

Contact

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AMDT
06/2017
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12 OCT 2017
Publication date
12 OCT 2017

wp-AMDT-2017-06

1. SIGNIFICANT INFORMATION AND CHANGES

1.1 Singapore Changi Airport

- a. Information on aircraft parking restrictions removed

1.2 Paya Lebar Airport

- a. Ground frequency 121.7MHz changed to 130.8MHz

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 THIS AMENDMENT INCORPORATES INFORMATION CONTAINED IN THE FOLLOWING WHICH ARE HEREBY SUPERSEDED:

NOTAMs:

A1668/17 dated 02/06/17
A2564/17 dated 24/08/17
A2565/17 dated 24/08/17
A2566/17 dated 24/08/17
A2567/17 dated 24/08/17
A2568/17 dated 24/08/17
A2863/17 dated 21/09/17
A2864/17 dated 21/09/17
A2865/17 dated 21/09/17
A2866/17 dated 21/09/17
A2867/17 dated 21/09/17
A2868/17 dated 21/09/17
A2869/17 dated 21/09/17
A2870/17 dated 21/09/17
A2871/17 dated 21/09/17
A2872/17 dated 21/09/17
A2873/17 dated 21/09/17
A2874/17 dated 21/09/17
A2875/17 dated 21/09/17

AIP Supplements:

087/2017 dated 03/08/17
088/2017 dated 07/08/17
089/2017 dated 08/08/17

Amended Pages

GEN 0.1-1/2: : *replace.*
GEN 0.2-1: : *replace.*
GEN 0.3-1/2: : *replace.*
GEN 0.3-3/4: : *replace.*
GEN 0.3-5: : *replace.*

GEN 0.4-1/2: : *replace.*
GEN 0.4-3: : *replace.*
GEN 2.1-1/2: : *replace.*
GEN 3.1-3/4: : *replace.*
GEN 3.2-3/4: : *replace.*
GEN 3.5-1/2: : *replace.*
ENR 3.4-1/2: : *replace.*
ENR 4.5-1: : *replace.*
AD 0.6-1/2: : *replace.*
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AD-2-WSSS-STAR-11 to 11.1: : *replace.*
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AD 2.WSSL-5/6: : *replace.*
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AD 2.WSSL-9/10: : *replace.*

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AD 2.WSSL-13/14: : *replace.*
AD-2-WSSL-ADC-1: : *replace.*
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AD-2-WSSL-ADC-3: : *replace.*
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AD-2-WSAP-IAC-4: : *replace.*
AD-2-WSAP-IAC-5: : *replace.*
AD-2-WSAP-IAC-6: : *replace.*

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Part 1 — General (GEN)

GEN 0

GEN 0.1 PREFACE

1 Name of the publishing authority

AIP Singapore is published by authority of the Civil Aviation Authority of Singapore.

2 Applicable ICAO documents

The AIP is prepared in accordance with the Standards and Recommended Practices (SARPs) of Annex 15 to the Convention on International Civil Aviation and the *Aeronautical Information Services Manual* (ICAO Doc 8126). Charts contained in the AIP are produced in accordance with Annex 4 to the Convention on International Civil Aviation and with the *Aeronautical Chart Manual* (ICAO Doc 8697). Differences from ICAO Standards, Recommended Practices and Procedures are given in subsection [GEN 1.7](#).

3 The AIP structure and established regular amendment interval

3.1 The AIP structure

The AIP forms part of the Integrated Aeronautical Information Package, details of which are given in subsection GEN 3.1. The principal AIP structure is shown in graphic form on page GEN 0.1-3.

The AIP is made up of three Parts, General ([GEN](#)), En-route ([ENR](#)) and Aerodromes ([AD](#)), each divided into sections and subsections as applicable, containing various types of information.

3.1.1 PART 1 — GENERAL (GEN)

Part 1 consists of five sections containing information briefly described hereafter.

[GEN 0](#) - Preface; Record of AIP Amendments; Record of current AIP Supplements; Checklist of AIP pages; List of hand amendments to the AIP; and Table of Contents to Part 1.

[GEN 1](#) - *National regulations and requirements* - Designated authorities; Entry, transit and departure of aircraft; Entry, transit and departure of passengers and crew; Entry, transit and departure of cargo; Aircraft instruments, equipment and flight documents; Summary of national regulations and international agreements/conventions; and Differences from ICAO Standards, Recommended Practices and Procedures.

[GEN 2](#) - *Tables and codes* - Measuring system, aircraft markings, holidays; Abbreviations used in AIS publications; Chart symbols; Location indicators; List of radio navigation aids; Conversion tables; and Sunrise/Sunset tables.

[GEN 3](#) - *Services* - Aeronautical Information Services; Aeronautical Charts; Air Traffic Services; Communication Services; Meteorological Services; and Search and Rescue.

[GEN 4](#) - *Charges for aerodromes and air navigation services* - Aerodrome charges and Air navigation services charges.

3.1.2 PART 2 — EN-ROUTE (ENR)

Part 2 consists of seven sections containing information briefly described hereafter.

[ENR 0](#) - Table of Contents to Part 2.

[ENR 1](#) - *General rules and procedures* - General rules; Visual flight rules; Instrument flight rules; ATS airspace classification; Holding, approach and departure procedures; Radar services and procedures; Altimeter setting procedures; Regional supplementary procedures; Air traffic flow management; Flight planning; Addressing of flight plan messages; Interception of civil aircraft; Unlawful interference; and Air traffic incidents.

[ENR 2](#) - *Air traffic services airspace* - Detailed description of Flight Information Region (FIR); Terminal Control Areas (TMA); and other regulated airspace.

[ENR 3](#) - *ATS routes* - Detailed description of ATS routes; Area Navigation Routes; Helicopter Routes; other routes; and en-route holding.

Note - Other types of routes which are specified in connection with procedures for traffic to and from aerodromes are described in the relevant sections and subsections of Part 3 - Aerodromes.

[ENR 4](#) - *Radio navigation aids/systems* - Radio navigation aids - en-route; special navigation systems; name-code designators for significant points; and aeronautical ground lights - en-route.

[ENR 5](#) - *Navigation warnings* - Prohibited, restricted and danger areas; military exercise and training areas; other activities of a dangerous nature; air navigation obstacles - en-route; aerial sporting and recreational activities; and bird migration and areas with sensitive fauna.

[ENR 6](#) - *En-route charts* - En-route Chart - ICAO.

3.1.3 PART 3 - AERODROMES (AD)

Part 3 consists of three sections containing information briefly described hereafter.

[AD 0](#) - Table of Contents to Part 3.

[AD 1](#) - *Aerodromes* - Introduction - Aerodromes availability; Rescue and fire fighting services; Index to aerodromes; and Grouping of aerodromes.

[AD 2](#) - *Aerodromes* - Detailed information about aerodromes listed under 24 sub-sections.

[AD 3](#) - This section has been omitted as there are no heliports in Singapore.

3.2 Regular Amendment Interval

Regular amendments to AIP Singapore will be issued once every two months. The publication dates will be on alternate AIRAC effective dates as follows:

Amendment Nr	Publication Date
01/2018	01 February 2018
02/2018	29 March 2018
03/2018	24 May 2018
04/2018	19 July 2018
05/2018	13 September 2018
06/2018	08 November 2018

4 Service to contact in case of detected AIP errors or omissions

In the compilation of the AIP, care has been taken to ensure that the information contained therein is accurate and complete. Any errors and omissions which may nevertheless be detected, as well as any enquiries or suggestions concerning the Integrated Aeronautical Information Package, should be referred to:

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

NR/Year	Publication date	Date inserted	Inserted by
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	

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GEN 0.3 RECORD OF CURRENT AIP SUPPLEMENTS

NR/Year	Subject	AIP section(s) affected	Period of validity (from/to)	Cancellation record
218/2014	Paya Lebar Airport - Luffer Cranes	AD	01 AUG 2014 / 30 DEC 2017	
219/2014	Paya Lebar Airport - Luffer Cranes	AD	01 AUG 2014 / 31 DEC 2017	
220/2014	Paya Lebar Airport - Hammerhead and Luffer Cranes	AD	01 AUG 2014 / 31 DEC 2017	
221/2014	Paya Lebar Airport - Luffer Crane	AD	01 AUG 2014 / 31 DEC 2017	
222/2014	Paya Lebar Airport - Luffer Cranes	AD	01 AUG 2014 / 31 DEC 2017	
21/2015	Paya Lebar Airport - Saddle Crane	AD	02 JAN 2015 / 04 DEC 2017	
22/2015	Paya Lebar Airport - Luffer Cranes	AD	02 JAN 2015 / 09 DEC 2017	
23/2015	Paya Lebar Airport - Topless Cranes	AD	02 JAN 2015 / 31 DEC 2017	
24/2015	Paya Lebar Airport - Luffer Crane	AD	02 JAN 2015 / 31 DEC 2017	
25/2015	Paya Lebar Airport - Hammerhead Cranes	AD	02 JAN 2015 / 31 DEC 2017	
74/2015	Paya Lebar Airport - Topless Cranes and Luffer Crane	AD	16 APR 2015 / 31 DEC 2017	
75/2015	Paya Lebar Airport - Hydraulic Crawler Cranes	AD	16 APR 2015 / 07 JAN 2018	
76/2015	Paya Lebar Airport - Tower Cranes	AD	16 APR 2015 / 31 MAR 2018	
77/2015	Paya Lebar Airport - Saddle Cranes	AD	16 APR 2015 / 01 MAY 2018	
109/2015	Singapore Changi Airport - Shortening of Runway 20C approach lighting to 720m to facilitate the construction of the northern end-around-taxiway	AD	02 OCT 2015 / 31 OCT 2018	
126/2015	Paya Lebar Airport - Luffer Crane	AD	01 JUL 2015 / 30 DEC 2017	
129/2015	Tengah Aerodrome - Luffer Crane	AD	01 JUL 2015 / 31 DEC 2017	
130/2015	Sembawang Aerodrome - Luffer Cranes	AD	01 JUL 2015 / 31 DEC 2017	
131/2015	Paya Lebar Airport - Topless Cranes	AD	01 JUL 2015 / 31 DEC 2017	
132/2015	Paya Lebar Airport - Cranes	AD	01 JUL 2015 / 12 APR 2018	
133/2015	Paya Lebar Airport - Luffer Crane and Topless Crane	AD	01 JUL 2015 / 30 JUN 2018	
134/2015	Paya Lebar Airport - Luffer Cranes	AD	01 JUL 2015 / 30 JUN 2018	
135/2015	Tengah Aerodrome - Luffer Cranes	AD	01 JUL 2015 / 30 JUN 2018	
140/2015	Paya Lebar Airport - Luffer Cranes	AD	03 AUG 2015 / 30 DEC 2017	
141/2015	Paya Lebar Airport - Saddle Crane	AD	03 AUG 2015 / 30 DEC 2017	
142/2015	Paya Lebar Airport - Topless Cranes	AD	03 AUG 2015 / 31 AUG 2018	
160/2015	Paya Lebar Airport - Luffer Cranes	AD	21 SEP 2015 / 15 AUG 2018	

NR/Year	Subject	AIP section(s) affected	Period of validity (from/to)	Cancellation record
161/2015	Paya Lebar Airport - Luffer Cranes	AD	21 SEP 2015 / 01 SEP 2018	
162/2015	Sembawang Aerodrome - Topless Cranes	AD	31 OCT 2015 / 31 OCT 2018	
004/2016	Singapore Changi Airport - Shortening of Runway 02C Approach Lighting System to 810M to Facilitate southern End-Round-Taxiway Construction	AD	01 JUN 2016 / 30 APR 2020	
025/2016	Paya Lebar Airport - Luffer Cranes	AD	04 MAR 2016 / 31 DEC 2017	
026/2016	Paya Lebar Airport - Topless Cranes	AD	04 MAR 2016 / 31 DEC 2017	
027/2016	Paya Lebar Airport - Topless Cranes and Luffer Cranes	AD	04 MAR 2016 / 31 DEC 2017	
028/2016	Paya Lebar Airport - Tower Cranes	AD	04 MAR 2016 / 26 MAR 2018	
029/2016	Paya Lebar Airport - Luffer Cranes	AD	04 MAR 2016 / 01 JUN 2018	
030/2016	Paya Lebar Airport - Saddle Cranes	AD	04 MAR 2016 / 17 JUN 2018	
031/2016	Paya Lebar Airport - Saddle Cranes	AD	04 MAR 2016 / 31 DEC 2018	
032/2016	Paya Lebar Airport - Luffer Crane	AD	04 MAR 2016 / 31 DEC 2018	
033/2016	Paya Lebar Airport - Luffer Crane	AD	04 MAR 2016 / 31 DEC 2018	
034/2016	Paya Lebar Airport - Saddle Cranes	AD	04 MAR 2016 / 31 DEC 2018	
037/2016	Paya Lebar Airport - Mobile Cranes and Crawler Cranes	AD	04 MAR 2016 / 07 JAN 2018	
039/2016	Paya Lebar Airport - Topless Cranes	AD	04 MAR 2016 / 31 JAN 2019	
058/2016	Paya Lebar Airport - Saddle Cranes	AD	04 AUG 2016 / 15 NOV 2017	
059/2016	Paya Lebar Airport - Luffer Crane	AD	04 AUG 2016 / 31 DEC 2017	
060/2016	Paya Lebar Airport - Luffer Crane	AD	04 AUG 2016 / 31 MAY 2018	
061/2016	Paya Lebar Airport - Luffer Crane and Topless Crane	AD	04 AUG 2016 / 29 JUN 2018	
062/2016	Paya Lebar Airport - Luffer Cranes	AD	04 AUG 2016 / 31 JUL 2018	
063/2016	Paya Lebar Airport - Topless Cranes	AD	04 AUG 2016 / 31 DEC 2018	
064/2016	Paya Lebar Airport - Topless Cranes	AD	04 AUG 2016 / 31 DEC 2018	
065/2016	Paya Lebar Airport - Luffer Crane	AD	04 AUG 2016 / 31 DEC 2018	
066/2016	Paya Lebar Airport - Piling Rig and Crawler Crane	AD	04 AUG 2016 / 01 AUG 2018	
067/2016	Paya Lebar Airport - Topless Cranes and Luffer Crane	AD	04 AUG 2016 / 31 MAR 2019	
068/2016	Paya Lebar Airport - Topless Cranes and Luffer Cranes	AD	04 AUG 2016 / 01 JUN 2019	
069/2016	Paya Lebar Airport - Saddle Cranes	AD	04 AUG 2016 / 30 JUN 2019	
070/2016	Paya Lebar Airport - Luffer Cranes and Topless Cranes	AD	04 AUG 2016 / 31 DEC 2019	
075/2016	Paya Lebar Airport - Topless Cranes	AD	04 AUG 2016 / 31 OCT 2017	

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

NR/Year	Subject	AIP section(s) affected	Period of validity (from/to)	Cancellation record
057/2017	Paya Lebar Airport - Luffer Cranes	AD	13 APR 2017 / 14 JAN 2020	
058/2017	Paya Lebar Airport - Topless Cranes	AD	13 APR 2017 / 26 OCT 2020	
062/2017	Tengah Aerodrome - Topless Crane and Luffer Crane	AD	13 APR 2017 / 31 MAR 2018	
063/2017	Paya Lebar Airport - Topless Cranes and Luffer Crane	AD	13 APR 2017 / 15 APR 2019	
065/2017	Paya Lebar Airport - Topless Cranes	AD	27 APR 2017 / 20 DEC 2017	
066/2017	Paya Lebar Airport - Luffer Cranes	AD	27 APR 2017 / 31 DEC 2017	
067/2017	Sembawang Aerodrome - Topless Crane	AD	27 APR 2017 / 01 FEB 2020	
068/2017	Paya Lebar Airport - Obstacles	AD	27 APR 2017 / 26 OCT 2020	
072/2017	Tengah Aerodrome - Mobile Crane	AD	11 JUL 2017 / 30 NOV 2017	
073/2017	Paya Lebar Airport - Crawler Crane	AD	11 JUL 2017 / 01 DEC 2017	
074/2017	Paya Lebar Airport - Mobile Crane	AD	11 JUL 2017 / 31 DEC 2017	
075/2017	Sembawang Aerodrome - Crawler Crane	AD	11 JUL 2017 / 17 APR 2018	
076/2017	Paya Lebar Airport - Crawler Crane	AD	11 JUL 2017 / 30 JUN 2018	
077/2017	Paya Lebar Airport - Luffer Cranes and Topless Cranes	AD	11 JUL 2017 / 31 AUG 2018	
078/2017	Paya Lebar Airport - Mobile Cranes and Crawler Cranes	AD	11 JUL 2017 / 30 NOV 2018	
079/2017	Paya Lebar Airport - Topless Crane	AD	11 JUL 2017 / 28 APR 2019	
080/2017	Paya Lebar Airport - Topless Cranes	AD	11 JUL 2017 / 29 APR 2019	
081/2017	Paya Lebar Airport - Luffer Crane	AD	11 JUL 2017 / 01 MAY 2019	
082/2017	Paya Lebar Airport - Topless Cranes	AD	11 JUL 2017 / 31 DEC 2019	
083/2017	Paya Lebar Airport - Topless Cranes	AD	11 JUL 2017 / 31 DEC 2019	
084/2017	Paya Lebar Airport - Luffer Cranes	AD	11 JUL 2017 / 31 DEC 2019	
085/2017	Paya Lebar Airport - Topless Cranes	AD	11 JUL 2017 / 01 JUN 2020	
091/2017	Singapore Changi Airport - Revisions to runway 20C and runway 20R standard instrument departures (SIDS)	AD	09 NOV 2017 UFN	
092/2017	Flying displays in conjunction with the Singapore Airshow 2018 exhibition from Wednesday 31 January to Sunday 11 February 2018	AD/ENR	31 JAN 2018 / 11 FEB 2018	
093/2017	Singapore Changi Airport -Works schedule and movement area restrictions pertaining to diversion of airside services and soil improvement works	AD	28 OCT 2017 / 24 MAR 2018	
094/2017	Paya Lebar Airport - Crawler Crane	AD	26 SEP 2017 / 31 DEC 2017	
095/2017	Paya Lebar Airport - Topless Crane and Luffer Cranes	AD	26 SEP 2017 / 31 DEC 2019	

NR/Year	Subject	AIP section(s) affected	Period of validity (from/to)	Cancellation record
096/2017	Tengah Aerodrome - Mobile Cranes	AD	26 SEP 2017 / 31 DEC 2017	
097/2017	Paya Lebar Airport - Crawler Cranes and Piling Rigs	AD	26 SEP 2017 / 24 JAN 2018	
098/2017	Paya Lebar Airport - Topless Cranes	AD	26 SEP 2017 / 31 DEC 2019	
099/2017	Paya Lebar Airport - Crawler Cranes	AD	26 SEP 2017 / 02 MAY 2018	
100/2017	Paya Lebar Airport - Piling Rig and Crawler Crane	AD	26 SEP 2017 / 15 JUL 2018	
101/2017	Paya Lebar Airport - Piling Rig and Crawler Crane	AD	26 SEP 2017 / 15 JUL 2018	
102/2017	Paya Lebar Airport - Crawler Cranes	AD	26 SEP 2017 / 24 JUL 2018	
103/2017	Paya Lebar Airport - Mobile Crane	AD	26 SEP 2017 / 31 DEC 2017	
104/2017	Paya Lebar Airport - Mobile Cranes	AD	26 SEP 2017 / 31 DEC 2017	
105/2017	Paya Lebar Airport - Luffer Crane and Saddle Crane	AD	29 SEP 2017 / 31 DEC 2018	
106/2017	Paya Lebar Airport - Topless Cranes	AD	01 OCT 2017 / 01 OCT 2019	
108/2017	Paya Lebar Airport - Topless Crane and Luffer Cranes	AD	30 SEP 2017 / 06 JUL 2020	
109/2017	Singapore FIR - Implementation of RNAV Route L762	ENR	07 DEC 2017 UFN	

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GEN 0.4 CHECKLIST OF AIP PAGES

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

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

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

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GEN 2 TABLES AND CODES

GEN 2.1 MEASURING SYSTEM, AIRCRAFT MARKING, HOLIDAYS

1 UNITS OF MEASUREMENT

- 1.1 The table of units of measurement shown below is used for the dissemination of information and in messages transmitted to aircraft.

<i>Measurement of</i>	<i>Units</i>
Distance used in navigation, position report, etc. - generally in excess of 4000m	* Kilometres (km) or Nautical miles (NM)
Relatively short distances such as those relating to aerodromes (e.g. runway lengths)	Metres (m)
Altitudes, elevations and heights	Metres (m) or Feet (ft)
Horizontal speed including wind speed	Knots (kt)
Vertical speed	Feet per minute (ft/min)
Wind direction for landing and taking-off	Degrees Magnetic (°M)
Wind direction except for landing and taking-off	Degrees True (°T)
Visibility, including runway visual range	Metres (m) or Kilometres (km)
Altimeter Setting	Hectopascals (hPa)
Temperature	Degrees Celsius (Centigrade) (°C)
Weight	Metric tonnes (t) or kilogrammes (kg)
Time	Hours and minutes, the day of 24 hours beginning at midnight UTC (hhmm)
* International nautical miles, for which conversion into metres is given by: 1 international NM = 1852 metres	

2 TIME SYSTEM

- 2.1 Co-ordinated Universal Time (UTC) is used in the air traffic and communication services and in documents published for international distribution by the Aeronautical Information Service. Reporting of time is expressed to the nearest minute, e.g. 12:40:35 is reported as 1241. Local time is 8 hours ahead of UTC. Time checks to aircraft are accurate to within 30 seconds.

3 GEODETIC REFERENCE DATUM

3.1 *Name/designation of datum*

- 3.1.1 All published geographical coordinates in the Singapore FIR indicating latitude and longitude are expressed in terms of the World Geodetic System-1984 (WGS-84) geodetic reference datum.

3.2 *Area of Application*

- 3.2.1 The area of application for the published geographical coordinates coincides with the area of responsibility of the Aeronautical Information Service, i.e. the entire territory of Singapore as well as the airspace over the high seas encompassed by the Singapore Flight Information Region.

3.3 *Use of asterisk*

- 3.3.1 An asterisk (*) will be used to identify those published geographical coordinates which have been transformed into WGS-84 coordinates but whose accuracy of original field work does not meet the requirements in ICAO Annex 11, Chapter 2 and ICAO Annex 14, Volume I, Chapter 2. Specifications for determination and reporting of WGS-84 coordinates are given in ICAO Annex 11, Chapter 2 and ICAO Annex 14, Volume I, Chapter 2.

4 AIRCRAFT NATIONALITY AND REGISTRATION MARKS

- 4.1 The nationality mark for aircraft registered in Singapore is the figure 9, followed by the letter V, i.e. 9V. The nationality mark is followed by a hyphen and a registration mark consisting of a three letter group, e.g. 9V-BAA.

5 PUBLIC HOLIDAYS IN SINGAPORE

5.1 The following dates are notified as public holidays:

Name of Holiday	Date	Day
New Year's Day	01 January 2018	Monday
Chinese New Year	16 February 2018	Friday
Chinese New Year	17 February 2018	Saturday
Good Friday	30 March 2018	Friday
Labour Day	01 May 2018	Tuesday
Vesak Day	29 May 2018	Tuesday
Hari Raya Puasa	15 June 2018	Friday
National Day	09 August 2018	Thursday
Hari Raya Haji	22 August 2018	Wednesday
Deepavali	06 November 2018	Tuesday
Christmas Day	25 December 2018	Tuesday

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

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

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

3.6 Aeronautical Information Circular (AIC)

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

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

3.7 Checklist and NOTAM List

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

4 AIRAC SYSTEM

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

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

AIRAC Effective Dates				
Year 2018	Year 2019	Year 2020	Year 2021	Year 2022
04 January	03 January	02 January	28 January	27 January
01 February	31 January	30 January	25 February	24 February
01 March	28 February	27 February	25 March	24 March
29 March	28 March	26 March	22 April	21 April
26 April	25 April	23 April	20 May	19 May
24 May	23 May	21 May	17 June	16 June
21 June	20 June	18 June	15 July	14 July
19 July	18 July	16 July	12 August	11 August
16 August	15 August	13 August	09 September	08 September
13 September	12 September	10 September	07 October	06 October
11 October	10 October	08 October	04 November	03 November
08 November	07 November	05 November	02 December	01 December
06 December	05 December	03 December	30 December	29 December
		31 December		

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

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

5 PRE-FLIGHT INFORMATION SERVICE AT AERODROMES

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

k. Visual Approach Chart - ICAO

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

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

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

5 LIST OF AERONAUTICAL CHARTS AVAILABLE

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

GEN 3.5 METEOROLOGICAL SERVICES

1 RESPONSIBLE SERVICE

- 1.1 The meteorological services for civil aviation are provided by the Meteorological Services Division of the National Environment Agency.

Post:

THE DIRECTOR-GENERAL
Meteorological Service Singapore
Singapore Changi Airport,
P.O. Box 8
SINGAPORE 918141

Tel: (65) 65457190(HQ)

(65) 65425059 / (65) 65422837 (MET Office)

Fax: (65) 65457192 (HQ)

(65) 65425026 (MET Office)

AFS: WSSSYMYX

URL: www.weather.gov.sg

- 1.2 The service is provided in accordance with the provisions contained in the following ICAO documents:

Annex 3 – Meteorological Service for International Air Navigation

Doc 7030 – Regional Supplementary Procedures Part 3 - Meteorology

- 1.3 Differences to these provisions are detailed in subsection GEN 1.7.

2 AREA OF RESPONSIBILITY

- 2.1 Area meteorological watch is provided for the Singapore FIR.

3 METEOROLOGICAL OBSERVATIONS AND REPORTS

TABLE GEN 3.5.3 Meteorological Observations and Reports

<i>Name of Station/ Location Indicator</i>	<i>Type & Frequency of Observation/ Automatic Observing Equipment</i>	<i>Types of MET Reports & Supplementary Information included</i>	<i>Observation System & Sites (s)</i>	<i>Hours of Operation</i>	<i>Climatological Information</i>
1	2	3	4	5	6
SINGAPORE/ Singapore Changi WSSS	Half hourly plus special observations	METAR SPECI TREND WS	<ul style="list-style-type: none"> a. Ultrasonic Wind Sensor at MET station situated 345m west of centre of RWY 02L/20R. (wind report in METAR and SPECI taken from this measurement). b. Cup anemometers and wind vanes at ends and middle of both runways. c. Windsocks at ends of both runways. d. Transmissometers at both ends and in the middle of both runways. e. Low level wind shear observations made continuously by system of 13 surface wind sensors located in the airport and its vicinity. f. Satellite Receiving System receiving MTSAT infrared and visible imageries hourly. g. MET Doppler Weather Radar detecting windshear within 20km and monitoring storms up to 480km. 	H24	Climatological Summaries available at Singapore MET Services of the National Environment Agency.
← SINGAPORE/ Seletar WSSL	Hourly plus special observations	METAR SPECI	<ul style="list-style-type: none"> a. 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). b. Windsocks at ends of RWY 03/21. 	H24	NIL
← SINGAPORE/ Paya Lebar WSAP	Hourly plus special observations	METAR SPECI	<ul style="list-style-type: none"> a. Cup anemometers and wind vanes at both ends of RWY 02/20 (wind report in METAR and SPECI taken from the measurement associated with the RWY in use). 	H24	NIL

ENR 3.4 HELICOPTER ROUTES

1 HELICOPTER OPERATIONS OVER SINGAPORE ISLAND

1.1 INTRODUCTION

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

1.2 RESTRICTED AREA -SINGLE-ENGINE HELICOPTER OPERATIONS RESTRICTED

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

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

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

1.3 ROUTEINGS

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

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

1.4 OVER-WATER ROUTES

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

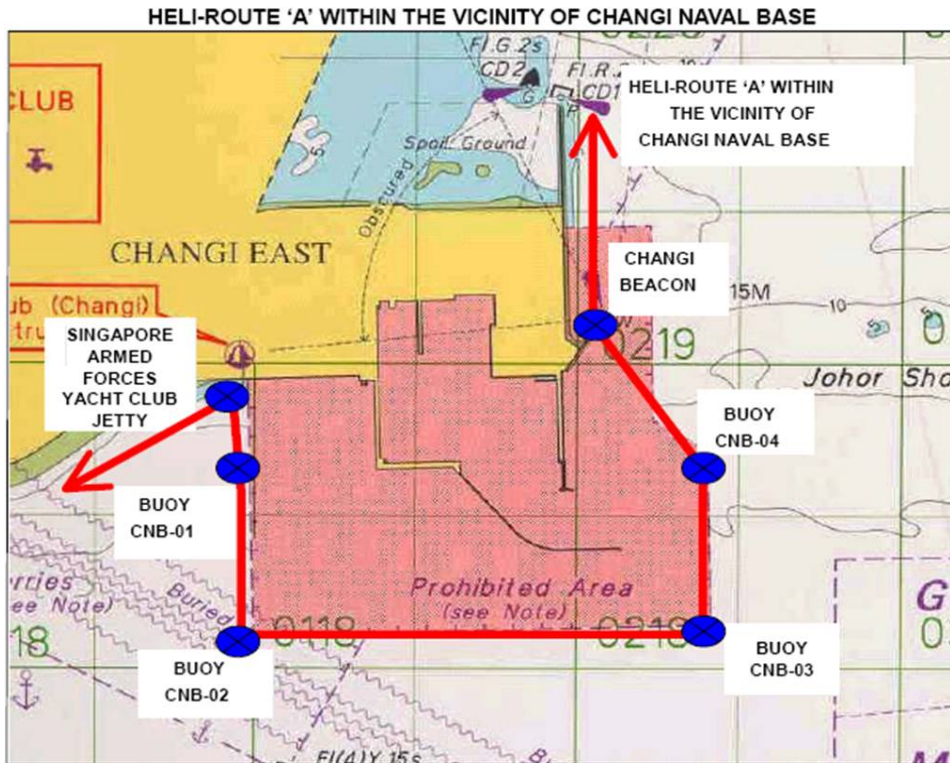
1.4.1.1 Heli-Route Alpha

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

	<i>Markers Description</i>	<i>Coordinates</i>	<i>Remarks</i>
a)	CHANGI BEACON	011909N 1040206E	White lights, 3 flashes every 15 sec
b)	BUOY CNB-04	011844N 1040224E	Yellow buoy, 3m above waterline Yellow lights, 1 flash every 2 sec
c)	BUOY CNB-03	011809N 1040224E	Yellow buoy, 3m above waterline Yellow lights, 1 flash every 2 sec
d)	BUOY CNB-02	011806N 1040100E	Yellow buoy, 3m above waterline Yellow lights, 1 flash every 2 sec
e)	BUOY CNB-01	011829N 1040059E	Yellow buoy, 3m above waterline Yellow lights, 1 flash every 2 sec
f)	Singapore Armed Forces Yacht Club Jetty	011851N 1040058E	Yellow lights, 3 lamp posts along jetty

Note: Pilots are to adhere strictly to the above transit routes.

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



1.4.1.2 **Heli-Route Bravo**

←

Originates from Bedok Jetty (011819N 1035632E), following the coastline of Singapore Island via the southern tip and contour of Sentosa towards Tuas and vice versa.

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

1.5 OVER-LAND ROUTE

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

1.5.1.1 **Heli-Route Charlie**

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

1.6 CONDITIONS GOVERNING THE USE OF HELI-ROUTE CHARLIE

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

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

ENR 4.5 AERONAUTICAL GROUND LIGHTS - ENROUTE

<i>Name Ident (Coordinates)</i>	<i>Type and Intensity (1,000 Candelas)</i>	<i>Characteristics</i>	<i>Operating Hours</i>	<i>Remarks</i>
1	2	3	4	5
BEDOK LIGHTHOUSE 011833N 1035558E	Marine 369	FLG W EV 5 SEC	HN	
HORSBURGH LIGHTHOUSE 011949N 1042420E	Marine 266	FLG W EV 10 SEC	HN	
PAYA LEBAR 012100N 1035354E	IBN †	FLG R 'PL' EV 12 SEC	HN + IMC	† 3KW
PULAU PISANG LIGHTHOUSE 012810N 1031521E	Marine 291	FLG W EV 10 SEC	HN	-
RAFFLES LIGHTHOUSE 010936N 1034427E	Marine 240	GP FLG (3) W EV 20 SEC	HN	-
SAKIJANG BEACON 011318N 1035116E	Marine 15.95	FLG W EV 2.5 SEC	HN	-
SELETAR 012459.52N 1035155.84E	IBN	FLG G 'ST' repeatedly	HN + IMC	-
SELETAR 012457.12N 1035223.34E	ABN 3.75	ALTN FLG W G EV 2.5 SEC	HN + IMC	-
SEMBAWANG 012500N 1034854E	IBN 2.1 #	FLG R 'AG' EV 20 SEC	HN + IMC	# 0.7KW
SINGAPORE CHANGI 012301.27N 1035959.49E	IBN	FLG G 'CH' EV 7 SEC	HN + IMC	-
SINGAPORE CHANGI 012209.20N 1035858.43E	ABN W 10.8 G 2.2	ALTN FLG W G EV 4 SEC	HN + IMC	-
SULTAN SHOAL LIGHTHOUSE 011423N 1033853E	Marine 260	GP FLG (2) W EV 15 SEC	HN	-
TENGAH 012400N 1034254E	IBN	FLG R 'TN'	HN	-

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←

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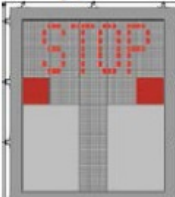
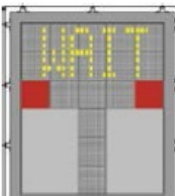
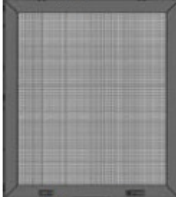
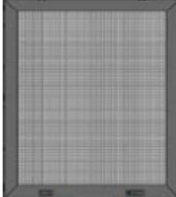
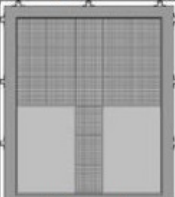
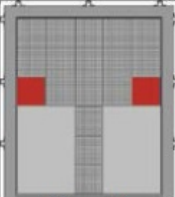
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WSAG AD 2.21	[NIL] NOISE ABATEMENT PROCEDURES	NIL
WSAG AD 2.22	[NIL] FLIGHT PROCEDURES	NIL
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WMKJ AD 2.3	[NIL] OPERATIONAL HOURS	NIL
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WMKJ AD 2.9	[NIL] SURFACE MOVEMENT GUIDANCE AND CONTROL SYSTEM AND MARKINGS	NIL
WMKJ AD 2.10	[NIL] AERODROME OBSTACLES	NIL
WMKJ AD 2.11	[NIL] METEOROLOGICAL INFORMATION PROVIDED	NIL
WMKJ AD 2.12	[NIL] RUNWAY PHYSICAL CHARACTERISTICS	NIL
WMKJ AD 2.13	[NIL] DECLARED DISTANCES	NIL
WMKJ AD 2.14	[NIL] APPROACH AND RUNWAY LIGHTING	NIL
WMKJ AD 2.15	[NIL] OTHER LIGHTING, SECONDARY POWER SUPPLY	NIL
WMKJ AD 2.16	[NIL] HELICOPTER LANDING AREA	NIL
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WMKJ AD 2.21	[NIL] NOISE ABATEMENT PROCEDURES	NIL
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WMKJ AD 2.23	[NIL] ADDITIONAL INFORMATION	NIL
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WIDD AD 2.3	[NIL] OPERATIONAL HOURS	NIL
WIDD AD 2.4	[NIL] HANDLING SERVICES AND FACILITIES	NIL
WIDD AD 2.5	[NIL] PASSENGER FACILITIES	NIL
WIDD AD 2.6	[NIL] RESCUE AND FIRE FIGHTING SERVICES	NIL
WIDD AD 2.7	[NIL] SEASONAL AVAILABILITY - CLEARING	NIL
WIDD AD 2.8	[NIL] APRONS, TAXIWAYS AND CHECK LOCATIONS DATA	NIL
WIDD AD 2.9	[NIL] SURFACE MOVEMENT GUIDANCE AND CONTROL SYSTEM AND MARKINGS	NIL
WIDD AD 2.10	[NIL] AERODROME OBSTACLES	NIL
WIDD AD 2.11	[NIL] METEOROLOGICAL INFORMATION PROVIDED	NIL
WIDD AD 2.12	[NIL] RUNWAY PHYSICAL CHARACTERISTICS	NIL
WIDD AD 2.13	[NIL] DECLARED DISTANCES	NIL
WIDD AD 2.14	[NIL] APPROACH AND RUNWAY LIGHTING	NIL
WIDD AD 2.15	[NIL] OTHER LIGHTING, SECONDARY POWER SUPPLY	NIL
WIDD AD 2.16	[NIL] HELICOPTER LANDING AREA	NIL
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WIDD AD 2.21	[NIL] NOISE ABATEMENT PROCEDURES	NIL
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WIDN AD 2.3	[NIL] OPERATIONAL HOURS	NIL
WIDN AD 2.4	[NIL] HANDLING SERVICES AND FACILITIES	NIL
WIDN AD 2.5	[NIL] PASSENGER FACILITIES	NIL
WIDN AD 2.6	[NIL] RESCUE AND FIRE FIGHTING SERVICES	NIL
WIDN AD 2.7	[NIL] SEASONAL AVAILABILITY – CLEARING	NIL
WIDN AD 2.8	[NIL] APRONS, TAXIWAYS AND CHECK LOCATIONS DATA	NIL
WIDN AD 2.9	[NIL] SURFACE MOVEMENT GUIDANCE AND CONTROL SYSTEM AND MARKINGS	NIL
WIDN AD 2.10	[NIL] AERODROME OBSTACLES	NIL
WIDN AD 2.11	[NIL] METEOROLOGICAL INFORMATION PROVIDED	NIL
WIDN AD 2.12	[NIL] RUNWAY PHYSICAL CHARACTERISTICS	NIL
WIDN AD 2.13	[NIL] DECLARED DISTANCES	NIL
WIDN AD 2.14	[NIL] APPROACH AND RUNWAY LIGHTING	NIL
WIDN AD 2.15	[NIL] OTHER LIGHTING, SECONDARY POWER SUPPLY	NIL
WIDN AD 2.16	[NIL] HELICOPTER LANDING AREA	NIL
WIDN AD 2.17	ATS AIRSPACE	AD 2.WIDN-1
WIDN AD 2.18	ATS COMMUNICATION FACILITIES	AD 2.WIDN-1
WIDN AD 2.19	[NIL] RADIO NAVIGATION AND LANDING AIDS	NIL
WIDN AD 2.20	[NIL] LOCAL TRAFFIC REGULATIONS	NIL
WIDN AD 2.21	[NIL] NOISE ABATEMENT PROCEDURES	NIL
WIDN AD 2.22	[NIL] FLIGHT PROCEDURES	NIL
WIDN AD 2.23	[NIL] ADDITIONAL INFORMATION	NIL
WIDN AD 2.24	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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Description	Display on ADGS	
<p>Overshooting</p> <ul style="list-style-type: none"> 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. 	<p>Safedock Type 1</p>  	<p>Safedock Type 2</p>  
<p>No Display</p> <ul style="list-style-type: none"> 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. 	<p>Safedock Type 1</p>  <p>Figure 1</p>  <p>Figure 2</p>	<p>Safedock Type 2</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
T3 WEST		
A1	<p>The aircraft shall be pushed back following the pushback line onto Taxilane V6 until its nose wheel is at the "EOP A1" 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. The aircraft may breakaway from there. Engine start up is not permitted during standard pushback.</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. This alternate pushback procedure can only be exercised if the auxiliary power unit of aircraft is unserviceable.</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. This alternate pushback procedure can only be exercised if the auxiliary power unit of aircraft is unserviceable.</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>
A2	<p>The aircraft (on idle thrust) 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. The aircraft may breakaway from there.</p> <p><u>Alternate Pushback Procedure (Pushback Facing North)</u></p> <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. This alternate pushback procedure can only be exercised if the auxiliary power unit of aircraft is unserviceable.</p> <p><u>Alternate Pushback Procedure (Pushback Facing South)</u></p> <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. This alternate pushback procedure can only be exercised if the auxiliary power unit of aircraft is unserviceable.</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>
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>	<p>Pushback approved, to face North (or South).</p>

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"> • 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. <p><u>OR</u></p> <ul style="list-style-type: none"> • 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. 	<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"> • 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. <p><u>OR</u></p> <ul style="list-style-type: none"> • 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. 	<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"> • 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. <p><u>OR</u></p> <ul style="list-style-type: none"> • 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. 	<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"> • 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. <p><u>OR</u></p> <ul style="list-style-type: none"> • 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. 	<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"> • 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. <p><u>OR</u></p> <ul style="list-style-type: none"> • 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. 	<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"> • 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. <p><u>OR</u></p> <ul style="list-style-type: none"> • 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. 	<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. The aircraft may breakaway from there. Engine start up is not permitted during standard pushback.</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. This alternate pushback procedure can only be exercised if the auxiliary power unit of aircraft is unserviceable.</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. This alternate pushback procedure can only be exercised if the auxiliary power unit of aircraft is unserviceable.</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 (on idle thrust) 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. The aircraft may breakaway from there.</p> <p><u>Alternate Pushback Procedure (To Face North)</u></p> <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. This alternate pushback procedure can only be exercised if the auxiliary power unit of aircraft is unserviceable.</p> <p><u>Alternate Pushback Procedure (To Face South)</u></p> <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. This alternate pushback procedure can only be exercised if the auxiliary power unit of aircraft is unserviceable.</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>
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>	<p>Pushback approved, to face North (or South).</p>
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>	<p>Pushback approved, to face North (or South).</p>
B5, B6	<p>The aircraft (on idle thrust) shall be pushed back:</p> <ul style="list-style-type: none"> • 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. <p><u>OR</u></p> <ul style="list-style-type: none"> • 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. 	<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"> • 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. <p><u>OR</u></p> <ul style="list-style-type: none"> • 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. 	<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"> • 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. <p><u>OR</u></p> <ul style="list-style-type: none"> • 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. 	<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).
<u>T1 WEST</u>		
C1	<p>The aircraft (on idle thrust) shall be pushed back:</p> <ul style="list-style-type: none"> • 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. <p><u>OR</u></p> <ul style="list-style-type: none"> • 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. 	<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"> • 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. <p><u>OR</u></p> <ul style="list-style-type: none"> • 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. 	<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"> • 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. <p><u>OR</u></p> <ul style="list-style-type: none"> • 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. 	<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"> • 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. <p><u>OR</u></p> <ul style="list-style-type: none"> • 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. 	<p>Pushback approved, to face North.</p> <p>Pushback approved, to face South.</p>
<u>T1 CENTRAL</u>		

APRON/ ACFT STANDS	PUSHBACK PROCEDURES	PHRASEOLOGY USED BY SINGAPORE GROUND
C11	The aircraft (on idle thrust) shall be pushed back following the pushback line to face North until its nose wheel is at the "EOP 21" position. The aircraft shall then be towed forward following the tow line onto Taxilane N2 until its nose wheel is at the "EOT 22A" position. The aircraft may breakaway from there.	Standard pushback approved.
C13	<p>The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane N2 to face North until its nose wheel is at the "EOP 22" position. The aircraft shall then be towed forward until its nose wheel is at the "EOT 22A" position. The aircraft may breakaway from there.</p> <p><u>Alternate Pushback Procedure</u></p> <p>The aircraft (on idle thrust) shall be pushed back onto Taxilane N2 to face South followed by Taxilane N3 until the nose of the aircraft is behind the stopbar line behind aircraft stand D35. The aircraft may breakaway from there.</p> <p><u>Alternate Pushback Procedure</u></p> <p>The aircraft (on idle thrust) shall be pushed back onto Taxilane N2 to face South followed by Taxilane N1 until the nose of the aircraft is behind the stopbar line behind aircraft stand C16. The aircraft may breakaway from there.</p>	<p>Standard pushback approved.</p> <p>Pushback approved, to face South on Taxilane N3.</p> <p>Pushback approved, to face South on Taxilane N1.</p>
C15	<p>The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane N2 to face North until its nose wheel is at the intersection of the aircraft stand lead-in line and Taxilane N2 centreline. The aircraft may breakaway from there.</p> <p><u>Alternate Pushback Procedure</u></p> <p>The aircraft (on idle thrust) shall be pushed back onto Taxilane N2 to face South followed by Taxilane N3 until the nose of the aircraft is behind the stopbar line behind aircraft stand D35. The aircraft may breakaway from there.</p> <p><u>Alternate Pushback Procedure</u></p> <p>The aircraft (on idle thrust) shall be pushed back onto Taxilane N2 to face South followed by Taxilane N1 until the nose of the aircraft is behind the stopbar line behind aircraft stand C16. The aircraft may breakaway from there.</p>	<p>Standard pushback approved.</p> <p>Pushback approved, to face South on Taxilane N3.</p> <p>Pushback approved, to face South on Taxilane N1.</p>
C16	<p>The aircraft (on idle thrust) shall be pushed back:</p> <ul style="list-style-type: none"> • onto Taxilane N1 to face North until its nose wheel is at the intersection of the aircraft stand lead-in line and Taxilane N1 centreline. The aircraft may breakaway from there. <p><u>OR</u></p> <ul style="list-style-type: none"> • onto Taxilane N1 to face South until the nose of the aircraft is behind the stopbar line behind aircraft stand C16 . The aircraft may breakaway from there. <p><u>Alternate Pushback Procedure</u></p> <p>The aircraft (on idle thrust) shall be pushed back onto Taxilane N1 to face North until the nose of the aircraft is behind the stopbar behind aircraft stand C15 on Taxilane N2. The aircraft may breakaway from there.</p>	<p>Pushback approved, to face North.</p> <p>Pushback approved, to face South.</p> <p>Pushback approved, to face North on Taxilane N2.</p>

APRON/ ACFT STANDS	PUSHBACK PROCEDURES	PHRASEOLOGY USED BY SINGAPORE GROUND
C17	<p>The aircraft (on idle thrust) shall be pushed back onto Taxilane N1 to face North (or South) until its nose wheel is at the intersection of the aircraft stand lead-in line and Taxilane N1 centreline. The aircraft may breakaway from there.</p> <p><u>Alternate Pushback Procedure</u></p> <p>The aircraft (on idle thrust) shall be pushed back onto Taxilane N1 to face North until the nose of the aircraft is behind the stopbar behind aircraft stand C15 on Taxilane N2. The aircraft may breakaway from there.</p>	<p>Pushback approved, to face North (or South).</p> <p>Pushback approved, to face North on Taxilane N2.</p>
C18	<p>The aircraft (on idle thrust) shall be pushed back onto Taxilane N1 to face North until its nose wheel is at the intersection of the aircraft stand lead-in line and Taxilane N1 centreline. The aircraft may breakaway from there.</p> <p><u>Alternate Pushback Procedure</u></p> <p>The aircraft (on idle thrust) shall be pushed back onto Taxilane N1 to face North until the nose of the aircraft is behind the stopbar behind aircraft stand C15 on Taxilane N2. The aircraft may breakaway from there.</p>	<p>Standard pushback approved.</p> <p>Pushback approved, to face North on Taxilane N2.</p>
C19	<p>The aircraft (on idle thrust) shall be pushed back onto Taxilane N1 to face North until the nose of the aircraft is behind the stopbar behind aircraft stand C18. The aircraft may breakaway from there.</p>	<p>Standard pushback approved.</p>
D30	<p>The aircraft (on idle thrust) shall be pushed back following the pushback line to face North until its nose wheel is at the "EOP 20" position. The aircraft shall then be towed forward onto Taxilane N2 until its nose wheel is at the "EOT 22A" position. The aircraft may breakaway from there.</p>	<p>Standard pushback approved.</p>
D32	<p>The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane N2 to face North until its nose wheel is at the "EOP 22" position. The aircraft shall then be towed forward until its nose wheel is at the "EOT 22A" position. The aircraft may breakaway from there.</p> <p><u>Alternate Pushback Procedure</u></p> <p>The aircraft (on idle thrust) shall be pushed back onto Taxilane N2 to face South followed by Taxilane N3 until the nose of the aircraft is behind the stopbar line behind aircraft stand D35. The aircraft may breakaway from there.</p> <p><u>Alternate Pushback Procedure</u></p> <p>The aircraft (on idle thrust) shall be pushed back onto Taxilane N2 to face South followed by Taxilane N1 until the nose of the aircraft is behind the stopbar line behind aircraft stand C16. The aircraft may breakaway from there.</p>	<p>Standard pushback approved.</p> <p>Pushback approved, to face South on Taxilane N3.</p> <p>Pushback approved, to face South on Taxilane N1.</p>
D34	<p>The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane N2 to face North until its nose wheel is at the intersection of the aircraft stand lead-in line and Taxilane N2 centreline. The aircraft may breakaway from there.</p> <p><u>Alternate Pushback Procedure</u></p> <p>The aircraft (on idle thrust) shall be pushed back onto Taxilane N2 to face South followed by Taxilane N3 until the nose of the aircraft is behind the stopbar line behind aircraft stand D35. The aircraft may breakaway from there.</p> <p><u>Alternate Pushback Procedure</u></p> <p>The aircraft (on idle thrust) shall be pushed back onto Taxilane N2 to face South followed by Taxilane N1 until the nose of the aircraft is behind the stopbar line behind aircraft stand C16. The aircraft may breakaway from there.</p>	<p>Standard pushback approved.</p> <p>Pushback approved, to face South on Taxilane N3.</p> <p>Pushback approved, to face South on Taxilane N1.</p>

APRON/ ACFT STANDS	PUSHBACK PROCEDURES	PHRASEOLOGY USED BY SINGAPORE GROUND
D35	<p>The aircraft (on idle thrust) shall be pushed back:</p> <ul style="list-style-type: none"> • onto Taxilane N3 to face North until its nose wheel is at the intersection of the aircraft stand lead-in line and Taxilane N3 centreline. The aircraft may breakaway from there. <p><u>OR</u></p> <ul style="list-style-type: none"> • onto Taxilane N3 to face South until the nose of the aircraft is behind the stopbar line behind aircraft stand D35 . The aircraft may breakaway from there. <p><u>Alternate Pushback Procedure</u></p> <p>The aircraft (on idle thrust) shall be pushed back onto Taxilane N3 to face North until the nose of the aircraft is behind the stopbar behind aircraft stand D34 on Taxilane N2. The aircraft may breakaway from there.</p>	<p>Pushback approved, to face North.</p> <p>Pushback approved, to face South.</p> <p>Pushback approved, to face North on Taxilane N2.</p>
D36	<p>The aircraft (on idle thrust) shall be pushed back onto Taxilane N3 to face North (or South) until its nose wheel is at the intersection of the aircraft stand lead-in line and Taxilane N3 centreline. The aircraft may breakaway from there.</p> <p><u>Alternate Pushback Procedure</u></p> <p>The aircraft (on idle thrust) shall be pushed back onto Taxilane N3 to face North until the nose of the aircraft is behind the stopbar behind aircraft stand D34 on Taxilane N2. The aircraft may breakaway from there.</p>	<p>Pushback approved, to face North (or South).</p> <p>Pushback approved, to face North on Taxilane N2.</p>
D37	<p>The aircraft (on idle thrust) shall be pushed back onto Taxilane N3 to face North until its nose wheel is at the intersection of the aircraft stand lead-in line and Taxilane N3 centreline. The aircraft may breakaway from there.</p> <p><u>Alternate Pushback Procedure</u></p> <p>The aircraft (on idle thrust) shall be pushed back onto Taxilane N3 to face North until the nose of the aircraft is behind the stopbar behind aircraft stand D34 on Taxilane N2. The aircraft may breakaway from there.</p>	<p>Standard pushback approved.</p> <p>Pushback approved, to face North on Taxilane N2.</p>
D38	<p>The aircraft (on idle thrust) shall be pushed back onto Taxilane N3 to face North until the nose of the aircraft is behind the stopbar behind aircraft stand D37. The aircraft may breakaway from there.</p>	<p>Standard pushback approved.</p>
<u>T1 EAST</u>		
D40	<p>The aircraft (on idle thrust) shall be pushed back:</p> <ul style="list-style-type: none"> • onto Taxilane A6 to face North until its nose wheel is at "EOP B D40, D40L, D40R" position. The aircraft may breakaway from there. <p><u>OR</u></p> <ul style="list-style-type: none"> • onto Taxilane A6 to face South until its nose wheel is at "EOP A D40, D40L, D40R" position. The aircraft may breakaway from there. 	<p>Pushback approved, to face North.</p> <p>Pushback approved, to face South.</p>

APRON/ ACFT STANDS	PUSHBACK PROCEDURES	PHRASEOLOGY USED BY SINGAPORE GROUND
D40L, D40R	<p>The aircraft (on idle thrust) shall be pushed back:</p> <ul style="list-style-type: none"> • following the pushback line onto Taxilane A6 to face North until its nose wheel is at "EOP B D40, D40L, D40R" position. The aircraft may breakaway from there. <p>OR</p> <ul style="list-style-type: none"> • following the pushback line onto Taxilane A6 to face South until its nose wheel is at "EOP A D40, D40L, D40R" position. The aircraft may breakaway from there. 	<p>Pushback approved, to face North.</p> <p>Pushback approved, to face South.</p>
D41	<p>The aircraft (on idle thrust) shall be pushed back onto Taxilane A6 to face North (or South) until its nose wheel is at the intersection of the aircraft stand lead-in line and Taxilane A6 centreline. The aircraft may breakaway from there.</p>	<p>Pushback approved, to face North (or South).</p>
D42	<p>The aircraft (on idle thrust) shall be pushed back onto Taxilane A6 to face North (or South) until its nose wheel is at the intersection of the aircraft stand lead-in line and Taxilane A6 centreline. The aircraft may breakaway from there.</p>	<p>Pushback approved, to face North (or South).</p>
D42L, D42R	<p>The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane A6 to face North (or South) until its nose wheel is at the intersection of the aircraft stand pushback line and Taxilane A6 centreline. The aircraft may breakaway from there.</p>	<p>Pushback approved, to face North (or South).</p>
D44, D46, D47	<p>The aircraft (on idle thrust) shall be pushed back onto Taxilane A6 to face North (or South) until its nose wheel is at the intersection of the aircraft stand lead-in line and Taxilane A6 centreline. The aircraft may breakaway from there.</p>	<p>Pushback approved, to face North (or South).</p>
D48	<p>The aircraft (on idle thrust) shall be pushed back:</p> <ul style="list-style-type: none"> • onto Taxilane A6 to face North until the nose of the aircraft is behind the stopbar line behind aircraft stand D48. The aircraft may breakaway from there. <p>OR</p> <ul style="list-style-type: none"> • onto Taxilane A6 to face South until its nose wheel is at the intersection of the aircraft stand lead-in line and Taxilane A6 centreline. The aircraft may breakaway from there. 	<p>Pushback approved, to face North.</p> <p>Pushback approved, to face South.</p>
D49	<p>The aircraft (on idle thrust) shall be pushed back:</p> <ul style="list-style-type: none"> • onto Taxilane A6 to face North until its nose wheel is at the "EOP D49" position. The aircraft may breakaway from there. <p>OR</p> <ul style="list-style-type: none"> • onto Taxilane A6 to face South until its nose wheel is at the intersection of the aircraft stand lead-in line and Taxilane A6 centreline. The aircraft shall then be towed forward until its nose wheel is at the "EOT D49" position behind aircraft stand D49. The aircraft may breakaway from there. 	<p>Pushback approved, to face North.</p> <p>Pushback approved, to face South.</p>
T2 NORTH		
E8	<p>The aircraft (on idle thrust) shall be pushed back onto TWY A4 to face East until its nose wheel is at "EOP 14" position. The aircraft shall then be towed forward to "EOT 15" position. The aircraft may breakaway from there.</p>	<p>Standard pushback approved.</p>
E10	<p>The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane A6 to face North until its nose wheel is at the "EOP 19" position. The aircraft may breakaway from there.</p>	<p>Standard pushback approved.</p>

APRON/ ACFT STANDS	PUSHBACK PROCEDURES	PHRASEOLOGY USED BY SINGAPORE GROUND
E11	<p>The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane A6 to face North until its nose wheel is at the intersection of Taxilane A6 and Taxilane A5 centreline. The aircraft shall then be towed forward following Taxilane A5 centreline to "EOT 16" position. The aircraft may breakaway from there.</p> <p><u>Alternate Pushback Procedure</u></p> <p>The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane A6 to face North until its nose wheel is at the "EOP 19A" position behind aircraft stand E24. The aircraft shall then be towed forward to "EOT 18B" position behind aircraft stand E26. The aircraft may breakaway from there.</p>	<p>Standard pushback approved.</p> <p>Pushback approved, to face North on Taxilane A6.</p>
E12	<p>The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane A5 to face North until its nose wheel is at the intersection of the aircraft stand pushback line and Taxilane A5 centreline. The aircraft shall then be towed forward until its nose wheel is at the "EOT 16" position. The aircraft may breakaway from there.</p> <p><u>Alternate Pushback Procedure</u></p> <p>The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane A5 followed by Taxilane A6 to face North until its nose wheel is at the intersection of Taxilane A6 and Taxilane A5 centreline. The aircraft may breakaway from there.</p>	<p>Standard pushback approved.</p> <p>Pushback approved, to face North on Taxilane A6.</p>
E20	<p>The aircraft (on idle thrust) shall be pushed back following the pushback line until its nose wheel is at the "EOP 17" position. The aircraft shall then be towed forward following the tow line onto Taxilane A6 to face North until its nose wheel is at the "EOT 18A" position. The aircraft may breakaway from there.</p>	<p>Standard pushback approved.</p>
E22	<p>The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane A6 to face North until its nose wheel is at "EOP 19" position. The aircraft shall then be towed forward until its nose wheel is at the "EOT 18" position. The aircraft may breakaway from there.</p>	<p>Standard pushback approved.</p>
E24	<p>The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane A6 to face North until its nose wheel is at the intersection of the aircraft stand pushback line and Taxilane A6 centreline. The aircraft may breakaway from there.</p>	<p>Standard pushback approved.</p>
E24L, E24R	<p>The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane A6 to face North until its nose wheel is at the intersection of the aircraft stand pushback line and Taxilane A6 centreline. The aircraft may breakaway from there.</p>	<p>Standard pushback approved.</p>
E26	<p>The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane A6 to face North until its nose wheel is at the intersection of the aircraft stand pushback line and Taxilane A6 centreline. The aircraft may breakaway from there.</p>	<p>Standard pushback approved.</p>
E27	<p>The aircraft (on idle thrust) shall be pushed back onto Taxilane A6 to face North (or South) until its nose wheel is at the intersection of the aircraft stand lead-in line and Taxilane A6 centreline. The aircraft may breakaway from there.</p>	<p>Pushback approved, to face North (or South).</p>
E27L, E27R	<p>The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane A6 to face North (or South) until its nose wheel is at the intersection of the aircraft stand pushback line and Taxilane A6 centreline. The aircraft may breakaway from there.</p>	<p>Pushback approved, to face North (or South).</p>
E28	<p>The aircraft (on idle thrust) shall be pushed back onto Taxilane A6 to face North (or South) until its nose wheel is at the intersection of the aircraft stand lead-in line and Taxilane A6 centreline. The aircraft may breakaway from there.</p>	<p>Pushback approved, to face North (or South).</p>
T2 CENTRAL		

APRON/ ACFT STANDS	PUSHBACK PROCEDURES	PHRASEOLOGY USED BY SINGAPORE GROUND
E1	The aircraft (on idle thrust) shall be pushed back following the pushback line to face East until its nose wheel is at the "EOP E1" position. The aircraft shall then be towed forward onto Taxilane B2 until its nose wheel is at the "EOT E1, E2, F30, F31" position. The aircraft may breakaway from there.	Standard pushback approved.
E2	The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane B2 to face East until its nose wheel is at the intersection of the aircraft stand pushback line and Taxilane B2 centreline. The aircraft shall then be towed forward to "EOT E1, E2, F30, F31" position. The aircraft may breakaway from there.	Standard pushback approved.
E3	The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane B2 to face East until its nose wheel is at the intersection of the aircraft stand pushback line and Taxilane B2 centreline. The aircraft may breakaway from there.	Standard pushback approved.
E4	<p>The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane B2 to face East until its nose wheel is at the "EOP E4, F33" position. The aircraft may breakaway from there.</p> <p><u>Alternate Pushback Procedure</u></p> <p>The aircraft (on idle thrust) shall be pushed back onto Taxilane B1 to face South until its nose wheel is at the "EOP A E4, F33" position. The aircraft may breakaway from there.</p> <p><u>Alternate Pushback Procedure</u></p> <p>The aircraft (on idle thrust) shall be pushed back onto Taxilane B3 to face North until its nose wheel is at the "EOP B E4, F33" position. The aircraft may breakaway from there.</p>	<p>Standard pushback approved.</p> <p>Pushback approved, to face South on Taxilane B1.</p> <p>Pushback approved, to face North on Taxilane B3.</p>
← E5, E6	The aircraft (on idle thrust) shall be pushed back onto Taxilane B1 to face North until its nose wheel is at the intersection of the aircraft stand lead-in line and Taxilane B1 centreline. The aircraft shall then be towed forward until its nose wheel is at the "EOT E5, E6, E7" position behind aircraft stand E6. The aircraft may breakaway from there.	Standard pushback approved.
← E7	The aircraft (on idle thrust) shall be pushed back onto Taxilane B1 to face North until its nose wheel is at the "EOT E5, E6, E7" position behind aircraft stand E6. The aircraft may breakaway from there.	Standard pushback approved.
F30	The aircraft (on idle thrust) shall be pushed back following the pushback line to face East until its nose wheel is at the "EOP F30" position. The aircraft shall then be towed forward onto Taxilane B2 until its nose wheel is at the "EOT E1, E2, F30, F31" position. The aircraft may breakaway from there.	Standard pushback approved.
F31	The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane B2 to face East until its nose wheel is at "EOP F31" position. The aircraft shall then be towed forward to "EOT E1, E2, F30, F31" position. The aircraft may breakaway from there.	Standard pushback approved.
F32	The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane B2 to face East until its nose wheel is at the intersection of the aircraft stand pushback line and taxilane B2 centreline. The aircraft may breakaway from there.	Standard pushback approved.

APRON/ ACFT STANDS	PUSHBACK PROCEDURES	PHRASEOLOGY USED BY SINGAPORE GROUND
F33	<p>The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane B2 to face East until its nose wheel is at the "EOP E4, F33" position. The aircraft may breakaway from there.</p> <p><u>Alternate Pushback Procedure</u></p> <p>The aircraft (on idle thrust) shall be pushed back onto Taxilane B1 to face South until its nose wheel is at the "EOP A E4, F33" position. The aircraft may breakaway from there.</p> <p><u>Alternate Pushback Procedure</u></p> <p>The aircraft (on idle thrust) shall be pushed back onto Taxilane B3 to face North until its nose wheel is at the "EOP B E4, F33" position. The aircraft may breakaway from there.</p>	<p>Standard pushback approved.</p> <p>Pushback approved, to face South on Taxilane B1.</p> <p>Pushback approved, to face North on Taxilane B3.</p>
← F34	<p>The aircraft (on idle thrust) shall be pushed back onto Taxilane B3 to face South until its nose wheel is at the intersection of the aircraft stand lead-in line and Taxilane B3 centreline. The aircraft shall then be towed forward until its nose wheel is at the "EOT F34, F35L, F36" position behind aircraft stand F35. The aircraft may breakaway from there.</p>	Standard pushback approved.
F35, F35R	<p>The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane B3 to face South until its nose wheel is at the intersection of the aircraft stand pushback line and Taxilane B3 centreline. The aircraft may breakaway from there.</p>	Standard pushback approved.
← F35L	<p>The aircraft (on idle thrust) shall be pushed back onto Taxilane B3 to face South until its nose wheel is at the "EOT F34, F35L, F36" position behind aircraft stand F35. The aircraft may breakaway from there.</p>	Standard pushback approved.
← F36	<p>The aircraft (on idle thrust) shall be pushed back onto Taxilane B3 to face South until its nose wheel is at the "EOT F34, F35L, F36" position behind aircraft stand F35. The aircraft may breakaway from there.</p>	Standard pushback approved.
<u>T2 SOUTH</u>		
F37	<p>The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane C2 to face South until its nose wheel is at the "EOT 4" position. The aircraft may breakaway from there.</p> <p><u>Alternate Pushback Procedure</u></p> <p>The aircraft (on idle thrust) shall be pushed back onto TWY C1 to face East until its nose wheel is at the "EOP 5" position. The aircraft may breakaway from there.</p>	<p>Standard pushback approved.</p> <p>Pushback approved, to face East on TWY C1.</p>
F40	<p>The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane C6 to face South until its nose wheel is at the "EOP 2" position. The aircraft shall then be towed forward until its nose wheel is at the "EOT 3" position. The aircraft may breakaway from there.</p>	Standard pushback approved.
F41	<p>The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane C2 to face South until its nose wheel is at the intersection of the aircraft stand pushback line and Taxilane C2 centreline. The aircraft shall then be towed forward until its nose wheel is at the "EOT 4" position. The aircraft may breakaway from there.</p> <p><u>Alternate Pushback Procedure</u></p> <p>The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane C2 to face South, following Taxilane C2 centreline onto Taxilane C6 until its nose wheel is at the intersection of Taxilane C2 and Taxilane C6 centreline. The aircraft may breakaway from there.</p>	<p>Standard pushback approved.</p> <p>Pushback approved, to pushback onto Taxilane C6.</p>

APRON/ ACFT STANDS	PUSHBACK PROCEDURES	PHRASEOLOGY USED BY SINGAPORE GROUND
F42	<p><u>Main pushback procedure (for all aircraft wingspan)</u></p> <p>The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane C2 to face South until its nose wheel is at the intersection of the aircraft stand pushback line and Taxilane C2 centreline. The aircraft shall then be towed forward until its nose wheel is at the "EOT 4" position. The aircraft may breakaway from there.</p> <p><u>Alternate pushback procedure (for all aircraft types except A380)</u></p> <p>The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane C2 to face South, following Taxilane C2 centreline onto Taxilane C6 until its nose wheel is at the intersection of Taxilane C2 and Taxilane C6 centreline. The aircraft may breakaway from there.</p> <p><u>Alternate pushback procedure (for A380 aircraft)</u></p> <p>The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane C2 to face South until its nose wheel is at the "EOP 4A" position. The aircraft shall then be towed forward following the tow line until its nose wheel is at the "EOT 4B" position on Taxilane C6, behind aircraft stand F59. The aircraft may breakaway from there.</p>	<p>Standard pushback approved.</p> <p>Pushback approved, to pushback onto Taxilane C6.</p> <p>Pushback approved, to pushback onto Taxilane C6.</p>
F50	<p>The aircraft (on idle thrust) shall be pushed back following the pushback line until its nose wheel is at the "EOP 1" position. The aircraft shall then be towed forward following the tow line onto Taxilane C6 to face South until its nose wheel is at the "EOT 3" position. The aircraft may breakaway from there.</p>	<p>Standard pushback approved.</p>
F52	<p>The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane C6 to face South until its nose wheel is at the "EOP 2" position. The aircraft shall then be towed forward until its nose wheel is at the "EOT 3" position. The aircraft may breakaway from there.</p>	<p>Standard pushback approved.</p>
F52L	<p>The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane C6 to face South until its nose wheel is at the intersection of the aircraft stand pushback line and Taxilane C6 centreline. The aircraft may breakaway from there.</p>	<p>Standard pushback approved.</p>
F52R	<p>The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane C6 to face South until its nose wheel is at the intersection of the aircraft stand pushback line and Taxilane C6 centreline. The aircraft shall then be towed forward until its nose wheel is at the "EOT" position. The aircraft may breakaway from there.</p>	<p>Standard pushback approved.</p>
F54	<p>The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane C6 to face South until its nose wheel is at the intersection of Taxilane C2 and Taxilane C6 centreline. The aircraft may breakaway from there.</p>	<p>Standard pushback approved.</p>
F56	<p>The aircraft (on idle thrust) shall be pushed back onto Taxilane C6 to face South until its nose wheel is at the intersection of the aircraft stand lead-in line and Taxilane C6 centreline. The aircraft may breakaway from there.</p>	<p>Standard pushback approved.</p>
F56L, F56R	<p>The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane C6 to face South until its nose wheel is at the intersection of the aircraft stand pushback line and Taxilane C6 centreline. The aircraft may breakaway from there.</p>	<p>Standard pushback approved.</p>
F58	<p>The aircraft (on idle thrust) shall be pushed back onto Taxilane C6 to face North (or South) until its nose wheel is at the intersection of the aircraft stand lead-in line and Taxilane C6 centreline. The aircraft may breakaway from there.</p>	<p>Pushback approved, to face North (or South).</p>
F59	<p>The aircraft (on idle thrust) shall be pushed back onto Taxilane C6 to face North (or South) until its nose wheel is at the intersection of the aircraft stand lead-in line and Taxilane C6 centreline. The aircraft may breakaway from there.</p>	<p>Pushback approved, to face North (or South).</p>

APRON/ ACFT STANDS	PUSHBACK PROCEDURES	PHRASEOLOGY USED BY SINGAPORE GROUND
F59L, F59R	The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane C6 to face North (or South) until its nose wheel is at the intersection of the aircraft stand pushback line and Taxilane C6 centreline. The aircraft may breakaway from there.	Pushback approved, to face North (or South).
F60	The aircraft (on idle thrust) shall be pushed back onto Taxilane C6 to face North (or South) until its nose wheel is at the intersection of the aircraft stand lead-in line and Taxilane C6 centreline. The aircraft may breakaway from there.	Pushback approved, to face North (or South).
T4 APRON		
G1	The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane L5 to face South until the nose of the aircraft is behind the stopbar behind aircraft stand G6 on Taxilane L5. The aircraft may breakaway from there.	Pushback approved, to face South.
G2	The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane L5 to face North until its nose wheel is at the "EOP-G2" position. The aircraft may breakaway from there.	Pushback approved, to face North.
G3, G4	The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane L5 to face North until its nose wheel is at the intersection of the aircraft stand pushback line and Taxilane L5 centreline. The aircraft may breakaway from there.	Pushback approved, to face North.
G5, G6, G7, G8, G9, G10, G11, G12, G13	The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane L5 to face North or South until its nose wheel is at the intersection of the aircraft stand pushback line and Taxilane L5 centreline. The aircraft may breakaway from there.	Pushback approved, to face North or South.
G14, G15	<p>The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane L5 to</p> <ul style="list-style-type: none"> • face North until its nose wheel is at the intersection of the aircraft stand pushback line and Taxilane L5 centreline. The aircraft may breakaway from there. <p><u>OR</u></p> <ul style="list-style-type: none"> • face South until its nose wheel is at the intersection of the aircraft stand pushback line and Taxilane L5 centreline. The aircraft shall then be towed forward until its nose wheel is at the "EOT-G14, G15" position behind aircraft stand G14. The aircraft may breakaway from there. 	<p>Pushback approved, to face North.</p> <p>Pushback approved, to face South.</p>
G16, G17	The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane L5 to face North until the nose of the aircraft is behind the stopbar behind aircraft stand G15. The aircraft may breakaway from there.	Pushback approved, to face North.
G18, G18L, G18R, G19, G19L, G19R, G20, G20L, G20R	The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane L4 to face East until its nose wheel is at the intersection of the aircraft stand pushback line and Taxilane L4 centreline. The aircraft may breakaway from there.	Pushback approved, to face East.
G21	The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane L4 to face East until its nose wheel is at the "EOP G21" position. The aircraft shall then be towed forward until its nose wheel is at the "EOT G21, G21L, G21R" position on Taxilane L4 centreline. The aircraft may breakaway from there.	Pushback approved, to face East.

APRON/ ACFT STANDS	PUSHBACK PROCEDURES	PHRASEOLOGY USED BY SINGAPORE GROUND
G21L	The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane L4 to face East until its nose wheel is at the intersection of the aircraft stand pushback line and Taxilane L4 centreline. The aircraft shall then be towed forward until its nose wheel is at the "EOT G21, G21L, G21R" position. The aircraft may breakaway from there.	Pushback approved, to face East.
G21R	The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane L4 to face East until its nose wheel is at the "EOP G21R" position. The aircraft shall then be towed forward until its nose wheel is at the "EOT G21, G21L, G21R" position. The aircraft may breakaway from there.	Pushback approved, to face East.
<u>EAST REMOTE</u>		
200	<p>The aircraft (on idle thrust) shall be pushed back:</p> <ul style="list-style-type: none"> • onto Taxilane C6 to face North until its nose wheel is at the intersection of the aircraft stand lead-in line and Taxilane C6 centreline. The aircraft shall then be towed forward until its nose wheel is at the intersection of aircraft stand 201 lead-in line and Taxilane C6 centreline. The aircraft may breakaway from there. <p><u>OR</u></p> <ul style="list-style-type: none"> • onto Taxilane C6 to face South until its nose wheel is at the intersection of the aircraft stand lead-in line and Taxilane C6 centreline. The aircraft may breakaway from there. 	<p>Pushback approved, to face North.</p> <p>Pushback approved, to face South.</p>
200L	<p>The aircraft (on idle thrust) shall be pushed back:</p> <ul style="list-style-type: none"> • following the pushback line onto Taxilane C6 to face North until its nose wheel is at the intersection of the aircraft stand pushback line and Taxilane C6 centreline. The aircraft shall then be towed forward until its nose wheel is abeam aircraft stand 200. The aircraft may breakaway from there. <p><u>OR</u></p> <ul style="list-style-type: none"> • following the pushback line onto Taxilane C6 to face South until its nose wheel is at the intersection of the aircraft stand pushback line and Taxilane C6 centreline. The aircraft may breakaway from there. 	<p>Pushback approved, to face North.</p> <p>Pushback approved, to face South.</p>
200R	The aircraft (on idle thrust) shall be pushed back following the pushback line onto Taxilane C6 to face North (or South) until its nose wheel is at the intersection of the aircraft stand pushback line and Taxilane C6 centreline. The aircraft may breakaway from there.	Pushback approved, to face North (or South).
201	The aircraft (on idle thrust) shall be pushed back onto Taxilane C6 to face North (or South) until its nose wheel is at the intersection of the aircraft stand lead-in line and Taxilane C6 centreline. The aircraft may breakaway from there.	Pushback approved, to face North (or South).
202	<p>The aircraft (on idle thrust) shall be pushed back:</p> <ul style="list-style-type: none"> • onto Taxilane C6 to face North until its nose wheel is at the intersection of the aircraft stand lead-in line and Taxilane C6 centreline. The aircraft may breakaway from there. <p><u>OR</u></p> <ul style="list-style-type: none"> • onto Taxilane C6 to face South until its nose wheel is at the intersection of the aircraft stand lead-in line and Taxilane C6 centreline. The aircraft may breakaway from there. 	<p>Pushback approved, to face North.</p> <p>Pushback approved, to face South.</p>
202L, 202R	The aircraft (on idle thrust) shall be pushed back onto Taxilane C6 to face North (or South) until its nose wheel is at the intersection of the aircraft stand pushback line and Taxilane C6 centreline. The aircraft may breakaway from there.	Pushback approved, to face North (or South).

APRON/ ACFT STANDS	PUSHBACK PROCEDURES	PHRASEOLOGY USED BY SINGAPORE GROUND
203	<p>The aircraft (on idle thrust) shall be pushed back:</p> <ul style="list-style-type: none"> • onto Taxilane C6 to face North until the nose of the aircraft is behind the stopbar behind aircraft stand 203. The aircraft may breakaway from there. <p><u>OR</u></p> <ul style="list-style-type: none"> • onto Taxilane C6 to face South until its nose wheel is at the intersection of the aircraft stand lead-in line and Taxilane C6 centreline. The aircraft may breakaway from there. 	<p>Pushback approved, to face North.</p> <p>Pushback approved, to face South.</p>
<u>SOUTH-EAST REMOTE</u>		
205	<p>The aircraft (on idle thrust) shall be pushed back:</p> <ul style="list-style-type: none"> • onto TWY C7 to face North until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY C7 centreline. The aircraft shall then be towed forward until its nose wheel is at the intersection of aircraft stand 206 lead-in line and TWY C7 centreline. The aircraft may breakaway from there. <p><u>OR</u></p> <ul style="list-style-type: none"> • onto TWY C7 to face South until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY C7 centreline. The aircraft may breakaway from there. 	<p>Pushback approved, to face North.</p> <p>Pushback approved, to face South.</p>
206, 207, 208	The aircraft (on idle thrust) shall be pushed back onto TWY C7 to face North (or South) until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY C7 centreline. The aircraft may breakaway from there.	Pushback approved, to face North (or South).
209	<p>The aircraft (on idle thrust) shall be pushed back:</p> <ul style="list-style-type: none"> • onto TWY C7 to face North until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY C7 centreline. The aircraft may breakaway from there. <p><u>OR</u></p> <ul style="list-style-type: none"> • onto TWY C7 to face South until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY C7 centreline. The aircraft shall then be towed forward until its nose wheel is at the intersection of aircraft stand 208 lead-in line and TWY C7 centreline. The aircraft may breakaway from there. 	<p>Pushback approved, to face North.</p> <p>Pushback approved, to face South.</p>
<u>NORTH REMOTE</u>		
300	<p>The aircraft (on idle thrust) shall be pushed back:</p> <ul style="list-style-type: none"> • onto TWY NC2 to face East until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY NC2 centreline. The aircraft shall then be towed forward until its nose wheel is at the intersection of aircraft stand 301 lead-in line and TWY NC2 centreline. The aircraft may breakaway from there. <p><u>OR</u></p> <ul style="list-style-type: none"> • onto TWY NC2 to face West until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY NC2 centreline. The aircraft may breakaway from there. 	<p>Pushback approved, to face East.</p> <p>Pushback approved, to face West.</p>
301	The aircraft (on idle thrust) shall be pushed back onto TWY NC2 to face East (or West) until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY NC2 centreline. The aircraft may breakaway from there.	Pushback approved, to face East (or West).

APRON/ ACFT STANDS	PUSHBACK PROCEDURES	PHRASEOLOGY USED BY SINGAPORE GROUND
302	<p>The aircraft (on idle thrust) shall be pushed back:</p> <ul style="list-style-type: none"> • onto TWY NC2 to face East until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY NC2 centreline. The aircraft may breakaway from there. <p><u>OR</u></p> <ul style="list-style-type: none"> • onto TWY NC2 to face West until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY NC2 centreline. The aircraft shall then be towed forward until its nose wheel is at the intersection of aircraft stand 301 lead-in line and TWY NC2 centreline. The aircraft may breakaway from there. 	<p>Pushback approved, to face East.</p> <p>Pushback approved, to face West.</p>
303	<p>The aircraft (on idle thrust) shall be pushed back:</p> <ul style="list-style-type: none"> • onto TWY NC2 to face East until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY NC2 centreline. The aircraft shall then be towed forward until its nose wheel is at the intersection of aircraft stand 304 lead-in line and TWY NC2 centreline. The aircraft may breakaway from there. <p><u>OR</u></p> <ul style="list-style-type: none"> • onto TWY NC2 to face West until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY NC2 centreline. The aircraft may breakaway from there. 	<p>Pushback approved, to face East.</p> <p>Pushback approved, to face West.</p>
304, 305	<p>The aircraft (on idle thrust) shall be pushed back onto TWY NC2 to face East (or West) until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY NC2 centreline. The aircraft may breakaway from there.</p>	<p>Pushback approved, to face East (or West).</p>
306	<p>The aircraft (on idle thrust) shall be pushed back:</p> <ul style="list-style-type: none"> • onto TWY NC2 to face East until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY NC2 centreline. The aircraft may breakaway from there. <p><u>OR</u></p> <ul style="list-style-type: none"> • onto TWY NC2 to face West until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY NC2 centreline. The aircraft shall then be towed forward until its nose wheel is at the intersection of aircraft stand 305 lead-in line and TWY NC2 centreline. The aircraft may breakaway from there. 	<p>Pushback approved, to face East.</p> <p>Pushback approved, to face West.</p>
307, 308	<p>The aircraft (on idle thrust) shall be pushed back:</p> <ul style="list-style-type: none"> • onto TWY NC2 to face East until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY NC2 centreline. The aircraft shall then be towed forward until the nose of the aircraft is behind the stopbar behind aircraft stand 309. The aircraft may breakaway from there. <p><u>OR</u></p> <ul style="list-style-type: none"> • onto TWY NC2 to face West until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY NC2 centreline. The aircraft may breakaway from there. 	<p>Pushback approved, to face East.</p> <p>Pushback approved, to face West.</p>

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

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" 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" 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 intersection of the aircraft stand pushback line and Taxilane S4 centreline. 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.
WEST CARGO		
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"> • 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. <p><u>OR</u></p> <ul style="list-style-type: none"> • 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. 	<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"> • 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. <p><u>OR</u></p> <ul style="list-style-type: none"> • 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. 	<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"> • 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. <p><u>OR</u></p> <ul style="list-style-type: none"> • 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. 	<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"> • 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. <p><u>OR</u></p> <ul style="list-style-type: none"> • 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. 	<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 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.
<u>EAST CARGO</u>		
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	<p>The aircraft (on idle thrust) shall be pushed back to face North until its nose wheel is at the "EOP" position. The aircraft shall then be towed forward following Taxilane EC centreline onto Taxilane EA until its nose wheel is at the "EOT" position behind aircraft stand 602. The aircraft may breakaway from there. Engine start-up is not permitted during standard pushback.</p> <p><u>Alternate pushback procedure</u></p> <p>The aircraft (on idle thrust) shall be pushed back to face North until its nose wheel is at the "EOP" position. Engine start-up is permitted only on the port engine. The aircraft shall then be towed forward following Taxilane EC centreline onto Taxilane EA until its nose wheel is at the "EOT" position behind aircraft stand 602. The aircraft may breakaway from there. This alternate pushback procedure can only be exercised if the auxiliary power unit of the aircraft is unserviceable.</p>	<p>Standard pushback approved.</p> <p>Alternate pushback approved.</p>

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 50 seconds. Pilots shall not cross any lighted red stopbar lights.

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

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

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

IN APPROACH / TKOF AREAS			IN CIRCLING AREA AND AT AD		
RWY/Area affected		OBST type, ELEV, Markings/LGT	Coordinates	OBST type, ELEV, Markings/LGT	
1		2	3	2	
g)	RWY 02L APCH	Pole, HGT 128ft AMSL, marked and LGTD	011859N 1035748E	g)	Antenna, HGT 78ft AMSL, marked and LGTD
h)	RWY 02L APCH	Pole, HGT 160ft AMSL, marked and LGTD	012058N 1035814E	h)	Antenna, HGT 82ft AMSL, marked and LGTD
i)	RWY 02L APCH	Pole, HGT 131ft AMSL, marked and LGTD	012038N 1035848E	i)	Antenna, HGT 78ft AMSL, marked and LGTD
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	Associated MET Office	Singapore Changi (WSSS)
2	Hours of service	H24
3	Office responsible for TAF preparation Periods of validity	Singapore Changi (WSSS) 12, 30
4	Type of landing forecast, Interval of issuance	TREND
5	Briefing/consultation provided	P
6	Flight documentation, Language 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	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	ATS units provided with information	Singapore ACC, Singapore RCC
10	Additional information	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 Bituminous concrete	012056.26N 1035838.83E (10.29 M)	6.66 M 6.23 M
20R(Threshold displaced by 740m southwards)	203.02°	4000 M x 60 M	72/F/B/W/U Bituminous concrete	012233.95N 1035920.06E (10.29 M)	4.01 M 4.31 M
02C	023.03°	4000 M x 60 M	72/F/B/W/U Bituminous concrete	011943.51N 1035905.86E (10.28 M)	4.32 M 4.52 M
20C	203.03°	4000 M x 60 M	72/F/B/W/U Bituminous concrete	012143.37N 1035956.46E (10.28 M)	4.58 M 4.56 M

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

Remarks (continued from above)

Scheduled Closure of RWY 02L/20R

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

Scheduled Closure of RWY 02C/20C

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

WSSS AD 2.13 DECLARED DISTANCES

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

Note: Intersection departures are allowed subject to the following:

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

WSSS AD 2.14 APPROACH AND RUNWAY LIGHTING

<i>RWY</i>	<i>APCH LGT Type, LEN, Intensity</i>	<i>THR LGT colour WBAR</i>	<i>PAPI (MEHT)</i>	<i>TDZ LGT LEN</i>	<i>RWY Centreline LGT, LEN, spacing, colour, INTST</i>	<i>RWY Edge LGT, LEN, spacing, colour, INTST</i>	<i>RWY End LGT colour</i>	<i>SWY LGT colour</i>
1	2	3	4	5	6	7	8	9
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
20R	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
02C	CAT I High Intensity reduced approach lighting (810m) consisting of centreline barrettes showing variable White, 1 crossbar, 2 approach beacons and sequenced flashing lights.	Green supplemented by Green wing-bar and 2 THR ident lights.	PAPI 003° located either side of RWY, 418m from THR. 2 White LGT and 2 Red LGT (19.8m), 3 White LGT and 1 Red LGT (23.7m), 4 White LGT (26.2m). ACFT with eye-to-wheel height greater than 8m are advised to fly with 2 White and 2 Red LGT visible so as to achieve sufficient wheel clearance.	NIL	Inset High Intensity centreline lights as follow: From THR to 900m from RWY end: White, 300m to 900m from RWY end: ALTN Red/ White, 300m to RWY end: Red.	Bi-directional raised White/Amber edge lights.	Red	Elevated Red

<i>RWY</i>	<i>APCH LGT Type, LEN, Intensity</i>	<i>THR LGT colour WBAR</i>	<i>PAPI (MEHT)</i>	<i>TDZ LGT LEN</i>	<i>RWY Centreline LGT, LEN, spacing, colour, INTST</i>	<i>RWY Edge LGT, LEN, spacing, colour, INTST</i>	<i>RWY End LGT colour</i>	<i>SWY LGT colour</i>
1	2	3	4	5	6	7	8	9
20C	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>	CHANGI CTR 013300N 1040149E 013042N 1040654E 012542N 1040448E thence along Kuala Lumpur/Singapore FIR BDRY to 012000N 1041218E 010018N 1035524E 011100N 1035134E 013300N 1040149E
2	<i>Vertical Limits</i>	SFC to 3,000ft ALT
3	<i>Airspace Classification</i>	C
4	<i>ATS Unit Callsign Language(s)</i>	Singapore Tower English
5	<i>Transition Altitude</i>	11000 FT (3,350m)
6	<i>Remarks</i>	A helicopter shall not be operated within the Changi CTR unless prior permission has been obtained from the Director-General of Civil Aviation, CAAS. Email to caas_ats_ansp@caas.gov.sg

WSSS AD 2.18 ATS COMMUNICATION FACILITIES

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

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

WSSS AD 2.19 RADIO NAVIGATION AND LANDING AIDS

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

<i>Type of aid and Variation</i>	<i>Ident</i>	<i>Frequency</i>	<i>OPR Hr</i>	<i>Position of Transmitting Antenna Coordinates</i>	<i>DME Transmitting Antenna Elevation / Remarks</i>
1	2	3	4	5	6 & 7
RWY 02C ILS LLZ	ICE	108.3MHz	H24	012154.41N 1040001.08E	Located 368m (1207ft) from THR RWY 20C, along RWY centreline. Course width 3.38°. EM: A0/A2. Maintenance Period: May - October Second Friday of every month between 0200-0900 November - April Second Saturday of every month between 0200-0900
RWY 02C ILS GP	-	334.1MHz	H24	011952.11N 1035913.68E	Located 338m (1109ft) from THR RWY 02C on left side of RWY, 120m (394ft) from RWY centreline. GP angle 3°. HGT of ILS reference datum: 18m (58ft) EM: A0/A2
RWY 02C ILS DME	ICE	CH20X	H24	011952.11N 1035913.68E	DME co-located with GP. EM: P9
RWY 02C ILS MM	-	75MHz	H24	011915.04N 1035853.83E	Located 945m (3100ft) from THR RWY 02C along extended centreline of RWY. No back beam.
RWY 20R ILS LLZ	ICH	108.9MHz	H24	012045.23N 1035834.17E	Located 368m (1207ft) from THR RWY 02L, along centreline of the RWY. Course width 3.38°. EM: A0/A2. Maintenance Period: May - October First Saturday of every month between 0200-0900 November - April First Friday of every month between 0200-0900
RWY 20R ILS GP	-	329.3MHz	H24	012225.54N 1035912.29E	Located 330m (1083ft) from displaced THR RWY 20R on right side of the RWY, 120m (394ft) from RWY centreline. GP angle 3°. HGT of ILS REF datum: 17m (56ft) EM: A0/A2
RWY 20R ILS DME	ICH	CH26X	H24	012225.54N 1035912.29E	DME co-located with GP. Rwy 20R ILS DME not available beyond 15 degrees west of RWY 20R centreline below 2500ft. EM: P9
RWY 20R ILS MM	-	75MHz	H24	012307.50N 1035934.23E	Located 1122m (3681ft) from displaced THR RWY 20R, along centreline of the RWY.
RWY 02L ILS LLZ	ICW	110.9MHz	H24	012307.03N 1035934.03E	Located 1105m (3625ft) from displaced THR RWY 20R, along centreline of RWY. Course width 2.81°. EM:A0/A2 Maintenance Period: May - October First Friday of every month between 0200-0900 November - April First Saturday of every month between 0200-0900
RWY 02L ILS GP	-	330.8MHz	H24	012108.34N 1035838.94E	Located 343m (1125ft) from THR RWY 02L on left side of RWY, 143m (469ft) from RWY centreline. GP angle 3°. HGT of ILS Reference datum: 18m (58ft) EM:A0/A2
RWY 02L ILS DME	ICW	CH46X	H24	012108.34N 1035838.94E	DME co-located with GP EM:P9
RWY 02L ILS MM	-	75MHz	H24	012027.53N 1035826.70E	Located 957m (3140ft) from THR RWY 02L along extended centreline of RWY. No back beam.

WSSS AD 2.20 LOCAL TRAFFIC REGULATIONS

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

Please refer to 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

Aeronautical Service	PAYA LEBAR Airport	SINGAPORE CHANGI Airport	Significant Differences and Remarks
Approach Lights	RWY 02 Modified Calvert High INTST with centreline and 3 crossbars. High INTST white LGT with brilliancy control and sequenced flashing lights.	RWY 02L Precision APCH LGT CAT II. Extended centreline with red side row barettes, 2 crossbars, 2 APCH beacons and sequenced flashing lights.	
	RWY 20 Modified Calvert High INTST with centreline and 3 crossbars. High INTST white LGT with brilliancy control and sequenced flashing lights.	RWY 20R Precision APCH LGT CAT I. Centreline barettes flashing white, 2 APCH beacons and sequenced flashing lights. (refer to chart AD-2-WSSS-ADC-2)	
ILS	RWY 20 - NIL	RWY 20R IDENT ICH No back beam LLZ 108.9 MHz GP 329.3 MHz	
	RWY 02 - NIL	RWY 02L IDENT ICW No back beam LLZ 110.9 MHz GP 330.8 MHz	
IBN	Flashing R 'PL' HN and IMC	Flashing G 'CH' HN and IMC	
ABN	NIL	ALTN Flashing W G every 2.3 SEC	

WSSS AD 2.21 NOISE ABATEMENT PROCEDURES

- 1.1 To alleviate the problem of noise, all aircraft on AWY G579 between SINJON (SJ) and JAYBEE (JB) shall operate at/above 5,000ft.
- 1.2 The Standard Instrument Departure routes for aircraft departing on RWY 20R/20C are for the purpose of noise abatement in addition to being used for air traffic control.
- 1.3 Departures on RWY 20R are restricted between 1600-2200UTC. This restriction is not applicable when RWY 20C/02C is unavailable because of maintenance works or for other reasons.
- 1.4 Unless it is necessary for operational or safety reasons, when using engine reverse, arrivals on RWY 02L/20R between 1600-2200UTC may not exceed idle reverse thrust.

WSSS AD 2.22 FLIGHT AND GROUND PROCEDURES

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

1.1 Introduction

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

1.2 Authorisation for Category II ILS Approaches

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

1.3 Category II ILS Runways

- 1.3.1 At Singapore Changi Airport, Category II ILS approaches are available only on RWY 02L and RWY 20C, which are also equipped with precision approach Category II lighting system. When required, pilots making Category II ILS approaches to Singapore Changi Airport should refer to the procedures in the Instrument Approach Charts

AD-2-WSSS-IAC-1 to AD-2-WSSS-IAC-11 and the Precision Approach Terrain Charts for RWY 02L and RWY 20C at AD-2-WSSS-PATC-1 and AD-2-WSSS-PATC-2 respectively.

1.4 Initiation of Category II ILS Operations

- 1.4.1 Preparations will be made to implement LVP for Category II ILS operations at Singapore Changi Airport during prolonged period of low visibility, except during thunderstorms, when the RVR drops below 800 metres.
- 1.4.2 Availability of the Category II ILS approaches will be made known through NOTAM and ATIS broadcasts as well as air traffic control radio communications.
- 1.4.3 During LVP operations, aircraft will not be cleared for Category II ILS approach if any of the ILS or approach/runway lights fall below Category II requirements. Aircraft will not be cleared for landing if the Touchdown Zone RVR is unserviceable.

1.5 ILS Sensitive Areas

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

1.6 Termination of LVP for Category II ILS Operations

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

1.7 Operations of flights Not Authorised for Category II ILS Operations

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

2 RUNWAY UTILISATION

2.1 Runway-in-use

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

2.2 Departures

- 2.2.1 Pilots should arrange their taxi such that they are ready to depart without delay on reaching the runway holding point. As standard ICAO wake turbulence separation is being applied, pilots are to advise ATC early if more time is needed for the aircraft to be ready for departure. When informed, ATC will be able to make changes in the departure sequence, if necessary, to minimise delays to other succeeding departures.
- 2.2.2 Pilots should complete cockpit checks prior to line-up for departure and keep any checks on the runway to a minimum.
- 2.2.3 Conditional line-up clearance may be used by ATC to facilitate an expeditious flow of traffic. On receipt of line-up clearance, pilots should taxi into position promptly without delay. Unless given instructions to line-up and wait, pilots should be ready and prepared to depart without stopping. On receipt of take-off clearance, pilots to commence take-off roll without delay.

2.3 Clearance for Immediate Take-Off

- 2.3.1 A pilot receiving the ATC instruction 'cleared for immediate take-off' is required to act as follows:
- if waiting clear of the runway, taxi immediately on to it and begin take-off run immediately without stopping the aircraft;
 - if already lined-up on the runway, take-off without delay;
 - if unable to comply with the instruction, inform ATC immediately.

2.4 Arrivals - Minimum Runway Occupancy Time (ROT)

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

- 2.4.2 To achieve minimum ROT and reduce missed approaches due to occupied runway, pilots should vacate the runway via the first available exit taxiway corresponding to operational requirements, or as instructed by ATC. If an exit taxiway other than the first available exit taxiway is required, pilots shall advise the Tower Controller on first contact.
- 2.4.3 To enhance planning, pilots can make reference to the Landing Exit Distance (LED), the distance from threshold to the furthest edge of the exit taxiway:

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

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

2.5 Land after Procedures

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

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

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

2.6 Special Landing Procedures

- 2.6.1 Special landing procedures may be in force at Singapore Changi Airport in conditions shown as follows:
- When the runway-in-use is temporarily occupied by other traffic, landing clearance may be issued to an arriving aircraft provided that at the time the aircraft crosses the threshold of the runway-in-use the following separation distances will exist:
 - Landing following landing - The preceding landing aircraft will be clear of the runway-in-use or will be at least 2,500m from the threshold of the runway-in-use.
 - Landing following departure - The departing aircraft will be airborne and at least 2,500m from the threshold of the runway-in-use, or if not airborne, will be at least 2,500m from the threshold of the runway-in-use.
- 2.6.2 These procedures will be used only under the following conditions:
- during daylight hours;
 - visibility of at least 5km;
 - cloud ceiling of 1,500ft in the departure/missed approach area;
 - ATC is satisfied that the pilot of the next arriving aircraft will be able to observe continuously the relevant traffic;
 - no unfavourable surface wind conditions (including significant tailwind, windshear, turbulence, etc);
 - when the runway is dry and free of all precipitants such that there is no evidence that the braking action may be adversely affected.

2.7 Phraseology

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

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

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

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

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

3.3 Definition of commonly used terms in A-CDM

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

4 A-CDM PRE-DEPARTURE PROCEDURES

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

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

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

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

4.5 TOBT shall be updated through the following systems:

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

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

4.7 TOBT information is available through the following channels:

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

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

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

4.10 TSAT information is available through the following channels:

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

5 A-CDM START-UP PROCEDURES

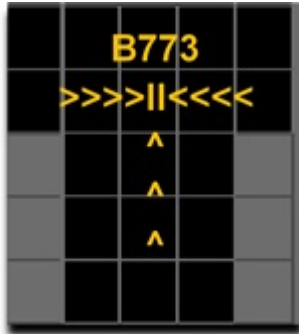





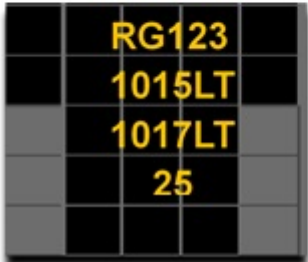
- 5.1 Pilot shall ensure aircraft is ready for pushback at TOBT.
- 5.2 Pilot to maintain communication with the AO / GHA as they are responsible for updating the TOBT. Notify the AO / GHA to update the TOBT if it is expected to differ by 5 minutes or more.
- 5.3 Pilot to contact Ground Movement Planner (Clearance Delivery) and request for ATC clearance within 5 minutes of TOBT using the following phraseology:
- Callsign
 - Destination
 - Proposed flight level and alternate level, if any
 - Parking position
- a. Pilot shall only request for ATC clearance provided aircraft is ready to pushback at TOBT. Any updates to TOBT after receipt of ATC clearance will result in cancellation of clearance issued as the ATC clearance validity is based on the initial TOBT.
- 5.4 ATC will advise the pilot whether the proposed flight level or other alternate flight level is available and an ATC clearance will be issued accordingly. If pre-departure coordination with an adjacent unit or centre is required, the pilot will be instructed to standby.
- 5.5 ATC will update TSAT changes if any, during issuance of ATC clearances. Note that TSAT displayed on ADGS may not be final and can be revised due to en-route clearance restrictions, ground congestion or flow measures.
- 5.6 Pilot shall request for pushback from Ground Movement Control within 5 minutes of TSAT after obtaining ATC clearance, or as directed by ATC.
- a. ATC may swap pushback sequence based on real-time readiness of aircrafts to maximise apron and runway capacity and reduce the overall delay to traffic as and when required.
 - b. At the end of pushback, the departing aircraft must have all engines started and be ready to taxi immediately, unless otherwise instructed by ATC.



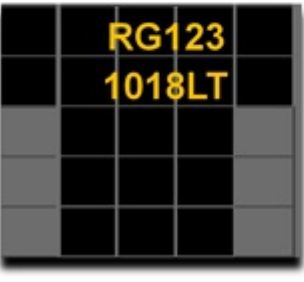
Note: The first aircraft to taxi may not necessarily be the first aircraft to take-off as distances between aircraft stands and the departure runway vary.

- 5.7 A flight issued with gate hold (TSAT > TOBT) but chooses to commence pushback before the assigned time will be allowed to do so subject to traffic. However, the flight should not expect an earlier departure time as the planned pre-departure sequence will be maintained.
- 5.8 If a flight is unable to pushback by TSAT + 5 minutes due to the aircraft being unready, ATC clearance and TSAT will be cancelled. Pilot must notify the AO / GHA to update the TOBT for a new TSAT before requesting for a new ATC clearance. This also applies to aircraft returning back to blocks after pushback.
- a. ATC will inform the aircraft when a clearance is cancelled using the phraseology; "(Callsign of aircraft) your ATC clearance and TSAT is cancelled (reason). Update TOBT before requesting for new clearance".
 - b. Flight may also have its ATC clearance cancelled if it develops a technical problem after pushback and is unable to taxi for prolonged duration.
- 5.9 Non-compliance of initial TSAT may result in an aircraft losing its existing position in the pre-departure sequence. Delay can be expected as a result of re-sequencing based on new TOBT input.
- 5.10 If delay in pushback is due to ground traffic movement or ATC clearance restrictions, the ATC clearance and TSAT will remain valid even if it exceeds TSAT + 5 minutes. TOBT need not be updated for such situations.
- 5.11 In the event that A-CDM mode of operations need to be cancelled due to any reason, the termination will be communicated to relevant parties through email by the airport operator and a NOTAM will be issued by ATC. Pilot shall follow the non-CDM procedures detailed in para 12.

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

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

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

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

7 CONTACT AND INFORMATION

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

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

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

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

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

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

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

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

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

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

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

11 DELAY DUE TO OVERFLIGHTS

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

12 NON-CDM MODE OF OPERATIONS

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

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

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

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

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

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

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

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

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

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

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

14 GROUND MOVEMENT PLANNER ON VHF 121.65MHz

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

15 GROUND MOVEMENT CONTROL ON VHF 124.3MHz, 121.85MHz AND 121.725MHz

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

16 TAXIING

- 16.1 Taxi clearance given by Singapore Ground Movement Control will relate to movement on the manoeuvring area, but excluding the marshalling area.
- 16.2 Aircraft taxiing on the manoeuvring area will be regulated by ATC to avoid or reduce possible conflict and will be provided with traffic information and alerting service. ATC shall apply taxiing clearance limits whenever necessary.
- 16.3 The taxiway routes to be used by aircraft after landing or when taxiing for departure will be specified by ATC. The issuance by ATC of a taxi route to an aircraft does not relieve the pilot-in-command of the responsibility to maintain separation with other aircraft on the manoeuvring area or to comply with ATC directions intended to regulate aircraft on the manoeuvring area.
- 16.4 Pilots are reminded to always use minimum power when starting engines, when manoeuvring within the apron area or when manoeuvring from apron taxiways to other parts of the aerodrome. It is especially critical when commencing to taxi that break-away thrusts are kept to an absolute minimum and then be reduced to idle thrusts as soon as possible.

17 TAKE-OFF AND LANDING

- 17.1 Departing aircraft will normally be directed by ATC to use the full length of the runway for take-off. On obtaining an ATC clearance the aircraft shall enter the runway via designated taxiways:
- RWY 02C - TWY E10 or E11
- RWY 02L - TWY W8, W9 or W10
- RWY 20C - TWY E1, E2
- RWY 20R - TWY W1, W2
- 17.2 The pilot-in-command shall not take-off or land without a clearance from Aerodrome Control.
- 17.3 The pilot-in-command shall not run-up on the runway in use unless authorised by Aerodrome Control. Engine run-ups in the holding pan or taxiway holding point clear of the runway in use may be carried out subject to approval by Aerodrome Control.
- 17.4 After landing, the pilot-in-command shall vacate the runway by the shortest suitable route and to contact Singapore Ground Movement Control who will issue specific taxi route instructions to its assigned aircraft stand.
- 17.5 Aircraft with radio communication failure shall vacate the runway and stop on the taxiway and watch for light signals from Aerodrome Control.

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

18.1 INTRODUCTION

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

18.2 ARRIVALS

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

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

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

18.3 DEPARTURES

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

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

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

18.4 VERTICAL AND SPEED RESTRICTIONS

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

18.5 OPERATORS' PROCEDURES

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

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

19 COORDINATES OF SID/STAR WAYPOINTS (WGS84 DATUM)

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

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

20 SID / STAR PHRASEOLOGIES

- 20.1 SID / STAR phraseologies allow ATC and pilot to communicate and understand detailed clearance information that would otherwise require long and potentially complex transmissions. To eliminate safety risk due to a mismatch between ATC and pilot expectations when SID / STAR phraseologies are used, and what certain terms may mean, ICAO has published Amendment 7-A to Doc 4444, PANS- ATM to harmonise the core phraseologies that positively reinforce the lateral, vertical and speed requirements embedded in a SID or STAR that will continue to apply, unless explicitly cancelled or amended by the controller.
- 20.2 The core phraseologies are:
- i. CLIMB VIA SID TO (level)
 - ii. DESCEND VIA STAR TO (level)
- 20.3 These require the aircraft to:
- i. Climb / descend to the cleared level in accordance with published level restrictions;
 - ii. Follow the lateral profile of the procedure; and
 - iii. Comply with published speed restrictions or ATC-issued speed control instructions as applicable.
- 20.4 Phraseologies for removal of speed or level restrictions are:
- i. CLIMB VIA SID TO (level), CANCEL SPEED RESTRICTION(S)
 - ii. DESCEND VIA STAR TO (level), CANCEL LEVEL RESTRICTION(S) AT (point(s))
- 20.5 These phraseologies mean that:
- i. The lateral profile of the procedure continue to apply and
 - ii. Speed or level restrictions which have not been referred to will continue to apply.
- 20.6 Phraseologies for variations to the lateral profile of the SID / STAR are:
- i. PROCEED DIRECT (waypoint), or
 - ii. VECTORING
- 20.7 These phraseologies mean that speed and level restrictions associated with the bypassed waypoints are cancelled.
- 20.8 Phraseology to clear aircraft to return to SID / STAR is: REJOIN SID / STAR
- 20.9 This phraseology means that speed and level restrictions associated with the waypoint where the rejoin occurs, as well as those associated with all subsequent waypoints must be complied with.
- 20.10 The term 'VIA' will no longer be used when issuing lateral routing clearances.

21 ARRIVING AIRCRAFT

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

22 LIGHT AIRCRAFT OPERATIONS

- 22.1 Light aircraft operations into and out of Singapore Changi Airport may be approved subject to the following conditions:
- a. Prior permission has been granted;
 - b. Aircraft is suitably equipped;
 - c. Pilot is appropriately rated;
 - d. Subject to ATC.
- 22.2 Flight notification shall be given by filing a flight plan.
- 22.3 All such operations will be regulated in accordance with IFR procedures.

23 SIMULTANEOUS INDEPENDENT PARALLEL APPROACHES

23.1 *Introduction*

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

23.2 *Procedures for simultaneous independent parallel approaches*

23.2.1 To ensure safe operations between aircraft on parallel approaches, Normal Operating Zones (NOZs) are established for each extended runway centreline and a No Transgression Zone (NTZ) is established between the NOZs.

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

23.2.3 Within the NOZ, ATC shall provide a minimum vertical separation of 1,000ft or 3NM surveillance separation between pairs of aircraft until both aircraft are established on the ILS Localizer course.

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

23.2.5 Aircraft can expect to maintain altitude 3,500ft till Glide Path Interception for Runway 20R / 02L and 2,500ft till Glide Path Interception for Runway 20C / 02C. This is to ensure the necessary vertical separation prior to establishing on the respective ILS Localizer course.

23.2.6 Aircraft can expect the following radiotelephony phraseology when intercepting the ILS:

- a. to intercept the Localizer before clearing for ILS

“TURN LEFT (RIGHT) HEADING (three digits) MAINTAIN (altitude) REPORT ESTABLISHED ON THE LOCALIZER RUNWAY (number) LEFT (CENTRE / RIGHT)”

followed by ...

“MAINTAIN (altitude), CLEARED FOR ILS APPROACH RUNWAY (number) LEFT (CENTRE/RIGHT)”

or

- b. to intercept ILS

“TURN LEFT (RIGHT) HEADING (three digits) MAINTAIN (altitude) CLEARED FOR ILS APPROACH RUNWAY (number) LEFT (CENTRE / RIGHT)”

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

23.3 *Break-out manoeuvre*

23.3.1 When an aircraft is observed to have not established on the appropriate Localizer course or deviated from its course towards the NTZ, ATC will instruct the aircraft to return immediately to the correct Localizer course with the following radiotelephony phraseology:

“YOU HAVE CROSSED THE LOCALIZER, TURN LEFT (or RIGHT) IMMEDIATELY AND RETURN TO THE LOCALIZER”

or

“TURN LEFT (or RIGHT) TO RETURN TO LOCALIZER COURSE”

23.3.2 When ATC observed aircraft to be penetrating or will penetrate the NTZ, ATC will instruct the aircraft on the adjacent Localizer course to alter course to avoid the deviating aircraft with the following radiotelephony phraseology:

“TRAFFIC ALERT, TURN LEFT (or RIGHT) IMMEDIATELY HEADING (degrees), CLIMB AND MAINTAIN (altitude)”

23.4 *Pilot notification and conditions for operations*

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

23.4.2 Simultaneous approaches to the parallel runways will be suspended in the event of adverse weather or any other conditions that may affect the safe conduct of such approaches to the parallel runways.

WSSS AD 2.23 ADDITIONAL INFORMATION

1 BIRD CONCENTRATION IN THE VICINITY OF THE AIRPORT

- 1.1 A number of varieties of birds are found in Singapore throughout the year. The larger birds commonly found in Singapore Changi Airport include the following:
- cattle egrets (weighing approximately 300g each)
 - grey herons (weighing approximately 500g each)
 - 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	AD-2-WSSS-ADC-1
Aerodrome Chart - ICAO	AD-2-WSSS-ADC-2
Aerodrome Advisory Chart - ICAO	AD-2-WSSS-ADC-3
Aerodrome Obstacle Chart - ICAO - TYPE A - RWY 02L/20R	AD-2-WSSS-AOC-1
Aerodrome Obstacle Chart - ICAO - TYPE A - RWY 02C/20C	AD-2-WSSS-AOC-2
Aerodrome Obstacle Chart - ICAO - TYPE B	AD-2-WSSS-AOC-3
Precision Approach Terrain Chart - ICAO - RWY 02L	AD-2-WSSS-PATC-1
Precision Approach Terrain Chart - ICAO - RWY 20C	AD-2-WSSS-PATC-2
RNAV_(GNSS) SIDs and STARs - Introduction	
RNAV _(GNSS) SID - RWY 02L/20R - ANITO 6E/ANITO 6F	AD-2-WSSS-SID-1 to 1.1
RNAV _(GNSS) SID - RWY 02C/20C - ANITO 6A / ANITO 6B	AD-2-WSSS-SID-2 to 2.1
RNAV _(GNSS) SID - RWY 02L/20R - ADMIM 1E / ADMIM 2F	AD-2-WSSS-SID-3 to 3.1
RNAV _(GNSS) SID - RWY 02C/20C - ADMIM 1A / ADMIM 2B	AD-2-WSSS-SID-4 to 4.1
RNAV _(GNSS) SID - RWY 02L/20R - TOMAN 2E / TOMAN 3F	AD-2-WSSS-SID-5 to 5.1
RNAV _(GNSS) SID - RWY 02C/20C - TOMAN 2A / TOMAN 3B	AD-2-WSSS-SID-6 to 6.1
RNAV _(GNSS) SID - RWY 02L/20R - BAVUS 1E / BAVUS 2F	AD-2-WSSS-SID-7 to 7.1
RNAV _(GNSS) SID - RWY 02C/20C - BAVUS 1A / BAVUS 2B	AD-2-WSSS-SID-8 to 8.1
RNAV _(GNSS) SID - RWY 02L/20R - AROSO 2E / AROSO 3F	AD-2-WSSS-SID-9 to 9.1
RNAV _(GNSS) SID - RWY 02L/20R - MASBO 2E / MASBO 3F	AD-2-WSSS-SID-10 to 10.1
RNAV _(GNSS) SID - RWY 02C/20C - AROSO 2A / AROSO 3B	AD-2-WSSS-SID-11 to 11.1
RNAV _(GNSS) SID - RWY 02C/20C - MASBO 2A / MASBO 3B	AD-2-WSSS-SID-12 to 12.1
RNAV _(GNSS) SID - RWY 02L/20R - MERSING 5E / MERSING 7F	AD-2-WSSS-SID-13 to 13.1
RNAV _(GNSS) SID - RWY 02C/20C - MERSING 5A / MERSING 7B	AD-2-WSSS-SID-14 to 14.1
RNAV _(GNSS) SID - RWY 02C/20C - VENIX 1A / VENIX 2B	AD-2-WSSS-SID-15 to 15.1
RNAV _(GNSS) SID - RWY 02L/20R - VENIX 1E / VENIX 2F	AD-2-WSSS-SID-16 to 16.1
RNAV _(GNSS) SID - RWY 02C/20C - KADAR 1A / KADAR 2B	AD-2-WSSS-SID-17 to 17.1
RNAV _(GNSS) SID - RWY 02L/20R - KADAR 1E / KADAR 2F	AD-2-WSSS-SID-18 to 18.1
RNAV _(GNSS) STAR - RWY 02L/02C - ARAMA 1A	AD-2-WSSS-STAR-1 to 1.1
RNAV _(GNSS) STAR - RWY 02L/02C - ASUNA 1A	AD-2-WSSS-STAR-2 to 2.1
RNAV _(GNSS) STAR - RWY 20R/20C - ARAMA 1B	AD-2-WSSS-STAR-3 to 3.1
RNAV _(GNSS) STAR - RWY 20R/20C - ASUNA 1B	AD-2-WSSS-STAR-4 to 4.1
RNAV _(GNSS) STAR - RWY 02L/02C - KARTO 1A	AD-2-WSSS-STAR-5 to 5.1
RNAV _(GNSS) STAR - RWY 02L/02C - OBDOS 1A	AD-2-WSSS-STAR-6 to 6.1
RNAV _(GNSS) STAR - RWY 20R/20C - KARTO 1B	AD-2-WSSS-STAR-7 to 7.1
RNAV _(GNSS) STAR - RWY 20R/20C - OBDOS 1B	AD-2-WSSS-STAR-8 to 8.1
RNAV _(GNSS) STAR - RWY 20R/20C - LELIB 3B	AD-2-WSSS-STAR-9 to 9.1
RNAV _(GNSS) STAR - RWY 02L/02C - MABAL 2A	AD-2-WSSS-STAR-11 to 11.1
RNAV _(GNSS) STAR - RWY 20R/20C - MABAL 2B	AD-2-WSSS-STAR-13 to 13.1
RNAV _(GNSS) STAR - RWY 02L - LEBAR 2A	AD-2-WSSS-STAR-14 to 14.1
RNAV _(GNSS) STAR - RWY 20R - LEBAR 2B	AD-2-WSSS-STAR-15 to 15.1
RNAV _(GNSS) STAR - RWY 02L/02C - REPOV 1A	AD-2-WSSS-STAR-16 to 16.1
RNAV _(GNSS) STAR - RWY 02L/02C - SURGA 1A	AD-2-WSSS-STAR-17 to 17.1
RNAV _(GNSS) STAR - RWY 20R/20C - REPOV 1B	AD-2-WSSS-STAR-18 to 18.1
RNAV _(GNSS) STAR - RWY 20R/20C - SURGA 1B	AD-2-WSSS-STAR-19 to 19.1
RNAV _(GNSS) STAR - RWY 02L/02C - ELALO 1A	AD-2-WSSS-STAR-20 to 20.1
RNAV _(GNSS) STAR - RWY 20R/20C - ELALO 1B	AD-2-WSSS-STAR-21 to 21.1
Instrument Approach Chart - ICAO - RWY 02L - ICW ILS/DME	AD-2-WSSS-IAC-1
Instrument Approach Chart - ICAO - RWY 02C - ICE ILS/DME	AD-2-WSSS-IAC-2
Instrument Approach Chart - ICAO - RWY 20R - ICH ILS/DME	AD-2-WSSS-IAC-5
Instrument Approach Chart - ICAO - RWY 20C - ICC ILS/DME	AD-2-WSSS-IAC-6
Instrument Approach Chart - ICAO - RWY 20C - VTK DVOR/DME	AD-2-WSSS-IAC-7
Instrument Approach Chart - ICAO - RWY 02L - RNAV _(GNSS)	AD-2-WSSS-IAC-9
Instrument Approach Chart - ICAO - RWY 02C - RNAV _(GNSS)	AD-2-WSSS-IAC-10
Instrument Approach Chart - ICAO - RWY 20R - RNAV _(GNSS)	AD-2-WSSS-IAC-11
Instrument Approach Chart - ICAO - RWY 20C - RNAV _(GNSS)	AD-2-WSSS-IAC-12
Visual Approach Chart - ICAO	AD-2-WSSS-VAC-1

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AERODROME CHART - ICAO

01° 21' 33"N
103° 59' 22"E

AERODROME ELEVATION 6.66m

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

SINGAPORE/SINGAPORE CHANGI

PAPI 3° (MEHT)*

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

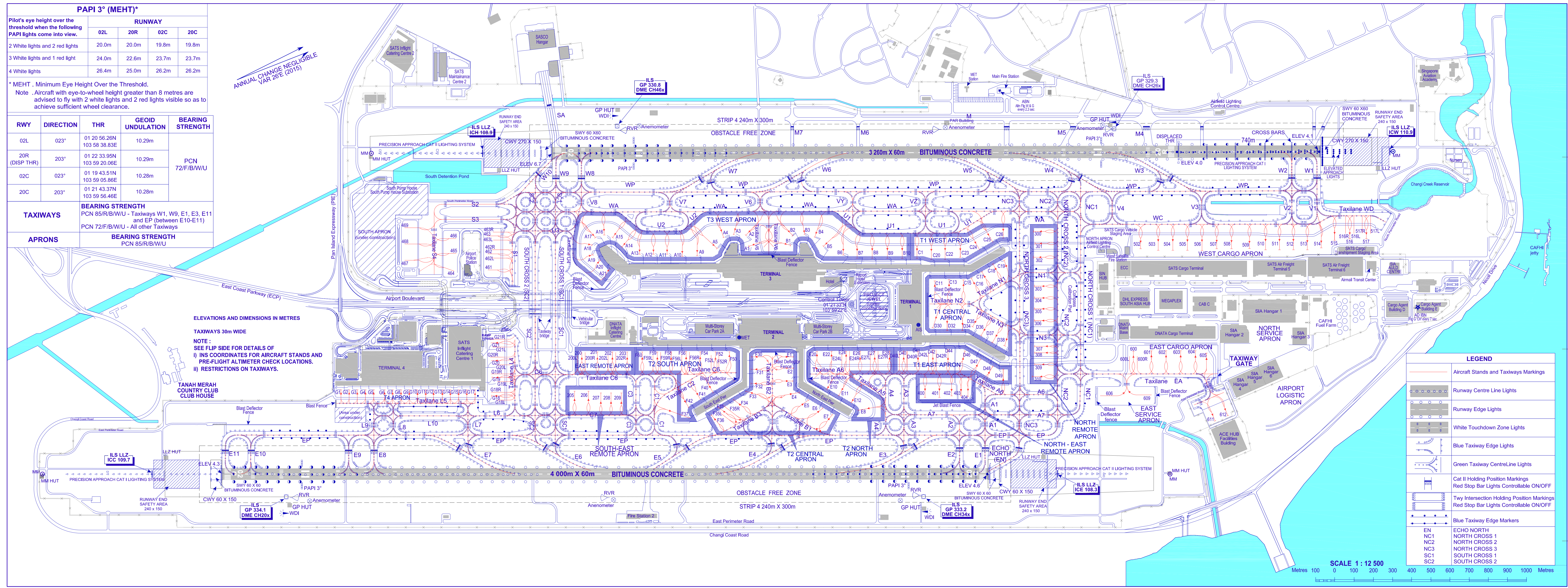
* MEHT - Minimum Eye Height Over the Threshold.
Note: Aircraft with eye-to-wheel height greater than 8 metres are advised to fly with 2 white lights and 2 red lights visible so as to achieve sufficient wheel clearance.

RWY	DIRECTION	THR	GEOID UNDULATION	BEARING STRENGTH
02L	023°	01 20 56.28N 103 58 38.83E	10.29m	PCN 72/F/B/W/U
20R (DISP THR)	203°	01 22 33.95N 103 59 20.06E	10.29m	
02C	023°	01 19 43.51N 103 59 05.86E	10.28m	
20C	203°	01 21 43.37N 103 59 56.46E	10.28m	

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

APRONS BEARING STRENGTH
PCN 85/R/B/W/U

ANNUAL CHANGE NEGLIGIBLE
VAR 26E (2015)



ELEVATIONS AND DIMENSIONS IN METRES

TAXIWAYS 30m WIDE

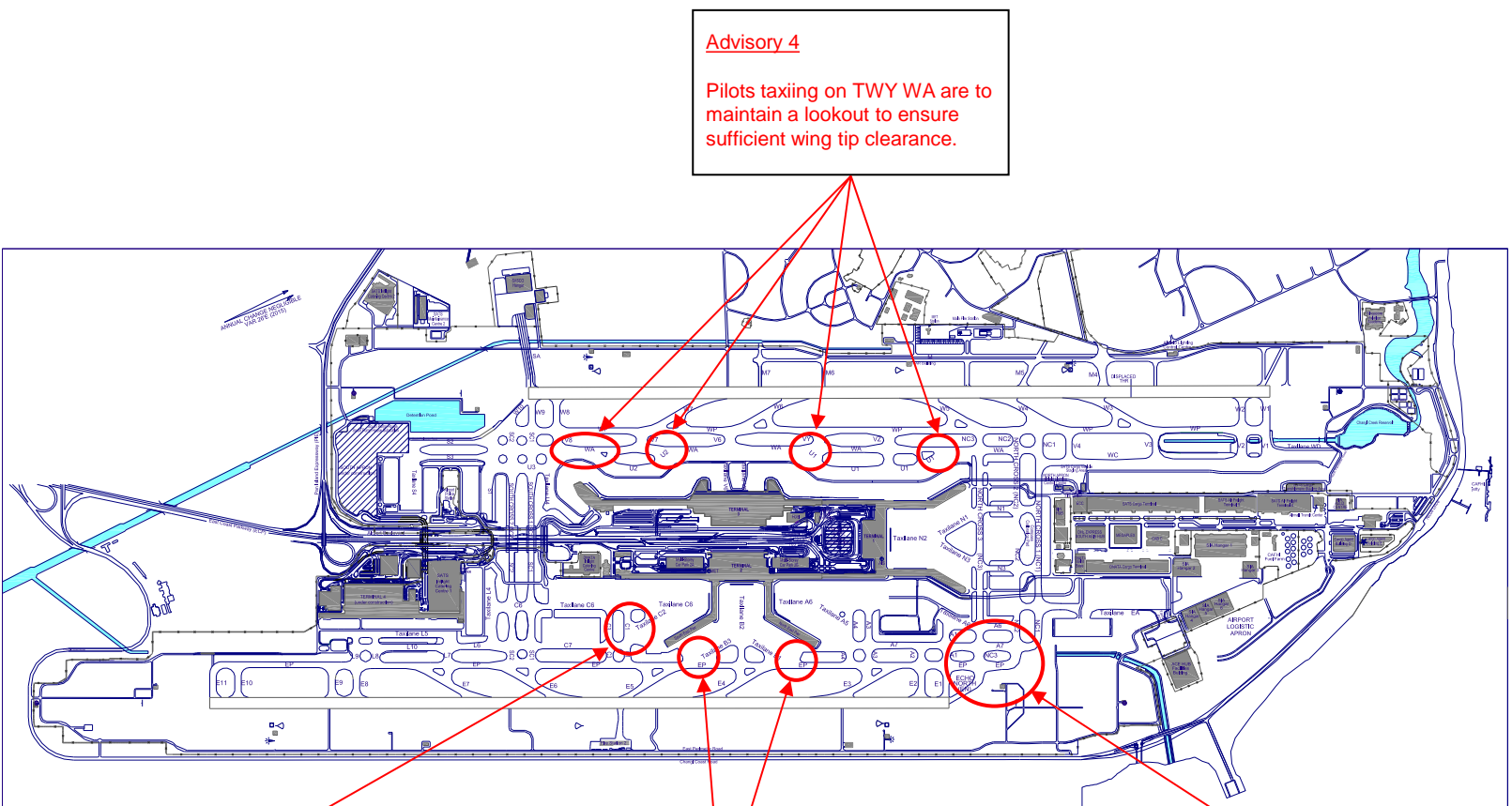
NOTE:
i) INS COORDINATES FOR AIRCRAFT STANDS AND PRE-FLIGHT ALTIMETER CHECK LOCATIONS.
ii) RESTRICTIONS ON TAXIWAYS.

LEGEND

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

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

AERODROME ADVISORY CHART



Advisory 4
Pilots taxiing on TWY WA are to maintain a lookout to ensure sufficient wing tip clearance.

Advisory 1
Pilots taxiing on TWY C1 are to maintain a lookout to ensure sufficient wing tip clearance.

Advisory 2
Pilots taxiing on TWY EP are to maintain a lookout to ensure sufficient wing tip clearance.

Advisory 3
Pilots taxiing on TWY NC1 or NC2 to holding point EN or E1 via TWY EP are to pay extra attention to ground signages and lightings to prevent the mistaken identification of TWY EP as RWY 20C.

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

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

TRANSITION ALTITUDE
11 000ft

D-ATIS AP ID-WSSS
128.6

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

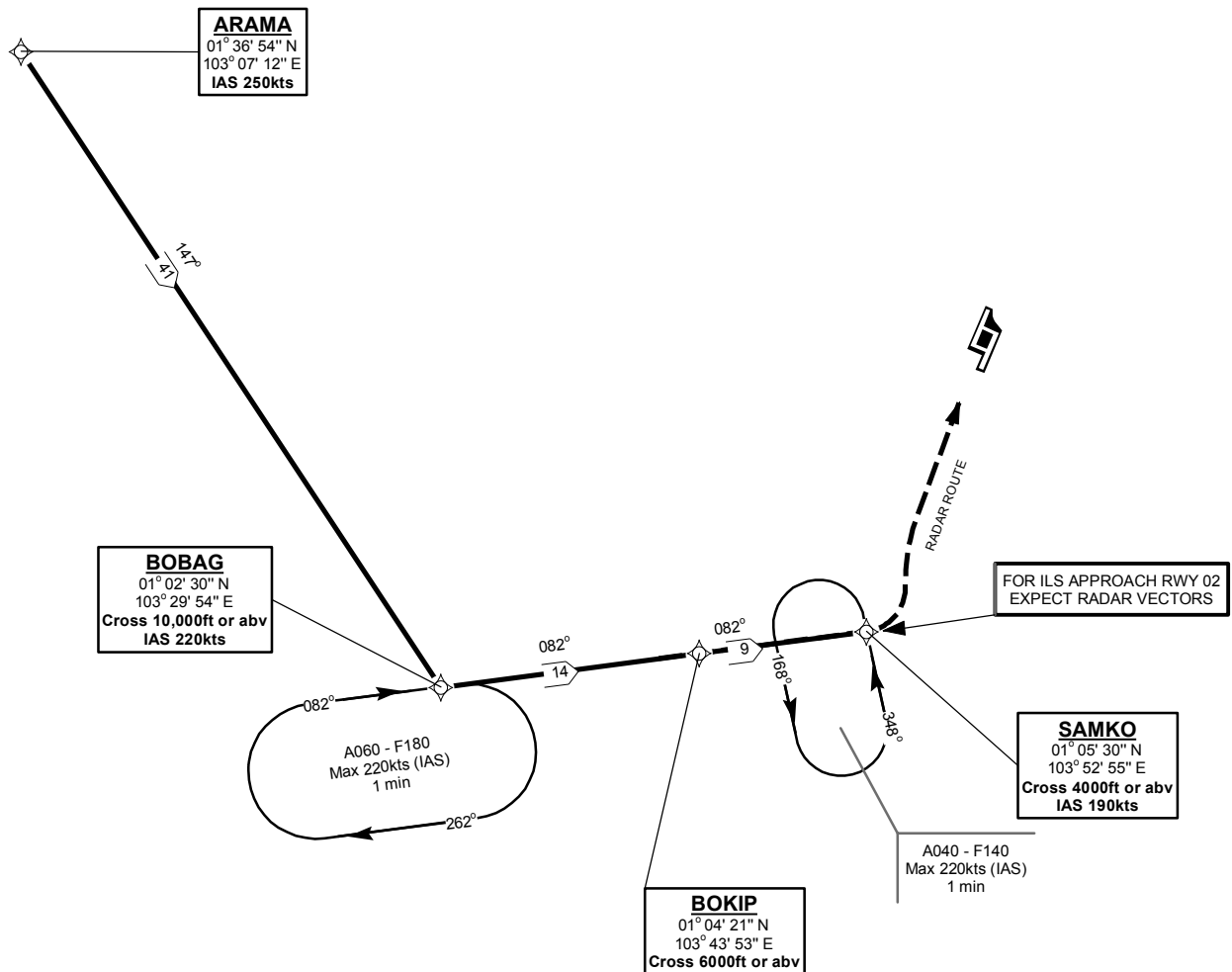
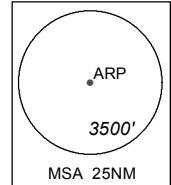
ELEV, ALT IN FEET
BEARINGS, TRACKS AND
RADIALS ARE MAGNETIC
VAR 26°E (2015)

DISTANCES IN NM

NOTE: RADAR REQUIRED

NOTE: RNAV-1 NAVIGATION SPECIFICATION GNSS REQUIRED

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



NOT TO SCALE

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

Formal & Abbreviated Descriptions

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

Tabular Descriptions

Path Term	Waypoint Name	Fly-Over	Course °M(°T)	Magnetic Variation	Turn Direction	Altitude	Speed Limit	Navigation Spec
IF	ARAMA	-	-	-0.5	-	-	K250	RNAV1
TF	BOBAG	-	147(147.5)	-0.5	L	A100+	K220	RNAV1
TF	BOKIP	-	082(082.5)	-0.5	-	A060+	-	RNAV1
TF	SAMKO	-	082(082.8)	-0.5	-	A040+	K190	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

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

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

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

TRANSITION ALTITUDE
11 000ft

D-ATIS AP ID-WSSS
128.6

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

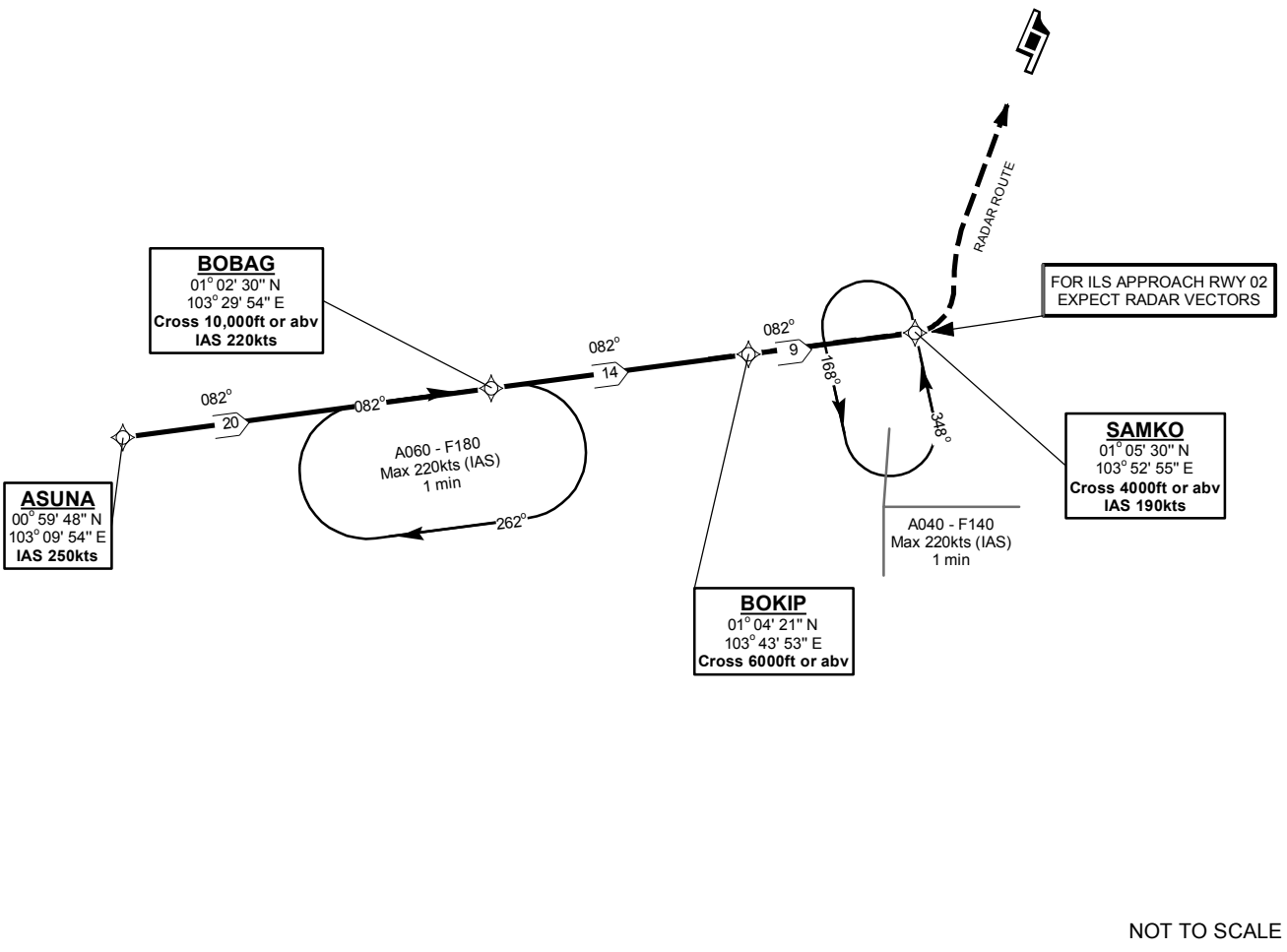
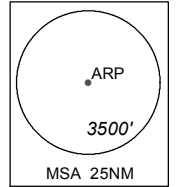
ELEV, ALT IN FEET
BEARINGS, TRACKS AND
RADIALS ARE MAGNETIC
VAR 26°E (2015)

DISTANCES IN NM

NOTE: RADAR REQUIRED

NOTE: RNAV-1 NAVIGATION SPECIFICATION GNSS REQUIRED

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



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

Formal & Abbreviated Descriptions

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

Tabular Descriptions

Path Term	Waypoint Name	Fly-Over	Course °M(°T)	Magnetic Variation	Turn Direction	Altitude	Speed Limit	Navigation Spec
IF	ASUNA	-	-	-0.5	-	-	K250	RNAV1
TF	BOBAG	-	082(082.4)	-0.5	-	A100+	K220	RNAV1
TF	BOKIP	-	082(082.5)	-0.5	-	A060+	-	RNAV1
TF	SAMKO	-	082(082.8)	-0.5	-	A040+	K190	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

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

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

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

TRANSITION ALTITUDE
11 000ft

D-ATIS AP ID-WSSS
128.6

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

**ARAMA ONE BRAVO ARRIVAL
ARAMA 1B**

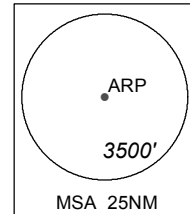
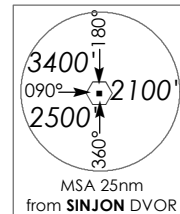
ELEV, ALT IN FEET
BEARINGS, TRACKS AND
RADIALS ARE MAGNETIC
VAR 26°E (2015)

DISTANCES IN NM

NOTE: RADAR REQUIRED

NOTE: RNAV-1 NAVIGATION SPECIFICATION GNSS REQUIRED

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



ARAMA
01° 36' 54" N
103° 07' 12" E
IAS 250kts

BOBAG
01° 02' 30" N
103° 29' 54" E
Cross 10,000ft or abv
IAS 220kts

A060 - F180
Max 220kts (IAS)
1 min

NYLON
01° 36' 57" N
104° 06' 24" E

FOR ILS APPROACH RWY 20
EXPECT RADAR VECTORS

BIPOP
01° 31' 22" N
104° 10' 18" E
Cross 3000ft or abv
IAS 190kts

DOVAN
01° 19' 38" N
104° 12' 49" E
Cross 4000ft or abv

BTM
01° 08' 13" N
104° 07' 58" E
Cross 7000ft or abv
IAS 220kts

SAMKO
01° 05' 30" N
103° 52' 55" E

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

NOT TO SCALE

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

Formal & Abbreviated Descriptions

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
From ARAMA, speed 250kts. To BOBAG at or above 10000ft, speed 220kts, turn left. To SAMKO, turn left. To BTM at or above 7000ft, speed 220kts, turn left. To DOVAN at or above 4000ft, turn left. To BIPOP at or above 3000ft, speed 190kts.	ARAMA [K250] -	IF	N
	BOBAG [A100+; K220; L] -	TF	N
	SAMKO [L] -	TF	N
	BTM [A070+; K220; L] -	TF	N
	DOVAN [A040+; L] -	TF	N
	BIPOP [A030+; K190]	TF	N

Tabular Descriptions

Path Term	Waypoint Name	Fly-Over	Course °M(°T)	Magnetic Variation	Turn Direction	Altitude	Speed Limit	Navigation Spec
IF	ARAMA	-	-	-0.5	-	-	K250	RNAV1
TF	BOBAG	-	147(147.5)	-0.5	L	A100+	K220	RNAV1
TF	SAMKO	-	082(082.6)	-0.5	L	-	-	RNAV1
TF	BTM	-	080(080.5)	-0.5	L	A070+	K220	RNAV1
TF	DOVAN	-	023(023.1)	-0.5	L	A040+	-	RNAV1
TF	BIPOP	-	348(348.5)	-0.5	-	A030+	K190	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

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

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

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

TRANSITION ALTITUDE
11 000ft

D-ATIS AP ID-WSSS
128.6

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

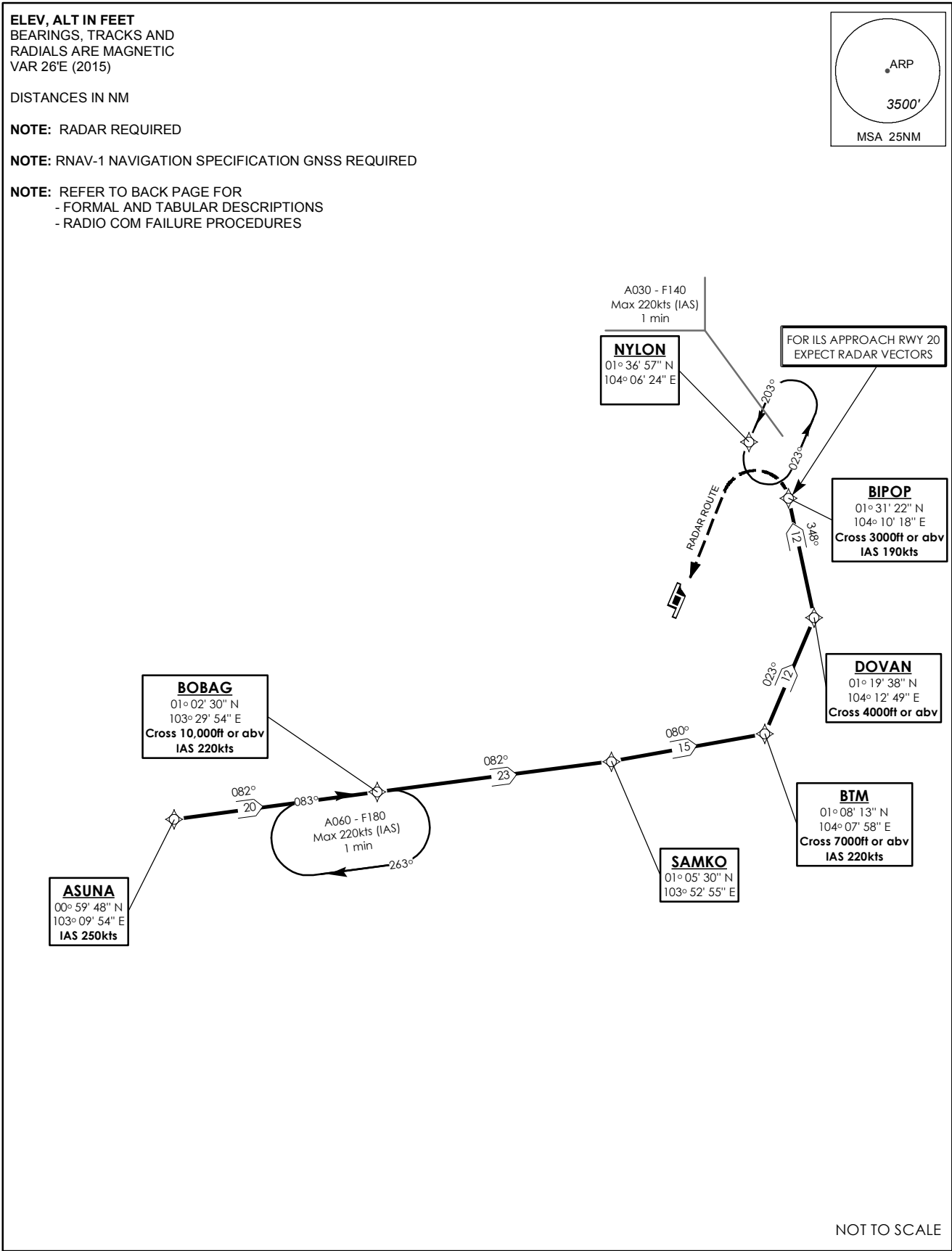
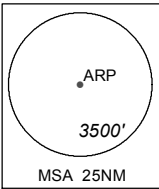
ELEV, ALT IN FEET
BEARINGS, TRACKS AND
RADIALS ARE MAGNETIC
VAR 26°E (2015)

DISTANCES IN NM

NOTE: RADAR REQUIRED

NOTE: RNAV-1 NAVIGATION SPECIFICATION GNSS REQUIRED

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



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

Formal & Abbreviated Descriptions

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
From ASUNA, speed 250kts. To BOBAG at or above 10000ft, speed 220kts. To SAMKO, turn left. To BTM at or above 7000ft, speed 220kts, turn left. To DOVAN at or above 4000ft, turn left. To BIPOP at or above 3000ft, speed 190kts.	ASUNA [K250] -	IF	N
	BOBAG [A100+; K220] -	TF	N
	SAMKO [L] -	TF	N
	BTM [A070+; K220; L] -	TF	N
	DOVAN [A040+; L] -	TF	N
	BIPOP [A030+; K190]	TF	N

Tabular Descriptions

Path Term	Waypoint Name	Fly-Over	Course °M(°T)	Magnetic Variation	Turn Direction	Altitude	Speed Limit	Navigation Spec
IF	ASUNA	-	-	-0.5	-	-	K250	RNAV1
TF	BOBAG	-	082(082.4)	-0.5	-	A100+	K220	RNAV1
TF	SAMKO	-	082(082.6)	-0.5	L	-	-	RNAV1
TF	BTM	-	080(080.5)	-0.5	L	A070+	K220	RNAV1
TF	DOVAN	-	023(023.1)	-0.5	L	A040+	-	RNAV1
TF	BIPOP	-	348(348.5)	-0.5	-	A030+	K190	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

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

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

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

TRANSITION ALTITUDE
 11 000ft

D-ATIS AP ID-WSSS
 128.6

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

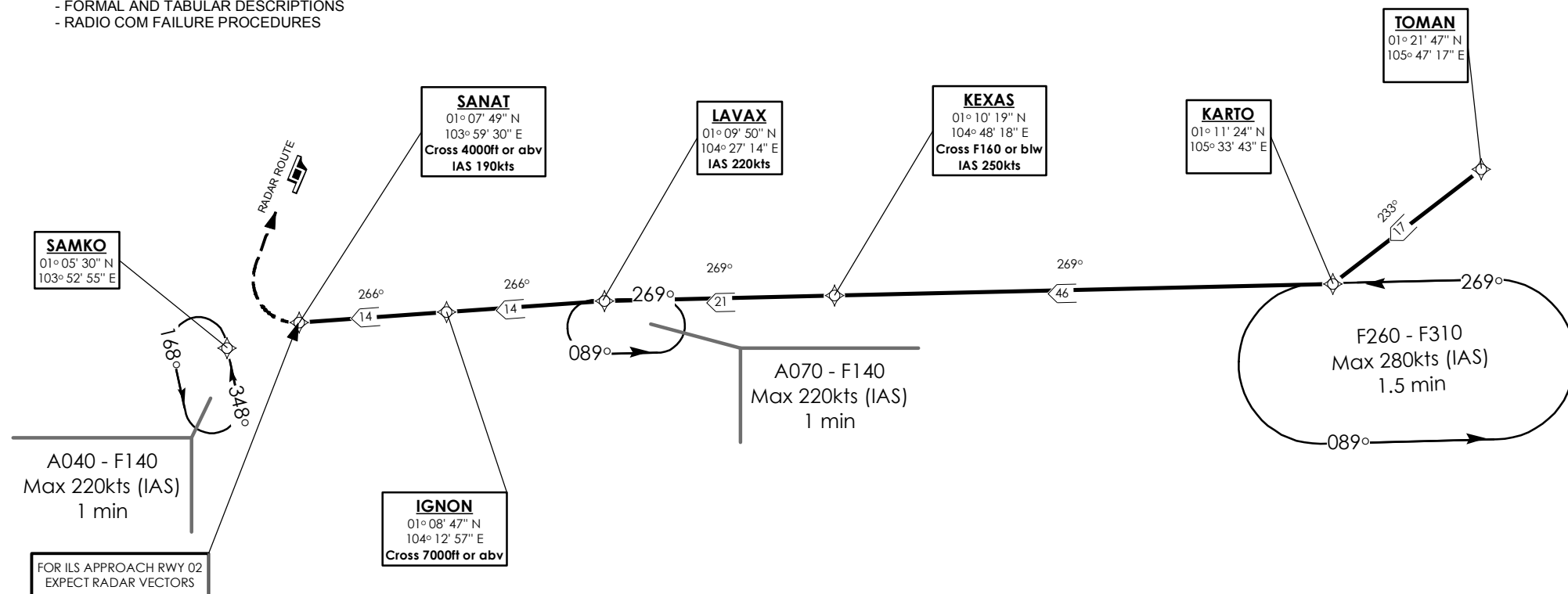
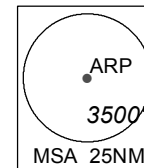
ELEV, ALT IN FEET
 BEARINGS, TRACKS AND
 RADIALS ARE MAGNETIC
 VAR 26°E (2015)

DISTANCES IN NM

NOTE: RADAR REQUIRED

NOTE: RNAV-1 NAVIGATION SPECIFICATION GNSS REQUIRED

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



NOT TO SCALE

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

Formal & Abbreviated Descriptions

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

Tabular Descriptions

Path Term	Waypoint Name	Fly-Over	Course °M(°T)	Magnetic Variation	Turn Direction	Altitude	Speed Limit	Navigation Spec
IF	TOMAN	-	-	-0.5	-	-	-	RNAV1
TF	KARTO	-	233(233.5)	-0.5	R	-	-	RNAV1
TF	KEXAS	-	269(269.5)	-0.5	-	FL160-	K250	RNAV1
TF	LAVAX	-	269(269.5)	-0.5	L	-	K220	RNAV1
TF	IGNON	-	266(266.5)	-0.5	-	A070+	-	RNAV1
TF	SANAT	-	266(266.5)	-0.5	-	A040+	K190	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

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

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

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

TRANSITION ALTITUDE
 11 000ft

D-ATIS AP ID-WSSS
 128.6

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

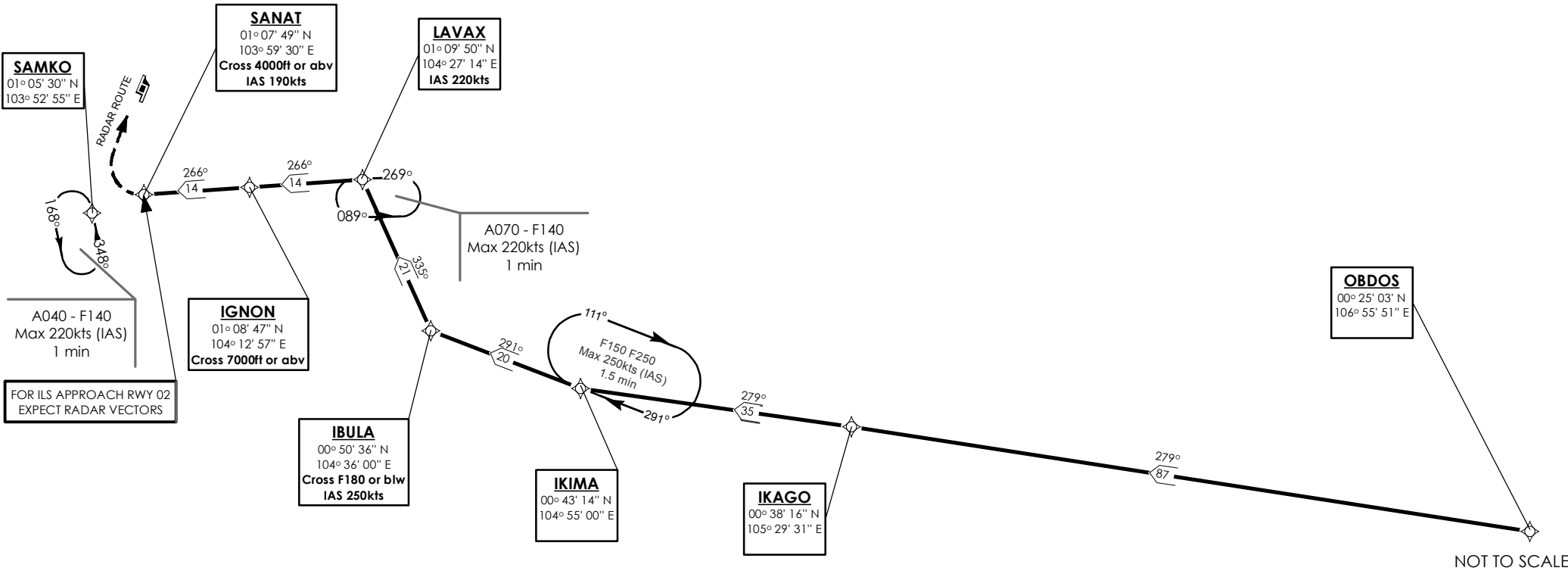
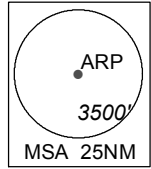
ELEV, ALT IN FEET
 BEARINGS, TRACKS AND
 RADIALS ARE MAGNETIC
 VAR 26°E (2015)

DISTANCES IN NM

NOTE: RADAR REQUIRED

NOTE: RNAV-1 NAVIGATION SPECIFICATION GNSS REQUIRED

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



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

Formal & Abbreviated Descriptions

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
From OBDOS. To IKAGO. To IKIMA, turn right. To IBULA at or below FL180, speed 250kts, turn right. To LAVAX, speed 220kts, turn left. To IGNON at or above 7000ft. To SANAT at or above 4000ft, speed 190kts.	OBDOS -	IF	N
	IKAGO -	TF	N
	IKIMA [R] -	TF	N
	IBULA [FL180-; K250; R] -	TF	N
	LAVAX [K220; L] -	TF	N
	IGNON [A070+] -	TF	N
	SANAT [A040+; K190]	TF	N

Tabular Descriptions

Path Term	Waypoint Name	Fly-Over	Course °M(°T)	Magnetic Variation	Turn Direction	Altitude	Speed Limit	Navigation Spec
IF	OBDOS	-	-	-0.5	-	-	-	RNAV1
TF	IKAGO	-	279(279.5)	-0.5	-	-	-	RNAV1
TF	IKIMA	-	279(279.5)	-0.5	R	-	-	RNAV1
TF	IBULA	-	291(291.1)	-0.5	R	FL180-	K250	RNAV1
TF	LAVAX	-	335(335.4)	-0.5	L	-	K220	RNAV1
TF	IGNON	-	266(266.5)	-0.5	-	A070+	-	RNAV1
TF	SANAT	-	266(266.5)	-0.5	-	A040+	K190	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

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

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

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

TRANSITION ALTITUDE
 11 000ft

D-ATIS AP ID-WSSS
 128.6

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

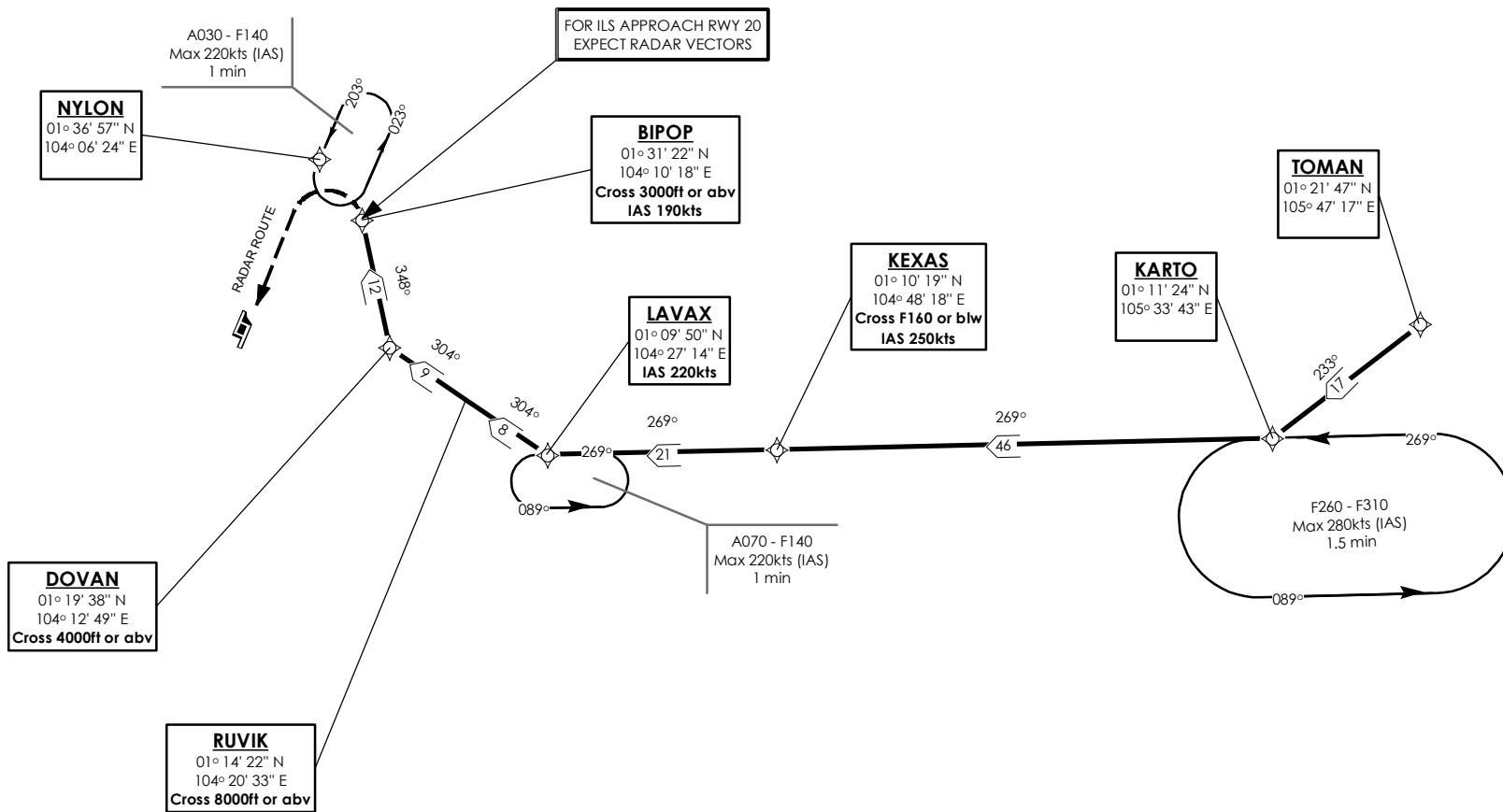
ELEV, ALT IN FEET
 BEARINGS, TRACKS AND
 RADIALS ARE MAGNETIC
 VAR 26°E (2015)

DISTANCES IN NM

NOTE: RADAR REQUIRED

NOTE: RNAV-1 NAVIGATION SPECIFICATION GNSS REQUIRED

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



NOT TO SCALE

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

Formal & Abbreviated Descriptions

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
From TOMAN. To KARTO, turn right. To KEXAS at or below FL160, speed 250kts. To LAVAX, speed 220kts, turn right. To RUVIK at or above 8000ft. To DOVAN at or above 4000ft, turn right. To BIPOP at or above 3000ft, speed 190kts.	TOMAN -	IF	N
	KARTO [R] -	TF	N
	KEXAS [FL160-; K250] -	TF	N
	LAVAX [K220; R] -	TF	N
	RUVIK [A080+] -	TF	N
	DOVAN [A040+; R] -	TF	N
	BIPOP [A030+; K190]	TF	N

Tabular Descriptions

Path Term	Waypoint Name	Fly-Over	Course °M(°T)	Magnetic Variation	Turn Direction	Altitude	Speed Limit	Navigation Spec
IF	TOMAN	-	-	-0.5	-	-	-	RNAV1
TF	KARTO	-	233(233.5)	-0.5	R	-	-	RNAV1
TF	KEXAS	-	269(269.5)	-0.5	-	FL160-	K250	RNAV1
TF	LAVAX	-	269(269.5)	-0.5	R	-	K220	RNAV1
TF	RUVIK	-	304(304.0)	-0.5	-	A080+	-	RNAV1
TF	DOVAN	-	304(304.1)	-0.5	R	A040+	-	RNAV1
TF	BIPOP	-	348(348.5)	-0.5	-	A030+	K190	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

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

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

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

TRANSITION ALTITUDE
 11 000ft

D-ATIS AP ID-WSSS
 128.6

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

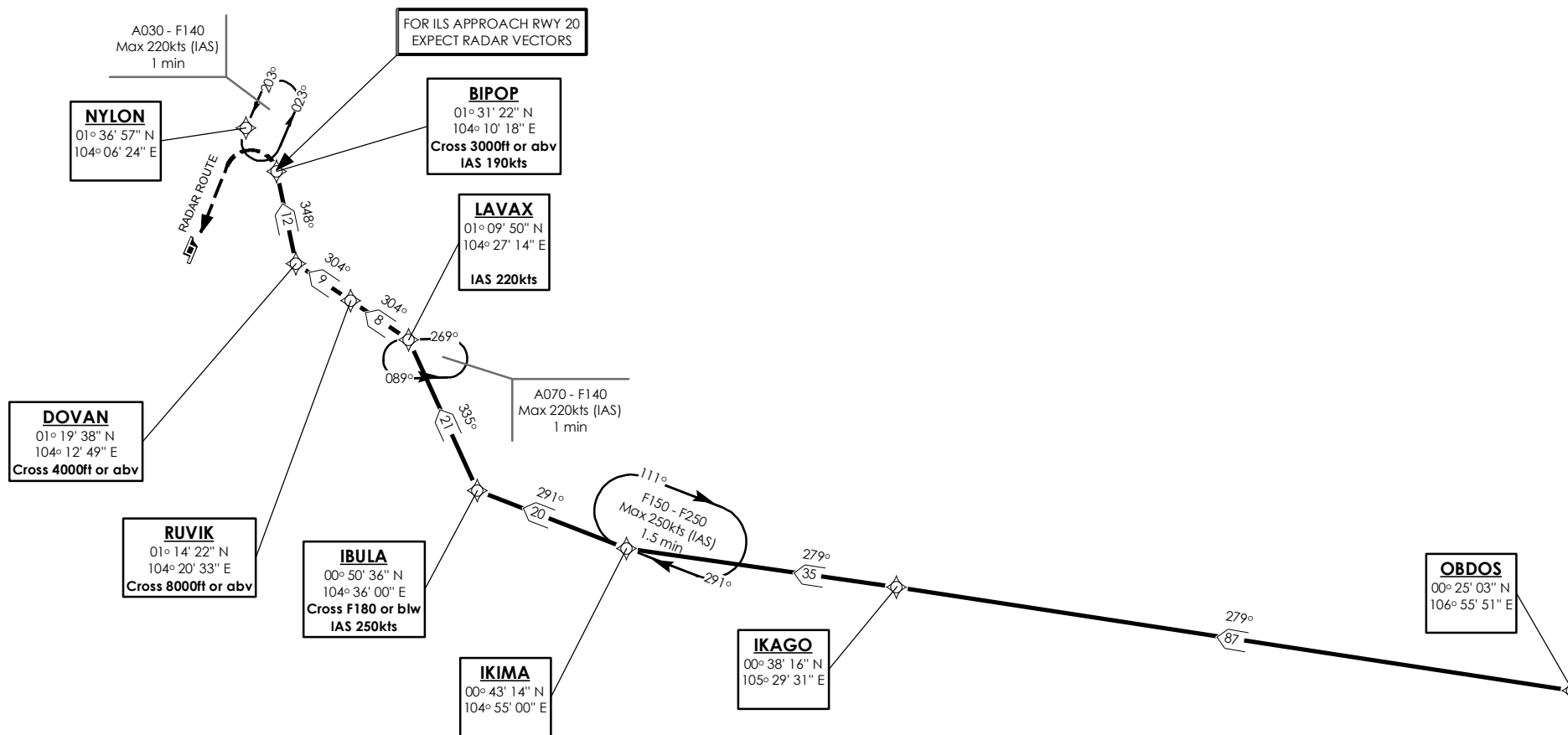
ELEV, ALT IN FEET
 BEARINGS, TRACKS AND
 RADIALS ARE MAGNETIC
 VAR 26°E (2015)

DISTANCES IN NM

NOTE: RADAR REQUIRED

NOTE: RNAV-1 NAVIGATION SPECIFICATION GNSS REQUIRED

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



NOT TO SCALE

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

Formal & Abbreviated Descriptions

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
From OBDOS. To IKAGO. To IKIMA, turn right. To IBULA at or below FL180, speed 250kts, turn right. To LAVAX, speed 220kts, turn left. To RUVIK at or above 8000ft. To DOVAN at or above 4000ft, turn right. To BIPOP at or above 3000ft, speed 190kts.	OBDOS -	IF	N
	IKAGO -	TF	N
	IKIMA [R] -	TF	N
	IBULA [FL180-; K250; R] -	TF	N
	LAVAX [K220; L] -	TF	N
	RUVIK [A080+] -	TF	N
	DOVAN [A040+; R] -	TF	N
BIPOP [A030+; K190]	TF	N	

Tabular Descriptions

Path Term	Waypoint Name	Fly-Over	Course °M(°T)	Magnetic Variation	Turn Direction	Altitude	Speed Limit	Navigation Spec
IF	OBDOS	-	-	-0.5	-	-	-	RNAV1
TF	IKAGO	-	279(279.5)	-0.5	-	-	-	RNAV1
TF	IKIMA	-	279(279.5)	-0.5	R	-	-	RNAV1
TF	IBULA	-	291(291.1)	-0.5	R	FL180-	K250	RNAV1
TF	LAVAX	-	335(335.4)	-0.5	L	-	K220	RNAV1
TF	RUVIK	-	304(304.0)	-0.5	-	A080+	-	RNAV1
TF	DOVAN	-	304(304.1)	-0.5	R	A040+	-	RNAV1
TF	BIPOP	-	348(348.5)	-0.5	-	A030+	K190	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

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

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

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

TRANSITION ALTITUDE
11 000ft

D-ATIS AP ID-WSSS
128.6

**SINGAPORE/Singapore Changi
RWY 20R/C
LELIB THREE BRAVO ARRIVAL
LELIB 3B**

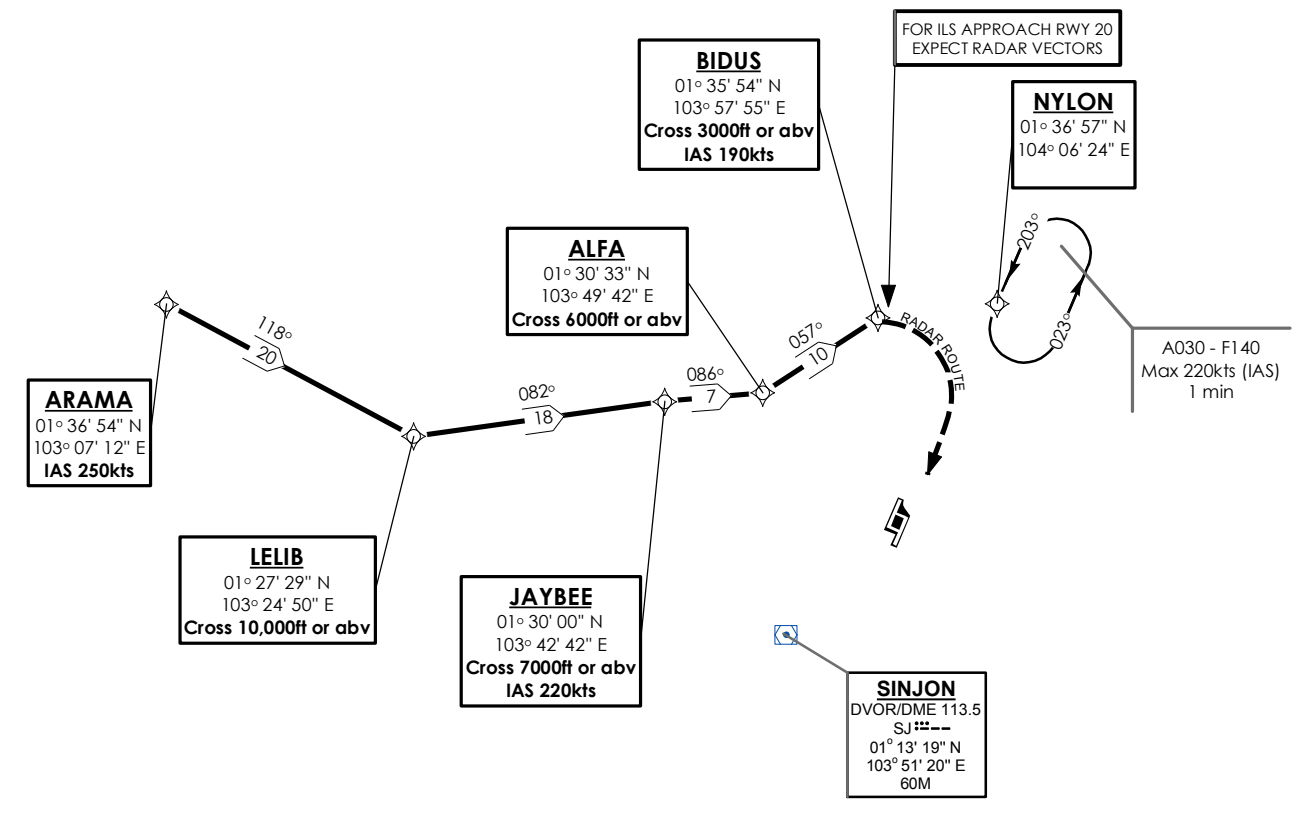
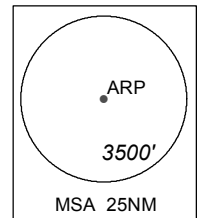
ELEV, ALT IN FEET
BEARINGS, TRACKS AND
RADIALS ARE MAGNETIC
VAR 26°E (2015)

DISTANCES IN NM

NOTE: RADAR REQUIRED

NOTE: RNAV-1 NAVIGATION SPECIFICATION GNSS REQUIRED

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



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

NOT TO SCALE

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

Formal & Abbreviated Descriptions

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
From ARAMA, speed 250kts. To LELIB at or above 10000ft, turn left. To JAYBEE at or above 7000ft, speed 220kts, turn right. To ALFA at or above 6000ft, turn left. To BIDUS at or above 3000ft, speed 190kts.	ARAMA [K250] -	IF	N
	LELIB [A100+; L] -	TF	N
	JAYBEE [A070+; K220; R] -	TF	N
	ALFA [A060+; L] -	TF	N
	BIDUS [A030+; K190]	TF	N

Tabular Descriptions

Path Term	Waypoint Name	Fly-Over	Course °M(°T)	Magnetic Variation	Turn Direction	Altitude	Speed Limit	Navigation Spec
IF	ARAMA	-	-	-0.5	-	-	K250	RNAV1
TF	LELIB	-	118(118.5)	-0.5	L	A100+	-	RNAV1
TF	JAYBEE	-	082(082.0)	-0.5	R	A070+	K220	RNAV1
TF	ALFA	-	086(086.5)	-0.5	L	A060+	-	RNAV1
TF	BIDUS	-	057(057.1)	-0.5	-	A030+	K190	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

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

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

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

TRANSITION ALTITUDE
11 000ft

D-ATIS AP ID-WSSS
128.6

**SINGAPORE/Singapore Changi
RWY 02L/C
MABAL TWO ALPHA ARRIVAL
MABAL 2A**

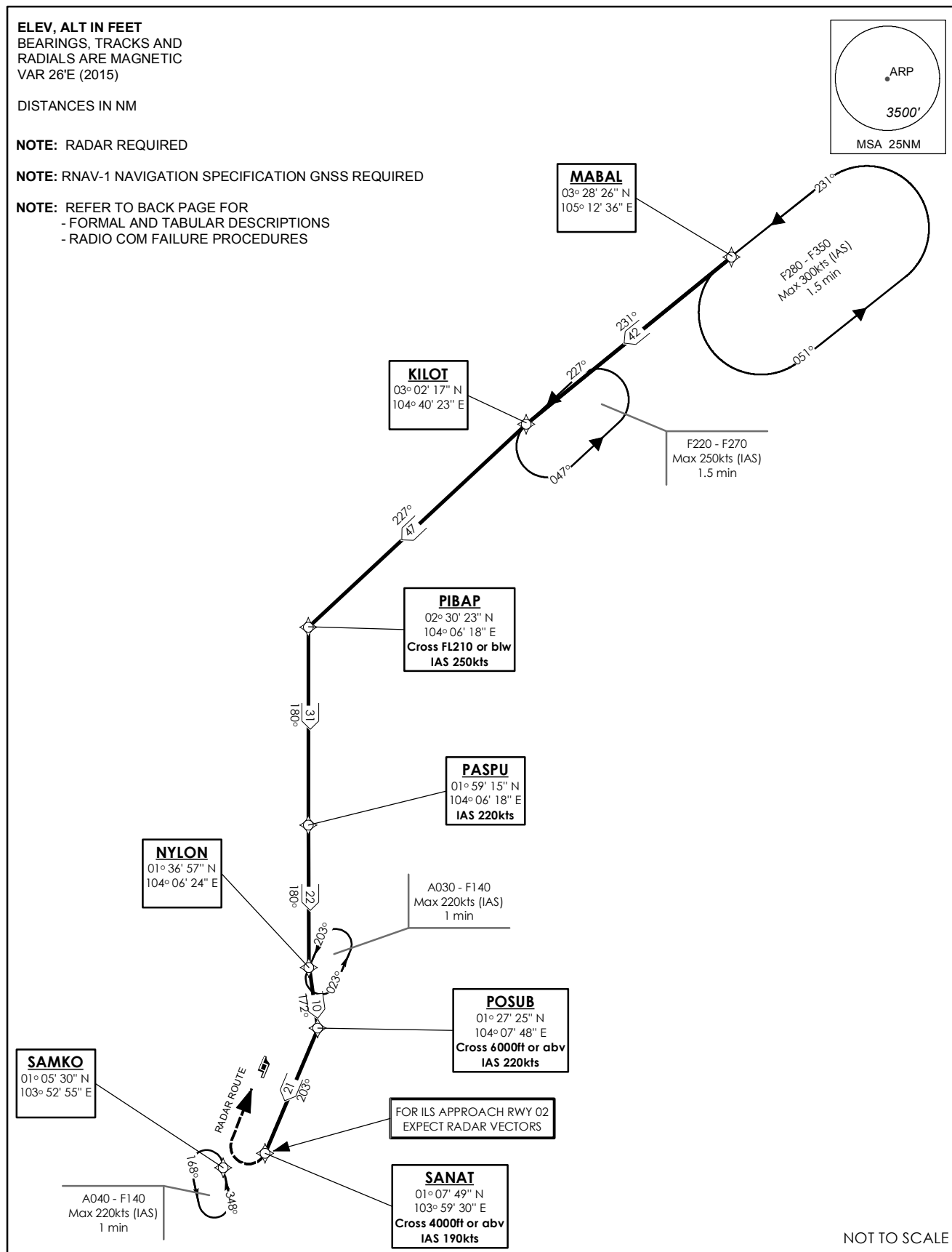
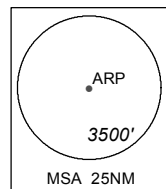
ELEV, ALT IN FEET
BEARINGS, TRACKS AND
RADIALS ARE MAGNETIC
VAR 26°E (2015)

DISTANCES IN NM

NOTE: RADAR REQUIRED

NOTE: RNAV-1 NAVIGATION SPECIFICATION GNSS REQUIRED

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



MABAL 2A (STAR) RNAV GNSS RWY 02L/02C - DESCRIPTIONS

Formal & Abbreviated Descriptions

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
From MABAL. To KILOT, turn left. To PIBAP at or below FL210, speed 250kts, turn left. To PASPU, speed 220kts. To NYLON, turn left. To POSUB at or above 6000ft, speed 220kts, turn right. To SANAT at or above 4000ft, speed 190kts.	MABAL -	IF	N
	KILOT [L] -	TF	N
	PIBAP [FL210-; K250; L] -	TF	N
	PASPU [K220] -	TF	N
	NYLON [L] -	TF	N
	POSUB [A060+; K220; R] - SANAT [A040+; K190]	TF	N

Tabular Descriptions

Path Term	Waypoint Name	Fly-Over	Course °M(°T)	Magnetic Variation	Turn Direction	Altitude	Speed Limit	Navigation Spec
IF	MABAL	-	-	-0.5	-	-	-	RNAV1
TF	KILOT	-	231(231.1)	-0.5	L	-	-	RNAV1
TF	PIBAP	-	227(227.5)	-0.5	L	FL210-	K250	RNAV1
TF	PASPU	-	180(180.5)	-0.5	-	-	K220	RNAV1
TF	NYLON	-	180(180.5)	-0.5	L	-	-	RNAV1
TF	POSUB	-	172(172.5)	-0.5	R	A060+	K220	RNAV1
TF	SANAT	-	203(203.1)	-0.5	-	A040+	K190	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

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

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

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

TRANSITION ALTITUDE
11 000ft

D-ATIS AP ID-WSSS
128.6

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

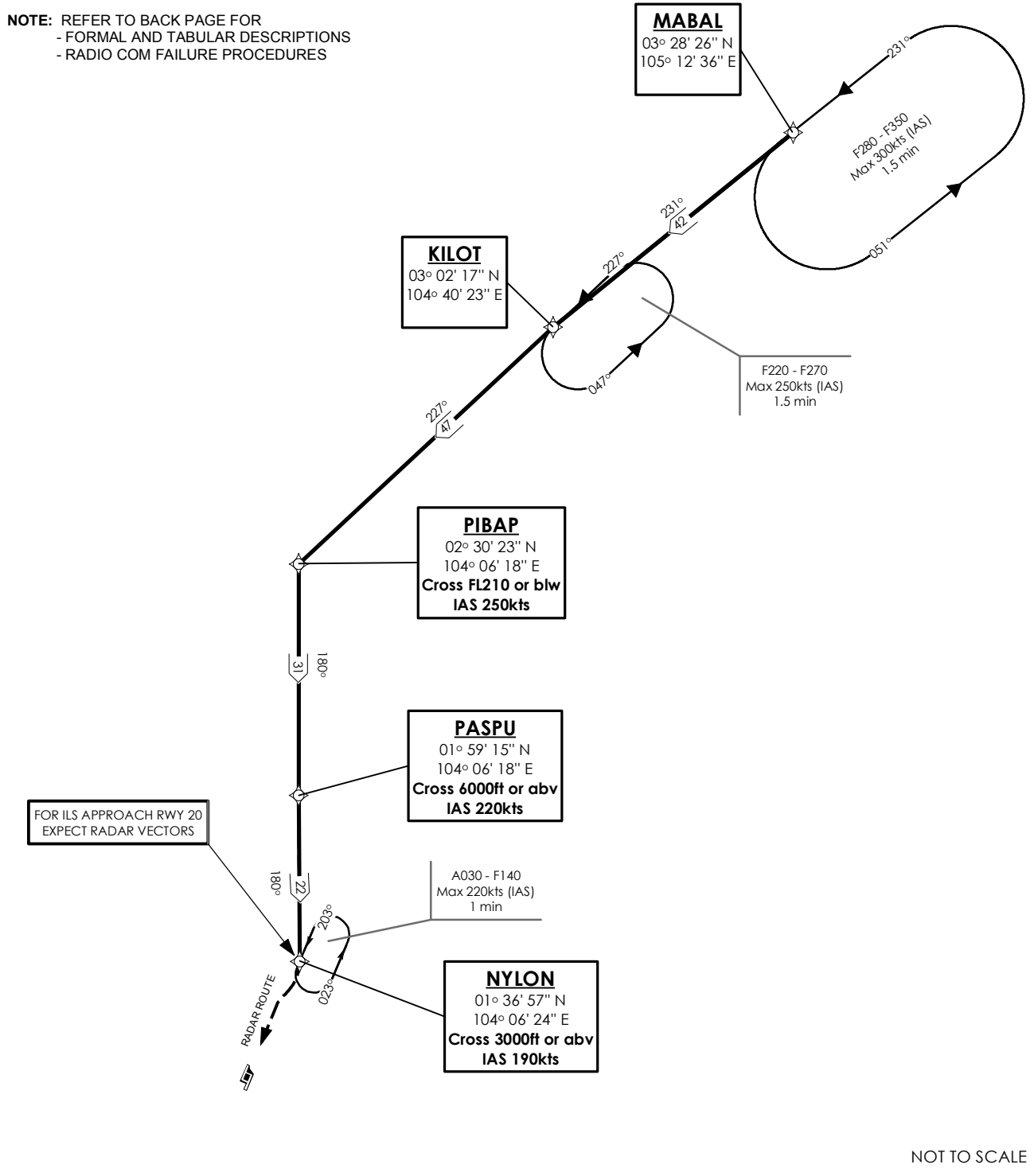
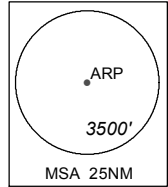
ELEV, ALT IN FEET
BEARINGS, TRACKS AND
RADIALS ARE MAGNETIC
VAR 26°E (2015)

DISTANCES IN NM

NOTE: RADAR REQUIRED

NOTE: RNAV-1 NAVIGATION SPECIFICATION GNSS REQUIRED

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



NOT TO SCALE

MABAL 2B (STAR) RNAV GNSS RWY 20R/20C - DESCRIPTIONS

Formal & Abbreviated Descriptions

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
From MABAL. To KILOT, turn left. To PIBAP at or below FL210, speed 250kts, turn left. To PASPU, at or above 6000ft, speed 220kts. To NYLON at or above 3000ft, speed 190kts.	MABAL - KILOT [L] - PIBAP [FL210-; K250; L] - PASPU [A060+; K220] - NYLON [A030+; K190]	IF TF TF TF TF	N N N N N

Tabular Descriptions

Path Term	Waypoint Name	Fly-Over	Course °M(°T)	Magnetic Variation	Turn Direction	Altitude	Speed Limit	Navigation Spec
IF	MABAL	-	-	-0.5	-	-	-	RNAV1
TF	KILOT	-	231(231.1)	-0.5	L	-	-	RNAV1
TF	PIBAP	-	227(227.5)	-0.5	L	FL210-	K250	RNAV1
TF	PASPU	-	180(180.5)	-0.5	-	A060+	K220	RNAV1
TF	NYLON	-	180(180.5)	-0.5	-	A030+	K190	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

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

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

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

TRANSITION ALTITUDE
11 000ft

D-ATIS AP ID-WSSS
128.6

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

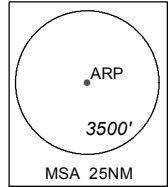
ELEV, ALT IN FEET
BEARINGS, TRACKS AND
RADIALS ARE MAGNETIC
VAR 26°E (2015)

DISTANCES IN NM

NOTE: RADAR REQUIRED

NOTE: RNAV-1 NAVIGATION SPECIFICATION GNSS REQUIRED

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



PASPU
01° 59' 15" N
104° 06' 18" E
IAS 220kts

PAPA UNIFORM
DVOR/DME 115.1
PU :---
01° 25' 24" N
103° 56' 00" E
60M
Cross 7,000ft or abv

DEVIATION IS NOT PERMITTED
BETWEEN SJ AND PU

WSR38
10,000ft ALT
GND

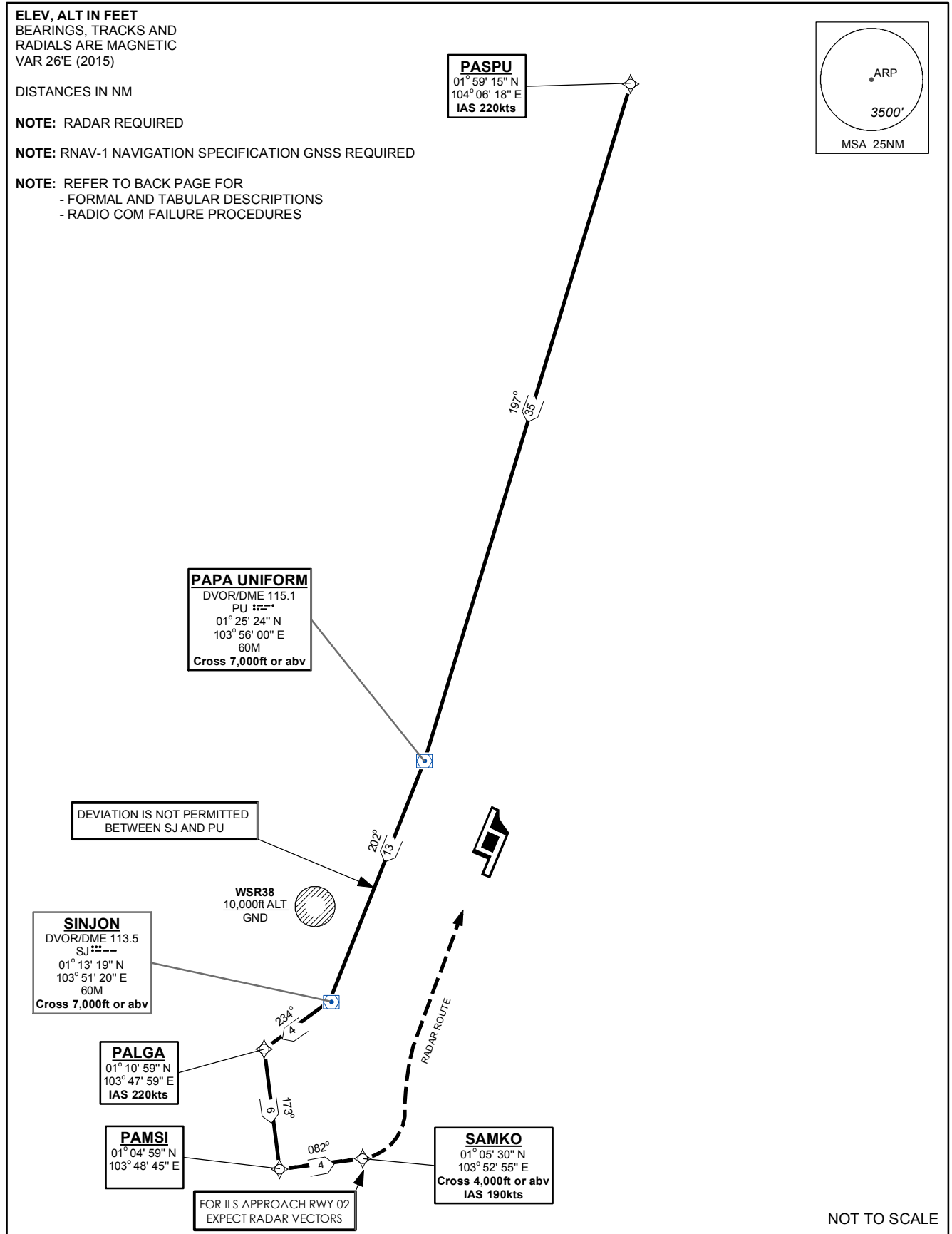
SINJON
DVOR/DME 113.5
SJ :---
01° 13' 19" N
103° 51' 20" E
60M
Cross 7,000ft or abv

PALGA
01° 10' 59" N
103° 47' 59" E
IAS 220kts

PAMSI
01° 04' 59" N
103° 48' 45" E

SAMKO
01° 05' 30" N
103° 52' 55" E
Cross 4,000ft or abv
IAS 190kts

FOR ILS APPROACH RWY 02
EXPECT RADAR VECTORS



NOT TO SCALE

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

Formal & Abbreviated Descriptions

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
From PASPU, speed 220kts. To PU at or above 7000ft, turn right. To SJ at or above 7000ft, turn right. To PALGA, speed 220kts, turn left. To PAMSI, turn left. To SAMKO at or above 4000ft, speed 190kts.	PASPU [K220] -	IF	N
	PU [A070+; R] -	TF	N
	SJ [A070+; R] -	TF	N
	PALGA [K220; L] -	TF	N
	PAMSI [L] -	TF	N
	SAMKO [A040+; K190]	TF	N

Tabular Descriptions

Path Term	Waypoint Name	Fly-Over	Course °M(°T)	Magnetic Variation	Turn Direction	Altitude	Speed Limit	Navigation Spec
IF	PASPU	-	-	-0.5	-	-	K220	RNAV1
TF	PU	-	197(197.5)	-0.5	R	A070+	-	RNAV1
TF	SJ	-	202(202.5)	-0.5	R	A070+	-	RNAV1
TF	PALGA	-	234(234.5)	-0.5	L	-	K220	RNAV1
TF	PAMSI	-	173(173.5)	-0.5	L	-	-	RNAV1
TF	SAMKO	-	082(082.5)	-0.5	-	A040+	K190	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

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

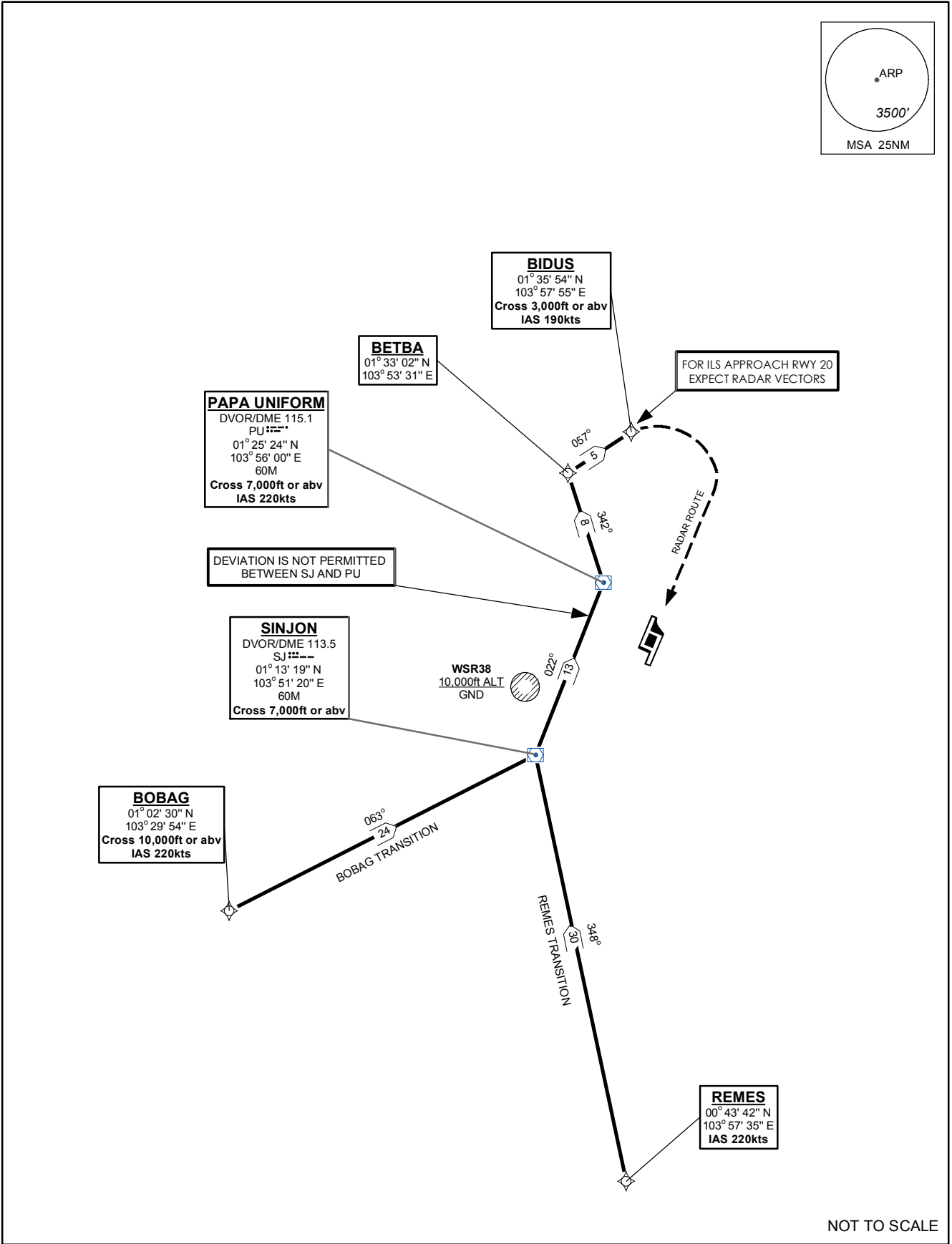
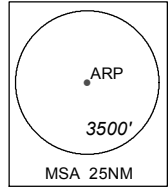
**STANDARD ARRIVAL CHART
RNAV (GNSS) -
INSTRUMENT (STAR)**

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

TRANSITION ALTITUDE
11 000ft

D-ATIS AP ID-WSSS
128.6

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



NOT TO SCALE

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

Formal & Abbreviated Descriptions

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

Tabular Descriptions (BOBAG Transition)

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

Tabular Descriptions (REMES Transition)

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

RADIO COMMUNICATIONS FAILURE PROCEDURE

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

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

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

TRANSITION ALTITUDE
11 000ft

D-ATIS AP ID-WSSS
128.6

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

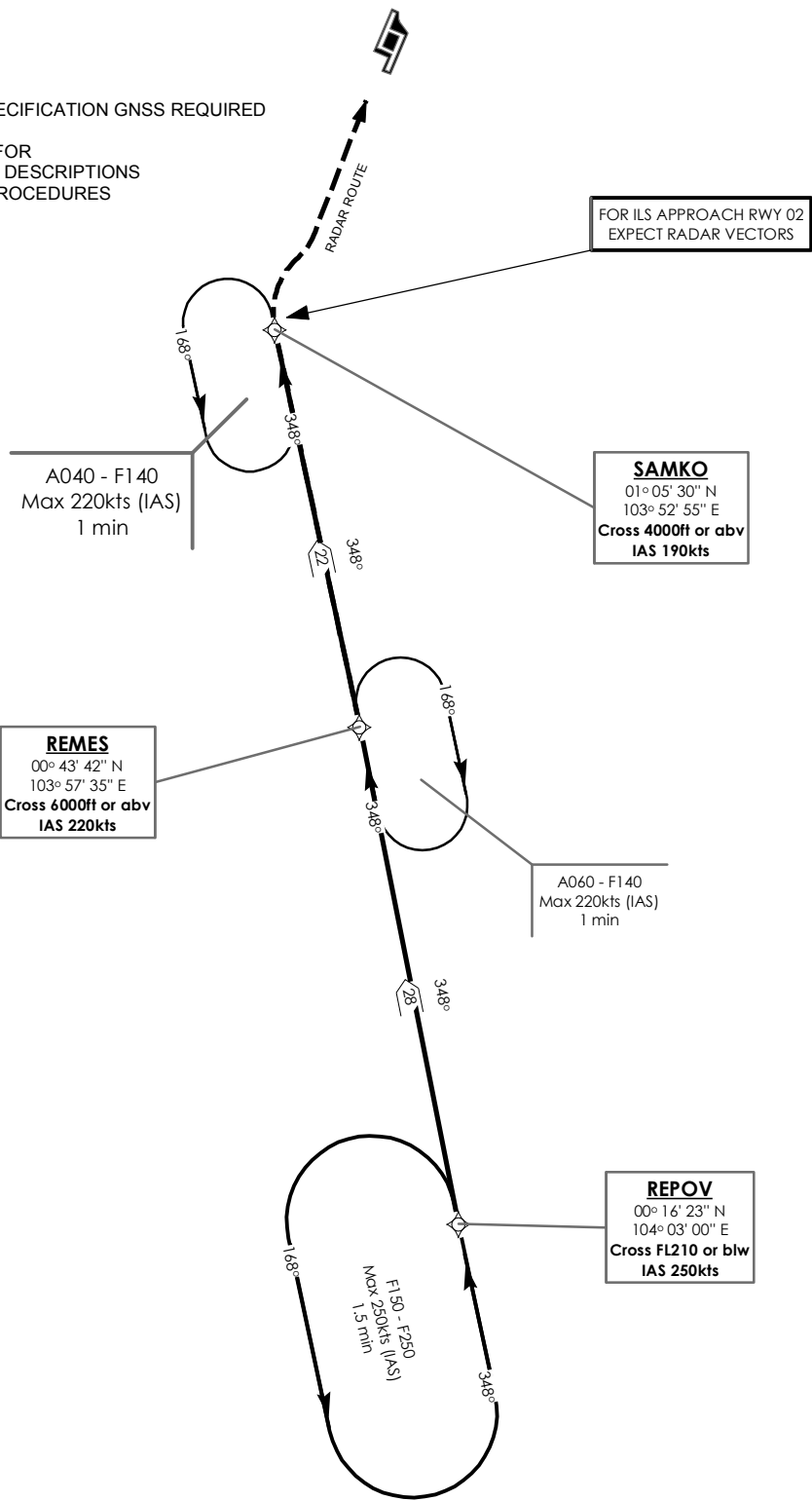
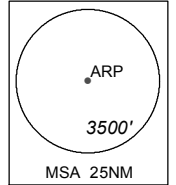
ELEV, ALT IN FEET
BEARINGS, TRACKS AND
RADIALS ARE MAGNETIC
VAR 26°E (2015)

DISTANCES IN NM

NOTE: RADAR REQUIRED

NOTE: RNAV-1 NAVIGATION SPECIFICATION GNSS REQUIRED

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



NOT TO SCALE

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

Formal & Abbreviated Descriptions

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

Tabular Descriptions

Path Term	Waypoint Name	Fly-Over	Course °M(°T)	Magnetic Variation	Turn Direction	Altitude	Speed Limit	Navigation Spec
IF	REPOV	-	-	-0.5	-	FL210-	K250	RNAV1
TF	REMES	-	348(348.7)	-0.5	-	A060+	K220	RNAV1
TF	SAMKO	-	348(348.5)	-0.5	-	A040+	K190	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

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

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

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

TRANSITION ALTITUDE
 11 000ft

D-ATIS AP ID-WSSS
 128.6

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

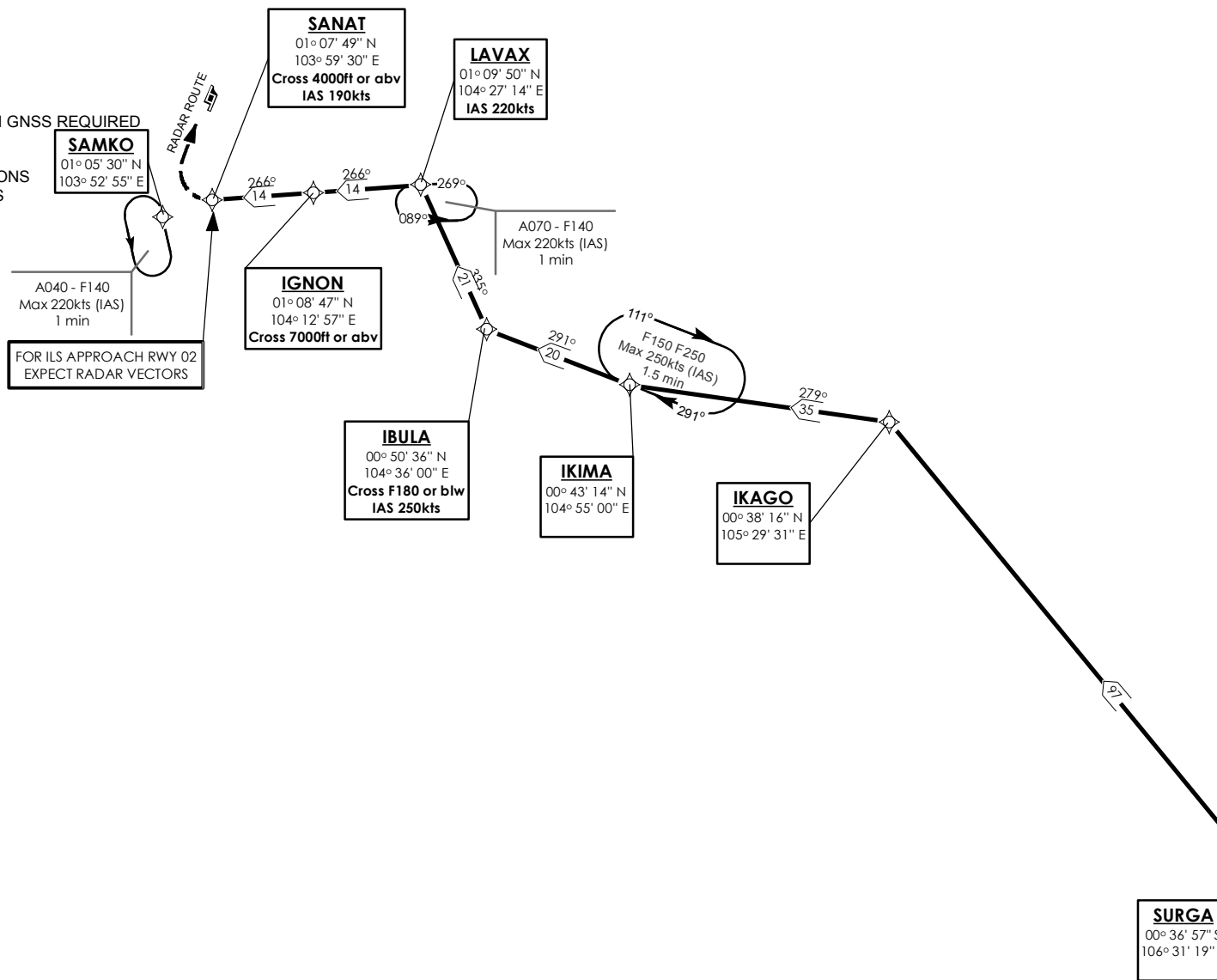
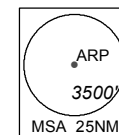
ELEV, ALT IN FEET
 BEARINGS, TRACKS AND
 RADIALS ARE MAGNETIC
 VAR 26°E (2015)

DISTANCES IN NM

NOTE: RADAR REQUIRED

NOTE: RNAV-1 NAVIGATION SPECIFICATION GNSS REQUIRED

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



NOT TO SCALE

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

Formal & Abbreviated Descriptions

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
From SURGA. To IKAGO, turn left. To IKIMA, turn right. To IBULA at or below FL180, speed 250kts, turn right. To LAVAX, speed 220kts, turn left. To IGNON at or above 7000ft. To SANAT at or above 4000ft, speed 190kts.	SURGA -	IF	N
	IKAGO [L] -	TF	N
	IKIMA [R] -	TF	N
	IBULA [FL180-; K250; R] -	TF	N
	LAVAX [K220; L] -	TF	N
	IGNON [A070+] -	TF	N
	SANAT [A040+; K190]	TF	N

Tabular Descriptions

Path Term	Waypoint Name	Fly-Over	Course °M(°T)	Magnetic Variation	Turn Direction	Altitude	Speed Limit	Navigation Spec
IF	SURGA	-	-	-0.5	-	-	-	RNAV1
TF	IKAGO	-	320(320.4)	-0.5	L	-	-	RNAV1
TF	IKIMA	-	279(279.5)	-0.5	R	-	-	RNAV1
TF	IBULA	-	291(291.1)	-0.5	R	FL180-	K250	RNAV1
TF	LAVAX	-	335(335.4)	-0.5	L	-	K220	RNAV1
TF	IGNON	-	266(266.5)	-0.5	-	A070+	-	RNAV1
TF	SANAT	-	266(266.5)	-0.5	-	A040+	K190	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

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

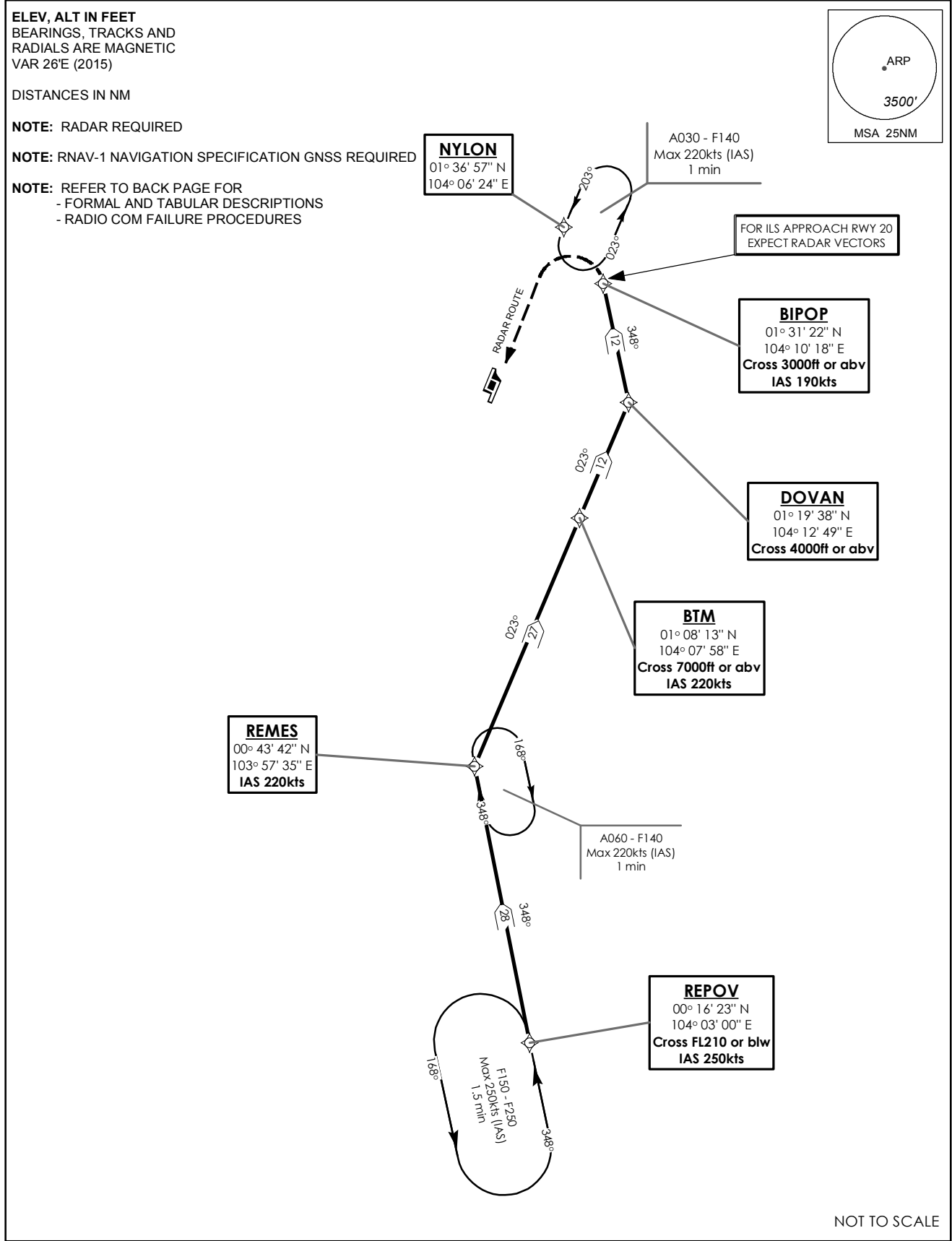
**STANDARD ARRIVAL CHART
RNAV (GNSS) -
INSTRUMENT (STAR)**

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

TRANSITION ALTITUDE
11 000ft

D-ATIS AP ID-WSSS
128.6

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



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

Formal & Abbreviated Descriptions

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

Tabular Descriptions

Path Term	Waypoint Name	Fly-Over	Course °M(°T)	Magnetic Variation	Turn Direction	Altitude	Speed Limit	Navigation Spec
IF	REPOV	-	-	-0.5	-	FL210-	K250	RNAV1
TF	REMES	-	348(348.7)	-0.5	R	-	K220	RNAV1
TF	BTM	-	023(023.1)	-0.5	-	A070+	K220	RNAV1
TF	DOVAN	-	023(023.1)	-0.5	L	A040+	-	RNAV1
TF	BIPOP	-	348(348.5)	-0.5	-	A030+	K190	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

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

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

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

TRANSITION ALTITUDE
 11 000ft

D-ATIS AP ID-WSSS
 128.6

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

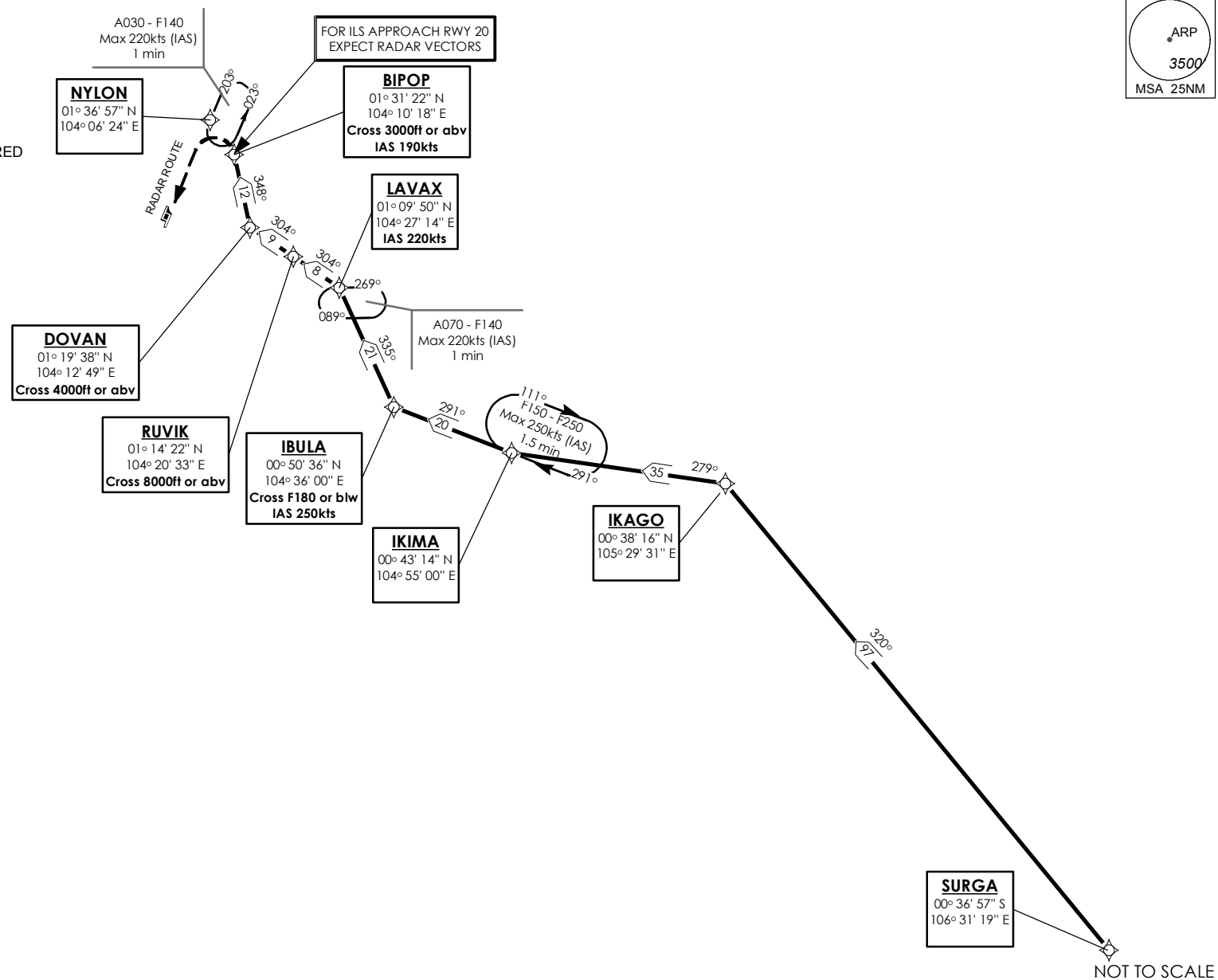
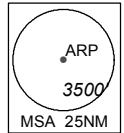
ELEV, ALT IN FEET
 BEARINGS, TRACKS AND
 RADIALS ARE MAGNETIC
 VAR 26°E (2015)

DISTANCES IN NM

NOTE: RADAR REQUIRED

NOTE: RNAV-1 NAVIGATION SPECIFICATION GNSS REQUIRED

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



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

Formal & Abbreviated Descriptions

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
From SURGA. To IKAGO, turn left. To IKIMA, turn right. To IBULA at or below FL180, speed 250kts, turn right. To LAVAX, speed 220kts, turn left. To RUVIK at or above 8000ft. To DOVAN at or above 4000ft, turn right. To BIPOP at or above 3000ft, speed 190kts.	SURGA -	IF	N
	IKAGO [L] -	TF	N
	IKIMA [R] -	TF	N
	IBULA [FL180-; K250; R] -	TF	N
	LAVAX [K220; L] -	TF	N
	RUVIK [A080+] -	TF	N
	DOVAN [A040+; R] -	TF	N
	BIPOP [A030+; K190]	TF	N

Tabular Descriptions

Path Term	Waypoint Name	Fly-Over	Course °M(°T)	Magnetic Variation	Turn Direction	Altitude	Speed Limit	Navigation Spec
IF	SURGA	-	-	-0.5	-	-	-	RNAV1
TF	IKAGO	-	320(320.4)	-0.5	L	-	-	RNAV1
TF	IKIMA	-	279(279.5)	-0.5	R	-	-	RNAV1
TF	IBULA	-	291(291.1)	-0.5	R	FL180-	K250	RNAV1
TF	LAVAX	-	335(335.4)	-0.5	L	-	K220	RNAV1
TF	RUVIK	-	304(304.0)	-0.5	-	A080+	-	RNAV1
TF	DOVAN	-	304(304.1)	-0.5	R	A040+	-	RNAV1
TF	BIPOP	-	348(348.5)	-0.5	-	A030+	K190	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

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

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

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

TRANSITION ALTITUDE
11 000ft

D-ATIS AP ID-WSSS
128.6

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

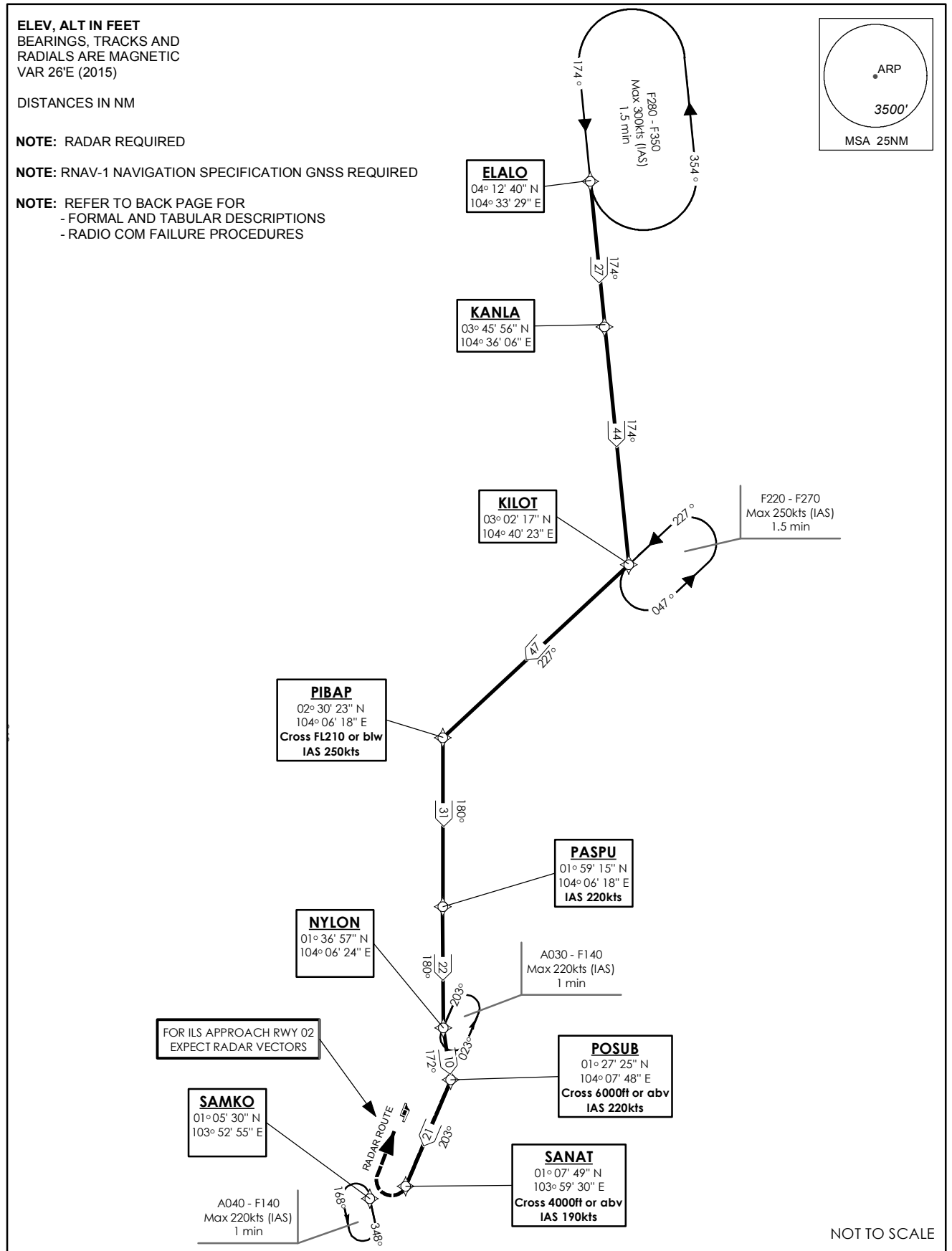
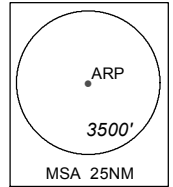
ELEV, ALT IN FEET
BEARINGS, TRACKS AND
RADIALS ARE MAGNETIC
VAR 26°E (2015)

DISTANCES IN NM

NOTE: RADAR REQUIRED

NOTE: RNAV-1 NAVIGATION SPECIFICATION GNSS REQUIRED

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



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

Formal & Abbreviated Descriptions

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
From ELALO. To KANLA. To KILOT, turn right. To PIBAP at or below FL210, speed 250kts, turn left. To PASPU, speed 220kts. To NYLON, turn left. To POSUB at or above 6000ft, speed 220kts, turn right. To SANAT at or above 4000ft, speed 190kts.	ELALO -	IF	N
	KANLA -	TF	N
	KILOT [R] -	TF	N
	PIBAP [FL210-; K250; L] -	TF	N
	PASPU [K220] -	TF	N
	NYLON [L] -	TF	N
	POSUB [A060+; K220; R] - SANAT [A040+; K190]	TF TF	N N

Tabular Descriptions

Path Term	Waypoint Name	Fly-Over	Course °M(°T)	Magnetic Variation	Turn Direction	Altitude	Speed Limit	Navigation Spec
IF	ELALO	-	-	-0.5	-	-	-	RNAV1
TF	KANLA	-	174(174.5)	-0.5	-	-	-	RNAV1
TF	KILOT	-	174(174.5)	-0.5	R	-	-	RNAV1
TF	PIBAP	-	227(227.5)	-0.5	L	FL210-	K250	RNAV1
TF	PASPU	-	180(180.5)	-0.5	-	-	K220	RNAV1
TF	NYLON	-	180(180.5)	-0.5	L	-	-	RNAV1
TF	POSUB	-	172(172.5)	-0.5	R	A060+	K220	RNAV1
TF	SANAT	-	203(203.1)	-0.5	-	A040+	K190	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

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

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

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

TRANSITION ALTITUDE
11 000ft

D-ATIS AP ID-WSSS
128.6

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

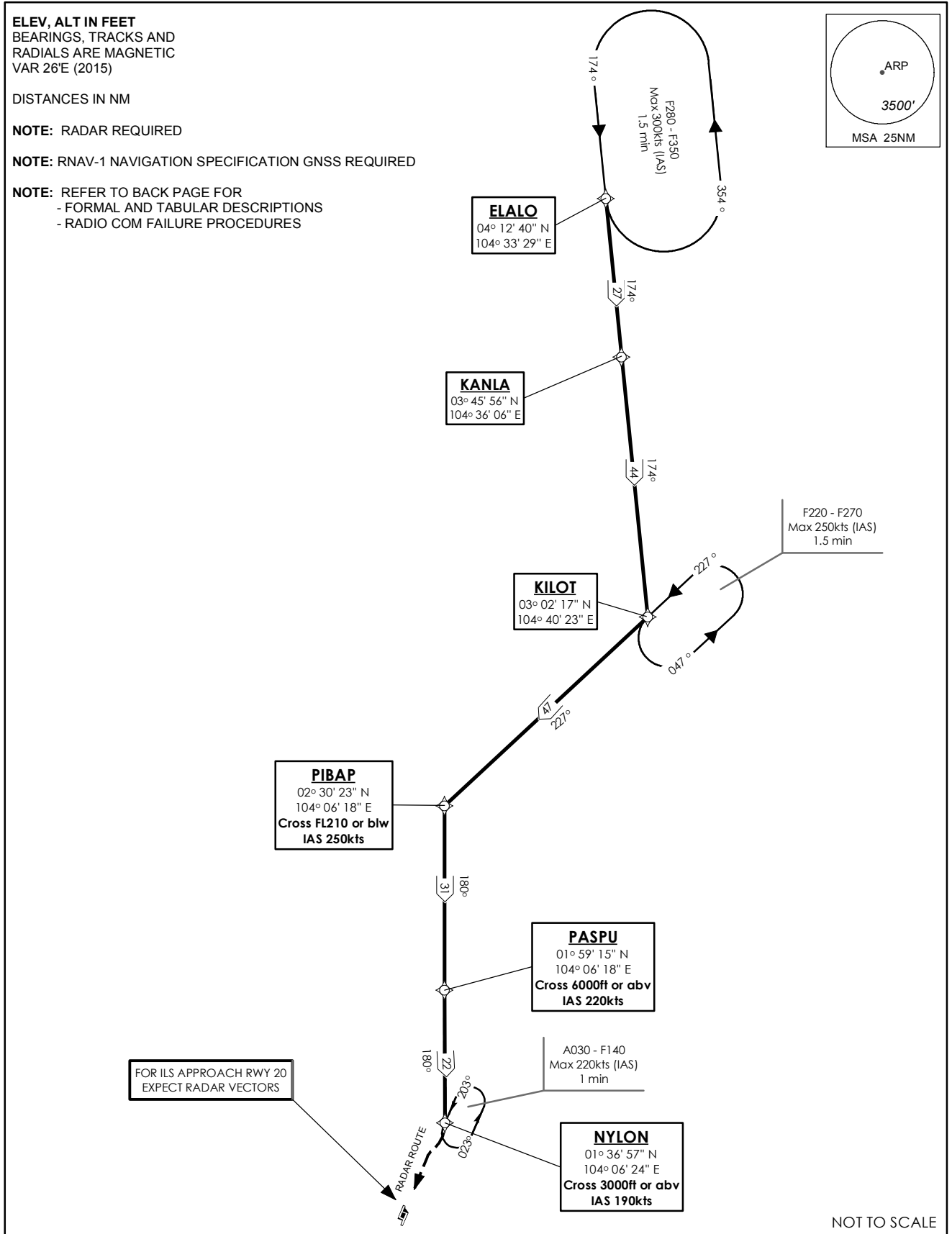
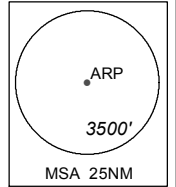
ELEV, ALT IN FEET
BEARINGS, TRACKS AND
RADIALS ARE MAGNETIC
VAR 26°E (2015)

DISTANCES IN NM

NOTE: RADAR REQUIRED

NOTE: RNAV-1 NAVIGATION SPECIFICATION GNSS REQUIRED

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



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

Formal & Abbreviated Descriptions

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
From ELALO. To KANLA. To KILOT, turn right. To PIBAP at or below FL210, speed 250kts turn left. To PASPU, at or above 6000ft, speed 220kts. To NYLON at or above 3000ft, speed 190kts.	ELALO -	IF	N
	KANLA -	TF	N
	KILOT [R] -	TF	N
	PIBAP [FL210-; K250; L] -	TF	N
	PASPU [A060+; K220] -	TF	N
	NYLON [A030+; K190]	TF	N

Tabular Descriptions

Path Term	Waypoint Name	Fly-Over	Course °M(°T)	Magnetic Variation	Turn Direction	Altitude	Speed Limit	Navigation Spec
IF	ELALO	-	-	-0.5	-	-	-	RNAV1
TF	KANLA	-	174(174.5)	-0.5	-	-	-	RNAV1
TF	KILOT	-	174(174.5)	-0.5	R	-	-	RNAV1
TF	PIBAP	-	227(227.5)	-0.5	L	FL210-	K250	RNAV1
TF	PASPU	-	180(180.5)	-0.5	-	A060+	K220	RNAV1
TF	NYLON	-	180(180.5)	-0.5	-	A030+	K190	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

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

WSSL — SINGAPORE / SELETAR**WSSL AD 2.1 AERODROME LOCATION INDICATOR AND NAME**

WSSL — SINGAPORE / SELETAR

WSSL AD 2.2 AERODROME GEOGRAPHICAL AND ADMINISTRATIVE DATA

1	<i>ARP Coordinates and Site at AD</i>	012501.04N 1035203.52E
2	<i>Direction and distance from (city)</i>	006°, 14.6km from city centre (The Fullerton Hotel, Singapore)
3	<i>Elevation/Reference Temperature</i>	14 M (46ft) / 33.5°C
4	<i>Geoid Undulation</i>	9.78 M
5	MAG VAR	0°26' E (2015)
6	<i>AD Administration, Address, Telephone, Telefax, AFS</i>	<p>Address: CHANGI AIRPORTGROUP (S) PTE LTD SELETAR AIRPORT BUILDING 556, WEST CAMP SINGAPORE 797794</p> <p>TEL: (65)64810017, Fax: (65)64811190 (Airport Manager) TEL: (65)64812909, Fax: (65)64833044 (AIS) TEL: (65)64812893, Fax: (65)64831656 (Control Tower) TEL: (65)64815077, 97533361 FAX: (65)64831754 (Airside Operations Unit)</p> <p>AFS: WSSLYDYX</p>
7	<i>Types of Traffic Permitted</i>	IFR and VFR
8	<i>Remarks</i>	<p>a. Scheduled Closure Periods for RWY 03/21: see AIP page WSSL AD 2-5.</p> <p>b. PPR for aircraft not equipped with RTF.</p> <p>c. 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.</p> <p>d. Direct transit area. Overnight transit in Singapore city.</p> <p>e. All arriving and departing aircraft are required to appoint a licensed Ground Handling Agent (GHA). List of Seletar GHAs can be downloaded from URL - http://www.seletarairport.com/ground-handling-agents-at-seletar-airport.html</p>

WSSL AD 2.3 OPERATIONAL HOURS

1	<i>Aerodrome Administration</i>	H24	5	<i>ATS Reporting Office</i>	H24
2	<i>Customs and Immigration</i>	H24	6	<i>MET Briefing Office</i>	H24
3	<i>Health and Sanitation</i>	H24	7	<i>Air Traffic Services</i>	H24
4	<i>AIS Self-Briefing Office</i>	H24	8	<i>Apron Control Office</i>	H24

WSSL AD 2.4 HANDLING SERVICES AND FACILITIES

1	<i>Cargo Handling Facilities</i>	Provided by handling agent.
2	<i>Fuel / Oil Types</i>	AVGAS 100LL, JET A1
3	<i>Fuelling Facilities / Capacity</i>	SUN/MON to THU/FRI BTN 2330-1400; SAT, SUN and Public holidays BTN 0030-0930 Contact during operating hours: TEL: (65)68538320 (Operations Room) Contact after operating hours: TEL: (65)91130816 (H24 Operations Mobile) FAX: (65)64839246 Group email: GX-SAV-Seletar-Operations24by7@shell.com PPP link: http://www.shell.com/business-customers/aviation/ppp.html
4	<i>Hangar space for visiting aircraft</i>	By arrangement with handling agent.
5	<i>Repair facilities for visiting aircraft</i>	By arrangement with handling agent.
6	<i>Remarks</i>	NIL

WSSL AD 2.5 PASSENGER FACILITIES

1	<i>Hotels</i>	NIL
2	<i>Restaurants</i>	NIL
3	<i>Transportation</i>	Handling agent provides its own transport service for passengers and crew between airport and city. Public buses and private hired taxis are available at airport terminal.
4	<i>Medical Facilities</i>	NIL
5	<i>Bank and Post Office</i>	NIL
6	<i>Tourist Office</i>	NIL
7	<i>Remarks</i>	NIL

WSSL AD 2.6 RESCUE AND FIRE FIGHTING SERVICES

1	<i>AD category for fire fighting</i>	CAT7 (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>	Up to B757-200. Contact Seletar Airside Operations at: +65 64815077 or +65 97533361
4	<i>Remarks</i>	All Airport Emergency Service personnel are trained in rescue and fire-fighting as well as medical first-aid.

WSSL AD 2.7 SEASONAL AVAILABILITY - CLEARING

The aerodrome is available throughout the year

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

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

WSSL AD 2.9 SURFACE MOVEMENT GUIDANCE AND CONTROL SYSTEM AND MARKINGS

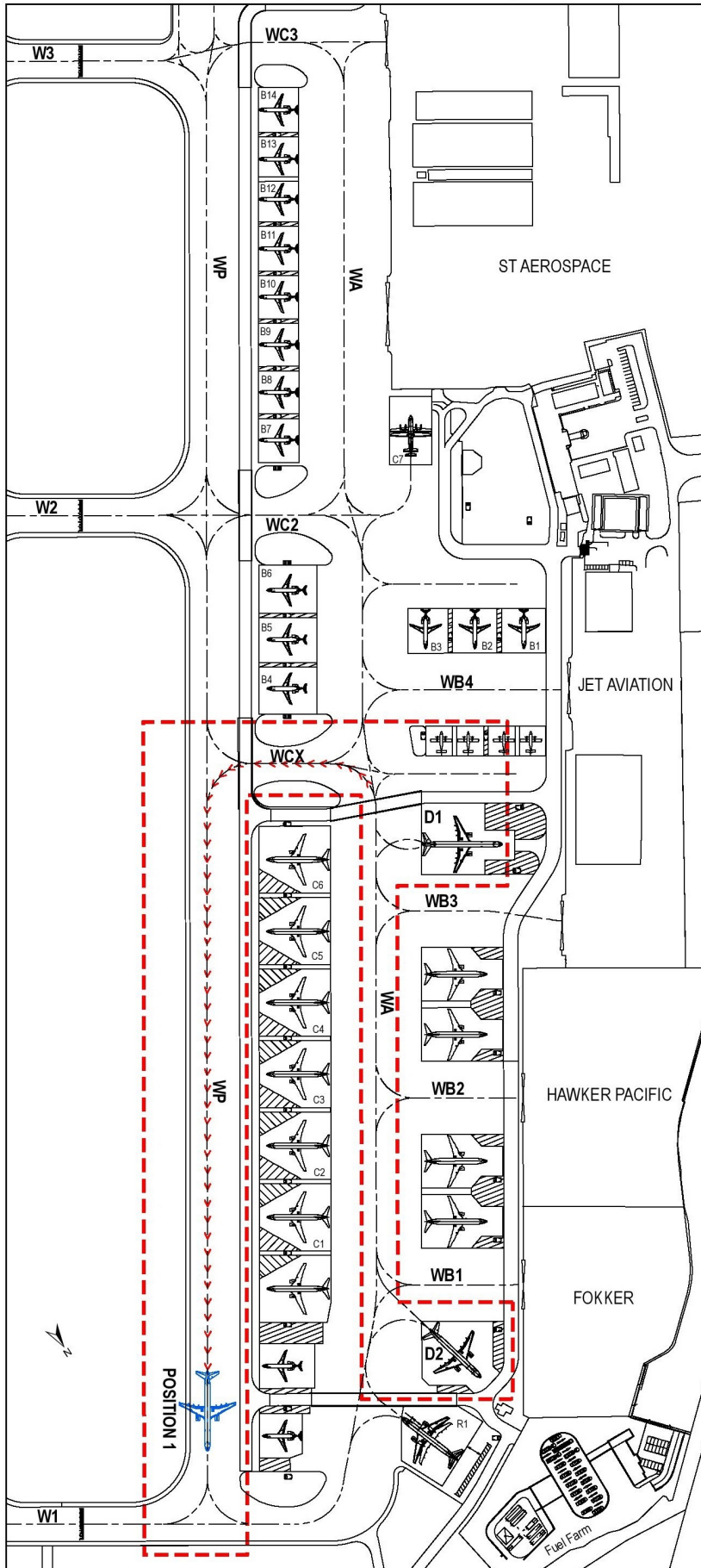
SURFACE MOVEMENT GUIDANCE AND CONTROL SYSTEM AND MARKINGS		
1	<i>Use of aircraft stand ID signs, TWY guidelines and visual docking/parking guidance system of aircraft stands</i>	Taxiing guidance signs at all intersections with TWY and RWY at all holding positions. Guidelines at apron. Nose-in guidance at aircraft stands.
2	<i>RWY and TWY markings and LGT</i>	<p><u>RWY LGT:</u> refer to page WSSL AD 2-5 for details. RWY Turn Pad LGT / Markings: Only AVBL at THR RWY 03. Yellow turnpad centreline.</p> <p><u>TWY LGT:</u> TWY Edge LGT: Blue LGT, inset, elevated and omni-directional. TWY markings: Yellow TWY centreline.</p> <p><u>MARKING AIDS:</u> Threshold, touchdown zone, centreline stripes and RWY designation. RWY width outline from bituminous concrete surface by white lines.</p> <p><u>AIMING POINT MARKINGS:</u> RWY 03: coincident with PAPI origin located 311.6m from THR respectively. RWY 21: coincident with PAPI origin located 232.8m from THR respectively.</p>
3	<i>Stop Bars</i>	<p>Stop Bars: Red LGT across taxiways W1, W2, W3, E2, E3 and E4, flushed with TWY surface.</p> <p>By default, red stop bar lights remain on unless deselected by the runway controller. When deselected, these stop bar lights will re-activate automatically after 45 seconds. Pilots shall not cross any lighted red stop bar lights.</p> <p>Pilots and drivers shall enter / cross the runway only when both the following conditions are met: The crew have</p> <ol style="list-style-type: none"> received positive ATC clearance to enter / cross the runway or taxiway, and observed that the red stop bar lights are turned off. <p>Crash Alarm Stop Bars: Red LGT across junctions of EP, EC4 and EH2 TWY, flushed with TWY surface.</p> <p>(Note to pilots and tow-crew: Slow down when taxiing / towing on TWY EP between TWY EC4 and abeam the Control Tower. Keep a lookout for emergency vehicles that may cross the taxiway to respond to emergency on the RWY.)</p>

SURFACE MOVEMENT GUIDANCE AND CONTROL SYSTEM AND MARKINGS

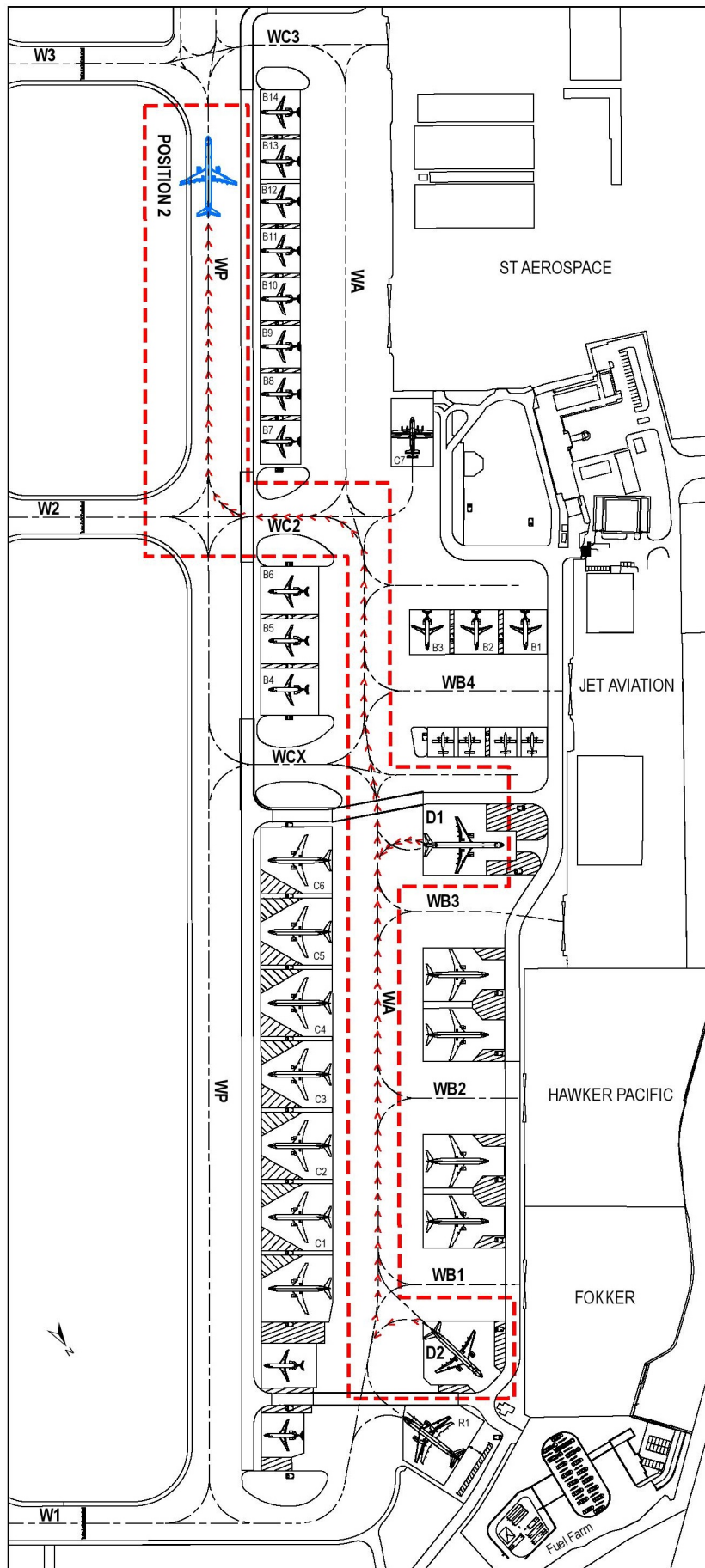
4	Remarks	<ul style="list-style-type: none"> a. Aircraft operators/ground handlers shall be responsible for the safe and smooth operations of aircraft at the aircraft stands. b. To enhance airside safety, all aircraft larger than Code A (i.e. up to but not including 15m wingspan) shall be marshalled into the aircraft stands. c. Arriving aircraft will be assigned an aircraft stand. A ground handler shall marshal the aircraft into the aircraft stand. d. A ground handler shall be at the aircraft stand when the aircraft is ready to depart. When the pilot signals that he is ready to taxi, the ground handler shall ensure that the area around the aircraft is clear before marshalling the aircraft out of the aircraft stand. e. Only Code A aircraft, Code B aircraft, aircraft type Global Express, Global 5000, Global Express XRS, Fokker 50, Fokker 70, Fokker 100, Gulfstream 500, Gulfstream 550, ATR 42-500, ATR 42-600, ATR 72-500, DASH 7 and Falcon 7X are allowed to self-power out from aircraft stands C1, C2, C3, C4, C5 and C6. f. Aircraft at stand C1 shall self-power out towards the north only. g. Aircraft at stand C6 shall self-power towards the south only. h. Aircraft at stands C2, C3, C4 and C5 are allowed to self-power out towards the south or the north. i. Aircraft can self-power in from the north as well as the south via TWY WA. j. All personnel, tow tugs and equipment shall be cleared from the aircraft stand and red chevron markings on the adjacent aircraft stands before self-power out can commence. k. Aircraft with wingspan larger than 28.35m are not allowed to park at aircraft stand C7. Refuelling will not be allowed at aircraft stand C7. l. Aircraft stands D50, D51, D52, D53, D54, D55 and D56 will be used for tow operations only.
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SURFACE MOVEMENT GUIDANCE AND CONTROL SYSTEM AND MARKINGS		
Aircraft Stands	Pushback / Tow Forward Procedures	Phraseology Used By SELETAR GROUND
C1/C2/C3/ C4/C5/C6	<p>PUSHBACK The aircraft (on idle thrust) shall be pushed back onto TWY WA to face North (or South) until its nose wheel is at the intersection of the aircraft stand lead-in line and the centreline of TWY WA. The aircraft may breakaway from there.</p> <p>TOW FORWARD The aircraft (on idle thrust) shall be towed forward onto the centreline of TWY WP to face North (or South) until its nose wheel is at the intersection of the aircraft tow-out line and TWY WP centreline. The aircraft may breakaway from there.</p>	<p>Pushback approved, to face North (or South)</p> <p>Tow forward approved, to face North (or South)</p>
C7	<p>PUSHBACK The aircraft (on idle thrust) shall be pushed back onto TWY WA to face North (or South) until its nose wheel is at the intersection of the aircraft stand lead-in line and the centreline of TWY WA. The aircraft may breakaway from there.</p>	<p>Pushback approved, to face North (or South)</p>
C50/C51/C52	<p>PUSHBACK The aircraft (on idle thrust) shall be pushed back onto TWY ES to face North (or South) until its nose wheel is at the intersection of the aircraft stand lead-in line (or pushback line) and the centreline of TWY ES. The aircraft may breakaway from there.</p>	<p>Pushback approved, to face North (or South)</p>
D1/D2 (for B757-200 and C130)	<p>PUSHBACK AND TOW FORWARD TO TWY WP The tow-crew shall request from Seletar Ground (vehicular) on 122.9MHz for departure pushback approval. Upon receiving the approval, the aircraft shall be pushed back onto TWY WA to face South until its nose wheel is at the intersection of the aircraft stand lead-in line and TWY WA centreline. The aircraft shall then be towed forward to TWY WP until the tow tug towing the aircraft is at the intermediate holding position short of TWY W1 (see chart AD 2.WSSL-6) or TWY W3 (see chart AD 2.WSSL-7). Once the tow tug is disengaged, the aircraft will request start up approval from Seletar Ground (aircraft) on 121.6MHz. The aircraft shall breakaway from there.</p> <p>FOR LANDED B757-200/C130 AIRCRAFT EXITING VIA TWY W1 After landing, B757-200/C130 aircraft exiting TWY W1 shall stop when its nose is at the information marking "B757/C130 HOLD FOR TOW" on TWY W1. The aircraft shall be on tow starting from this point onwards until they park inside the aircraft stands.</p> <p>FOR LANDED B757-200/C130 AIRCRAFT EXITING VIA TWY W2 After landing, B757-200/C130 aircraft exiting TWY W2 shall stop when its nose is at the information marking "B757/C130 HOLD FOR TOW" on TWY W2. The aircraft shall be on tow starting from this point onwards until they park inside the aircraft stands.</p> <p>FOR LANDED B757-200/C130 AIRCRAFT EXITING VIA TWY W3 After landing, B757-200/C130 aircraft exiting TWY W3 shall stop when its nose is at the information marking "B757/C130 HOLD FOR TOW" on TWY W3. The aircraft shall be on tow starting from this point onwards until they park inside the aircraft stands.</p>	<p>1) Tow approved to intermediate holding position on TWY WP short of TWY W1 to face North; or</p> <p>2) Tow approved to intermediate holding position on TWY WP short of TWY W3 to face South</p> <p>Not applicable</p> <p>Not applicable</p> <p>Not applicable</p>
D50 /D51/ D52/D53/ D54/D55/ D56	<p>The tow crew shall request from Seletar Ground (vehicular) on 122.9MHz for pushback approval. Upon receiving the approval, the aircraft shall be pushed back onto TWY EN to face South until its nose wheel is at the intersection of the aircraft stand pushback line and TWY EN centreline. The aircraft shall then be towed from there.</p>	<p>Pushback approved to face South</p>

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



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



WSSL AD 2.10 AERODROME OBSTACLES

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

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

WSSL AD 2.11 METEOROLOGICAL INFORMATION PROVIDED

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

WSSL AD 2.12 RUNWAY PHYSICAL CHARACTERISTICS

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

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

12	Remarks:
<p>i) Scheduled closure period for RWY 03/21</p> <p>a) BTN 1600-2300 first FRI of EV month or second FRI if the first FRI is a public holiday. RWY CLSD to all TFC except medevac and EMERG flights. Advance notice of 30 minutes is required for EMERG opening of RWY.</p> <p>b) BTN 0500-0515, 1030-1045, 1600-1615 and 2300-2315 daily for RWY inspection. Aircraft to expect delay.</p> <p>c) BTN 1600-1800 EV TUE and FRI of EV month. RWY CLSD to all TFC except medevac and EMERG flights. Advance notice of 30 minutes is required for EMERG opening of RWY.</p> <p>ii) A lighted runway turn pad with centreline marking is provided at the threshold of RWY 03 which is able to serve aircraft up to B757-200.</p> <p>iii) Orange frangible posts are positioned along the boundary 90m on either sides on the RWY centreline. These posts demarcate the boundary for grass cutting and other maintenance works.</p>	

WSSL AD 2.13 DECLARED DISTANCES

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

WSSL AD 2.14 APPROACH AND RUNWAY LIGHTING

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

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

WSSL AD 2.15 OTHER LIGHTING, SECONDARY POWER SUPPLY

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

WSSL AD 2.16 HELICOPTER LANDING AREA

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

WSSL AD 2.17 ATS AIRSPACE

1	<i>Designation and Lateral Limits</i>	<p>SELETAR CTR 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>SELETAR CONTROL ZONE A Portion of Seletar CTR within Singapore FIR is known as Seletar CTR 'A'.</p> <p>SELETAR CONTROL ZONE '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>SELETAR CONTROL ZONE A SFC to 4 500ft ALT Maximum Usable ALT 4 000ft</p> <p>SELETAR CONTROL ZONE 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	* for vehicular movements For AWY B469, G334, R208, L625, L629, L635, L642, M751, M753, M758, M761, M763, M771, N884, N891 and N892
	SELETAR GROUND	121.6 MHz * 122.9 MHz		
ACC	SINGAPORE RADAR	P123.7 MHz S127.3 MHz	0000-1430	For AWY A457, A464, A576, B466, R325 (all northbound) and R469.
		133.8 MHz		For AWY G580, M646 and M767
		P133.25 MHz S135.8 MHz	H24	For AWY A464, A576, G579 (all southbound), B470, G220, N875 and in area in the immediate vicinity of Singapore
		P134.2 MHz S133.35 MHz		Radar Maint Period: Monthly - every third SAT BTN 1601-2359
	P134.4 MHz S128.1 MHz 255.4 MHz	SEA 1. SATCOM SER AVBL SSB suppressed carrier		
	SINGAPORE RADIO	6556 kHz 11297 kHz		SEA 2. SATCOM SER AVBL SSB suppressed carrier
		5655 kHz 8942 kHz 11396 kHz		SEA 3. SATCOM SER AVBL SSB suppressed carrier
6556 kHz				
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 Hr	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

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

WSSL AD 2.20 LOCAL TRAFFIC REGULATIONS

1 LOCAL FLYING RESTRICTIONS:

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

2 TEST/TRAINING FLIGHTS

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

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

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

3.1 **INTRODUCTION**

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

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

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

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

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

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

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

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

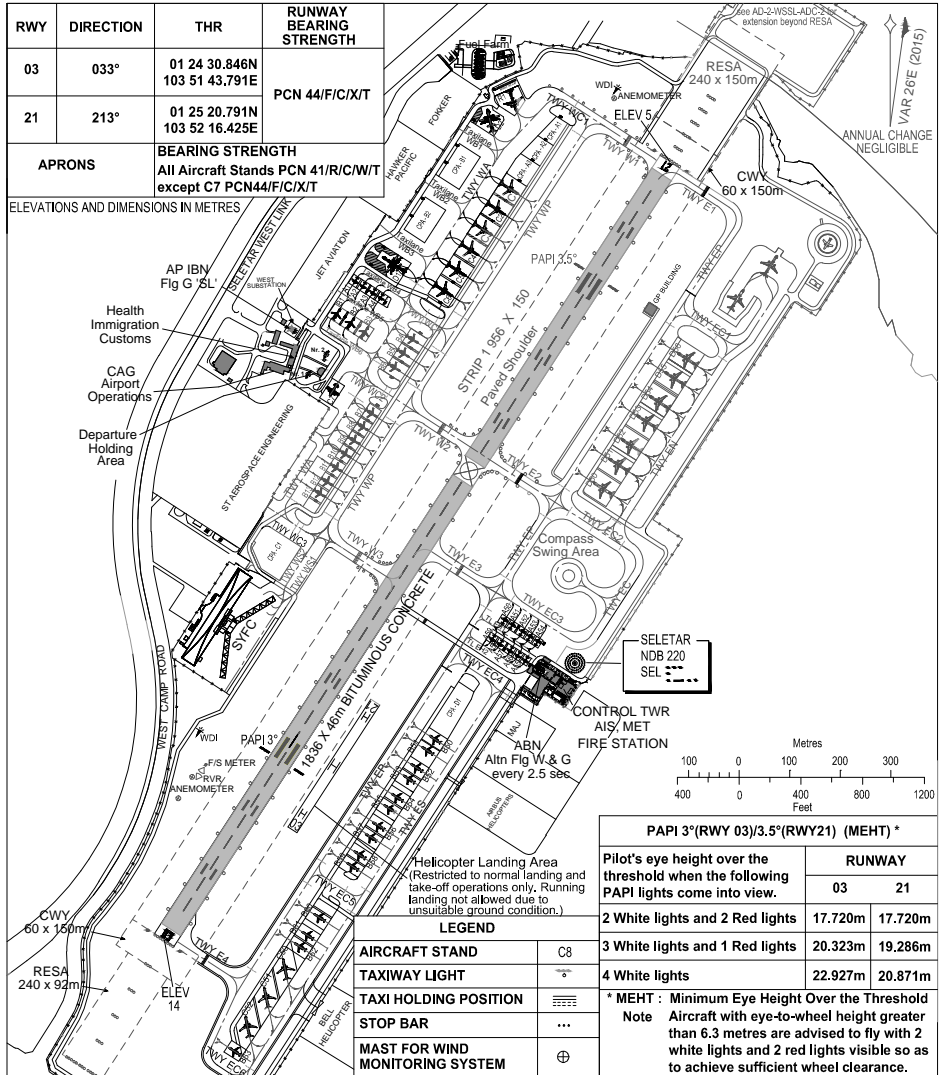
AERODROME CHART - ICAO

01° 25' 01.04"N
103° 52' 03.52"E

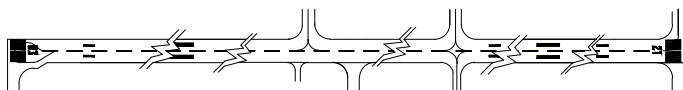
ELEV 14m

TWR 118.45
121.6

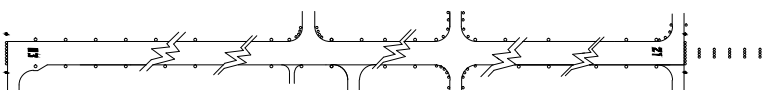
SINGAPORE/SELETAR



MARKING AIDS RWY 03/21 AND EXIT TWY



LIGHTING AIDS RWY 03/21 AND EXIT TWY

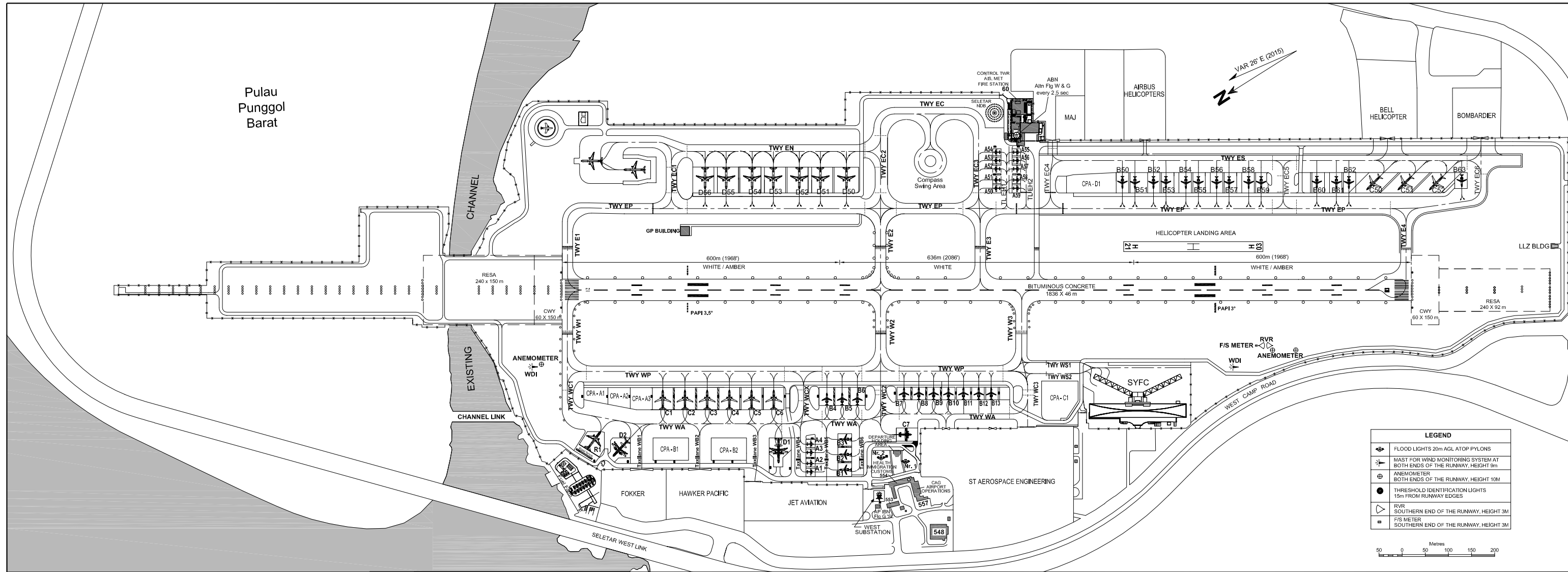


INS COORDINATES FOR AIRCRAFT STANDS

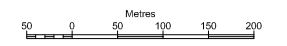
STAND NR	NORTH LATITUDE	EAST LONGITUDE	ELEVATION
A1	01 25 13.102	103 51 56.167	6.181m (20.280ft)
A2	01 25 12.779	103 51 56.653	6.338m (20.795ft)
A3	01 25 12.350	103 51 57.301	6.586m (21.609ft)
A4	01 25 12.029	103 51 57.787	6.761m (22.183ft)
A50	01 24 51.431	103 52 05.765	7.807m (25.615ft)
A51	01 24 51.110	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)
A67	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



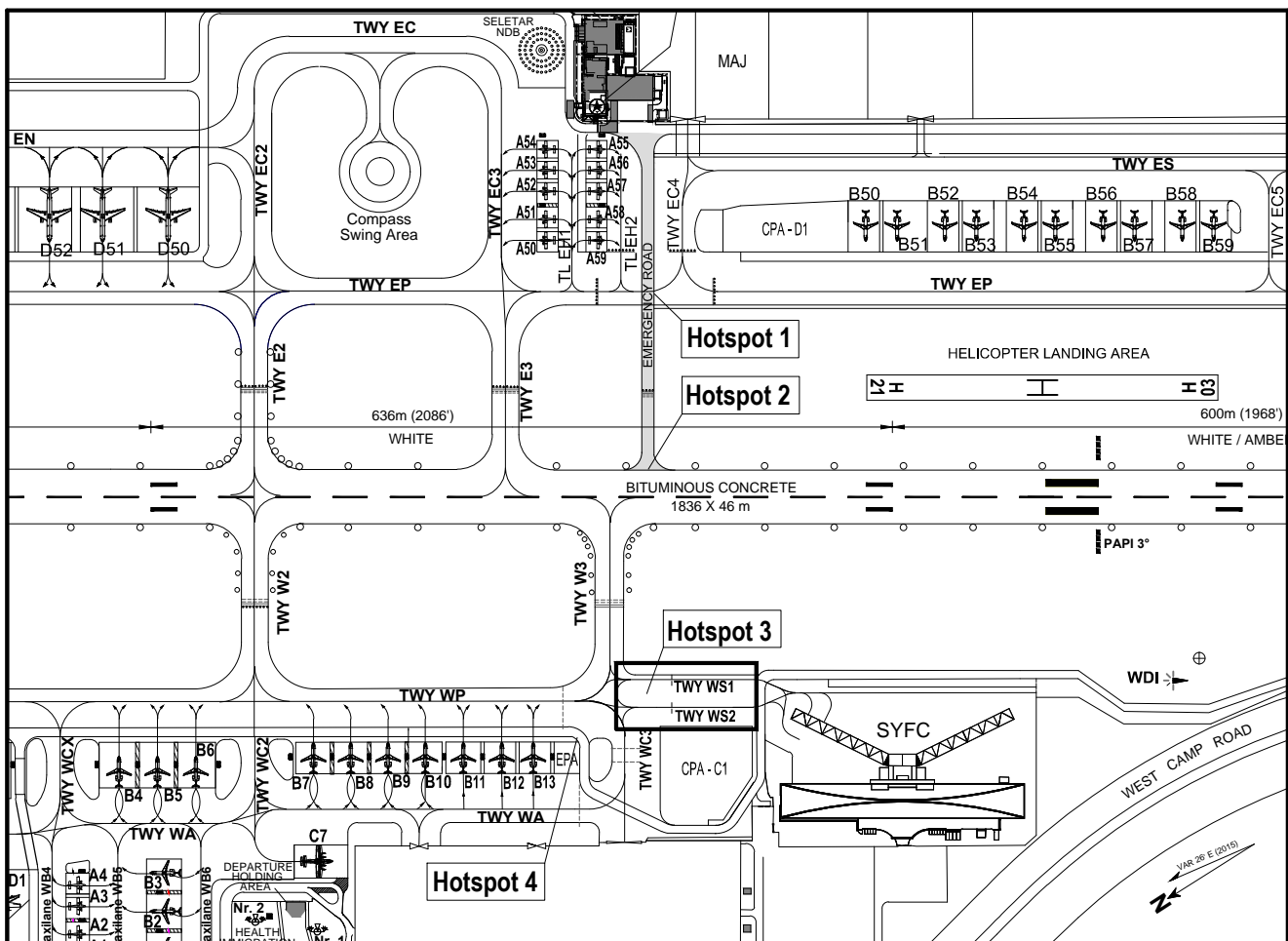
LEGEND	
	FLOOD LIGHTS 20m AGL ATOP PYLONS
	MAST FOR WIND MONITORING SYSTEM AT BOTH ENDS OF THE RUNWAY, HEIGHT 9m
	ANEMOMETER BOTH ENDS OF THE RUNWAY, HEIGHT 10M
	THRESHOLD IDENTIFICATION LIGHTS 15m FROM RUNWAY EDGES
	RVR SOUTHERN END OF THE RUNWAY, HEIGHT 3M
	F/S METER SOUTHERN END OF THE RUNWAY, HEIGHT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



CHANGES : New Aircraft Stands D55, D56 and new TWY EC1, TWY E1 added at North East Apron. TWY EP extended.

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AERODROME HOTSPOTS



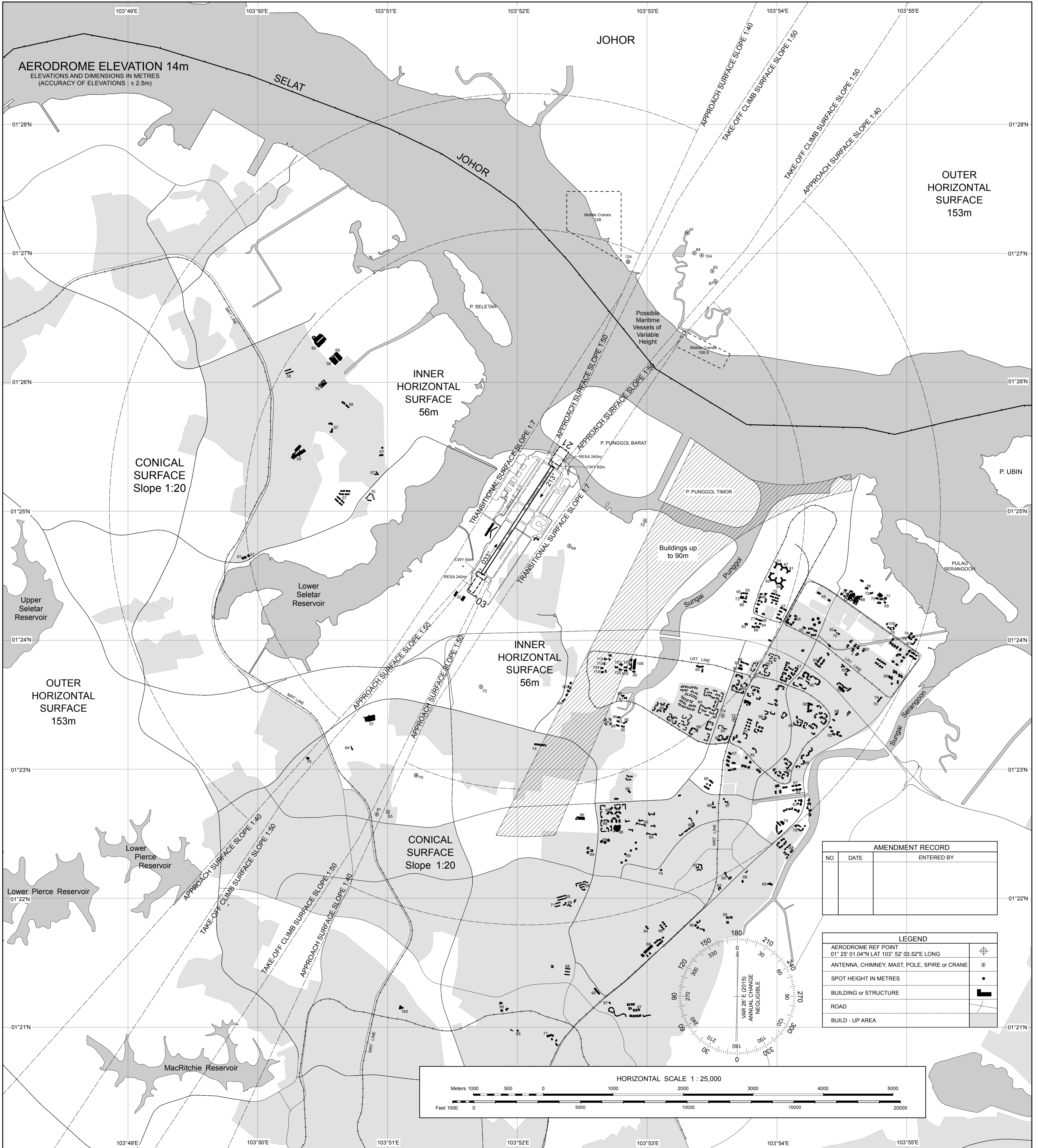
Hotspots

- 1) Emergency access road crossing TWY EP parallel to TWY EC4.
Pilots and tow tug drivers to exercise caution. Stop Bar on both sides of emergency road will be lighted during emergency.
- 2) Emergency roadway South of TWY E3.
Pilots on RWY to exercise caution and observe NO ENTRY marking. This is not a taxiway.
- 3) TWY WS1 & WS2.
Available for Code A aircraft accessing SYFC Dispersal only.
- 4) Roadway R3A bends to the right after aircraft stand B13.
Drivers travelling South to exercise caution. TWY WC3 ahead.

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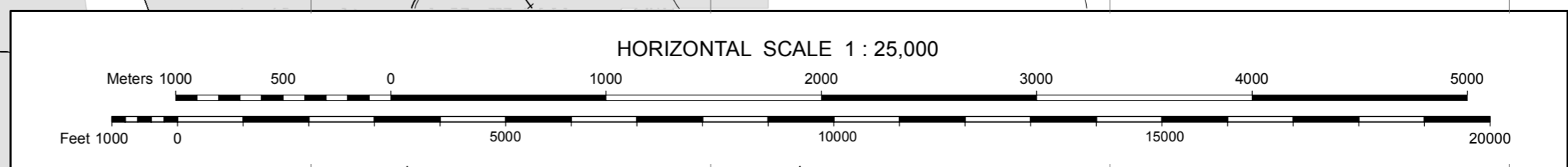
**AERODROME OBSTACLE CHART - ICAO
TYPE B**

SINGAPORE / Seletar



AMENDMENT RECORD		
NO	DATE	ENTERED BY

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



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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	<i>ARP coordinates and site at AD</i>	012120.6N 1035410.0E(Paya Lebar IBN)
2	<i>Direction and distance from (city)</i>	-
3	<i>Elevation/Reference temperature</i>	20 M (65ft) / 31.5° C
4	<i>MAG VAR</i>	0°26' E (2015)
5	<i>AD Administration, address, telephone, telefax, telex, AFS</i>	PAYA LEBAR AIRPORT SINGAPORE 534395 Tel: 63813111 (Base Command Post) AFS: WSAPYWYX
6	<i>Types of traffic permitted</i>	IFR
7	<i>Remarks</i>	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	<i>Aerodrome Administration</i>	BTN 2300-1100 SUN/MON to THU/FRI, 2300-0500 FRI/SAT; Public holidays and outside operating hours prior permission required from RSAF Headquarters via Paya Lebar Operations.
2	<i>Customs and immigration</i>	by prior arrangement only
3	<i>Health and sanitation</i>	by prior arrangement only
4	<i>AIS Briefing Office</i>	-
5	<i>ATS Reporting Office</i>	-
6	<i>MET Briefing Office</i>	H24
7	<i>Air Traffic Services</i>	H24
8	<i>Remarks</i>	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 2300-1100 SUN/MON to THU/FRI; 2300-0500 FRI/SAT; 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.

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

WSAP AD 2.18 ATS COMMUNICATION FACILITIES

Service designation	Call sign	Frequency	Hours of operation	Remarks
APP	PAYA LEBAR APPROACH	119.9 MHz 298.0 MHz *255.8 MHz #127.7 MHz	BTN 2300-1100 SUN-MON to THU-FRI; BTN 2300-0500 FRI-SAT; and on SUN, Public holidays and outside the above	* for monitoring aircraft operating in Light Aircraft Training Areas. # for monitoring aircraft operating in Light Aircraft Training Areas and Seletar outbound/inbound traffic.
TWR	PAYA LEBAR TOWER	118.05 MHz 263.1 MHz		NIL
GND	PAYA LEBAR GROUND	130.8 MHz 296.0 MHz		
PAR	PAYA LEBAR TALKDOWN	119.9 MHz †269.0 MHz ◆240.5 MHz	times PPR from RSAF HQ via Paya Lebar Operations.	† for Talkdown 1, ◆for Talkdown 2 Maint Period: BTN 0001-1100 First THU of EV month
SRE	PAYA LEBAR DIRECTOR	283.0 MHz		Maint Period: BTN 0001-1100 Second THU of EV month
Flight Information Service	SINGAPORE RADAR	119.1 MHz	H24	NIL
ACC	SINGAPORE RADAR	P123.7 MHz S127.3 MHz	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, 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	BTN 2300-1100 from SUN-MON to THU-FRI, BTN 2300-0500 FRI-SAT; and on SUN, Public holiday and outside the above times PPR from RSAF HQ via Paya Lebar Operations.	012224.00N 1035451.00E	030° MAG 2.375km from ARP. Maint Period: BTN 0001-0900 Second SAT of EV month RWY 02 step-down fix revised to 4.4 DME at 1060ft.
PAPA UNIFORM DVOR/DME	PU	115.1 MHz CH98X	H24	012523.99N 1035559.74E	020° MAG 9km from THR RWY 02 Antenna Hgt: 190ft AMSL. Coverage 200NM. Maint Period: BTN 0200-0600 Third WED of EV month
SINJON DVOR/DME	SJ	113.5 MHz CH82X	H24	011319.28N 1035120.08E	201° MAG 14.5km from THR RWY 02 (Paya Lebar). Antenna HGT: 194ft AMSL Coverage 200NM Maint Period: BTN 0200-0600 Third THU of EV month
ILS LLZ RWY 02	IPN	109.3MHz	H24	012246.41N 1035503.64E	LOC 401m from THR RWY 20 along centreline of RWY. Course width 3 DEG. Maint Period: BTN 0001-0900 First SUN of EV month

WSAP AD 2.23 ADDITIONAL INFORMATION**1 OUTDOOR LIGHT AND WATER SHOW**

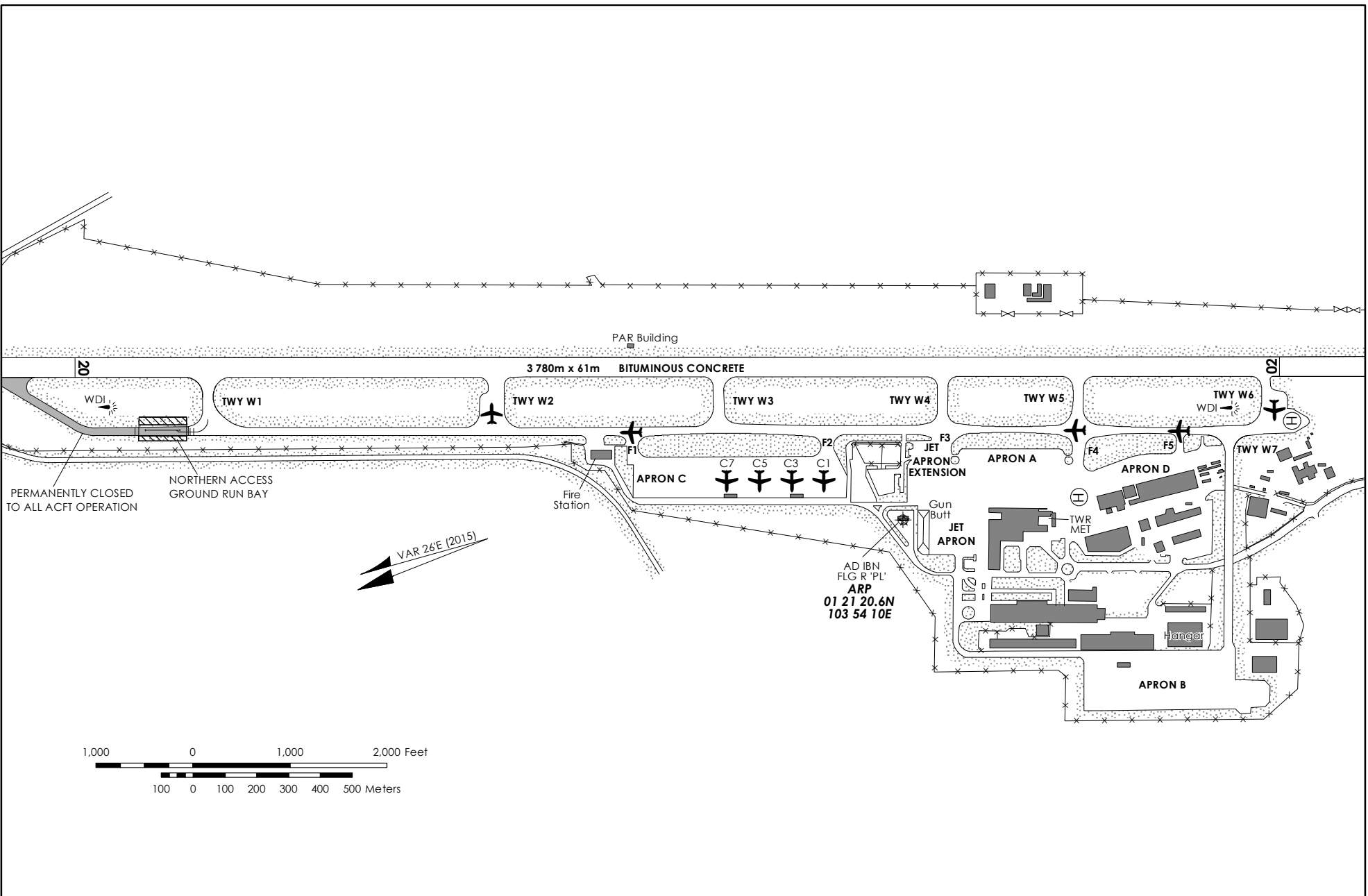
- 1.1 An outdoor light and water show will take place between 1200-1215, 1300-1315, 1400-1415 Friday to Saturday and 1200-1215, 1300-1315 Sunday to Thursday at 011704N 1035130E (within Paya Lebar Control Zone).
GND - UNL.

WSAP AD 2.24 CHARTS RELATED TO PAYA LEBAR AIRPORT

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

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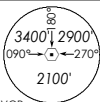
LOCATION OF AIRCRAFT STANDS FOR CIVIL AIRCRAFT AT PAYA LEBAR AIRPORT



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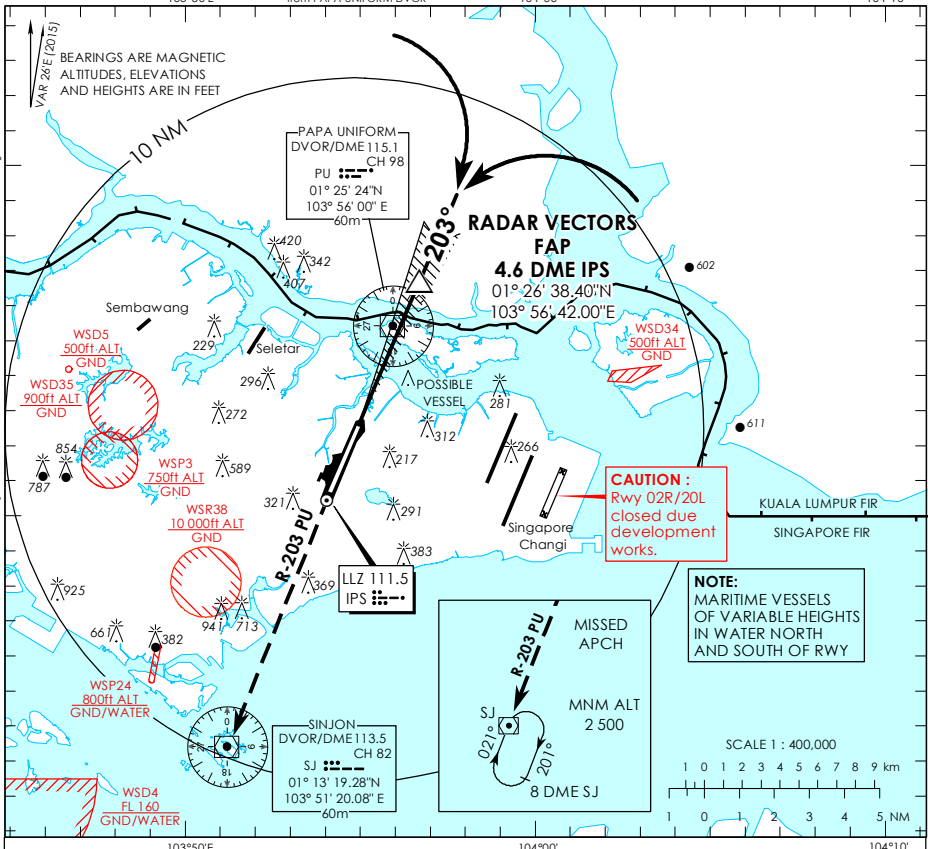
**INSTRUMENT
APPROACH
CHART**

AERODROME ELEV 65ft
HEIGHT RELATED TO
THR RWY 20 - 65ft



ATIS Paya Lebar	148.9
Singapore APP	120.3
Paya Lebar APP	119.9 298.0
Paya Lebar TWR	118.05 263.1
Ground Control	130.8 296.0

**SINGAPORE/
PAYA LEBAR
IPS ILS/DME
RWY 20**

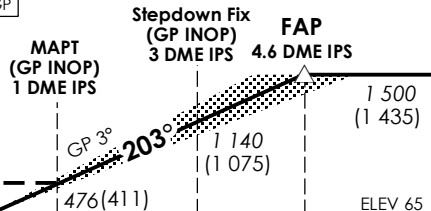


Transition Level : FL 130
Transition Alt : 11 000

ILS/DME co-located with GP

ILS RDH 55

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



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

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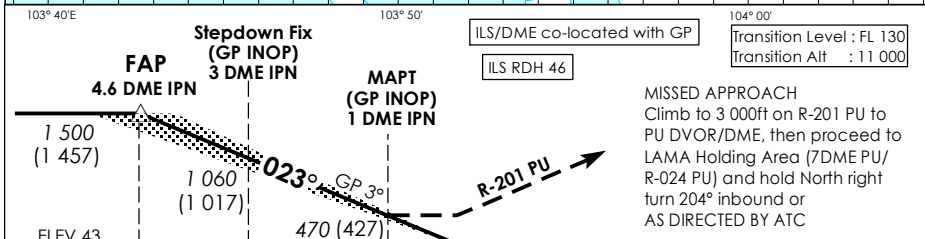
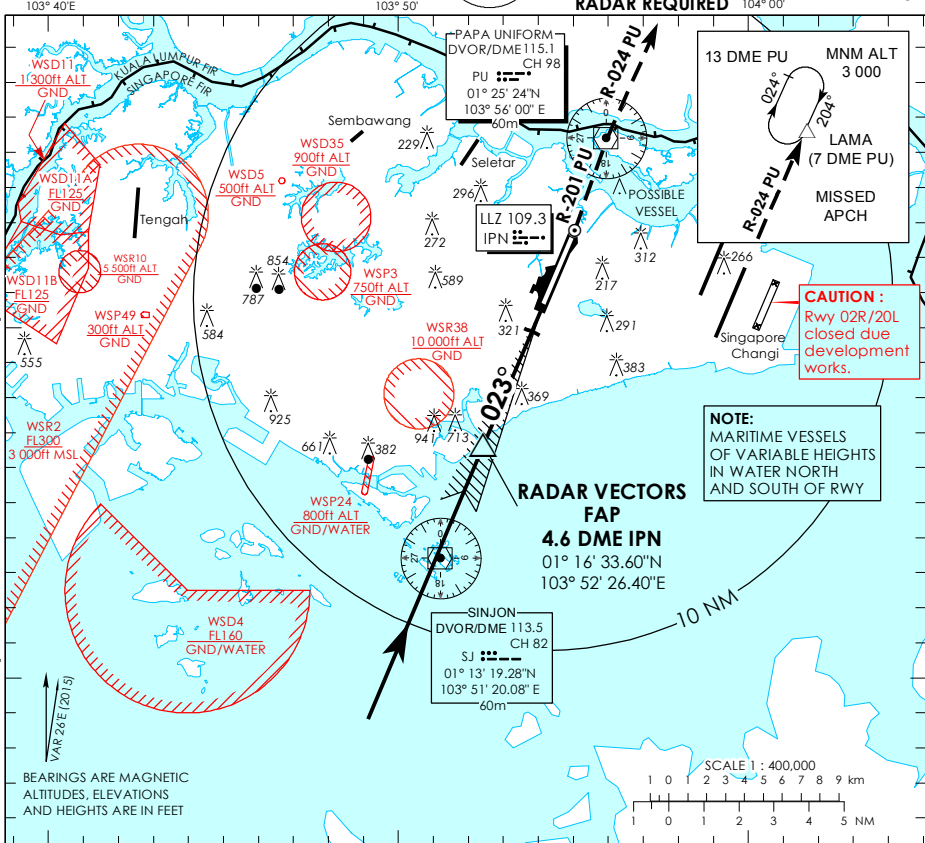
INSTRUMENT APPROACH CHART

AERODROME ELEV 65ft
HEIGHT RELATED TO
THR RWY 02 - ELEV 43ft MSA 25 NM
from PAPA UNIFORM DVOR



ATIS Paya Lebar	148.9
Singapore APP	120.3
Paya Lebar APP	119.9 298.0
Paya Lebar TWR	118.05 263.1
Ground Control	130.8 296.0

SINGAPORE/PAYA LEBAR
IPN ILS/DME RWY 02



OCA (OCH)					
Category of Aircraft	A	B	C	D	
Straight-in	CAT I ILS	178 (135)	188 (145)	198 (155)	208 (165)
	GP INOP	470 (427)			
Distance	4 DME	3 DME	2 DME		
Altitude (Height)	1300 (1257)	1060 (1017)	740 (697)		
Speed	knots	70	120	150	185
FAF - MAPT 3.6nm	min : s	3 : 06	1 : 48	1 : 27	1 : 11
Rate of descent/GS	ft/min	370	635	795	980

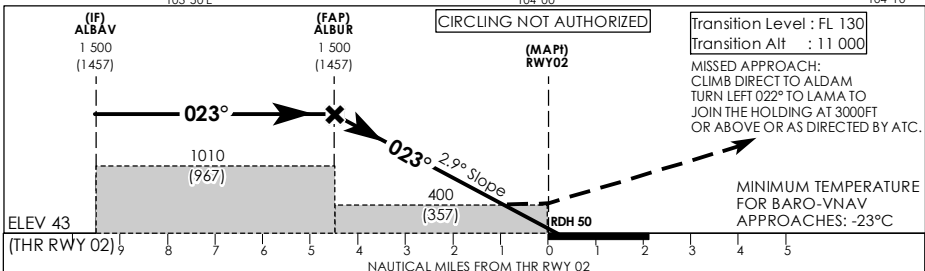
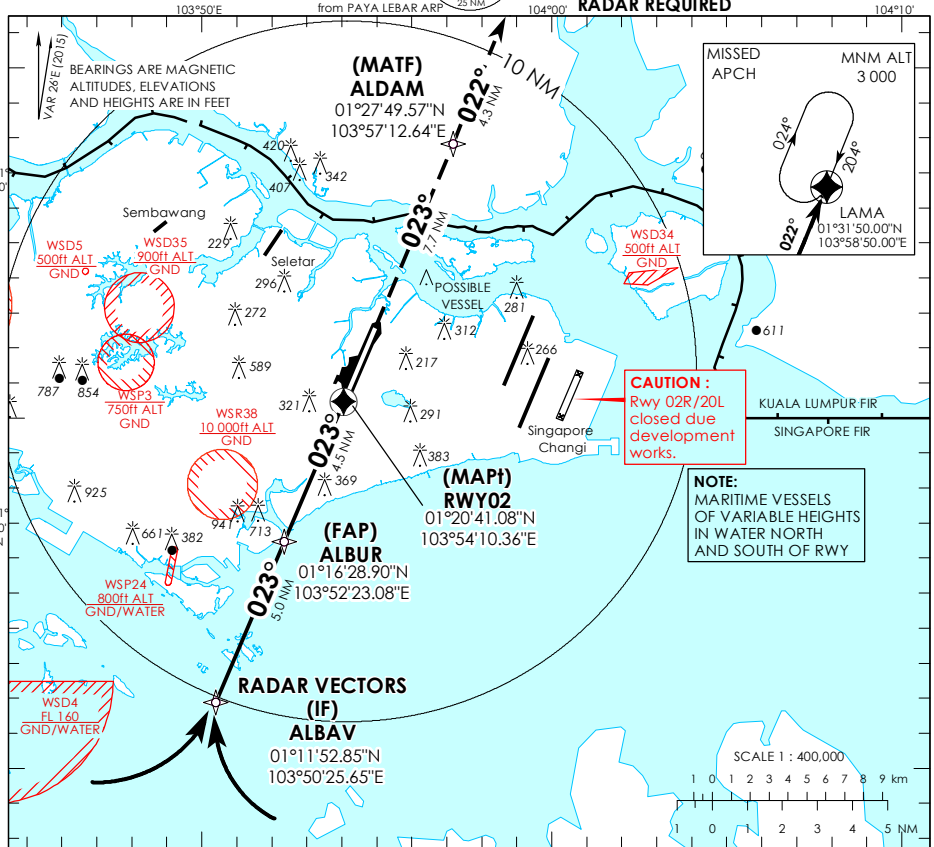
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INSTRUMENT APPROACH CHART

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

ATIS Paya Lebar	148.9
Singapore APP	120.3
Paya Lebar APP	119.9 298.0
Paya Lebar TWR	118.05 263.1
Ground Control	130.8 296.0

SINGAPORE/ PAYA LEBAR RNAV (GNSS) RWY 02



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

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INSTRUMENT APPROACH CHART

AERODROME ELEV 65ft
HEIGHT RELATED TO THR RWY 20 - 65ft

3500
+
ARP

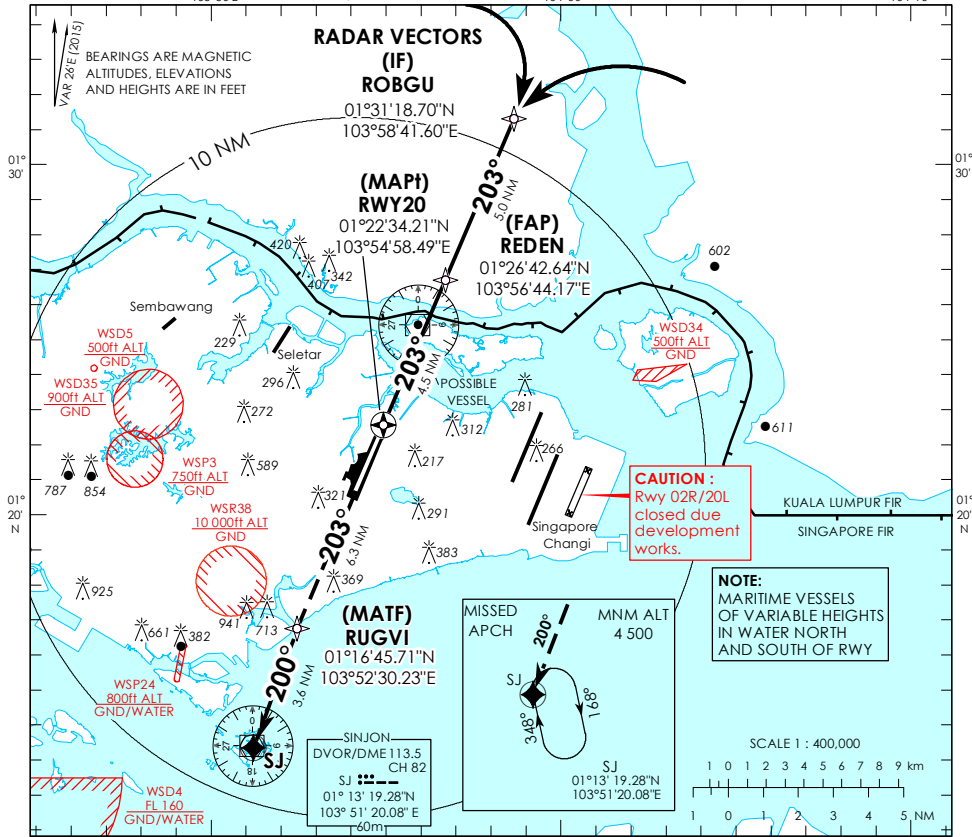
ATIS Paya Lebar	148.9
Singapore APP	120.3
Paya Lebar APP	119.9 298.0
Paya Lebar TWR	118.05 263.1
Ground Control	130.8 296.0

SINGAPORE/
PAYA LEBAR
RNAV (GNSS)
RWY 20

103°50'E 104°00' 104°10'

MSA 25 NM from PAYA LEBAR ARP

RADAR REQUIRED



Transition Level : FL 130
Transition Alt : 11 000

MISSED APPROACH:
CLIMB DIRECT TO RUGVI.
TURN LEFT 200° TO SJ TO
JOIN THE HOLDING AT 4500FT
OR ABOVE OR AS DIRECTED BY ATC.

MINIMUM TEMPERATURE FOR BARO-VNAV APPROACHES: -23°C

RDH 50

2.9° slope

420 (355)

1010 (945)

CIRCLING NOT AUTHORIZED

ELEV 65 (THR RWY 20)

NAUTICAL MILES FROM THR RWY 20

		OCA (OCH)					
Category of Aircraft		A	B	C	D		
LNAV/VNAV	2.5%			420 (355)			
LNAV	2.5%			420 (355)			
Fix		ROBGU	REDEN	RWY20	RUGVI	SINJON	
Altitude (Height)	1500 (1435)	1500 (1435)	420 (355)	1030 (965)	1580 (1515)		
Speed	knots	80	100	120	140	160	180
FAP - MAP1 4.5 nm	min : s	3 : 23	2 : 42	2 : 15	1 : 56	1 : 41	1 : 30
Rate of descent/GS	ft/min	410	513	615	718	821	923

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