odd <sup>(1)</sup>		[Class A] (5)
▲ OBLOT	014256N 1064147E					(7)
(10)	169° -	20.1NM	FL 460 FL 240	Odd <sup>(1)</sup>		[Class A] (5)
▲ OBGET	012307N 1064531E					(7)
(10)	169° -	107.2NM	FL 460 FL 240	Odd <sup>(1)</sup>		[Class A] (6)
▲ KIKOR (WSJC/WIIZ FIR BDRY)	002244S 1070524E					(7)
<p><u>Route Remarks:</u>  <b>Lateral Limits:</b>            25NM either side of line joining DUDIS to KIKOR.</p> <p>Available only for flights departing from Hong Kong or north of Hong Kong to Jakarta.</p> <p><u>Point/Segment Remarks:</u>            (2) ADS-C service is available to suitably equipped aircraft operating outside radar cover (between DUDIS and MABLI) and not in the exclusive ADS-B airspace within Singapore FIR.            (3) Segment from DUDIS to MABLI use:            P134.35 MHz            S133.6 MHz            (4) Segment from MABLI to OMLIV use:            P134.7 MHz            S134.15 MHz            (5) Segment from OMLIV to OBGET use:            P134.2 MHz            S133.35 MHz            (6) Segment from OBGET to KIKOR use:            P134.4 MHz            S128.1 MHz            (7) NIL</p>						

Route Designator {RNP Type}		[Route Usage Notes]				
Significant Point Name {RNP Type}	Significant Point Coordinates		Upper limit Lower limit	FL series		Remarks
	Initial Track MAG ↓ ↑	Great Circle Dist NM		↓	↑	Controlling unit Frequency {Airspace class} Remarks
1	2	3	4	5	6	7
<b>L649</b>		Route availability: (1) H24				
▲ LAXOR (WSJC/RPHI FIR BDRY)	094937N 1144829E					
(10)		98.0NM	FL 460 FL 240		Even <sup>(1)</sup>	[Class A]
▲ URKET (WSJC/WBFC FIR BDRY)	081130N 1145000E					<sup>(2)</sup>
(10)		62.0NM	FL 460 FL 240		Even <sup>(1)</sup>	[Class A]
▲ DAKIX (WBFC/WSJC FIR BDRY)	070854N 1145054E					<sup>(3)</sup>
<p><u>Route Remarks:</u> Lateral Limits: 25NM either side of line joining DAKIX to LAXOR. Available only for flights departing from Brunei (WBSB), Labuan (WBKL) and Miri (WBGR) to Hong Kong (VHHH) only. No-PDC Flight Levels FL300 and FL380 applicable. ADS-C and CPDLC services are available to suitably equipped aircraft operating outside radar cover within the Singapore FIR.</p> <p><u>Point/Segment Remarks:</u> (2) NIL (3) BRU 359° 136NM</p>						

<b>Route Designator {RNP Type}</b>		<b>[Route Usage Notes]</b>				
<b>Significant Point Name</b>	<b>Significant Point Coordinates</b>					<b>Remarks</b>
<b>{RNP Type}</b>	<b>Initial Track MAG</b>	<b>Great Circle Dist NM</b>	<b>Upper limit Lower limit</b>	<b>FL series</b>		<b>Controlling unit Frequency {Airspace class} Remarks</b>
	↓ ↑			↓	↑	
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
<b>M630</b>	<i>Route availability:</i> (1) H24					
▲ SUKRI	012306N 1025904E					
(5)		37.3NM	FL 460 5500 FT ALT	Odd <sup>(1)</sup>		[Class A - ABV FL150 Class B - BLW FL150]
Δ BOBAG	010230N 1032954E					<sup>(2)</sup>
(5)		61.3NM	FL 460 5500 FT ALT	Odd <sup>(1)</sup>		[Class A - ABV FL150 Class B - BLW FL150]
▲ TANJUNG PINANG VOR/DME (TPG)	005413N 1043052E					
<i>Route Remarks:</i>						
<b>Lateral Limits:</b> 11.5NM either side of line joining SUKRI to TPG.						
Flight departing from aerodromes in Peninsular Malaysia and overflying WSJC are restricted to FL270 and above at waypoint SUKRI if the planned cruising level is FL270 or higher.						
<i>Flight Planning:</i> Southbound flight planning permitted for flights from Kuala Lumpur and airports beyond which are overflying beyond Singapore. Flights landing at Singapore Changi Airport to flight plan on A464.						
Singapore ACC FREQ: P133.25 MHz S135.8 MHz						
<i>Point/Segment Remarks:</i> (2) NIL						

Route Designator {RNP Type}		[Route Usage Notes]				
Significant Point Name {RNP Type}	Significant Point Coordinates		Upper limit Lower limit	FL series		Remarks Controlling unit Frequency {Airspace class} Remarks
	Initial Track MAG ↓ ↑	Great Circle Dist NM		↓	↑	
1	2	3	4	5	6	7
<b>M635</b>		Route availability: (1) H24				
▲ TEKONG DVOR/DME (VTK)	012455N 1040120E					(4)
		42.5NM	FL 460 5500 FT ALT	Odd <sup>(1)</sup>	Even <sup>(1)</sup>	[Class A - ABV FL150 Class B - BLW FL150] (2)
▲ TANJUNG PINANG VOR/DME (TPG)	005413N 1043052E					
		58.5NM	FL 460 5500 FT ALT	Odd <sup>(1)</sup>	Even <sup>(1)</sup>	[Class A - ABV FL150 Class B - BLW FL150] (3)
▲ ATPOM	002425N 1052114E					
		93.1NM	FL 460 5500 FT ALT	Odd <sup>(1)</sup>	Even <sup>(1)</sup>	[Class A - ABV FL150 Class B - BLW FL150] (2)
▲ SURGA (WSJC/WIIZ FIR BDRY)	003657S 1063119E					
<p>← <b>Route Remarks:</b>  <b>Lateral Limits:</b>                      25NM either side of line joining VTK to SURGA.</p> <p>Singapore ACC FREQ:                      P134.4 MHz                      S128.1 MHz</p> <p>Flight Planning:                      Flights overflying Singapore to destinations north of Kuala Lumpur and Subang are to flight plan via SURGA M635 TPG A464 SJ G579 VJB Y342 AROSO Y339.</p> <p>Flights overflying Singapore to land at Kuala Lumpur and Subang are to flight plan via SURGA M635 TPG A464 SJ G579 VJB A457.</p> <p><b>Point/Segment Remarks:</b>                      (2) NIL                      (3) TPG 120.5°                      58.5NM                      (4) Kuala Lumpur / Singapore FIR boundary approximately 1.2NM north of VTK.</p>						

Route Designator {RNP Type}		[Route Usage Notes]				
Significant Point Name	Significant Point Coordinates			FL series		Remarks
{RNP Type}	Initial Track MAG ↓ ↑	Great Circle Dist NM	Upper limit Lower limit	↓	↑	Controlling unit Frequency {Airspace class} Remarks
1	2	3	4	5	6	7
<b>M765</b>	Route availability: (1) H24					
▲ IGARI	065612N 1033506E					
		53.3NM	FL 460 FL 135	Even <sup>(1)</sup>	Odd <sup>(1)</sup>	[Class B] <sup>(2)</sup>
▲ VENLI (WMFC/WSJC FIR BDRY)	062848N 1024900E					
<p><u>Route Remarks:</u>  <b>Lateral Limits:</b>            10NM either side of line joining VKB DVOR/DME to IGARI.</p> <p>Portion of M765 within the Singapore FIR has been delegated to Lumpur ACC for provision of ATS.</p> <p>Lumpur ACC FREQ:            132.6MHz</p> <p><u>Point/Segment Remarks:</u>            (2) VKB 058°            88.8NM</p>						

Route Designator {RNP Type}		[Route Usage Notes]				
Significant Point Name {RNP Type}	Significant Point Coordinates		Upper limit Lower limit	FL series		Remarks Controlling unit Frequency {Airspace class} Remarks
	Initial Track MAG ↓ ↑	Great Circle Dist NM		↓	↑	
1	2	3	4	5	6	7
<b>M767</b>		Route availability: (1) H24				
▲ TEGID (RPHI/WSJC FIR BDRY)	085656N 1155143E					(2)
(10)		242.5NM	FL 460 FL 205			[Class A]
▲ TODAM	063138N 1123536E					(2)
(10)		225.5NM	FL 460 FL 205			[Class A]
▲ TERIX	041521N 1093456E					(2)
(10)		186.8NM	FL 460 FL 205			[Class A]
▲ BOBOB	022206N 1070558E					(2)
(10)		99.0NM	FL 460 FL 205			[Class A]
▲ TOMAN	012147N 1054717E					(2)
<p><u>Route Remarks:</u>  <b>Lateral Limits:</b>                      25NM either side of line joining TOMAN to TEGID.</p> <p>ADS-C and CPDLC services are available to suitably equipped aircraft operating outside radar cover (between TEGID and BOBOB) within the Singapore FIR.</p> <p>Singapore ACC FREQ:                      P134.2 MHz                      S133.35 MHz</p> <p>Uni-directional for south-west bound flights from TEGID to TOMAN. No PDC Flight Levels FL310, FL320, FL350, FL360, FL390, FL400 applicable. Other levels available with prior approval.</p> <p><u>Point/Segment Remarks:</u>                      (2) NIL</p>						



Route Designator {RNP Type}		[Route Usage Notes]				
Significant Point Name	Significant Point Coordinates			FL series		Remarks
{RNP Type}	Initial Track MAG ↓ ↑	Great Circle Dist NM	Upper limit Lower limit	↓	↑	Controlling unit Frequency {Airspace class} Remarks
1	2	3	4	5	6	7
<b>M768</b>		Route availability: (1) H24				
▲ AKMON	081254N 1101306E					(2)
		96.9NM	FL 460 FL 135	Odd <sup>(1)</sup>	Even <sup>(1)</sup>	[Class A]
▲ LAGOT	071632N 1113243E					(2)
		76.9NM	FL 460 FL 135	Odd <sup>(1)</sup>	Even <sup>(1)</sup>	[Class A]
▲ TODAM	063138N 1123536E					(2)
		55.4NM	FL 460 FL 135	Odd <sup>(1)</sup>	Even <sup>(1)</sup>	[Class A]
▲ ASISU (WSJC/WBFC FIR BDRY)	055906N 1132046E					(3)
<p><i>Route Remarks:</i>  <b>Lateral Limits:</b>                      25NM either side of line joining ASISU to AKMON.                       ADS-C and CPDLC services are available to suitably equipped aircraft operating outside radar cover within the Singapore FIR.</p> <p><i>Point/Segment Remarks:</i>                      (2) NIL                      (3) BRU 305°                      113.3NM</p>						

Route Designator {RNP Type}		[Route Usage Notes]				
Significant Point Name {RNP Type}		Significant Point Coordinates			Remarks	
		Initial Track MAG ↓ ↑	Great Circle Dist NM	Upper limit Lower limit	FL series ↓      ↑	
1	2	3	4	5	6	7
<b>M771</b>		Route availability: (1) H24				
▲ DUDIS (WSJC/VVTS FIR BDRY)		070000N 1064836E			(7)	
(10)		156.2NM	FL 460 FL 135			[Class A] (2) (3)
▲ DOLOX		044841N 1052247E			(8)	
(10)		42.5NM	FL 460 FL 135			[Class A] (4)
▲ DAMOG		041225N 1050014E			(9)	
(10)		27.5NM	FL 460 FL 135			[Class A] (4)
▲ DUBSA		034901N 1044540E			(10)	
(10)		26.6NM	FL 460 FL 135			[Class A] (5)
▲ VISAT		032620N 1043134E			(11)	
(10)		21.7NM	FL 460 FL 135			[Class A] (5)
▲ OTLON		030752N 1042006E			(12)	
(10)		5.4NM	FL 460 FL 135			[Class A] (5)
▲ RAXIM (WMFC/WSJC FIR BDRY)		030318N 1041713E			(13)	
(10)		47.0NM	FL 460 FL 135			[Class A] (6)
▲ MERSING DVOR/DME (VMR)		022318N 1035218E				
<i>Route Remarks:</i>						
<b>Lateral Limits:</b> 10NM either side of line joining VMR DVOR/DME to RAXIM and 25NM either side of line joining RAXIM to DUDIS.						
Uni-directional for north-east bound flights from VMR to DUDIS. No PDC Flight Levels FL310, FL320, FL350, FL360, FL390, FL400 applicable. Other levels available with prior approval.						
<i>Point/Segment Remarks:</i>						
(2) ADS-C service is available to suitably equipped aircraft operating outside radar cover (between DOLOX and DUDIS) and not in exclusive ADS-B airspace within the Singapore FIR.						
(3) Segment from DUDIS to DOLOX use: P134.35 MHz S133.6 MHz						
(4) Segment from DOLOX to DUBSA use: P123.7 MHz S127.3 MHz						
(5) Segment from DUBSA to RAXIM use: P134.7 MHz S134.15 MHz						
(6) Segment from RAXIM to VMR use: P133.8 MHz S127.3 MHz						
(7) NIL						
(8) VMR 031° 170.6NM						
(9) VMR 031° 128.1NM						
(10) VMR 032° 100.6NM						
(11) VMR 032° 74.0NM						
(12) VMR 032° 52.4NM						
(13) VMR 032° 47.0NM						

Route Designator {RNP Type}		[Route Usage Notes]				
Significant Point Name	Significant Point Coordinates				Remarks	
{RNP Type}	Initial Track MAG ↓ ↑	Great Circle Dist NM	Upper limit Lower limit	FL series ↓      ↑		Controlling unit Frequency {Airspace class} Remarks
1	2	3	4	5	6	7
<b>N891</b>	Route availability: (1) H24					
▲ IGARI	065612N 1033506E					(6)
		65.4NM	FL 460 FL 155	Odd <sup>(1)</sup>	Even <sup>(1)</sup>	[Class A] (2)
▲ IKUMI	055338N 1035509E					(6)
		64.0NM	FL 460 FL 155	Odd <sup>(1)</sup>	Even <sup>(1)</sup>	[Class A] (2)
▲ ENREP	045223N 1041442E					(7)
		75.5NM	FL 460 FL 155	Odd <sup>(1)</sup>	Even <sup>(1)</sup>	[Class A] (3)
▲ UGPEK	033647N 1040752E					(8)
		11.7NM	FL 460 FL 155	Even <sup>(1)</sup>	Odd <sup>(1)</sup>	[Class A] (3)
▲ URIGO	032505N 1040647E					(9)
		10.6NM	FL 460 FL 155	Even <sup>(1)</sup>	Odd <sup>(1)</sup>	[Class A] (3)
▲ MANIM (WMFC/WSJC FIR BDRY)	031431N 1040553E					(10)
		2.6NM	FL 460 FL 155	Even <sup>(1)</sup>	Odd <sup>(1)</sup>	[Class A] (4)
▲ OBDAB	031153N 1040538E					(11)
		106.4NM	FL 460 FL 155	Even <sup>(1)</sup>	Odd <sup>(1)</sup>	[Class A] (4)
▲ PAPA UNIFORM DVOR/DME (PU)	012523.99N 1035559.74E					(5)
<i>Route Remarks:</i>						
ADS-C service is available to suitably equipped aircraft operating outside radar cover and not in the exclusive ADS-B airspace within the Singapore FIR						
<b>Lateral Limits:</b>						
5NM either side of line joining PU DVOR/DME to ENREP funnelling out at an angle of 5° from PU to 25NM of either side of track. It then continues at this width until WSJC/VVTS FIR BDRY.						
<i>Point/Segment Remarks:</i>						
(2) Segment from IGARI to ENREP use: P134.35 MHz S133.6 MHz						
(3) Segment from ENREP to MANIM use: P123.7 MHz S127.3 MHz						
(4) Segment from MANIM to PU use: P133.8 MHz S127.3 MHz						
(5) WSJC/WMFC FIR boundary approximately 0.4NM North of PU.						
(6) NIL						
(7) PU 005° 206.8NM						
(8) PU 005° 131.3NM						
(9) PU 005° 119.6NM						
(10) PU 005° 109.0NM						
(11) PU 005° 106.4NM						

Route Designator {RNP Type}		[Route Usage Notes]				
Significant Point Name {RNP Type}		Significant Point Coordinates			Remarks	
		Initial Track MAG ↓ ↑	Great Circle Dist NM	Upper limit Lower limit	FL series ↓      ↑	
1		2	3	4	5	6
7						
<b>N892</b>		Route availability: (1) H24				
▲ MELAS (VTS/WSJC FIR BDRY)		070520N 1080911E				
(10)			203.6NM	FL 460 FL 135		[Class A] (2) (3)
▲ MABLI		041717N 1061247E				
(10)			52.1NM	FL 460 FL 135		[Class A] (4)
▲ MUMSO		034420N 1053213E				
(10)			25.2NM	FL 460 FL 135		[Class A] (4)
▲ MABAL		032826N 1051236E				
(10)			41.4NM	FL 460 FL 135		[Class A] (4)
▲ KILOT		030217N 1044023E				
(10)			15.7NM	FL 460 FL 135		[Class A] (4)
▲ KIBOL WSJC/WMFC FIR BDRY		025229N 1042805E				
(10)			28.1NM	FL 460 FL 135		[Class A] (5)
▲ PEKLA		023437N 1040618E				
(10)			18.0NM	FL 460 FL 135		[Class A] (5)
▲ MERSING DVOR/DME (VMR)		022318N 1035218E				
<p><u>Route Remarks:</u>  <b>Lateral Limits:</b>                      10NM either side of line joining VMR DVOR/DME to KIBOL and 25NM either side of line joining KIBOL to MELAS.</p> <p>Uni-directional for south-west bound flights from MELAS to VMR. No PDC Flight Levels FL310, FL320, FL350, FL360, FL390, FL400 applicable. Other levels available with prior approval.</p> <p><u>Point/Segment Remarks:</u>                      (2) ADS-C service is available to suitably equipped aircraft operating outside radar cover (between MELAS and MABLI) and not in the exclusive ADS-B airspace within the Singapore FIR.                      (3) Segment from MELAS to MABLI use:                      P134.35 MHz                      S133.6 MHz                      (4) Segment from MABLI to KIBOL use:                      P134.7 MHz                      S134.15 MHz                      (5) Segment from KIBOL to VMR use:                      P133.8 MHz                      S127.3 MHz                      (6) VMR 051°                      180.6NM                      (7) VMR 051°                      128.4NM                      (8) VMR 051°                      103.2NM                      (9) VMR 051°                      61.8NM                      (10) VMR 050°                      46.1NM                      (11) VMR 051°                      18.0NM</p>						

## 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	081254N 1101306E	<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> , <a href="#">L762</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 1064836E	<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
GULIB	041714N 1110633E	<a href="#">L517</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
HOSBA	011948N 1042418E	<a href="#">G580, W401</a>	HLDG ID
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	065612N 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, M772, N884</a>	
LEBIN	031438N 1060604E	<a href="#">N875, N884</a>	
LEDOX	011642N 1035651E		SID-WSSS
LEGOL	012053N 1034723E	<a href="#">G579</a>	
LELIB	012729N 1032450E	<a href="#">A464, 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, N884</a>	
LUSMO	033341N 1065534E	<a href="#">L625, M758, N884</a>	
LUXOL	011802.73N 1035823.38E		IAC-WSSS
MABAL	032826N 1051236E	<a href="#">M758, N892</a>	HLDG ID, STAR-WSSS
MABLI	041717N 1061247E	<a href="#">L635, L644, 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>	
MIBEL	012351N 1020816E	<a href="#">L762</a>	
MUMSO	034420N 1053213E	<a href="#">N875, N892</a>	
NIMIX	012452N 1075926E	<a href="#">G580, N875</a>	
NIVAM	023650N 1040228E	<a href="#">G219</a>	
NODIN	081100N 1161142E	<a href="#">M522</a>	
NOPAT	042313N 1044756E	<a href="#">L629, 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, M774</a>	STAR-WSSS
OB GET	012307N 1064531E	<a href="#">G580, L644</a>	
OB LOT	014256N 1064147E	<a href="#">L644, 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>	



# ENR 5 NAVIGATION WARNINGS

## ENR 5.1 PROHIBITED, RESTRICTED AND DANGER AREAS

### 1 INTRODUCTION

- 1.1 All airspace in which a potential hazard to aircraft operations may exist and all areas over which the operation of civil aircraft may, for one reason or another be restricted either temporarily or permanently, are classified according to three types of areas as defined by ICAO.
- 1.2 Each area is described in the tabulation found in pages ENR 5.1-3 to 5.1-6 which indicates its lateral and vertical limits, the type of restriction or hazard involved, the times at which it applies and other pertinent information.

### 2 DANGER AREA

- 2.1 An airspace of defined dimensions within which activities dangerous to the flight of aircraft may exist at specified times. This term is used only when the potential danger to aircraft has not led to the designation of the airspace as restricted or prohibited. The effect of the creation of the danger area is to caution operators or pilots of aircraft that it is necessary for them to assess the dangers in relation to their responsibility for the safety of their aircraft.

### 3 PROHIBITED AREA

- 3.1 An airspace of defined dimensions, above the land areas or territorial waters of a State, within which the flight of aircraft is prohibited. This term is used only when the flight of civil aircraft within the designated airspace is not permitted at any time under any circumstances.

### 4 RESTRICTED AREA

- 4.1 An airspace of defined dimensions, above the land areas or territorial waters of a State, within which the flight of aircraft is restricted in accordance with certain specified conditions. This term is used whenever the flight of civil aircraft within the designated airspace is not absolutely prohibited but may be made only if specified conditions are complied with. Thus, prohibition of flight except at certain meteorological conditions. Similarly, prohibition of flight unless special permission had been obtained, leads to the designation of restricted area. However, conditions of flight imposed as a result of application of rules of the air or air traffic service practice or procedures (for example, compliance with minimum safe heights or with rules stemming from the establishment of controlled airspace) do not constitute conditions calling for designation as a restricted area.

### 5 DESIGNATION OF AREA

- 5.1 Each area is numbered and single series of numbers is used for all areas, regardless of type, to ensure that a number is never duplicated.
- 5.2 The type of area involved is indicated by the letter "P" for Prohibited, "R" for Restricted and "D" for Danger, preceded by the Nationality letters "WS". For example, areas are assigned numbers and letters in the following manner - WSD1, WSR2, WSP3, WSD4 etc.

Identification, Name and Lateral Limits	Upper limit Lower limit	Remarks (time of activity, type of restriction, nature of hazard, risk of interception)
1	2	3
<b>PROHIBITED AREAS</b>		
<b>WSP3</b> A circle, 0.8NM radius centred at 012136N 1034746E	750 FT GND	Active: Permanent. Under no circumstances shall a forced landing be permitted within the area. Rotary wing aircraft shall avoid overflying the area.
<b>WSP24</b> Area within two circles, 150m radius, centred at Mt. Faber (011615N 1034909E) and Sentosa Island (011519N 1034858E) and the tangential lines joining these circles.	800 FT ALT GND/WATER	Active: Permanent.
<b>WSP49</b> 012025N 1034236E 012028N 1034239E 012027N 1034249E 012018N 1034249E 012018N 1034236E.	300 FT ALT GND	Active: Permanent.
<b>WMP228 BUKIT SERENE</b> Area within 2NM centred at 012845N 1034334E with the southern border of the Prohibited Area coinciding with the coastline of South Johor.	5000 FT ALT GND	Sultan's Palace. Active: Permanent. (refer to AIP Malaysia)
<b>RESTRICTED AREAS</b>		
<b>WSR2 TENGAH CORRIDOR</b> Area within two circles, 2NM radius, centred at Tengah and 4NM radius, centred at 011000N 1033324E and the tangents joining these circles but excluding WSD11 (Pasir Laba Range) when notified as active.	FL 300 3000 FT MSL	Jet Let-Down Sector. Active: BTN 2300-1100 SUN-MON to THU-FRI and BTN 2300-0500 FRI-SAT. Controlling Authority : Tengah APP on 130.0 or 263.4 MHz DRG AD OPR HR and SATCC (RSAF element) on 123.4 MHz and 288.2MHz after AD OPR HR.
<b>WSR10</b> A circle, 0.6NM radius, centred at 012136.2197N 1034055.3795E.	5500 FT ALT GND	Active: Permanent.
<b>WSR31</b> 012000N 1041400E 012000N 1042000E 013000N 1042300E 013000N 1044000E 011800N 1044000E 011500N 1042000E.	10000 FT ALT 3500 FT MSL	Training Area. Active daily during daylight hours in VMC only when radar unit in operations.
<b>WSR38</b> A circle, 1NM radius centred at 011807N 1035031E	10000 FT ALT GND	Istana. Active: Permanent. All FLT BTN SJ/JP on AWY G579 are to avoid at all times the area which overlaps the eastern edge of G579 .
<b>WMR104</b> 032859N 1030254E 023959N 1023454E 022300N 1025954E 022300N 1034554E 032059N 1032054E 031859N 1031554E 032559N 1031254E 032859N 1030254E.	10000 FT ALT 3000 FT ALT	Training. Active: 2230-1030 SUN-MON to FRI-SAT (refer to AIP Malaysia)

Identification, Name and Lateral Limits	Upper limit	Remarks (time of activity, type of restriction, nature of hazard, risk of interception)
	Lower limit	
1	2	3
<b>RESTRICTED AREAS</b>		
<b>WMR223 KANGAR KAHANG</b> A circle, 5NM radius, centred at 021500N 1033354E	10000 FT ALT GND	Parachute Dropping. Active: by NOTAM. Controlling Authority: Kluang Tower 128.3 MHz/122.4 MHz. (refer to AIP Malaysia)
<b>WMR225 NORTH-KLUANG</b> An arc of a circle, radius 20NM, centred at 020230N 1031824E (Kluang Control Tower) from 020000N 1025839E to 021830N 1032954E; then an arc of a circle, radius 6NM, centred at 020230N 1031824E (Kluang Control Tower) from 020200N 1031224E to 020730N 1032154E; then straight lines joining 020000N 1025839E to 020200N 1031224E and 021830N 1032954E to 020730N 1032224E.	3500 FT ALT GND	Army Airwing Helicopter Training Area Active: 2330-1030 SUN-MON TO WED-THU; 2330-0500 THU-FRI; 0600-1030 FRI; and 2330-0430 FRI-SAT; SUN and PH closed.  Controlling Authority: Kluang Tower 128.3 MHz and 122.4 MHz
<b>WMR226 WEST-KLUANG</b> An arc of a circle, radius 20NM, centred at 020230N 1031824E (Kluang Control Tower) from 020000N 1025839E to 014630N 1030554E; then an arc of a circle, radius 6NM, centred at 020230N 1031824E (Kluang Control Tower) from 020200N 1031224E to 015650N 1031709E.	2000 FT ALT GND	PPR for all non-Malaysian Army aircraft. During hours of operations, request through Kluang Army Airwing Operations (48 hours prior notice). No refuelling for civil aircraft. (refer to AIP Malaysia)
<b>WMR229</b> A circle, 1NM radius, centred at 013730N 1034952E.	1500 FT ALT GND	Helicopter Operations. Active: 0100-0830 MON-FRI. Visiting military aircraft are required to give advance notice of movements to Jungle Warfare School. (refer to AIP Malaysia)
<b>DANGER AREAS</b>		
<b>WSD4 SOUTHERN ISLAND LIVE FIRING RANGE</b> An arc, 3.5NM radius, centred at 011230N 1034354E with eastern extremity at 011230N 1034724E and western extremity at 011459N 1034125E.	FL 160 GND/WATER	Air to GND and GND to GND Firing Range. Active: 2300-1100 SUN-MON to FRI-SAT except PH. Activity outside these hours will be notified by NOTAM.
<b>WSD5 MANDAI CAMP</b> A circle, radius 175M, centred at 012403N 1034646E.	500 FT ALT GND	Rifle Range. Active: Permanent

Identification, Name and Lateral Limits	Upper limit Lower limit	Remarks (time of activity, type of restriction, nature of hazard, risk of interception)
1	2	3
<b>DANGER AREAS</b>		
<b>WSD11 PASIR LABA</b> 012550N 1034024E 012333N 1033904E 012303N 1033909E 012058N 1033759E 011933N 1034009E 012142N 1034104E 012245N 1034104E 012440N 1034124E (General Area).	1300 FT ALT GND	Small Arm Firing Active: Permanent.
<b>WSD11A PASIR LABA</b> 012550N 1034024E 012333N 1033904E 012303N 1033909E 012240N 1034016E 012245N 1034104E 012440N 1034124E (Northern Area within the General Area).	FL 125 GND	Artillery Firing At least 7 days advance notice by NOTAM.
<b>WSD11B PASIR LABA</b> 012303N 1033909E 012240N 1034016E 012245N 1034104E 012142N 1034104E 011933N 1034009E 012058N 1033759E (Southern Area within the General Area).	FL 125 GND	Artillery Firing At least 7 days advance notice by NOTAM.
<b>WSD13 AREA KILO</b> BTN LAT 020000N 023000N and LONG 1043600E 1045500E.	FL 550 WATER	Naval Anti-Aircraft Firing 72 HR notice by NOTAM.
<b>WSD14 AREA LIMA</b> BTN LAT 013000N 020000N and LONG 1043600E 1045500E.	FL 550 WATER	Naval Anti-Aircraft Firing and Live Air to Air Firing. 72 HR notice by NOTAM.
<b>WSD15 AREA MIKE</b> BTN LAT 013000N 020000N and LONG 1045500E 1053000E.	FL 550 WATER	Naval Carrier Operation Area 72 HR notice by NOTAM.
<b>WSD20 AREA HOTEL</b> BTN LAT 023000N 030000N and LONG 1043600E 1045500E.	2000 FT ALT WATER	Naval Exercise Area 72 HR notice by NOTAM.
<b>WSD34 PULAU TEKONG</b> 012409N 1040208E 012419N 1040332E 012349N 1040240E 012351N 1040200E.	500 FT ALT GND	Rifle Range Active: Permanent

Identification, Name and Lateral Limits	Upper limit	Remarks (time of activity, type of restriction, nature of hazard, risk of interception)
	Lower limit	
1	2	3
<b>DANGER AREAS</b>		
<b>WSD35 NEE SOON</b> A circle, 1NM radius, centred at 012310N 1034809E.	900 FT ALT GND	Rifle Range Active: Permanent
<b>WSD44</b> BTN LAT 020000N 023000N and LONG 1045500E 1051230E	FL 550 WATER	Naval Exercise Area Active: 72hr prior notice by NOTAM
<b>WSD45</b> BTN LAT 020000N 023000N and LONG 1051230E 1053000E.	FL 550 WATER	Naval Exercise Area Active: 72hr prior notice by NOTAM
<b>WMD8 CHINA SEA NORTH RANGE</b> BTN LAT 013000N 020000N and LONG 1042000E 1043500E.	FL 550 WATER	Naval Air to Air Firing Range Active: 72hr prior notice by NOTAM
<b>WMD12 AREA JULIET</b> BTN LAT 020000N 023000N and LONG 1041700E 1043600E.	FL 550 WATER	Naval Anti-Aircraft Firing Range Active: 72hr prior notice by NOTAM
<b>WMD21 AREA GOLF</b> BTN LAT 023000N 030000N and LONG 1043600E 1041700E.	2000 FT ALT WATER	Naval Exercise Area Active: 72hr prior notice by NOTAM
<b>WMD224 MALAYSIAN NAVAL EXERCISE AREA</b> 012500N 1025954E 013000N 1025954E 012700N 1030954E 012200N 1030954E	12000 FT ALT WATER	Firing Range Active: 48hr prior notice by NOTAM. 2 exercises per month.
<b>WMD227 PULAU YU</b> 021900N 1041324E 020000N 1041324E 020000N 1041700E 021900N 1041700E 021900N 1041324E	10000 FT ALT WATER	Radar Bombing Range Active: 72hr prior notice by NOTAM. Area will be confirmed 'clear' by participating aircraft prior to commencing live attacks. (refer to AIP Malaysia)
<b>WMD230 ULU TIRAM (SOUTH)</b> 013720N 1035324E 013840N 1035135E 013704N 1034954E 013530N 1035140E.	2000 FT ALT # GND	Artillery Firing Range. Active: PERM # When activity necessitates raising upper limit to 9,500ft ALT, 48hr prior notice will be given by NOTAM. (refer to AIP Malaysia)
<b>WMD231 ULU TIRAM (NORTH)</b> 013815N 1034950E 013927N 1035028E 014238N 1034929E 014239N 1034822E 014133N 1034627E 013840N 1034627E 013858N 1034840E.	2000 FT ALT * GND	Artillery Firing Range. Active: PERM * When activity necessitates raising upper limit to 9,500ft ALT, 48hr prior notice will be given by NOTAM. (refer to AIP Malaysia)

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### ENROUTE CHART - ICAO

**LEGEND**

**Aerodrome**  
 Name of FIR  
 Name of Aerodrome  
 Lower Limit  
 Upper Limit  
 GND/WATER  
 ACC SINGAPORE

**Flight Information Region (FIR)**  
 Name of FIR  
 Lower Limit  
 Upper Limit  
 GND/WATER  
 ACC SINGAPORE

**Terminal Control Area (TMA)**  
 Name of TMA  
 Airspace Classification  
 Lower Limit  
 Upper Limit  
 GND/WATER  
 ACC SINGAPORE

**Control Zone (CTR)**  
 Name of CTR  
 Airspace Classification  
 Lower Limit  
 Upper Limit  
 GND/WATER  
 ACC SINGAPORE

**ATS route**  
 Route designator  
 Magnetic track  
 Distance in nautical miles  
 Minimum flight altitude above MSL level  
 Lower limit (FL) / Flight level  
 Required navigation performance

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

**Reporting Point (REP)**  
 Compulsory  
 On Request

**ATS/MET reporting point (MRP)**  
 Compulsory  
 On Request

**Restricted Airspace**  
 Identification of area  
 Nationality letter  
 Watermark  
 W400  
 W400  
 WATER

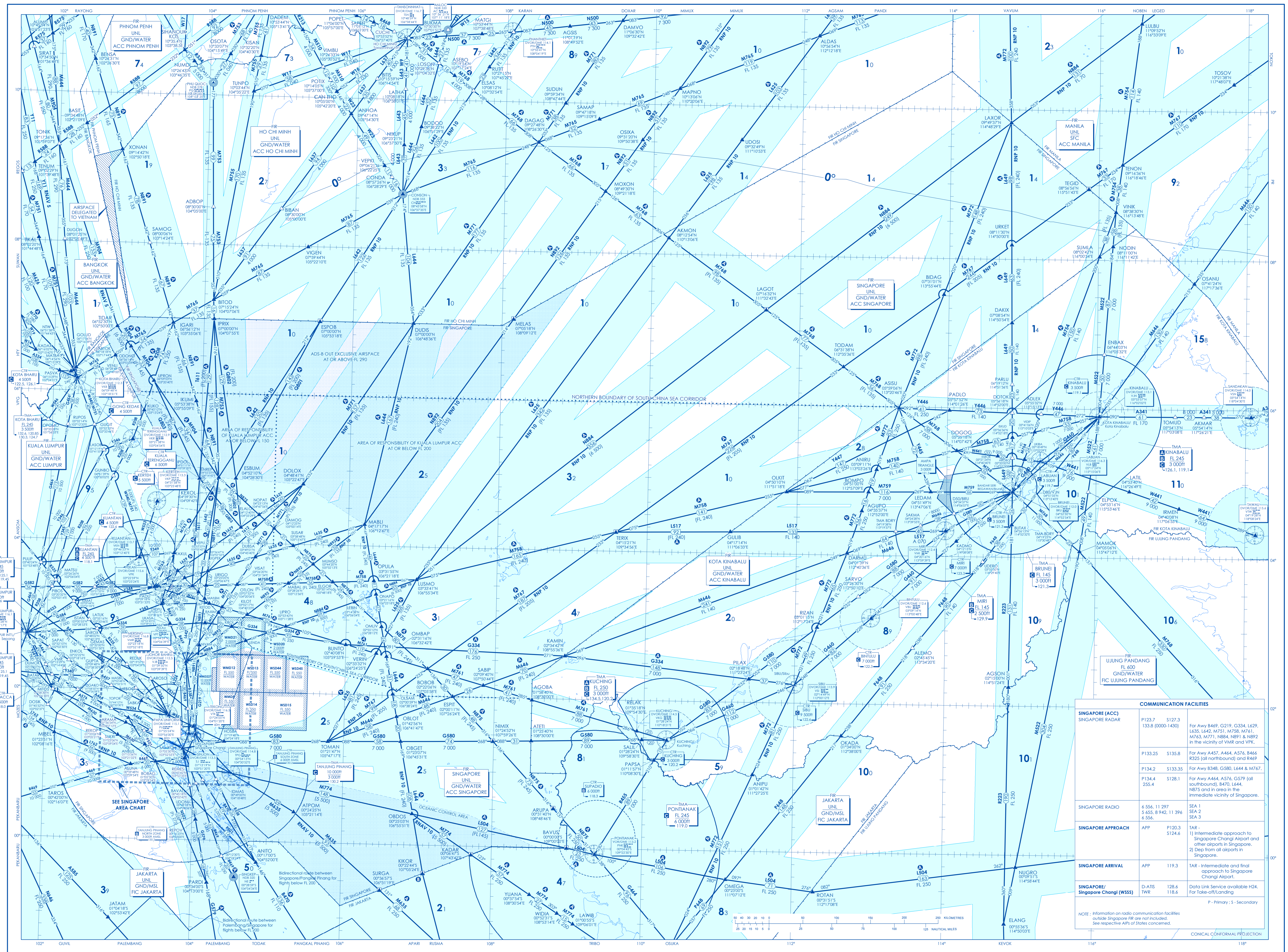
**Collocated VOR and DME navigation aids (VOR/DME)**  
 Compass rose oriented on the chart to Magnetic North

**Identification for radio navigation aids (NAVAID)**  
 Name  
 MHA/DME  
 Frequency  
 Identification of call sign  
 Geographical coordinates in WGS-84  
 Elevation of DME site (to the nearest 50ft)

**COP at mid-point between VOR are not shown**

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

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



**WSIC/WMFC RR DRY REPORTING POINTS**

NAME	COORDINATES	FL
TAKUL	03 35 52N 103 40 37E	3 000
MANIM	03 14 51N 104 55 53E	3 000
REKOD	03 38 22N 103 10 42N	3 000
RIVAL	03 38 22N 104 09 42E	3 000
DOVOL	03 38 47N 103 49 23E	3 000
ISDE	03 24 52N 103 55 44E	3 000
ESGLO	03 19 34N 104 00 47E	3 000
MINA	02 41 24N 104 39 32E	3 000

**RYSM SEPARATION AVAILABLE SINGAPORE FIR**  
 BTN FL 290 AND FL 410 (inclusive)

**AIRSPACE CLASSIFICATION IN THE SINGAPORE FIR**

Airspace	Levels	Classification
Controlled airspace	FL 150 to FL 460	A
Controlled airspace more than 100 nm seaward from the shoreline	Surface to FL 150	B
Controlled airspace more than 100 nm seaward from the shoreline	Lower limit to FL 460	A
Control Zones (CTR)	Change CTR	C
Fixed labor CTR	Surface to upper limit	D
Selector CTR	Surface to upper limit	C
ATIS	Surface to upper limit	D
Uncontrolled airspace		G*

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

MAGNETIC INFORMATION FOR THE YEAR 2015

**COMMUNICATION FACILITIES**

SINGAPORE (ACC)	SINGAPORE RADAR	SINGAPORE RADIO	SINGAPORE APPROACH	SINGAPORE ARRIVAL	SINGAPORE DEPARTURE
	P123.7 133.8 (0000-1430)	6 556, 11 297 5 455, 8 942, 11 396 6 556	APP P120.3	APP 119.3	TAR- 1) Intermediate approach to Singapore Changi Airport and other airports in Singapore. 2) Deep from all airports in Singapore.
	P133.25 P134.2 P134.4 255.4		TAR- P120.3	TAR- 119.3	TAR- Intermediate and final approach to Singapore Changi Airport. Data Link Service available H24. For Take-off/Landing

**SINGAPORE (ACC)**  
 P123.7  
133.8 (0000-1430)  
 For Awy B469, G239, G334, L629, L635, L642, M751, M758, M761, M763, M771, N884, N891 & N892 in the vicinity of VMR and VPK.

**SINGAPORE RADIO**  
 6 556, 11 297  
5 455, 8 942, 11 396  
6 556  
 SEA 1  
SEA 2  
SEA 3

**SINGAPORE APPROACH**  
 APP  
P120.3  
 TAR-  
1) Intermediate approach to Singapore Changi Airport and other airports in Singapore.  
2) Deep from all airports in Singapore.

**SINGAPORE ARRIVAL**  
 APP  
119.3  
 TAR- Intermediate and final approach to Singapore Changi Airport.

**SINGAPORE DEPARTURE**  
 D-ATIS  
TWR  
118.6  
 Data Link Service available H24. For Take-off/Landing

P - Primary ; S - Secondary

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

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**AD 0.6 TABLE OF CONTENTS TO PART 3**

<a href="#">AD 0.1</a>	[NIL] PREFACE	AD 0.1-1
<a href="#">AD 0.2</a>	[NIL] RECORD OF AIP AMENDMENTS	AD 0.2-1
<a href="#">AD 0.3</a>	[NIL] RECORD OF AIP SUPPLEMENTS	AD 0.3-1
<a href="#">AD 0.4</a>	[NIL] CHECKLIST OF AIP PAGES	AD 0.4-1
<a href="#">AD 0.5</a>	[NIL] LIST OF HAND AMENDMENTS TO THE AIP	AD 0.5-1
<a href="#">AD 0.6</a>	TABLE OF CONTENTS TO PART 3	AD 0.6-1
<b><a href="#">AD 1</a></b>	<b>AERODROMES/HELIPORTS - INTRODUCTION</b>	
<a href="#">AD 1.1</a>	AERODROME AVAILABILITY	AD 1.1-1
<a href="#">1</a>	INTRODUCTION	AD 1.1-1
<a href="#">2</a>	APPLICABLE ICAO DOCUMENTS	AD 1.1-2
<a href="#">3</a>	CIVIL USE OF MILITARY AIR BASES	AD 1.1-2
<a href="#">4</a>	CAT II / III OPERATIONS AT AERODROMES	AD 1.1-3
<a href="#">5</a>	FRICITION MEASURING DEVICE USED AND FRICTION LEVEL BELOW WHICH THE RUNWAY IS DECLARED SLIPPERY WHEN IT IS WET	AD 1.1-3
<a href="#">6</a>	OTHERS	AD 1.1-3
<a href="#">AD 1.2</a>	RESCUE AND FIRE FIGHTING SERVICES	AD 1.2-1
<a href="#">AD 1.3</a>	INDEX TO AERODROMES	AD 1.3-1
<a href="#">AD 1.4</a>	GROUPING OF AERODROMES	AD 1.4-1
<a href="#">1</a>	Primary/Major International Aerodrome	AD 1.4-1
<a href="#">2</a>	Secondary/Other International Aerodrome	AD 1.4-1
<a href="#">3</a>	National Aerodrome	AD 1.4-1
<a href="#">AD 1.5</a>	STATUS OF CERTIFICATION OF AERODROMES	AD 1.5-1
<b><a href="#">AD 2</a></b>	<b>AERODROMES</b>	
<b><a href="#">WSSS</a></b>	<b>SINGAPORE / SINGAPORE CHANGI INTL</b>	
<a href="#">WSSS AD 2.1</a>	AERODROME LOCATION INDICATOR AND NAME	AD 2.WSSS-1
<a href="#">WSSS AD 2.2</a>	AERODROME GEOGRAPHICAL AND ADMINISTRATIVE DATA	AD 2.WSSS-1
<a href="#">WSSS AD 2.3</a>	OPERATIONAL HOURS	AD 2.WSSS-1
<a href="#">WSSS AD 2.4</a>	HANDLING SERVICES AND FACILITIES	AD 2.WSSS-2
<a href="#">WSSS AD 2.5</a>	PASSENGER FACILITIES	AD 2.WSSS-2
<a href="#">WSSS AD 2.6</a>	RESCUE AND FIRE FIGHTING SERVICES	AD 2.WSSS-2
<a href="#">WSSS AD 2.7</a>	SEASONAL AVAILABILITY - CLEARING	AD 2.WSSS-2
<a href="#">WSSS AD 2.8</a>	APRONS, TAXIWAYS AND CHECK LOCATIONS/POSITIONS DATA	AD 2.WSSS-3
<a href="#">WSSS AD 2.9</a>	SURFACE MOVEMENT GUIDANCE AND CONTROL SYSTEM AND MARKINGS	AD 2.WSSS-4
<a href="#">1</a>	SAFEGATE AIRCRAFT DOCKING GUIDANCE SYSTEM - SAFEDOCK	AD 2.WSSS-5
<a href="#">2</a>	PROCEDURES FOR START-UP AND PUSHBACK OF AIRCRAFT	AD 2.WSSS-10
<a href="#">3</a>	ADVANCED MULTILATERATION SYSTEM	AD 2.WSSS-32
<a href="#">4</a>	AIRFIELD GROUND LIGHTING CONTROL AND MONITORING SYSTEM (AGLCMS) AND MARKINGS	AD 2.WSSS-33
<a href="#">WSSS AD 2.10</a>	AERODROME OBSTACLES	AD 2.WSSS-33
<a href="#">WSSS AD 2.11</a>	METEOROLOGICAL INFORMATION PROVIDED	AD 2.WSSS-34
<a href="#">WSSS AD 2.12</a>	RUNWAY PHYSICAL CHARACTERISTICS	AD 2.WSSS-35
<a href="#">WSSS AD 2.13</a>	DECLARED DISTANCES	AD 2.WSSS-36
<a href="#">WSSS AD 2.14</a>	APPROACH AND RUNWAY LIGHTING	AD 2.WSSS-36
<a href="#">WSSS AD 2.15</a>	OTHER LIGHTING, SECONDARY POWER SUPPLY	AD 2.WSSS-38
<a href="#">WSSS AD 2.16</a>	HELICOPTER LANDING AREA	AD 2.WSSS-38

<a href="#">WSSS AD 2.17</a>	ATS AIRSPACE	AD2.WSSS-38
<a href="#">WSSS AD 2.18</a>	ATS COMMUNICATION FACILITIES	AD2.WSSS-39
<a href="#">WSSS AD 2.19</a>	RADIO NAVIGATION AND LANDING AIDS	AD2.WSSS-40
<a href="#">WSSS AD 2.20</a>	LOCAL TRAFFIC REGULATIONS	AD2.WSSS-42
<a href="#">1</a>	DESIGNATION OF PAYA LEBAR AIRPORT AS AN ALTERNATE AERODROME FOR SINGAPORE CHANGI AIRPORT	AD2.WSSS-42
<a href="#">2</a>	WRONG APPROACHES AND LANDINGS OF AIRCRAFT BOUND FOR SINGAPORE CHANGI AND PAYA LEBAR AIRPORTS	AD2.WSSS-42
<a href="#">WSSS AD 2.21</a>	NOISE ABATEMENT PROCEDURES	AD2.WSSS-43
<a href="#">WSSS AD 2.22</a>	FLIGHT AND GROUND PROCEDURES	AD2.WSSS-43
<a href="#">1</a>	LOW VISIBILITY PROCEDURES (LVP) FOR CATEGORY II ILS OPERATIONS	AD2.WSSS-43
<a href="#">2</a>	RUNWAY UTILISATION	AD2.WSSS-44
<a href="#">3</a>	AIRPORT COLLABORATIVE DECISION MAKING (A-CDM) MODE OF OPERATIONS	AD2.WSSS-46
<a href="#">4</a>	A-CDM PRE-DEPARTURE PROCEDURES	AD2.WSSS-46
<a href="#">5</a>	A-CDM START-UP PROCEDURES	AD2.WSSS-47
<a href="#">6</a>	A-CDM INFORMATION VIA AIRCRAFT DOCKING GUIDANCE SYSTEM (ADGS)	AD2.WSSS-49
<a href="#">7</a>	CONTACT AND INFORMATION	AD2.WSSS-50
<a href="#">8</a>	DEPARTURE CLEARANCE (DCL) VIA DATALINK PROCEDURES	AD2.WSSS-50
<a href="#">9</a>	ASSIGNMENT OF FLIGHT LEVELS TO AIRCRAFT DEPARTING FROM SINGAPORE CHANGI AIRPORT	AD2.WSSS-52
<a href="#">10</a>	DELAY IN PUSHBACK AND/OR TAXIING DUE TO OTHER AIRCRAFT	AD2.WSSS-52
<a href="#">11</a>	DELAY IN TAKE-OFF DUE TO RESTRICTIONS IN THE ATC CLEARANCE	AD2.WSSS-52
<a href="#">12</a>	DELAY DUE TO OVERFLIGHTS	AD2.WSSS-52
<a href="#">13</a>	NON-CDM MODE OF OPERATIONS	AD2.WSSS-52
<a href="#">14</a>	GATE HOLD PROCEDURES FOR DEPARTING AIRCRAFT (DURING NON-CDM MODE OF OPERATIONS)	AD2.WSSS-53
<a href="#">15</a>	GROUND MOVEMENT PLANNER ON VHF 121.65MHz	AD2.WSSS-53
<a href="#">16</a>	GROUND MOVEMENT CONTROL ON VHF 121.725MHz, 121.85MHz, 122.55MHz, 124.3MHz and 125.65MHz	AD2.WSSS-53
<a href="#">17</a>	TAXIING	AD2.WSSS-53
<a href="#">18</a>	TAKE-OFF AND LANDING	AD2.WSSS-54
<a href="#">19</a>	STANDARD INSTRUMENT DEPARTURE (SID) AND STANDARD INSTRUMENT ARRIVAL (STAR)	AD2.WSSS-55
<a href="#">19.1</a>	INTRODUCTION	AD2.WSSS-55
<a href="#">19.2</a>	ARRIVALS	AD2.WSSS-55
<a href="#">19.3</a>	DEPARTURES	AD2.WSSS-55
<a href="#">19.4</a>	VERTICAL AND SPEED RESTRICTIONS	AD2.WSSS-56
<a href="#">19.5</a>	OPERATORS' PROCEDURES	AD2.WSSS-56
<a href="#">20</a>	COORDINATES OF SID/STAR WAYPOINTS (WGS84 DATUM)	AD2.WSSS-56
<a href="#">21</a>	SID / STAR PHRASEOLOGIES	AD2.WSSS-58
<a href="#">22</a>	ARRIVING AIRCRAFT	AD2.WSSS-58
<a href="#">23</a>	LIGHT AIRCRAFT OPERATIONS	AD2.WSSS-58
<a href="#">24</a>	SIMULTANEOUS INDEPENDENT PARALLEL APPROACHES	AD2.WSSS-59
<a href="#">24.1</a>	Introduction	AD2.WSSS-59
<a href="#">24.2</a>	Procedures for simultaneous independent parallel approaches	AD2.WSSS-59
<a href="#">24.3</a>	Break-out manoeuvre	AD2.WSSS-59
<a href="#">24.4</a>	Pilot notification and conditions for operations	AD2.WSSS-59
<a href="#">WSSS AD 2.23</a>	ADDITIONAL INFORMATION	AD2.WSSS-60
<a href="#">1</a>	BIRD CONCENTRATION IN THE VICINITY OF THE AIRPORT	AD2.WSSS-60

<a href="#">WSSS AD 2.24</a>	CHARTS RELATED TO AN AERODROME	AD 2.WSSS-61
<b><a href="#">WSSL</a></b>	<b>SINGAPORE / SELETAR</b>	
<a href="#">WSSL AD 2.1</a>	AERODROME LOCATION INDICATOR AND NAME	AD 2.WSSL-1
<a href="#">WSSL AD 2.2</a>	AERODROME GEOGRAPHICAL AND ADMINISTRATIVE DATA	AD 2.WSSL-1
<a href="#">WSSL AD 2.3</a>	OPERATIONAL HOURS	AD 2.WSSL-1
<a href="#">WSSL AD 2.4</a>	HANDLING SERVICES AND FACILITIES	AD 2.WSSL-2
<a href="#">WSSL AD 2.5</a>	PASSENGER FACILITIES	AD 2.WSSL-2
<a href="#">WSSL AD 2.6</a>	RESCUE AND FIRE FIGHTING SERVICES	AD 2.WSSL-2
<a href="#">WSSL AD 2.7</a>	SEASONAL AVAILABILITY - CLEARING	AD 2.WSSL-2
<a href="#">WSSL AD 2.8</a>	APRONS, TAXIWAYS AND CHECK LOCATIONS/POSITIONS DATA	AD 2.WSSL-3
<a href="#">WSSL AD 2.9</a>	SURFACE MOVEMENT GUIDANCE AND CONTROL SYSTEM AND MARKINGS	AD 2.WSSL-3
<a href="#">WSSL AD 2.10</a>	AERODROME OBSTACLES	AD 2.WSSL-8
<a href="#">WSSL AD 2.11</a>	METEOROLOGICAL INFORMATION PROVIDED	AD 2.WSSL-8
<a href="#">WSSL AD 2.12</a>	RUNWAY PHYSICAL CHARACTERISTICS	AD 2.WSSL-9
<a href="#">WSSL AD 2.13</a>	DECLARED DISTANCES	AD 2.WSSL-9
<a href="#">WSSL AD 2.14</a>	APPROACH AND RUNWAY LIGHTING	AD 2.WSSL-9
<a href="#">WSSL AD 2.15</a>	OTHER LIGHTING, SECONDARY POWER SUPPLY	AD 2.WSSL-10
<a href="#">WSSL AD 2.16</a>	HELICOPTER LANDING AREA	AD 2.WSSL-10
<a href="#">WSSL AD 2.17</a>	ATS AIRSPACE	AD 2.WSSL-11
<a href="#">WSSL AD 2.18</a>	ATS COMMUNICATION FACILITIES	AD 2.WSSL-12
<a href="#">WSSL AD 2.19</a>	RADIO NAVIGATION AND LANDING AIDS	AD 2.WSSL-13
<a href="#">WSSL AD 2.20</a>	LOCAL TRAFFIC REGULATIONS	AD 2.WSSL-13
1	LOCAL FLYING RESTRICTIONS:	AD 2.WSSL-13
2	TEST/TRAINING FLIGHTS	AD 2.WSSL-13
3	WRONG APPROACHES AND LANDINGS OF AIRCRAFT BOUND FOR SELETAR AERODROME AND SEMBAWANG MILITARY AERODROME	AD 2.WSSL-14
<a href="#">WSSL AD 2.21</a>	NOISE ABATEMENT PROCEDURES	AD 2.WSSL-15
<a href="#">WSSL AD 2.22</a>	FLIGHT PROCEDURES	AD 2.WSSL-16
1	PROCEDURES FOR ARRIVALS INTO SELETAR AERODROME	AD 2.WSSL-16
2	DEPARTURES FROM SELETAR AERODROME	AD 2.WSSL-19
<a href="#">WSSL AD 2.23</a>	ADDITIONAL INFORMATION	AD 2.WSSL-20
1	BIRD CONCENTRATION IN THE VICINITY OF THE AIRPORT	AD 2.WSSL-20
2	HELICOPTER CROSSING SELETAR NORTHERN EXTENDED CENTRELINE	AD 2.WSSL-20
<a href="#">WSSL AD 2.24</a>	CHARTS RELATED TO SELETAR AIRPORT	AD 2.WSSL-21
<b><a href="#">WSAP</a></b>	<b>PAYA LEBAR</b>	
<a href="#">WSAP AD 2.1</a>	AERODROME LOCATION INDICATOR AND NAME	AD 2.WSAP-1
<a href="#">WSAP AD 2.2</a>	AERODROME GEOGRAPHICAL AND ADMINISTRATIVE DATA	AD 2.WSAP-1
<a href="#">WSAP AD 2.3</a>	OPERATIONAL HOURS	AD 2.WSAP-1
<a href="#">WSAP AD 2.4</a>	HANDLING SERVICES AND FACILITIES	AD 2.WSAP-2
<a href="#">WSAP AD 2.5</a>	PASSENGER FACILITIES	AD 2.WSAP-2
<a href="#">WSAP AD 2.6</a>	RESCUE AND FIRE FIGHTING SERVICES	AD 2.WSAP-2
<a href="#">WSAP AD 2.7</a>	SEASONAL AVAILABILITY - CLEARING	AD 2.WSAP-2
<a href="#">WSAP AD 2.8</a>	APRONS, TAXIWAYS AND CHECK LOCATIONS DATA	AD 2.WSAP-2
<a href="#">WSAP AD 2.9</a>	SURFACE MOVEMENT GUIDANCE AND CONTROL SYSTEM AND MARKINGS	AD 2.WSAP-3
<a href="#">WSAP AD 2.10</a>	AERODROME OBSTACLES	AD 2.WSAP-5
<a href="#">WSAP AD 2.11</a>	METEOROLOGICAL INFORMATION PROVIDED	AD 2.WSAP-6

<a href="#">WSAP AD 2.12</a>	RUNWAY PHYSICAL CHARACTERISTICS	AD 2.WSAP-6
<a href="#">WSAP AD 2.13</a>	DECLARED DISTANCES	AD 2.WSAP-6
<a href="#">WSAP AD 2.14</a>	APPROACH AND RUNWAY LIGHTING	AD 2.WSAP-7
<a href="#">WSAP AD 2.15</a>	OTHER LIGHTING, SECONDARY POWER SUPPLY	AD 2.WSAP-7
<a href="#">WSAP AD 2.16</a>	[NIL] HELICOPTER LANDING AREA	NIL
<a href="#">WSAP AD 2.17</a>	ATS AIRSPACE	AD 2.WSAP-7
<a href="#">WSAP AD 2.18</a>	ATS COMMUNICATION FACILITIES	AD 2.WSAP-8
<a href="#">WSAP AD 2.19</a>	RADIO NAVIGATION AND LANDING AIDS	AD 2.WSAP-8
<a href="#">WSAP AD 2.20</a>	LOCAL TRAFFIC REGULATIONS - DESIGNATION OF PAYA LEBAR AIRPORT AS AN ALTERNATE AD FOR SINGAPORE CHANGI AIRPORT	AD 2.WSAP-9
<a href="#">1</a>	INTRODUCTION	AD 2.WSAP-9
<a href="#">2</a>	MANNING OF PAYA LEBAR AIRPORT	AD 2.WSAP-9
<a href="#">3</a>	OPERATIONAL SERVICES	AD 2.WSAP-9
<a href="#">4</a>	PASSENGER CLEARANCE	AD 2.WSAP-9
<a href="#">5</a>	SECURITY	AD 2.WSAP-9
<a href="#">6</a>	AIRCRAFT STAND ALLOCATION	AD 2.WSAP-10
<a href="#">7</a>	AIRCRAFT REFUELLING	AD 2.WSAP-10
<a href="#">8</a>	GROUND OPERATIONS	AD 2.WSAP-10
<a href="#">9</a>	FULL EMERGENCY/CRASH PROCEDURE	AD 2.WSAP-10
<a href="#">10</a>	METEOROLOGICAL AND AERONAUTICAL INFORMATION SERVICE	AD 2.WSAP-10
<a href="#">11</a>	ATC SERVICE OUTSIDE STIPULATED OPERATING HOURS	AD 2.WSAP-10
<a href="#">WSAP AD 2.21</a>	[NIL] NOISE ABATEMENT PROCEDURES	NIL
<a href="#">WSAP AD 2.22</a>	FLIGHT AND GROUND PROCEDURES	AD 2.WSAP-10
<a href="#">1</a>	DEPARTURE AND ARRIVAL PROCEDURES	AD 2.WSAP-10
<a href="#">2</a>	STANDARD INSTRUMENT DEPARTURES	AD 2.WSAP-10
<a href="#">3</a>	STANDARD ARRIVALS	AD 2.WSAP-10
<a href="#">WSAP AD 2.23</a>	ADDITIONAL INFORMATION	AD 2.WSAP-11
<a href="#">1</a>	OUTDOOR LIGHT AND WATER SHOW	AD 2.WSAP-11
<a href="#">WSAP AD 2.24</a>	CHARTS RELATED TO PAYA LEBAR AIRPORT	AD 2.WSAP-11
 <b>WSAT TENGGAH</b>		
<a href="#">WSAT AD 2.1</a>	AERODROME LOCATION INDICATOR AND NAME	AD 2.WSAT-1
<a href="#">WSAT AD 2.2</a>	AERODROME GEOGRAPHICAL AND ADMINISTRATIVE DATA	AD 2.WSAT-1
<a href="#">WSAT AD 2.3</a>	OPERATIONAL HOURS	AD 2.WSAT-1
<a href="#">WSAT AD 2.4</a>	HANDLING SERVICES AND FACILITIES	AD 2.WSAT-1
<a href="#">WSAT AD 2.5</a>	PASSENGER FACILITIES	AD 2.WSAT-2
<a href="#">WSAT AD 2.6</a>	RESCUE AND FIRE FIGHTING SERVICES	AD 2.WSAT-2
<a href="#">WSAT AD 2.7</a>	SEASONAL AVAILABILITY - CLEARING	AD 2.WSAT-2
<a href="#">WSAT AD 2.8</a>	APRONS, TAXIWAYS AND CHECK LOCATIONS/POSITIONS DATA	AD 2.WSAT-2
<a href="#">WSAT AD 2.9</a>	[NIL] SURFACE MOVEMENT GUIDANCE AND CONTROL SYSTEM AND MARKINGS	NIL
<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
<a href="#">WSAT AD 2.12</a>	RUNWAY PHYSICAL CHARACTERISTICS	AD 2.WSAT-3
<a href="#">WSAT AD 2.13</a>	DECLARED DISTANCES	AD 2.WSAT-3
<a href="#">WSAT AD 2.14</a>	APPROACH AND RUNWAY LIGHTING	AD 2.WSAT-3
<a href="#">WSAT AD 2.15</a>	OTHER LIGHTING, SECONDARY POWER SUPPLY	AD 2.WSAT-3
<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

<a href="#">WSAT AD 2.18</a>	ATS COMMUNICATION FACILITIES	AD 2.WSAT-4
<a href="#">WSAT AD 2.19</a>	RADIO NAVIGATION AND LANDING AIDS	AD 2.WSAT-5
<a href="#">WSAT AD 2.20</a>	LOCAL TRAFFIC REGULATIONS - USE OF RSAF TENGAH AIR BASE AS AN EMERGENCY DIVERSION AERODROME FOR SINGAPORE CHANGI AIRPORT	AD 2.WSAT-7
<a href="#">1</a>	INTRODUCTION	AD 2.WSAT-7
<a href="#">2</a>	MANNING OF TENGAH AIR BASE	AD 2.WSAT-7
<a href="#">3</a>	OPERATIONAL SERVICES	AD 2.WSAT-7
<a href="#">4</a>	PASSENGER CLEARANCE	AD 2.WSAT-7
<a href="#">5</a>	SECURITY	AD 2.WSAT-7
<a href="#">6</a>	AIRCRAFT STAND ALLOCATION	AD 2.WSAT-7
<a href="#">7</a>	COMMUNICATIONS	AD 2.WSAT-7
<a href="#">8</a>	FUEL	AD 2.WSAT-8
<a href="#">9</a>	AIRCRAFT SERVICES	AD 2.WSAT-8
<a href="#">10</a>	RESCUE AND FIRE FIGHTING FACILITIES	AD 2.WSAT-8
<a href="#">11</a>	FULL EMERGENCY/CRASH PROCEDURE	AD 2.WSAT-8
<a href="#">12</a>	ATC SERVICE OUTSIDE OPERATING HOURS	AD 2.WSAT-8
<a href="#">WSAT AD 2.21</a>	[NIL] NOISE ABATEMENT PROCEDURES	NIL
<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
<b><a href="#">WSAG</a></b>	<b>SEMBAWANG</b>	
<a href="#">WSAG AD 2.1</a>	AERODROME LOCATION INDICATOR AND NAME	AD 2.WSAG-1
<a href="#">WSAG AD 2.2</a>	AERODROME GEOGRAPHICAL AND ADMINISTRATIVE DATA	AD 2.WSAG-1
<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
<a href="#">WSAG AD 2.7</a>	[NIL] SEASONAL AVAILABILITY - CLEARING	NIL
<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
<a href="#">WSAG AD 2.18</a>	COMMUNICATION FACILITIES	AD 2.WSAG-3
<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

**[WMKJ](#) JOHOR BAHRU**

<a href="#">WMKJ AD 2.1</a>	AERODROME LOCATION INDICATOR AND NAME	AD 2.WMKJ-1
<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
<b><a href="#">WIDD</a></b>	<b>BATAM/HANG NADIM (INDONESIA)</b>	
<a href="#">WIDD AD 2.1</a>	AERODROME LOCATION INDICATOR AND NAME	AD 2.WIDD-1
<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
<b><a href="#">WIDN</a></b>	<b>TANJUNG PINANG/RAJA HAJI FISABILILLAH (INDONESIA)</b>	
<a href="#">WIDN AD 2.1</a>	AERODROME LOCATION INDICATOR AND NAME	AD 2.WIDN-1
<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>	10.24 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.

# 1 SAFEGATE AIRCRAFT DOCKING GUIDANCE SYSTEM - SAFEDOCK

## 1.1 INTRODUCTION

1.1.1 The Safegate Aircraft Docking Guidance System (ADGS) - SAFEDOCK is a fully automatic aircraft docking guidance system installed at the contact aircraft stands at Terminals 1, 2, 3 and 4, and at the remote aircraft stands at South Apron of Singapore Changi Airport. There are two types of ADGS in Singapore Changi Airport, Safedock Type 1 ADGS and Safedock Type 2 ADGS.

## 1.2 DESCRIPTION OF SYSTEM

1.2.1 The system is based on a laser scanning technique and it tracks both the lateral and longitudinal position of the aircraft. This 3D technique allows the system to identify the incoming aircraft and check it against the one selected by the operator to ensure that the pilot is provided with the correct stop indication for the aircraft.

1.2.2 The system is operated only in the Automatic Mode. When the system fails, the aircraft is to be marshalled into the stand manually.

1.2.3 Azimuth guidance, continuous closing rate information, aircraft type, etc., are shown to the pilot on a single display clearly visible for both pilot and co-pilots. Figure A shows the Display and Laser Scanning Unit mounted on the terminal in front of the aircraft stand.

LED DISPLAY AND LASER SCANNING UNIT

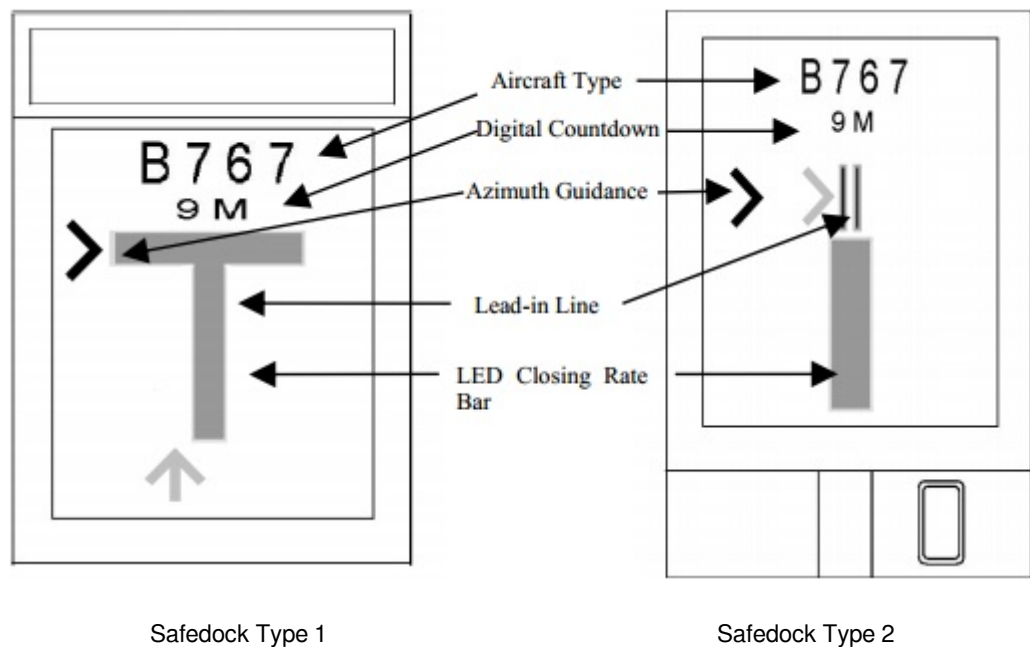

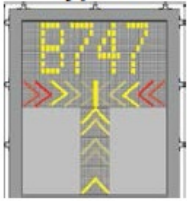
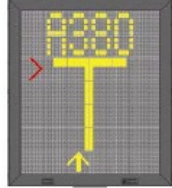
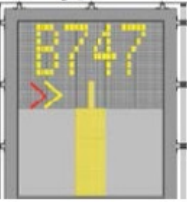
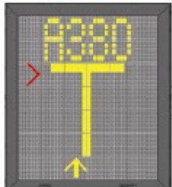
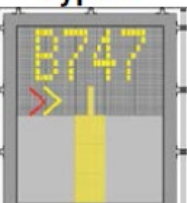

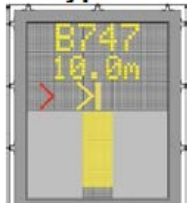

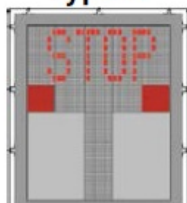

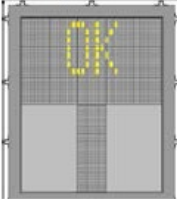



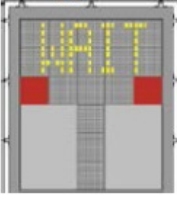



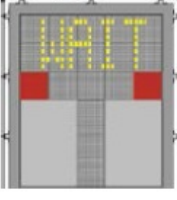
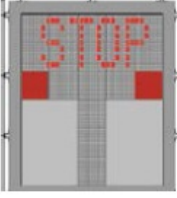
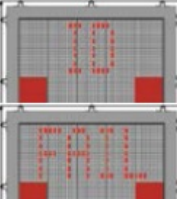


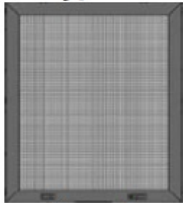
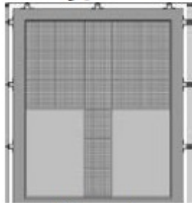

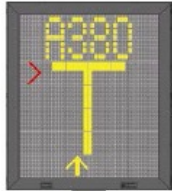
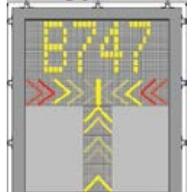
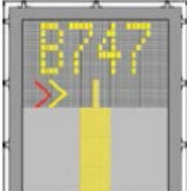
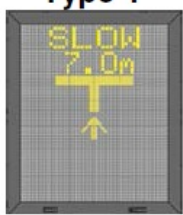
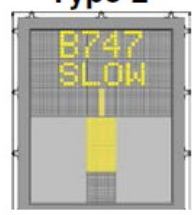

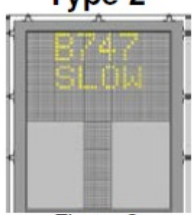
Figure A



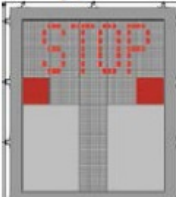
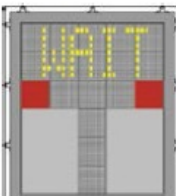
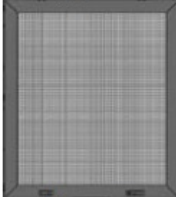
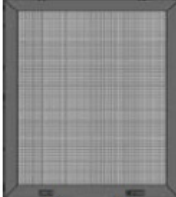
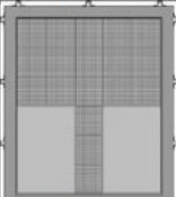
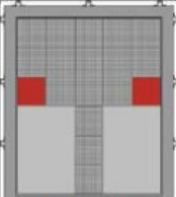
**1.3 DOCKING PROCEDURES**

Description	Display on ADGS	
<p><b>Checking of Aircraft Type</b></p> <ul style="list-style-type: none"> <li>Check that the correct aircraft type is displayed. The scrolling arrows indicate that the system is activated.</li> <li>Follow the lead-in line.</li> </ul>	<p><b>Safedock Type 1</b></p> 	<p><b>Safedock Type 2</b></p> 
<p><b>Capture of Correct Aircraft Type</b></p> <ul style="list-style-type: none"> <li>When the aircraft has been caught by the scanning unit, the scanning unit checks that the aircraft is the correct type and the display provides azimuth guidance information. When the solid yellow closing rate bar appears, the aircraft is being tracked by the system.</li> </ul>	<p><b>Safedock Type 1</b></p> 	<p><b>Safedock Type 2</b></p> 
<p><b>Steering and Alignment of Aircraft</b></p> <ul style="list-style-type: none"> <li>Look for the flashing red arrow and solid yellow arrow which provide azimuth guidance information. The flashing red arrow shows which direction to steer, while the solid yellow arrow gives an indication of how far the aircraft is off the centreline.</li> </ul>	<p><b>Safedock Type 1</b></p> 	<p><b>Safedock Type 2</b></p> 
<p><b>Distance of Aircraft from STOP Position</b></p> <ul style="list-style-type: none"> <li>When the aircraft is 15m from the stop position, closing rate information is given. "Distance to go" is indicated by turning off one row of LEDs (Laser Electronic Displays) for every half metre that the aircraft advances towards the stop position. From 15m to the stop position, the display will indicate the distance from the stop position for every 1m. At 3m from the stop position, the display will indicate the distance from the stop position for every 0.2m.</li> </ul>	<p><b>Safedock Type 1</b></p> 	<p><b>Safedock Type 2</b></p> 
<p><b>STOP Position</b></p> <ul style="list-style-type: none"> <li>When the correct stop position is reached, all of the LEDs for the closing rate bar will be off, the word "STOP" will appear in the display. For Safedock Type 1 ADGS, the word "STOP" will be displayed in red with red border. For Safedock Type 2 ADGS, the word "STOP" will be displayed in yellow and two red, rectangular fields will light in the azimuth guidance area of the display.</li> </ul>	<p><b>Safedock Type 1</b></p> 	<p><b>Safedock Type 2</b></p> 

Description	Display on ADGS	
<p><b>Checking of STOP Position</b></p> <ul style="list-style-type: none"> <li>If the aircraft stops at the correct position, "OK" will be displayed after a few seconds.</li> </ul>	<p><b>Safedock Type 1</b></p> 	<p><b>Safedock Type 2</b></p> 
<p><b>Overshooting of STOP Position</b></p> <ul style="list-style-type: none"> <li>If the aircraft has gone past the correct stop position, the display will show "TOO FAR" after the aircraft comes to a complete stop.</li> </ul>	<p><b>Safedock Type 1</b></p> 	<p><b>Safedock Type 2</b></p> 
<p><b>Object Blocking the View</b></p> <ul style="list-style-type: none"> <li>If some object is blocking the view towards the approaching aircraft or the detected aircraft is lost before 12m to the correct stop position, the system will show "WAIT".</li> </ul>	<p><b>Safedock Type 1</b></p> 	<p><b>Safedock Type 2</b></p> 
<p><b>Identification of Aircraft</b></p> <ul style="list-style-type: none"> <li>The aircraft must be identified at least 12m before the correct stop position. Otherwise, the display will show "WAIT", "STOP" and "ID FAIL".</li> </ul>	<p><b>Safedock Type 1</b></p>   	<p><b>Safedock Type 2</b></p>   

**1.4 SAFETY MEASURES**

Description	Display on ADGS	
<p><b>ADGS Blank / Wrong Aircraft Type</b></p> <ul style="list-style-type: none"> <li>Pilot should not turn an aircraft into the aircraft stand if the docking system is not activated or on seeing a wrong aircraft type displayed on the system.</li> </ul>	<p><b>Safedock Type 1</b></p>  <p>Figure 1</p>	<p><b>Safedock Type 2</b></p>  <p>Figure 1</p>
<p><b>Proceeding beyond Passenger Loading Bridges</b></p> <ul style="list-style-type: none"> <li>Pilot should not proceed beyond the passenger loading bridges unless the scrolling arrows (see figure 1) have been superseded by the solid yellow closing rate bar (see figure 2).</li> </ul>	<p><b>Safedock Type 1</b></p>  <p>Figure 1</p>  <p>Figure 2</p>	<p><b>Safedock Type 2</b></p>  <p>Figure 1</p>  <p>Figure 2</p>
<p><b>Minimum Speed</b></p> <ul style="list-style-type: none"> <li>When using the docking system, pilots are to taxi into the aircraft stand at minimum speed. The system will display "SLOW" to inform the pilot if the aircraft's taxiing speed is exceeded 1.2 m/ s.</li> </ul>	<p><b>Safedock Type 1</b></p> 	<p><b>Safedock Type 2</b></p> 
<p><b>Slow Down (In Abnormal Situations)</b></p> <ul style="list-style-type: none"> <li>In bad weather conditions, the docking system may go into downgrade mode. The display will show the aircraft type and "SLOW" and the scrolling arrows are disabled (see figures 1 &amp; 2). When the system has detected the aircraft, the solid yellow closing rate bar appears. Docking process is allowed to continue but pilot should exercise caution.</li> </ul>	<p><b>Safedock Type 1</b></p>  <p>Figure 1</p>	<p><b>Safedock Type 2</b></p>  <p>Figure 2</p>

Description	Display on ADGS	
<p><b>Overshooting</b></p> <ul style="list-style-type: none"> <li>To avoid overshooting, pilots are advised to approach the stop position slowly and observe the closing rate information displayed. Pilots should stop the aircraft immediately when seeing the “STOP” or “WAIT” display or when given the stop sign by the aircraft marshaller or is unsure of the information displayed during the docking process.</li> </ul>	<p><b>Safedock Type 1</b></p>  	<p><b>Safedock Type 2</b></p>  
<p><b>No Display</b></p> <ul style="list-style-type: none"> <li>Pilot should stop the aircraft immediately if the display goes black, for power failure (see figure 1) or system failure (see figure 2), during the docking process. The aircraft is to be manually marshalled into the aircraft stand.</li> </ul>	<p><b>Safedock Type 1</b></p>  <p>Figure 1</p>  <p>Figure 2</p>	<p><b>Safedock Type 2</b></p>  <p>Figure 1</p>  <p>Figure 2</p>

## 2 PROCEDURES FOR START-UP AND PUSHBACK OF AIRCRAFT

- 2.1 Ground crew must ensure that the area behind an aircraft is clear of vehicles, equipment and other obstructions before the start-up or pushback of aircraft commences.
- 2.2 When the pilot is ready for start-up and pushback, he shall seek confirmation from the ground crew that there is no hazard to his aircraft starting up. He shall then notify the Ground Movement Controller (Callsign: Singapore Ground) that he is ready for pushback. On being told by Singapore Ground that pushback is approved, he shall co-ordinate with the ground crew for the start-up and pushback of the aircraft.
- 2.3 The following table describes the procedures for the pushback of aircraft from the various aircraft stands. When it becomes necessary to vary a procedure to expedite aircraft movements, Singapore Ground will issue specific instructions to the pilot.
- 2.4 The lead-in lines are for aircraft nose-in guidance. For aircraft stands without dedicated pushback lines, ground crew may use the lead-in lines for pushback guidance.

APRON/ ACFT STANDS	PUSHBACK PROCEDURES	PHRASEOLOGY USED BY SINGAPORE GROUND
<b>T3 WEST</b>		
← A1	<p>The aircraft shall be pushed back following the pushback line onto Taxilane V6 until its nose wheel is at the "END OF PUSH (EOP) A1" position. The aircraft shall then be towed forward onto Taxilane V6 to face West until its nose wheel is at the "END OF TOW (EOT) A1, A2, B1, B2" position. Engine start up is only permitted when aircraft is at the "EOT" position. The aircraft may breakaway from there. This pushback procedure does not apply to aircraft with unserviceable auxiliary power unit.</p> <p><u>Alternate Pushback Procedure (To Face North)</u></p>	Standard pushback approved.
←	<p>The aircraft (on idle thrust) shall be pushed back onto Taxilane V6, following Taxilane V6 centreline onto TWY WA to face North until the nose of the aircraft is behind the stopbar behind aircraft stand A2. The aircraft may breakaway from there.</p> <p><u>Alternate Pushback Procedure (To Face South)</u></p>	Pushback approved, to face North on TWY WA.
←	<p>The aircraft (on idle thrust) shall be pushed back onto Taxilane V6, following Taxilane V6 centreline onto TWY WA to face South until the nose of the aircraft is behind the stopbar behind aircraft stand B2. The aircraft may breakaway from there.</p>	Pushback approved, to face South on TWY WA.
← A2	<p>The aircraft shall be pushed back following the pushback line onto Taxilane V6 to face West until its nose wheel is at the "EOP A2, B2" position. The aircraft shall then be towed forward until its nose wheel is at the "EOT A1, A2, B1, B2" position. Engine start up is only permitted when aircraft is at the "EOT" position. The aircraft may breakaway from there. This pushback procedure does not apply to aircraft with unserviceable auxiliary power unit.</p> <p><u>Alternate Pushback Procedure (To Face North)</u></p>	Standard pushback approved.
←	<p>The aircraft (on idle thrust) shall be pushed back onto TWY WA to face North until the nose of the aircraft is behind the stopbar behind aircraft stand A2. The aircraft may breakaway from there.</p> <p><u>Alternate Pushback Procedure (To Face South)</u></p>	Pushback approved, to face North on TWY WA.
←	<p>The aircraft (on idle thrust) shall be pushed back onto TWY WA to face South until the nose of the aircraft is behind the stopbar behind aircraft stand B2. The aircraft may breakaway from there.</p>	Pushback approved, to face South on TWY WA.
A3	<p>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 TWY WA centreline. The aircraft may breakaway from there.</p>	Pushback approved, to face North (or South).



APRON/ ACFT STANDS	PUSHBACK PROCEDURES	PHRASEOLOGY USED BY SINGAPORE GROUND
A4	The aircraft (on idle thrust) shall be pushed back following the pushback line onto TWY WA to face North (or South) until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY WA centreline. The aircraft may breakaway from there.	Pushback approved, to face North (or South).
A5, A9	<p>The aircraft (on idle thrust) shall be pushed back:</p> <ul style="list-style-type: none"> <li>• following the pushback line onto TWY U2 to face North until the nose of the aircraft is behind the stopbar behind aircraft stand A10. The aircraft may breakaway from there.</li> </ul> <p><u>OR</u></p> <ul style="list-style-type: none"> <li>• onto TWY U2 followed by TWY WA to face South until the nose of the aircraft is behind the stopbar behind aircraft stand A4. The aircraft may breakaway from there.</li> </ul>	<p>Pushback approved, to face North.</p> <p>Pushback approved, to face South.</p>
A10	<p>The aircraft (on idle thrust) shall be pushed back:</p> <ul style="list-style-type: none"> <li>• onto TWY U2 to face North until the nose of the aircraft is behind the stopbar behind aircraft stand A10. The aircraft may breakaway from there.</li> </ul> <p><u>OR</u></p> <ul style="list-style-type: none"> <li>• onto TWY U2 followed by TWY WA to face South until the nose of the aircraft is behind the stopbar behind aircraft stand A4. The aircraft may breakaway from there.</li> </ul>	<p>Pushback approved, to face North.</p> <p>Pushback approved, to face South.</p>
A11	<p>The aircraft (on idle thrust) shall be pushed back:</p> <ul style="list-style-type: none"> <li>• onto TWY U2 to face North until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY U2 centreline. The aircraft shall then be towed forward until the nose of the aircraft is behind the stopbar behind aircraft stand A10. The aircraft may breakaway from there.</li> </ul> <p><u>OR</u></p> <ul style="list-style-type: none"> <li>• onto TWY U2 to face South until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY U2 centreline. The aircraft shall then be towed forward until the nose of the aircraft is behind the stopbar behind aircraft stand A12. The aircraft may breakaway from there.</li> </ul>	<p>Pushback approved, to face North.</p> <p>Pushback approved, to face South.</p>
A12	<p>The aircraft (on idle thrust) shall be pushed back:</p> <ul style="list-style-type: none"> <li>• onto TWY U2 to face North until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY U2 centreline. The aircraft shall then be towed forward until the nose of the aircraft is behind the stopbar behind aircraft stand A10. The aircraft may breakaway from there.</li> </ul> <p><u>OR</u></p> <ul style="list-style-type: none"> <li>• onto TWY U2 to face South until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY U2 centreline. The aircraft may breakaway from there.</li> </ul>	<p>Pushback approved, to face North.</p> <p>Pushback approved, to face South.</p>
A13, A14, A15	<p>The aircraft (on idle thrust) shall be pushed back:</p> <ul style="list-style-type: none"> <li>• onto TWY U2 followed by TWY WA to face North until the nose of the aircraft is behind the stopbar behind aircraft stand A16. The aircraft may breakaway from there.</li> </ul> <p><u>OR</u></p> <ul style="list-style-type: none"> <li>• onto TWY U2 to face South until the nose of the aircraft is behind the stopbar behind aircraft stand A12. 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
A16	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 TWY WA centreline. The aircraft may breakaway from there.	Pushback approved, to face North (or South).
A17	<p>The aircraft (on idle thrust) shall be pushed back:</p> <ul style="list-style-type: none"> <li>• onto TWY V8 to face West until its nose wheel is at the "EOP A17" position behind aircraft stand A17. The aircraft may breakaway from there.</li> </ul> <p><u>OR</u></p> <ul style="list-style-type: none"> <li>• onto TWY WA to face South until the nose of the aircraft is behind the stopbar behind aircraft stand A16. The aircraft may breakaway from there.</li> </ul>	<p>Pushback approved, to face West.</p> <p>Pushback approved, to face South.</p>
A18	The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane U4 to face West until the nose of the aircraft is behind the stopbar behind aircraft stand A18. The aircraft may breakaway from there.	Standard pushback approved.
A19	The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane U4 to face West until its nose wheel is at the "EOP A19" position behind aircraft stand A19. The aircraft may breakaway from there.	Standard pushback approved.
A20	The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane U4 to face West until its nose wheel is at the "EOP A20" position behind aircraft stand A20. The aircraft may breakaway from there.	Standard pushback approved.
A21	The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane U4 until its nose wheel is at the "EOP A21" position. The aircraft shall then be towed forward to face West until the nose of the aircraft is behind the stopbar behind aircraft stand A18. The aircraft may breakaway from there.	Standard pushback approved.
← B1	<p>The aircraft shall be pushed back following the pushback line until its nose wheel is at the "EOP B1" position. The aircraft shall then be towed forward onto Taxilane V6 to face West until its nose wheel is at the "EOT A1, A2, B1, B2" position. Engine start up is only permitted when aircraft is at the "EOT" position. The aircraft may breakaway from there. This pushback procedure does not apply to aircraft with unserviceable auxiliary power unit.</p> <p><u>Alternate Pushback Procedure (To Face North)</u></p> <p>← The aircraft (on idle thrust) shall be pushed back onto Taxilane V6, following Taxilane V6 centreline onto TWY WA to face North until the nose of the aircraft is behind the stopbar behind aircraft stand A2. The aircraft may breakaway from there.</p> <p><u>Alternate Pushback Procedure (To Face South)</u></p> <p>← The aircraft (on idle thrust) shall be pushed back onto Taxilane V6, following Taxilane V6 centreline onto TWY WA to face South until the nose of the aircraft is behind the stopbar behind aircraft stand B2. The aircraft may breakaway from there.</p>	<p>Standard pushback approved.</p> <p>Pushback approved, to face North on TWY WA.</p> <p>Pushback approved, to face South on TWY WA.</p>

APRON/ ACFT STANDS	PUSHBACK PROCEDURES	PHRASEOLOGY USED BY SINGAPORE GROUND
← B2	<p>The aircraft shall be pushed back following the pushback line onto Taxilane V6 to face West until its nose wheel is at the "EOP A2, B2" position. The aircraft shall then be towed forward until its nose wheel is at the "EOT A1, A2, B1, B2" position. Engine start up is only permitted when aircraft is at the "EOT" position. The aircraft may breakaway from there. This pushback procedure does not apply to aircraft with unserviceable auxiliary power unit.</p> <p><u>Alternate Pushback Procedure (To Face North)</u></p>	Standard pushback approved.
←	<p>The aircraft (on idle thrust) shall be pushed back onto TWY WA to face North until the nose of the aircraft is behind the stopbar behind aircraft stand A2. The aircraft may breakaway from there.</p> <p><u>Alternate Pushback Procedure (To Face South)</u></p>	Pushback approved, to face North on TWY WA.
←	<p>The aircraft (on idle thrust) 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 may breakaway from there.</p>	Pushback approved, to face South on TWY WA.
B3	<p>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 TWY WA centreline. The aircraft may breakaway from there.</p>	Pushback approved, to face North (or South).
B4	<p>The aircraft (on idle thrust) shall be pushed back following the pushback line onto TWY WA to face North (or South) until its nose wheel is at the intersection of the aircraft stand pushback line and TWY WA centreline. The aircraft may breakaway from there.</p>	Pushback approved, to face North (or South).
B5, B6	<p>The aircraft (on idle thrust) shall be pushed back:</p> <ul style="list-style-type: none"> <li>• onto TWY U1 to face North, following TWY U1 centreline onto TWY WA until the nose of the aircraft is behind the stopbar behind aircraft stand B4. 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 TWY U1 to face South until the nose of the aircraft is behind the stopbar behind aircraft stand B7. The aircraft may breakaway from there.</li> </ul>	<p>Pushback approved, to face North.</p> <p>Pushback approved, to face South.</p>
B7	<p>The aircraft (on idle thrust) shall be pushed back:</p> <ul style="list-style-type: none"> <li>• onto TWY U1 to face North, following TWY U1 centreline onto TWY WA until the nose of the aircraft is behind the stopbar behind aircraft stand B4. The aircraft may breakaway from there.</li> </ul> <p><u>OR</u></p> <ul style="list-style-type: none"> <li>• onto TWY U1 to face South until the nose of the aircraft is behind the stopbar behind aircraft stand B7. The aircraft may breakaway from there.</li> </ul>	<p>Pushback approved, to face North.</p> <p>Pushback approved, to face South.</p>
B8	<p>The aircraft (on idle thrust) shall be pushed back:</p> <ul style="list-style-type: none"> <li>• onto TWY U1 to face North until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY U1 centreline. The aircraft shall then be towed forward until its nose wheel is at the intersection of aircraft stand B9 lead-in line and TWY U1 centreline. The aircraft may breakaway from there.</li> </ul> <p><u>OR</u></p> <ul style="list-style-type: none"> <li>• onto TWY U1 to face South until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY U1 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
B9, B10	The aircraft (on idle thrust) shall be pushed back onto TWY U1 to face North (or South) until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY U1 centreline. The aircraft may breakaway from there.	Pushback approved, to face North (or South).
<b><u>T1 WEST</u></b>		
C1	<p>The aircraft (on idle thrust) shall be pushed back:</p> <ul style="list-style-type: none"> <li>• onto TWY U1 to face North until its nose wheel is at the "EOP C1" position behind aircraft stand C1. The aircraft may breakaway from there.</li> </ul> <p><u>OR</u></p> <ul style="list-style-type: none"> <li>• onto TWY U1 to face South until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY U1 centreline. The aircraft may breakaway from there.</li> </ul>	<p>Pushback approved, to face North.</p> <p>Pushback approved, to face South</p>
C20	<p>The aircraft (on idle thrust) shall be pushed back:</p> <ul style="list-style-type: none"> <li>• onto TWY U1 to face North until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY U1 centreline. The aircraft may breakaway from there.</li> </ul> <p><u>OR</u></p> <ul style="list-style-type: none"> <li>• onto TWY U1 to face South until its nose wheel is at the "EOP C20" position behind aircraft stand C22. The aircraft may breakaway from there.</li> </ul>	<p>Pushback approved, to face North</p> <p>Pushback approved, to face South</p>
C22	The aircraft (on idle thrust) shall be pushed back onto TWY U1 to face North (or South) until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY U1 centreline. The aircraft may breakaway from there.	Pushback approved, to face North (or South).
C23	<p>The aircraft (on idle thrust) shall be pushed back:</p> <ul style="list-style-type: none"> <li>• onto TWY U1 to face North until the nose of the aircraft is behind the stopbar line behind aircraft stand C22. The aircraft may breakaway from there.</li> </ul> <p><u>OR</u></p> <ul style="list-style-type: none"> <li>• onto TWY U1 to face South until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY U1 centreline. The aircraft may breakaway from there.</li> </ul>	<p>Pushback approved, to face North.</p> <p>Pushback approved, to face South.</p>
C24, C25	The aircraft (on idle thrust) shall be pushed back onto TWY U1 to face North (or South) until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY U1 centreline. The aircraft may breakaway from there.	Pushback approved, to face North (or South).
C26	<p>The aircraft (on idle thrust) shall be pushed back:</p> <ul style="list-style-type: none"> <li>• onto TWY WA to face North until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY WA centreline. The aircraft may breakaway from there.</li> </ul> <p><u>OR</u></p> <ul style="list-style-type: none"> <li>• 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 until its nose wheel is at the "EOT C26" position behind aircraft stand C26. The aircraft may breakaway from there.</li> </ul>	<p>Pushback approved, to face North.</p> <p>Pushback approved, to face South.</p>
<b><u>T1 CENTRAL</u></b>		

APRON/ ACFT STANDS	PUSHBACK PROCEDURES	PHRASEOLOGY USED BY SINGAPORE GROUND
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.
464	The aircraft (on idle thrust) shall be pushed back following the pushback line until its nose wheel is at "EOP 464" position. The aircraft shall then be towed forward onto Taxilane S4 to face West until its nose wheel is at "EOT 464" position. The aircraft may breakaway from there.	Standard pushback approved.
465	The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane S4 to face West until its nose wheel is at "EOP 465, 467, 468" position. The aircraft may breakaway from there.	Standard pushback approved.
466	The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane S4 to face West until its nose wheel is at the intersection of the aircraft stand pushback line and Taxilane S4 centreline. The aircraft may breakaway from there.	Standard pushback approved.
467	The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane S4 to face West until its nose wheel is at "EOP 465, 467, 468" position. The aircraft may breakaway from there.	Standard pushback approved.
468	The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane S4 to face West until its nose wheel is at the "EOP 465, 467, 468" position. The aircraft may breakaway from there.	Standard pushback approved.
469	The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane S4 to face West until its nose wheel is at the intersection of the aircraft stand pushback line and Taxilane S4 centreline. The aircraft may breakaway from there.	Standard pushback approved.
<b>WEST CARGO</b>		
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	<p>The aircraft (on idle thrust) shall be pushed back:</p> <ul style="list-style-type: none"> <li>• 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.</li> </ul> <p><u>OR</u></p> <ul style="list-style-type: none"> <li>• 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.</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
512	<p>The aircraft (on idle thrust) shall be pushed back:</p> <ul style="list-style-type: none"> <li>• 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.</li> </ul> <p><u>OR</u></p> <ul style="list-style-type: none"> <li>• 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.</li> </ul>	<p>Pushback approved, to face North.</p> <p>Pushback approved, to face South.</p>
513	<p>The aircraft (on idle thrust) shall be pushed back:</p> <ul style="list-style-type: none"> <li>• 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.</li> </ul> <p><u>OR</u></p> <ul style="list-style-type: none"> <li>• 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.</li> </ul>	<p>Pushback approved, to face North.</p> <p>Pushback approved, to face South.</p>
514	<p>The aircraft (on idle thrust) shall be pushed back:</p> <ul style="list-style-type: none"> <li>• 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.</li> </ul> <p><u>OR</u></p> <ul style="list-style-type: none"> <li>• 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.</li> </ul>	<p>Pushback approved, to face North.</p> <p>Pushback approved, to face South.</p>
515	<p>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.</p>	<p>Standard pushback approved.</p>
516	<p>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.</p>	<p>Standard pushback approved.</p>
516L, 516R	<p>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.</p>	<p>Standard pushback approved.</p>
517	<p>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.</p>	<p>Standard pushback approved.</p>
517L	<p>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 "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.</p>	<p>Standard pushback approved.</p>

APRON/ ACFT STANDS	PUSHBACK PROCEDURES	PHRASEOLOGY USED BY SINGAPORE GROUND
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>EAST CARGO</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.
← 611, 612	The aircraft 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. Engine start up is only permitted at the end of pushback. The aircraft may breakaway from there. Aircraft with auxiliary power unit unserviceable: Engine startup is only permitted on the port side before pushing back.	Standard pushback approved.

## **3 ADVANCED MULTILATERATION SYSTEM**

### **3.1 INTRODUCTION**

3.1.1 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.

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

3.2.1 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.

### **3.3 MULTILATERATION SYSTEM OUTLINE**

3.3.1 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.

3.3.2 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.

### **3.4 AIRCRAFT REQUIREMENTS**

3.4.1 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.

3.4.2 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.

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

3.5.1 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.

#### **3.5.2 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).

#### **3.5.3 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).



## 4 AIRFIELD GROUND LIGHTING CONTROL AND MONITORING SYSTEM (AGLCMS) AND MARKINGS

### 4.1 INTRODUCTION

4.1.1 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).

### 4.2 ROUTE SELECTION AND PRIORITY

4.2.1 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.

4.2.2 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 60 seconds. Pilots and drivers shall not cross any lighted red stopbar lights.

4.2.3 Pilots and drivers 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.

### 4.3 INFORMATION AND MANDATORY SIGNS/MARKINGS

4.3.1 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.

### 4.4 TAXI INSTRUCTIONS USING THE GREEN TAXIWAY CENTRELINE LIGHTS

4.4.1 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

IN APPROACH / TKOF AREAS			IN CIRCLING AREA AND AT AD		
RWY/Area affected	OBST type, ELEV, Markings/LGT	Coordinates	OBST type, ELEV, Markings/LGT	Coordinates	
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>		
<b>RWY/Area affected</b>	<b>OBST type, ELEV, Markings/LGT</b>	<b>Coordinates</b>	<b>OBST type, ELEV, Markings/LGT</b>	<b>Coordinates</b>	
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

Designations RWY NR	TRUE BRG	Dimensions of RWY	Strength (PCN) and surface of RWY and SWY	THR coordinates (THR Geoid Undulation)	THR elevation and highest elevation of TDZ of precision APCH RWY
1	2	3	4	5	6
02L	023.02°	4000 M x 60 M	72/F/B/W/U Grooved Bituminous concrete	012056.27N 1035838.82E (10.24 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 Grooved Bituminous concrete	012233.95N 1035920.06E (10.25 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 (10.27 M)	4.22 M 4.52 M
20C	203.03°	4000 M x 60 M	72/F/B/W/U Bituminous concrete	012143.37N 1035956.46E (10.30 M)	4.48 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

RWY	APCH LGT Type, LEN, Intensity	THR LGT colour WBAR	PAPI (MEHT)	TDZ LGT LEN	RWY Centreline LGT, LEN, spacing, colour, INTST	RWY Edge LGT, LEN, spacing, colour, INTST	RWY End LGT colour	SWY LGT colour
1	2	3	4	5	6	7	8	9
02L	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

RWY	APCH LGT Type, LEN, Intensity	THR LGT colour WBAR	PAPI (MEHT)	TDZ LGT LEN	RWY Centreline LGT, LEN, spacing, colour, INTST	RWY Edge LGT, LEN, spacing, colour, INTST	RWY End LGT colour	SWY LGT colour
1	2	3	4	5	6	7	8	9
<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
<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: 012209.20N 1035858.43E (western side of RWY 02L/20R) ALTN FLG W G EV 2.3 SEC, Operating hours HN + IMC IBN: 012301.27N 1035959.49E (top of Cargo Agents Building E) FLG G 'CH' EV 7 SEC, Operating 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

Service Designation	Call sign	Frequency (P-Pri, S-Sec)	Hours of operation	Remarks
<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, L762, 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				
<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
		129.95 MHz	H24	for ground emergency
		122.55 MHz	H24	for ground movement of aircraft east of Terminal 4
		125.65 MHz	H24	for ground movement of aircraft west of Terminal 4
	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. All personnel operating the radio station on board an aircraft that is on the ground should possess the Aircraft Radio Operator Approval (AROA) or other equivalent certification.	
<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**

Type of aid and Variation	IDENT	Frequency	OPR Hour	Position of Transmitting Antenna Coordinates	DME Transmitting Antenna Elevation / Remarks
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 1035901.21E	Located 368m (1207ft) from THR RWY 02C, along RWY centreline. Course width 3.38°. EM: A0/A2.
RWY 20C ILS GP	-	333.2MHz	H24	012131.70N 1035955.79E	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	012131.70N 1035955.79E	DME co-located with GP. EM: P9.
RWY 20C ILS MM	-	75MHz	H24	012212.07N 1040001.14E	Located 957m (3140ft) from THR RWY 20C along extended centreline of RWY. No back beam.
RWY 02C ILS LLZ	ICE	108.3MHz	H24	012154.39N 1040001.14E	Located 368m (1207ft) from THR RWY 20C, along RWY centreline. Course width 3.38°. EM: A0/A2.
RWY 02C ILS GP	-	334.1MHz	H24	011952.09N 1035913.75E	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: 17m (56ft). EM: A0/A2.
RWY 02C ILS DME	ICE	CH20X	H24	011952.09N 1035913.75E	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.
RWY 20R ILS GP	-	329.3MHz	H24	012225.59N 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 Reference Datum: 17m (56ft). EM: A0/A2.
RWY 20R ILS DME	ICH	CH26X	H24	012225.59N 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	012307.51N 1035934.24E	Located 1122m (3681ft) from displaced THR RWY 20R, along centreline of the RWY.



Type of aid and Variation	IDENT	Frequency	OPR Hour	Position of Transmitting Antenna Coordinates	DME Transmitting Antenna Elevation / Remarks
1	2	3	4	5	6 & 7
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.
RWY 02L ILS GP	-	330.8MHz	H24	012108.35N 1035838.86E	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: 17m (56ft). EM:A0/A2.
RWY 02L ILS DME	ICW	CH46X	H24	012108.35N 1035838.86E	DME co-located with GP. EM:P9.
RWY 02L ILS MM	-	75MHz	H24	012027.54N 1035826.68E	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 section WSAP AD 2.20 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

**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 utilising the DCL service on selected routes shall request for ATC clearance through 'Request for Departure Clearance Downlink' (RCD) message no earlier than 20 minutes before TOBT. Refer to WSSS AD 2.22 paragraph 8.4 on the applicable routes for DCL service and procedures.

5.4 Pilot using voice request 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.

5.5 Regardless of clearance through voice or datalink, all departing aircraft must report to Clearance Delivery when ready for push within 5 minutes of TOBT.

5.6 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.

5.7 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.

5.8 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.

5.9 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.

5.10 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.

5.11 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.

5.12 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 13.

5.13 Quick overview of WSSS start-up for pilots

**Definitions of commonly used terms**

- **Target Off-Block Time (TOBT)** - The time that an AO or 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 ATC clearance.
- **Target Start-up Approval Time (TSAT)** - The time provided by ATC that an aircraft can expect start-up / pushback approval.

**TOBT and TSAT requirements**

- Irrespective of the TSAT, the aircraft must be ready for departure at the TOBT +/- 5 minutes as the TSAT may be revised forward at short notice.
- Any time the TOBT or TSAT cannot be met, or an earlier departure is required, the TOBT must be updated expeditiously by the aircraft operator or ground handler.

**ATC Clearance**

- ATC Clearance on selected ATS routes can be requested via Data Link Departure Clearance (DCL) at TOBT - 20 minutes.
- If DCL is not available, ATC Clearance should be requested via Clearance Delivery at TOBT +/-5 minutes.

**Start-up / Pushback Clearance**

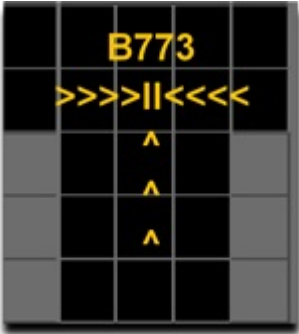



- Pilots must be ready for start-up / pushback at TOBT +/- 5 minutes.
- Pilots should request start-up / pushback clearance at TSAT +/- 5 minutes.

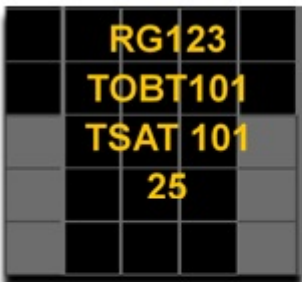

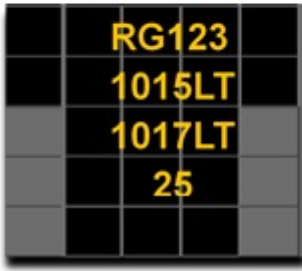


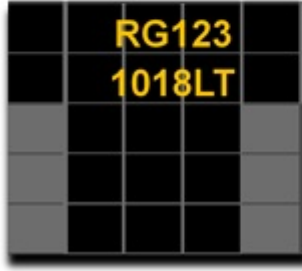
- ← 6
- ← 6.1

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

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.

←

<b>Aircraft Docking Guidance System (ADGS)</b>	
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>

<b>Aircraft Docking Guidance System (ADGS)</b>	
Description	Display on ADGS
<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>
<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>	<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>

**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 DEPARTURE CLEARANCE (DCL) VIA DATALINK PROCEDURES**

- 8.1 Aircraft need to be equipped with Aircraft Communications Addressing and Reporting System (ACARS) to support DCL application and be compliant with the European Organisation for Civil Aviation Equipment (EUROCAE) ED-85A (Data Link Application System Document (DLASD) for the DCL datalink service) and ARINC Specification 623-3.
- 8.2 Singapore application of DCL is in accordance with ED-85A.
- 8.3 The logon ID of the ground system for the provision of DCL service is WSSS.

- 8.4 DCL service is only applicable for flights departing from WSSS to the following routes / destinations:
- Destinations in Peninsular Malaysia via ATS Routes A457 and B466
  - Destinations in Thailand via ATS Routes B466 and B469 / M751
  - Destinations in Indonesia via ATS Route A457, R469 and B470
  - Destinations in Australia and New Zealand via ATS Route B470
  - Flights with allocated Calculated Take-Off Time (CTOT) under Bay of Bengal Cooperative Air Traffic Flow Management (BOBCAT)
- 8.5 Pilot utilising the DCL service on selected routes shall request for ATC clearance through RCD message no earlier than 20 minutes before TOBT.
- For flights with allocated CTOT under BOBCAT, to input "CTOT HHMMz" under the free text field in RCD message.
  - For flights routed via ANITO B470, to input "ANITO FLxxx"(ANITO crossing level) under the free text field in RCD message.
  - Pilot shall contact Clearance Delivery or the next assigned frequency in 'Departure Clearance Uplink' (CLD) message within 5 minutes of TOBT using the following phraseology:
    - <"Callsign"...With P-D-C, fully ready>
    - Provide requested flight level if it differs from PFL filed in flight plan
    - Provide CTOT or ANITO crossing if not previously given in RCD message
- 8.6 DCL message format does not include the requested cruising level and final cruising level.
- The planned flight level (PFL) filed in flight plan field 15b will be used as requested level unless otherwise specified by pilot.
  - Final cruising level will be assigned by Singapore ATC after airborne and it is subjected to traffic disposition. No on-ground level negotiations or reservations are allowed.
- 8.7 DCL service does not provide clearance revision. Any revision to the clearance issued via datalink will be made by ATC through voice communications.
- 8.8 Clearance request through VHF using the existing voice procedures is still available for applicable flights under the DCL service.
- 8.9 ATC will reject the DCL request and send a "revert to voice procedures" message to the pilot if one of the following occurs:
- Flight's routes / destinations not stated in paragraph 8.4
  - RCD message does not comply with ED-85A or have inaccurate flight data, e.g. different Callsign / ADES from flight plan
  - Invalid TOBT
  - When required by ATC due to flow restriction
- 8.10 Upon receipt of any "revert to voice procedures" message, pilot shall cancel any clearance received previously (if any) and follow the existing voice procedures for clearance request, i.e. contact Clearance Delivery within 5 minutes of TOBT.
- 8.11 Pilot shall monitor the clearance delivery frequency once the DCL process is initiated. In the event of any issues encountered, ATC will revert to voice procedures.
- 8.12 ATC will revert with CLD message within 5 minutes of receipt of the RCD message. If no CLD message is received, pilot is to call on delivery frequency to verify request.
- 8.13 Pilot shall respond with 'Departure Clearance Readback Downlink' (CDA) message within 5 minutes of receipt of CLD message. Failure to comply may result in a "revert to voice procedures" message being sent.
- Note: The DCL process is only complete and clearance confirmed when CDA message is received and processed successfully.  
A "CDA received – clearance confirmed" message will be sent to the pilot.
- 8.14 Aircraft operator / ground handling agent shall continue to update TOBT to reflect any changes in readiness time in accordance to A-CDM startup procedures stated in AIP Singapore section WSSS AD 2.22 paragraph 5.

8.15 ATC will check for TOBT compliance and update pilot of any revisions in departure clearance and flow restrictions before handing the flight over to Ground frequency for start-up and pushback.

8.16 ATC will cancel the clearance issued and send a "revert to voice procedures" message if pilot does not report ready for push within 5 minutes of TSAT.

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

← 9.1 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 5.4). Aircraft will normally be assigned the level requested unless an alternate level is offered after coordination with the adjacent ATC centres.

9.2 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

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

← 10.1 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 5.9 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.

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

11.1 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 5.9 is exceeded.

## ← 12 DELAY DUE TO OVERFLIGHTS

12.1 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.

## ← 13 NON-CDM MODE OF OPERATIONS

13.1 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.

13.2 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.

13.3 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 5.4



- ← b. ATC will revert to the gate hold procedures stated in para 14 and issue estimated pushback times accordingly.

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

- 14.1 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.
- 14.2 When an EPT is issued, pilots will be instructed to either remain on GMP frequency or to monitor Singapore Ground Control (frequencies 121.725MHz, 121.85MHz, 122.55MHz, 124.3MHz or 125.65MHz). It should be noted that when instructed to monitor the Singapore Ground frequencies, pilots shall not establish contact with the Singapore Ground Control, rather, pilots shall maintain listening watch on the assigned Singapore Ground Control frequency and wait for pushback instruction. This is to prevent unnecessary frequency congestion.
- 14.3 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.
- 14.4 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.
- 14.5 To maximise runway utilisation, departure sequence will be planned on the basis of increasing runway throughput so as to enhance overall efficiency.

## ← 15 GROUND MOVEMENT PLANNER ON VHF 121.65MHz

- ← 15.1 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.

## ← 16 GROUND MOVEMENT CONTROL ON VHF 121.725MHz, 121.85MHz, 122.55MHz, 124.3MHz and 125.65MHz

- 16.1 This frequency shall be used for aircraft start-up/push-back clearance.
- 16.2 Unless otherwise instructed by ATC, the pilot-in-command shall prior to starting engines listen out on the Ground Movement Control frequency on 121.725MHz, 121.85MHz, 122.55MHz, 124.3MHz or 125.65MHz.
- 16.3 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.
- 16.4 Departing aircraft will be instructed when to change from 118.6MHz or 118.25MHz to Singapore Departure frequency 120.3MHz.
- 16.5 In the case of the aircraft having landed, the pilot-in-command shall change from 118.6MHz or 118.25MHz to 121.725MHz, 121.85MHz, 122.55MHz, 124.3MHz or 125.65MHz immediately upon instructed by ATC after clearing the runway. He shall maintain watch on 121.725MHz, 121.85MHz, 122.55MHz, 124.3MHz or 125.65MHz for taxiing and parking instructions until he arrives at his aircraft stand.

## 17 TAXIING

- 17.1 Taxi clearance given by Singapore Ground Movement Control will relate to movement on the manoeuvring area, but excluding the marshalling area.
- 17.2 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.

17.3 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. **Pilots are also advised of the possibility of misjudging the clearance between the aircraft wing tips and other obstacles, especially in areas of hot-spots or during low-light / poor visibility conditions.**

17.4 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.

← **18 TAKE-OFF AND LANDING**

18.1 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

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

18.3 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.

18.4 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.

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

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

### 19.1 INTRODUCTION

- 19.1.1 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).
- 19.1.2 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.
- 19.1.3 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.

### 19.2 ARRIVALS

- 19.2.1 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
L762	ASUNA	NIL
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.		

- 19.2.2 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.

### 19.3 DEPARTURES

- 19.3.1 All departing aircraft will be cleared on the appropriate RNAV-1 (GNSS) SIDs and shall climb initially to 3,000ft.
- 19.3.2 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

ATS Route	RNAV-1 SID	Remarks and Flight Planning Requirements
L762	ADMIM	NIL
M635	VENIX	NIL
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.

#### 19.4 VERTICAL AND SPEED RESTRICTIONS

19.4.1 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.

#### 19.5 OPERATORS' PROCEDURES

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

19.5.2 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.

### 20 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

Name	Latitude	Longitude	Radius/Distance from VTK	Radius/Distance from SJ
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
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
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
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
MIBEL	012351N	1020816E	VTK R-269.5 / D113.2	SJ R-275.8 / D103.7
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	-	-

## **21 SID / STAR PHRASEOLOGIES**

21.1 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.

21.2 The core phraseologies are:

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

21.3 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.

21.4 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))

21.5 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.

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

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

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

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

21.9 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.

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

## **22 ARRIVING AIRCRAFT**

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

## **23 LIGHT AIRCRAFT OPERATIONS**

23.1 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.

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

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

## 24 SIMULTANEOUS INDEPENDENT PARALLEL APPROACHES

### 24.1 *Introduction*

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

### 24.2 *Procedures for simultaneous independent parallel approaches*

24.2.1 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.

24.2.2 ATC will vector arriving flights into Singapore Changi Airport from the final waypoint of the respective STARs to the respective NOZs.

24.2.3 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.

24.2.4 ATC is not required to provide separation between aircraft on adjacent ILS Localizers and will monitor aircraft for deviation from the approach path.

24.2.5 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.

24.2.6 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)”**

24.2.7 Aircraft can expect to maintain speed 180kt at base turn or earlier till 8NM from touchdown.

### 24.3 *Break-out manoeuvre*

24.3.1 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”**

24.3.2 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)”**

### 24.4 *Pilot notification and conditions for operations*

24.4.1 Simultaneous approaches to parallel runways operation will be broadcasted on ATIS during the active period.

24.4.2 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)
  - brahmny 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 7F .....	<a href="#">AD-2-WSSS-SID-1 to 1.1</a>
RNAV <sub>(GNSS)</sub> SID - RWY 02C/20C - ANITO 6A / ANITO 7B .....	<a href="#">AD-2-WSSS-SID-2 to 2.1</a>
RNAV <sub>(GNSS)</sub> SID - RWY 02L/20R - ADMIM 1E / ADMIM 3F .....	<a href="#">AD-2-WSSS-SID-3 to 3.1</a>
RNAV <sub>(GNSS)</sub> SID - RWY 02C/20C - ADMIM 1A / ADMIM 3B .....	<a href="#">AD-2-WSSS-SID-4 to 4.1</a>
RNAV <sub>(GNSS)</sub> SID - RWY 02L/20R - TOMAN 2E / TOMAN 4F .....	<a href="#">AD-2-WSSS-SID-5 to 5.1</a>
RNAV <sub>(GNSS)</sub> SID - RWY 02C/20C - TOMAN 2A / TOMAN 4B .....	<a href="#">AD-2-WSSS-SID-6 to 6.1</a>
RNAV <sub>(GNSS)</sub> SID - RWY 02L/20R - BAVUS 1E / BAVUS 3F .....	<a href="#">AD-2-WSSS-SID-7 to 7.1</a>
RNAV <sub>(GNSS)</sub> SID - RWY 02C/20C - BAVUS 1A / BAVUS 3B .....	<a href="#">AD-2-WSSS-SID-8 to 8.1</a>
RNAV <sub>(GNSS)</sub> SID - RWY 02L/20R - AROSO 2E / AROSO 4F .....	<a href="#">AD-2-WSSS-SID-9 to 9.1</a>
RNAV <sub>(GNSS)</sub> SID - RWY 02L/20R - MASBO 2E / MASBO 4F .....	<a href="#">AD-2-WSSS-SID-10 to 10.1</a>
RNAV <sub>(GNSS)</sub> SID - RWY 02C/20C - AROSO 2A / AROSO 4B .....	<a href="#">AD-2-WSSS-SID-11 to 11.1</a>
RNAV <sub>(GNSS)</sub> SID - RWY 02C/20C - MASBO 2A / MASBO 4B .....	<a href="#">AD-2-WSSS-SID-12 to 12.1</a>
RNAV <sub>(GNSS)</sub> SID - RWY 02L/20R - MERSING 5E / MERSING 8F .....	<a href="#">AD-2-WSSS-SID-13 to 13.1</a>
RNAV <sub>(GNSS)</sub> SID - RWY 02C/20C - MERSING 5A / MERSING 8B .....	<a href="#">AD-2-WSSS-SID-14 to 14.1</a>
RNAV <sub>(GNSS)</sub> SID - RWY 02C/20C - VENIX 1A / VENIX 3B .....	<a href="#">AD-2-WSSS-SID-15 to 15.1</a>
RNAV <sub>(GNSS)</sub> SID - RWY 02L/20R - VENIX 1E / VENIX 3F .....	<a href="#">AD-2-WSSS-SID-16 to 16.1</a>
RNAV <sub>(GNSS)</sub> SID - RWY 02C/20C - KADAR 1A / KADAR 3B .....	<a href="#">AD-2-WSSS-SID-17 to 17.1</a>
RNAV <sub>(GNSS)</sub> SID - RWY 02L/20R - KADAR 1E / KADAR 3F .....	<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**

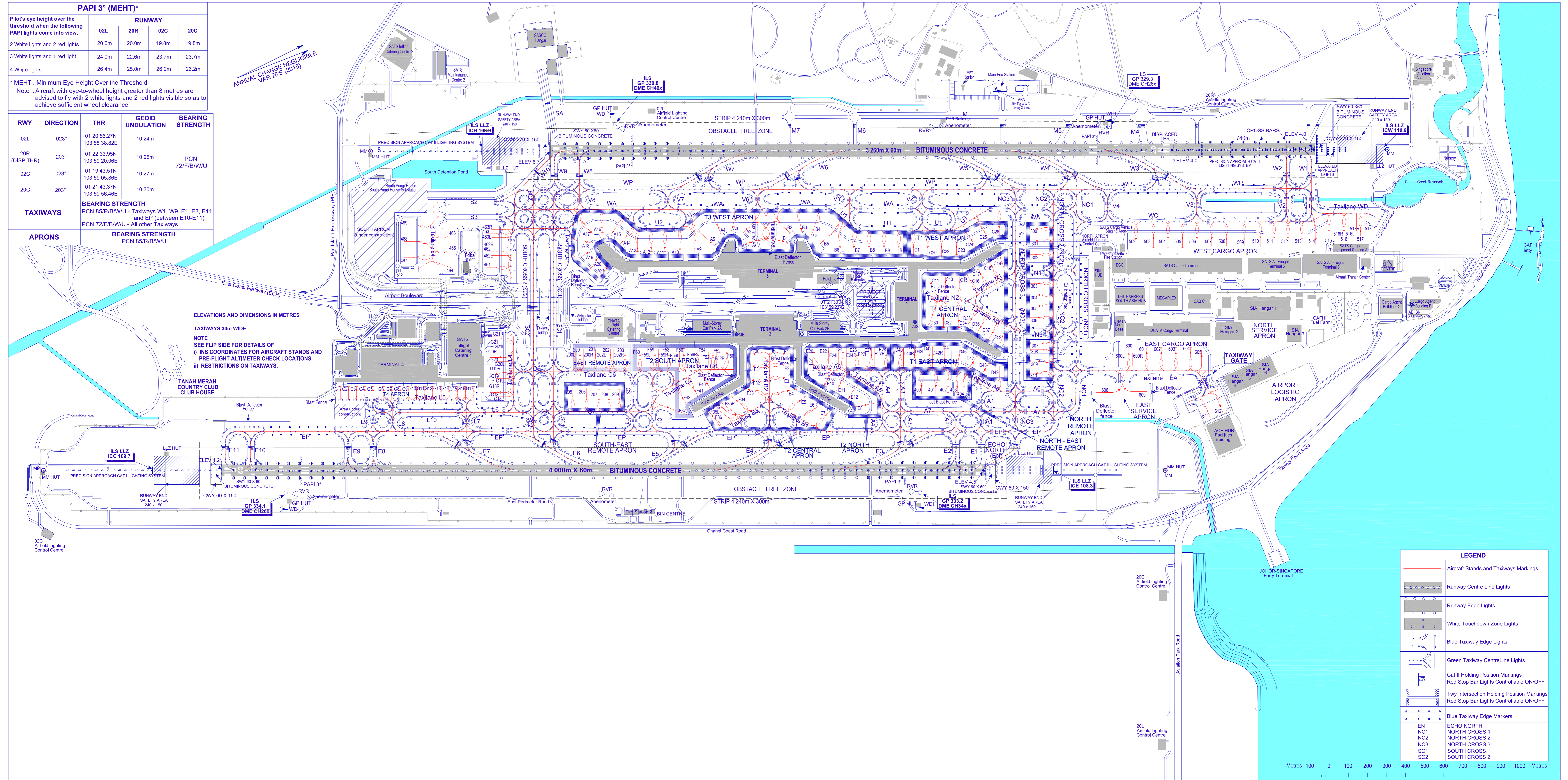
01° 21' 33"N  
103°59' 22"E

AERODROME ELEVATION 6.66m

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

RAMP TWR  
GND 122.55 (GMC 4 EAST)  
125.65 (GMC 4 WEST)

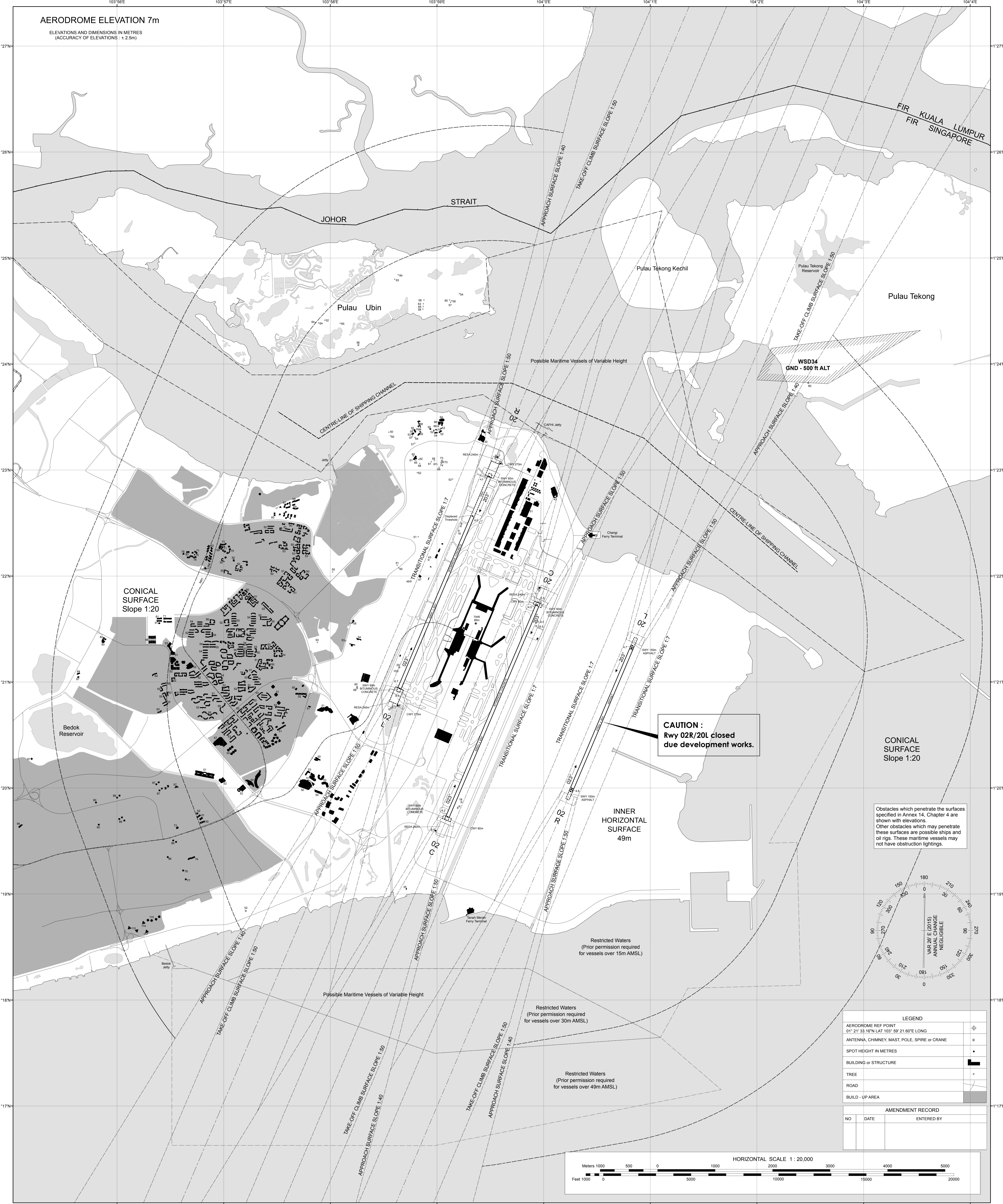
**SINGAPORE/SINGAPORE CHANGI**





# AERODROME OBSTACLE CHART - ICAO TYPE B

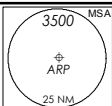
SINGAPORE / Singapore Changi



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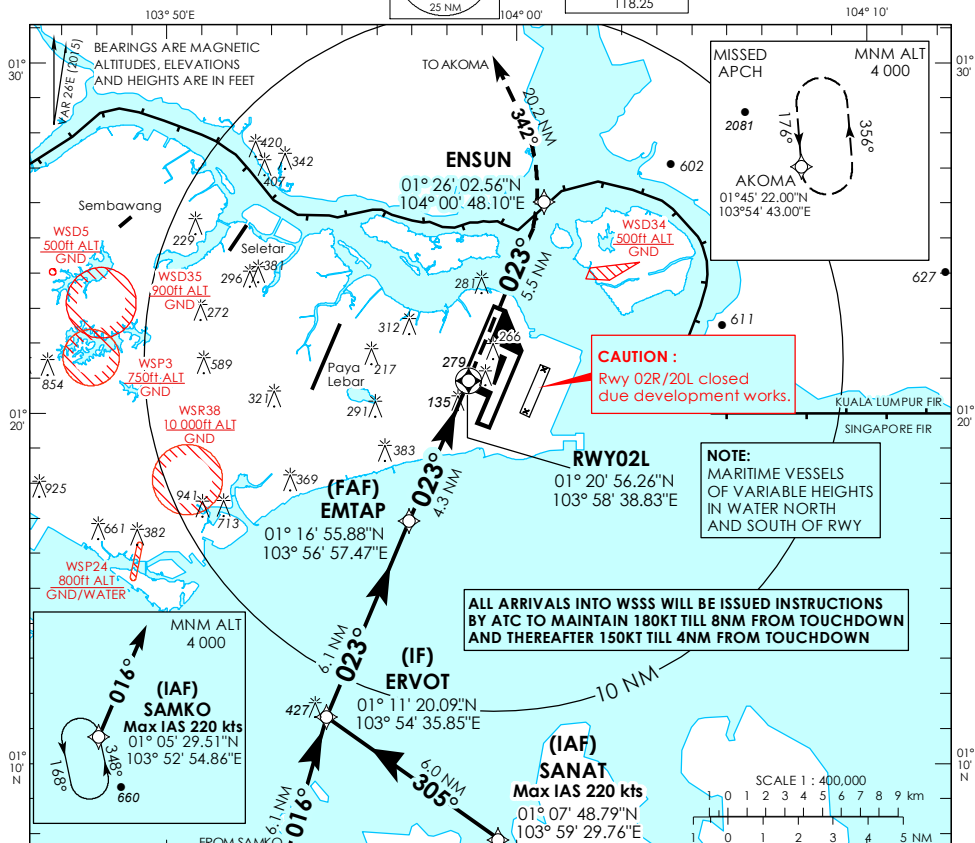
**INSTRUMENT APPROACH CHART**

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



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

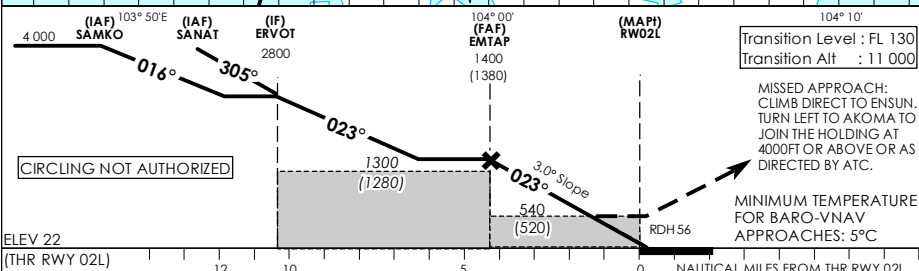
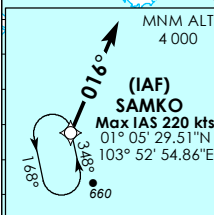
**SINGAPORE/ SINGAPORE CHANGI  
RNAV (GNSS) RWY 02L**



**CAUTION :**  
Rwy 02R/20L closed due development works.

**NOTE:**  
MARITIME VESSELS OF VARIABLE HEIGHTS IN WATER NORTH AND SOUTH OF RWY

**ALL ARRIVALS INTO WSSS WILL BE ISSUED INSTRUCTIONS BY ATC TO MAINTAIN 180KT TILL 8NM FROM TOUCHDOWN AND THEREAFTER 150KT TILL 4NM FROM TOUCHDOWN**



ELEV 22 (THR RWY 02L) 12 10 5 0 NAUTICAL MILES FROM THR RWY 02L

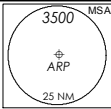
		OCA (OCH)					
Category of Aircraft		A	B	C	D		
LNAV/VNAV	2.5%	450 (430)					
LNAV	2.5%	540 (520)					
Fix		SAMKO	SANAT	ERVOT	EMTAP	RW02L	ENSUN
Altitude (Height)		4000 (3978)	4000 (3978)	2800 (2778)	1400 (1378)	540 (518)	880 (858)
Speed		knots	80	100	120	140	160
FAF - MAP1 4.3nm		min : s	3 : 14	2 : 35	2 : 09	1 : 51	1 : 37
Rate of descent/GS		ft/min	424	530	637	743	849

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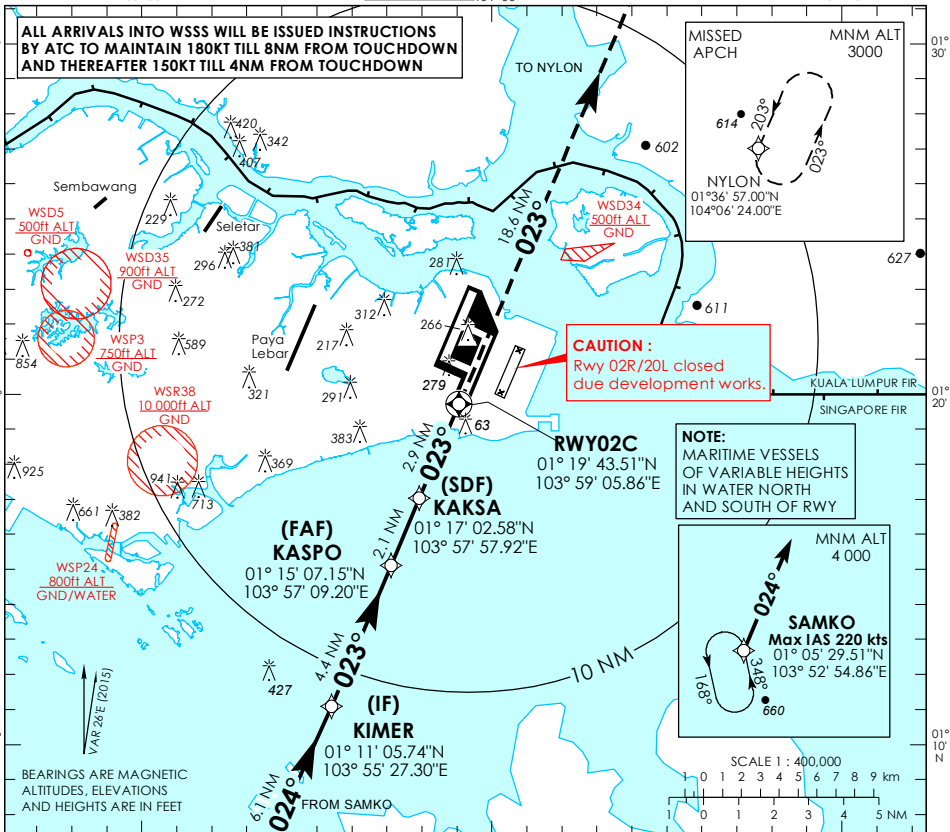
**INSTRUMENT APPROACH CHART**

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



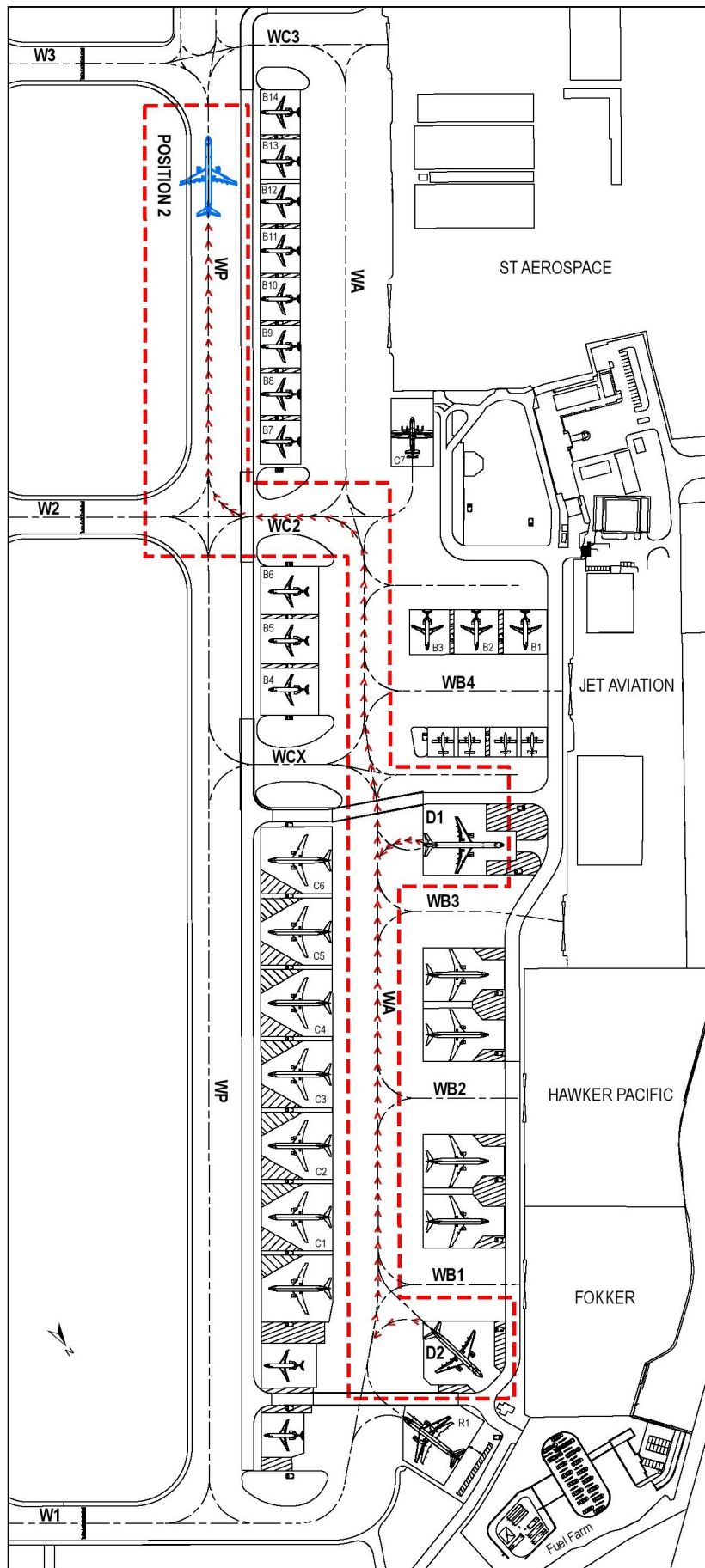
D-ATIS AP ID	WSSS
APP	128.6
TWR	120.3
	119.3
	118.6
	118.25

**SINGAPORE/ SINGAPORE CHANGI  
RNAV (GNSS) RWY 02C**



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### 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	
RWY/Area affected	Obstacle type Elevation Markings/LGT	Coordinates	Obstacle type Elevation Markings/LGT	Coordinates
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 mast 217ft AMSL	012258.8N1035113.8E
	3) Chimney 276ft AMSL	012700.18N1035321.93E	3) Radio masts 184ft AMSL	012454N 1035300E
	4) Chimney 273ft AMSL	012651.81N1035330.23E	4) Radar tower 177ft AMSL marked/LGTD	012537.79N1035306.74E (reclaimed land north of RWY)
	5) Chimney 286ft AMSL	012646.99N1035331.46E	5) Mobile cranes 420ft AMSL	within area bounded by 012711.78N1035223.74E 012729.78N1035223.74E 012729.78N1035247.74E 012656.78N1035247.74E
	6) Mobile cranes 330ft AMSL	within area bounded by 012627.24N1035313.00E 012607.79N1035333.95E 012614.23N1035337.07E 012623.93N1035316.02E	6) Glide Path Antenna 72ft AMSL	012512N1035215E
	7) Silo, 342 ft AMSL, mark and lighted	012659.1N1035325.3E		

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	Associated MET Office	Seletar
2	Hours of service	H24
3	Office responsible for TAF preparation, Periods of validity	Singapore Changi, 30 hours
4	Type of landing forecast, Interval of issuance	METAR, SPECI and AD warning of adverse weather (H24). TREND NIL.
5	Briefing/consultation provided	NIL
6	Flight documentation, Language(s) used	Tabular forms, English
7	Charts/other information available for briefing or consultation	NIL
8	Supplementary equipment available for providing information	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	ATS units provided with information	NIL
10	Additional information	TEL: 64815978 (MET Office)

**WSSL AD 2.17 ATS AIRSPACE**

1	<i>Designation and Lateral Limits</i>	<p><b>SELETAR CTR</b> 012703N 1035009E 012825N 1035009E 012900N 1035425E 012534N 1035454E thence along international boundary to 012556N 1035326E 012227N 1035158E 012232N 1035016E 012327N 1034922E 012607N 1035053E and thence an arc of 2NM radius (centred at position 012527N 1034856E) joining 012607N 1035053E and 012703N 1035009E</p> <p><b>SELETAR CONTROL ZONE A</b> Portion of Seletar CTR within Singapore FIR is known as Seletar CTR 'A'.</p> <p><b>SELETAR CONTROL ZONE 'B'</b> The part in the Kuala Lumpur FIR is known as Seletar CTR 'B' and is bounded by 012825N 1035009E, 012900N 1035425E, 012534N 1035454E thence along the Peninsular Malaysia/Singapore international boundary to 012808N 1035010E to 012825N 1035009E from GND/sea level to 3,000ft. It will be activated only with prior approval of Johor Bahru ATC. (see chart AD-2-WSSL-VFR-1).</p>
2	<i>Vertical Limits</i>	<p><b>SELETAR CONTROL ZONE A</b> SFC to 4 500ft ALT Maximum Usable ALT 4 000ft</p> <p><b>SELETAR CONTROL ZONE B</b> SFC to 3 000ft ALT</p>
3	<i>Airspace Classification</i>	C
4	<i>ATS Unit Call sign Language(s)</i>	SELETAR TOWER  English
5	<i>Transition Altitude</i>	11000 FT (3,350m)
6	<i>Remarks</i>	NIL

## WSSL AD 2.18 ATS COMMUNICATION FACILITIES

Service designation	Call sign	Frequency P-Pri S-Sec	Hours of operation	Remarks
TWR	SELETAR TOWER	P118.45 MHz S130.2 MHz 270.4 MHz	H24	
	SELETAR GROUND	121.6 MHz * 122.9 MHz		
ACC	SINGAPORE RADAR	P123.7 MHz S127.3 MHz	0000-1430	* for vehicular movements For AWY B469, G334, R208, L625, L629, L635, L642, M751, M753, M758, M761, M763, M771, N884, N891 and N892
		133.8 MHz	H24	For AWY A457, A464, A576, B466, L762, R325 (all northbound) and R469.
		P133.25 MHz S135.8 MHz		For AWY G580, M646 and M767
	P134.2 MHz S133.35 MHz	For AWY A464, A576, G579 (all southbound), B470, G220, N875 and in area in the immediate vicinity of Singapore		
	P134.4 MHz S128.1 MHz 255.4 MHz	Radar Maint Period: Monthly - every third SAT BTN 1601-2359		
	SINGAPORE RADIO	6556 kHz 11297 kHz	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		TAR: a) Intermediate APCH to Singapore Changi AP and other airports in Singapore b) DEP from all airports in Singapore  Maint Period: Monthly: every first THU BTN 0000-0900 (ASR I) and every fourth SAT BTN 1601-2359 (ASR II)

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

Type of Aid and Variation	IDENT	Frequency	OPR Hour	Coordinates	DME Elevation/Remarks
1	2	3	4	5	6
JAYBEE NDB	JB	400 KHz (80w)	H24	012959.77N 1034241.82E	BRG 298° DIST 19.6km from ARP Seletar. Coverage 50NM. Unusable 285°-060° beyond 20NM. Bearing fluctuations greater than +/- 10° may be observed in sector 138° to 148°. EM: A0/A2
KONG KONG NDB	KK	286 KHz (70w)	H24	013117.76N 1035923.69E	BRG 049° DIST 17.7km from ARP Seletar. Coverage 50NM. Unusable 270°-010° beyond 30NM. Bearing fluctuations greater than +/- 10° may be observed in sector 048° to 052°. EM: A0/A2
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:
- Aircraft identification;
  - 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**

<b>Aeronautical Service</b>	<b>Seletar AD</b>	<b>Sembawang AD</b>	<b>Significant Differences and Remarks</b>
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



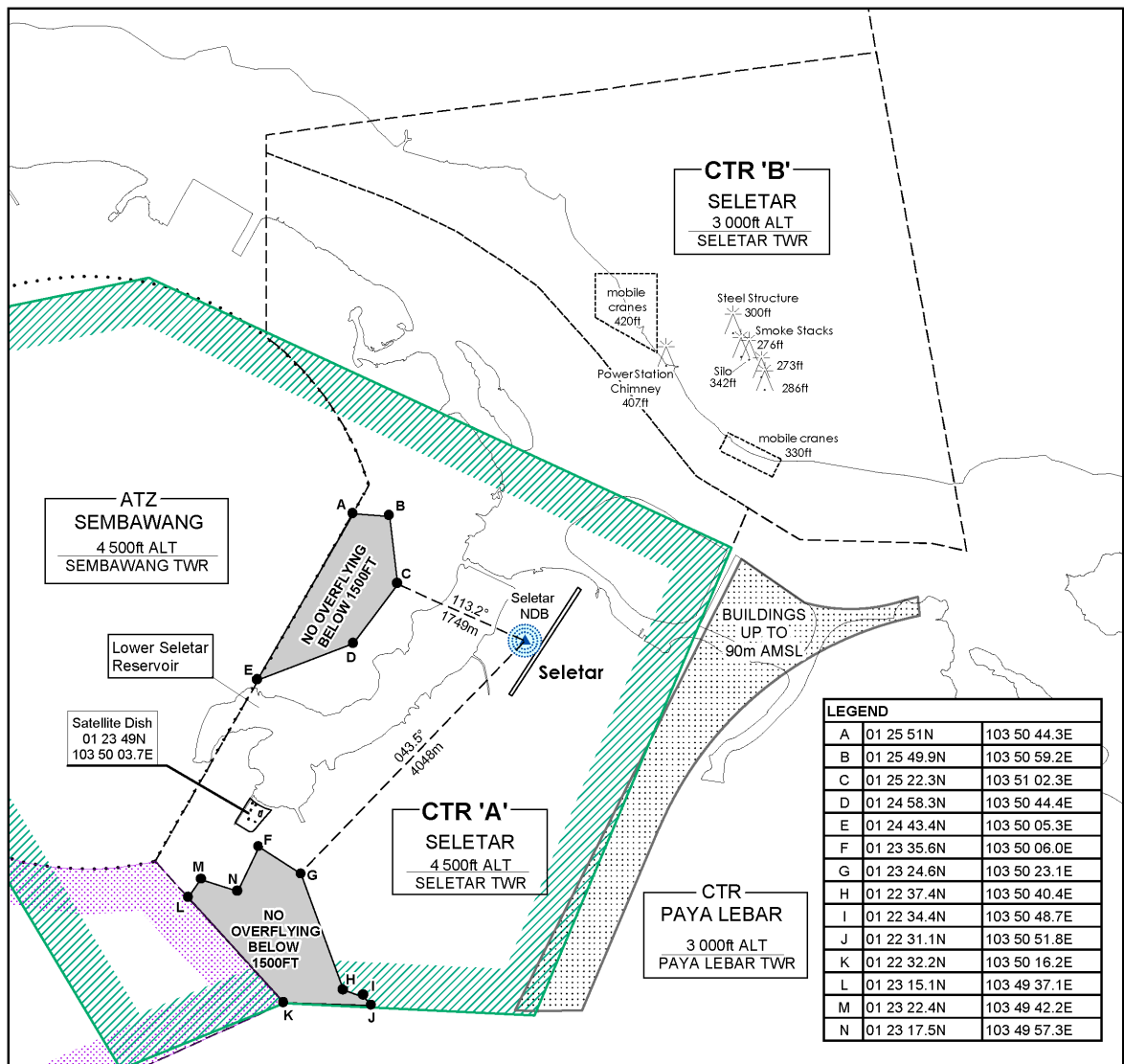
Aeronautical Service	Seletar AD	Sembawang AD	Significant Differences and Remarks
Approach LGT	Simple approach LGT available for RWY 03 approach, consisting of 4 rows of barettes and 1 crossbar (5th row). RWY 03 - white, elevated, uni-directional approach LGT and white, omni-directional CGL on top of 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
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):

POINT	COORDINATES
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

paragraph 1.4 and 1.5. The joining procedures are illustrated in charts AD-2-WSSL-VAC-3, AD-2-WSSL-VAC-4, AD-2-WSSL-IFR-1 and AD-2-WSSL-IFR-2.

- 1.1.4 When within 5km of the aerodrome reference point, aircraft are to fly; at a manoeuvring speed of not more than 170kt unless otherwise authorised by ATC. All aircraft are required to keep well clear of Sembawang ATZ and Paya Lebar CTR.
- 1.1.5 Circuit traffic already downwind shall have priority. Arriving aircraft shall position and sequence itself accordingly, unless directed otherwise by ATC.
- 1.1.6 Pilots shall not fly east of the runway. This is due to tall buildings up to 90m (296ft) AMSL to the east of Seletar CTR (the location is depicted in charts AD-2-WSSL-VAC-1 to AD-2-WSSL-VAC-4).

## **1.2 Joining Procedures for VFR flights from Tebrau City Mall (013259N1034748E)**

- 1.2.1 Aircraft on VFR flight plan joining Seletar CTR from East of JB Town are to descend to altitude cleared by ATC. From Tebrau City Mall (013259N1034748E) descend in VMC to altitude cleared by ATC and proceed to POINT 'X' (located 012830N 1034954E or radial 297/7DME from PU DVOR/DME) keeping clear of WMP228 and then direct to overhead the airfield.
- 1.2.2 When overhead the airfield, the joining aircraft shall make a turn overflying the runway and after passing abeam the Control Tower, commence descent as cleared to cross the upwind end of the runway at 1,500ft. Passing over the end of the runway, descend to circuit altitude as cleared by ATC. Pilots shall ensure to keep clear of Sembawang ATZ and Paya Lebar CTR and not to fly east of the runway. This is to keep clear of tall buildings up to 90m AMSL to the east of Seletar CTR. The area where the tall buildings are located is indicated in the Seletar Visual Approach Charts AD-2-WSSL-VAC-1 to AD-2-WSSL-VAC-4. Procedures are illustrated in the following charts:
- i. AD-2-WSSL-VAC-1 : Visual Approach Chart - RWY 03
  - ii. AD-2-WSSL-VAC-2 : Visual Approach Chart - RWY 21
- 1.2.3 Traffic permitting and in good visibility, joining aircraft may be cleared to join directly for right base when landing on RWY 21 or turn downwind for RWY 03 from Position 'A'.

## **1.3 Joining Procedures from Light Aircraft Training Areas**

- 1.3.1 Unless otherwise authorised by ATC, aircraft are to join overhead the airfield at 2,000ft keeping clear of Sembawang ATZ and Paya Lebar CTR.
- 1.3.2 When overhead the airfield, the joining aircraft shall make a turn to the eastern side of the runway and after passing abeam the Control Tower, commence descent as cleared to cross the upwind end of the runway at 1,500ft. Passing over the end of the runway, descend to circuit altitude as cleared by ATC. Pilots shall ensure to keep clear of Sembawang ATZ and Paya Lebar CTR and not to fly east of the runway. This is to keep clear of tall buildings up to 90m AMSL to the east of Seletar CTR. The area where the tall buildings are located is indicated in the Seletar Approach Charts AD-2-WSSL-VAC-1 to AD-2-WSSL-VAC-4. Procedures are illustrated in the following charts:
- i. AD-2-WSSL-VAC-1: Visual Approach Chart - RWY 03
  - ii. AD-2-WSSL-VAC-2: Visual Approach Chart - RWY 21
- 1.3.3 Traffic permitting and in good visibility, joining aircraft may be cleared to join directly for right base when landing on RWY 21 or turn downwind for RWY 03 from Position 'A'.

## **1.4 Joining Procedures for IFR flights from KK or JB - RWY 03**

- 1.4.1 From KK  
Cross KK at or above 3,000ft. On passing KK descend in VMC to 2,000ft or altitude cleared by ATC and join downwind RWY 03.
- i. Straight-in-Approach  
Join downwind RWY 03 at 2,000ft (keeping clear of Sembawang ATZ). When downwind descend from 2,000ft for visual approach RWY 03, or as cleared by ATC. Pilots should have the runway in sight.
  - ii. Circling Approach  
Join downwind RWY 03 at 2,000ft (keeping clear of Sembawang ATZ). At end of downwind turn left and overfly the runway. When passing over Position A (north end of the runway), descend from 2,000ft to 1,500ft and turn left for downwind RWY 03. At downwind descend for a visual approach RWY 03 or as cleared by ATC. Pilots should have the runway in sight.

1.4.2

From JB

Cross JB at or above 6,000ft enroute to Point ALFA. On passing Point ALFA, descend in VMC to 2,000ft or altitude cleared by ATC. (Point ALFA is located at 013033N 1034942E or Radial 296/7 DME VTK)

- i. Straight-in-approach  
On passing Point ALFA, turn right for downwind RWY 03 (keeping clear of Sembawang ATZ). At downwind descend from 2,000ft for a visual approach RWY 03, or as cleared by ATC. Pilots should have the runway in sight.
- ii. Circling Approach  
On passing Point ALFA, turn right for downwind RWY 03 (keeping clear of Sembawang ATZ). At end of downwind, turn left and overfly the runway. Passing over Position A (north end of the runway), descend from 2,000ft to 1,500ft and turn left for downwind RWY 03. At downwind descend for a visual approach RWY 03 or as cleared by ATC. Pilots should have the runway in sight. Procedures are illustrated in the following charts:

- \* AD-2-WSSL-VAC-3 : Visual Approach Chart - RWY 03
- \* AD-2-WSSL-IFR-1 : Seletar Aerodrome joining Procedures (IFR flights) from JB and KK - RWY 03

**1.5 Joining Procedures for IFR flights from KK or JB - RWY 21**

1.5.1

From KK

Cross KK at or above 3,000ft. On passing KK descend in VMC to 2,000ft or altitude cleared by ATC.

- i. Straight-in-Approach  
Join direct for a straight-in visual approach Rwy 21 descending from 2,000ft, or as cleared by ATC. Pilots should have the runway in sight.
- ii. Circling Approach  
Overfly the runway at 2,000ft, or as cleared by ATC. Passing over Position A (the south-end of the runway), descend from 2,000ft to 1,500ft and turn right for downwind RWY 21 (keeping clear of Light Aircraft Training Area A and Sembawang ATZ). At downwind descend for a visual approach RWY 21 or as cleared by ATC. Pilots should have the runway in sight.

1.5.2

From JB

Cross JB at or above 6,000ft enroute to Point ALFA. On passing Point ALFA, descend in VMC to 2,000ft or altitude cleared by ATC. (Point ALFA is loc at 013033N 1034942E or Radial 296 VTK)

- i. Straight-in-approach  
On passing Point ALFA, join direct for a straight-in visual approach RWY 21 descending from 2,000ft, or as cleared by ATC (keeping clear of Sembawang ATZ).
- ii. Circling Approach  
On passing Point ALFA, overfly the runway at 2,000ft. When passing over Position A (the south end of the RWY), descend from 2,000ft to 1,500ft and turn right for downwind RWY 21 (keeping clear of Light Aircraft Training Area A and Sembawang ATZ). At downwind descend for a visual approach RWY 21 or as cleared by ATC. Pilots should have the runway in sight. Procedures are illustrated in the following charts:

- \* AD-2-WSSL-VAC-4 : Visual Approach Chart - RWY 21
- \* AD-2-WSSL-IFR-2 : Seletar Aerodrome Joining Procedures (IFR flights) from JB and KK - RWY 21

**1.6 Holding Procedure**

1.6.1

A low level holding procedure is established at SJ DVOR/DME. Suitably equipped aircraft bound for Seletar which may wish to hold for weather improvement may use this procedure (ENR 3.6-3 refers)

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**1.7 Approaches to Seletar Aerodrome**

- 1.7.1 A deep-water shipping channel approximately 1525m from the northern threshold cuts across the extended centreline of Seletar RWY 21.
- 1.7.2 Information on the mast heights of tall vessels is relayed to ATC by Maritime and Port Authority of Singapore. ATC shall inform pilots of landing and departing aircraft of such information if the reported mast height of the vessel is above 30m.
- 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.

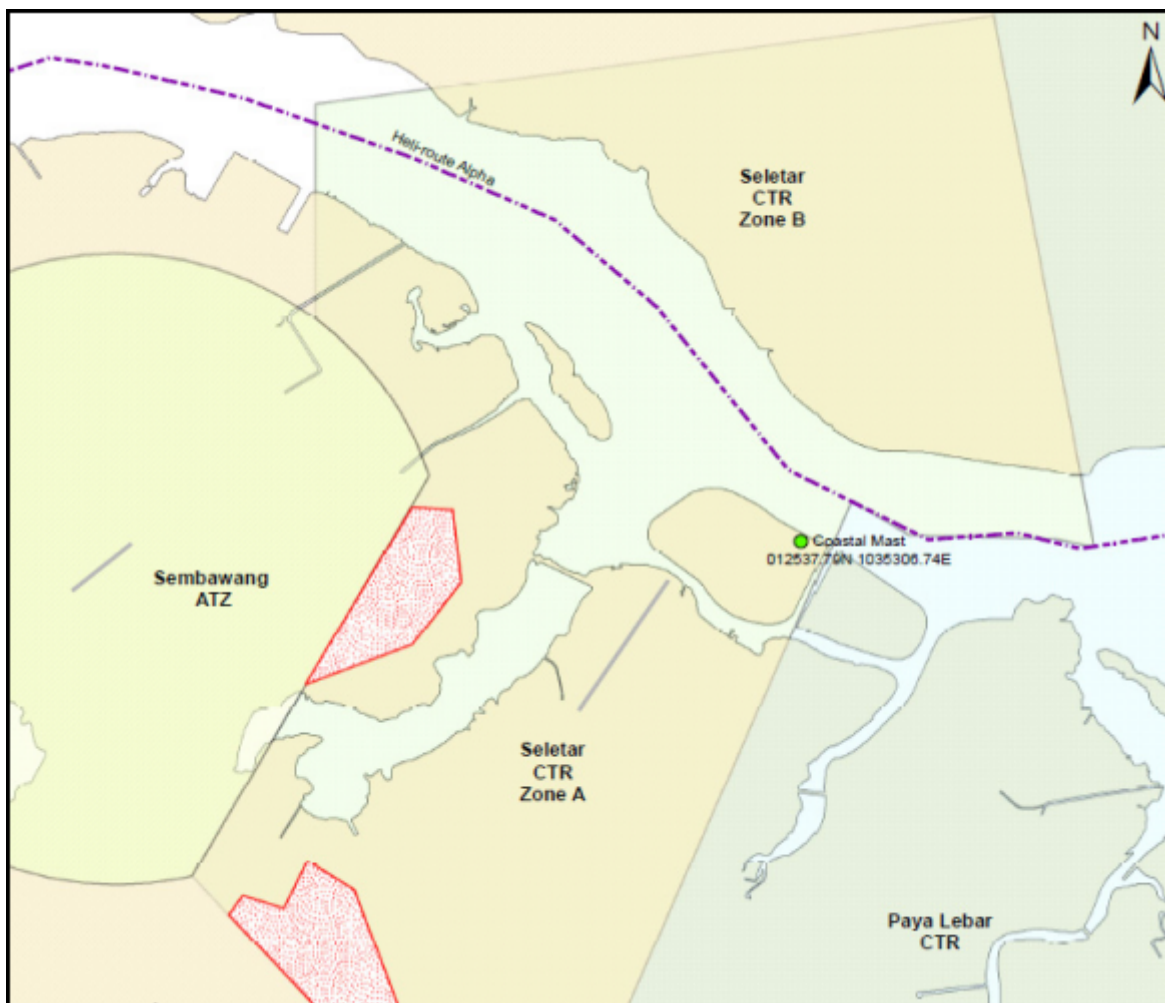
## WSSL AD 2.23 ADDITIONAL INFORMATION

### 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.



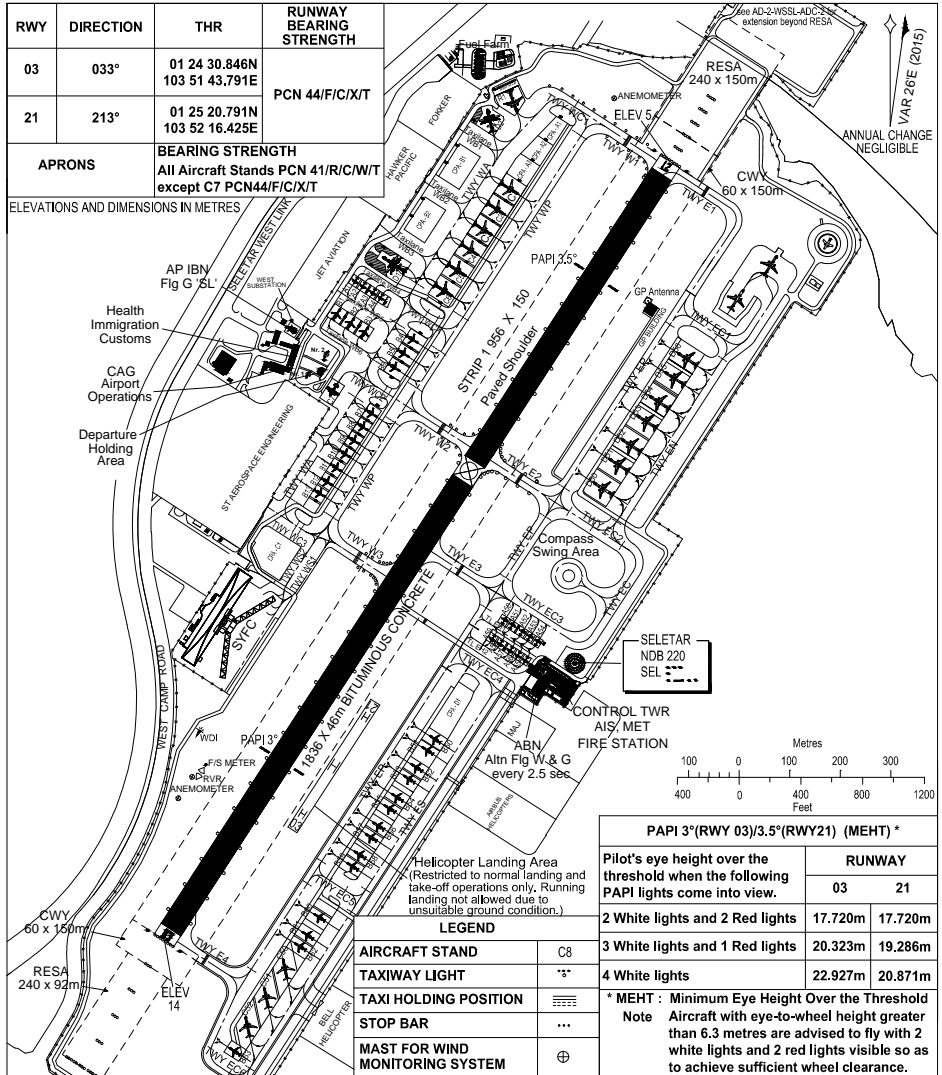
AERODROME CHART - ICAO

01° 25' 01.04"N  
103° 52' 03.52"E

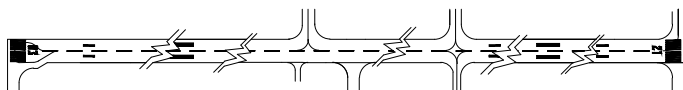
ELEV 14m

TWR 118.45  
121.6

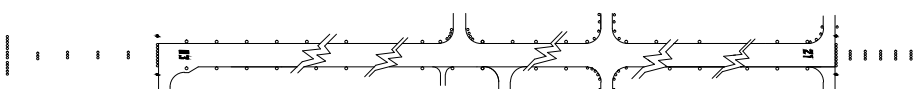
SINGAPORE/SELETAR



MARKING AIDS RWY 03/21 AND EXIT TWY



LIGHTING AIDS RWY 03/21 AND EXIT TWY

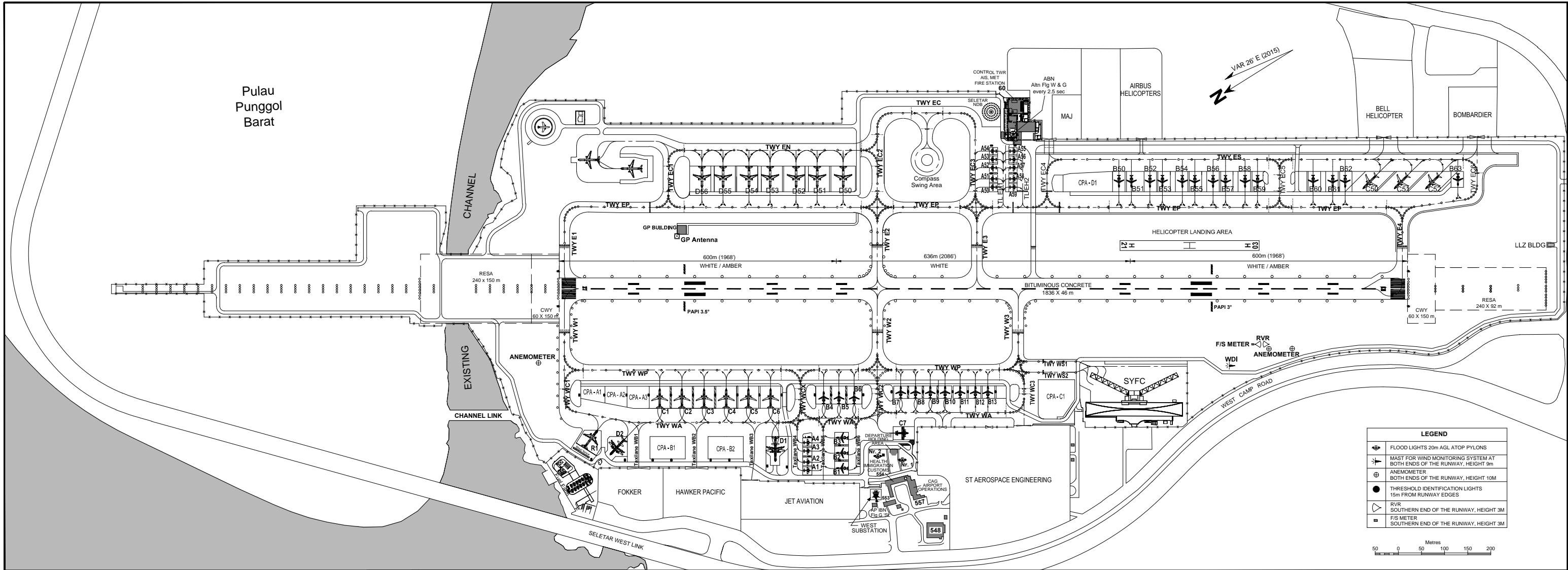


# INS COORDINATES FOR AIRCRAFT STANDS

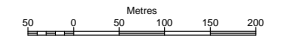
STAND NR	NORTH LATITUDE	EAST LONGITUDE	ELEVATION
A1	01 25 13.102	103 51 56.167	6.181m (20.280ft)
A2	01 25 12.779	103 51 56.653	6.338m (20.795ft)
A3	01 25 12.350	103 51 57.301	6.586m (21.609ft)
A4	01 25 12.029	103 51 57.787	6.761m (22.183ft)
A50	01 24 51.431	103 52 05.765	7.807m (25.615ft)
A51	01 24 51.110	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)
D55	01 25 07.129	103 52 16.184	5.550m (18.209ft)
D56	01 25 08.372	103 52 16.997	5.320m (17.454ft)



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



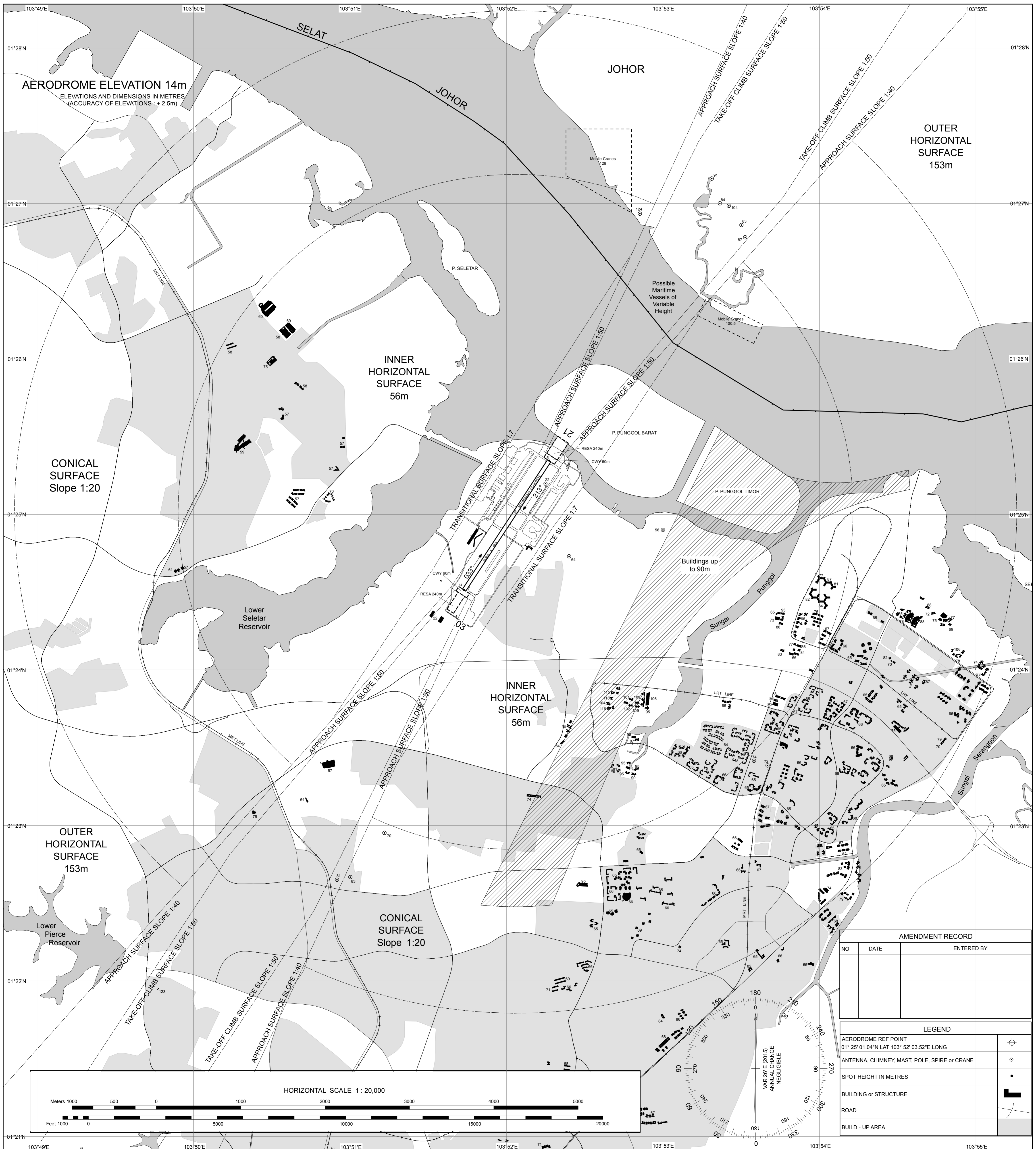
LEGEND	
	FLOOD LIGHTS 20m AGL ATOP PYLONS
	MAST FOR WIND MONITORING SYSTEM AT BOTH ENDS OF THE RUNWAY, HEIGHT 9m
	ANEMOMETER BOTH ENDS OF THE RUNWAY, HEIGHT 10M
	THRESHOLD IDENTIFICATION LIGHTS 15m FROM RUNWAY EDGES
	RVR SOUTHERN END OF THE RUNWAY, HEIGHT 3M
	F/S METER SOUTHERN END OF THE RUNWAY, HEIGHT 3M



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**AERODROME OBSTACLE CHART - ICAO  
TYPE B**

SINGAPORE / Seletar



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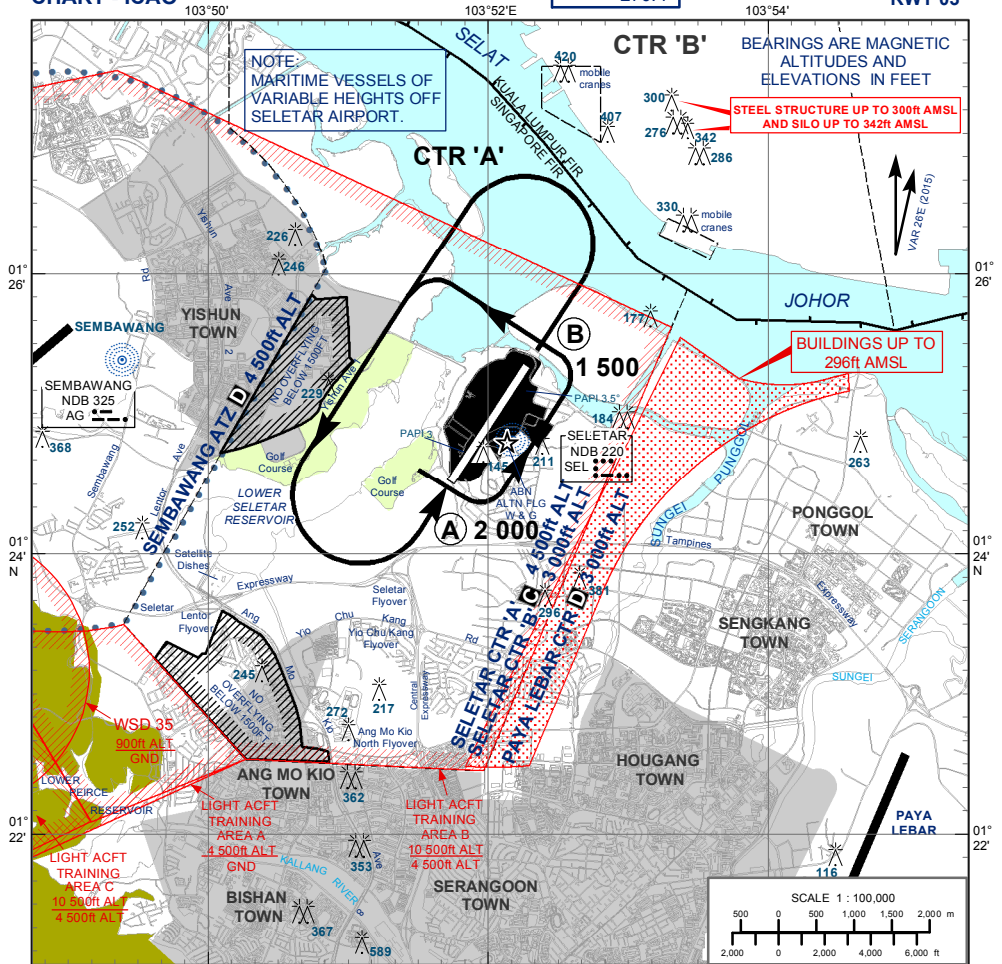
**VISUAL  
APPROACH  
CHART - ICAO**

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
Pilot's eye height over the threshold when the following PAPI lights come into view		
2 white lights and 2 red lights (MEHT)*	17.720m	17.720m
3 white lights and 1 red light	20.323m	19.286m
4 white lights	22.927m	20.871m

\*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 2m 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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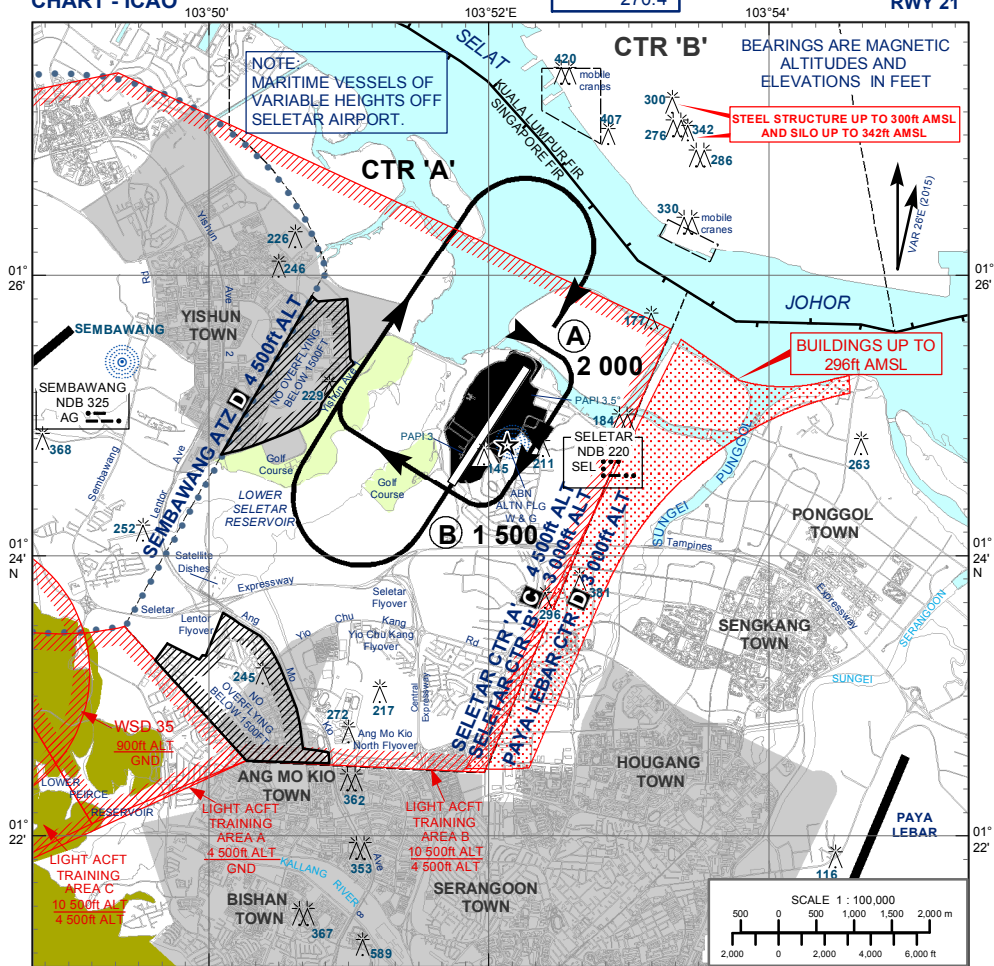
**VISUAL  
APPROACH  
CHART - ICAO**

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.

PAPI 3.5°	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)*	17.720m	17.720m
3 white lights and 1 red light	20.323m	19.286m
4 white lights	22.927m	20.871m

\*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 to achieve sufficient wheel clearance.

**Note:**

- 1) Pilots are to be advised of the steel structure 300ft AMSL and the Silo 342ft AMSL, 2mm 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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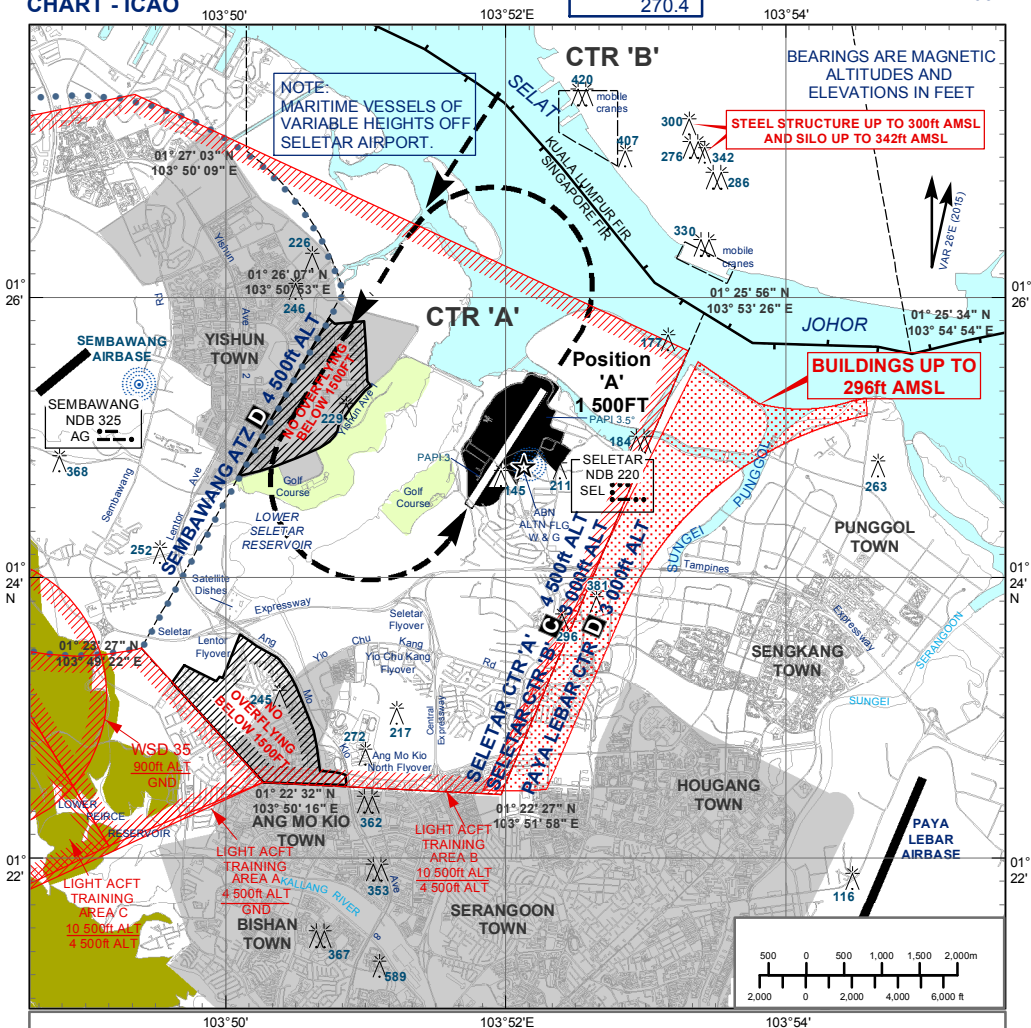
**VISUAL  
APPROACH  
CHART - ICAO**

**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 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)	17.720m	17.720m
3 white lights and 1 red light	20.323m	19.286m
4 white lights	22.927m	20.871m

\*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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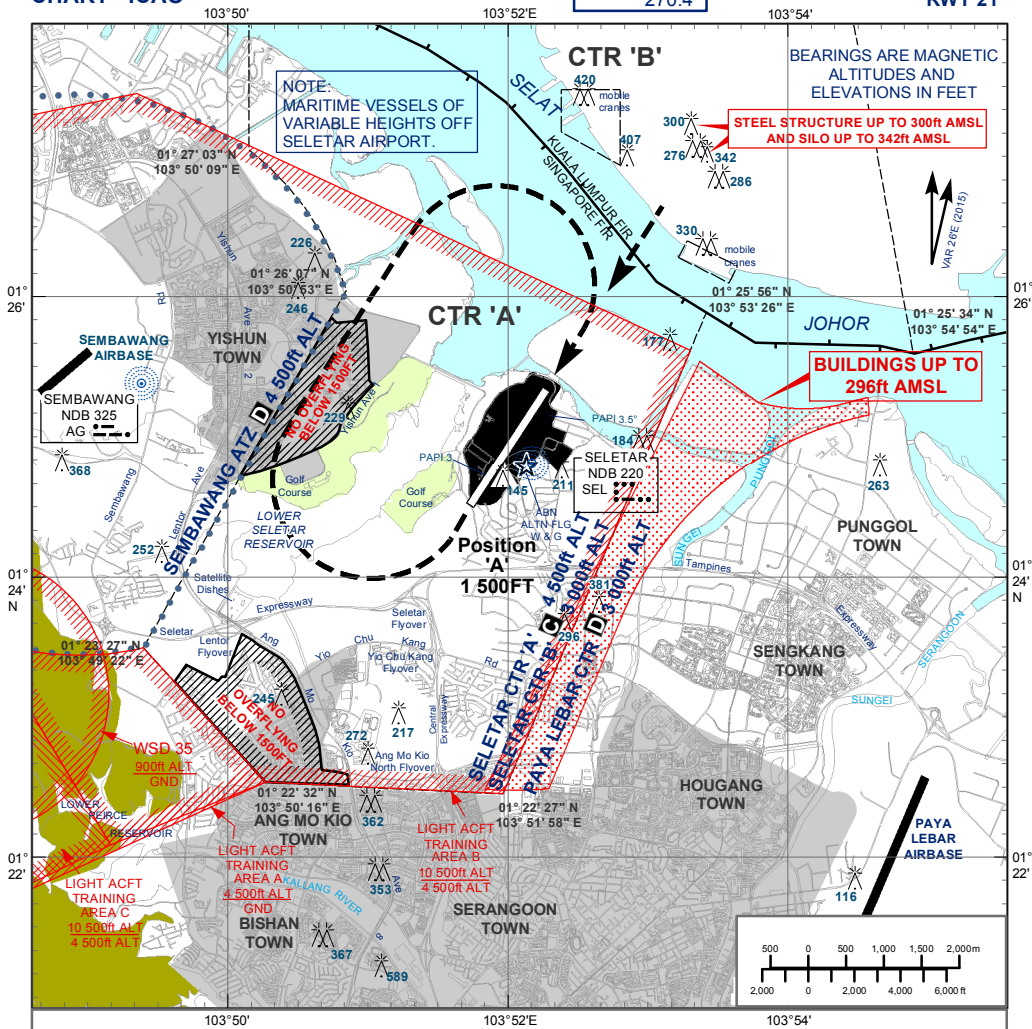
**VISUAL  
APPROACH  
CHART - ICAO**

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. 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)*	17.720m	17.720m
3 white lights and 1 red light	20.323m	19.286m
4 white lights	22.927m	20.871m

\*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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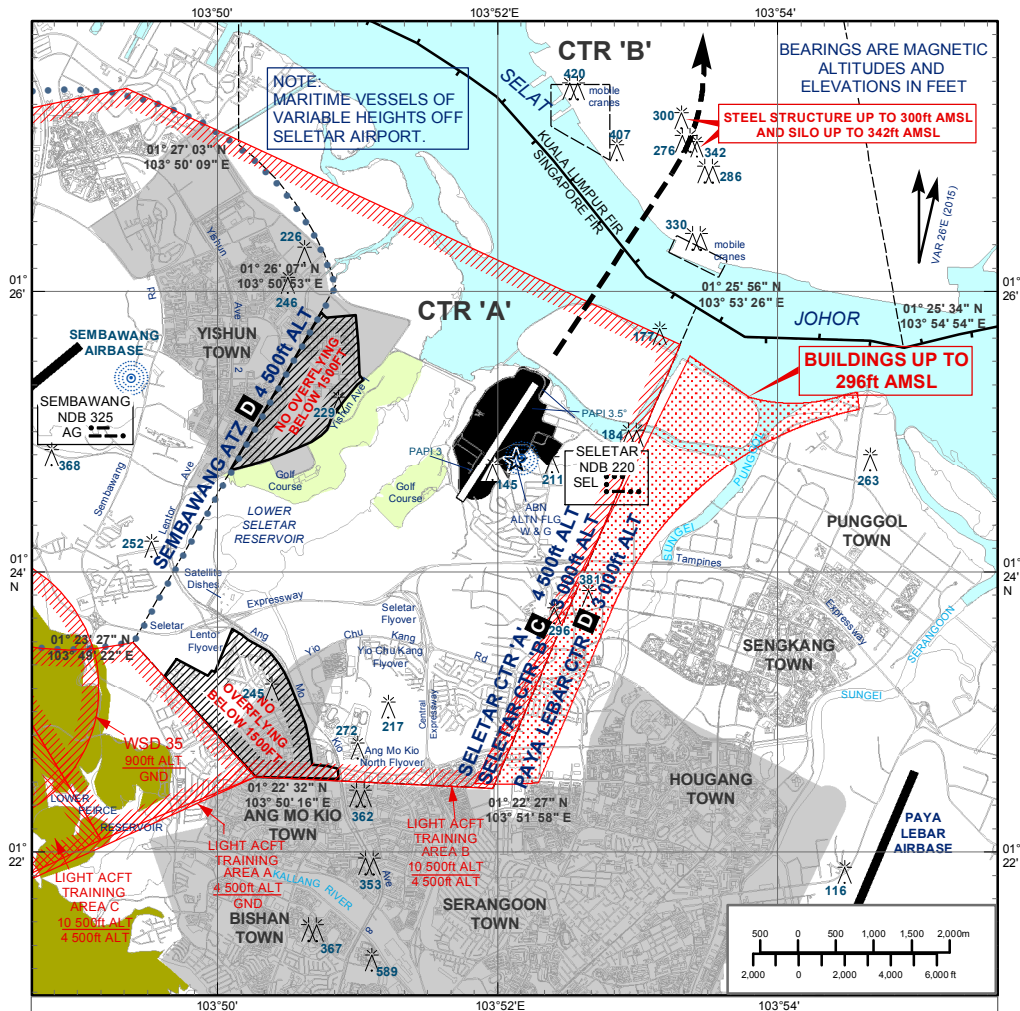
VISUAL  
DEPARTURE  
CHART

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**

- 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 — PAYA LEBAR

Note: The following sections in this chapter are intentionally left blank:  
AD 2.16, AD 2.21.

### WSAP AD 2.1 AERODROME LOCATION INDICATOR AND NAME

WSAP — PAYA LEBAR

### WSAP AD 2.2 AERODROME GEOGRAPHICAL AND ADMINISTRATIVE DATA

1	ARP coordinates and site at AD	012120.6N 1035410.0E(Paya Lebar IBN)
2	Direction and distance from (city)	-
3	Elevation/Reference temperature	20 M (65ft) / 31.5° C
4	MAG VAR	0°26' E (2015)
5	AD Administration, address, telephone, telefax, telex, AFS	PAYA LEBAR AIRPORT SINGAPORE 534395 Tel: 63813111 (Base Command Post) AFS: WSAPYWYX
6	Types of traffic permitted	IFR
7	Remarks	Operator: Republic of Singapore Air Force. Alternate/Emergency Diversionary Aerodrome for Singapore Changi Airport (see page WSAP AD 2-9)

### WSAP AD 2.3 OPERATIONAL HOURS

1	Aerodrome Administration	BTN 2300-1100 SUN/MON to THU/FRI Public holidays and outside operating hours prior permission required from RSAF Headquarters via Paya Lebar Base Command Post.
2	Customs and immigration	by prior arrangement only
3	Health and sanitation	by prior arrangement only
4	AIS Briefing Office	-
5	ATS Reporting Office	-
6	MET Briefing Office	H24
7	Air Traffic Services	H24
8	Remarks	AD may be closed periodically for Foreign Object Damage (FOD) walk. Actual emergency or diversion will be accepted at 30 min notification. Such closure will be published via NOTAM.

**WSAP AD 2.4 HANDLING SERVICES AND FACILITIES**

1	<i>Cargo Handling Facilities</i>	-
2	<i>Fuel / Oil Types</i>	JET A1, Oil
3	<i>Fuelling Facilities / Capacity</i>	BTN 2300-1 100 SUN/MON to THU/FRI Public holidays and outside operating hours prior permission required from RSAF Headquarters via Paya Lebar Base Command Post.
4	<i>Hangar space for visiting aircraft</i>	-
5	<i>Repair facilities for visiting aircraft</i>	-
6	<i>Remarks</i>	NIL

**WSAP AD 2.5 PASSENGER FACILITIES**

1	<i>Hotels</i>	NIL
2	<i>Restaurants</i>	NIL
3	<i>Transportation</i>	NIL
4	<i>Medical Facilities</i>	NIL
5	<i>Banks and Post Offices</i>	NIL
6	<i>Tourist Office</i>	NIL
7	<i>Remarks</i>	NIL

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

1	<i>AD category for fire fighting</i>	CAT9
2	<i>Rescue equipment</i>	Adequately provided as recommended by ICAO
3	<i>Capability for removal of disabled aircraft</i>	Sufficient salvage equipment provided by Airfield Ground Services section at military bases.
4	<i>Remarks</i>	All Airport Emergency Services personnel are trained in rescue and fire-fighting as well as medical first-aid.

**WSAP AD 2.7 SEASONAL AVAILABILITY - CLEARING**

The aerodrome is available throughout the year.

**WSAP AD 2.8 APRONS, TAXIWAYS AND CHECK LOCATIONS DATA**

1	<i>Apron surface and strength</i>	Strength: LCN80 - F (Apron A) Strength: LCN100 - PCN71/R/B/W/U (Apron B) Strength: LCN100 - PCN72/F/B/W/U (Apron C) Strength: LCN80 - F (Jet Apron/Jet Apron Extension)
2	<i>Taxiway width, surface and strength</i>	Strength: PCN72/F/B/W/U
3	<i>Remarks</i>	TWY between TWY W1 and TWY W2 closed to all code C and above aircraft. Pilots to exercise caution.

## WSAP AD 2.9 SURFACE MOVEMENT GUIDANCE AND CONTROL SYSTEM AND MARKINGS

SURFACE MOVEMENT GUIDANCE AND CONTROL SYSTEM AND MARKINGS		
1	<b>Aircraft Parking Restrictions</b>	
	There are 4 designated parking aprons: Apron A, Apron C, Jet Apron and Jet Apron Extension:	
	ACFT Stand	Largest ACFT Type
	Apron A	A1 to A5 C17
	Apron C	C1 to C7 (reserved for RSAF) C8 to C9 C10 C10A C11 C11A C130 C130 KC135 B747-400 C17 C5, AN124
	Jet Apron	J1 to J3 J1A and J2A C130 B747
	Jet Apron Extension	J4 and J5 C17
2	<b>Taxiing Procedures</b>	
2.1	Taxiing in/out of Apron Areas	
	Pilots taxiing in/out of apron areas must adhere to ATC's instructions. Once a pilot has reported visual with the marshaller, the pilot will be instructed to continue to taxi and follow the marshaller's instructions. At any time, should the aircraft pilot decide not to comply with the marshaller's instructions, it is mandatory for the pilot or the marshalling agency to inform ATC immediately. All marshalling services shall terminate at that moment and the pilot will be instructed by ATC to shutdown the aircraft. Concurrently, ATC will also inform the marshallers via the ground communications network. Subsequently, the aircraft will be towed to its allocated aircraft stand. Pilots are to exercise caution when operating in the apron areas due to close proximity of obstacles (e.g. Floodlights, buildings, etc.)	
2.2	To minimize the possibility of ground taxiing confliction within the apron areas as well as to achieve an orderly flow of aircraft ground movements, the following guidelines are recommended for both RWY 02 (Departures) and RWY 20 (Arrivals):	
	Apron	Departures
	Apron A	Taxi for RWY 02 departure via TWY F4.
		Arrivals Aircraft bound for aircraft stands A4-A5 shall taxi via TWY F4. Aircraft bound for aircraft stands A1-A3 and A6-A9 shall taxi via TWY F3.
	Apron B	No taxiing is allowed within Apron B and TWY W7. Aircraft will be towed in/out of Apron B to an assigned aircraft stand via TWY W7.
	Apron C	TWY F1 TWY F1 or F2
	Jet Apron/Jet Apron Extension	TWY F3 TWY F3
3	<b>Ground Taxiing Guidelines</b>	
3.1	The recommended taxiing guidelines may be subject to changes due to work-in-progress or unforeseen circumstances and shall be included in the NOTAM. Pilots will receive a taxiing brief from the Flight Planning office prior to departure.	
4	<b>Ground Restrictions due to Weather</b>	
4.1	In the event of inclement weather over Paya Lebar airport, ground support services for aircraft are to be terminated when the meteorological office issues a Lightning Risk Category 1 warning (very high lightning risk with extremely probable lightning producing CB clouds over the affected area). Ground agencies will be alerted of the warnings through the Base Public Announcement system as well as through the ground communications network. The following ground support services are to be terminated: a) aircraft refuelling and de-refuelling b) towing of aircraft in the open c) maintenance works on aircraft on the apron areas d) marshalling of aircraft in and out of the apron areas e) loading and unloading of cargo from aircraft f) customs and immigration checks in the apron areas	
4.2	There is no work restriction for Lightning Risk Categories 2, 3, 4 and 5. As aircraft marshalling is not permitted during Lightning Risk Category 1, aircraft that has landed at Paya Lebar Airport will be instructed to hold at the following designated areas until the warning has expired: a) Non-VIP aircraft at TWY F1, F2, F3 or F4 b) VIP aircraft at TWY F3 or F4	

**SURFACE MOVEMENT GUIDANCE AND CONTROL SYSTEM AND MARKINGS**

4.3	<p>There may be occasions when despite a declaration of Lightning Risk Category 1, certain activities would still need to be performed in the open areas due to critical or operational requirements. In such instances, approval must be sought from Paya Lebar Tower after careful assessment of the overall weather situation over Paya Lebar Airport. Examples of such critical activities include:</p> <p>a) Marshalling of VVIP / VIP aircraft b) Embarkation / disembarkation of VIP from aircraft</p>
5.	<p><b>Ground Procedures - General</b></p>
5.1	<p><u>Engine Start-ups and Ground Runs</u> Clearance from the Ground Controller must be sought and obtained for all engine start-ups or any associated activities within the apron areas. In addition, all engine ground runs, regardless of intensity, must be co-ordinated with ATC for approval. However, ground runs exceeding 85% of the engine power are prohibited within the apron areas. Within Paya Lebar Airport, the designated area for engine ground runs exceeding 85% of the engine power are the Northern Access Run-up Pad and Hush-House or as designated by Paya Lebar Base Command Post. The area allocated will be dependent on the type of aircraft concerned.</p>
5.2	<p><u>Aircraft to/from Apron B</u> Engine start-ups and shutdowns at TWY W7 are strictly prohibited. Aircraft departing or arriving to/from Apron B shall be allocated the appropriate aircraft stands for their start-ups or shutdowns and shall be towed in/out of the allocated aircraft stand. In addition, wing-walkers are to be provided for large aircraft on tow at TWY W7 due to construction works located next to TWY W7.</p>
5.3	<p><u>Prohibited Activities - Smoking in the Apron Areas</u> Smoking is strictly prohibited within the Apron areas. Disciplinary action will be taken on any personnel caught contravening this restriction.</p>

**WSAP AD 2.10 AERODROME OBSTACLES****IN APPROACH / TKOF AREAS**

<i>RWY/Area affected</i>	<i>OBST type, ELEV, Markings/LGT</i>	<i>Location/Coordinates</i>
1	2	3
a. RWY 02 APCH RWY 20 TKOF	Industrial buildings, HGT 83ft AMSL. OBST LGTD.	Located on either side of approach funnel 2300ft from RWY 02 THR.
b. RWY 02 APCH RWY 20 TKOF	Structure (water tower), HGT AMSL, marked and LGTD.	012022N 1035436E (east of RWY)
c. RWY 02/20 APCH RWY 02/20 TKOF	LLS LLZ co-located with LLZ antennae, HGT 17ft AGL.	LLZ RWY 02 located 1324ft from RWY 20 THR. LLZ RWY 20 located 1525ft from RWY 02 THR.

**IN CIRCLING AREA AND AT AERODROME**

<i>OBST type, ELEV, Markings/LGT</i>	<i>Location/Coordinates</i>
1	2
a. ILS GP huts co-located with GP antenna mast (HGT 53ft AGL).	GP RWY 02 located 296ft west of western edge of RWY and 858ft from RWY 02 THR. GP RWY 20 located 296ft west of western edge of RWY and 984ft from RWY 20 THR.
b. PAR hut, HGT 46.2ft AGL, marked and LGTD.	211ft east of eastern edge of RWY, 7089ft north of RWY 02 THR.
c. 2 x Frangible PAR Moving Target Indicator (MTI) reflectors.	RWY 02 MTI reflectors, HGT 16ft AGL, located 213ft east of eastern edge of RWY, 4389ft from RWY 02 THR. RWY 20 MTI reflectors, HGT 16ft AGL, located 209ft east of eastern edge of RWY, 2911ft from RWY 20 THR.
d. Arrestor hookwire installed 1200ft from RWY 02 THR and 1100ft from RWY 20 THR.	Within the RWY strip. Retriever Unit located 52ft from both sides of the RWY edges, 4ft in HGT.
e. Arrestor barrier installed 210ft south of RWY 02 THR and 118ft north of RWY 20 THR.	Within the RWY strip.
f. Surface wind direction sleeves (HGT 25ft AGL).	344ft west of western edge of RWY for both sides, 458ft from RWY 02 THR and 307ft from RWY 20 THR.
g. AWOS stanchions (HGT 23ft AGL).	296ft west of western edge of RWY on both sides, 658ft from RWY 02 THR and 654ft from RWY 20 THR.
h. One wheel structure (HGT 178m AMSL).	erected at 011726N 1035150E, BRG 216 DEG, DIST 5NM from WSAP ARP - within WSAP CTR). Structure marked/LGTD.
i. One Building (HGT 245m AMSL).	erected at 011642N 1035105E, BRG 216 DEG, DIST 6.2NM from WSAP ARP - within WSAP CTR). Building marked/LGTD.
j. Mobile aircraft arrestor gear (HGT 2m AGL)	12m from edge of western taxiway between TWY 1 and W2 at 415m south of TWY W1. Lighted at night.
k. Lightning protection system, HGT 218ft AMSL	erected at 012203.36N 1035509.39E.
l. Portable aircraft arrestor gear, HGT 6.6ft AGL	300ft south of RWY 20 THR, 33ft from RWY edge on both sides. All RWY 20 inbound shall land 500ft up RWY 20 THR. LDA 11,900ft.

## WSAP AD 2.11 METEOROLOGICAL INFORMATION PROVIDED

1	Associated MET Office	Paya Lebar (WSAP)
2	Hours of service	H24
3	Office responsible for TAF preparation and Periods of validity	Paya Lebar (WSAP), 9, 24
4	Type of landing forecast and Interval of issuance	NIL
5	Briefing/consultation provided	P
6	Flight documentation and Language(s) used	Charts or Tabular forms, English
7	Charts and other information available for briefing or consultation	S, U, P
8	Supplementary equipment available for providing information	APT, WXR
9	ATS units provided with information	-
10	Additional information	Tel : 63813156 (Met Office)

## WSAP AD 2.12 RUNWAY PHYSICAL CHARACTERISTICS

Designations RWY NR	TRUE & MAG BRG	Dimensions of RWY (m)	Strength (PCN) and surface of RWY/SWY	THR Coordinates	THR elevation and highest elevation of TDZ of precision APCH RWY
1	2	3	4	5	6
02	023° GEO 023° MAG	3780 x 61	72/F/B/W/U Bituminous concrete	012041.08N 1035410.36E	12.9 M (43ft)
20	203° GEO 203° MAG	3780 x 61	72/F/B/W/U Bituminous concrete	012234.41N 1035458.53E	19.7 M (65ft)
Designations RWY NR	Slope of (RWY - SWY)	Dimensions of SWY (m)	Dimensions of CWY (m)	Dimensions of Strip	OFZ
1	7	8	9	10	11
02	-	300x61	300x150	-	-
20	-	300x61	300x150	-	-

12	Remarks
a.	Intensive fixed wing flying operation west of runway.
b.	Helizone adjacent west of runway up to 800ft QNH.
c.	Arrestor Barrier both ends of runway. Pilots are to land at least 500ft up the THR of RWY in use.
d.	Hookwire cable installed 335m inwards from RWY 20 THR and 360m inwards from RWY 02 THR.
e.	Intense bird activity after rain, and up to 2 hour after dusk and dawn.
f.	Pilots making approaches for RWY 20 are to take note of the high ground, 32m AMSL, 1NM north of RWY 20 THR and to exercise caution.
g.	Threshold markings consist of 16 stripes.

## WSAP AD 2.13 DECLARED DISTANCES

RWY Designator	TORA (m)	TODA (m)	ASDA (m)	LDA (m)	Remarks
1	2	3	4	5	6
02	3780	4080	4080	3780	NIL
20	3780	4080	4080	3780	NIL

**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 1034459E 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	* 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	On SAT-SUN, public holidays and outside the above times PPR from RSAF	NIL
GND	PAYA LEBAR GROUND	130.8 MHz 296.0 MHz		
PAR	PAYA LEBAR TALKDOWN	119.9 MHz †269.0 MHz ◆240.5 MHz	Headquarters via Paya Lebar Base Command Post.	† 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	H24	for AWY B469, G219, G334, R208, L625, L629, L635, L642, M751, M753, M758, M761, M763, M771, N884, N891, N892.
		P133.25 MHz S135.8 MHz		for AWY A457, A464, A576, B466, L762, R325 (all northbound) and R469.
		P134.4 MHz S128.1 MHz 255.4 MHz		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	H24	012224.00N 1035451.00E	030° MAG 2.375km from ARP.  Maint Period: BTN 0001-0900 Second SAT of EV month  For homing purposes only.
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



Type of Aid and MAG Variation	IDENT	FREQ	OPR Hour	Position of transmitting Antenna Coordinates	DME transmitting Antenna Elevation / Remarks
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. It is closed on Saturdays, 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 building where Paya Lebar Air Traffic Control Tower is located.

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.