

REPUBLIC OF SINGAPORE

AERONAUTICAL INFORMATION SERVICES
CIVIL AVIATION AUTHORITY OF SINGAPORE
SINGAPORE CHANGI AIRPORT
P.O. BOX 1, SINGAPORE 918141

AIP

AMENDMENT NR 6/14
13 NOVEMBER 2014

1. SIGNIFICANT INFORMATION AND CHANGES

1.1 Singapore FIR

- a) Termination of Repetitive Flight Plan (RPL) System within the Singapore FIR ENR 1.10-3 / ENR 1.10-4

1.2 Singapore Changi Airport (WSSS)

- a) Update on parking restrictions for aircraft type B767 series at Cargo Stands WSSS AD 2-6.7
b) Update on runway capacity enhancement initiative to achieve maximum flow rate per hour for departures and arrivals WSSS AD 2-23

1.3 Seletar Airport (WSSL)

- a) Update on procedures for pushback and tow forward for aircraft types B757-200 and C130 from aircraft stands D1 and D2 WSSL AD 2-4-1 to WSSL AD 2-4-3
b) Availability of simple touchdown zone lights for both RWY 03 and RWY 21 approach WSSL AD 2-5 and WSSL AD 2-9

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

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

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

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 THIS AMENDMENT INCORPORATES INFORMATION CONTAINED IN THE FOLLOWING WHICH ARE HEREBY SUPERSEDED:

NOTAM:

AIP Supplement:

331/14 dated 2 OCT 14

AIC:

6/10 dated 9 SEP 10

4/14 dated 21 AUG 14

NOTAM:

A1911/14 dated 29 SEP 14

A1919/14 dated 30 SEP 14

A1943/14 dated 1 OCT 14

A1977/14 dated 7 OCT 14

A1981/14 dated 7 OCT 14

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
1/15	8 January 2015
2/15	5 March 2015
3/15	30 April 2015
4/15	25 June 2015
5/15	20 August 2015
6/15	15 October 2015
7/15	10 December 2015

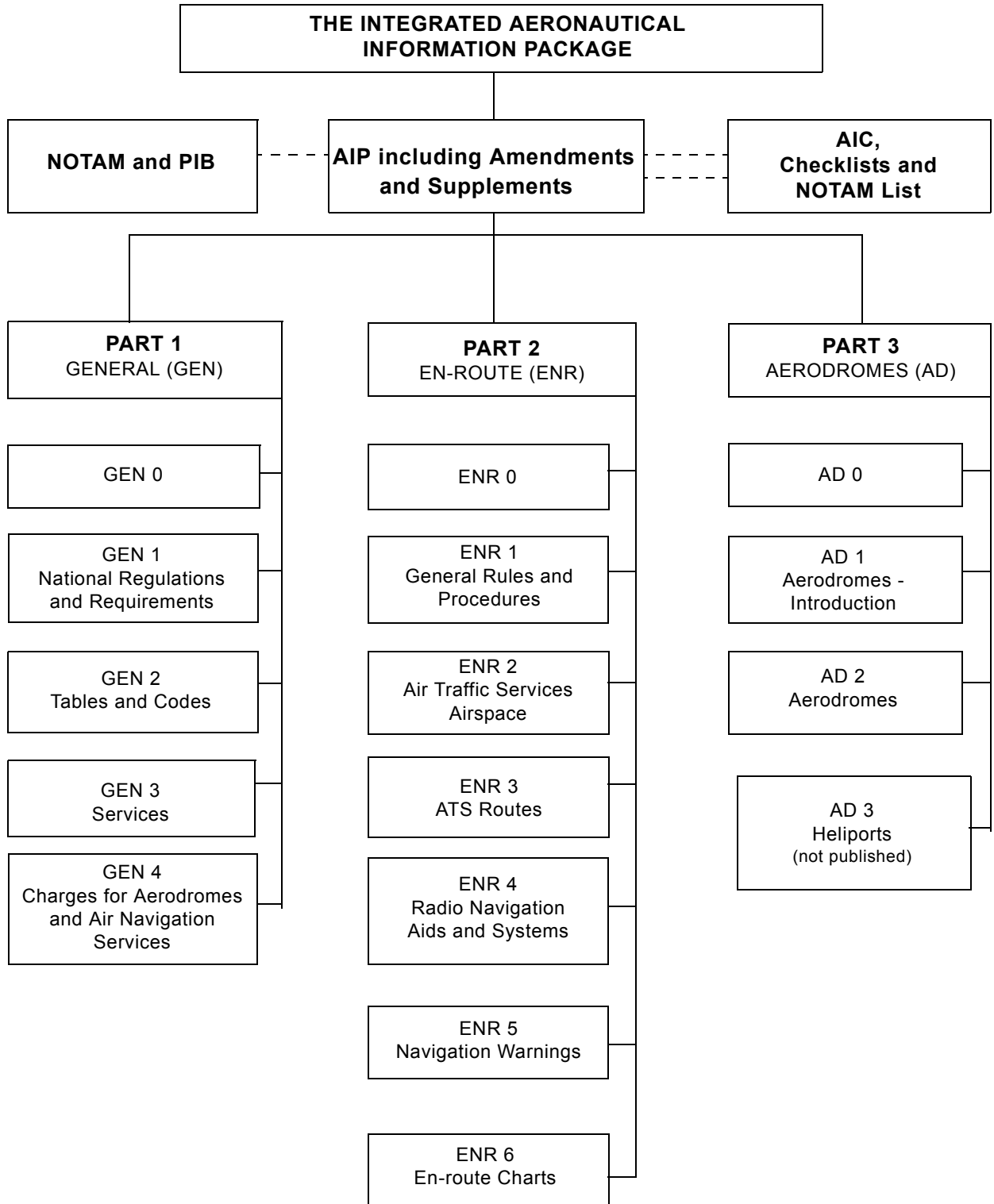
4. Service to contact in case of detected AIP errors or omissions

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:

Chief AIS
Aeronautical Information Services
Civil Aviation Authority of Singapore,
Singapore Changi Airport,
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Singapore 918141

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GEN 0.1 PREFACE



GEN 0.3 RECORD OF CURRENT AIP SUPPLEMENTS				
<i>NR/ Year</i>	<i>Subject</i>	<i>AIP section affected</i>	<i>Period of validity (from / to)</i>	<i>Cancellation record</i>
90/13	Paya Lebar AP - Hammerhead Cranes	AD	WIE / 1 JAN 16	
91/13	Paya Lebar AP - Hammerhead Cranes	AD	WIE / 1 JAN 16	
92/13	Paya Lebar AP - Tower Cranes	AD	WIE / 25 JAN 16	
93/13	Paya Lebar AP - Topless Cranes	AD	WIE / 31 JAN 16	
94/13	Paya Lebar AP - Luffer Crane	AD	WIE / 31 JAN 16	
172/13	Paya Lebar AP - Luffer Crane	AD	WIE / 30 DEC 15	
173/13	Paya Lebar AP - Luffer Crane	AD	WIE / 30 DEC 15	
174/13	Paya Lebar AP - Tower Crane	AD	WIE / 31 DEC 15	
175/13	Paya Lebar AP - Hammerhead and Luffer Cranes	AD	WIE / 31 DEC 15	
176/13	Paya Lebar AP - Topless and Luffer Cranes	AD	WIE / 31 DEC 15	
208/13	Paya Lebar AP - Hammerhead Crane	AD	WIE / 1 NOV 15	
209/13	Paya Lebar AP - Hammerhead Cranes	AD	WIE / 1 NOV 15	
210/13	Paya Lebar AP - Luffer Cranes	AD	WIE / 30 NOV 15	
211/13	Paya Lebar AP - Topless and Luffer Cranes	AD	WIE / 30 NOV 15	
212/13	Paya Lebar AP - Topless and Luffer Cranes	AD	WIE / 30 NOV 15	
213/13	Paya Lebar AP - Luffer Cranes	AD	WIE / 31 AUG 16	
214/13	Paya Lebar AP - Saddle and Luffer Cranes	AD	WIE / 31 AUG 16	
215/13	Paya Lebar AP - Saddle Cranes	AD	WIE / 1 SEP 16	
216/13	Paya Lebar AP - Luffer Cranes	AD	WIE / 10 SEP 16	
217/13	Paya Lebar AP - Topless Cranes	AD	WIE / 30 SEP 16	
218/13	Paya Lebar AP - Hammerhead Cranes	AD	WIE / 1 JAN 15	
219/13	Paya Lebar AP - Luffer Crane	AD	WIE / 9 JAN 15	
220/13	Paya Lebar AP - Hammerhead and Luffer Cranes	AD	WIE / 31 JAN 15	
221/13	Paya Lebar AP - Luffer Crane	AD	WIE / 31 JAN 15	
222/13	Paya Lebar AP - Luffer Crane	AD	WIE / 31 JAN 15	
228/13	Paya Lebar AP - Luffer Cranes	AD	WIE / 15 MAR 15	
229/13	Paya Lebar AP - Luffer Cranes	AD	WIE / 15 MAR 15	
230/13	Paya Lebar AP - Luffer and Topless Cranes	AD	WIE / 31 MAR 15	
231/13	Paya Lebar AP - Topless Cranes	AD	WIE / 31 MAR 15	
232/13	Paya Lebar AP - Topless Cranes	AD	WIE / 31 MAR 15	
255/13	Paya Lebar AP - Hammerhead and Topless Cranes	AD	WIE / 31 DEC 16	
256/13	Paya Lebar AP - Topless Cranes / A Frames	AD	WIE / 31 DEC 16	
257/13	Paya Lebar AP - Topless Cranes	AD	WIE / 31 DEC 16	
258/13	Paya Lebar AP - Luffer and Hammerhead Canes	AD	WIE / 31 DEC 16	
259/13	Paya Lebar AP - Topless and Hammerhead Cranes	AD	WIE / 31 DEC 16	
260/13	Paya Lebar AP - Luffer Cranes	AD	WIE / 1 DEC 15	
261/13	Paya Lebar AP - Hammerhead Cranes	AD	WIE / 20 DEC 15	
262/13	Paya Lebar AP - Luffer Crane	AD	WIE / 31 DEC 15	
263/13	Paya Lebar AP - Luffer Cranes	AD	WIE / 31 DEC 15	
264/13	Paya Lebar AP - Luffer Crane	AD	WIE / 31 DEC 15	
1/14	Paya Lebar AP - Luffer Cranes	AD	WIE / 31 DEC 16	
2/14	Paya Lebar AP - Luffer Cranes	AD	WIE / 31 DEC 16	
3/14	Paya Lebar AP - Luffer Crane	AD	WIE / 31 DEC 16	
4/14	Paya Lebar AP - Topless Cranes	AD	WIE / 31 DEC 16	
5/14	Paya Lebar AP - Topless Cranes	AD	WIE / 31 DEC 16	
11/14	Paya Lebar AP - Hammerhead Crane	AD	WIE / 1 DEC 15	
12/14	Paya Lebar AP - Luffer Crane	AD	WIE / 15 DEC 15	
13/14	Paya Lebar AP - Luffer Crane	AD	WIE / 27 DEC 15	
14/14	Paya Lebar AP - Luffer Cranes	AD	WIE / 31 DEC 15	
15/14	Paya Lebar AP - Topless Cranes	AD	WIE / 31 DEC 15	
16/14	Paya Lebar AP - Tower Cranes	AD	WIE / 25 JUN 15	

GEN 0.3 RECORD OF CURRENT AIP SUPPLEMENTS				
<i>NR/ Year</i>	<i>Subject</i>	<i>AIP section affected</i>	<i>Period of validity (from / to)</i>	<i>Cancellation record</i>
17/14	Paya Lebar AP - Hammerhead Cranes	AD	WIE / 30 JUN 15	
18/14	Paya Lebar AP - Hammerhead Cranes	AD	WIE / 30 JUN 15	
19/14	Paya Lebar AP - Cranes	AD	WIE / 30 JUN 15	
20/14	Paya Lebar AP - Luffer Cranes	AD	WIE / 30 JUN 15	
31/14	Paya Lebar AP - Cranes	AD	WIE / 31 DEC 14	
32/14	Paya Lebar AP - Tower Crane	AD	WIE / 31 DEC 14	
33/14	Paya Lebar AP - Topless Cranes	AD	WIE / 31 DEC 14	
34/14	Paya Lebar AP - Hammerhead Cranes	AD	WIE / 31 DEC 14	
35/14	Paya Lebar AP - Luffer Cranes	AD	WIE / 31 DEC 14	
36/14	Paya Lebar AP - Hammerhead Cranes	AD	WIE / 30 DEC 14	
37/14	Paya Lebar AP - Topless Cranes	AD	WIE / 31 DEC 14	
38/14	Paya Lebar AP - Luffer Crane	AD	WIE / 31 DEC 14	
39/14	Paya Lebar AP - Hammerhead Cranes	AD	WIE / 31 DEC 14	
40/14	Paya Lebar AP - Cranes	AD	WIE / 31 DEC 14	
41/14	Paya Lebar AP - Hammerhead Cranes	AD	WIE / 31 DEC 14	
42/14	Paya Lebar AP - Luffer Crane	AD	WIE / 31 DEC 14	
43/14	Paya Lebar AP - Topless Cranes	AD	WIE / 31 DEC 14	
44/14	Paya Lebar AP - Saddle Tower Cranes	AD	WIE / 31 DEC 14	
45/14	Paya Lebar AP - Hammerhead Cranes	AD	WIE / 31 DEC 14	
46/14	Paya Lebar AP - Hammerhead Cranes	AD	WIE / 31 DEC 14	
47/14	Paya Lebar AP - Luffer Crane	AD	WIE / 31 DEC 14	
48/14	Paya Lebar AP - Luffer Cranes	AD	WIE / 31 DEC 14	
49/14	Paya Lebar AP - Luffer Cranes	AD	WIE / 31 DEC 14	
50/14	Paya Lebar AP - Luffer Cranes	AD	WIE / 31 DEC 14	
51/14	Paya Lebar AP - Cranes	AD	WIE / 31 DEC 15	
52/14	Paya Lebar AP - Luffer Crane	AD	WIE / 31 DEC 15	
53/14	Paya Lebar AP - Topless Cranes	AD	WIE / 31 DEC 15	
54/14	Paya Lebar AP - Topless Cranes	AD	WIE / 31 DEC 15	
55/14	Paya Lebar AP - Luffer Cranes	AD	WIE / 31 DEC 15	
61/14	Paya Lebar AP - Topless Cranes	AD	WIE / 31 DEC 15	
62/14	Paya Lebar AP - Topless Cranes	AD	WIE / 31 DEC 15	
63/14	Paya Lebar AP - Cranes	AD	WIE / 31 DEC 15	
64/14	Paya Lebar AP - Topless Cranes	AD	WIE / 31 DEC 15	
65/14	Paya Lebar AP - Luffer Cranes	AD	WIE / 31 DEC 15	
66/14	Paya Lebar AP - Saddle Cranes	AD	WIE / 30 DEC 15	
67/14	Paya Lebar AP - Luffer Crane	AD	WIE / 31 DEC 15	
68/14	Paya Lebar AP - Luffer Crane	AD	WIE / 31 DEC 15	
69/14	Paya Lebar AP - Luffer Cranes	AD	WIE / 31 DEC 15	
70/14	Paya Lebar AP - Hammerhead Cranes	AD	WIE / 31 DEC 15	
86/14	Singapore Changi AP - Work activities due to construction of new water retention pond at south end reservoir	AD	WIE / 31 DEC 14	
108/14	Paya Lebar AP - Luffer Cranes	AD	WIE / 24 FEB 15	
109/14	Paya Lebar AP - Flat Top Cranes	AD	WIE / 28 FEB 15	
110/14	Paya Lebar AP - Luffer Crane	AD	WIE / 28 FEB 15	
111/14	Paya Lebar AP - Hammerhead and Luffer Cranes	AD	WIE / 28 FEB 15	
112/14	Paya Lebar AP - Topless Cranes	AD	WIE / 28 FEB 15	
124/14	Paya Lebar AP - Luffer Crane	AD	WIE / 31 JAN 17	
125/14	Paya Lebar AP - Luffer Cranes	AD	WIE / 1 FEB 17	
126/14	Sembawang AD - Hammerhead Cranes	AD	WIE / 1 FEB 17	
127/14	Paya Lebar AP - Hammerhead Cranes	AD	WIE / 28 FEB 17	
128/14	Paya Lebar AP - Tower Cranes	AD	WIE / 1 MAR 17	

GEN 0.3 RECORD OF CURRENT AIP SUPPLEMENTS				
<i>NR/ Year</i>	<i>Subject</i>	<i>AIP section affected</i>	<i>Period of validity (from / to)</i>	<i>Cancellation record</i>
134/14	Paya Lebar AP - Mobile Crane	AD	WIE / 11 MAY 15	
135/14	Paya Lebar AP - Tower and Topless Cranes	AD	WIE / 14 MAY 15	
136/14	Paya Lebar AP - Luffer Crane	AD	WIE / 20 MAY 15	
137/14	Paya Lebar AP - Luffer Cranes	AD	WIE / 31 MAY 15	
138/14	Paya Lebar AP - Luffer Crane	AD	WIE / 31 MAY 15	
196/14	Singapore Changi AP - Introduction of compact parking area	AD	WEF 15 JUL 14 / 31 DEC 14	
197/14	Paya Lebar AP - Luffer Crane	AD	WIE / 30 DEC 14	
198/14	Paya Lebar AP - Luffer Cranes	AD	WIE / 31 DEC 14	
199/14	Paya Lebar AP - Luffer Crane	AD	WIE / 31 DEC 14	
200/14	Paya Lebar AP - Luffer Cranes	AD	WIE / 31 DEC 14	
201/14	Paya Lebar AP - Luffer Cranes	AD	WIE / 31 DEC 14	
208/14	Paya Lebar AP - Hammerhead Cranes	AD	WIE / 31 DEC 14	
209/14	Paya Lebar AP - Tower Cranes	AD	WIE / 31 DEC 14	
210/14	Paya Lebar AP - Topless Cranes and Luffer Cranes	AD	WIE / 31 DEC 14	
211/14	Paya Lebar AP - Crawler Tower Cranes	AD	WIE / 31 DEC 14	
212/14	Paya Lebar AP - Luffer Cranes	AD	WIE / 31 DEC 14	
213/14	Paya Lebar AP - Cranes	AD	WIE / 1 MAR 16	
214/14	Paya Lebar AP - Cranes	AD	WIE / 1 MAR 16	
215/14	Paya Lebar AP - Cranes	AD	WIE / 30 MAR 16	
216/14	Paya Lebar AP - Hammerhead and Luffer Cranes	AD	WIE / 31 MAR 16	
217/14	Paya Lebar AP - Luffer Cranes	AD	WIE / 31 MAR 16	
218/14	Paya Lebar AP - Luffer Cranes	AD	WIE / 30 DEC 17	
219/14	Paya Lebar AP - Luffer Cranes	AD	WIE / 31 DEC 17	
220/14	Paya Lebar AP - Hammerhead and Luffer Cranes	AD	WIE / 31 DEC 17	
221/14	Paya Lebar AP - Luffer Crane	AD	WIE / 31 DEC 17	
222/14	Paya Lebar AP - Luffer Cranes	AD	WIE / 31 DEC 17	
223/14	Paya Lebar AP - Luffer Cranes	AD	WIE / 1 JUN 16	
224/14	Paya Lebar AP - Mobile Crane	AD	WIE / 1 JUN 16	
225/14	Paya Lebar AP - Crane	AD	WIE / 14 JUN 16	
226/14	Paya Lebar AP - Luffer Cranes	AD	WIE / 30 JUN 16	
227/14	Paya Lebar AP - Luffer Cranes	AD	WIE / 30 JUN 16	
228/14	Paya Lebar AP - Cranes	AD	WIE / 2 DEC 14	
229/14	Paya Lebar AP - Topless Cranes	AD	WIE / 29 DEC 14	
230/14	Paya Lebar AP - Hammerhead Cranes	AD	WIE / 31 DEC 14	
231/14	Paya Lebar AP - Luffer Cranes	AD	WIE / 31 DEC 14	
232/14	Paya Lebar AP - Tower Crane	AD	WIE / 15 JAN 15	
233/14	Paya Lebar AP - Luffer Crane	AD	WIE / 14 FEB 15	
234/14	Paya Lebar AP - Cranes	AD	WIE / 1 MAR 15	
235/14	Paya Lebar AP - Mobile Crane	AD	WIE / 14 MAR 15	
236/14	Paya Lebar AP - Cranes	AD	WIE / 15 MAR 15	
237/14	Paya Lebar AP - Crawler Crane	AD	WIE / 15 MAR 15	
238/14	Paya Lebar AP - Luffer Cranes	AD	WIE / 1 DEC 16	
240/14	Paya Lebar AP - Topless Cranes	AD	WIE / 31 DEC 16	
241/14	Paya Lebar AP - Luffer Cranes	AD	WIE / 31 DEC 16	
242/14	Paya Lebar AP - Topless Cranes	AD	WIE / 31 DEC 16	
243/14	Paya Lebar AP - Tower Cranes	AD	WIE / 3 JUL 15	
244/14	Paya Lebar AP - Luffer Cranes	AD	WIE / 4 JUL 15	
245/14	Paya Lebar AP - Cranes	AD	WIE / 9 JUL 15	
246/14	Paya Lebar AP - Luffer Cranes and Tower Crane	AD	WIE / 28 JUL 15	
247/14	Paya Lebar AP - Saddle and Luffer Cranes	AD	WIE / 31 JUL 15	
252/14	Paya Lebar AP - Mobile Cranes	AD	WIE / 6 JUN 15	

GEN 0.3 RECORD OF CURRENT AIP SUPPLEMENTS				
<i>NR/ Year</i>	<i>Subject</i>	<i>AIP section affected</i>	<i>Period of validity (from / to)</i>	<i>Cancellation record</i>
271/14	Paya Lebar AP - Crane	AD	WIE / 28 FEB 17	
272/14	Paya Lebar AP - Hammerhead Cranes	AD	WIE / 4 MAR 17	
273/14	Paya Lebar AP - Hammerhead Cranes	AD	WIE / 29 APR 17	
274/14	Paya Lebar AP - Topless Cranes	AD	WIE / 10 MAY 17	
275/14	Paya Lebar AP - Topless Cranes	AD	WIE / 1 JUN 17	
276/14	Paya Lebar AP - Luffer Crane	AD	WIE / 31 DEC 17	
277/14	Paya Lebar AP - Hammerhead Cranes	AD	WIE / 31 DEC 17	
278/14	Seletar AP - Construction of new aircraft stands, taxiways, ground run enclosure and Category I Approach Lighting System	AD	WIE / 31 DEC 14	
279/14	Singapore Changi AP - Construction of new aircraft stands and connecting taxiway at southern end	AD	WIE / 31 MAR 15	
281/14	Paya Lebar AP - Crawler Cranes	AD	WIE / 15 NOV 14	
282/14	Paya Lebar AP - Tower Cranes	AD	WIE / 30 NOV 14	
283/14	Paya Lebar AP - Luffer Crane	AD	WIE / 30 NOV 14	
284/14	Paya Lebar AP - Luffer Cranes	AD	WIE / 20 DEC 14	
285/14	Paya Lebar AP - Topless Cranes	AD	WIE / 30 JUN 15	
286/14	Paya Lebar AP - Tower Cranes	AD	WIE / 31 JUL 15	
287/14	Paya Lebar AP - Saddle Cranes	AD	WIE / 1 AUG 15	
288/14	Paya Lebar AP - Cranes	AD	WIE / 31 AUG 15	
289/14	Paya Lebar AP - Luffer Crane	AD	WIE / 31 OCT 15	
290/14	Paya Lebar AP - Crawler Crane and Mobile Crane	AD	WIE / 31 JAN 16	
291/14	Paya Lebar AP - Luffer Crane	AD	WIE / 7 JUL 17	
292/14	Paya Lebar AP - Tower Cranes	AD	WIE / 31 JUL 17	
293/14	Paya Lebar AP - Luffer Cranes and Saddle Cranes	AD	WIE / 19 AUG 17	
294/14	Paya Lebar AP - Mobile Cranes	AD	WIE / 1 JAN 17	
296/14	Paya Lebar AP - Luffer Crane	AD	WIE / 30 SEP 15	
297/14	Paya Lebar AP - Luffer Crane	AD	WIE / 30 SEP 15	
298/14	Paya Lebar AP - Topless Cranes	AD	WIE / 30 SEP 15	
299/14	Paya Lebar AP - Topless Cranes	AD	WIE / 30 SEP 15	
300/14	Paya Lebar AP - Luffer Cranes	AD	WIE / 30 SEP 15	
301/14	Paya Lebar AP - Luffer Cranes	AD	WIE / 30 JUN 15	
302/14	Paya Lebar AP - Saddle Cranes	AD	WIE / 1 AUG 15	
303/14	Paya Lebar AP - Topless Cranes	AD	WIE / 31 OCT 15	
304/14	Paya Lebar AP - Luffer Crane	AD	WIE / 1 NOV 15	
305/14	Paya Lebar AP - Luffer Cranes	AD	WIE / 30 NOV 15	
306/14	Paya Lebar AP - Hammerhead Cranes	AD	WIE / 1 JUN 15	
307/14	Paya Lebar AP - Mobile Crane	AD	WIE / 6 JUN 15	
308/14	Sembawang AD - Luffer Cranes	AD	WIE / 28 FEB 16	
309/14	Paya Lebar AP - Topless Cranes and Luffer Crane	AD	WIE / 30 JUN 15	
310/14	Paya Lebar AP - Crawler Crane	AD	WIE / 30 JUN 15	
311/14	Paya Lebar AP - Luffer Crane	AD	WIE / 22 JUN 16	
312/14	Paya Lebar AP - Mobile Crane	AD	WIE / 29 JUN 16	
313/14	Paya Lebar AP - Luffer Crane	AD	WIE / 30 JUN 16	
314/14	Paya Lebar AP - Tower Crane	AD	WIE / 30 JUN 16	
315/14	Paya Lebar AP - Tower Cranes	AD	WIE / 10 SEP 17	
316/14	Paya Lebar AP - Topless Cranes	AD	WIE / 30 APR 15	
317/14	Paya Lebar AP - Topless Cranes	AD	WIE / 30 APR 15	
318/14	Paya Lebar AP - Luffer Crane	AD	WIE / 30 APR 15	

GEN 0.4 CHECKLIST OF AIP PAGES					
PAGE	DATE	PAGE	DATE	PAGE	DATE
<u>PART 1 - GENERAL (GEN)</u>			<u>PART 2 - EN-ROUTE (ENR)</u>		
GEN 0		* 2.2-6	13 NOV 14	ENR 0	
* 0.1-1	13 NOV 14	* 2.2-7	13 NOV 14	0.6-1	10 MAR 11
* 0.1-2	13 NOV 14	* 2.2-8	13 NOV 14	0.6-2	10 MAR 11
* 0.1-3	13 NOV 14	2.3-1	18 JAN 07	* 0.6-3	13 NOV 14
0.2-1	18 SEP 14	2.3-2	18 JAN 07	* 0.6-4	13 NOV 14
* 0.3-1	13 NOV 14	2.4-1	3 JUN 10		
* 0.3-2	13 NOV 14	* 2.5-1	13 NOV 14	ENR 1	
* 0.3-3	13 NOV 14	2.5-3/chart	15 MAR 07	1.1-1	1 SEP 05
* 0.3-4	13 NOV 14	2.6-1	28 SEP 06	1.1-2	1 SEP 05
* 0.3-5	13 NOV 14	2.6-2	28 SEP 06	1.1-3	29 MAY 14
* 0.4-1	13 NOV 14	2.7-1	18 NOV 10	1.1-4	29 MAY 14
* 0.4-2	13 NOV 14			1.1-5	8 JUN 06
* 0.4-3	13 NOV 14	GEN 3		1.1-6	8 JUN 06
* 0.4-4	13 NOV 14	* 3.1-1	13 NOV 14	1.1-7	28 SEP 06
0.5-1	18 SEP 14	* 3.1-2	13 NOV 14	1.1-8	28 SEP 06
0.6-1	5 MAY 11	* 3.1-3	13 NOV 14	1.1-9	28 SEP 06
0.6-2	5 MAY 11	* 3.1-4	13 NOV 14	1.1-10	28 SEP 06
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GEN 2. TABLES AND CODES**GEN 2.1 MEASURING SYSTEM, AIRCRAFT MARKINGS, 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.

GEN 2.1 MEASURING SYSTEM, AIRCRAFT MARKINGS, HOLIDAYS

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
Christmas Day	25 December 2014	Thursday
New Year's Day	1 January 2015	Thursday
Chinese New Year Chinese New Year	19 February 2015 20 February 2015	Thursday Friday
Good Friday	3 April 2015	Friday
Labour Day	1 May 2015	Friday
Vesak Day	1 June 2015	Monday
Hari Raya Puasa	17 July 2015	Friday
National Day	9 August 2015	Sunday*
Hari Raya Haji	24 September 2015	Thursday
Deepavali	10 November 2015	Tuesday
Christmas Day	25 December 2015	Friday

* When a public holiday falls on a Sunday, the following Monday will be a public holiday.

GEN 2.2 ABBREVIATIONS USED IN AIS PUBLICATIONS

Abbreviations marked by asterisks (*) are either different from or not contained in ICAO DOC 8400.

A

A/A Air-to-air
AAIM Aircraft autonomous integrity monitoring
AAL Above aerodrome level
ABM Abeam
ABN Aerodrome beacon

ABV Above
ACAS Airborne collision avoidance system
ACC Area control centre or area control
ACCID Notification of an aircraft accident
ACFT Aircraft
ACK Acknowledge
ACL Altimeter check location
ACPT Accept or accepted
ACT Active or activated or activity
AD Aerodrome

ADA Advisory Area
ADC Aerodrome Chart
ADDN Addition or additional
ADF Automatic direction-finding equipment
ADIZ Air defence identification zone
ADJ Adjacent
ADR Advisory route

ADS-B Automatic dependent surveillance-broadcast
ADS-C Automatic dependent surveillance-contract

ADZ Advise

AFIS Aerodrome flight information service
AFS Aeronautical fixed service
AFT After (time or place)
AFTN Aeronautical fixed telecommunication network

A/G Air-to-ground

AGL Above ground level
AIC Aeronautical information circular
AIDC Air traffic services interfacility data communications

AIP Aeronautical information publication
AIRAC Aeronautical information regulation and control

AIREP Air-report
AIS Aeronautical information services

ALERFA Alert phase
ALRS Alerting service
ALS Approach lighting system
ALT Altitude

AMA Area minimum altitude
AMDT Amendment (AIP Amendment)

AMSL Above mean sea level

ANSP* Air Navigation Service Provider
AOC Aerodrome obstacle chart (followed by type and name/title)

AP Airport
APCH Approach
APN Apron
APP Approach control office or approach control or approach control service

APR April
APRX Approximate or approximately
APV Approve or approved or approval
ARC Area Chart
ARO Air traffic services reporting office
ARP Aerodrome reference point
ARR Arrive or arrival or Arrival (message type designator)

ASC Ascend to or ascending to
ASDA Accelerate-stop distance available
ASPH Asphalt
ASTO* Aeroshell turbine oil
ATA Actual time of arrival
ATC Air traffic control (in general)

ATD Actual time of departure
ATFM Air traffic flow management
ATIS Automatic terminal information service
ATM Air Traffic Management
ATN Aeronautical telecommunication network
ATS Air traffic services
ATTN Attention
AT-VASIS Abbreviated T visual approach slope indicator system

ATZ Aerodrome traffic zone
AUG August
AUW All up weight
AUX Auxiliary
AVBL Available

AVGAS Aviation gasoline
AWUT* Allocated Wheels Up Time
AWY Airway
AZM Azimuth

B

BA Braking action
BARO- Barometric vertical navigation

VNAV
BCN Beacon (Aeronautical ground light)
BCST Broadcast
BDRY Boundary
BLDG Building
BLW Below ...

GEN 2.2 ABBREVIATIONS USED IN AIS PUBLICATIONS

BOBCAT*	Bay of Bengal Cooperative Air Traffic Flow Management Advisory System	D		
BRG	Bearing	D ...	Danger area (followed by identification)	←
BRKG	Braking	DA	Decision altitude	
BTN	Between	DCKG	Docking	
C		DCPC	Direct controller-pilot communications	
... C	Centre (preceded by runway designation number to identify a parallel runway)	DCT	Direct (in relation to flight plan clearances and type of approach)	
C	Degrees Celsius (Centigrade)	DEC	December	
CAAS*	Civil Aviation Authority of Singapore	DEG	Degrees	
CAT	Category	DEP	Depart or departure or Departure (message type designator)	
CAVOK	Visibility, cloud and present weather better than prescribed values or conditions	DER	Departure end of the runway	←
CAFHI*	Changi Airport Fuel Hydrant Installation	DES	Descend to or descending to	
CH	Channel	DEST	Destination	←
CHG	Modification (message type designator)	DETRESFA	Distress phase	
CIV	Civil	DEV	Deviation or deviating	
CL	Centre line	DFTI	Distance from touchdown indicator	
CLBR	Calibration	DH	Decision height	
CLSD	Close or closed or closing	DISP*	Displaced	
CMB	Climb to or climbing to	DIST	Distance	←
CMPL	Completion or completed or complete	DLA	Delay or delayed or Delay (message type designator)	
CNL	Cancel or cancelled or flight plan cancellation (message type designator)	DLY	Daily	
CNS	Communications, Navigations and Surveillance	DME	Distance measuring equipment	←
COM	Communications	DNG	Danger or dangerous	
CONC	Concrete	DPT	Depth	←
COND	Condition	DR	Dead reckoning	
CONST	Construction or constructed	DRG	During	
CONT	Continue(s) or continued	DTG	Date-time group	
COOR	Coordinate or coordination	DTHR	Displaced runway threshold	
COORD	Coordinates	DUR	Duration	
COP	Change-over point	DVOR	Doppler VOR	
CPDLC	Controller-pilot data link communications	E		
CPL	Current flight plan (message type designator)	E ...	East or eastern longitude	←
CRC	Cyclic redundancy check	EAT	Expected approach time	
CS	Call sign	EET	Estimated elapsed time	
CTA	Control area	ELBA	Emergency location beacon - aircraft	
CTC	Contact	ELEV	Elevation	←
CTL	Control	ELT	Emergency locator transmitter	
CTN	Caution	EM	Emission	
CTR	Control zone	EMERG	Emergency	←
CUST	Customs	ENG	Engine	
CWY	Clearway	ENR	Enroute	
		ENRC	Enroute Chart (followed by name / title)	
		EOBT	Estimated off-block time	
		EQPT	Equipment	
		EST	Estimate or estimated or Estimate (message type designator)	
		ETA	Estimated time of arrival or estimating arrival	

GEN 2.2 ABBREVIATIONS USED IN AIS PUBLICATIONS

ETD	Estimated time of departure <i>or</i> estimating departure	GCA	Ground controlled approach system <i>or</i> ground controlled approach
ETO	Estimated time over significant point	GEN	General
EV	Every	GEO	Geographic <i>or</i> true
→ EXC	Except		
EXER	Exercises <i>or</i> exercising <i>or</i> to exercise	GLD	Glider
EXP	Expect <i>or</i> expected <i>or</i> expecting	GLONASS	Global orbiting navigation satellite system
EXTD	Extend <i>or</i> extending		

F

FAC	Facilities
→ FAF	Final approach fix
FAP	Final approach point
FATO	Final approach and take-off area
FAX	Facsimile transmission
FCST	Forecast
FCT	Friction coefficient
FDPS	Flight data processing system
FEB	February
FIC	Flight information centre
FIR	Flight information region
→ FIS	Flight information service

FL	Flight level
FLG	Flashing
FLR	Flares
FLT	Flight
FLTCK	Flight check
FLUC	Fluctuating <i>or</i> fluctuation <i>or</i> fluctuated
FLW	Follow(s) <i>or</i> following
FLY	Fly <i>or</i> flying
→ FM	Course from a fix to manual termination <i>(used in navigation database coding)</i>

FMS	Flight management system
FMU	Flow management unit
FNA	Final approach
FOD *	Foreign object damage
FPL	Flight Plan

FREQ	Frequency
FRI	Friday
→ FRNG	Firing

→ FSL Full stop landing

FST	First
→ FT	Feet <i>(dimensional unit)</i>

G

→ G/A Ground-to-air

GND	Ground
GNDCK	Ground check
GNSS	Global navigation satellite system
GP	Glide path
GPA	Glide path angle
GPS	Global positioning system
GRASS	Grass landing area
GS	Ground speed
GUND	Geoid undulation

H

H+ *	Hours plus.....minutes past the hour
H24	Continuous day and night service
HBN	Hazard beacon
HDG	Heading
HEL	Helicopter
HEL-L *	Light helicopter (radius of action, for rescue purposes, up to 185km (100NM) and capacity of evacuating 1-5 persons)
HEL-M *	Medium helicopter (radius of action, for rescue purposes, 185-370km (100-200NM) and capacity of evacuating 6-15 persons)
HEL-H *	Heavy helicopter (radius of action, for rescue purposes, more than 370km (200NM) and capacity of evacuating more than 15 persons)
HF	High frequency (3 000 to 30 000kHz)
HGT	Height <i>or</i> height above
HJ	Sunrise to sunset
HLDG	Holding
HN	Sunset to sunrise
HO	Service available to meet operational requirements
HOL	Holiday
HOSP	Hospital aircraft
HPA	Hectopascal
HQ *	Headquarters
HR	Hours
HS	Service available during hours of scheduled operations
HX	No specific working hours
HZ	Haze <i>or</i> Hertz <i>(cycle per second)</i>

I

IAC	Instrument approach chart <i>(followed by name/title)</i>
→ IAF	Initial approach fix

GEN 2.2 ABBREVIATIONS USED IN AIS PUBLICATIONS

IAP	Instrument approach procedure	LGTD	Lighted
IAR	Intersection of air routes	LIH	Light intensity high
IAS	Indicated airspeed	LIL	Light intensity low
IBN	Identification beacon	LIM	Light intensity medium
ID	Identifier <i>or</i> identify	LLZ	Localizer
IDENT	Identification	LM	Locator, middle
IF	Intermediate approach fix	LNAV	Lateral navigation
IFR	Instrument flight rules		
		LO	Locator, outer
ILS	Instrument landing system		
IM	Inner marker	LONG	Longitude
IMC	Instrument meteorological conditions	LORAN	LORAN (<i>Long range air navigation system</i>)
INA	Initial approach		
INBD	Inbound	LRG	Long range
INCERFA	Uncertainty phase	LT*	Local time
INFO	Information	LTD	Limited
INOP	Inoperative	LTT	Landline teletypewriter
INPR	In progress	LVL	Level
INS	Inertial navigation system	LVP	Low visibility procedures
INSTL	Install <i>or</i> installed <i>or</i> installation		
INSTR	Instrument	M	
INT	Intersection	M	Mach number (<i>followed by figures</i>) <i>or</i> Metres (<i>preceded by figures</i>)
INTL	International	MAD*	Maximum Acceptable Delay
INTRG	Interrogator	MAG	Magnetic
INTRP	Interrupt <i>or</i> interruption <i>or</i> interrupted	MAINT	Maintenance
		MAP	Aeronautical maps and charts
INTST	Intensity	MAPT	Missed approach point
IRS	Inertial reference system	MAR	March
ISA	International standard atmosphere	MAX	Maximum
		MAY	May
J		MCA	Minimum crossing altitude
JAN	January	MDA	Minimum descent altitude
JUL	July	MDH	Minimum descent height
JUN	June	MEA	Minimum en-route altitude
		MEHT	Minimum eye height over threshold (<i>for visual approach slope indicator systems</i>)
K		MET	Meteorological <i>or</i> meteorology
KG	Kilograms	METAR	Aerodrome routine meteorological report (<i>in meteorological code</i>)
KHZ	Kilohertz		
KM	Kilometres	MHZ	Megahertz
KMH	Kilometres per hour	MID	Mid-point (<i>related to RVR</i>)
KPA	Kilopascal	MIL	Military
KT	Knots	MIN	Minutes
KW	Kilowatts	MINDEF*	Ministry of Defence
L		MLS	Microwave landing system
... L	Left (<i>preceded by runway designation number to identify a parallel runway</i>)	MM	Middle marker
L	Locator (<i>see LM, LO</i>)	MNM	Minimum
LAT	Latitude	MNPS	Minimum navigation performance specifications
LDA	Landing distance available	MNT	Monitor <i>or</i> monitoring <i>or</i> monitored
LDAH	Landing distance available, helicopter	MNTN	Maintain
LDG	Landing	MOA	Military operating area
LDI	Landing direction indicator	MOC	Minimum obstacle clearance (<i>required</i>)
LEN	Length	MOCA	Minimum obstacle clearance altitude
LGT	Light <i>or</i> lighting	MON	Monday

GEN 2.2 ABBREVIATIONS USED IN AIS PUBLICATIONS

	MOPS	Minimum operational performance standards	OPS	Operations
	MOV	Move <i>or</i> moving <i>or</i> movement	O/R	On request
	MPS	Metres per second	OTP	On top
→	MSA	Minimum sector altitude	OTS	Organised track system
	MSAW	Minimum safe altitude warning	OUBD	Outbound
	MSG	Message	P	
→	MSL	Mean sea level	P ...	Prohibited area (<i>followed by identification</i>)
	MWO	Meteorological watch office	PA	Precision approach
	N		PALS	Precision approach lighting system (<i>specify category</i>)
	N	North <i>or</i> northern latitude	PANS	Procedures for air navigation services
	NAV	Navigation	PAPI	Precision approach path indicator
	NC	No change	PAR	Precision approach radar
	NDB	Non-directional radio beacon	PARA*	Paragraph
	NGT	Night	PARL	Parallel
→	NM	Nautical miles	PAX	Passenger(s)
	NML	Normal	PCL	Pilot-controlled lighting
	NOF	International NOTAM Office	PCN	Pavement classification number
	NOSIG	No significant change (<i>used in trend-type landing forecasts</i>)	PDC	Pre-departure clearance
	NOTAM	A notice distributed by means of telecommunication containing information concerning the establishment, condition <i>or</i> change in any aeronautical facility, service, procedure <i>or</i> hazard, the timely knowledge of which is essential to personnel concerned with flight operations	PER	Performance
→	NOV	November	PERM	Permanent
	NR	Number	PIB	Pre-flight information bulletin
	O		PJE	Parachute jumping exercise
	OAC	Oceanic area control centre	PLA	Practice low approach
	OAS	Obstacle assessment surface	PN	Prior notice required
	OBS	Observe <i>or</i> observed <i>or</i> observation	PNR	Point of no return
	OBST	Obstacle	POB	Persons on board
→	OCA	Oceanic control area <i>or</i> Obstacle clearance altitude	PPR	Prior permission required
	OCC	Occulting (<i>light</i>)	PRI	Primary
	OCH	Obstacle clearance height	PRKG	Parking
	OCNL	Occasional <i>or</i> occasionally	PROC	Procedure
	OCS	Obstacle clearance surface	PSN	Position
	OCT	October	PSP	Pierced steel plank
	OFZ	Obstacle free zone	PSR	Primary surveillance radar
	OHD	Overhead	PT*	Point(s)
	OM	Outer marker	PTN	Procedure turn
→	OPMET	Operational meteorological (<i>information</i>)	PVT*	Private
	OPR	Operator <i>or</i> operate <i>or</i> operative <i>or</i> operating <i>or</i> operational	PWR	Power
			Q	
			QDM	Magnetic heading (<i>zero wind</i>)
			QDR	Magnetic bearing
			QFE	Atmospheric pressure at aerodrome elevation (<i>or</i> at runway threshold)
			QFU	Magnetic orientation of runway
			QNH	Altimeter sub-scale setting to obtain elevation when on the ground
			QTE	True bearing
			QUAD	Quadrant

GEN 2.2 ABBREVIATIONS USED IN AIS PUBLICATIONS

R		RSAF*	Republic of Singapore Air Force	
R ...	Restricted area (<i>followed by identification</i>)	RSC	Rescue sub-centre	←
... R	Right (<i>preceded by runway designation number to identify a parallel runway</i>)	RSFC*	Republic of Singapore Flying Club	←
RA	Resolution advisory	RSR	En-route surveillance radar	
RAD*	Radius	RTE	Route	
RAF*	Royal Air Force	RTF	Radiotelephone	
RAG	Runway arresting gear	RTHL	Runway threshold light(s)	
RAI	Runway alignment indicator	RTN	Return <i>or</i> returned <i>or</i> returning	
RAIM	Receiver autonomous integrity monitoring	RTODAH	Rejected take-off distance available, helicopter	
RB	Rescue boat	RTT	Radioteletypewriter	
RCC	Rescue coordination centre	RTZL	Runway touchdown zone light(s)	
RCF	Radiocommunication failure (<i>message type designator</i>)	RUT	Standard regional route transmitting frequencies	
RCL	Runway centre line	RV	Rescue vessel	
RCLL	Runway centre line light(s)	RVR	Runway visual range	
RCP	Required communication performance	RWY	Runway	←
RDH	Reference datum height	RVSM	Reduced vertical separation minimum (300m(1000ft)) between FL290 and FL410	
RDL	Radial	S		
RDO	Radio	S	South <i>or</i> southern latitude	
REC	Receive <i>or</i> receiver	SAF*	Singapore Armed Forces	←
REDL	Runway edge light(s)	SALS	Simple approach lighting system	
REF	Reference to.... <i>or</i> refer to....	SAR	Search and rescue	
REG	Registration	SARPS	Standards and Recommended Practices (ICAO)	
RENL	Runway end light(s)	SAT	Saturday	
REP	Report <i>or</i> reporting <i>or</i> reporting point	SATCC*	Singapore Air Traffic Control Centre	
REQ	Request <i>or</i> requested	SATCOM	Satellite communication	
RESA	Runway end safety area	SDBY	Stand by	
RFC*	Radio facility chart	SDF	Step down fix	←
RH*	Rescue helicopter	SEC	Seconds	
RHC	Right-hand circuit	SELCAL	Selective calling system	
RIF	Reclearance in flight	SEP	September	
RITE	Right (<i>direction of turn</i>)	SER	Service <i>or</i> servicing <i>or</i> served	
RLLS	Runway lead-in lighting system	SFC	Surface	
RMAF*	Royal Malaysian Air Force	SFL*	Sequenced flashing light	
RMK	Remark	SGL	Signal	
RNAV	Area navigation	SIA*	Singapore Airlines Limited	
RNP	Required navigation performance	SID	Standard instrument departure	
ROC	Rate of climb	SIG	Significant	
ROD	Rate of descent	SIGMET	Information concerning en-route weather phenomena which may affect the safety of aircraft operations	
RPI	Radar position indicator	SIMUL	Simultaneous <i>or</i> simultaneously	←
RPLC	Replace <i>or</i> replaced	SKED	Schedule <i>or</i> scheduled	
RPS	Radar position symbol	SMC	Surface movement control	
RQMNTS	Requirements	SMR	Surface movement radar	
RQP	Request flight plan (<i>message type designator</i>)	SOC	Start of climb	
RQS	Request supplementary flight plan (<i>message type designator</i>)	SPECI	Aerodrome special meteorological report (<i>in meteorological code</i>)	
		SPECIAL	Local special meteorological report (<i>in abbreviated plain language</i>)	

GEN 2.2 ABBREVIATIONS USED IN AIS PUBLICATIONS

SPL	Supplementary flight plan (<i>message type designator</i>)	TORA	Take-off run available
SPOT	Spot wind	TP	Turning point
SQ	Squall	TR	Track
SR	Sunrise	TRA	Temporary reserved airspace
SRA	Surveillance radar approach	TRNG	Training
SRE	Surveillance radar element of precision approach radar system	TRANS	Transmits or transmitter
SRR	Search and rescue region	TRL	Transition level
SRY	Secondary	TT	Teletypewriter
SS	Sunset	TUE	Tuesday
SSR	Secondary surveillance radar	TURB	Turbulence
STA	Straight-in approach	T-VASIS	T visual approach slope indicator system
STAR	Standard instrument arrival	TVOR	Terminal VOR
STD	Standard	TWR	Aerodrome control tower or aerodrome control
STN	Station	TWY	Taxiway
→ STOL	Short take-off and landing	TWYL	Taxiway-link
STS	Status	TXL	Taxilane
STT*	Standard Taxi Time	TYP	Type of aircraft
STWL	Stopway light(s)	TYPH	Typhoon
SUBJ	Subject to		
SUN	Sunday	U	
→ SUP	Supplement (AIP Supplement)	UAC	Upper area control centre
SUPPS	Regional supplementary procedures	UAR	Upper air route
SVCBL	Serviceable	UFN	Until further notice
SWY	Stopway	UHF	Ultra high frequency (300 to 3000 MHz)
T		UIC	Upper information centre
TA	Traffic advisory	UIR	Upper flight information region
TAA	Terminal arrival altitude	UNL	Unlimited
TACAN	UHF tactical air navigation aid	UNREL	Unreliable
TAF	Aerodrome forecast (<i>in meteorological code</i>)	U/S	Unserviceable
TAIL	Tail wind	UTA	Upper control area
TAR	Terminal area surveillance radar	UTC	Coordinated Universal Time
TAS	True airspeed	V	
TAX	Taxiing or taxi	VA	Volcanic ash
TCAS RA	Traffic alert and collision avoidance system resolution advisory	VAAC	Volcanic ash advisory centre
TCH	Threshold crossing height	VAC	Visual approach chart (<i>followed by name / title</i>)
→ TDZ	Touchdown zone	VAR	Magnetic variation
TECR	Technical reason	VASIS	Visual approach slope indicator systems
TEL	Telephone	VCY	Vicinity
TEMPO	Temporary or temporarily	VER	Vertical
TFC	Traffic	VFR	Visual flight rules
TGL	Touch-and-go landing	VHF	Very high frequency (30MHz to 300MHz)
TGS	Taxiing guidance system	VIP	Very important person
THR	Threshold	VIS	Visibility
THRU	Through	VLR	Very long range
THU	Thursday	VMC	Visual meteorological conditions
TIBA	Traffic information broadcast by aircraft	VNAV	Vertical navigation
TIL	Until	VOLMET	Meteorological information for aircraft in flight
TKOF	Take-off	VOR	VHF omnidirectional radio range
TLOF	Touchdown and lift-off area	VORTAC	VOR and TACAN combination
TMA	Terminal control area	VOT	VOR airborne equipment test facility
TOC	Top of climb		
TODA	Take-off distance available		
→ TODAH	Take-off distance available, helicopter		
TOP	Cloud top		

GEN 2.2 ABBREVIATIONS USED IN AIS PUBLICATIONS

VRB	Variable
VSA	By visual reference to the ground
VSP	Vertical speed
VTOL	Vertical take-off and landing
VVIP*	Very, very important person

W

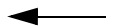
W	West or western longitude or White
WAAS	Wide area augmentation system
WAC	World Aeronautical Chart - ICAO 1:1 000 000 (<i>followed by name / title</i>)
WBAR	Wing bar lights
WDI	Wind direction indicator
WED	Wednesday
WEF	With effect from or effective from
WGS-84	World Geodetic System - 1984
WI	Within
WID	Width or wide
WIE	With immediate effect or effective immediately
WIP	Work in progress
WPT	Way-point
WRNG	Warning
WS	Wind shear
WSPD	Wind speed
WT	Weight
WUT*	Wheels Up Time
WX	Weather

X

XBAR	Crossbar (<i>of approach lighting system</i>)
XNG	Crossing

Y

YCZ	Yellow caution zone (<i>runway lighting</i>)
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GEN 2.5 LIST OF RADIO NAVIGATION AIDS

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

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

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

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GEN 3. SERVICES

GEN 3.1 AERONAUTICAL INFORMATION SERVICES

1. RESPONSIBLE SERVICE

1.1 The Aeronautical Information Services is a unit of the Air Traffic Services Division of the Civil Aviation Authority of Singapore which ensures the flow of information necessary for the safety, regularity and efficiency of international and national air navigation within the area of its responsibility as indicated under paragraph 2 below. It consists of the AIS headquarters and the International NOTAM Office (NOF). The AIS Changi and AIS Seletar Aerodrome units operate 24 hours at the same location.

1.2 AIS Headquarters

→ Aeronautical Information Services
Civil Aviation Authority of Singapore
Singapore Changi Airport
P.O. Box 1
Singapore 918141

TEL: (65) 65956051
FAX: (65) 64410221
Email: caas_singaporeais@caas.gov.sg

1.3 International NOTAM Office (NOF) and Changi and Seletar AIS Aerodrome Units

Singapore Air Traffic Control Centre (SATCC)
60 Biggin Hill Road
Singapore 509950

TEL: (65) 65956056	(Duty Supervisor)
TEL: (65) 65956053	(NOF)
AFS: WSSSYNYX	(NOF)
TEL: (65) 65956052	(Changi FPL Officer)
FAX: (65) 65431826	(Changi AIS)
AFS: WSSSYOYX	(Changi AIS)
TEL: (65) 64812909	(Seletar FPL Officer)
FAX: (65) 64833044	(Seletar AIS)
AFS: WSSLYOYX	(Seletar AIS)

The service is provided in accordance with the provisions contained in ICAO Annex 15 - Aeronautical Information Services and the guidance material in the Aeronautical Information Services Manual (Doc 8126 - AN/872).

2. AREA OF RESPONSIBILITY

2.1 The Aeronautical Information Services is responsible for the collection and dissemination of information for the entire territory of Singapore and for the airspace over the high seas encompassed by the Singapore Flight Information Region.

3. AERONAUTICAL PUBLICATIONS

3.1 Aeronautical information is provided in the form of the Integrated Aeronautical Information Package (IAIP) containing the following elements:

Aeronautical Information Publication (AIP) and its Amendment service;
AIP Supplement (AIP SUP);
NOTAM and Pre-flight Information Bulletins (PIB);
Aeronautical Information Circulars (AIC); and
Checklists and Monthly NOTAM Lists

NOTAM and monthly checklists are issued via the AFS. PIB can be retrieved from the automated AIM-SG system at Changi AIS or via the internet. All the other elements of the IAIP are distributed by mail. AIP SUP, AIC and the Monthly NOTAM Lists are also posted on the CAAS website at:

<http://www.caas.gov.sg>

or

AIM-SG URL page at <http://aim.caasaim.gov.sg>

3.2 Aeronautical Information Publication (AIP)

The AIP Singapore, issued in one volume, is the basic aeronautical information document published for the Republic of Singapore and contains information of a lasting character essential to air navigation. It is available in English only and is maintained up-to-date by an amendment service of reprinted pages and, in the case of minor amendments, by manuscript corrections.

3.3 Amendment service to the AIP (AIP AMDT)

Amendments to the AIP, together with checklists, are made by means of replacement sheets. Regular AIP AMDT is published in accordance with the established regular intervals (see GEN 0.1-2 para 3.2). It incorporates permanent changes to the AIP on the indicated publication date.

A brief description of the subjects affected by the AIP AMDT is given in the AIP AMDT cover sheet. New information included on the reprinted AIP pages is marked by either a vertical line or a horizontal arrow in the margin of the affected page to show the change or addition made.

Each AIP page and AIP replacement page introduced by an AIP AMDT, including the AIP AMDT cover sheet, is dated. The date consists of the day, month (by name) and year of publication. Each AIP AMDT cover sheet includes references to the serial numbers of those elements, if any, of the Integrated Aeronautical Information Package which have been incorporated into the AIP by the amendment and consequently cancelled.

Each AIP AMDT is allocated a serial number which is consecutive and based on the calendar year. The year, indicated by two digits, is a part of the serial number of the AIP AMDT.

A checklist of AIP pages containing the page numbers/chart titles and the publication date of the information is re-issued with each AIP AMDT and is an integral part of the AIP.

3.4 AIP Supplement (AIP SUP)

Temporary changes of long duration (3 months or more) and information of short duration which contains extensive text and/or graphics, supplementing the permanent information contained in the AIP, are published as AIP SUP. Operationally significant changes to the AIP are published in accordance with the AIRAC system and its established effective dates, and are identified clearly by the acronym AIRAC.

AIP SUP are placed at the beginning of the AIP. AIP SUP are published on yellow paper in order to be conspicuous. Each AIP SUP (regular or AIRAC) is allocated a serial number which is consecutive and based on the calendar year.

An AIP SUP is kept in the AIP as long as all or some of its contents remain valid. The period of validity of the information contained in the AIP SUP will normally be given in the AIP SUP itself. Alternatively, NOTAM may be used to indicate changes to the period of validity or cancellation of the AIP SUP.

The checklist of current AIP SUP is published in the monthly plain-language NOTAM List.

3.5 NOTAM and Pre-flight Information Bulletins (PIB)

A NOTAM contains information concerning the establishment, condition or change in any aeronautical facility, service, procedure or hazard, the timely knowledge of which is essential to personnel engaged in flight operations. Each NOTAM contains information in the order shown in the ICAO NOTAM format and is composed of abbreviated phraseology assigned to the ICAO NOTAM code complemented by ICAO abbreviations, indicators, identifiers, designators, callsigns, frequencies, figures and plain language. NOTAM originated and issued for Singapore FIR are distributed in 'A' series.

NOTAM are published as and when necessary to disseminate information of direct operational significance which:

- a) is of an ephemeral nature;
- b) requires advance distribution; or
- c) is appropriate to the AIP but needs immediate dissemination.

Each NOTAM is assigned a 4-digit serial number preceded by the letter 'A' indicating the series, followed by a stroke and 2 digits indicating the year of issue. The serial numbers begin with 0001 every year. A checklist of current NOTAM is issued every month via the AFS. Additionally, a printed plain-language NOTAM List is sent by airmail to those who had originally received the NOTAM via the AFS, as well as to others on request. The NOTAM list is also retrievable online at <http://www.caas.gov.sg>.

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	AB		Ho Chi-Minh	AC	A	Ottawa	AB	A
Addis Ababa	A		Hong Kong	A	A	Paris	A	A
Almaty	K		Jakarta	ABC	A	Phnom-Penh	AB	-
Amman	A		Jeddah	AW	A	Plaisance	A	A
Amsterdam	AM		Johannesburg	ABC	A	Port Moresby	A	A
Ankara	ABCN		Kabul	A	A	Praha	-	A
Antananarivo	AB		Karachi	A	A	Pyongyang	A	-
Athinai	A		Kathmandu	A	A	Riga	A	-
Baghdad	AB		Kenya	A	-	Rio de Janeiro	-	A
Bahrain	A		Kobenhavn	AB	A	Roma	AW	A
Baku	A		Kolkata	ACD	A	Sanaa	A	A
Bangkok	AC		Kuala Lumpur	A	A	Seoul	AG	A
Beijing	AEF		Kuwait	A	A	Shannon	ABD-	A
Beograd	AK		Kyiv	A	-		HJNV	A
Brisbane	CDEF-		Lisboa	A	-	Sofia	A	A
	GHJN		Ljubljana	A	-	Stockholm	ABC	A
Brunei	B		London	ABDF-	A	Taipei	AC	A
Bruxelles	A			GHJMPV	-	Tehran	AB	A
Bucuresti	ABM				A	Tel Aviv	A	A
Budapest	A		Macao	A	A	Tokyo	ABCEJ	-
Cairo	A		Madrid	ABDE	A	Tripoli	A	A
Chennai	ACDG		Mahé	A	A	Vientiane	A	-
Christchurch	B		Male'	ACD	-	Vilnius	A	A
Colombo	AC		Malta	A	A	Washington	A	A
Congo	AB		Manila	BC	A	Wien	AB	-
Damascus	A		Mauritius	A	A	Windhoek	AB	A
Dar es-Salaam	A		Moskva	AGOPV	A	Yangon	ABC	A
Dhaka	A		Mumbai	ABC	-	Zurich	A	
Timor-Leste	G		Muscat	AB	-			
Frankfurt	A		Nadi	AD	A			
Harare	A		Nairobi	A	A			
Helsinki	A		New Delhi	ACDG	-			
			Nicosia	A				
			Niew Milligen	M				

Pre-flight Information Bulletin (PIB) which contains a recapitulation of current NOTAM and other information of urgent character for the operator / flight crews can be retrieve from the following:

- a) CAAS website: <http://www.caas.gov.sg>
- b) AIM-SG URL page at <http://aim.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. Subsequently, a printed NOTAM List is prepared and distributed by mail to all recipients of the Integrated Aeronautical Information Package. It contains the plain language presentation of current NOTAM, information on the serial numbers of the latest AIP AMDT, AIP SUP and AIC issued and also includes the checklist for AIP SUP.

3.8 Sale of publications

AIP Singapore may be purchased from the Aeronautical Information Services, Civil Aviation Authority of Singapore, Singapore Changi Airport at S\$435.00 per copy of the AIP (excluding postage).

The fee for the AIP AMDT service is S\$130.00 per year per copy of the AIP (excluding postage which is to be paid in advance).

Additional AIP covers may be purchased at \$12.00 each.

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 SUP. If an AIRAC AIP SUP cannot be issued due to lack of time, an AIRAC NOTAM will be issued. Such NOTAM will immediately be followed by an AIP SUP.

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 2015 to 2018:

AIRAC Effective Dates			
Year 2015	Year 2016	Year 2017	Year 2018
8 January	7 January	5 January	4 January
5 February	4 February	2 February	1 February
5 March	3 March	2 March	1 March
2 April	31 March	30 March	29 March
30 April	28 April	27 April	26 April
28 May	26 May	25 May	24 May
25 June	23 June	22 June	21 June
23 July	21 July	20 July	19 July
20 August	18 August	17 August	16 August
17 September	15 September	14 September	13 September
15 October	13 October	12 October	11 October
12 November	10 November	9 November	8 November
10 December	8 December	7 December	6 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 SUP, the effective date and the reference number of the AIRAC AIP SUP. This trigger NOTAM will come into force on the same effective date as the AIRAC AIP SUP 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

<i>Aerodrome</i>	<i>Briefing Coverage</i>	<i>Availability of Bulletins</i>
SINGAPORE CHANGI	All route stages emanating from Singapore.	Pre-flight Information Bulletin (PIB) can be retrieved from: a) CAAS website at http://www.caas.gov.sg b) AIM-SG URL at http://aim.caasaim.gov.sg
SELETAR Aeronautical Information Service for Seletar Airport is provided from the AIS office at Singapore Changi Airport.		

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GEN 3.2 AERONAUTICAL CHARTS

1. RESPONSIBLE SERVICES

1.1 The Civil Aviation Authority of Singapore provides a range of aeronautical charts for use by all types of civil aviation. The Aeronautical Information Services produces some of the charts which are part of the AIP. Other charts, suitable for pre-flight planning and briefing, are available for reference at the AIS office at Singapore Changi Airport and the AIS Self-Briefing Office at Seletar Aerodrome. The charts published in the AIP are produced in accordance with the provisions contained in the ICAO documents listed in para 1.2. Differences to the provisions contained in ICAO Annex 4 - *Aeronautical Charts* are detailed in subsection GEN 1.7.

1.2 Applicable ICAO Documents

- Annex 4 - Aeronautical Charts, Eleventh Edition 2009.
Doc 8168-OPS/611 - Aircraft Operations, Volume II - Construction of Visual and Instrument Flight Procedures, Fifth Edition 2006.

2. MAINTENANCE OF CHARTS

2.1 The aeronautical charts included in the AIP are kept up-to-date regularly by means of replacement sheets where necessary. Significant amendments or revisions in aeronautical information for other aeronautical charts are also included in the replacement sheets. Revisions of the aeronautical information on all charts is constantly in progress and amended reprints are published as regularly as production resources permit.

2.2 Information found to be incorrect after publication will be corrected by an AIC or NOTAM if they are of operational significance.

3. PURCHASE ARRANGEMENTS

3.1 The charts as listed under paragraph 4 of this sub-section may be obtained from:

Aeronautical Information Services
Civil Aviation Authority of Singapore
Singapore Changi Airport
P. O. Box 1
Singapore 918141

→ TEL: (65) 65956051
FAX: (65) 64410221
AFS: WSSSYNYX
Email: caas_singaporeais@caas.gov.sg

4. AERONAUTICAL CHART SERIES AVAILABLE

4.1 The following series of aeronautical charts are produced:

- a) World Aeronautical Chart - ICAO;
- b) Aerodrome Chart - ICAO;
- c) Aerodrome Obstacle Chart - ICAO Type A (for each runway);
- d) Aerodrome Obstacle Chart - ICAO Type B;
- e) Precision Approach Terrain Chart - ICAO;
- f) Enroute Chart - ICAO;
- g) Area Chart - ICAO;
- h) Standard Departure Chart - Instrument (SID) - ICAO;
- i) Standard Arrival Chart - Instrument (STAR) - ICAO;
- j) Instrument Approach Chart - ICAO (for each runway and procedure type);
- k) Visual Approach Chart - ICAO

4.2 General description of each series

a) *World Aeronautical Chart - ICAO 1: 1 000 000*

This series is constructed on Lambert Conformal Conic Projection with two standard parallels at 0 degree 40 minutes and 3 degree 20 minutes. The spheroid is World Geodetic System 1984 (WGS84). The aeronautical data shown have been kept to a minimum, consistent with the use of the chart for visual air navigation. It includes a selection of aerodromes, significant obstacles, elements of the ATS system, prohibited, restricted and danger areas, and radio navigation aids. The chart provides information to satisfy visual air navigation and is also used as a pre-flight planning chart.

b) *Aerodrome Chart - ICAO*

This chart contains detailed aerodrome data to provide flight crews with information that will facilitate the ground movement of aircraft:

- from the aircraft stand to the runway; and
- from the runway to the aircraft stand;

It also provides essential operational information at Singapore Changi Airport and Seletar Aerodrome.

c) *Aerodrome Obstacle Chart - ICAO Type A (operating limitations)*

This chart contains detailed information on obstacles in the take-off flight path areas of Singapore Changi Airport, Seletar Aerodrome and Paya Lebar Airport. It is shown in plan and profile view. This obstacle information provides the data necessary to enable an operator to comply with the operating limitations of ICAO Annex 6, Parts I and II, Chapter 5.

d) *Aerodrome Obstacle Chart - ICAO Type B*

This chart is produced to assist in the determination of critical heights for Singapore Changi Airport and Seletar Aerodrome.

e) *Precision Approach Terrain Chart - ICAO*

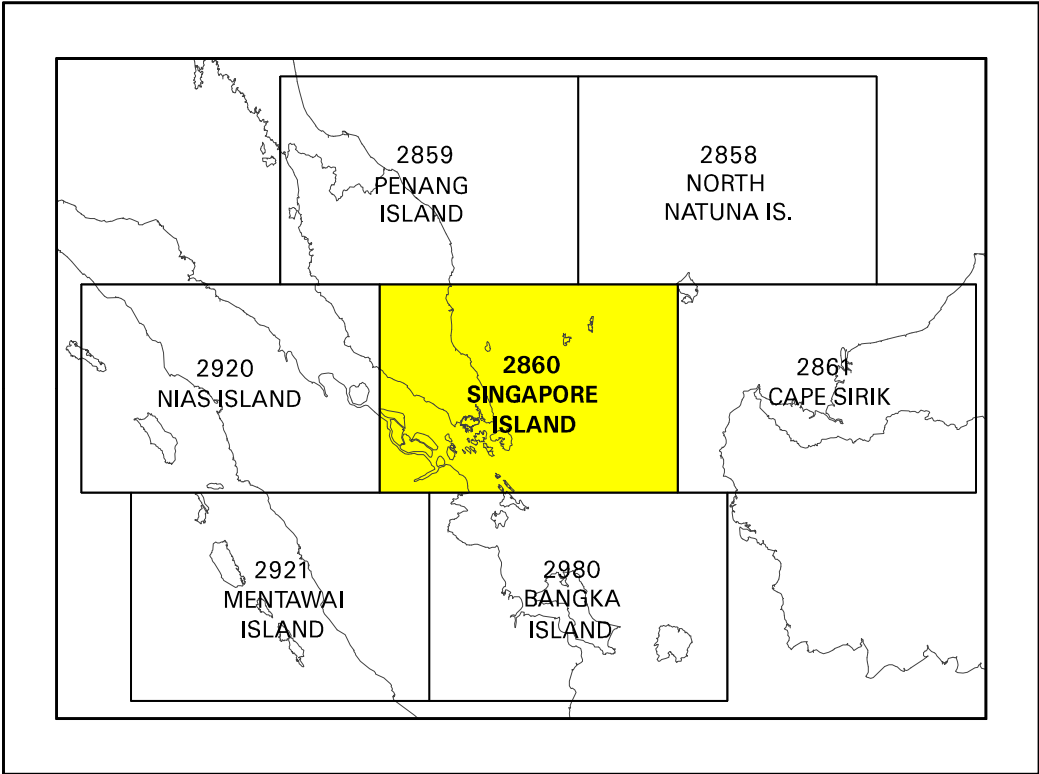
This chart provides detailed terrain profile information within a defined portion of the final approach so as to enable aircraft operating agencies to assess the effects of the terrain on decision height determination by the use of radio altimeters. This chart is produced for the precision approach Cat II runways at Singapore Changi Airport.

f) *Enroute Chart - ICAO*

This chart is produced for the entire Singapore FIR. The aeronautical data include all aerodromes, prohibited, restricted and danger areas and the air traffic services system in detail. This chart provides the flight crew with information to facilitate navigation along ATS routes in compliance with air traffic services procedures.

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	15 JUL 99
Enroute Chart ICAO (ENRC)		ENR 6-1		In AIP	24 JUL 14
Instrument Approach Chart ICAO (IAC)	1:400 000	Singapore Changi RWY 02L - ICW ILS/DME WSSS AD 2-101		In AIP	10 MAR 11
	1:400 000	RWY 02C - ICE ILS/DME WSSS AD 2-103		In AIP	10 MAR 11
	1:400 000	RWY 02C - VTK DVOR/DME WSSS AD 2-105		In AIP	10 MAR 11
	1:400 000	RWY 02R - ICX ILS/DME WSSS AD 2-107		In AIP	10 MAR 11
	1:400 000	RWY 20R - ICH ILS/DME WSSS AD 2-109		In AIP	10 MAR 11
	1:400 000	RWY 20C - ICC ILS/DME WSSS AD 2-111		In AIP	10 MAR 11
	1:400 000	RWY 20C - VTK DVOR/DME WSSS AD 2-113		In AIP	10 MAR 11
	1:400 000	RWY 20L - ICZ ILS/DME WSSS AD 2-115		In AIP	18 NOV 10
	1:400 000	RWY 02L - RNAV(GNSS) WSSS AD 2-117		In AIP	10 MAR 11
	1:400 000	RWY 20R - RNAV(GNSS) WSSS AD 2-119		In AIP	7 MAR 13
	1:400 000	Paya Lebar RWY 20 - PU DVOR/DME WSAP AD 2-17		In AIP	10 MAR 11
	1:400 000	RWY 02 - PU DVOR/DME WSAP AD 2-19		In AIP	10 MAR 11
	1:400 000	RWY 20 - IPS ILS/DME WSAP AD 2-21		In AIP	10 MAR 11
	1:400 000	RWY 02 - IPN ILS/DME WSAP AD 2-23		In AIP	10 MAR 11
Visual Approach Chart ICAO (VAC)	1:400 000	Singapore Changi WSSS AD 2-121		In AIP	10 MAR 11
	1:100 000	Seletar RWY 03 WSSL AD 2-21		In AIP	12 DEC 13
	1:100 000	RWY 21 WSSL AD 2-23		In AIP	12 DEC 13
	1:100 000	RWY 03 WSSL AD 2-25		In AIP	12 DEC 13
	1:100 000	RWY 21 WSSL AD 2-27		In AIP	12 DEC 13
Visual Departure Chart	1:100 000	Seletar RWY 03 WSSL AD 2-29		In AIP	12 DEC 13
	1:100 000	RWY 21 WSSL AD 2-31		In AIP	12 DEC 13
Aerodrome Chart ICAO (AC)		Singapore Changi WSSS AD 2-31		In AIP	24 JUL 14
		Seletar WSSL AD 2-13		In AIP	18 SEP 14
		Paya Lebar WSAP AD 2-11		In AIP	18 SEP 14
Aerodrome Obstacle Chart ICAO TYPE A (AOC)	1:10 000	Singapore Changi RWY 20R/02L WSSS AD 2-37		In AIP	3 APR 14
	1:10 000	RWY 20C/02C WSSS AD 2-39		In AIP	3 APR 14
	1:10 000	Seletar RWY 03/21 WSSL AD 2 -17		In AIP	6 FEB 14
	1:20 000	Paya Lebar RWY 20/02 WSAP AD 2-15		In AIP	18 SEP 14
	Aerodrome Obstacle Chart ICAO TYPE B (AOC)	1:25 000	Singapore Changi RWY 02L/20R and 02C/20C WSSS AD 2-41		In AIP
1:12 500		Seletar RWY 03/21 WSSL AD 2-19		In AIP	18 SEP 14
Precision Approach Terrain Chart - ICAO (PATC)	1:2 500	Singapore Changi RWY 02L WSSS AD 2-43		In AIP	25 APR 96
	1:2 500	RWY 02C WSSS AD 2-45		In AIP	25 APR 96

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



GEN 3.2 AERONAUTICAL CHARTS

8. CORRECTIONS TO CHARTS NOT CONTAINED IN THE AIP

Identification of charts	Location on the chart where the correction has to be made	Precise details of the corrections to be made

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GEN 3.3 AIR TRAFFIC SERVICES

1. RESPONSIBLE SERVICE

- 1.1 The Chief Air Traffic Control Officer of the Air Traffic Services Division of the Civil Aviation Authority of Singapore (CAAS) acting under the authority of the Director-General of Civil Aviation is the authority responsible for the overall administration of air traffic services within the Singapore FIR.

→ Chief Air Traffic Control Officer TEL : (65) 65412405
Air Traffic Services Division FAX : (65) 6441 0221
Civil Aviation Authority of Singapore AFS : WSJCZQZX
Singapore Changi Airport
P. O. Box 1, Singapore 918141

- 1.2 The services are provided in accordance with the provisions contained in the following ICAO documents:
Annex 2 - *Rules of the Air*
Annex 11 - *Air Traffic Services*
Doc 4444 - *Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM)*
Doc 8168 - *Procedures for Air Navigation Services - Aircraft Operations (PANS-OPS)*
Doc 7030 - *Regional Supplementary Procedures*
- 1.3 Differences to these provisions are detailed in subsection GEN 1.7.

2. AREA OF RESPONSIBILITY

- 2.1 Air traffic services are provided for the entire territory of Singapore, including its territorial waters as well as the airspace over the high seas within the Singapore FIR.
- 2.2 In some cases, in accordance with the regional air navigation agreement, air traffic services are provided, under the delegated authority, in the airspace within another bordering FIR. Details of such services are provided in section ENR 2.

3. TYPES OF SERVICES

- 3.1 The following types of services are provided:
- Flight Information Service (FIS) and Alerting Service (ALRS);
 - Area Control (ACC); and
 - Radar
- 3.2 With the exception of services provided at military air bases, the following types of services are provided at aerodromes:
- Aerodrome Control (TWR);
 - Aerodrome Flight Information Service (AFIS); and
 - Automatic Terminal Information Service (ATIS) at certain aerodromes
- 3.3 Air Traffic Control is exercised:
- a) on airways covering the main ATS routes;
 - b) within the Singapore/Johor Airspace Complex and in control zones at controlled aerodromes equipped with approach and/or landing aids.
- 3.4 Flight information service and alerting service within the Singapore FIR and air traffic control services in control areas are provided by one centre (ACC Singapore). There is no distinction between upper and lower controlled airspace. The axis of each airway is constituted by a line connecting reference points identified normally by radio navigational facilities.

- 3.5 Air traffic control, flight information and alerting services are provided by:
 - a) ACC Singapore along the airways including those parts of the airways traversing the Singapore / Johor Airspace Complex;
 - b) the relevant aerodrome control tower in coordination with ACC Singapore as necessary, for arriving and departing aircraft.
- 3.6 Radar service is an integral part of the ATS system. A description of radar services and procedures is provided in subsection ENR 1.6. Additional procedures applicable within the Singapore / Johor Airspace Complex are contained in sub-section ENR 1.1.
- 3.7 The description of the airspace designated for air traffic services purpose is found in several tables, all forming part of sub-section ENR 2.1.
- 3.8 In general, the air traffic rules and procedures in force and the organisation of air traffic services are in conformity with ICAO Standards, Recommended Practices and Procedures. The regional supplementary procedures and altimeter setting procedures are set out in full. Differences between the national and international rules and procedures are given in sub-section GEN 1.7.
- 3.9 A few prohibited areas, restricted areas and danger areas are established within the Singapore / Johor Airspace Complex. These areas are shown in sub-section ENR 5.1. Activation of areas subject to intermittent activity is notified well in advance by NOTAM, giving reference to the area only by its identification.

4. CO-ORDINATION BETWEEN THE OPERATOR AND ATS

- 4.1 Co-ordination between the operator and air traffic services is effected in accordance with Chapter 2, paragraph 2.15 of ICAO Annex 11 - Air Traffic Services and Chapter II, paragraphs 11.2.1.1.4 and 11.2.1.1.5 ICAO Doc 4444 - *Procedures for Air Navigation Services - Air Traffic Management* (PANS-ATM).

5. MINIMUM FLIGHT ALTITUDE

- 5.1 The minimum flight altitudes on the ATS routes, as presented in section ENR 3, have been determined so as to ensure at least 1,000ft (300m) vertical clearance above the highest obstacle within 18km on each side of the centre line of the route. However, where the angular divergence of the navigational aid signal in combination with the distance between the navigational aids could result in the aircraft being more than 8km on either side of the centre line, the 18km protection limit is increased by the extent to which the divergence is more than 8km from the centre line.

6. ATS UNITS ADDRESS LIST

<i>Unit Name</i>	<i>Postal Address</i>	<i>Telephone Nr</i>	<i>Telefax Nr</i>	<i>Telex Nr</i>	<i>AFS Address</i>
1	2	3	4	5	6
SINGAPORE ACC / APP	Singapore Air Traffic Control Centre (SATCC) 60, Biggin Hill Road Singapore 509950	(65) 65412668 (65) 65412672	(65) 65456252	-	WSJCZQZX
SINGAPORE TOWER	Singapore Changi Control Tower Civil Aviation Authority of Singapore P.O Box 1, Singapore Changi Airport Singapore 918141	(65) 65956057 (65) 65412410 (65) 65412416	(65) 65456224	-	Nil
SELETAR TOWER	Seletar Control Tower Civil Aviation Authority of Singapore Seletar Airport Building 1007, West Camp Road Singapore 797794	(65) 64812893	(65) 64813510	-	WSSLZTZX

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

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

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

4.8.2 SELETAR AERODROME

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

- 4.8.2.2 Wind Shear Observations (Seletar Aerodrome)

- 4.8.2.2.1 ATC will pass to all aircraft taking off or landing for the next $\frac{1}{2}$ hour from the time of report whenever microburst or windshear of intensity 10 knots or greater is observed/reported.

- 4.8.2.2.2 The phraseology used by ATC to warn pilots of the presence of wind shear of intensity between 10 and 30 knots is:

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

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

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

5. NOTIFICATION REQUIRED FROM OPERATORS

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

6. AIRCRAFT REPORTS REQUIRED FROM OPERATORS

6.1 AIREP

- 6.1.1 Routine aircraft meteorological observations shall be made and the reports transmitted at ATS/MET reporting points listed on page GEN 3.5-6 and as indicated in subsection ENR 3.1 - ATS ROUTES.

- 6.1.2 Special aircraft observations and aircraft observations during climb-out and approach shall be made and the reports transmitted as necessary.

- 6.1.3 Special aircraft observations of pre-eruption volcanic activity, volcanic eruption or volcanic ash cloud shall be recorded on the special Air-Report of Volcanic Activity form which can be downloaded from URL <https://fpl-1.caasaim.gov.sg/>. A copy of the completed Volcanic Activity Report shall be delivered by the operator or a flight crew member, without delay, either personally or by telephone facsimile (TEL: 65425026 or 65429978) to the Meteorological Office, Singapore Changi Airport.

6.2 REPORTING OF LOW LEVEL WIND SHEAR

- 6.2.1 Pilots encountering wind shear shall report to ATC as soon as possible.
- 6.2.2 When reporting wind shear on radiotelephony, the information should be transmitted in this order:
 - a) Aircraft callsign;
 - b) WIND SHEAR report;
 - c) Time (of wind shear occurrence);
 - d) Position (of wind shear);
 - e) Intensity (moderate, strong or severe);
 - f) Average height of wind shear layer.

- 6.2.3 On receipt of a wind shear report from a pilot, ATC will pass it to other aircraft in the vicinity. The following phraseology will be used:

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

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

6.3 AIRCRAFT ATS/MET REPORTING POINTS IN THE SINGAPORE FIR

- 6.3.1. Aircraft Meteorological Observations shall be made in relation to and transmitted in flight by all aircraft at the following selected Air Traffic Services position reporting points within the Singapore FIR except when:
 - a) The flight duration is less than 2 hours, or
 - b) The altitude of the flight path is less than 5 000ft, or
 - c) The aircraft is less than 1 hour’s flying time from the next intended point of landing.
- 6.3.2. The aircraft ATS/MET reporting points listed below are indicated in chart page ENR 3.1-17.
- 6.3.3. The position of the mean wind or spot wind, to the nearest whole degree latitude and longitude, shall be recorded and transmitted in flight.

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

ENR 1.8 REGIONAL SUPPLEMENTARY PROCEDURES (DOC 7030)	ENR 1.8-1
1. RVSM Procedures in the Singapore FIR	ENR 1.8-1
Identification of RVSM Airspace	ENR 1.8-1
Airworthiness Operational Approval and Monitoring	ENR 1.8-1
ACAS II and Transponder Equipage	ENR 1.8-2
In-Flight Procedures within RVSM Airspace	ENR 1.8-2/3
Weather Deviation Procedures in the Singapore FIR	ENR 1.8-3/5
Procedures to mitigate wake turbulence encounters and distracting aircraft system alerts in the Oceanic Airspace of Singapore FIR	ENR 1.8-5
Procedures for OPR of Non-RVSM compliant aircraft in RVSM airspace	ENR 1.8-6/7
Contingency Scenarios	ENR 1.8-8
Expanded Equipment Failure and Turbulence Encounter Scenarios	ENR 1.8-9/11
Controller/Pilot Phraseology	ENR 1.8-12
2. MNT and RNAV Procedures	ENR 1.8-13
Longitudinal Separation on ATS Routes	ENR 1.8-14
Table - Appendix A - Application of MNT when the following ACFT is faster	ENR 1.8-16
3. RNP10 Navigation Requirements	ENR 1.8-17
Operations by aircraft not meeting RNP 10 Requirements	ENR 1.8-17
Monitoring of aircraft Navigation Performance	ENR 1.8-18
Separation Minima	ENR 1.8-18
4. No Pre-departure Coordination (No PDC) Procedures	ENR 1.8-19
5. Strategic Lateral Offset Procedures	ENR 1.8-21
6. Strategic Flow Management Procedures	ENR 1.8-22
7. Automatic Dependent Surveillance Broadcast (ADS-B) Out Exclusive Airspace within parts of the Singapore FIR	ENR 1.8-24
ENR 1.9 AIR TRAFFIC FLOW MANAGEMENT (ATFM)	ENR 1.9-1
ENR 1.10 FLIGHT PLANNING	
1. Procedures for submission of a Flight Plan	ENR 1.10-1
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3. RNP 10 NAVIGATION REQUIREMENTS

3.1 INTRODUCTION

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

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

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

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

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

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

3.2 OPERATIONS BY AIRCRAFT NOT MEETING RNP 10 REQUIREMENTS

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

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

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

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

3.3 SAFETY ASSESSMENT CRITERIA

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

3.4 MONITORING OF AIRCRAFT NAVIGATION PERFORMANCE

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

Lateral Deviations

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

Longitudinal Deviations

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

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

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

3.5 SEPARATION MINIMA

3.5.1 Lateral Separation Minima

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

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

3.5.2 Longitudinal Separation

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

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

3.5.3 Vertical Separation

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

3.6 OPERATORS' PROCEDURES

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

3.7 CONTINGENCY PROCEDURES (including WEATHER DEVIATION)

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

1.6.3 Operators of aircraft unable to meet the RNP 10 requirements (see page ENR 1.8-17) and wishing to operate at or above FL290 on RNAV routes specified in paragraph 1.6.2 shall annotate their flight plan as follows:
Item 18 - insert "RMK/REQ FL (insert level)" where FL = the preferred flight level (subject to ATC co-ordination)

1.6.4 Operators of aircraft approved for RNP 1 (P-RNAV) operations shall also include the following information in their flight plan:
Item 10 - "R" where R = PBN approved
Item 18 - PBN/O1 where O1 = Basic RNP1 all permitted sensors, or
PBN/O2 where O2 = Basic RNP1 GNSS, or
PBN/O3 where O3 = Basic RNP1 DME/DME, or
PBN/O4 where O4 = Basic RNP1 DME/DME/IRU

1.7 RVSM and NON-RVSM Approved Aircraft

1.7.1 Operators of RVSM approved or non-RVSM approved aircraft operating in RVSM airspace (see page ENR 1.8-6) shall annotate their flight plan as follows:

	Item 10	Item 18
RVSM approved aircraft	W	
Non-RVSM approved aircraft		STS/NONRVSM

INTENTIONALLY

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PART 3 - AERODROMES (AD)**AD 0**

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AD 0.2	RECORD OF AIP AMENDMENTS	- Not applicable
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7. CARGO STANDS - Aircraft types that can be parked are as follows:

Stands	502	503	504	505	506	507	508	509	601	602	603	604	611	612
A300	→	→	→	→	→	→	→	→	→	→	→	→		
A306													→	→
A310	→	→	→	→	→	→	→	→	→	→	→	→	→	→
A330									→	→	→	→	→	→
A332	→	→	→	→	→	→	→	→	→	→	→	→		
A333	→	→	→	→	→	→	→	→	→	→	→	→		
A342	→	→	→	→	→	→	→	→	→	→	→	→	→	→
A343	→	→	→	→	→	→	→	→	→	→	→	→	→	→
A345	→							→						
A346	→							→						
A380	→							→						
B707	→	→	→	→	→	→	→	→	→	→	→	→		
B727	→	→	→	→	→	→	→	→	→	→	→	→	→	→
B737	→	→	→	→	→	→	→	→	→	→	→	→	→	→
B744	→	→	→	→	→	→	→	→	→	→				
B747	→	→	→	→	→	→	→	→	→	→	→	→		
B748						→	→	→			→	→		
B74S	→	→	→	→	→	→	→	→	→	→	→	→		
B752													→	→
B753													→	→
B757	→	→	→	→	→	→	→	→	→	→	→	→		
B762	→	→	→	→	→	→	→	→	→	→	→	→	→	→
B763	→	→	→	→	→	→	→	→	→	→	→	→	→	→
B764	→	→	→					→			→	→		
B772	→	→	→	→	→	→	→	→	→	→	→	→	→	→
B772LR													→	→
B773	→	→	→	→	→	→	→	→	→	→	→	→		
B773ER	→	→	→	→	→	→	→	→	→	→	→	→		
B777F													→	→
DC8	→	→	→	→	→	→	→	→	→	→	→	→	→	→
DC10	→	→	→	→	→	→	→	→	→	→	→	→	→	→
IL62	→	→	→	→	→	→	→	→	→	→	→	→	→	→
IL86	→	→	→	→	→	→	→	→	→	→	→	→	→	→
L101	→	→	→	→	→	→	→	→	→	→	→	→	→	→
MD11	→	→	→	→	→	→	→	→	→	→	→	→	→	→

8. BUDGET TERMINAL STANDS - Aircraft types that can be parked at stands (→) are as follows:

Stands	1	2	3	4	5	6	7	8	9	10	11	12	13	14
AT72	→	→	→	→	→	→	→	→	→	→	→	→	→	→
A319	→	→	→	→	→	→	→	→	→	→	→	→	→	→
A320	→	→	→	→	→	→	→	→	→	→	→	→	→	→
A321											→	→	→	→
B737	→	→	→	→	→	→	→	→	→	→	→	→	→	→
DHC7	→	→	→	→	→	→	→	→	→	→	→	→	→	→

9. MARS STANDS - Aircraft types that can be parked at stands (→) are as follows:

Stands	101	101L	101R	102	102L	102R
A300	→			→		
A310	→			→		
A319		→	→		→	→
A320		→	→		→	→
A321		→	→		→	→
A332	→			→		
A333	→			→		
A342	→			→		
A343	→			→		
A345	→			→		
A380	→			→		
B737		→	→		→	→
B747	→			→		
B748	→			→		
B757	→			→		
B762	→			→		
B763	→			→		
B772	→			→		
B773	→			→		
B773ER	→			→		
B787-8	→			→		

2. RUNWAY UTILISATION

2.1 Runway-in-use

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

2.2 Departures

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

2.3 Clearance for Immediate Take-Off

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

2.4 Arrivals - Minimum Runway Occupancy Time (ROT)

- 2.4.1 Arriving aircraft upon landing are reminded that it is imperative to vacate the runway as quickly as practicable to enable ATC to apply minimum spacing on final approach and minimize 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*</u> (1655), <u>W7*</u> (2123) and W8 (3061)	Note 1: Recommended exit taxiways are bold and underlined.
20C	<u>E6*</u> (1948), <u>E7*</u> (2391) and E8 (3152)	
02L	<u>W5*</u> (1966), <u>W4*</u> (2491) and W3* (2876)	Note 2: * Indicates Rapid Exit Taxiway (RET) and maximum design ground speed for the exit taxiway is 50kts.
02C	<u>E5*</u> (2055), <u>E4*</u> (2565) and E3* (3267)	
20L	Not applicable	
02R	Not applicable	

- 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:

- (a) the runway is long enough;
- (b) during daylight hours;
- (c) the second aircraft will be able to see the first aircraft clearly and continuously until it is clear of the runway;
- (d) 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:

- (a) 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:

- i) 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.

- ii) 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:

- (a) during daylight hours;
- (b) visibility of at least 5km;
- (c) cloud ceiling of 1,500ft in the departure/missed approach area;
- (d) ATC is satisfied that the pilot of the next arriving aircraft will be able to observe continuously the relevant traffic;
- (e) no unfavourable surface wind conditions (including significant tailwind, windshear, turbulence, etc.);
- (f) 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:

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

3. PROCEDURES FOR PUSH BACK AND ASSIGNMENT OF FLIGHT LEVELS TO AIRCRAFT DEPARTING FROM SINGAPORE CHANGI AIRPORT

3.1 Aircraft departing from Singapore Changi Airport shall adhere to the procedures for push back and assignment of flight levels.

3.2 Assignment of flight levels to departing aircraft is made on a first-come-first-served basis. Aircraft will normally be assigned the level requested unless an alternate level is offered after coordination with the adjacent ATC centres.

3.3 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 10 min longitudinal separation provided there is no closing speed with the preceding aircraft;
- c) additional longitudinal separation as appropriate shall be provided by ATC for the faster aircraft following a slower 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.

3.4 To avoid confusion, pilots shall use the correct phraseology as detailed in para 3.5 when ready for push back.

- 3.5 The pilot shall notify ATC when the aircraft is ready to push back within 5 minutes using the following phraseology:
- callsign
 - destination
 - proposed flight level and alternate level, if any
 - parking position
- 3.6 On receipt of the "ready to push back" call, 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.
- 3.7 Once the 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.
- 3.8 At the end of the push back, 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.

4. GATE HOLD PROCEDURES FOR DEPARTING AIRCRAFT

- 4.1 Whenever there are about five to seven departing aircraft at the RWY holding point, subsequent push-backs 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). The determination of EPT will take into account an aircraft's parking stand as well as taxi time to the RWY-in-use holding point.
- 4.2 When an EPT is issued, pilots will be instructed to either remain on GMP frequency or to monitor Singapore Ground Control (frequencies 124.3MHz or 121.725MHz). It should be noted that when instructed to monitor Singapore Ground frequencies, pilots shall not establish contact with the Singapore Ground Control, rather, pilots shall maintain a listening watch on the assigned Singapore Ground Control frequency and wait for pushback instruction. This is to prevent unnecessary frequency congestion.
- 4.3 A flight issued with an EPT but chooses to commence pushback before the assigned time will be allowed to do so. However, the flight should not expect an earlier departure time as the planned departure sequences will be maintained.
- 4.4 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 the GMP to contact Singapore Ground for pushback for the purpose of better gate utilization.
- 4.5 To maximize runway utilization, departure sequence will be planned on the basis of increasing runway throughput so as to enhance overall efficiency.

5. DELAY IN PUSH BACK AND/OR TAXIING DUE TO OTHER AIRCRAFT

- 5.1 Delays may be expected for the second aircraft to push back 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 3.7 is exceeded.

6. DELAY IN TAKE-OFF DUE TO RESTRICTIONS IN THE ATC CLEARANCE

- 6.1 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 longitudinal separation. Such a delay will not deprive a departing aircraft of its ATC clearance even though the 5 minutes grace period would have been exceeded.

7. DELAY DUE TO OVERFLIGHTS

- 7.1 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.

8. FLIGHTS EXEMPTED

8.1 The above procedures are not applicable to VIP, CASEVAC, SAR and other special tasks aircraft. ATC shall have full discretion in the conduct of such operations.

9. CANCELLATION OF ATC CLEARANCE / OBTAINING A FRESH CLEARANCE

9.1 A departing aircraft may have its ATC clearance cancelled under the following circumstances:

- a) on expiry of the 5 minutes grace period under para 3.7, it is still unable to push back; or
- b) after pushing back, the pilot advises that it is returning to blocks; or
- c) it develops a technical problem and is unable to continue taxiing.

9.2 ATC will inform the aircraft when a clearance is cancelled using the phraseology;
“(Callsign of aircraft) your ATC clearance is cancelled (reason)”

9.3 Pilots who are ready to depart following the cancellation of an ATC clearance will adopt the normal procedures as if it is the first time they are ready to depart.

10. GROUND MOVEMENT PLANNER ON VHF 121.65MHz

10.1 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.

11. GROUND MOVEMENT CONTROL ON VHF 124.3MHz

11.1 This frequency shall be used for aircraft start-up/push-back clearance.

11.2 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.

11.3 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 (118.6MHz) when nearing the taxiway holding position;
- c) Request for take-off clearance on 118.6MHz.

11.4 The pilot-in-command stopping for a pre-flight check at the taxiway holding position shall change over from 124.3MHz to 118.6MHz and request for further clearance before recommencing taxiing.

11.5 Departing aircraft will be instructed when to change from 118.6MHz to Singapore Approach frequency of 120.3MHz.

11.6 In the case of the aircraft having landed, the pilot-in-command shall change from 118.6MHz to 124.3MHz immediately after clearing the runway. He shall maintain watch on 124.3MHz for taxiing and parking instructions until he arrives at his aircraft stand.

12. TAXIING

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

12.2 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.

12.3 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.

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

13. TAKE-OFF AND LANDING

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

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

- 13.2 The pilot-in-command shall not take-off or land without a clearance from Aerodrome Control.
- 13.3 The pilot-in-command shall not run-up on the runway in use unless authorised by Aerodrome Control. Engine run-ups in the holding pan or taxiway holding point clear of the runway in use may be carried out subject to approval by Aerodrome Control.
- 13.4 After landing, the pilot-in-command shall vacate the runway by the shortest suitable route and to contact Ground Control who will issue specific taxi route instructions to its assigned aircraft stand.
- 13.5 Aircraft with radio communication failure shall vacate the runway and stop on the taxiway and watch for light signals from Aerodrome Control.

14. ARRIVING AIRCRAFT

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

15. LIGHT AIRCRAFT OPERATIONS

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

WSSS AD 2.23 ADDITIONAL INFORMATION

1. BIRD CONCENTRATION IN THE VICINITY OF THE AIRPORT

- 1.1 A number of varieties of birds are found in Singapore throughout the year. The larger birds commonly found in Singapore Changi Airport include the following:
- cattle egrets (weighing approximately 300g each)
 - grey herons (weighing approximately 500g each)
 - brahminy kites (weighing approximately 600g each)
- 1.2 There could be an increase in bird activities during the migratory months of September to April. During this period, migratory birds may use the airport as their feeding ground.

WSSS AD 2.24 CHARTS RELATED TO SINGAPORE CHANGI AIRPORT

Location of RWY 02R/20L in relation to RWY 02L/20R and RWY 02C/20C Aerodrome Chart - ICAO Aerodrome Advisory Chart	WSSS AD 2-29 WSSS AD 2-31 WSSS AD 2-33
Aerodrome Obstacle Chart - ICAO - TYPE A - RWY 02L/20R Aerodrome Obstacle Chart - ICAO - TYPE A - RWY 02C/20C Aerodrome Obstacle Chart - ICAO - TYPE B	WSSS AD 2-37 WSSS AD 2-39 WSSS AD 2-41
Precision Approach Terrain Chart - ICAO - RWY 02L Precision Approach Terrain Chart - ICAO - RWY 20C	WSSS AD 2-43 WSSS AD 2-45
RNAV _(GNSS) SIDs and STARs - Introduction Continuous Descent Operation (CDO) for Arrivals into Singapore Changi Airport	WSSS AD 2-47 to 2-50 WSSS AD 2-50-1/4
RNAV _(GNSS) SID - RWY 02L/20R - ANITO 5E / ANITO 4F RNAV _(GNSS) SID - RWY 02C/20C - ANITO 5A / ANITO 4B RNAV _(GNSS) SID - RWY 02L/20R - BOBAG 1E / BOBAG 1F RNAV _(GNSS) SID - RWY 02C/20C - BOBAG 1A / BOBAG 1B RNAV _(GNSS) SID - RWY 02L/20R - TOMAN 1E / TOMAN 1F RNAV _(GNSS) SID - RWY 02C/20C - TOMAN 1A / TOMAN 1B RNAV _(GNSS) SID - RWY 02L/20R - VENPA 1E / VENPA 1F RNAV _(GNSS) SID - RWY 02C/20C - VENPA 1A / VENPA 1B RNAV _(GNSS) SID - RWY 02L/20R - AROSO 1E / AROSO 1F RNAV _(GNSS) SID - RWY 02L/20R - MASBO 1E / MABSO 1F RNAV _(GNSS) SID - RWY 02C/20C - AROSO 1A / AROSO 1B RNAV _(GNSS) SID - RWY 02C/20C - MASBO 1A / MABSO 1B RNAV _(GNSS) SID - RWY 02L/20R - MERSING 4E / MERSING 5F RNAV _(GNSS) SID - RWY 02C/20C - MERSING 4A / MERSING 5B	WSSS AD 2-51 to 2-52 WSSS AD 2-53 to 2-54 WSSS AD 2-55 to 2-56 WSSS AD 2-57 to 2-58 WSSS AD 2-63 to 2-64 WSSS AD 2-65 to 2-66 WSSS AD 2-67 to 2-68 WSSS AD 2-69 to 2-70 WSSS AD 2-71 to 2-72 WSSS AD 2-71-1 to 2-72-1 WSSS AD 2-73 to 2-74 WSSS AD 2-73-1 to 2-74-1 WSSS AD 2-75 to 2-76 WSSS AD 2-77 to 2-78
RNAV _(GNSS) STAR - RWY 02L/02C - BOBAG 1A RNAV _(GNSS) CDO - RWY 02L - BOBAG 1K RNAV _(GNSS) STAR - RWY 20R/20C - BOBAG 1B RNAV _(GNSS) CDO - RWY 20R - BOBAG 1L RNAV _(GNSS) STAR - RWY 02L/02C - LAVAX 1A RNAV _(GNSS) CDO - RWY 02L - LAVAX 1K RNAV _(GNSS) STAR - RWY 20R/20C - LAVAX 1B RNAV _(GNSS) CDO - RWY 20R - LAVAX 1L RNAV _(GNSS) STAR - RWY 20R/20C - LELIB 2B RNAV _(GNSS) STAR - RWY 02L/02C - PASPU 1A RNAV _(GNSS) CDO - RWY 02L - PASPU 1K RNAV _(GNSS) STAR - RWY 20R/20C - PASPU 1B RNAV _(GNSS) CDO - RWY 20R - PASPU 1L RNAV _(GNSS) STAR - RWY 02L/02C - REMES 5A RNAV _(GNSS) CDO - RWY 02L - REMES 1K RNAV _(GNSS) STAR - RWY 20R/20C - REMES 6B RNAV _(GNSS) CDO - RWY 20R - REMES 1L	WSSS AD 2-81 to 2-82 WSSS AD 2-81-1 to 2-82-1 WSSS AD 2-83 to 2-84 WSSS AD 2-83-1 to 2-84-1 WSSS AD 2-85 to 2-86 WSSS AD 2-85-1 to 2-86-1/2 WSSS AD 2-87 to 2-88 WSSS AD 2-87-1 to 2-88-1/2 WSSS AD 2-89 to 2-90 WSSS AD 2-91 to 2-92 WSSS AD 2-91-1 to 2-92-1/2 WSSS AD 2-93 to 2-94 WSSS AD 2-93-1 to 2-94-1/2 WSSS AD 2-97 to 2-98 WSSS AD 2-97-1 to 2-98-1 WSSS AD 2-99 to 2-100 WSSS AD 2-99-1 to 2-100-1
Instrument Approach Chart - ICAO - RWY 02L - ICW ILS/DME Instrument Approach Chart - ICAO - RWY 02C - ICE ILS/DME Instrument Approach Chart - ICAO - RWY 02C - VTK DVOR/DME Instrument Approach Chart - ICAO - RWY 02R - ICX ILS/DME Instrument Approach Chart - ICAO - RWY 20R - ICH ILS/DME Instrument Approach Chart - ICAO - RWY 20C - ICC ILS/DME Instrument Approach Chart - ICAO - RWY 20C - VTK DVOR/DME Instrument Approach Chart - ICAO - RWY 20L - ICZ ILS/DME Instrument Approach Chart - ICAO - RWY 02L - RNAV _(GNSS) Instrument Approach Chart - ICAO - RWY 02C - RNAV _(GNSS) Instrument Approach Chart - ICAO - RWY 20R - RNAV _(GNSS) Instrument Approach Chart - ICAO - RWY 20C - RNAV _(GNSS)	WSSS AD 2-101 WSSS AD 2-103 WSSS AD 2-105 WSSS AD 2-107 WSSS AD 2-109 WSSS AD 2-111 WSSS AD 2-113 WSSS AD 2-115 WSSS AD 2-117 WSSS AD 2-118 WSSS AD 2-119 WSSS AD 2-120
Visual Approach Chart - ICAO	WSSS AD 2-121

AD 2 - AERODROMES

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>	012501.03N 1035203.52E
2	<i>Direction and Distance from (city)</i>	006°, 14.6km from city centre (The Fullerton, Singapore)
3	<i>Elevation/Reference Temperature</i>	14m (46ft) / 33.0°C
4	<i>Geoid Undulation</i>	9.78m
5	<i>MAG VAR</i>	27'E (2010)
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 and JET A1
3	<i>Fuelling Facilities / Capacity</i>	MON to FRI BTN 0030-1030; SAT, SUN and Public holidays BTN 0030-0930 Contact during operating hours: TEL: (65)64811522 or (65)64846681 FAX: (65)64812159 Contact after operating hours: HP: (65)91294161 or (65)91284143
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

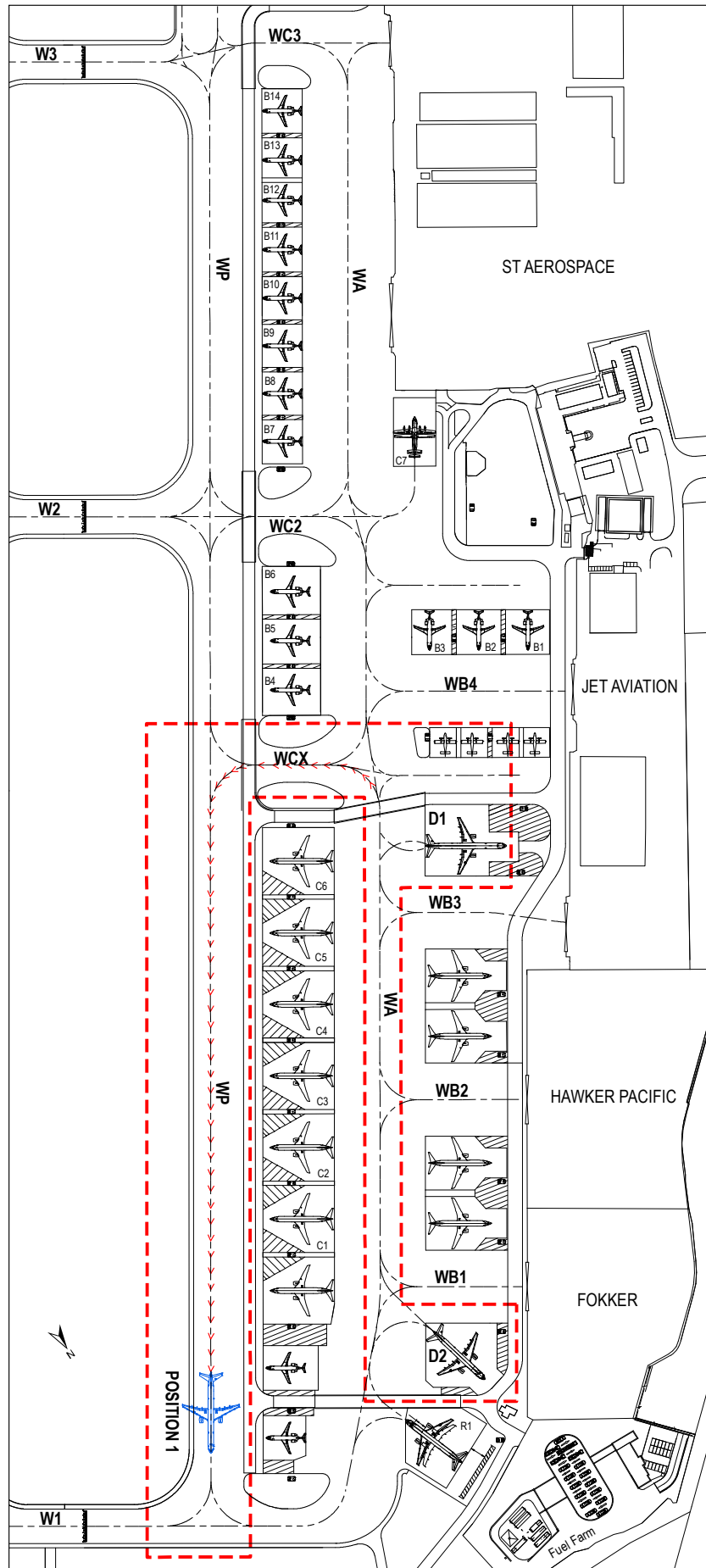
WSSL AD 2.5 PASSENGER FACILITIES		
1	<i>Hotels</i>	Nil
2	<i>Restaurants</i>	Nil
3	<i>Transportation</i>	Handling agent provides its own transport service for passengers and crew between airport and city. Public buses and private hired taxis are available at airport terminal.
4	<i>Medical Facilities</i>	Nil
5	<i>Banks and Post Offices</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>	CAT 7 (No facilities for foaming of runway).
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.

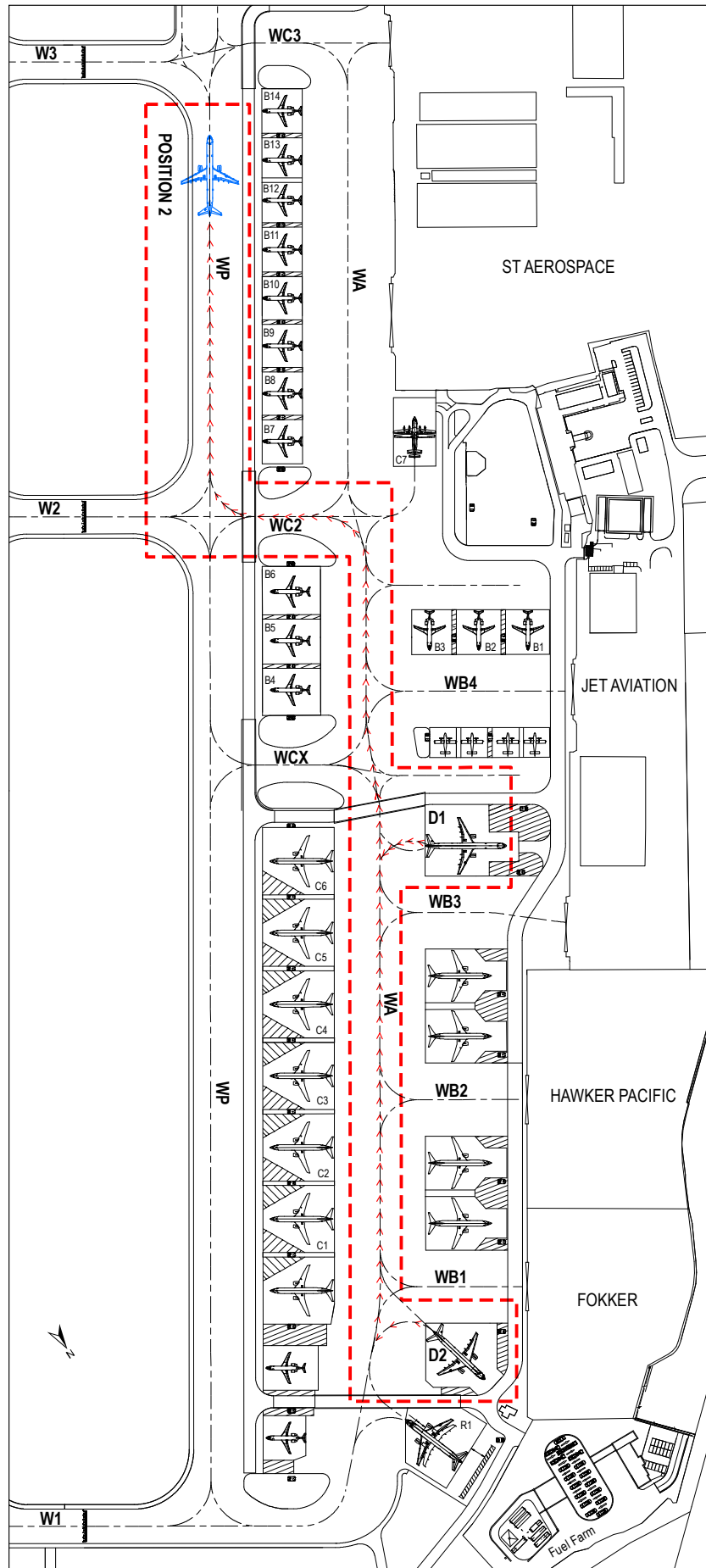
WSSL AD 2.7 SEASONAL AVAILABILITY - CLEARING		
The aerodrome is available throughout the year		

PROCEDURES FOR PUSHBACK AND TOW FORWARD OF AIRCRAFT		
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 nosewheel 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 nosewheel 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 nosewheel 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 nosewheel is at the intersection of the aircraft stand lead-in line (or pushback line) and the centreline of TWY ES. The aircraft may breakaway from there.</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 nosewheel is at the intersection of the aircraft stand lead-in line and TWY WA centreline. The aircraft shall then be towed forward to TWY WP until the tow tug towing the aircraft is at the intermediate holding position short of TWY W1 (see chart WSSL AD 2-4-2) or TWY W3 (see chart WSSL AD 2-4-3). Once the tow tug is disengaged, the aircraft will request start up approval from Seletar Ground (aircraft) on 121.6MHz. The aircraft shall breakaway from there.</p>	<p>1) Tow approved to intermediate holding position on TWY WP short of TWY W1 to face North; or 2) Tow approved to intermediate holding position on TWY WP short of TWY W3 to face South</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>Not applicable</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>Not applicable</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>Not applicable</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 30m AMSL and above in shipping channel	Approximately 1525m from THR RWY 21	1) Power station chimney 124m/407ft AMSL	012656.8N1035251.7E	
	2) Steel structure 91m/300ft AMSL	012709.78N1035318.74E	2) Radio masts 72m/237ft AMSL	within 500m radius of 012337N1035144E	
	3) Chimney 84m/276ft AMSL	012700.18N1035321.93E	3) Radio mast 66m/217ft AMSL	012258.8N1035113.8E	
	4) Chimney 83m/273ft AMSL	012651.81N1035330.23E	4) Surface Wind Direction Sleeves	located at the northern and southern ends of RWY.	
	5) Chimney 87m/286ft AMSL	012646.99N1035331.46E	5) Radio masts 71m/232ft AMSL	within 100m radius of 012454N 1035259E	
	6) Mobile cranes 100.5m/330ft AMSL	within area bounded by 012627.24N1035313.00E 012607.79N1035333.95E 012614.23N1035337.07E 012623.93N1035316.02E	6) Radar tower 54m AMSL marked/LGTD	012537.79N1035306.74E (reclaimed land north of RWY)	
			7) Mobile cranes 128m/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 9 hours
4	<i>Type of landing forecast, Interval of issuance</i>	METAR, SPECI BTN 2100-1500 and 1500-2100 (on request). AD warning of adverse weather (H24)
5	<i>Briefing/consultation provided</i>	NIL
6	<i>Flight documentation, Language(s) used</i>	Tabular forms, English
7	<i>Charts/other information available for briefing or consultation</i>	NIL
8	<i>Supplementary equipment available for providing information</i>	MDWR (Met Doppler Weather Radar) MAINT Period: Second WED of every month BTN 0200-0900. Incase of bad WX, THU following the second WED BTN 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	RWY End Elevation	Highest Elevation of Touchdown Zone
1	2	3	4	5	6	7	8
03	033.33°	1836 x 46	47/F/C/X/U Bituminous concrete	012430.846N 1035143.791E (9.78m)	14m	5m	14m
21	213.33°	1836 x 46	47/F/C/X/U Bituminous concrete	012520.791N 1035215.431E (9.78m)	5m	14m	10m
CWY Dimensions		STRIP Dimensions (m)		OFZ	Remarks (continued below)		
9		10		11	12		
60m X 150m		1956m X 150m		Not applicable	RESA RWY 03 - 90m X 92m RESA RWY 21 - 240m X 92m		

12	Remarks:
Scheduled closure periods for RWY 03/21	
a) BTN 1600-2300 first FRI of EV month or second FRI if the first FRI is a public holiday. RWY CLSD to all TFC except medivac and EMERG flights. Advance notice of 30 minutes is required for EMERG opening of RWY.	
b) BTN 0500-0515, 1030-1045, 1600-1615 and 2300-2315 daily for RWY inspection. Aircraft to expect delay.	
c) BTN 1600-1800 EV TUE and FRI of EV month. RWY CLSD to all TFC except medivac and EMERG flights. Advance notice of 30 minutes is required for EMERG opening of RWY.	
Runway turn pad	
a) A lighted turn pad with centreline marking is provided at the threshold of RWY 03 which is able to serve aircraft up to B757-200.	

WSSL AD 2.13 DECLARED DISTANCES					
RWY Designator	TORA (m)	TODA (m)	ASDA (m)	LDA (m)	Remarks
1	2	3	4	5	6
03	1 836	1 896	1 836	1 836	
21	1 836	1 896	1 836	1 836	

WSSL AD 2.14 APPROACH AND RUNWAY LIGHTING								
RWY Desig- nator	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
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	ABN/IBN location, characteristics and hours of operation	ABN: 012448.000N 1035207.956E (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	LD and LGTI location Anemometer location and LGT	Cup anemometers and wind vanes and windsocks at ends of RWY.
3	TWY edge and centre line marking	TWY Edge LGT: Blue, elevated and omni-directional TWY Centreline Marking: Yellow
4	Secondary power supply/switch-over time	Automatic standby generator power supply available for airfield lighting.
5	Remarks	Vehicles painted yellow or displaying checkered red/white or orange/white flag at highest point of vehicle. WDI lighted.

WSSL AD 2.16 HELICOPTER LANDING AREA		
1	Coordinates of THR of FATO Geoid undulation	H03 012437.963N 1035152.072E H21 012446.046N 1035157.344E
2	FATO elevation M/FT	H03- 10.52m/34.5ft; 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	Designation and Lateral Limits	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. SELETAR CONTROL ZONE 'A' Portion of Seletar CTR within Singapore FIR is known as Seletar CTR 'A'. 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 WSSL AD 2-33).
2	Vertical Limits	SFC to 3,000ft ALT
3	Airspace Classification	C
4	ATS Unit Call sign Language(s)	Seletar Tower English
5	Transition Altitude	11,000ft (3,350m)
6	Remarks	Nil

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). <u>RWY 03</u> - 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. <u>RWY 21</u> - white, inset and elevated, uni-directional approach LGT and white, omni-directional CGL on top of elevated approach LGT. Simple touchdown zone LGT for both RWY 03 and RWY 21 approach consisting of 2 pairs of white, inset, uni-directional LGT	Nil	No visual approach slope indicator at Sembawang AD
IBN	Flashing Green 'SL'	Flashing R 'AG' EV 20 SEC HN and IMC	Nil
ABN	ALTN Flashing W G EV 2.5 SEC	Nil	Sembawang AD has no ABN
Parking Apron	Relatively large aircraft parking apron to the west of RWY, connected to the RWY by three taxiways	Small aircraft parking apron	Differences in size and location of the parking apron

WSSL AD 2.21 NOISE ABATEMENT PROCEDURES

- 1.1 To alleviate the problem of noise, all aircraft on AWY G579 between Sinjon (SJ) and Jaybee (JB) shall operate at/above 5,000ft.
- 1.2 Aircraft are restricted from overflying built-up residential areas around Seletar AP (areas bounded by 1) 012551.0N 1035044.3E, 012549.9N 1035059.2E, 012522.3N 1035102.3E, 012458.3N 1035044.4E, 012443.4N 1035005.3E, and 2) 012335.6N 1035006.0E, 012324.6N 1035023.1E, 012237.4N 1035040.4E, 012234.4N 1035048.7E, 012231.1N 1035051.8E, 012232.2N 1035016.2E, 012315.1N 1034937.1E, 012322.4N 1034942.2E, 012317.5N 1034957.3E - refer to charts WSSL AD 2-21, WSSL AD 2-23, WSSL AD 2-25 and WSSL AD 2-27) at an altitude below 1,500ft. Aircraft types which are unable to safely manoeuvre clear of the built-up residential areas are not allowed to operate at Seletar AP. As a visual reference, pilots may wish to use the satellite dish located south of 012349.0N 1035003.7E (Lower Seletar Reservoir) as a guide when making approaches for Runway 03.
- 1.3 Freighter flights are not permitted between 1400-2300.
- 1.4 No engine run up shall be permitted between 1400-2300.

WSSL AD 2.22 FLIGHT PROCEDURES

1. PROCEDURES FOR ARRIVALS INTO SELETAR AERODROME

1.1 Introduction

- 1.1.1 Aircraft on VFR flight plan, routing via Tebrau City Mall (013259N1034748E) to Seletar shall follow the joining procedures as described in paragraph 1.2 and illustrated in charts WSSL AD2-21, WSSL AD2-23 and WSSL AD2-33.
- 1.1.2 Aircraft returning from Light Aircraft Training Areas shall follow the joining procedures as described in paragraph 1.3 and illustrated in charts WSSL AD2-21 and WSSL AD2-23.
- 1.1.3 Aircraft on IFR flight plan, routing via JB or KK to Seletar shall be vectored under radar for a visual approach. Paya Lebar Approach shall provide the radar service. When Paya Lebar Approach is closed, Singapore Approach shall provide the service. Unless authorised by ATC, pilots shall follow the joining procedures as described in paragraph 1.4 and 1.5. The joining procedures are illustrated in charts WSSL AD2-25, WSSL AD2-27, WSSL AD2-35 and WSSL AD2-37.
- 1.1.4 When within 5km of the aerodrome reference point, aircraft are to fly; at a manoeuvring speed of not more than 170kt unless otherwise authorised by ATC. All aircraft are required to keep well clear of Sembawang ATZ and Paya Lebar CTR.
- 1.1.5 Circuit traffic already downwind shall have priority. Arriving aircraft shall position and sequence itself accordingly, unless directed otherwise by ATC.
- 1.1.6 Pilots shall not fly east of the runway. This is due to tall buildings up to 90m (296ft) AMSL to the east of Seletar CTR (the location is depicted in charts WSSL AD2-21 to WSSL AD2-27).

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

- 1.2.1 Aircraft on VFR flight plan joining Seletar CTR from East of JB Town are to descend to altitude cleared by ATC. From Tebrau City Mall (013259N1034748E) descend in VMC to altitude cleared by ATC and proceed to POINT 'X' (located 012830N 1034954E or radial 297/7DME from PU DVOR/DME) keeping clear of WMP228 and then direct to overhead the airfield.
- 1.2.2 When overhead the airfield, the joining aircraft shall make a turn overflying the runway and after passing abeam the Control Tower, commence descent as cleared to cross the upwind end of the runway at 1,500ft. Passing over the end of the runway, descend to circuit altitude as cleared by ATC. Pilots shall ensure to keep clear of Sembawang ATZ and Paya Lebar CTR and not to fly east of the runway. This is to keep clear of tall buildings up to 90m AMSL to the east of Seletar CTR. The area where the tall buildings are located is indicated in the Seletar Visual Approach Charts WSSL AD 2-21 to WSSL AD 2-27. Procedures are illustrated in the following charts:
 - i) WSSL AD 2-21: VAC - RWY 03
 - ii) WSSL AD 2-23: VAC - RWY 21
- 1.2.3 Traffic permitting and in good visibility, joining aircraft may be cleared to join directly for right base when landing on RWY 21 or turn downwind for RWY 03 from Position 'A'.

WSAP AD 2.10 AERODROME OBSTACLES		
IN APPROACH / TKOF AREAS		
<i>RWY/Area affected</i>	<i>OBST type, ELEV, Markings/LGT</i>	<i>Location/Coordinates</i>
1	2	3
a) RWY 02 APCH RWY 20 TKOF	Industrial buildings, HGT 83ft AMSL. OBST LGTD	Located on either side of approach funnel 2300ft from RWY 02 THR.
b) RWY 02 APCH RWY 20 TKOF	Structure (water tower), HGT 229ft AMSL, marked and LGTD	012022N 1035436E (east of RWY)
c) RWY 02/20 APCH RWY 02/20 TKOF	LLS LLZ co-located with LLZ antennae, HGT 17ft AGL.	LLZ RWY 02 LOC1324ft from RWY 20 THR. LLZ RWY 20 LOC1525ft from RWY 02 THR.

IN CIRCLING AREA AND AT AERODROME	
<i>OBST type, ELEV, Markings/LGT</i>	<i>Location/Coordinates</i>
1	2
a) ILS GP huts co-located with GP antenna mast (HGT 53ft AGL).	GP RWY 02 located 296ft west of western edge of RWY and 858ft from RWY 02 THR. GP RWY 20 located 296ft west of western edge of RWY and 984ft from RWY 20 THR.
b) PAR hut, HGT 39ft AGL, marked and LGTD.	211ft E 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, 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, 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 W1 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 fm 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	<i>Associated MET Office</i>	Paya Lebar (WSAP)
2	<i>Hours of service</i>	H24
3	<i>Office responsible for TAF preparation and Periods of validity</i>	Paya Lebar (WSAP), 9, 24
4	<i>Type of landing forecast and Interval of issuance</i>	Nil
5	<i>Briefing/consultation provided</i>	P
6	<i>Flight documentation and Language(s) used</i>	Charts or Tabular forms, English
7	<i>Charts and other information available for briefing or consultation</i>	S, U, P
8	<i>Supplementary equipment available for providing information</i>	APT, WXR
9	<i>ATS units provided with information</i>	-
10	<i>Additional information</i>	TEL: 63813156 (Met Office)

WSAP AD 2.12 RUNWAY PHYSICAL CHARACTERISTICS

<i>Designations RWY NR</i>	<i>TRUE & MAG BRG</i>	<i>Dimensions of RWY (m)</i>	<i>Strength (PCN) and surface of RWY/SWY</i>	<i>THR Coordinates</i>	<i>THR ELEV and highest ELEV of TDZ of precision APP RWY</i>
1	2	3	4	5	6
02	023° GEO 023° MAG	3 780 x 61	72/F/B/W/U Bituminous concrete	012041.08N 1035410.36E	13.2m (43ft)
20	203° GEO 203° MAG	3 780 x 61	72/F/B/W/U Bituminous concrete	012234.41N 1035458.53E	19.3m (63ft)
<i>Designations RWY NR</i>	<i>Slope of (RWY - SWY)</i>	<i>Dimensions of SWY (m)</i>	<i>Dimensions of CWY (m)</i>	<i>Dimensions of Strip</i>	<i>OFZ</i>
1	7	8	9	10	11
02	-	300 x 61	300 x 150	-	-
20	-	300 x 61	300 x 150	-	-

12	Remarks
	<p>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.</p>

WSAP AD 2.13 DECLARED DISTANCES

<i>RWY Designator</i>	<i>TORA(m)</i>	<i>TODA(m)</i>	<i>ASDA(m)</i>	<i>LDA(m)</i>	<i>Remarks</i>
1	2	3	4	5	6
02	3 780	4 080	4 080	3 780	Nil
20	3 780	4 080	4 080	3 780	Nil

WSAP AD 2.14 APPROACH AND RUNWAY LIGHTING

<i>RWY Desig- nator</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, INST</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 brilliance 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