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eAIP

Civil Aviation Authority of Singapore

AIP AMENDMENT
04/2025

Effective date
07 AUG 2025

Publication date
07 AUG 2025

wp-AMDT-2025-04

1 Significant information and changes

1.1 Singapore FIR

NIL

1.2 Singapore Changi Airport

a) Updated AIP Section WSSS AD 2.14 - Runway 20R - PAPI (MEHT).

b) Updated Runway 20R PAPI (MEHT) in the Visual Approach Chart - AD-2-WSSS-VAC-1-2 (Flip-Page).

c) Updated AIP Section WSSS AD 2.9 - RWY 02L Taxiway Light.

2 This amendment incorporates information contained in the listed NOTAM and AIP Supplements which is hereby superseded:

NIL

AMENDED PAGES

To be removed				To be inserted		
GEN				GEN		
	GEN 0.2-1	12 JUN 2025			GEN 0.2-1	07 AUG 2025
	GEN 0.3-1	12 JUN 2025			GEN 0.3-1	07 AUG 2025
	GEN 0.3-2	12 JUN 2025			GEN 0.3-2	07 AUG 2025
	GEN 0.3-3	12 JUN 2025			GEN 0.3-3	07 AUG 2025
	GEN 0.3-4	12 JUN 2025			GEN 0.3-4	07 AUG 2025
	GEN 0.3-5	12 JUN 2025			GEN 0.3-5	07 AUG 2025
	GEN 0.3-6	12 JUN 2025			GEN 0.3-6	07 AUG 2025
	GEN 0.3-7	12 JUN 2025			GEN 0.3-7	07 AUG 2025
	GEN 0.4-1	12 JUN 2025			GEN 0.4-1	07 AUG 2025
	GEN 0.4-2	12 JUN 2025			GEN 0.4-2	07 AUG 2025
	GEN 0.4-3	12 JUN 2025			GEN 0.4-3	07 AUG 2025
	GEN 0.4-4	12 JUN 2025			GEN 0.4-4	07 AUG 2025
	GEN 0.6-2	12 JUN 2025			GEN 0.6-2	07 AUG 2025
					GEN 0.6-3	07 AUG 2025
	GEN 1.1-1	12 JUN 2025			GEN 1.1-1	07 AUG 2025
	GEN 1.1-2	12 JUN 2025			GEN 1.1-2	07 AUG 2025
	GEN 1.7-1	12 JUN 2025			GEN 1.7-1	07 AUG 2025
	GEN 1.7-2	12 JUN 2025			GEN 1.7-2	07 AUG 2025
	GEN 1.7-3	12 JUN 2025			GEN 1.7-3	07 AUG 2025
					GEN 1.7-4	07 AUG 2025
	GEN 3.4-2	12 JUN 2025			GEN 3.4-2	07 AUG 2025
	GEN 3.5-4	12 JUN 2025			GEN 3.5-4	07 AUG 2025
	GEN 3.6-1	12 JUN 2025			GEN 3.6-1	07 AUG 2025
	GEN 3.6-2	12 JUN 2025			GEN 3.6-2	07 AUG 2025
	GEN 3.6-3	12 JUN 2025			GEN 3.6-3	07 AUG 2025
	GEN 3.6-4	12 JUN 2025			GEN 3.6-4	07 AUG 2025
					GEN 3.6-5	07 AUG 2025
ENR				ENR		
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	ENR 1.6-2	12 JUN 2025			ENR 1.6-2	07 AUG 2025
	ENR 1.6-3	12 JUN 2025			ENR 1.6-3	07 AUG 2025
	ENR 1.6-4	12 JUN 2025			ENR 1.6-4	07 AUG 2025
	ENR 1.6-5	12 JUN 2025			ENR 1.6-5	07 AUG 2025
	ENR 1.6-6	12 JUN 2025			ENR 1.6-6	07 AUG 2025
	ENR 1.6-7	12 JUN 2025			ENR 1.6-7	07 AUG 2025
	ENR 1.6-8	12 JUN 2025			ENR 1.6-8	07 AUG 2025
	ENR 1.6-9	12 JUN 2025			ENR 1.6-9	07 AUG 2025
	ENR 1.6-10	12 JUN 2025			ENR 1.6-10	07 AUG 2025
	ENR 1.7-1	12 JUN 2025			ENR 1.7-1	07 AUG 2025
	ENR 1.7-2	12 JUN 2025			ENR 1.7-2	07 AUG 2025
	ENR 1.8-9	12 JUN 2025			ENR 1.8-9	07 AUG 2025
	ENR 1.8-10	12 JUN 2025			ENR 1.8-10	07 AUG 2025
	ENR 1.8-20	12 JUN 2025			ENR 1.8-20	07 AUG 2025
	ENR 1.8-24	12 JUN 2025			ENR 1.8-24	07 AUG 2025
	ENR 1.11-1	12 JUN 2025			ENR 1.11-1	07 AUG 2025

To be removed				To be inserted		
	ENR 3.5-4	12 JUN 2025			ENR 3.5-4	07 AUG 2025
	ENR 4.1-1	12 JUN 2025			ENR 4.1-1	07 AUG 2025
	ENR 5.6-1	12 JUN 2025			ENR 5.6-1	07 AUG 2025
AD				AD		
	AD 0.6-5	12 JUN 2025			AD 0.6-5	07 AUG 2025
	AD 0.6-8	12 JUN 2025			AD 0.6-8	07 AUG 2025
	AD 2.WSSS-3	12 JUN 2025			AD 2.WSSS-3	07 AUG 2025
	AD 2.WSSS-20	12 JUN 2025			AD 2.WSSS-20	07 AUG 2025
	AD 2.WSSS-47	12 JUN 2025			AD 2.WSSS-47	07 AUG 2025
	AD-2-WSSS-ADC-2-1	12 JUN 2025			AD-2-WSSS-ADC-2-1	07 AUG 2025
	AD-2-WSSS-ADC-2-2	12 JUN 2025			AD-2-WSSS-ADC-2-2	07 AUG 2025
	AD-2-WSSS-ADC-3	12 JUN 2025			AD-2-WSSS-ADC-3	07 AUG 2025
	AD-2-WSSS-AOC-1	12 JUN 2025			AD-2-WSSS-AOC-1	07 AUG 2025
	AD-2-WSSS-AOC-3	12 JUN 2025			AD-2-WSSS-AOC-3	07 AUG 2025
	AD-2-WSSS-VAC-1-1	12 JUN 2025			AD-2-WSSS-VAC-1-1	07 AUG 2025
	AD-2-WSSS-VAC-1-2	12 JUN 2025			AD-2-WSSS-VAC-1-2	07 AUG 2025
	AD-2-WSSL-ADC-1-1	12 JUN 2025			AD-2-WSSL-ADC-1-1	07 AUG 2025
	AD-2-WSSL-ADC-1-2	12 JUN 2025			AD-2-WSSL-ADC-1-2	07 AUG 2025
	AD-2-WSSL-ADC-2-1	12 JUN 2025			AD-2-WSSL-ADC-2-1	07 AUG 2025
	AD 2.WSAT-6	12 JUN 2025			AD 2.WSAT-6	07 AUG 2025
	AD 2.WIDN-1	12 JUN 2025			AD 2.WIDN-1	07 AUG 2025

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GEN 0.2 RECORD OF AIP AMENDMENTS

AIP AMENDMENT

NR/Year	Publication Date	Effective date	Inserted by
03/2025	12 JUN 2025	12 JUN 2025	
04/2025	07 AUG 2025	07 AUG 2025	

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GEN 0.3 RECORD OF CURRENT AIP SUPPLEMENTS

NR/Year	Subject	AIP section(s) affected	Period of Validity	Cancellation record
059/2020	SINGAPORE CHANGI AIRPORT – LONG TERM CLOSURE OF AIRCRAFT STAND E20 AT TERMINAL 2, SINGAPORE CHANGI AIRPORT		2020/08/25 2026/12/30	
006/2024	PAYA LEBAR AIRPORT – CRANES		2024/01/11 2025/12/31	
007/2024	PAYA LEBAR AIRPORT – LUFFING CRANES		2024/01/11 2025/12/31	
017/2024	SINGAPORE CHANGI AIRPORT – CLOSURE OF AIRCRAFT STAND 504 AT WEST CARGO APRON		2024/02/22 2025/10/31	
020/2024	PAYA LEBAR AIRPORT – SADDLE CRANES		2024/02/08 2025/12/31	
044/2024	PAYA LEBAR AIRPORT – LUFFER CRANES		2024/02/08 2025/08/31	
047/2024	PAYA LEBAR AIRPORT – LUFFING CRANES		2024/02/08 2025/12/30	
048/2024	PAYA LEBAR AIRPORT – CRANES		2024/02/08 2025/12/31	
056/2024	SINGAPORE CHANGI AIRPORT – UPDATED CLOSURE SCHEDULES FOR RUNWAY 02L/20R AND RUNWAY 02C/20C		2024/03/31 2025/09/30	
083/2024	SINGAPORE CHANGI AIRPORT-DECOMMISSIONING OF AIRCRAFT STANDS E1 AND F30 AND TEMPORARY CLOSURE OF TAXILANES R1,R2,R3 AND AIRCRAFT STANDS E2,E3,E4,F31,F32,F33 AND F34 DUE TO CONSTRUCTION WORK ACTIVITIES AT TERMINAL 2		2024/05/09 2028/01/03	
094/2024	PAYA LEBAR AIRPORT – CRAWLER CRANE		2024/05/09 2025/09/30	
111/2024	PAYA LEBAR AIRPORT – MOBILE CRANE		2024/07/25 2025/08/31	
134/2024	SINGAPORE CHANGI AIRPORT – TEMPORARY CLOSURE OF TAXILANE N4 BEHIND AIRCRAFT STAND 604 AND DOWNGRADE OF AIRCRAFT STAND 603 TO CODE C		2024/08/30 2025/10/02	
137/2024	PAYA LEBAR AIRPORT – MOBILE CRANE		2024/09/12 2025/09/28	
140/2024	PAYA LEBAR AIRPORT – MOBILE CRANE		2024/09/12 2025/08/11	
141/2024	PAYA LEBAR AIRPORT – TOPLESS CRANES		2024/09/12 2025/08/13	
142/2024	PAYA LEBAR AIRPORT – LUFFING CRANES		2024/09/12 2025/08/31	
143/2024	PAYA LEBAR AIRPORT – CRAWLER CRANES		2024/09/12 2025/08/25	
144/2024	PAYA LEBAR AIRPORT – TOPLESS TOWER CRANES		2024/09/12 2025/08/31	
146/2024	PAYA LEBAR AIRPORT – MOBILE CRANES		2024/09/12 2025/08/20	
147/2024	PAYA LEBAR AIRPORT – MOBILE CRANE		2024/09/12 2025/09/07	
148/2024	PAYA LEBAR AIRPORT – CRANES		2024/09/12 2025/08/31	

NR/Year	Subject	AIP section(s) affected	Period of Validity	Cancellation record
155/2024	PAYA LEBAR AIRPORT – MOBILE CRANE		2024/10/17 2025/09/11	
156/2024	PAYA LEBAR AIRPORT – TOPLESS CRANES		2024/10/17 2025/09/03	
157/2024	PAYA LEBAR AIRPORT – OBSTACLES		2024/10/17 2025/09/05	
158/2024	PAYA LEBAR AIRPORT – MOBILE CRANE		2024/10/17 2025/09/17	
160/2024	PAYA LEBAR AIRPORT – MOBILE CRANE		2024/10/17 2025/09/19	
161/2024	PAYA LEBAR AIRPORT – MOBILE CRANE		2024/10/17 2025/10/31	
164/2024	PAYA LEBAR AIRPORT – CRANES		2024/10/17 2025/09/30	
171/2024	PAYA LEBAR AIRPORT – MOBILE CRANE		2024/10/17 2025/11/10	
174/2024	SINGAPORE CHANGI AIRPORT – CLOSURE OF TAXIWAYS ASSOCIATED WITH RUNWAY 02R/20L		2024/11/28 2027/12/22	
176/2024	SINGAPORE CHNAGI AIRPORT - USE OF CONSTRUCTION LASERS, LOCATIONS OF AUTOMATIC TOTAL STATIONS AND CONCRETE BLOCKS TO SUPPORT CONSTRUCTION ACTIVITIES AT TERMINAL 2		2024/10/28 2026/10/05	
177/2024	PAYA LEBAR AIRPORT – MOBILE CRANE		2024/11/14 2025/11/15	
178/2024	PAYA LEBAR AIRPORT – CRANES		2024/11/14 2025/12/31	
181/2024	PAYA LEBAR AIRPORT – MOBILE CRANE		2024/11/14 2025/11/30	
185/2024	PAYA LEBAR AIRPORT – MOBILE CRANE		2024/11/14 2025/12/31	
186/2024	PAYA LEBAR AIRPORT – MOBILE CRANE		2024/11/14 2025/12/31	
187/2024	PAYA LEBAR AIRPORT – LUFFER CRANES		2024/11/14 2025/12/31	
188/2024	PAYA LEBAR AIRPORT – CRANES		2024/11/14 2025/12/31	
190/2024	PAYA LEBAR AIRPORT – CRAWLER CRANE		2024/11/14 2025/10/20	
192/2024	PAYA LEBAR AIRPORT – TOPLESS CRANES		2024/11/14 2025/11/30	
193/2024	PAYA LEBAR AIRPORT – CRAWLER TOWER CRANES		2024/11/14 2025/12/31	
194/2024	PAYA LEBAR AIRPORT – TOWER CRANES		2024/11/14 2025/12/31	
195/2024	PAYA LEBAR AIRPORT – FLAT-TOP CRANES		2024/11/14 2025/12/31	
196/2024	PAYA LEBAR AIRPORT – MOBILE CRANE		2024/11/14 2025/11/01	
197/2024	PAYA LEBAR AIRPORT – CRANES		2024/11/14 2025/12/15	
198/2024	PAYA LEBAR AIRPORT – TOWER CRANES		2024/11/14 2025/11/15	

NR/Year	Subject	AIP section(s) affected	Period of Validity	Cancellation record
199/2024	SINGAPORE CHANGI AIRPORT – LONG TERM CLOSURE OF AIRCRAFT STAND E5 AT TERMINAL 2, SINGAPORE CHANGI AIRPORT		2024/12/26 2025/10/30	
200/2024	REVISION TO RESTRICTED AREAS WSR9 AND WSR16		2024/12/26 PERM	
201/2024	PAYA LEBAR AIRPORT – MOBILE CRANES		2024/12/12 2025/10/31	
202/2024	PAYA LEBAR AIRPORT – MOBILE CRANES		2024/12/12 2025/10/31	
203/2024	PAYA LEBAR AIRPORT – MOBILE CRANES		2024/12/12 2025/10/31	
204/2024	PAYA LEBAR AIRPORT – CRAWLER CRANE		2024/12/12 2025/11/30	
205/2024	PAYA LEBAR AIRPORT – TOPLESS CRANES		2024/12/12 2025/11/30	
208/2024	PAYA LEBAR AIRPORT – CRANES		2024/12/12 2025/12/30	
209/2024	PAYA LEBAR AIRPORT – CRANES		2024/12/12 2025/12/30	
212/2024	PAYA LEBAR AIRPORT – MOBILE CRANE		2024/12/31 2025/10/31	
218/2024	SELETAR AIRPORT - CLOSURE OF HELICOPTER LANDING AREA		2024/12/30 2025/12/31	
002/2025	PAYA LEBAR AIRPORT – MOBILE CRANES		2025/01/24 2025/12/31	
003/2025	PAYA LEBAR AIRPORT – TRUCK CRANE		2025/01/24 2025/12/31	
004/2025	PAYA LEBAR AIRPORT – LUFFING TOWER CRANE		2025/01/24 2025/12/30	
005/2025	PAYA LEBAR AIRPORT – TOPLESS TOWER CRANES		2025/01/24 2025/12/31	
006/2025	PAYA LEBAR AIRPORT – TOWER CRANE		2025/01/24 2025/12/31	
009/2025	PAYA LEBAR AIRPORT – MOBILE CRANE		2025/01/24 2025/12/31	
010/2025	PAYA LEBAR AIRPORT – LUFFING CRANE		2025/01/24 2025/12/31	
013/2025	PAYA LEBAR AIRPORT – CRANES		2025/01/24 2025/12/14	
014/2025	PAYA LEBAR AIRPORT – MOBILE CRANE		2025/01/24 2025/12/31	
015/2025	PAYA LEBAR AIRPORT – MOBILE CRANE		2025/01/24 2025/12/31	
016/2025	PAYA LEBAR AIRPORT – FLAT TOP CRANES		2025/01/24 2025/12/31	
017/2025	PAYA LEBAR AIRPORT – LUFFING CRANES		2025/01/24 2025/12/31	
018/2025	PAYA LEBAR AIRPORT – FLAT TOP CRANES		2025/01/24 2025/12/31	
019/2025	PAYA LEBAR AIRPORT – TOWER CRANES		2025/01/24 2025/12/31	
020/2025	PAYA LEBAR AIRPORT – TOWER CRANES		2025/01/24 2025/12/31	

NR/Year	Subject	AIP section(s) affected	Period of Validity	Cancellation record
021/2025	PAYA LEBAR AIRPORT – LUFFER CRANES		2025/01/24 2025/12/31	
022/2025	PAYA LEBAR AIRPORT – CRANES		2025/01/24 2025/12/31	
024/2025	PAYA LEBAR AIRPORT – LUFFING CRANES		2025/02/17 2025/12/01	
025/2025	PAYA LEBAR AIRPORT – LUFFER CRANE		2025/02/17 2025/12/31	
026/2025	PAYA LEBAR AIRPORT – TOWER CRANE		2025/02/17 2025/08/31	
027/2025	PAYA LEBAR AIRPORT – CRAWLER CRANES		2025/02/17 2025/12/30	
028/2025	PAYA LEBAR AIRPORT – CRANES		2025/02/17 2025/12/31	
029/2025	PAYA LEBAR AIRPORT – CRANES		2025/02/17 2025/12/31	
030/2025	PAYA LEBAR AIRPORT – TOPLESS CRANES		2025/02/17 2025/12/31	
034/2025	PAYA LEBAR AIRPORT – FLAT TOP CRANES		2025/02/17 2026/01/31	
035/2025	AIRPORT CLOSURES AND AIRSPACE RESTRICTIONS IN SUPPORT OF AERIAL ACTIVITIES PRIOR TO AND ON SINGAPORE'S NATIONAL DAY, 09 AUGUST 2025		2025/05/27 2025/08/16	
036/2025	SINGAPORE CHANGI AIRPORT - STEEL AND FRANGIBLE FRAMES AND FRANGIBLE POSTS		2025/02/28 2026/01/02	
037/2025	SINGAPORE CHANGI AIRPORT – UPDATED INFORMATION AND DATA FOR RUNWAY 02R/20L		2025/03/20 2025/09/03	
038/2025	SINGAPORE CHANGI AIRPORT – CLOSURE OF AIRCRAFT STAND 604 AT EAST CARGO APRON		2025/04/17 2026/02/19	
039/2025	SINGAPORE CHANGI AIRPORT – CLOSURE OF TAXILANE N1 BEHIND AIRCRAFT STAND 517L		2025/04/17 2025/08/07	
040/2025	PAYA LEBAR AIRPORT – MOBILE CRANE		2025/03/11 2026/03/20	
041/2025	PAYA LEBAR AIRPORT – TOWER CRANES		2025/03/11 2025/12/31	
043/2025	PAYA LEBAR AIRPORT – CRANES		2025/03/11 2026/02/12	
044/2025	PAYA LEBAR AIRPORT – CRANES		2025/03/11 2026/01/31	
045/2025	PAYA LEBAR AIRPORT – LUFFING CRANES		2025/03/11 2025/12/31	
046/2025	PAYA LEBAR AIRPORT – MOBILE CRANE		2025/03/11 2026/01/15	
047/2025	PAYA LEBAR AIRPORT – CRANES		2025/03/11 2025/12/31	
048/2025	PAYA LEBAR AIRPORT – CRANES		2025/03/11 2025/12/31	
049/2025	PAYA LEBAR AIRPORT – CRANES		2025/03/11 2026/12/31	

NR/Year	Subject	AIP section(s) affected	Period of Validity	Cancellation record
050/2025	PAYA LEBAR AIRPORT – CRANES		2025/04/10 2026/03/01	
051/2025	PAYA LEBAR AIRPORT – CRANES		2025/04/10 2026/03/05	
052/2025	PAYA LEBAR AIRPORT – CRANES		2025/04/10 2026/03/07	
053/2025	PAYA LEBAR AIRPORT – CRANES		2025/04/10 2025/09/30	
054/2025	PAYA LEBAR AIRPORT – CRANES		2025/04/10 2026/03/05	
055/2025	PAYA LEBAR AIRPORT – CRANES		2025/04/10 2026/03/27	
057/2025	PAYA LEBAR AIRPORT – CRANE		2025/04/10 2025/12/31	
060/2025	PAYA LEBAR AIRPORT – CRANE		2025/04/10 2025/12/31	
061/2025	PAYA LEBAR AIRPORT – CRANES		2025/04/10 2025/12/31	
062/2025	PAYA LEBAR AIRPORT – CRANE		2025/04/10 2025/09/30	
063/2025	PAYA LEBAR AIRPORT – CRANES		2025/04/10 2025/12/31	
064/2025	SINGAPORE CHANGI AIRPORT – APPLY MINIMUM THRUST AT EAST CARGO APRON		2025/05/05 2026/02/28	
065/2025	SINGAPORE CHANGI AIRPORT – TEMPORARY FIXED OBJECTS AT AIRCRAFT STAND 504 AND STRIPS OF RUNWAY 02L/20R, TAXIWAYS N2, W, W3, M4, AND M, USE OF SURVEY LASERS, SOLAR PANELS AND CONCRETE SLABS		2025/05/26 2027/08/31	
066/2025	PAYA LEBAR AIRPORT – CRANES		2025/05/15 2025/11/30	
067/2025	PAYA LEBAR AIRPORT – CRANE		2025/05/15 2026/04/14	
068/2025	PAYA LEBAR AIRPORT – CRANES		2025/05/15 2026/04/17	
069/2025	PAYA LEBAR AIRPORT – CRANES		2025/05/15 2026/04/22	
070/2025	PAYA LEBAR AIRPORT – CRANES		2025/05/15 2026/04/26	
071/2025	PAYA LEBAR AIRPORT – CRANES		2025/05/15 2026/04/17	
072/2025	PAYA LEBAR AIRPORT – MOBILE CRANE		2025/05/15 2025/12/31	
075/2025	PAYA LEBAR AIRPORT – CRANES		2025/05/15 2026/05/01	
076/2025	PAYA LEBAR AIRPORT – CRANES		2025/05/15 2026/05/01	
077/2025	PAYA LEBAR AIRPORT – CRANE		2025/05/15 2025/12/31	
078/2025	PAYA LEBAR AIRPORT – CRANES		2025/05/15 2026/05/01	
079/2025	PAYA LEBAR AIRPORT – CRANES		2025/05/15 2026/05/02	

NR/Year	Subject	AIP section(s) affected	Period of Validity	Cancellation record
080/2025	PAYA LEBAR AIRPORT – CRANES		2025/05/15 2026/05/01	
082/2025	SINGAPORE CHANGIAIRPORT - IMPLEMENTATION OF PATTERN "B" RUNWAY HOLDING POSITION FOR RUNWAY 02L/20R		2025/06/29 PERM	
083/2025	PAYA LEBAR AIRPORT – CRANES		2025/05/29 2026/12/31	
084/2025	PAYA LEBAR AIRPORT – CRANE		2025/05/29 2026/12/31	
085/2025	PAYA LEBAR AIRPORT – CRANES		2025/07/31 2026/08/01	
086/2025	PAYA LEBAR AIRPORT – CRANE		2025/06/19 2026/07/31	
087/2025	PAYA LEBAR AIRPORT – CRANES		2025/06/19 2025/12/31	
088/2025	PAYA LEBAR AIRPORT – CRANE		2025/06/19 2026/01/31	
089/2025	PAYA LEBAR AIRPORT – CRANE		2025/06/19 2025/12/31	
090/2025	PAYA LEBAR AIRPORT – CRANES		2025/06/19 2026/05/16	
091/2025	SINGAPORE CHANGI AIRPORT – CHANGES TO PILOT DISPLAY INFORMATION ON THE AIRCRAFT DOCKING GUIDANCE SYSTEM(ADGS) - PILOT DISPLAY UNIT (PDU)		2025/08/07 PERM	
092/2025	PAYA LEBAR AIRPORT – CRANES		2025/07/10 2025/12/31	
093/2025	PAYA LEBAR AIRPORT – CRANES		2025/07/10 2026/06/01	
094/2025	PAYA LEBAR AIRPORT – CRANES		2025/07/10 2026/06/03	
095/2025	PAYA LEBAR AIRPORT – CRANE		2025/07/10 2026/06/05	
096/2025	PAYA LEBAR AIRPORT – CRANE		2025/07/10 2026/01/31	
097/2025	PAYA LEBAR AIRPORT – CRANE		2025/07/10 2025/12/31	
098/2025	PAYA LEBAR AIRPORT – CRANE		2025/07/10 2026/01/31	
099/2025	PAYA LEBAR AIRPORT – CRANE		2025/07/10 2026/01/31	
100/2025	PAYA LEBAR AIRPORT – CRANES		2025/07/10 2026/06/06	
101/2025	PAYA LEBAR AIRPORT – CRANE		2025/07/10 2026/01/07	
102/2025	PAYA LEBAR AIRPORT – CRANES		2025/07/10 2026/06/06	
103/2025	PAYA LEBAR AIRPORT – CRANES		2025/07/10 2026/06/06	
104/2025	PAYA LEBAR AIRPORT – CRANES		2025/07/10 2026/06/06	
105/2025	PAYA LEBAR AIRPORT – CRANES		2025/07/10 2026/06/09	

NR/Year	Subject	AIP section(s) affected	Period of Validity	Cancellation record
106/2025	PAYA LEBAR AIRPORT – CRANES		2025/07/10 2026/06/09	
107/2025	PAYA LEBAR AIRPORT – FRANGIBLE TOWERS		2025/07/10 2025/12/31	
108/2025	PAYA LEBAR AIRPORT – CRANE		2025/07/10 2026/12/31	
109/2025	PAYA LEBAR AIRPORT – CRANES		2025/07/10 2026/06/13	
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GEN 1 NATIONAL REGULATIONS AND REQUIREMENTS

GEN 1.1 DESIGNATED AUTHORITIES

The authority responsible for civil aviation in Singapore is the Civil Aviation Authority of Singapore under the Ministry of Transport. The addresses of the designated authorities concerned with facilitation of international air navigation are as follows:

1 CIVIL AVIATION

Post:
CIVIL AVATION AUTHORITY OF SINGAPORE
60 Airport Boulevard, #04-01, Changi Airport Terminal 2
SINGAPORE 819643
Tel: (65) 65421122
Fax: (65) 65421231
AFS: WSSSYAYX
URL: www.caas.gov.sg

2 METEOROLOGY

Post:
DIRECTOR-GENERAL METEOROLOGICAL SERVICE SINGAPORE
60 Airport Boulevard, Changi Airport Terminal 2, #04-502-503
SINGAPORE 819643
Tel: (65) 65457190
Fax: (65) 65457192
AFS: WSSSYMYX
URL: www.weather.gov.sg

3 CUSTOMS

Post:
SINGAPORE CUSTOMS
55 Newton Road #07-01, Revenue House
SINGAPORE 307987
Tel: (65) 63552000
URL: www.customs.gov.sg

4 IMMIGRATION

Post:
IMMIGRATION & CHECKPOINTS AUTHORITY
10 Kallang Road, #08-00 ICA Building
SINGAPORE 208718
Tel: (65) 63916100
URL: www.ica.gov.sg

5 HEALTH

Post:
COMMUNICABLE DISEASES AGENCY
Acting Director Contact & Environmental Diseases, Border & Travel Health (CEBT)
238A Thomson Road, Novena Square Tower A #23-01 to 05
SINGAPORE 307684
URL: www.cda.gov.sg

Post:
MINISTRY OF HEALTH
Director Disease Response and Training Division (DTD)
1 Pasir Panjang Road, Labrador Tower
Level 21, #21-01
SINGAPORE 118479
Tel: (65) 63259220
URL: www.moh.gov.sg

6 ENROUTE AND AERODROME CHARGES

Post:

CIVIL AVIATION AUTHORITY OF SINGAPORE
60 Airport Boulevard, #04-01, Changi Airport Terminal 2
SINGAPORE 819643

Tel: (65) 65421122
Fax: (65) 65421231
AFS: WSSSYAYX

Post:

CHANGI AIRPORT GROUP (S) PTE LTD
SELETAR AIRPORT (AIRSIDE OPERATIONS)
21 Seletar Aerospace Road 1 #02-01
SINGAPORE 797405

Tel: (65) 64815077
Fax (65) 64831754

7 AGRICULTURE QUARANTINE

Post:

Head Office: ANIMAL & VETERINARY SERVICE
Singapore Botanic Gardens, 1 Cluny Road
SINGAPORE 259569

URL: www.nparks.gov.sg/avs

Post:

CHANGI ANIMAL AND PLANT QUARANTINE STATION
113A Airport Cargo Road, Changi Airfreight Centre
SINGAPORE 819985

Tel: 1800 476 1600

8 TRANSPORT SAFETY INVESTIGATION BUREAU

Post:

Director (TSIB)
MINISTRY OF TRANSPORT
c/o Changi Airport Post Office P.O. Box 1005
SINGAPORE 918155

Tel: (65) 65412797
Fax: (65) 65422394
URL: www.mot.gov.sg

GEN 1.7 DIFFERENCES FROM ICAO STANDARDS, RECOMMENDED PRACTICES AND PROCEDURES

ANNEX 1 **Personnel Licensing**, 13th Edition

Chapter 2

2.3.3.1.2 Due to local geographical constraints and boundary, it is not possible to complete one cross-country flight totalling not less than 270km (150NM) in the course of which full- stop landings at two different aerodromes are made. In such cases, a Private Pilot Licence with restriction to fly within Singapore only will be issued.

2.8.2.1 Singapore issues two types of ratings for flying instructors: Flying Instructor Rating and Assistant Flying Instructor Rating. Both ratings meet the ICAO standards for flying instructors. Newly qualified instructors are issued with an Assistant Flying Instructor Rating, and may qualify for a Flying Instructor Rating after acquiring additional flying and instructional experience.

An Assistant Flying Instructor Rating does not entitle the holder to:

a) give flying instructions unless under the supervision of a person holding a Flying Instructor Rating; or
b) give directions in respect of the student pilot's first solo day/night flight and first solo cross-country day/night flight.

2.9.1.1 The applicant for a Commercial Pilot Licence (Gliders) shall not be less than 18 years of age.

2.10.1.1 The applicant for a Private Pilot Licence (Balloons and Airships) shall not be less than 17 years of age. The applicant for a Commercial Pilot Licence (Balloons and Airships) shall not be less than 18 years of age.

ANNEX 2 **Rules of the Air**, 10th Edition

Appendix 3

VFR or IFR flights when operating in uncontrolled airspace within certain parts of the Singapore FIR at or above 3,000ft and below FL250 are required to use the cruising levels specified in the quadrantal table of cruising levels (quadrantal rule) as shown in section ENR 1.7 para 4.4.

DOC 4444 **Procedures for Air Navigation Services - Air Traffic Management,** 15th Edition (PANS-ATM)

- NIL Difference

DOC 7030 **Regional Supplementary Procedures,** 5th Edition

MID/ASIA REGIONAL SUPPLEMENTARY PROCEDURES

1.2.1 Flights shall be conducted in accordance with the Instrument Flight Rules (even when not operating in instrument meteorological conditions) when operated:

a) Above FL200.

ANNEX 3 **Meteorological Service for International Air Navigation,** 20th Edition

- NIL Difference

ANNEX 4 **Aeronautical Charts,** 11th Edition

- NIL Difference

ANNEX 5 **Units of Measurement to be used in Air and Ground Operations**, 5th Edition

- NIL Difference

ANNEX 6 **Operation of Aircraft**

Part I (International Commercial Air Transport - Aeroplanes) - 11th Edition

Chapter 12

12.4(b) Singapore regulations do not require all cabin crew to be trained on the use of automated external defibrillator (AED). However, the regulations require that at least one senior cabin crew on board every aircraft carrying AED to be trained on the use of AED.

Part II (International General Aviation - Aeroplanes) - 10th Edition

- NIL Difference

Part III (International Operations - Helicopters) - 10th Edition

- NIL Difference

ANNEX 7 **Aircraft Nationality and Registration Marks,** 6th Edition

- NIL Difference.

ANNEX 8 **Airworthiness of Aircraft,** 12th Edition

- NIL Difference

ANNEX 9 **Facilitation**, 16th Edition

Chapter 3

3.26 Singapore adopts an electronic visa system (e-Visa) to retrieve information to verify the identity of the visa holder.

3.27 Singapore requires all travellers, including Singapore Citizens, Permanent Residents, Long-Term Pass holders and foreign visitors, to complete an electronic SG Arrival Card (SGAC) before/upon arrival in Singapore.

3.46 Special Pass may be issued to an inadmissible passenger to enter Singapore to enable him to apply for travel documents from the relevant Diplomatic Mission. In such cases, the airlines shall continue to be responsible for the custody and care of the passenger and eventual repatriation.

3.66 With effect from 27 Aug 2007, air crew who arrive in Singapore on crew duty and seeking temporary entry into Singapore are required to produce their passports for immigration clearance. However, their passports will not be endorsed. Crew who are nationals of countries that require visa to enter Singapore will continue to be exempted from the visa requirements if they arrive in Singapore as part of their crew duty or to join their assigned flights for the purpose of performing their crew duty.

Chapter 5

5.9.1 Under Singapore's regulations, the cost of custody and care of inadmissible persons pending their removal shall be borne by the aircraft operator.

5.18 The obligations, responsibilities, and costs associated with the removal of deportees are a shared responsibility. Singapore works closely with foreign diplomatic missions to facilitate the removal of deportees.

5.23 A valid travel document is required before any special consideration can be given to the admission of such persons. For Permanent Residents, entry permit and valid Travelling documents are required before entry is granted.

5.27 An application for a travel document has to be duly signed by the applicant before a travel document can be issued.

5.29 The required travel document to facilitate the return of the national will be issued upon confirmation of the person's Singapore Citizenship status.

ANNEX 10 **Aeronautical Telecommunications**

Volume I (Radio Navigation Aids) - 7th Edition

Volume II (Communication Procedures including those with PANS status) - 7th Edition

Volume III (Communication Systems) - 2nd Edition
Part I - Digital Data Communication Systems
Part II - Voice Communication Systems

Volume IV (Surveillance and Collision Avoidance Systems) - 5th Edition

Volume V (Aeronautical Radio Frequency Spectrum Utilization) - 3rd Edition

- NIL Difference

ANNEX 11 **Air Traffic Services**,15th Edition
- NIL Difference

ANNEX 12 **Search and Rescue**, 8th Edition
- NIL Difference

ANNEX 13 **Aircraft Accident and Incident Investigation**, 13th Edition
- NIL Difference

ANNEX 14 **Aerodromes**

Volume I (Aerodrome Design and Operations) - 8th Edition

Chapter 3

3.4.3 The words “wherever practicable” in Annex 14 paragraph 3.4.3 have been removed in our national regulations. Without exception, the width of the runway strip shall be 140m where the code number is 3 or 4; and 70m where the code number is 1 or 2.

Chapter 4

4.2.14 For a precision approach runway category I, the inner approach surface; inner transitional surfaces; and balked landing surface shall be established, in addition to the conical surface; inner horizontal surface; approach surface and transitional surfaces.

Chapter 6

6.1.1.6 Annex 14 paragraph 6.1.1.6(c) which states that the marking may be omitted when the obstacle is lighted by high-intensity obstacle lights by day has been removed from our national regulations.

Chapter 7

7.4.1 Relating to the display of unserviceability markers, our national regulations require additionally that “unserviceability markers shall also be displayed at the entrances to a permanently or temporarily closed runway or taxiway, or part thereof”.

Chapter 9

9.2.3 Relating to the level of rescue and fire fighting protection to be provided, the remission factor has been removed from our national regulations.

Volume II (Heliports) - 5th Edition
- Not applicable

ANNEX 15 **Aeronautical Information Services**, 16th Edition
- NIL Difference

ANNEX 16 **Environmental Protection**

Volume I (Aircraft Noise) - 8th Edition

Volume II (Aircraft Engine Emissions) - 4th Edition

Volume III (Aeroplane CO? Emissions) - 1st Edition

- NIL Difference

ANNEX 17 **Aviation Security - Safeguarding International Civil Aviation Against Acts of Unlawful Interference**, 12th Edition

- NIL Difference

ANNEX 18 **The Safe Transport of Dangerous Goods by Air,** 4th Edition

- NIL Difference

ANNEX 19 **Safety Management**, 2nd Edition

- NIL Difference

GEN 3.4 COMMUNICATION SERVICES

3.4.1 RESPONSIBLE SERVICE

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

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

Post:
Director-General of Civil Aviation
Civil Aviation Authority of Singapore
60 Airport Boulevard, #04-01, Changi Airport Terminal 2
Singapore 819643
Tel: (65) 65421122
Fax: (65) 65421231
AFS: WSSSYAYX

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

Annex 10	– *Aeronautical Telecommunications*
Doc 8400	– *Procedures for Air Navigation Services - ICAO Abbreviations and Codes (PANS-ABC)*
Doc 8585	– *Designators for Aircraft Operating Agencies, Aeronautical Authorities and Services*
Doc 7030	– *Regional Supplementary Procedures*
Doc 7910	– *Location Indicators*
Doc 9880	– Manual on Detailed Technical Specifications for the Aeronautical Telecommunications Network (ATN) using ISO / OSI standards and protocols

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

3.4.2 AREA OF RESPONSIBILITY

3.4.2.1 Communication services are provided for the entire SINGAPORE FIR.

3.4.2.2 For the following airspace within Jakarta FIR, aeronautical telecommunication services (CNS) will be jointly provided by Indonesia and Singapore:

The area bounded by 031727N 1052959E 012450N 1061648E 001030N 1045656E 000000N 1050340E 000000N 1044330E thence around the arc of a circle radius 90 NM centred on 011324N 1035124E to 013430N 1022353E 011300N 1033000E 011408N 1033142E 011200N 1033900E 011046N 1034015E 010800N 1034500E 011500N 1040000E 011800N 1043000E 012921N 1043441E 011947N 1044606E 021838N 1052205E 023641N 1051311E 024348N 1050854E 025010N 1051210E 031453N 1052619E 031727N 1052959E excluding the Tanjungpinang Terminal Control Area (TMA) and Control Zone (CTR).

Vertical limit: SFC to FL370

3.4.3 TYPES OF SERVICE

3.1 Radio navigation services

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

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

3.2 Voice/data link services

3.2.1 *Voice service*

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

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

3.2.2 *Enroute Communications Organisation*

a) The radio frequencies for enroute communications are listed in subsection ENR 2.1
b) The Singapore HF network provides an umbrella communication coverage for the FIR and may be contacted if communication cannot be maintained on the primary channel.
c) Aircraft approaching or departing from an airport is required to communicate with that airport on the appropriate surface movement, tower or approach control frequency.
d) ADS-C and / or CPDLC services are available to suitably equipped aircraft operating outside radar cover and not in ADS-B exclusive airspace within the Singapore FIR. The hours when ADS-C and CPDLC services are available and the logon requirements are listed in ENR 2.1. Full details of the services are published in ENR 1.1 paragraphs 9.1 to 9.6.

3.2.3 Data link Service

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

a) the messages satisfy the requirements of ICAO Annex 10, Volume II, Chapter 3, paragraph 3.3;
b) the messages are prepared in the form specified in ICAO Annex 10;
c) the text of an individual message does not exceed 1800 characters.

3.2.4 General Aircraft Operating Agency Messages

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

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

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

3.3 Broadcasting service

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

a) HF RTF Volmet Broadcasts (page GEN 3.5-7 refers)
b) VHF ATIS Broadcasts (page GEN 3.4-3 refers)

COMPUTERISED ATIS BROADCASTS

Station	*Callsign Identification*	*Frequency MHz*	*Hours UTC*
1	2	3	4
SINGAPORE / Singapore Changi	Changi Airport Departure Information	128.6	H24 (broadcasting with half hourly updated MET INFO)
	Changi Airport Arrival Information	128.025	
SINGAPORE/ Seletar	Seletar Airport Information	128.425	H24 (broadcasting with hourly updated MET INFO)

Remarks

Alphabetical Reference
All ATIS broadcasts will include Alphabetical Reference for identification in the ATIS message.

Updating of Data
H + 00 to H + 10 and H + 30 to H + 40.

Range 100NM

Height A110

Power 50W

Note to D-ATIS users
Pilots are advised to use AEEC 623 format with Cyclic Redundancy Check (CRC) for D-ATIS service to ensure data integrity. For aircraft formats without CRC (e.g. AEEC 620 format or AEEC 623 format without CRC), pilots are advised to verify the D-ATIS message received with the voice broadcasted ATIS message or to use only voice broadcasted ATIS service.

3.5.4 TYPES OF SERVICES

3.5.4.1 The Meteorological Office and Meteorological Watch Office at Singapore Changi Airport operate H24 and provide the following services for international air navigation:

a) Full meteorological documentation and briefing for current operational planning for all flights operating out of Singapore Changi Airport via the Aviation Weather Services Portal at URL https://www.weather.gov.sg/aviation;

b) Area meteorological watch over the Singapore FIR with the supply of meteorological information including SIGMET information to aircraft in flight through the Singapore ATS radio channels (see subsection AD 2.11);

c) For the portions of airspace within the Jakarta FIR where MET is jointly provided by Indonesia and Singapore (see GEN 3.5 para 3.5.2.1), high level SIGWX forecasts are provided jointly with the Centre for Aviation Meteorology of BMKG; SIGMET and special air reports (ARS) are provided jointly with Meteorological Watch Office Jakarta;

d) HF RTF VOLMET broadcasts of meteorological information (see page GEN 3.5-7), Aviation weather report with trend statement, strong low level vertical wind shear report and aerodrome warnings are also included in VHF ATIS broadcasts for Singapore Changi Airport (see page GEN 3.4-3);

e) Meteorological information for ATS.

3.5.4.2 Weather briefing by a forecaster is available H24 to qualified flight operations personnel at the Meteorological Office at Singapore Changi Airport or via telephone at (65)62446133 / (65)65422837. Weather information is available online via the Aviation Weather Services Portal at URL https://www.weather.gov.sg/aviation (see paragraph 9.2 for further details).

3.5.4.3 The Meteorological Office at Seletar Aerodrome operates H24 and provides meteorological documentation without briefing for international and general aviation flights operating out of Seletar Aerodrome.

3.5.4.4 Details of documentation supplied for each flight are determined by arrangement between the operator and the Meteorological Office. In general, the pilot-in-command is provided with documentation comprising one or more fixed-time prognostic streamline/istotach/spot temperature charts of standard isobaric surfaces appropriate to the cruising level (ICAO model IS), one of fixed-time prognostic significant weather chart code form and appropriate aerodrome forecasts in TAF code form.

3.5.4.5 Routine aerodrome forecasts received from other Meteorological Offices are normally included in meteorological documentation without modification. When a required aerodrome forecast is not received, a provisional forecast may be issued by the Meteorological Office providing the documentation.

3.5.4.6 After documentation has been issued and until take-off (i.e. the latest ETD notified to the Meteorological Office), the Meteorological Office at Singapore Changi Airport makes available amendments to the documentation. It is the responsibility of the operator's local representative or the pilot-in-command to obtain any pre-departure amendment(s) from the Meteorological Office at Singapore Changi Airport. The pilot-in-command may request pre-departure amendment(s) through the Singapore Changi Airport Control Tower.

3.5.4.7 Climatological Summaries for Singapore Changi (WSSS-48698) are available from the Meteorological Service Singapore.

3.5.5 OBSERVING SYSTEMS AND OPERATING PROCEDURES AT SINGAPORE CHANGI AIRPORT AND SELETAR AERODROME

3.5.5.1 SINGAPORE CHANGI AIRPORT

3.5.5.2 RWY 02L/20R (Runway 1)

3.5.5.2.1 Surface wind is measured by three ultrasonic wind sensors located as follows:

	DIST FROM END OF RWY	DIST FROM RWY CENTRELINE
(i) One set at	406 metres north of RWY 02L	120 metres
(ii) One set at	Middle of runway	121 metres
(iii) One set at	381 metres south of RWY 20R	121 metres

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

	DIST FROM END OF RWY	DIST FROM RWY CENTRELINE
1st set	446 metres north of RWY 02L	120 metres
2nd set	Middle of runway	121 metres
3rd set	421 metres south of RWY 20R	121 metres

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

3.5.5.2.3 Surface wind report in METAR and SPECI is taken from the wind sensor at the southern end of RWY 02L (with the sensor at the northern end of RWY 02C/20C as backup).

3.5.5.3RWY 02C/20C (Runway 2)

3.5.5.3.1 Surface wind is measured by three ultrasonic wind sensors, located as follows:

	DIST FROM THRESHOLD	DIST FROM RWY CENTRELINE
(i) One set at	414 metres north of RWY 02C	130 metres
(ii) One set at	Middle of runway	130 metres
(iii) One set at	413 metres south of RWY 20C	128 metres

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

	DIST FROM THRESHOLD	DIST FROM RWY CENTRELINE
1st set	449 metres north of RWY 02C	120 metres
2nd set	Middle of runway	120 metres
3rd set	427 metres south of RWY 20C	120 metres

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

3.5.5.4 RWY 02R/20L (Runway 3)

Surface wind is measured by three ultrasonic wind sensors located as follows:

	DIST FROM THRESHOLD	DIST FROM RWY CENTRELINE
(i) One set at	428 metres north of RWY 02R	132 metres
(ii) One set at	Middle of runway	121 metres
(iii) One set at	435 metres south of RWY 20L	132 metres

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

	DIST FROM THRESHOLD	DIST FROM RWY CENTRELINE
1st set	421 metres north of RWY 02R	120 metres
2nd set	Middle of runway	121 metres
3rd set	425 metres south of RWY 20L	120 metres

3.5.5.4.2 RVR is reported in steps of 25 metres between 0 and 400 metres, 50 metres between 400 and 800 metres and 100 metres between 800 and 1500 metres.

3.5.5.5 Wind Shear Observations (Singapore Changi Airport)

3.5.5.5.1 Horizontal low level wind shear observations are measured continuously by a system consisting of 15 surface wind sensors, MET Doppler X, S and C band weather radars and two wind lidars located in Singapore Changi airport and its vicinity.

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

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

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

3.5.5.5.4 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)"

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

3.5.6 SELETAR AERODROME

3.5.6.1 Surface wind is measured by ultrasonic wind sensors at ends of runway. Surface wind report in METAR and SPECI is taken from measurements of the ultrasonic wind sensor at RWY 03.

3.5.6.2 Wind Shear Observations (Seletar Aerodrome)

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

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

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

GEN 3.6 SEARCH AND RESCUE

1 RESPONSIBLE SERVICE(S)

1.1 The search and rescue service in Singapore is provided by the Civil Aviation Authority of Singapore, in collaboration with the Ministry of Defence, Meteorological Service and Maritime and Port Authority of Singapore, which have the responsibility for making the necessary facilities available. The postal and telegraphic addresses of the Civil Aviation Authority of Singapore are given on page GEN 1.1-1.

Post: RESCUE COORDINATION CENTRE (RCC),
60 Biggin Hill Road,
Singapore 509950.
Tel: (65) 65425024 - Singapore RCC
(65) 65412668 or (65) 65412672 - Singapore ACC
Fax: (65) 65422548
AFS: WSJCZQZX

1.2 The service is provided in accordance with the provisions contained in the following ICAO documents and local procedures:

Annex 12 – Search and Rescue
Annex 13 – Aircraft Accident and Incident Investigation
Doc 7030 – Regional Supplementary Procedures for Alerting and SAR services applicable in the SEA Region.
Doc 9731 – International Aeronautical and Maritime Search and Rescue Manuals Volume 1, 2 and 3 Singapore local procedures

2 AREA OF RESPONSIBILITY

2.1 The search and rescue service in Singapore is responsible for SAR operations within Singapore SRR.

2.2 For the following airspace within Jakarta FIR, search and rescue services (SAR) will be jointly provided by Indonesia and Singapore:

The area bounded by 031727N 1052959E 012450N 1061648E 001030N 1045656E 000000N 1050340E 000000N 1044330E thence around the arc of a circle radius 90 NM centred on 011324N 1035124E to 013430N 1022353E 011300N 1033000E 011408N 1033142E 011200N 1033900E 011046N 1034015E 010800N 1034500E 011500N 1040000E 011800N 1043000E 012921N 1043441E 011947N 1044606E 021838N 1052205E 023641N 1051311E 024348N 1050854E 025010N 1051210E 031453N 1052619E 031727N 1052959E excluding the Tanjungpinang Terminal Control Area (TMA) and Control Zone (CTR).

Vertical limit: SFC to FL370

3 TYPES OF SERVICES

3.1 Details of the rescue coordination centre and related supporting rescue units are given in the table on page GEN 3.6-3 titled - Search and Rescue Units. In addition, various elements of the Singapore Police Force, Maritime and Port Authority of Singapore and the Merchant Marine are available for search and rescue missions, when required. The aeronautical, maritime and public telecommunication services are available to the search and rescue organisation.

3.2 All search aircraft are land planes and carry survival equipment, capable of being dropped, consisting of inflatable rubber dinghies equipped with general purpose first aid supplies, emergency rations and survival radio equipment. Aircraft are equipped to communicate on 121.5MHz, 123.1MHz, 243.0MHz, 282.8MHz, 2182KHz, 3023KHz and 5680KHz and are also equipped with VHF/UHF direction finder. Marine craft are equipped to communicate on 123.1MHz, 282.8MHz, 2182KHz, 3023KHz and 5680KHz and are equipped with radar.

3.3 The Singapore RCC provides distress alert detection of Emergency Locator Transmitters (ELTs), Emergency Position Indicator Radio Beacons (EPIRBs) and Personal Locator Beacons (PLBs) using the Cospas-Sarsat Satellite Aided Tracking System. This system is able to detect 406.0MHz beacons globally and the information is shared with the other users of the system. A database of the Singapore registered aviation beacons is kept at the RCC and the Maritime beacons are in the Maritime and Port Authority database.

3.4 Users of 406.0MHz beacons that are coupled with the 121.5MHz frequency will be able to use the 121.5MHz for homing purposes only by search units.

4 SAR AGREEMENTS

4.1 SAR agreements have been concluded between Civil Aviation Authority of Singapore and the SAR authorities or agencies of Indonesia, Malaysia, Philippines, Thailand and Vietnam. These agreements provide for mutual assistance in the conduct of SAR operations within each others' SAR Regions (SRR) and approval for entry of SAR aircraft, vessels and personnel of one

State into the SRR of another State, with prior permission, for the purpose of conducting SAR operations or rendering SAR assistance and for direct communications between the SAR authorities or agencies on all common SAR matters.

4.2 Requests for the entry of aircraft, equipment and personnel from other States to engage in search for aircraft in distress or to rescue survivors of aircraft accidents should be transmitted to the Rescue Coordination Centre. Instructions as to the control which will be exercised on entry of such aircraft and/ or personnel will be given by the Rescue Coordination Centre in accordance with the standing plan for the conduct of search and rescue in the area.

4.3 Civil Aviation Authority of Singapore has also concluded an SAR agreement with the SAR Coordinator Pacific RCC, United States Air Force (USAF). The agreement provides for all possible assistance to assist RCC Singapore in its response to United States (US) military SAR incidents within the Singapore SRR. It will also provide US assistance to RCC Singapore in its prosecution of civil SAR incidents when requested.

5 CONDITIONS OF AVAILABILITY

5.1 The SAR service and facilities in Singapore are available without charge to neighbouring states on opportunity basis and upon request to the Rescue Coordination Centre Singapore or the Singapore Air Traffic Control Centre. All facilities are specialised in SAR techniques and functions.

6 PROCEDURES AND SIGNALS USED

6.1 Procedures and signals used by aircraft

6.1.1 Procedures for pilots-in-command observing an accident or intercepting a distress call and/or message are outlined in ICAO Annex 12, Chapter 5.

6.2 Communications

6.2.1 Transmission and reception of distress messages within the Singapore Search and Rescue Region are handled in accordance with ICAO Annex 10, Volume II, Chapter 5, para 5.3.

6.2.2 For communications during search and rescue operations, the codes and abbreviations published in *ICAO Abbreviations and Codes (Doc 8400)* are used.

6.2.3 Information concerning positions, callsigns, frequencies and hours of operation of Singapore aeronautical stations is published in sections AD 2 and ENR 2.

6.2.4 The frequency 121.5MHz is guarded continuously by the Control Tower, Singapore Changi Airport, the Singapore Air Traffic Control Centre and Control Tower, Seletar Aerodrome. The Coast Radio Station in Singapore guards the international distress frequencies.

6.2.5 Search and Rescue aircraft conducting Search and Rescue Operations will use the following callsigns:

a) Fixed Wing ‘Rescue (plus number 61 to 85)’
b) Rotary Wing ‘Rescue (plus number 10 to 19)’

6.2.6 Rescue vessels / boats conducting Search and Rescue Operations will use the following callsigns:

a) ‘Rescue Vessel (plus number 21 to 31)’
b) ‘Rescue Boat (plus number or callsign)’

6.3 Search and Rescue Signals

6.3.1 The search and rescue signals to be used are those prescribed in ICAO Annex 12, Chapter 5, paragraph 5.8.

6.3.2 Ground/Air Visual Signal Codes for use by Survivors

GROUND/AIR VISUAL SIGNAL CODES FOR USE BY SURVIVORS			
Nr.	*Message*	*Code symbol*	*Instructions for use*
1	Require assistance	**V**	a) Make signals not less than 8ft(2.5m). b) Take care to layout signals exactly as shown. Provide as much colour contrast as possible c) between signals and background. Make every effort to attract attention by other d) means such as radio, flares, smoke, reflected light.
2	Require medical assistance	**X**	
3	No or Negative	**N**	
4	Yes or Affirmative	**Y**	
5	Proceeding in this direction	↑	

6.4 Search and Rescue Units

SEARCH AND RESCUE UNITS			
Name	*Location*	*Facilities*	*Remarks*
MINDEF	Singapore	LRG	One search and locate aircraft.
		VLR	One search and locate aircraft.
		Hel-M	One search and rescue aircraft.
		Hel-H	One search and rescue aircraft.
		RV	Two search and rescue ship.
CHANGI AIRPORT EMERG SERVICE	Singapore Changi Airport	RB	Additional maritime cover is provided by vessels of the Police Coast Guard and the Maritime and Port Authority of Singapore.
USAF PACIFIC RCC	Hickham Airforce Base	LRG	On opportunity basis. Singapore in coordination with USAF Pacific RCC.

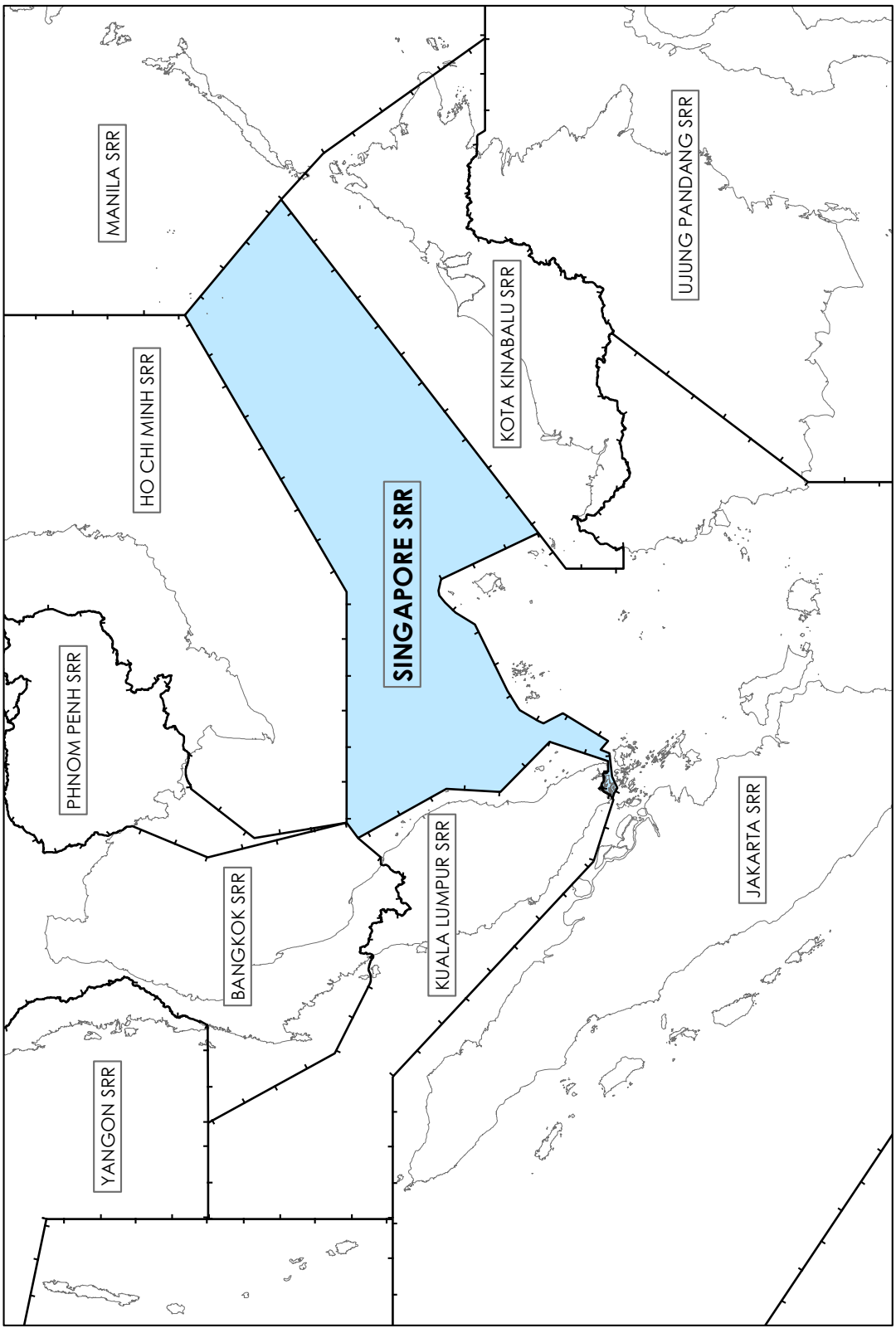
6.5 Search and Rescue Frequencies

SEARCH AND RESCUE FREQUENCIES			
Purpose	*Frequency*	*Period*	*Watch Kept By*
International Distress Frequencies	121.5 MHz	24 hours watch	RSAF (SATCC) RCC Singapore
	243.0 MHz	24 hours watch	RSAF (SATCC)
	156.8 MHz (Channel 16)	24 hours watch	Maritime and Port Authority Ships at sea.
	156.525 MHz (DSC Channel 70)	24 hours watch	Maritime and Port Authority Ships at sea.
Scene of Search	2 182 KHz	As required	RCC Singapore
	282.8 MHz	As required	Search Aircraft RCC Singapore
	123.1 MHz	As required	RCC Singapore Merchant Shipping (if equipped)
	3 023 KHz	As required	RCC Singapore
	5 680 KHz	As required	RCC Singapore

Note:

Speech circuits exist between all ATS Units in Peninsular Malaysia and Singapore. Speech circuits also exist between Singapore ATS Unit and Kota Kinabalu ATS Unit in Sabah. Direct speech communications circuits exist between Singapore ATS Unit and Jakarta, Manila and Ho Chi Minh ATS Units and are available for relay of messages between Singapore RCC and the respective RCCs but may be subject to delays.

SINGAPORE SEARCH AND RESCUE REGION (SRR)



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ENR 1.6 ATS SURVEILLANCE SERVICES AND PROCEDURES

1 PRIMARY RADAR

1.1 DESCRIPTION OF PRIMARY R ADAR SERVICES AND PROCEDURES

1.1.1 Surveillance services will be provided to aircraft operating in controlled airspace subject to surveillance coverage, equipment serviceability and situations that may result in a degradation of ATS provision.

1.1.2 Flight information service may be provided using ATS surveillance to aircraft operating in uncontrolled airspace subject to surveillance and communication coverage, and air traffic conditions. Pilot may request for the following:

a. Information regarding any aircraft observed to be on a conflicting path with the identified aircraft and suggestions or advice regarding avoiding action; and
b. Information on the position of significant weather and, as practicable, advice to the aircraft on how best to circumnavigate any such areas of adverse weather; and
c. Information to assist the aircraft in its navigation.

Aircraft receiving flight information services are not obliged to follow the advice and/or suggestions given by ATC.

1.1.3 Aircraft operating in uncontrolled airspace, intending to enter or cross controlled airspace shall seek ATC clearance to do so. ATC will identify the aircraft and provide ATS surveillance service prior to entering controlled airspace.

1.1.4 The pilot-in-command is responsible for navigation and obstacle clearance when operating on established ATS routes and instrument flight procedures. However, for purpose of ensuring separation and expeditious flow of traffic, ATC may instruct pilots to fly specific headings for an IFR flight to be vectored and/or provide direct routing which takes the aircraft off an ATS route or an instrument flight procedure. Under such circumstance, ATC will issue clearance such that the prescribed obstacle clearance will always exist until the aircraft reaches the point where pilots will resume own navigation.

1.1.5 Position information will be given as follows:

a. A well-known geographical position;
b. Bearing and distance (using points of the compass) from a known position;
c. Magnetic heading (QDM) and distance to the appropriate reporting point or en-route navigational facility;
d. A distance to the runway touchdown point (as “track miles” to run).

1.1.6 Aircraft will be identified by ATC before providing ATS surveillance services using one of the following methods:

a. By a pilot report over a prescribed position displayed on the radar map or plotted on the radar map outlay;
b. By instructing a pilot to carry out turn(s) and ATC observing the executed turn(s);
c. By observing and correlating the radar echo of a departing aircraft to a known airborne time.

1.1.7 It is not possible to specify separation minima between identified aircraft and unknown traffic considered to constitute a hazard due to unpredictable manoeuvres of the latter. However, whenever practicable, the minimum surveillance separation shall be applied.

1.2 SINGAPORE AIR TRAFFIC CONTROL UNITS

1.2.1 Singapore ATC will use the following callsigns when providing ATS surveillance services:

a. Aircraft provided with Area Control Service (ACC)
   i. Singapore Radar;
   ii. Singapore Control.

b. Aircraft provided with Approach Control Service (APP)
   i. Singapore Approach;
   ii. Singapore Arrival;
   iii. Singapore Departure;
   iv. Seletar Approach.

1.3 MILITARY RADAR UNITS AUTHORISED TO PROVIDE RADAR CROSSING SERVICE

1.3.1 The Military Radar Units authorised to provide radar crossings of controlled areas (airways) by military aircraft are:

a. RSAF 201 Squadron (Air Defence Radar Unit-ADRU); and

b. RSAF 203 Squadron (Singapore Air Traffic Control Centre)

1.4 RADAR FAILURE

1.4.1 In the event of radar failure, instructions will be issued by the radar controller to restore standard longitudinal, lateral or vertical separation between those aircraft operating with radar separation. Instructions may also be given to aircraft to communicate on another ATC frequency.

1.5 RADIO FAILURE

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

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

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

1.6 TOTAL RADIO COMMUNICATION FAILURE PROCEDURES

1.6.1 If total radio communication failure occurs in VMC during daylight hours, the pilot shall continue to fly in VMC and land at the most suitable aerodrome. If it occurs in VMC during the hours of darkness (between sunset and sunrise) action shall be taken in accordance with paragraph 1.6.2 below.

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

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

a. Proceed according to the current flight plan, at the last assigned flight level, to the clearance limit and thereafter at the flight plan level.

b. Arrive at the destination as close as possible to ETA.

c. Commence descent as close as possible to EAT (or ETA if no EAT has been acknowledged).

d. If unable to land within 30 minutes of the time descent should have started (i.e. EAT or ETA if no EAT has been acknowledged), proceed to cross SAMKO Holding Area (SHA) at 4,000ft then via A457 at FL200 if Kuala Lumpur is the nominated alternate or via B470 at FL290 if Soekarno- Hatta is the nominated alternate or otherwise proceed at the planned flight level to other nominated alternate.

Note:

1) Aircraft are to follow the established radio failure procedures as laid down by the respective airports.

2) During this 30 minute period ATC will reserve the airspace at the aircraft’s flight level and below. At the expiry of this period with the concurrence of other users normal operations will resume.

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

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

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

1.7.2 For IFR flights to Singapore Changi Airport, aircraft experiencing radio failure shall:

a. Proceed according to the last acknowledged clearance received from Singapore ATC, or
b. If no specific instructions or clearance has been received from Singapore ATC:

i. Maintain the last assigned altitude or flight level and proceed via planned ATS Routes thereafter the appropriate STAR for RWY 02L/02C /02R to SAMKO Holding Area (SHA). If SHA is not part of the STAR, flight shall proceed to SHA after the last waypoint on the STAR.
ii. Commence descent from SHA at or as close as possible to the ETA as indicated on the flight plan.
iii. Carry out the appropriate instrument approach procedure from SHA to land on RWY 02L/02C/02R.

c. If radio failure occurs while flight is on assigned heading from an ATC issued instruction which takes the aircraft off the STAR, the pilot shall rejoin the last assigned STAR by resuming own navigation to the next ensuing waypoint on STAR
d. Identify the runway-in-use in accordance with paragraph 1.8. If unable to effect a landing on:

i. RWY 02L
Carry out missed approach procedure to AKOMA (PU R-356/20DME) (014522N 1035443E). Leave AKOMA at 4,000ft to NYLON Holding Area (NHA) and execute the appropriate instrument procedure from NHA to land on RWY 20R, RWY 20C or RWY 20L, as appropriate.
ii. RWY 02C
Carry out missed approach procedure to NYLON Holding Area (NHA) and execute the appropriate instrument procedure from NHA to land on RWY 20R, RWY 20C or RWY 20L, as appropriate.
iii. RWY 20R
Carry out missed approach procedure to SAMKO Holding Area (SHA) and execute the appropriate instrument procedure from SHA to land on RWY 02L, RWY 02C or RWY 02R, as appropriate.
iv. RWY 20C
Carry out missed approach procedure to EXOMO (VTK R-158/22DME) (010425.49N 1040933.17E). Leave EXOMO at 4,000ft to SAMKO Holding Area (SHA) and execute the appropriate instrument procedure from SHA to land on RWY 02L, RWY 02C or RWY 02R, as appropriate.
v. RWY 02R
Carry out missed approach procedure to HOSBA (VTK R-103/24DME) (011948N 1042418E) Holding Area (HHA). Leave HHA at 7,000ft to NHA via ATS route W401 and VTK DVOR. Execute the appropriate instrument procedure from NHA to land on RWY 20L, RWY 20C or RWY 20R.
vi. RWY 20L
Carry out missed approach procedure to HOSBA (SJ R-079/34DME) (011948N 1042418E) Holding Area (HHA). Leave HHA at 7,000ft to SHA via ATS route G580 and SJ DVOR. Execute the appropriate instrument procedure from SHA to land on RWY 02L, RWY 02C or RWY 02R.

1.8 IDENTIFICATION OF RUNWAY-IN-USE

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

1.8.2 If unable to land within 30 minutes of EAT or ETA, if no EAT has been received and acknowledged, proceed in accordance with paragraph 1.6.3 (d) above.

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

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

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

a. Proceed straight ahead to NYLON Holding Area (NHA) climbing to the last assigned altitude. At NHA, climb/descend to maintain 7,000ft;
b. Hold at NHA for 4 minutes and leave NHA on track 203°. At 10 DME north of VTK, turn left for HOSBA Holding Area (HHA) to jettison fuel, maintaining 7,000ft;
c. After fuel jettison, proceed to SAMKO Holding Area (SHA) via Airway G580 and SINJON DVOR. Maintain 7,000ft. At SHA descend for an instrument approach on RWY 02L/02C/02R. Identify the runway-in-use in accordance with paragraph 1.8 above.

1.9.3 When radio communication failure occurs immediately after the aircraft has departed on RWY 20R/20C/20L, the pilot shall proceed according to the following procedures:

a. Proceed straight ahead to SAMKO Holding Area (SHA) climbing to the last assigned altitude. At SHA climb/descend to maintain 7,000ft;
b. Hold at SHA for 4 minutes. Leave SHA for HOSBA Holding Area (HHA) via SJ DVOR and Airway G580 to jettison fuel, maintaining 7,000ft;
c. After fuel jettison, proceed to NHA via Airway W401. Maintain 7,000ft. On crossing VTK 042R turn right to intercept VTK 023R. At NHA descend to carry out an instrument approach on RWY 20R/20C/20L.

1.9.4 ATC action is based on the assumption that the aircraft will take a minimum of 10 min to jettison fuel. An aircraft therefore should not leave earlier than 10 min after arrival at HOSBA Holding Area even if fuel jettison is completed at a shorter time or if jettisoning is not necessary or possible unless circumstances require an immediate return.

1.9.5 Alternatively, aircraft may jettison fuel between HOSBA and point 80NM from VTK DVOR/DME on Airway G580.

1.10 TOTAL RADIO FAILURE - SPECIAL PROCEDURES - SELETAR AP - ARRIVALS

1.10.1 If total radio communication failure occurs in VMC during daylight hours to an aircraft bound for Seletar AD, the pilot shall continue to fly in VMC and land at the most suitable aerodrome.

1.10.2 If in IMC or when weather conditions are such that the total radio communication failure aircraft cannot complete its flight in accordance with paragraph 1.10.1, the pilot will EITHER:

a. proceed in accordance with the last acknowledged clearance from ATC; OR

b. if no specific instructions or clearances have been received and acknowledged:

i. maintain the last assigned level and proceed via flight planned route, then to OMKOM;
ii. commence descent from OMKOM at or as close as possible to the ETA Seletar AD as indicated on the flight plan or last EAT passed by ATC and acknowledged by aircraft;
iii. leave OMKOM at 2,500ft and proceed to overhead Seletar;
iv. if Seletar Aerodrome is visual, initiate the standard arrival procedures for RWY 21;
v. if unable to effect a landing on RWY 21, carry out a missed approach at or below 1,500ft and land on RWY 03.

1.10.3 ATC will assist the pilot in identifying RWY-in-use by switching on the RWY lights and appropriate PAPI.

1.10.4 The pilot shall keep a look-out for light signals from Seletar Tower. On receipt of a green light from Seletar Tower, a landing may be made.

1.10.5 If unable to land within 30 minutes of ETA Seletar as indicated in the flight plan or last acknowledged EAT, aircraft will proceed to its flight planned alternate.

1.10.6 It is the pilot’s responsibility to ensure that he is clear of other traffic while carrying out the standard arrival procedure.

1.11 TOTAL RADIO FAILURE - SPECIAL PROCEDURES - SELETAR AP - DEPARTURES

1.11.1 If total radio communication failure occurs to a departing aircraft within the Seletar Control Zone, the pilot shall maintain 2,500ft and if Seletar AD is visual, initiate the standard arrival procedures for RWY 21. If unable to effect a landing on RWY 21, carry out a missed approach at or below 1,500ft and land on RWY 03. When in the circuit, the pilot shall keep a look-out for light signals from Seletar Tower.

1.11.2 If departing aircraft experiences total radio communication failure outside the Seletar Control Zone, the pilot shall follow procedures as set out in paragraph 1.10.

1.11.3 At night, aircraft experiencing total radio communication failure will proceed to its flight planned alternate.

1.12 RADIO FAILURE - SPECIAL PROCEDURES - SELETAR AP - HELICOPTERS

1.12.1 Helicopters experiencing RTF failure should approach low level (not above 300ft) and fly past the Control Tower on the eastern side of the runway rocking laterally.

1.12.2 Unless the pilot unmistakably sees a green light from the Tower, he is not to assume that he is cleared to land but is to carry out the same procedure again.

1.12.3 In each circumstance, it is the pilot's responsibility to ensure that he is cleared of other circuit traffic and does not encroach on the approach of the runway.

1.13 RADIO FAILURE - SPECIAL PROCEDURES - SELETAR AP - FIXED WING AIRCRAFT

1.13.1 Aircraft experiencing radio failure are to descend on the western side of the runway to 600ft and rock the aircraft when passing abeam the Control Tower.

1.13.2 Unless the pilot unmistakably sees a green light from the Tower, he is not to assume that he is cleared to land but is to carry out the same procedure again.

1.13.3 When carrying out radio failure procedure, the pilot-in-command shall not infringe the helicopter circuit whenever it is active and shall keep a sharp look-out for helicopters and other aircraft operating in the aerodrome circuit.

1.14 ACTION TAKEN BY ATC DURING RADIO FAILURE

1.14.1 In addition to the action specified in paragraph 1.6.2, if unable to establish normal communication with an aircraft, ATC will:

a. Maintain separation between the aircraft and other aircraft known to be operating in its vicinity;
b. Transmit essential information to the aircraft, including the flight levels reserved for its use, route to be flown, and any significant weather information, such as terminal weather, areas in which VMC may be expected, etc.;
c. Advise other aircraft in the vicinity of the presumed position of the aircraft experiencing radio failure;
d. Use ground radar to check whether the aircraft is receiving and complying with ATC instructions, and to ensure separation from other aircraft;
e. Inform the operator concerned or his representative;
f. Inform the alternate aerodrome of the circumstances of the failure and request attempts to establish communication with the aircraft;
g. Inform all concerned and end all radio failure actions if communication with aircraft is established and when aircraft lands.

1.15 VOICE AND CPDLC POSITION REPORTING REQUIREMENTS

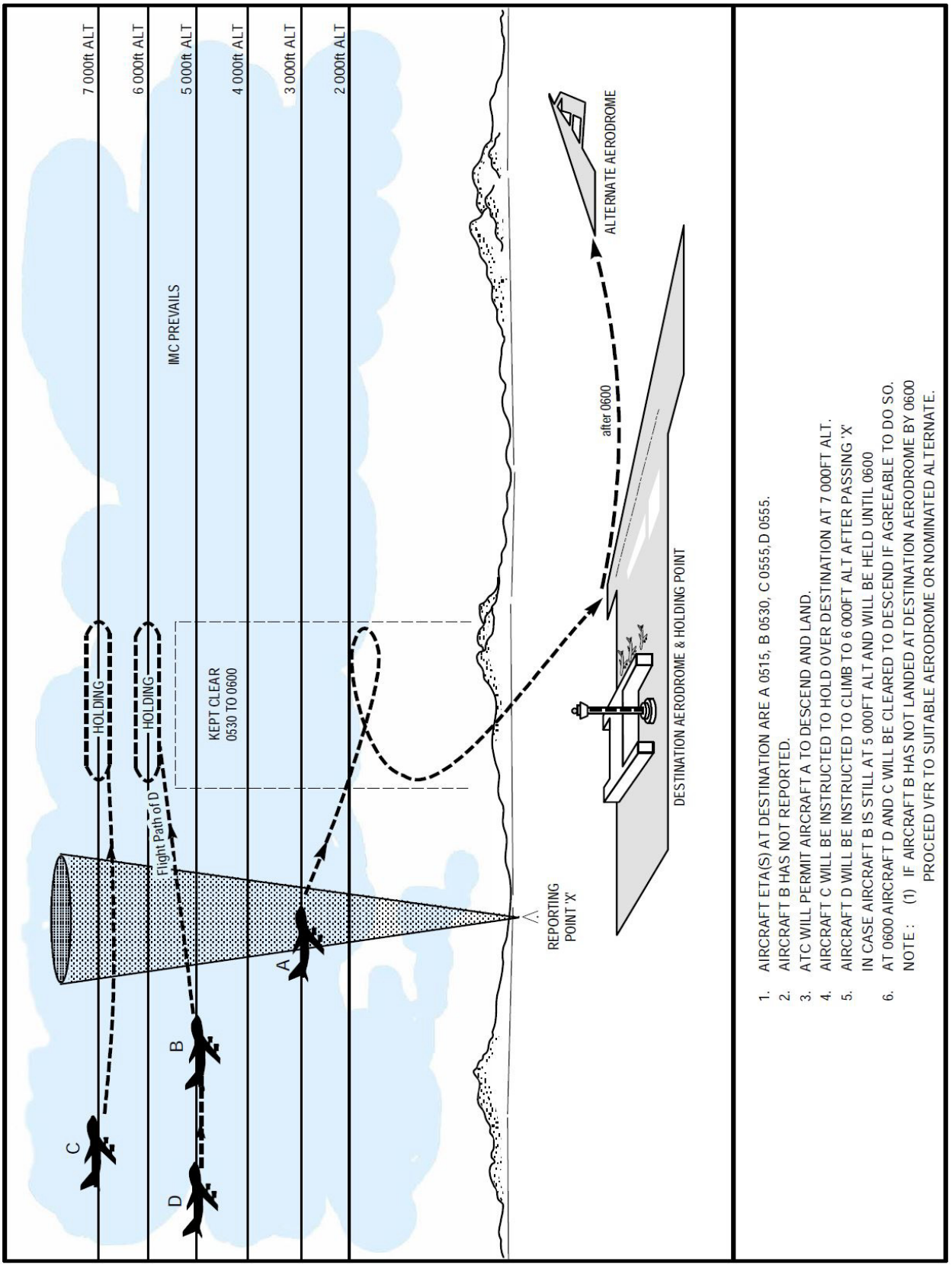
1.15.1 There are no voice and CPDLC position reporting requirements for the Primary Radar coverage area stipulated in paragraph 1.16.1.

1.16 AREA OF PRIMARY RADAR COVERAGE

1.16.1 Maximum operating range of the Primary Radar is 250 NM from Singapore Changi Airport.

ATC PROCEDURE FOR RADIO FAILURE

APPENDIX 'A'

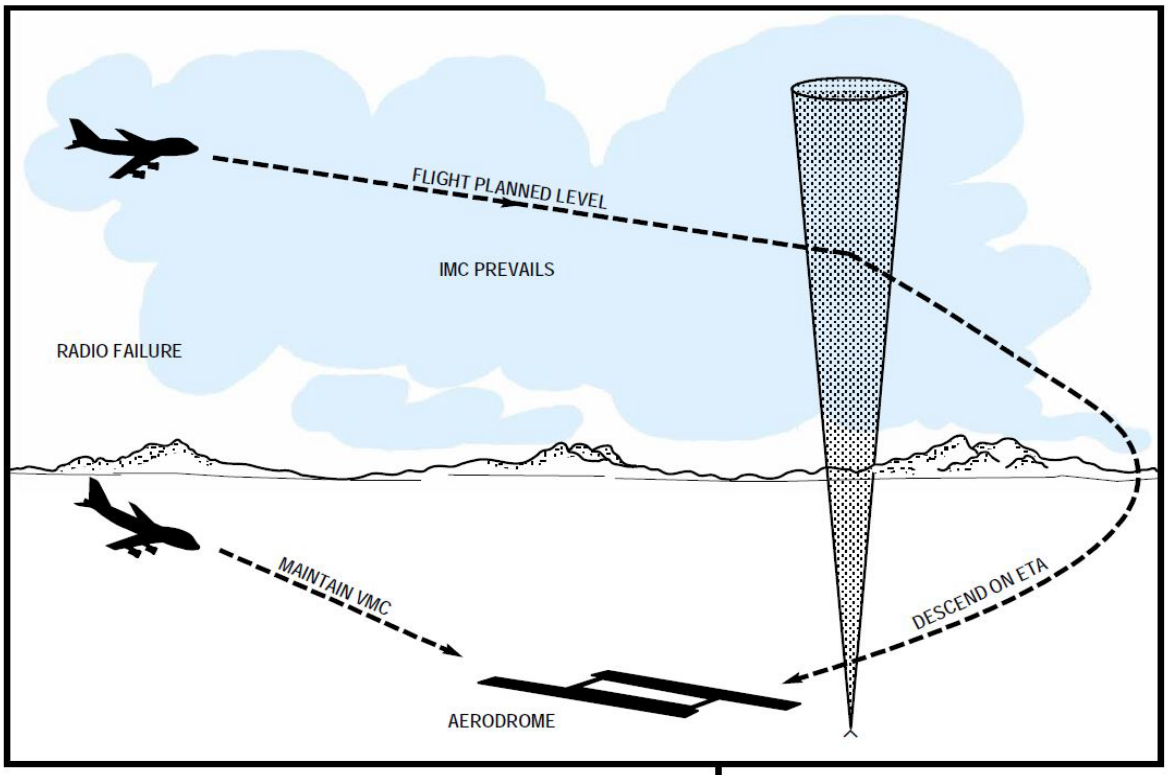


1. AIRCRAFT ETA(S) AT DESTINATION ARE A 0515, B 0530, C 0555,D 0555.
2. AIRCRAFT B HAS NOT REPORTED.
3. ATC WILL PERMIT AIRCRAFT A TO DESCEND AND LAND.
4. AIRCRAFT C WILL BE INSTRUCTED TO HOLD OVER DESTINATION AT 7 000FT ALT.
5. AIRCRAFT D WILL BE INSTRUCTED TO CLIMB TO 6 000FT ALT AFTER PASSING 'X'
   IN CASE AIRCRAFT B IS STILL AT 5 000FT ALT AND WILL BE HELD UNTIL 0600
6. AT 0600 AIRCRAFT D AND C WILL BE CLEARED TO DESCEND IF AGREEABLE TO DO SO.

NOTE : (1) IF AIRCRAFT B HAS NOT LANDED AT DESTINATION AERODROME BY 0600
PROCEED VFR TO SUITABLE AERODROME OR NOMINATED ALTERNATE.

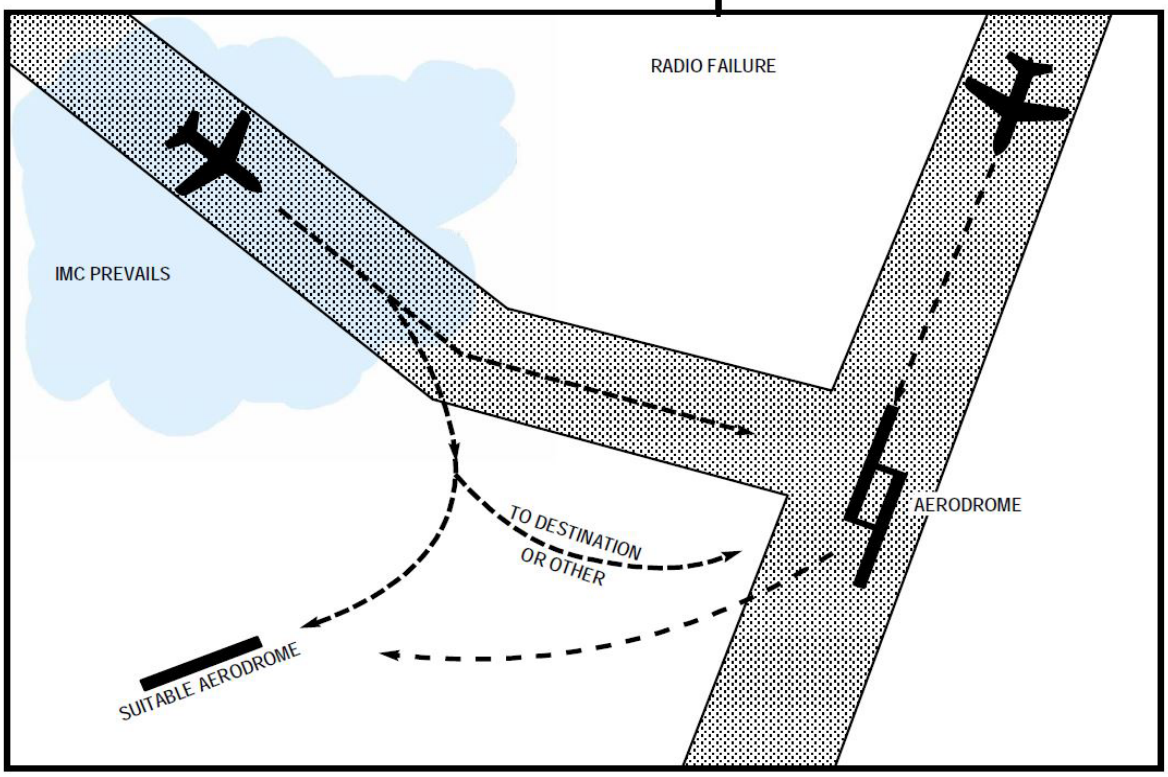
PILOT PROCEDURE FOR RADIO FAILURE

APPENDIX 'B'



IF IFR, DIVERT OFF AIRWAYS, ESTABLISH VMC AND LAND AT SUITABLE AERODROME OR, PROCEED IN STRICT ACCORDANCE WITH CLEARANCE OR FLIGHT PLAN TO DESTINATION.

IF VFR, MAINTAIN VMC TO DESTINATION OR OTHER SUITABLE AERODROME



2 SECONDARY SURVEILLANCE RADAR (SSR)

2.1 DESCRIPTION OF SSR OPERATING PROCEDURES

2.1.1 All aircraft operating in controlled airspace where Singapore is responsible for the provision of ATS are required to operate SSR transponders selecting Mode 3/A (4096 codes) and Mode C simultaneously.

2.1.2 Aircraft departing Singapore shall operate transponders in accordance with instructions given by ATC.

2.1.3 Pilots who have received specific instructions from ATC concerning the setting of the transponder shall maintain that setting except in circumstances detailed in paragraphs 2.2, 2.3 and 2.4 below.

2.1.4 Aircraft bound for Singapore shall operate on the SSR code last assigned to them by the adjacent FIR, or if no code has been previously assigned, advise the ATC unit concerned who will provide the required code.

2.1.5 Aircraft will be identified by ATC before providing ATS surveillance services using one of the following methods:

a. Verification of compliance to assigned discrete SSR transponder code;
b. Observation of compliance with an instruction to set a specific SSR transponder code;
c. Observation of compliance with an instruction to squawk IDENT.

2.2 EMERGENCY PROCEDURES

2.2.1 Pilot(s) of aircraft encountering a state of emergency shall set their transponder as follows:

NATURE OF EMERGENCY	TRANSPONDER CODE
Lost C2 Link state	7400
Unlawful Interference	7500
Radio Failure	7600
General Emergency	7700

2.3 RADIO COMMUNICATION FAILURE

2.3.1 Aircraft experiencing total radio communication failure shall set transponder code as per paragraph 2.2.1 and adopt the procedures specified in paragraph 1.6

2.3.2 Aircraft experiencing partial radio communication failure shall set transponder code as per paragraph 2.2.1. The possible scenarios are:

a. Aircraft is unable to receive ATC transmissions, pilots shall adopt the appropriate procedures specified in paragraph 1.6 to 1.13.

b. Aircraft can receive ATC transmissions, ATC will continue to issue instructions and/or clearances to pilots. Such instructions and clearances will be repeated. Pilots may squawk ident to acknowledge.

2.4 SYSTEM OF SSR CODE ASSIGNMENT

2.4.1 Aircraft operating in the Singapore FIR and airspace where ATS is provided by Singapore (see ENR 2.1) will be assigned the following codes except for those aircraft already assigned codes by adjacent FIRs:

INTERNATIONAL	DOMESTIC
0100 - 0177	0001 - 0077
2200 - 2277	4200 - 4277
	4300 - 4377
	4600 - 4677

2.5 VOICE AND CPDLC POSITION REPORTING REQUIREMENTS

2.5.1 There are no voice and CPDLC position reporting requirements for the SSR coverage area stipulated in paragraph 2.6.1.

2.6 AREA OF SSR COVERAGE

2.6.1 Maximum operating range of the SSR is 250 NM from Singapore Changi Airport.

3 AUTOMATIC DEPENDENT SURVEILLANCE-BROADCAST (ADS-B)

3.1 DESCRIPTION OF ADS-B OPERATING PROCEDURES IN ADS-B OUT EXCLUSIVE AIRSPACE

3.1.1 Aircraft that operates on ATS routes L642, L644, M753, M771, M904, N891, N892, Q801, Q802, Q803 and T611 within airspace bounded by 073605N 1090045E, 040713N 1063543E, 041717N 1061247E (MABLI), 044841N 1052247E (DOLOX), 045224N 1041442E (ENREP), 045000N 1034400E, thence north along the Singapore FIR boundary to 070000N 1080000E at or above FL290 must carry serviceable ADS-B transmitting equipment that has been certified as meeting:

a. European Aviation Safety Agency - Certification Considerations for the Enhanced ATS in Non-Radar Areas using ADS-B Surveillance (ADS-B-NRA) Application via 1090MHz Extended Squitter (AMC 20-24), or
b. European Aviation Safety Agency (EASA) CS-ACNS (Subpart D - Surveillance - SUR), or
c. Federal Aviation Administration - Advisory Circular No: 20-165A (or later versions) Airworthiness Approval of Automatic Dependent Surveillance - Broadcast (ADS-B) Out Systems, or
d. An ‘approved ADS-B Out equipment configuration’ as specified in Part 91 (General Operating and Flight Rules) Manual of Standards 2020, issued by the Civil Aviation Safety Authority of Australia.

3.1.2 Aircraft that does not comply with the requirements stipulated in paragraph 3.1.1 will not be accorded priority in the delineated airspace and flight level assignments would be subjected to air traffic conditions.

3.1.3 If an aircraft carries ADS-B transmitting equipment but does not comply with the requirements stipulated in paragraph 3.1.1, the aircraft must not fly in the delineated airspace unless the equipment is deactivated or set to transmit only a value of zero for the Navigation Uncertainty Category (NUCp) or Navigation Integrity Category (NIC).

3.1.4 Aircraft will be identified by ATC before providing ATS surveillance services using one of the following methods:

a. Direct recognition of the aircraft identification in an ADS-B label displayed to ATC on their air situation display system;
b. Observation of compliance with an instruction to TRANSMIT ADS-B IDENT.

3.2 EMERGENCY PROCEDURES

3.2.1 The pilot-in-command, upon awareness of an onboard ADS-B equipment failure, must inform ATC as soon as possible. ATC would then provide the necessary clearance to ensure separation with other flights operating in the delineated airspace as stipulated in paragraph 3.1.1.

3.2.2 Pilot(s) of aircraft encountering a state of emergency shall set their transponder as stipulated in paragraph 2.2.1.

3.3 RADIO COMMUNICATION FAILURE

3.3.1 Aircraft experiencing total radio communication failure shall set transponder code as per paragraph 2.2.1 and adopt the procedures specified in paragraph 1.6

3.3.2 Aircraft experiencing partial radio communication failure shall set transponder code as per paragraph 2.2.1. In the event whereby:

a. Aircraft is unable to receive ATC transmissions, pilots shall adopt the appropriate procedures specified in paragraph 1.6 to 1.13.
b. Aircraft can receive ATC transmissions, ATC will continue to issue instructions and/or clearances to pilots. Such instructions and clearances will be repeated. Pilots may squawk ident to acknowledge.

3.4 FLIGHT PLANNING REQUIREMENTS

3.4.1 Aircraft operators complying with the requirements stipulated in paragraph 3.1.1 are to indicate the appropriate ADS-B designator in Field 10b of the ICAO flight plan:

a. B1: ADS-B with dedicated 1090 MHz ADS-B “out” capability
b. B2: ADS-B with dedicated 1090 MHz ADS-B “out” and “in” capability

3.4.2 Aircraft operators are to include the aircraft address (24 bit Code) in hexadecimal format in Field 18 of the ICAO flight plan as per the following example: CODE/7C432B

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

a. The three-letter ICAO designator of the aircraft operator followed by the flight number (e.g. SIA123, MAS123, GIA123), when radiotelephony callsign consists of the associated ICAO telephony designator for the aircraft operator followed by the flight number (e.g. SINGAPORE123, MALAYSIAN123, INDONESIA123).

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

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

3.5 VOICE AND CPDLC POSITION REPORTING REQUIREMENTS

3.5.1 There are no voice and CPDLC position reporting requirements for the ADS-B coverage area .

4 OTHER RELEVANT INFORMATION AND PROCEDURES

NIL

ENR 1.7 ALTIMETER SETTING PROCEDURES

1 INTRODUCTION

1.1 A common transition altitude of 11,000ft (3,350 metres) has been established in the Singapore Flight Information Region and airspace where ATS is provided by Singapore (see ENR 2.1). This will ensure uniformity in the transition altitudes for aerodromes within the territories of Brunei, Malaysia and Singapore, except for an area of radius 10 nautical miles centred on Mount Kinabalu where the lowest safe altitude will be 15,000ft (4,570 metres) and the lowest usable flight level will be FL170.

1.2 The maximum variation in QNH values in the Singapore FIR and airspace where ATS is provided by Singapore (see ENR 2.1) does not exceed 10hPa either side of the standard setting 1013.2hPa, representing a change of about 300ft on the altimeter from QNH to 1013.2hPa. To simplify ATC procedures, therefore, a transition level of FL130 has been established, thus providing a transition layer of 2,000ft and ensuring at all times the 1,000ft vertical separation between aircraft.

1.3 No aircraft should therefore flight plan to cruise at flight levels 115, 120 and 125 when operating in the Singapore Flight Information Region and airspace where ATS is provided by Singapore (see ENR 2.1).

1.4 AREA QNH

1.4.1 AREA QNH is the forecast value of the LOWEST mean sea level pressure within Singapore FIR and airspace where ATS is provided by Singapore (see ENR 2.1), valid for a period of 6 hours. e.g. AREA QNH valid 0600-1200.

1.4.2 AREA QNH as defined above, is one of the types of MET data required for the determination of the lowest flight level which will ensure adequate terrain clearance at any location within Singapore FIR and airspace where ATS is provided by Singapore (see ENR 2.1) during the period of validity.

1.4.3 Amendments are issued by MET when the mean sea level pressure at any location in Singapore FIR and airspace where ATS is provided by Singapore (see ENR 2.1) is expected to fall below the current AREA QNH by more than 2hPa, and units responsible for airspace in which aircraft could be operating on AREA QNH shall broadcast the amended value on all air/ground frequencies in use.

1.4.4 Change from LOCAL QNH (set for departure) to AREA QNH will be made on leaving the Aerodrome Traffic Zone after take-off.

1.4.5 Cruising within the transition layer is not permitted unless specifically cleared by the ATC.

2 BASIC ALTIMETER SETTING PROCEDURES

2.1 ALTIMETER SETTING PROCEDURES

2.1.1 For flight at or below the transition altitude, the altimeter reference will be the AREA QNH. Flight will therefore be conducted in altitudes.

2.1.2 Change from LOCAL QNH (set for departure) to AREA QNH will be made on leaving the Singapore/Johor Airspace Complex or Aerodrome Traffic Zone after take-off.

2.1.3 Change from AREA QNH to LOCAL QNH will be made on entering Terminal Control Area or Aerodrome Traffic Zone or on commencement of final approach to land.

2.1.4 For flight at and above the transition level, the standard altimeter setting of 1013.2hPa will be used.

2.1.5 Change from AREA QNH to 1013.2hPa will be made on climb through the transition altitude.

2.1.6 Change from 1013.2hPa to AREA QNH will be made on descent through the transition level.

2.1.7 Cruising within the transition layer is not permitted unless specifically cleared by ATC.

2.1.8 Vertical displacement of aircraft when at or below the transition is expressed in terms of altitude whereas such displacement at or above the transition level is expressed in terms of flight level. While passing through the transition layer, vertical displacement is expressed in terms of altitude when descending and in terms of flight level when ascending.

2.1.9 Flight Level zero is located at the atmospheric pressure level of 1013.2hPa. Consecutive flight levels are separated by a pressure level corresponding to 500ft in the Standard Atmosphere.

Note: Example of the relationship between flight levels and altimeter indications are given in the following table, the metric equivalents being approximate:

FLIGHT LEVEL	ALTIMETER INDICATION	
Number	Feet	Metres
10	1 000	300
15	1 500	450
20	2 000	600
50	5 000	1 000
100	10 000	3 050
130	13 000	3 950
150	15 000	4 550
200	20 000	6 100
250	25 000	7 600
300	30 000	9 150
350	35 000	10 650
400	40 000	12 200
450	45 000	13 700
500	50 000	15 250

2.2 TAKE-OFF AND CLIMB

2.2.1 A QNH altimeter setting shall be made available to aircraft by Approach/Aerodrome Control in the routine take- off and climb instructions.

2.2.2 Vertical displacement of aircraft during climb shall be effected by reference to altitude until reaching the transition altitude above which vertical displacement shall be effected by reference to flight level.

2.2.3 A QFE altimeter setting will be made available on request but reports to ATC are to be made in altitudes.

2.3 VERTICAL SEPARATION - ENROUTE

2.3.1 Aircraft en-route in the Singapore FIR and airspace where ATS is provided by Singapore (see ENR 2.1), regardless whether IFR or VFR , shall be flown at flight levels or altitudes where appropriate.

2.3.2 It is the pilots' responsibility to select a flight level which will give adequate terrain clearance using forecast pressure information.

2.3.3 For the purpose of en-route vertical separation IFR and VFR flights within controlled airspace and flights in uncontrolled airspace of the Singapore FIR and airspace within the Jakarta FIR where ATS is provided by Singapore (see ENR 2.1), reference should be made to the following:

a. Semi-circular system of cruising levels within all controlled airspace (IFR flights) (section ENR 1.7 para 4.2);
b. VFR flights cruising levels up to FL150 within controlled airspace (section ENR 1.7 para 4.3);
c. Quadrantal cruising levels in uncontrolled airspace of the Singapore FIR and airspace within the Jakarta FIR where ATS is provided by Singapore (see ENR 2.1) (section ENR 1.7 para 4.4).

2.4 APPROACH AND LANDING

2.4.1 A QNH altimeter setting shall be made available in the routine approach and landing instructions.

2.4.2 A QFE altimeter setting will be made available on request but reports to ATC are to be made in altitude.

Scenario 3: All primary altimetry systems are considered unreliable or failed.

The pilot should:	ATC can be expected to:
Maintain CFL by reference to the standby altimeter (if the aircraft is so equipped).	Obtain pilot's intention and pass essential traffic information.
Alert nearby aircraft by: a) Making maximum use of exterior lights; b) Broadcasting position, FL, and intentions on 121.5MHz (as a back-up, the VHF inter-pilot air-to-air frequency 123.45MHz may be used).	If the pilot intends to continue in RVSM airspace, assess traffic situation to determine if the aircraft can be accommodated through the provision of lateral, longitudinal, or conventional vertical separation, and if so, apply the appropriate minimum.
Consider declaring an emergency. Notify ATC of the failure and intended course of action.	If the pilot requests clearance to exit RVSM airspace, accommodate expeditiously, if possible.
Possible courses of action include: a) Maintaining CFL and route provided that ATC can provide lateral, longitudinal or conventional vertical separation. b) Requesting ATC clearance to climb above or descend below RVSM airspace if ATC cannot establish adequate separation from other aircraft. c) Executing the contingency manoeuvre shown in paragraphs 1.5 and 1.6 to offset from the assigned track and FL, if ATC clearance cannot be obtained.	If adequate separation cannot be established and it is not possible to comply with the pilot's request for clearance to exit RVSM airspace, advise the pilot of essential traffic information, notify other aircraft in the vicinity and continue to monitor the situation. Notify adjoining ATC facilities/sectors of the situation.

Scenario 4: The primary altimeters diverge by more than 200ft (60m).

The pilot should:
Attempt to determine the defective system through established trouble-shooting procedures and/or comparing the primary altimeter displace to the standby altimeter (as corrected by the correction cards, if required).
If the defective system can be determined, couple the functioning altimeter system to the altitude-keeping device.
If the defective system cannot be determined, follow the guidance in Scenario 3 for failure or unreliable altimeter indications of all primary altimeters.

Scenario 5: Turbulence (greater than moderate) which the pilot believes will impact the aircraft's capability to maintain flight level.

The pilot should:	ATC can be expected to:
Watch for conflicting traffic both visually and by reference to ACAS, if equipped.	
If considered necessary, alert nearby aircraft by: a) Making maximum use of exterior lights; b) Broadcasting position, FL, and intentions on 121.5MHz (as a back-up, the VHF inter-pilot air-to-air frequency 123.45MHz may be used).	
Notify ATC of intended course of action as soon as possible. Possible courses of action include: a) Maintaining CFL and route, provided ATC can provide lateral, longitudinal or conventional vertical separation. b) Requesting flight level change, if necessary c) Executingthecontingencymanoeuvreshowninparagraphs 1.5 and 1.6 to offset from the assigned track and FL, if ATC clearance cannot be obtained and the aircraft cannot maintain CFL.	Assess traffic situation to determine if the aircraft can be accommodated through the provision of lateral, longitudinal, or conventional vertical separation, and if so, apply the appropriate minimum. If unable to provide adequate separation, advise the pilot of essential traffic information and request pilot's intentions. Notify other aircraft in the vicinity and monitor the situation. Notify adjoining ATC facilities/sectors of the situation.

CONTROLLER / PILOT PHRASEOLOGY

Phrases	Purpose
(callsign) CONFIRM RVSM APPROVED	Used by the controller to ascertain the RVSM approval status of an aircraft.
NEGATIVE RVSM*	Used by the pilot to report non-RVSM approval status: a) On the initial call on any frequency within the RVSM airspace (controllers shall provide a readback with this same phrase); and b) In all requests for flight level changes pertaining to flight levels within the RVSM airspace; and c) In all readback of flight level clearances pertaining to flight levels within the RVSM airspace. Additionally, except for State aircraft, pilots shall include this RTF phrase to read back flight level clearances involving the vertical transit through FL290 or FL410.
AFFIRM RVSM*	Used by the pilot to report RVSM approval status.
NEGATIVE RVSM STATE AIRCRAFT*	Used by the pilot of a non-RVSM approved State aircraft to report non-RVSM approval status in response to the RTF phrase (callsign) CONFIRM RVSM APPROVED.
(callsign) UNABLE CLEARANCE INTO RVSM AIRSPACE, MAINTAIN [or DESCEND TO, or CLIMB TO] FLIGHT LEVEL *(number)*	Used to deny ATC clearance into the RVSM airspace.
UNABLE RVSM DUE TURBULENCE*	Used by the pilot to report when severe turbulence affects the aircraft's capability to maintain the height- keeping requirements for RVSM.
UNABLE RVSM DUE EQUIPMENT*	Used by the pilot to report that the aircraft's equipment has degraded below the MASPS (Minimum Aircraft Systems Performance Specification) required for flight within the RVSM airspace.
READY TO RESUME RVSM*	Used by the pilot to report the ability to resume operations within the RVSM airspace after an equipment or weather-related contingency.
REPORT ABLE TO RESUME RVSM	Used by the controller to confirm that an aircraft has regained its RVSM approval status or to confirm that the pilot is ready to resume RVSM operations.

** indicates a pilot transmission*

2 MACH NUMBER TECHNIQUE (MNT) AND AREA NAVIGATION (RNAV)

2.1 INTRODUCTION

2.1.1 RNAV is a method which permits aircraft navigation along any desired flight path within the coverage of the associated navigation aids, or within the limits of the capability of self-contained aids, or a combination of these methods. RNAV equipment is considered to be that equipment which operates by automatically determining aircraft position from one, or a combination of the following sensors with the means to establish and follow a desired path: VOR/DME, DME/DME, INS, LORAN C, GNSS.

2.1.2 Only aircraft equipped with RNAV systems would be able to operate on the RNAV routes in Singapore FIR and airspace where ATS is provided by Singapore (see ENR 2.1). Aircraft that are not RNAV compliant will only be cleared to operate on non-RNAV routes.

2.1.3 The requirements for conduct of RNAV operations are stated in ICAO Doc 9613 (Manual on Required Navigation Performance) and at https://www.caas.gov.sg/legislation-regulations/guidelines-advisory/air-operations.

6.4 ACTIONS TO BE TAKEN IF A REVISED ATC CLEARANCE CANNOT BE OBTAINED

6.4.1 If the aircraft is required to deviate from track or ATS route to avoid adverse meteorological conditions and a revised ATC clearance cannot be obtained, the pilot shall take the following actions:

a. if possible, deviate away from an organized track or ATS route system;
b. establish communications with and alert nearby aircraft by broadcasting on 121.5MHz, at suitable intervals:. (or, on 123.45MHz as a backup inter-pilot air-to-air frequency);
   i. aircraft identification;
   ii. flight level;
   iii. position (including ATS route designator or the track code); and
   iv. intentions.
c. watch for conflicting traffic both visually and by reference to ACAS (such as TCAS, if equipped);
d. turn on all aircraft exterior lights (commensurate with appropriate operating limitations);
e. for deviations of less than 5.0 NM from the originally cleared track or ATS route, remain at a level assigned by ATC;
f. for deviations greater than, or equal to 5.0 NM from the originally cleared track or ATS route, when the aircraft is approximately 5.0 NM from track, initiate a level change in accordance with the following table:

Originally cleared track or ATS route centreline	Deviations greater than 5NM	Level change
EAST (000-179 magnetic)	LEFT RIGHT	DESCEND 300ft CLIMB 300ft
WEST (180-359 magnetic)	LEFT RIGHT	CLIMB 300ft DESCEND 300ft

g. if the pilot receives clearance to deviate from cleared track or ATS route for a specified distance and, subsequently, requests, but cannot obtain a clearance to deviate beyond that distance, the pilot should apply an altitude offset in accordance with the table above before deviating beyond the cleared distance; and

h. when returning to track or ATS route, be at its assigned flight level when the aircraft is within approximately 5.0 NM of the centreline.

Note.- If, as a result of actions taken under the provisions of 6.4.1, the pilot determines that there is another aircraft at or near the same flight level with which a conflict may occur, then the pilot is expected to adjust the path of the aircraft, as necessary, to avoid conflict.

6.4.2 If contact was not established prior to deviating, continue to attempt to contact ATC to obtain a clearance. If contact was established, continue to keep ATC advised of intentions and obtain essential traffic information.

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

7 AIR TRAFFIC MANAGEMENT CONTINGENCY PLAN

7.1 INTRODUCTION

7.1.1 The Air Traffic Management (ATM) Contingency Plan for Singapore FIR and airspace where ATS is provided by Singapore (see ENR 2.1) has been developed to fulfil the requirements of the ICAO Standards and Recommended Practices contained in Annex 11 and the Regional Supplementary Procedures (Doc 7030). In the event of partial or total disruption to the provision of Air Traffic Services (ATS) and / or the related support services in Singapore FIR and airspace where ATS is provided by Singapore (see ENR 2.1), the ATM Contingency Plan referred to in this section shall be activated to ensure the continued safety of air navigation of aircraft operating through the affected airspace.

7.1.2 However, this contingency plan does not address arrangements for aircraft arriving and departing at Singapore airports. Aircraft departing or landing at Changi operating within 60NM from Singapore will be subjected to contingency procedures stated in ENR 1.8 paragraphs 1.5, 1.6, 1.7 and 1.8.

7.1.3 This ATM Contingency Plan provides:

a) the contingency routes structure using existing published airways to enable transit through the Singapore FIR and airspace where ATS is provided by Singapore (see ENR 2.1) and

b) the associated Air Traffic Control (ATC) procedures to support the contingency plan.

7.1.4 As and where dictated by circumstances, aircraft planning to operate through Singapore FIR and airspace where ATS is provided by Singapore (see ENR 2.1) that have not yet departed may be temporarily suspended until a full assessment of the prevailing conditions has been determined and sufficient air traffic services restored.

7.1.5 Long-haul international aircraft and special operations (e.g. Search and Rescue (SAR), State aircraft, humanitarian flights, etc.) shall be afforded priority for levels at FL290 and above. Aircraft operators that operate domestic and regional flights should plan on the basis that FL290 and above may not be available.

7.1.6 Aircraft operators may elect to avoid the Singapore FIR and airspace where ATS is provided by Singapore (see ENR 2.1) by using ATS routes outside of Singapore FIR and airspace where ATS is provided by Singapore (see ENR 2.1).

7.2 REDUCED ATS AND PROVISION OF FLIGHT INFORMATION SERVICES (FIS)

7.2.1 During the period where the contingency arrangements are in place, ATS including ATC services may not be available, a NOTAM will be issued providing the relevant information. The contingency plan provides for limited flight information and alerting services to be provided by Singapore ACC.

7.2.2 FIS and flight monitoring will be provided by the designated ATS authorities for the adjacent FIRs on the contingency routes that enter their respective FIRs.

7.2.3 During the early stages of a contingency event, ATC may be overloaded and tactical action may be taken to re-clear aircraft on alternative routes not included in this Plan.

7.2.4 In the event that ATS cannot be provided in the Singapore FIR and airspace where ATS is provided by Singapore (see ENR 2.1) a NOTAM shall be issued indicating the following:

a. time and date on the commencement of the contingency measures;
b. airspace available for aircraft operations and airspace to be avoided;
c. details of the facilities and services available or not available and any limits on ATS provision, including an expected date of restoration of services if available;
d. information on the provisions made for alternative services;
e. applicable ATS routes, AIP-published contingency routes, or tactically defined contingency routes;
f. any special procedures to be complied by neighbouring ATS units not covered by this Plan;
g. any special procedures to be complied by pilots; and
h. any other details that aircraft operators may find useful with respect to the disruption and actions taken.

7.2.5 In the event that the Singapore International NOTAM Office is unable to issue the NOTAM, the alternate International NOTAM Office will take action to issue the contingency NOTAM upon notification by CAAS.

7.3 AIRCRAFT SEPARATION AND SPACING

7.3.1 Aircraft separation criteria, where applicable, will be in accordance with the ICAO Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM, Doc 4444) and the Regional Supplementary Procedures (Doc 7030).

7.3.2 The longitudinal separation / spacing will be 15 minutes. However, this may be reduced to 10 minutes in conjunction with application of the Mach number technique where authorized by CAAS and the agreed ATS coordination with the adjacent ATS authority.

7.3.3 The contingency route structure provides for lateral separation / spacing of 100NM. In cases where the lateral spacing of contingency routes is less than 100NM, a minimum vertical separation of 1000 feet will be applicable.

7.4 PRIORITY FOR FLIGHT LEVELS

7.4.1 Where possible, aircraft on long-haul international flights shall be afforded priority for cruising levels assigned in accordance with the flight level allocation scheme as specified in paragraph 7.10.

7.9.1.1 When operating within the contingency airspace, pilots should use normal radio communication procedures where ATS services are available. Where limited or no ATS is available, communications shall be conducted in accordance with the procedures in this Plan or as otherwise notified by NOTAM.

7.9.1.2 If communications are lost unexpectedly on the normal ATS frequencies, pilots shall try the next applicable frequency, e.g. if en-route contact is lost, pilots shall try the next appropriate frequency (the next normal handover frequency). Pilots should also consider attempting to contact ATC on the last frequency where two-way communication had been established. In the absence of communication with ATC, the pilot shall continue to make routine position reports on the assigned frequency, and also broadcast positions in accordance with the TIBA procedures in paragraph 7.11.

7.9.2 **Communication frequencies**

7.9.2.1 A list of frequencies to be used for the contingency routes and the ATS units providing FIS and air-ground communication monitoring for the Singapore FIR and airspace where ATS is provided by Singapore (see ENR 2.1) is detailed in paragraph 7.10.

7.10 CONTINGENCY ROUTES

7.10.1 **Between Singapore and Manila FIR**

7.10.1.1 The following table shows the Contingency Routes (CR) Structure, Flight Level Allocation Scheme (FLAS) and Transfer of Control and Communication (TOC) between Singapore and Manila FIR.

CR	ATS Route	Direction	FLAS	ACC	Transfer of Communication (TOC)	Remarks
CRS-3	N884 (075400N 1122000E - LAXOR)	East	FL310 FL350	Manila ACC	At 075400N 1122000E, contact Manila ACC: - ADS/CPDLC: Logon RPHI - HF: 5655 / 8942 - VHF : 118.9 (LAXOR)	International operators may choose to avoid the Singapore FIR by using alternate ATS routes in other FIRs.
CRM-3	N884 (LAXOR - LULBU)	East	FL310 FL350 FL390	Singapore ACC	Applicable between 2100-1300 UTC At LULBU, contact Puerto Princesa Approach 122.0	International operators may choose to avoid the Manila FIR by using alternate ATS routes in other FIRs. Puerto Princesa Approach Facility Hours of Operations 2100-1300UTC
	N884 (LAXOR - LEGED)				Applicable between 1300-2100UTC At LUBAN, contact Clark Tower 118.7	International operators may choose to avoid the Manila FIR by using alternate ATS routes in other FIRs. Clark Control Tower Hours of Operations: H24

CR	ATS Route	Direction	FLAS	ACC	Transfer of Communication (TOC)	Remarks
CRM-4	M767 (TOSOV - TEGID)	West	FL320 FL360 FL400	Singapore ACC	Applicable between 2100-1300UTC At TOSOV to contact Singapore ATC: - ADS/CPDLC: Logon WSJC - HF: 6556 / 8942	International operators may choose to avoid the Manila FIR by using alternate ATS routes in other FIRs.
	M767 (TELEN - TEGID)				Applicable between 1300-2100UTC At TELEN to contact Singapore ATC: - ADS/CPDLC: Logon WSJC - HF: 6556 / 8942	
N/A	M772	N/A	N/A	N/A	Not applicable. M772 will be suspended. No flight planning is allowed.	N/A

7.10.2 **Between Singapore and Ho Chi Minh FIR**

7.10.2.1 The following table shows the Contingency Routes (CR) Structure, Flight Level Allocation Scheme (FLAS) and Transfer of Control and Communication (TOC) between Singapore and Ho Chi Minh FIR.

CR	ATS Route	Direction	FLAS	ACC	Transfer of Communication (TOC)	Remarks
CRS-1	L642 (ESPOB – 060000N 1045600E)	West	FL360 FL400	Ho Chi Minh ACC	At 060000N 1045600E, contact Kuala Lumpur ATC: - VHF: 132.6 - HF: 5655 / 8942	International operators may choose to avoid the Singapore FIR by using alternate ATS routes in other FIRs.
CRS-2	M771 (060000N 1060900E – DUDIS)	East	FL350 FL390	Ho Chi Minh ACC	At 060000N 1060900E, contact Ho Chi Minh ATC: - ADS / CPDLC: Logon VVHM - VHF: 133.05 / 119.35 - HF: 5655 / 8942	International operators may choose to avoid the Singapore FIR by using alternate ATS routes in other FIRs.
CRS-3	N884 (060000N 1095600E – 075400N 1122000E)	**East**	FL310 FL350	Ho Chi Minh ACC	At 060000N 1095600E, contact Ho Chi Minh ATC: - ADS / CPDLC: Logon VVHM - VHF: 133.05 / 120.7 - HF: 5655 / 8942 At 075400N 1122000E, contact Manila ATC: - ADS / CPDLC: Logon RPHI - VHF: 118.9 (LAXOR) - HF: 5655 / 8942	International operators may choose to avoid the Singapore FIR by using alternate ATS routes in other FIRs.
CRS-4	M768 (064600N 1121500E - AKMON)	East	FL330	Ho Chi Minh ACC	At 064600N 1121500E, contact Kota Kinabalu ATC: - ADS / CPDLC: Logon WBFC - VHF: 126.1	International operators may choose to avoid the Singapore FIR by using alternate ATS routes in other FIRs.
		West	FL380	Ho Chi Minh ACC	At 064600N 1121500E, contact Ho Chi Minh ATC: - ADS / CPDLC: Logon VVHM - VHF: 133.05 / 119.35	

ENR 1.11 ADDRESSING OF FLIGHT PLAN MESSAGES

1 General

1.1 Flight movement messages relating to traffic into or via the Singapore FIR and airspace within the Jakarta FIR where ATS is provided by Singapore (see ENR 2.1) shall be addressed as stated below in order to warrant correct relay and delivery.

Category of Flight (IFR, VFR or both)	Route (Into or via FIR and/or TMA)	Message Address
1	2	3
All flights	***Transiting into or via:***	
	Singapore FIR (WSJC)	WSJCZQZX
	Airspace within the Jakarta FIR (WIIF) where ATS is provided by Singapore (see ENR 2.1)	WSJCZQZX WIIFZQZX
	Inbound to:	
	Singapore Changi Airport (WSSS) Seletar Airport (WSSL) Paya Lebar Airport (WSAP) Tengah Airport (WSAT)	WSJCZQZX
	Outbound from:	
	Singapore Changi Airport (WSSSWSSS)	WSSSZPZX
	Seletar Airport (WSSLWSSL)	WSSLZPZX
	Paya Lebar Airport (WSAPWSAP)	WSAPZPZX
	Paya Lebar Airport (WSATWSAT)	WSATZPZX

Note:
Flight movement messages comprise flight plan messages, amendment messages relating thereto and flight plan cancellation messages (ICAO DOC 4444 - PANS-ATM, Chapter 11, paragraph 11.2.1.1.3 refers).

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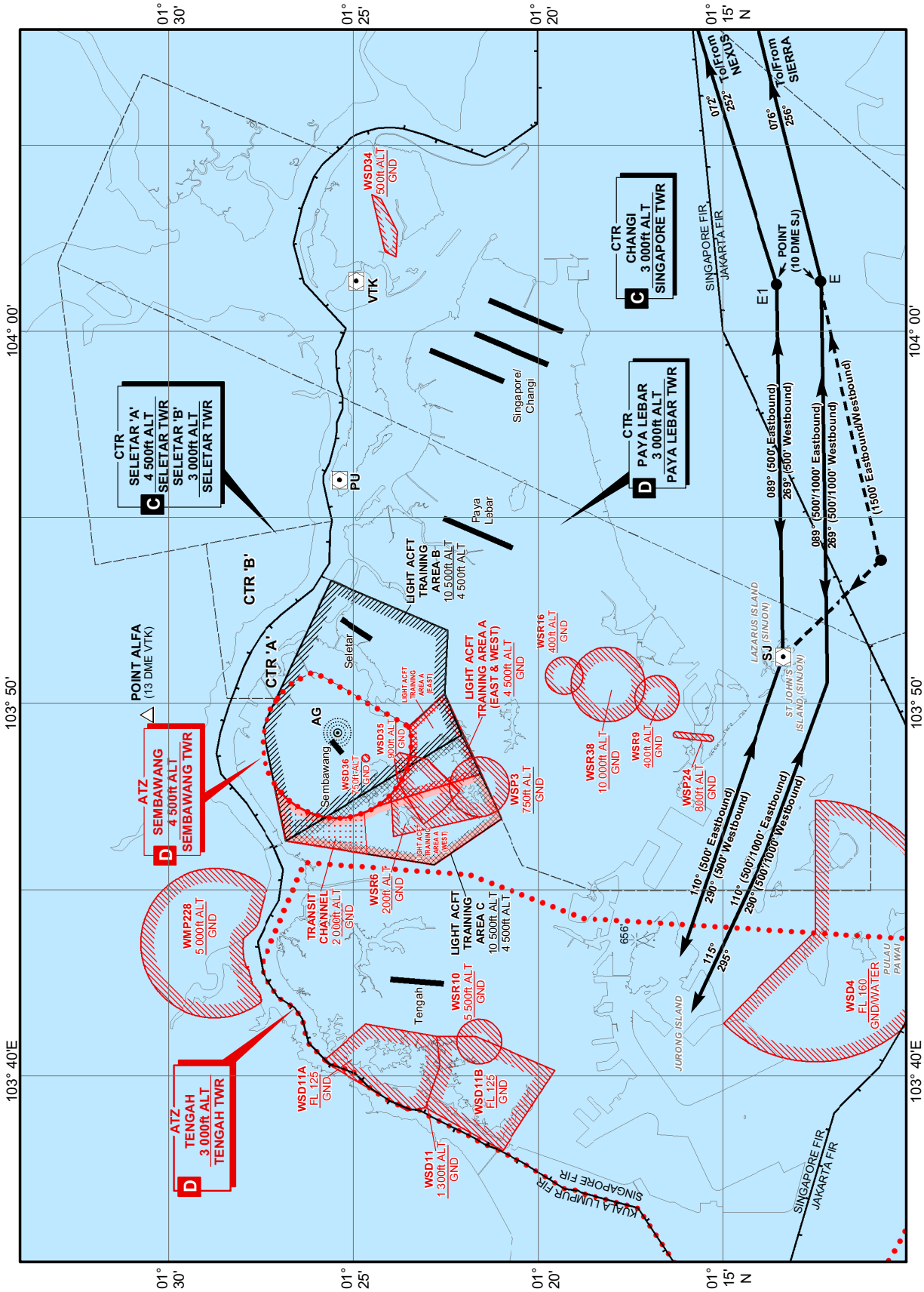
VMC CROSSING BY MILITARY AIRCRAFT



4 HELICOPTER OPERATIONS OVER SINGAPORE ISLAND

4.1 INTRODUCTION

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

4.2 RESTRICTED AREA -SINGLE-ENGINE HELICOPTER OPERATIONS RESTRICTED

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

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

4.2.2 Part of this triangle lies within the existing Restricted Area WSR38 (see charts ENR 3.5-8 and ENR 3.5-9).

4.3 ROUTINGS

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

4.3.2 These helicopter routes are to be flown in VMC and in daylight hours. They could either be flown separately or in combination (see chart ENR 3.5-8).

4.4 OVER-WATER ROUTES

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

4.4.1.1 **Heli-Route Alpha**

4.4.1.2 This route covers the area from Johor Causeway eastbound over water along Selat Johor, following the coastline of Singapore Island via the northern contour of Pulau Ubin and along the eastern coastline, down to Bedok Jetty (011819N 1035632E) and vice versa. Within the vicinity of Changi Naval Base (CNB), transiting helicopters are to keep laterally clear by tracking along the following markers located about 1km from the Naval Base (see table below and diagram on page ENR 3.5-5).

	Markers Description	*Coordinates*	*Remarks*
a)	CHANGI BEACON	011909.00N 1040206.00E	WHITE lights, 3 flashes every 15 sec
b)	BUOY CNB-04	011844.00N 1040224.00E	YELLOW buoy, 3m above waterline YELLOW lights, 1 flash every 2 sec
c)	BUOY CNB-03	011809.00N 1040224.00E	YELLOW buoy, 3m above waterline YELLOW lights, 1 flash every 2 sec
d)	BUOY CNB-02	011806.00N 1040100.00E	YELLOW buoy, 3m above waterline YELLOW lights, 1 flash every 2 sec
e)	BUOY CNB-01	011829.00N 1040059.00E	YELLOW buoy, 3m above waterline YELLOW lights, 1 flash every 2 sec
f)	Singapore Armed Forces Yacht Club Jetty	011851.00N 1040058.00E	Yellow lights, 3 lamp posts along jetty
Note: Pilots are to adhere strictly to the above transit routes.			

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

ENR 4 RADIO NAVIGATION AIDS/SYSTEMS

ENR 4.1 RADIO NAVIGATION AIDS - EN-ROUTE

Name of station (VOR/VAR)	ID	Frequency (CH)	Hours of operation	Coordinates	ELEV DME antenna	Remarks
1	2	3	4	5	6	7
JOHOR BAHRU DVOR/DME	VJB	112.5 MHZ (CH 72X)	H24	013950N 1033939E	43.07 M	Operating Authority: Department of Civil Aviation Malaysia
MERSING DVOR/DME	VMR	116.8MHz (CH 115X)	H24	022318N 1035218E	-	Operating Authority: Department of Civil Aviation Malaysia. 50w
PAPA UNIFORM DVOR/DME	PU	115.1MHz (CH 98X)	H24	012524N 1035600E	Antenna HGT: 190FT AMSL	BRG 020° DIST 9km from THR RWY 02 (WSAP). MAINT Period: Third WED of EV month BTN 0200-0600, Coverage 200NM EM:F1
SINJON DVOR/DME	SJ	113.5MHz (CH 82X)	H24	011321N 1035115E	Antenna HGT: 190FT AMSL	BRG 201° DIST 14.5km from THR RWY 02 (WSAP). MAINT Period: Third THU of EV month BTN 0200-0600, Coverage 200NM EM:F1
TANJUNGPINANG VOR/DME	TPG	114.8 MHZ (CH 95X)	from 00:00 to 14:00	005413N 1043052E	-	Operating Authority: AirNav Indonesia, Indonesia. Coverage 40NM.
TEKONG DVOR/DME	VTK	116.5MHz (CH 112X)	H24	012455N 1040120E	Antenna HGT: 150FT AMSL	BRG 023° DIST 6.4km from THR RWY 20C (WSSS). MAINT Period: Third FRI of EV month BTN 0200-0600, Coverage 200NM EM:F1

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ENR 5.6 BIRD MIGRATION

1 BIRD MIGRATION

1.1 Bird migrations generally occur between September and March. Migratory birds come from as far away as North and Central Asia.

2 REPORTING OF WILDLIFE STRIKE

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

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

The RTF phraseology should include the following:

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

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

The RTF phraseology should include the following:

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

2.4 A copy of the Wildlife Strike Reporting Form is shown on page ENR 5.6-2. Airline operators may send the completed Wildlife Strike Reporting Form to email address: changi.airside@changiairport.com

WILDLIFE STRIKE REPORTING FORM

(This information is required for aviation safety)

OPERATOR or CALL SIGN .....
ENGINE TYPE .....
DATE: Day .....
Month ..... Year .....
AERODROME NAME .....
HEIGHT AGL..... ft **SPEED (IAS)..... kt**

AIRCRAFT TYPE _____
AIRCRAFT REGISTRATION _____
TIME OF INCIDENT **(L)** ..... **(UTC)** .....
Dawn / Day / Dusk / Night
RUNWAY USED _____
APRX LOC _____

PHASE OF FLIGHT

- ☐ Unknown
- ☐ Taxi
- ☐ Take-off run
- ☐ Climb
- ☐ En-route
- ☐ Descend
- ☐ Approach
- ☐ Landing Roll

SKY CONDITION

- ☐ No Cloud
- ☐ Some Cloud
- ☐ Overcast

PRECIPITATION

- ☐ Fog
- ☐ Rain

PART(S) OF AIRCRAFT

	Struck	Damaged
Radome	☐	☐
Windshield	☐	☐
Nose (excluding above)	☐	☐
Engine No. 1	☐	☐
Engine No. 2	☐	☐
Engine No. 3	☐	☐
Engine No. 4	☐	☐
Propeller	☐	☐
Wing/Rotor	☐	☐
Fuselage	☐	☐
Landing gear	☐	☐
Tail	☐	☐
Lights	☐	☐
Others (specify)	☐	☐

BIRD SPECIES

NUMBER OF BIRDS **Seen** ..... **Struck** .....

SIZE OF BIRD ☐ Small ☐ Medium ☐ Large

PILOT WARNED OF BIRDS Yes / No

LIGHTS USED:

Landing	☐ Yes	☐ No
Strobe Anti-Collision	☐ Yes	☐ No

EFFECT ON FLIGHT

- ☐ None
- ☐ Precautionary landing
- ☐ Aborted take-off
- ☐ Engines shut down
- ☐ Others (specify) .....

REMARKS

(Describe damage, injuries and other pertinent information)

_____

_____

NAME OF REPORTING OFFICER: _____ ORGANISATION: _____

Please send completed Wildlife Strike Reporting Form to:
Airside Management Centre (email: changi.airside@changiairport.com)
CHANGI AIRPORT GROUP (SINGAPORE) PTE LTD
P.O. Box 168, Singapore Changi Airport
Singapore 918146

WSAT AD 2.6	RESCUE AND FIRE FIGHTING SERVICES	AD 2.WSAT-2
WSAT AD 2.7	SEASONAL AVAILABILITY - CLEARING	AD 2.WSAT-2
WSAT AD 2.8	APRONS, TAXIWAYS AND CHECK LOCATIONS/POSITIONS DATA	AD 2.WSAT-2
WSAT AD 2.9	[NIL] SURFACE MOVEMENT GUIDANCE AND CONTROL SYSTEM AND MARKINGS	AD 2.WSAT-2
WSAT AD 2.10	AERODROME OBSTACLES	AD 2.WSAT-2
WSAT AD 2.11	[NIL] METEOROLOGICAL INFORMATION PROVIDED	AD 2.WSAT-2
WSAT AD 2.12	RUNWAY PHYSICAL CHARACTERISTICS	AD 2.WSAT-2
WSAT AD 2.13	DECLARED DISTANCES	AD 2.WSAT-3
WSAT AD 2.14	APPROACH AND RUNWAY LIGHTING	AD 2.WSAT-3
WSAT AD 2.15	OTHER LIGHTING, SECONDARY POWER SUPPLY	AD 2.WSAT-3
WSAT AD 2.16	[NIL] HELICOPTER LANDING AREA	AD 2.WSAT-3
WSAT AD 2.17	ATS AIRSPACE	AD 2.WSAT-3
WSAT AD 2.18	ATS COMMUNICATION FACILITIES	AD 2.WSAT-4
WSAT AD 2.19	RADIO NAVIGATION AND LANDING AIDS	AD 2.WSAT-4
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WMKJ JOHOR BAHRU	JOHOR BAHRU	AD 2.WMKJ-1
WMKJ AD 2.1	AERODROME LOCATION INDICATOR AND NAME	AD 2.WMKJ-1
WMKJ AD 2.2	[NIL] AERODROME GEOGRAPHICAL AND ADMINISTRATIVE DATA	AD 2.WMKJ-1
WMKJ AD 2.3	[NIL] OPERATIONAL HOURS	AD 2.WMKJ-1
WMKJ AD 2.4	[NIL] HANDLING SERVICES AND FACILITIES	AD 2.WMKJ-1
WMKJ AD 2.5	[NIL] PASSENGER FACILITIES	AD 2.WMKJ-1
WMKJ AD 2.6	[NIL] RESCUE AND FIRE FIGHTING SERVICES	AD 2.WMKJ-1
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WMKJ AD 2.8	[NIL] APRONS, TAXIWAYS AND CHECK LOCATIONS/POSITIONS DATA	AD 2.WMKJ-1
WMKJ AD 2.9	[NIL] SURFACE MOVEMENT GUIDANCE AND CONTROL SYSTEM AND MARKINGS	AD 2.WMKJ-1
WMKJ AD 2.10	[NIL] AERODROME OBSTACLES	AD 2.WMKJ-1
WMKJ AD 2.11	[NIL] METEOROLOGICAL INFORMATION PROVIDED	AD 2.WMKJ-1
WMKJ AD 2.12	[NIL] RUNWAY PHYSICAL CHARACTERISTICS	AD 2.WMKJ-1
WMKJ AD 2.13	[NIL] DECLARED DISTANCES	AD 2.WMKJ-1
WMKJ AD 2.14	[NIL] APPROACH AND RUNWAY LIGHTING	AD 2.WMKJ-1
WMKJ AD 2.15	[NIL] OTHER LIGHTING, SECONDARY POWER SUPPLY	AD 2.WMKJ-1
WMKJ AD 2.16	[NIL] HELICOPTER LANDING AREA	AD 2.WMKJ-1
WMKJ AD 2.17	ATS AIRSPACE	AD 2.WMKJ-1
WMKJ AD 2.18	[NIL] ATS COMMUNICATION FACILITIES	AD 2.WMKJ-1
WMKJ AD 2.19	[NIL] RADIO NAVIGATION AND LANDING AIDS	AD 2.WMKJ-1
WMKJ AD 2.20	[NIL] LOCAL AERODROME REGULATIONS	AD 2.WMKJ-1
WMKJ AD 2.21	[NIL] NOISE ABATEMENT PROCEDURES	AD 2.WMKJ-1
WMKJ AD 2.22	[NIL] FLIGHT PROCEDURES	AD 2.WMKJ-1
WMKJ AD 2.23	[NIL] ADDITIONAL INFORMATION	AD 2.WMKJ-1

WMKJ AD 2.24	[NIL] CHARTS RELATED TO AN AERODROME	AD 2.WMKJ-1
WMKJ AD 2.25	[NIL] VISUAL SEGMENT SURFACE (VSS) PENETRATION	AD 2.WMKJ-1
WIDD BATAM/ HANG NADIM (INDONESIA)	BATAM / HANG NADIM (INDONESIA)	AD 2.WIDD-1
WIDD AD 2.1	AERODROME LOCATION INDICATOR AND NAME	AD 2.WIDD-1
WIDD AD 2.2	[NIL] AERODROME GEOGRAPHICAL AND ADMINISTRATIVE DATA	AD 2.WIDD-1
WIDD AD 2.3	[NIL] OPERATIONAL HOURS	AD 2.WIDD-1
WIDD AD 2.4	[NIL] HANDLING SERVICES AND FACILITIES	AD 2.WIDD-1
WIDD AD 2.5	[NIL] PASSENGER FACILITIES	AD 2.WIDD-1
WIDD AD 2.6	[NIL] RESCUE AND FIRE FIGHTING SERVICES	AD 2.WIDD-1
WIDD AD 2.7	[NIL] SEASONAL AVAILABILITY - CLEARING	AD 2.WIDD-1
WIDD AD 2.8	[NIL] APRONS, TAXIWAYS AND CHECK LOCATIONS/POSITIONS DATA	AD 2.WIDD-1
WIDD AD 2.9	[NIL] SURFACE MOVEMENT GUIDANCE AND CONTROL SYSTEM AND MARKINGS	AD 2.WIDD-1
WIDD AD 2.10	[NIL] AERODROME OBSTACLES	AD 2.WIDD-1
WIDD AD 2.11	[NIL] METEOROLOGICAL INFORMATION PROVIDED	AD 2.WIDD-1
WIDD AD 2.12	[NIL] RUNWAY PHYSICAL CHARACTERISTICS	AD 2.WIDD-1
WIDD AD 2.13	[NIL] DECLARED DISTANCES	AD 2.WIDD-1
WIDD AD 2.14	[NIL] APPROACH AND RUNWAY LIGHTING	AD 2.WIDD-1
WIDD AD 2.15	[NIL] OTHER LIGHTING, SECONDARY POWER SUPPLY	AD 2.WIDD-1
WIDD AD 2.16	[NIL] HELICOPTER LANDING AREA	AD 2.WIDD-1
WIDD AD 2.17	ATS AIRSPACE	AD 2.WIDD-1
WIDD AD 2.18	ATS COMMUNICATION FACILITIES	AD 2.WIDD-1
WIDD AD 2.19	[NIL] RADIO NAVIGATION AND LANDING AIDS	AD 2.WIDD-1
WIDD AD 2.20	[NIL] LOCAL AERODROME REGULATIONS	AD 2.WIDD-1
WIDD AD 2.21	[NIL] NOISE ABATEMENT PROCEDURES	AD 2.WIDD-1
WIDD AD 2.22	[NIL] FLIGHT PROCEDURES	AD 2.WIDD-1
WIDD AD 2.23	[NIL] ADDITIONAL INFORMATION	AD 2.WIDD-1
WIDD AD 2.24	CHARTS RELATED TO AN AERODROME	AD 2.WIDD-1
WIDD AD 2.25	[NIL] VISUAL SEGMENT SURFACE (VSS) PENETRATION	AD 2.WIDD-1
WIDN TANJUNGPINANG / RAJA HAJI FISABILILLAH (INDONESIA)	TANJUNGPINANG / RAJA HAJI FISABILILLAH (INDONESIA)	AD 2.WIDN-1
WIDN AD 2.1	AERODROME LOCATION INDICATOR AND NAME	AD 2.WIDN-1
WIDN AD 2.2	[NIL] AERODROME GEOGRAPHICAL AND ADMINISTRATIVE DATA	AD 2.WIDN-1
WIDN AD 2.3	[NIL] OPERATIONAL HOURS	AD 2.WIDN-1
WIDN AD 2.4	[NIL] HANDLING SERVICES AND FACILITIES	AD 2.WIDN-1
WIDN AD 2.5	[NIL] PASSENGER FACILITIES	AD 2.WIDN-1
WIDN AD 2.6	[NIL] RESCUE AND FIRE FIGHTING SERVICES	AD 2.WIDN-1
WIDN AD 2.7	[NIL] SEASONAL AVAILABILITY - CLEARING	AD 2.WIDN-1
WIDN AD 2.8	[NIL] APRONS, TAXIWAYS AND CHECK LOCATIONS/POSITIONS DATA	AD 2.WIDN-1
WIDN AD 2.9	[NIL] SURFACE MOVEMENT GUIDANCE AND CONTROL SYSTEM AND MARKINGS	AD 2.WIDN-1

WIDN AD 2.10	[NIL] AERODROME OBSTACLES	AD 2.WIDN-1
WIDN AD 2.11	[NIL] METEOROLOGICAL INFORMATION PROVIDED	AD 2.WIDN-1
WIDN AD 2.12	[NIL] RUNWAY PHYSICAL CHARACTERISTICS	AD 2.WIDN-1
WIDN AD 2.13	[NIL] DECLARED DISTANCES	AD 2.WIDN-1
WIDN AD 2.14	[NIL] APPROACH AND RUNWAY LIGHTING	AD 2.WIDN-1
WIDN AD 2.15	[NIL] OTHER LIGHTING, SECONDARY POWER SUPPLY	AD 2.WIDN-1
WIDN AD 2.16	[NIL] HELICOPTER LANDING AREA	AD 2.WIDN-1
WIDN AD 2.17	ATS AIRSPACE	AD 2.WIDN-1
WIDN AD 2.18	ATS COMMUNICATION FACILITIES	AD 2.WIDN-1
WIDN AD 2.19	[NIL] RADIO NAVIGATION AND LANDING AIDS	AD 2.WIDN-1
WIDN AD 2.20	[NIL] LOCAL AERODROME REGULATIONS	AD 2.WIDN-1
WIDN AD 2.21	[NIL] NOISE ABATEMENT PROCEDURES	AD 2.WIDN-1
WIDN AD 2.22	[NIL] FLIGHT PROCEDURES	AD 2.WIDN-1
WIDN AD 2.23	[NIL] ADDITIONAL INFORMATION	AD 2.WIDN-1
WIDN AD 2.24	CHARTS RELATED TO AN AERODROME	AD 2.WIDN-1
WIDN AD 2.25	[NIL] VISUAL SEGMENT SURFACE (VSS) PENETRATION	AD 2.WIDN-1
WIDT TANJUNG BALAI KARIMUN/ RAJA HAJI ABDULLAH (INDONESIA)	TANJUNG BALAI KARIMUN / RAJA HAJI ABDULLAH (INDONESIA)	AD 2.WIDT-1
WIDT AD 2.1	AERODROME LOCATION INDICATOR AND NAME	AD 2.WIDT-1
WIDT AD 2.2	[NIL] AERODROME GEOGRAPHICAL AND ADMINISTRATIVE DATA	AD 2.WIDT-1
WIDT AD 2.3	[NIL] OPERATIONAL HOURS	AD 2.WIDT-1
WIDT AD 2.4	[NIL] HANDLING SERVICES AND FACILITIES	AD 2.WIDT-1
WIDT AD 2.5	[NIL] PASSENGER FACILITIES	AD 2.WIDT-1
WIDT AD 2.6	[NIL] RESCUE AND FIRE FIGHTING SERVICES	AD 2.WIDT-1
WIDT AD 2.7	[NIL] SEASONAL AVAILABILITY - CLEARING	AD 2.WIDT-1
WIDT AD 2.8	[NIL] APRONS, TAXIWAYS AND CHECK LOCATIONS/POSITIONS DATA	AD 2.WIDT-1
WIDT AD 2.9	[NIL] SURFACE MOVEMENT GUIDANCE AND CONTROL SYSTEM AND MARKINGS	AD 2.WIDT-1
WIDT AD 2.10	[NIL] AERODROME OBSTACLES	AD 2.WIDT-1
WIDT AD 2.11	[NIL] METEOROLOGICAL INFORMATION PROVIDED	AD 2.WIDT-1
WIDT AD 2.12	[NIL] RUNWAY PHYSICAL CHARACTERISTICS	AD 2.WIDT-1
WIDT AD 2.13	[NIL] DECLARED DISTANCES	AD 2.WIDT-1
WIDT AD 2.14	[NIL] APPROACH AND RUNWAY LIGHTING	AD 2.WIDT-1
WIDT AD 2.15	[NIL] OTHER LIGHTING, SECONDARY POWER SUPPLY	AD 2.WIDT-1
WIDT AD 2.16	[NIL] HELICOPTER LANDING AREA	AD 2.WIDT-1
WIDT AD 2.17	ATS AIRSPACE	AD 2.WIDT-1
WIDT AD 2.18	ATS COMMUNICATION FACILITIES	AD 2.WIDT-1
WIDT AD 2.19	[NIL] RADIO NAVIGATION AND LANDING AIDS	AD 2.WIDT-1
WIDT AD 2.20	[NIL] LOCAL AERODROME REGULATIONS	AD 2.WIDT-1
WIDT AD 2.21	[NIL] NOISE ABATEMENT PROCEDURES	AD 2.WIDT-1
WIDT AD 2.22	[NIL] FLIGHT PROCEDURES	AD 2.WIDT-1

2	*Taxiway width, surface and strength*	Minimum width 23m for all taxiways TWY A1, A2, A11, A12, A (between A1 and A2, and between A11 and A12), B1, B2, B13, B14, B (between B1 and B2, and between B13 and B14), C1, C2, C13, C14, C (between C1 and C2) and L (between C13 and C14), D1, D2, D13, D14, D (between D1 and D2, and between D13 and D14), T1, T2, T4, T12, T13, T (between T11 and T13), U12, U13, U (between U12 and U13), W1, W9 – Concrete surface; strength PCR 1006/R/B/W/U TXL U2, TWY U7 (between TWY U and TXL U2), TWY U8 (between TWY U and TXL U2), TWY U9 (between TWY U and TXL U2), TXL S6, S8, S9, TWY S7 – Asphalt surface; strength PCR 530/F/B/X/U All other taxiways – Asphalt surface; strength PCR 710/F/B/X/U Note: Open-air drains, demarcated by frangible poles, are installed within non-graded TWY strips at least 30m from the TWY centrelines. 0.5m-high lateral restraint at 30m east of TWY P8 and TXL N5 centreline before the open drain. 0.8m-high lateral restraints, located at 43m from the centreline of TWY G and TWY H, on the taxiway bridges.
3	*Altimeter checkpoints location and elevation*	See AD-2-WSSS-ADC-2/ Chart (flip side) for coordinates and elevations of aircraft stands.
4	VOR checkpoint location	NIL
5	*INS checkpoints position*	See AD-2-WSSS-ADC-2/ Chart (flip side) for coordinates and elevations of aircraft stands.
6	*Remarks*	NIL

WSSS AD 2.9 SURFACE MOVEMENT GUIDANCE AND CONTROL SYSTEM AND MARKINGS

1	Use of aircraft stand ID signs, TWY guidelines and visual docking/parking guidance system of aircraft stands.
	Taxiing guidance signs at all intersections with TWY and RWY at all holding positions. Apron markings at aircraft stands. Nose-in guidance at aircraft stands. For information on Safegate Aircraft Docking Guidance System, Taxiing Guidance System at Singapore Changi Airport, refer to WSSS AD 2.9.
2	RWY and TWY markings and LGT.
	RWY 02L RWY LGT: refer to WSSS AD 2.14 and WSSS AD 2.15. TWY LGT: BLUE lights on TWY curved edges. BLUE TWY edge markers along selected straight TWY edge sections. Red stop bar at TWY INT controllable on/off. Red stop bar lights at Pattern "A" RWY HLDG PSN entrances to RWY are controllable on/off and are supplemented with elevated RWY guard lights and RWY designation sign at the sides. Red stop bar lights at Pattern “B” RWY HLDG PSN before entry into the RWY ILS sensitive area on the west of RWY 02L/20R are controllable on/off with Category I RWY HLDG PSN sign. Internally lighted mandatory or information TWY signboards. "MIL" destination signs on the west of RWY 02L/20R indicate the direction to aircraft movement area for military use only. Alternate green and yellow taxiway centreline lights along taxiways within ILS sensitive zone in the vicinity of the runway and green taxiway centreline lights with selective controls along taxi-routes to/from main RWY and aprons. On the west of RWY 02L/20R, no taxiway centreline lights. MARKING AIDS: THR, touchdown zone, RWY centreline, RWY side stripe, RWY designations, aiming point markings, TWY centreline, taxi holding positions – all taxiways, apron markings.
	RWY 20R RWY LGT: refer to WSSS AD 2.14 and WSSS AD 2.15. TWY LGT: same as for RWY 02L and RWY 02C/20C. MARKING AIDS: Pre-threshold centreline, transverse stripe for displaced THR, THR, touchdown zone, RWY centreline, RWY side stripe, RWY designations, aiming point markings, TWY centreline, taxi holding positions – all taxiways, apron markings.

	RWY 02C/20C RWY LGT: refer to WSSS AD 2.14 and WSSS AD 2.15. TWY LGT: BLUE lights on TWY curved edges. BLUE TWY edge markers along selected straight TWY edge sections. Red stop bar lights at TWY INT are controllable on/off. Red stop bar lights at Pattern "A" RWY HLDG PSN entrances to RWY are controllable on/off and are supplemented with elevated RWY guard lights and RWY designation sign at the sides. Red stop bar lights at Pattern "B" RWY HLDG PSN before entry into the RWY ILS sensitive area are controllable on/off with Category I/II RWY HLDG PSN sign. Internally lighted mandatory or information TWY signboards. On the east and west of RWY 02C/20C, alternate green and yellow taxiway centreline lights along taxiways within ILS sensitive zone in the vicinity of the runway and green taxiway centreline lights with selective controls along taxi-routes to/from main RWY and aprons. On the east of RWY 02C/20C between Pattern "A" RWY HLDG PSN and Pattern "B" RWY HLDG PSN TWY, alternate green and yellow taxiway centreline lights along taxiways within ILS sensitive zone. Rapid Exit Taxiway Indicator LGT comprises a set of yellow unidirectional LGT positioned in a 3-2-1 sequence at 100m intervals prior to the point of tangency of the rapid exit taxiway centreline. MARKING AIDS: THR, touchdown zone, RWY centreline, RWY side stripe, RWY designations, aiming point markings, TWY centreline, taxi holding positions – all taxiways, apron markings.
	RWY 02R/20L RWY LGT: refer to WSSS AD 2.14 and WSSS AD 2.15. TWY LGT: Blue lights on TWY curved edges. Blue TWY edge markers along selected straight TWY edge sections. Red stop bar lights at TWY INT are controllable on/off. Red stop bar lights at Pattern “A” RWY HLDG PSN entrances to RWY are controllable on/off and are supplemented with elevated RWY guard lights and RWY designation sign at the sides. Red stop bar lights at Pattern “B” RWY HLDG PSN before entry into the RWY ILS sensitive area are controllable on/off with Category I/II RWY HLDG PSN sign. Internally lighted mandatory or information TWY signboards. “MIL” destination signs on the east of RWY 02R/20L indicate the direction to aircraft movement area for military use only. On the west of RWY 02R/20L, alternate green and yellow taxiway centreline lights along taxiways within ILS sensitive zone in the vicinity of the runway and green taxiway centreline lights with selective controls along taxi-routes to/from main RWY and aprons. On the east of RWY 02R/20L, no taxiway centreline lights. MARKING AIDS: THR, touchdown zone, RWY centreline, RWY side stripe, RWY designations, aiming point markings, TWY centreline, taxi holding positions – all taxiways, apron markings.
3	*Stop bars:* Stop bars where appropriate.
4	*Remarks:* Where Red stop bar is not present at the TWY INT, Yellow INTERMEDIATE HLDG PSN LGT will be used at TWY INT and switched on between sunset and sunrise or during periods of poor visibility.

1 ADB SAFEGATE AIRCRAFT DOCKING GUIDANCE SYSTEM - SAFEDOCK

1.1 INTRODUCTION

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

1.2 DESCRIPTION OF SYSTEM

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

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

RWY Designator	Intersection Departures	TORA (m)	TODA (m)	ASDA (m)	LDA (m)	Remarks
1	2	3	4	5	6	7
20C	Not applicable	4000	4060	4060	4000	NIL
	T3	3808	3868	3868	Not applicable	
	T4	3421	3481	3481	Not applicable	
	T5	2721	2781	2781	Not applicable	
	D3	3842	3902	3902	Not applicable	
	D4	3502	3562	3562	Not applicable	
	D5	3027	3087	3087	Not applicable	
	D6	2552	2612	2612	Not applicable	
02C	Not applicable	4000	4060	4060	4000	NIL
	T11	3842	3902	3902	Not applicable	
	T10	3329	3389	3389	Not applicable	
	T9	3197	3257	3257	Not applicable	
	T8	2551	2611	2611	Not applicable	
	D12	3842	3902	3902	Not applicable	
	D11	3480	3540	3540	Not applicable	
	D10	2877	2937	2937	Not applicable	
	D9	2402	2462	2462	Not applicable	
20L	Not applicable	4000	4060	4060	4000	NIL
	A3	3842	3902	3902	Not applicable	
	A4	3027	3087	3087	Not applicable	
	A5	2552	2612	2612	Not applicable	
02R	Not applicable	4000	4060	4060	4000	NIL
	A10	3842	3902	3902	Not applicable	
	A9	2877	2937	2937	Not applicable	
	A8	2402	2462	2462	Not applicable	

Note: Intersection departures are allowed subject to the following:

a) initiated by pilot and approved by ATC, traffic permitting.

b) ATC is able to keep aircraft visual at all times

WSSS AD 2.14 APPROACH AND RUNWAY LIGHTING

RWY	APCH LGT Type, LEN, Intensity	THR LGT colour WBAR	PAPI (MEHT)	TDZ LGT LEN	RWY Centreline LGT, LEN, spacing, colour, INTST	RWY Edge LGT, LEN, spacing, colour, INTST	RWY End LGT colour	SWY LGT colour
1	2	3	4	5	6	7	8	9
02L	CAT II High Intensity approach lighting (900m) consisting of extended centreline and RED row barrettes, 2 crossbars, 2 approach beacons and sequenced flashing lights.	GREEN supplemented by Green wing-bar and 2 THR ident lights.	PAPI 003° located either side of RWY, 422m behind RWY THR. 2 WHITE LGT and 2 RED LGT (20.0m), 3 WHITE LGT and 1 RED LGT (24.0m), 4 WHITE LGT (26.4m). ACFT with eye-to-wheel height greater than 8m are advised to fly with 2 WHITE and 2 RED LGT visible so as to achieve sufficient wheel clearance.	WHITE	Inset High Intensity centreline lights (longitudinal spacing at 30m apart) as follows: From THR to 900m from RWY end: WHITE, 300m to 900m from RWY end: ALTN RED/ WHITE, 300m to RWY end: RED.	Bi-directional White/Amber edge lights (longitudinal spacing at 60m apart) as follows: From THR to 600m from RWY end: White, 600m to RWY end: Amber.	RED	RED
20R	CAT1 High Intensity approach lighting (900m) distance coded centreline lights showing variable WHITE and crossbars at 150m, 300m, 450m, 600m and 750m.	GREEN supplemented by Green wing-bar and 2 THR ident lights.	PAPI 003° located either side of RWY, 410m from THR. 2 WHITE LGT and 2 RED LGT (19.5m), 3 White LGT and 1 RED LGT (23.3m), 4 WHITE LGT (25.7m). ACFT with eye-to-wheel height greater than 8m are advised to fly with 2 WHITE and 2 RED LGT visible so as to achieve sufficient wheel clearance.	NIL	Inset High Intensity centreline lights (longitudinal spacing at 30m apart) as follows: From THR to 900m from RWY end: WHITE, 300m to 900m from RWY end: ALTN RED/ WHITE, 300m to RWY end: RED.	RED RWY edge lights (longitudinal spacing at 60m apart) in the direction of RWY 20R before the displaced THR. Bi-directional raised WHITE/ AMBER edge lights (longitudinal spacing at 60m apart) after the displaced THR.	RED	Elevated RED

24.3 BREAK-OUT MANOEUVRE

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

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

or

"TURN LEFT (or RIGHT) TO RETURN TO LOCALIZER COURSE"

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

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

24.4 PILOT NOTIFICATION AND CONDITIONS FOR OPERATIONS

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

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

WSSS AD 2.23 ADDITIONAL INFORMATION

1 BIRD CONCENTRATION IN THE VICINITY OF THE AIRPORT

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

- cattle egrets (weighing approximately 400g each)
- intermediate egrets (weighing approximately 500g each)
- brahminy kites (weighing approximately 600g each)
- grey herons (weighing approximately 1500g each)
- white-bellied sea eagle (weighing approximately 2900g each)

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

1.3 Various active dispersal devices generating light, sound or cracking effects are used for bird dispersal to mitigate wildlife hazards where necessary within Singapore Changi Airport (such as handheld laser device, long range acoustic device, scarecrow, stock-whip, pyrotechnic, etc.).

WSSS AD 2.24 CHARTS RELATED TO AN AERODROME

LOCATIONS OF RUNWAY 02L/20R, RUNWAY 02C/20C AND RUNWAY 02R/20L AT WSSS	AD-2-WSSS-ADC-1
AERODROME CHART - ICAO	AD-2-WSSS-ADC-2
AERODROME ADVISORY CHART - ICAO	AD-2-WSSS-ADC-3
AERODROME OBSTACLE CHART - ICAO TYPE A (OPERATING LIMITATIONS)	AD-2-WSSS-AOC-1
AERODROME OBSTACLE CHART - ICAO - TYPE A - RWY 02C/20C	AD-2-WSSS-AOC-2
AERODROME OBSTACLE CHART - ICAO - TYPE B	AD-2-WSSS-AOC-3
AERODROME OBSTACLE CHART ICAO - TYPE A - RWY 02R/20L	AD-2-WSSS-AOC-4
PRECISION APPROACH TERRAIN CHART - ICAO - RWY 02L	AD-2-WSSS-PATC-1
PRECISION APPROACH TERRAIN CHART - ICAO - RWY 20C	AD-2-WSSS-PATC-2
PRECISION APPROACH TERRAIN CHART - ICAO - RWY 02R	AD-2-WSSS-PATC-3
Precision Approach Terrain Chart - ICAO - RWY 20L	AD-2-WSSS-PATC-4
PRECISION APPROACH TERRAIN CHART - ICAO - RWY 02C	AD-2-WSSS-PATC-5
RNAV (GNSS) SID - RWY 02C - ANITO 7A	AD-2-WSSS-SID-1
RNAV(GNSS) SID - RWY 20C - ANITO 8B	AD-2-WSSS-SID-2
RNAV(GNSS) SID - RWY 02R - ANITO 1C	AD-2-WSSS-SID-3
RNAV (GNSS) SID - RWY 20L - ANITO 1D	AD-2-WSSS-SID-4
RNAV (GNSS) SID - RWY 02L - ANITO 7E	AD-2-WSSS-SID-5

RNAV (GNSS) SID - RWY 20R - ANITO 8F	AD-2-WSSS-SID-6
RNAV (GNSS) SID - RWY 02C - AROSO 3A	AD-2-WSSS-SID-7
RNAV (GNSS) SID - RWY 20C - AROSO 5B	AD-2-WSSS-SID-8
RNAV (GNSS) SID - RWY 02R - AROSO 1C	AD-2-WSSS-SID-9
RNAV (GNSS) SID - RWY 20L - AROSO 1D	AD-2-WSSS-SID-10
RNAV (GNSS) SID - RWY 02L - AROSO 3E	AD-2-WSSS-SID-11
RNAV (GNSS) SID - RWY 20R - AROSO 5F	AD-2-WSSS-SID-12
RNAV (GNSS) SID - RWY 02C - DODSO 1A	AD-2-WSSS-SID-13
RNAV(GNSS) SID - RWY 20C - DODSO 1B	AD-2-WSSS-SID-14
RNAV (GNSS) SID - RWY 02R - DODSO 1C	AD-2-WSSS-SID-15
RNAV (GNSS) SID - RWY 20L - DODSO 1D	AD-2-WSSS-SID-16
RNAV (GNSS) SID - RWY 02L - DODSO 1E	AD-2-WSSS-SID-17
RNAV (GNSS) SID - RWY 20R - DODSO 1F	AD-2-WSSS-SID-18
RNAV (GNSS) SID - RWY 02C - IDBUD 1A	AD-2-WSSS-SID-19
RNAV (GNSS) SID - RWY 20C - IDBUD 1B	AD-2-WSSS-SID-20
RNAV (GNSS) SID - RWY 02R - IDBUD 1C	AD-2-WSSS-SID-21
RNAV (GNSS) SID - RWY 20L - IDBUD 1D	AD-2-WSSS-SID-22
RNAV (GNSS) SID - RWY 02L - IDBUD 1E	AD-2-WSSS-SID-23
RNAV (GNSS) SID - RWY 20R - IDBUD 1F	AD-2-WSSS-SID-24
RNAV (GNSS) SID - RWY 02C - KIRDA 1A	AD-2-WSSS-SID-25
RNAV (GNSS) SID - RWY 20C - KIRDA 1B	AD-2-WSSS-SID-26
RNAV (GNSS) SID - RWY 02R - KIRDA 1C	AD-2-WSSS-SID-27
RNAV (GNSS) SID - RWY 20L - KIRDA 1D	AD-2-WSSS-SID-28
RNAV (GNSS) SID - RWY 02L - KIRDA 1E	AD-2-WSSS-SID-29
RNAV (GNSS) SID - RWY 20R - KIRDA 1F	AD-2-WSSS-SID-30
RNAV (GNSS) SID - RWY 02C - MASBO 3A	AD-2-WSSS-SID-31
RNAV (GNSS) SID - RWY 20C - MASBO 5B	AD-2-WSSS-SID-32
RNAV (GNSS) SID - RWY 02R - MASBO 1C	AD-2-WSSS-SID-33
RNAV (GNSS) SID - RWY 20L - MASBO 1D	AD-2-WSSS-SID-34
RNAV (GNSS) SID - RWY 02L - MASBO 3E	AD-2-WSSS-SID-35
RNAV (GNSS) SID - RWY 20R - MASBO 5F	AD-2-WSSS-SID-36
RNAV (GNSS) SID - RWY 02C - VMR 6A	AD-2-WSSS-SID-37
RNAV (GNSS) SID - RWY 20C - VMR 9B	AD-2-WSSS-SID-38
RNAV (GNSS) SID - RWY 02R - VMR 1C	AD-2-WSSS-SID-39
RNAV (GNSS) SID - RWY 20L - VMR 1D	AD-2-WSSS-SID-40
RNAV (GNSS) SID - RWY 02L - VMR 6E	AD-2-WSSS-SID-41
RNAV (GNSS) SID - RWY 02R - VMR 9F	AD-2-WSSS-SID-42
RNAV (GNSS) SID - RWY 02C - MIBEL 1A	AD-2-WSSS-SID-43
RNAV (GNSS) SID - RWY 20C - MIBEL 1B	AD-2-WSSS-SID-44
RNAV (GNSS) SID - RWY 02R - MIBEL 1C	AD-2-WSSS-SID-45
RNAV (GNSS) SID - RWY 20L - MIBEL 1D	AD-2-WSSS-SID-46
RNAV (GNSS) SID - RWY 02L - MIBEL 1E	AD-2-WSSS-SID-47
RNAV (GNSS) SID - RWY 20R - MIBEL 1F	AD-2-WSSS-SID-48
RNAV (GNSS) SID - RWY 02C - TAROS 1A	AD-2-WSSS-SID-49
RNAV (GNSS) SID - RWY 20C - TAROS 1B	AD-2-WSSS-SID-50
RNAV (GNSS) SID - RWY 02R - TAROS 1C	AD-2-WSSS-SID-51
RNAV (GNSS) SID - RWY 20L - TAROS 1D	AD-2-WSSS-SID-52
RNAV (GNSS) SID - RWY 02L - TAROS 1E	AD-2-WSSS-SID-53
RNAV (GNSS) SID - RWY 20R - TAROS 1F	AD-2-WSSS-SID-54
RNAV (GNSS) SID - RWY 02C - TOMAN 3A	AD-2-WSSS-SID-55
RNAV (GNSS) SID - RWY 20C - TOMAN 5B	AD-2-WSSS-SID-56
RNAV (GNSS) SID - RWY 02R - TOMAN 1C	AD-2-WSSS-SID-57
RNAV (GNSS) SID - RWY 20L - TOMAN 1D	AD-2-WSSS-SID-58
RNAV (GNSS) SID - RWY 02L - TOMAN 3E	AD-2-WSSS-SID-59
RNAV (GNSS) SID - RWY 20R - TOMAN 5F	AD-2-WSSS-SID-60
RNAV (GNSS) SID - RWY 20C - VOVOS 1B	AD-2-WSSS-SID-61
RNAV (GNSS) SID - RWY 20L - VOVOS 1D	AD-2-WSSS-SID-62
RNAV (GNSS) SID - RWY 20R - VOVOS 1F	AD-2-WSSS-SID-63
RNAV (GNSS) SID - RWY 02R/20L - CHA 1C / CHA 1D	AD-2-WSSS-SID-64
RNAV(GNSS) STAR - RWY 02L/02C/02R - ARAMA 1A	AD-2-WSSS-STAR-1
RNAV(GNSS) STAR - RWY 20R/20C/20L - ARAMA 1B	AD-2-WSSS-STAR-2
RNAV(GNSS) STAR - RWY 02L/02C/02R - ASUNA 2A	AD-2-WSSS-STAR-3
RNAV(GNSS) STAR - RWY 20R/20C/20L - ASUNA 2B	AD-2-WSSS-STAR-4
RNAV(GNSS) STAR - RWY 02L/02C/02R - ELALO 1A	AD-2-WSSS-STAR-5

AERODROME CHART - ICAO

01 21' 33"N
103°59' 22"E

AERODROME ELEVATION 6.66m

TWR	118.6 / 118.25 / 131.4
GND	124.3 / 121.85 / 121.725 / 127.275
DELIVERY	121.65 / 119.6

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

SINGAPORE/SINGAPORE CHANGI

PAPI 3° (MEHT) *

Pilot's eye height over the threshold when the following PAPI lights come into view.	RUNWAY					
	02L	20R	02C	20C	02R	20L
2 White lights and 2 red lights	20.0m	19.5m	19.8m	19.8m	19.7m	19.7m
3 White lights and 1 red light	24.0m	23.3m	23.7m	23.7m	23.6m	23.6m
4 White lights	26.4m	25.7m	26.2m	26.2m	26.0m	26.0m

* MEHT Minimum Eye Height Over the Threshold.

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

RWY	DIRECTION	THR	GEOID UNDULATION	BEARING STRENGTH
02L	023°	01 20 56.27N 103 58 38.62E	10.23m	PCR 710/F/B/X/U
20R (DISP THR)	203°	01 22 34.02N 103 59 20.09E	10.26m	
02C	023°	01 19 43.51N 103 59 05.86E	10.27m	
20C	203°	01 21 43.37N 103 59 56.48E	10.30m	
02R	023°	01 19 20.59N 103 59 59.45E	10.32m	
20L	203°	01 21 20.45N 104 00 00.08E	10.36m	

TAXIWAYS

BEARING STRENGTH

PCR 1006/R/B/W/U - TWY A1, A2, A11, A12, A (between A1 and A2, and between A11 and A12), B1, B2, B13, B14, B (between B1 and B2, and between B13 and B14), C1, C2, C13, C14, C (between C1 and C2) and L (between C13 and C14), D1, D2, D13, D14, D (between D1 and D2, and between D13 and D14), T1, T2, T4, T12, T13, T (between T11 and T13), U12, U13, U (between U12 and U13), W1, W9

PCR 930/F/B/X/U - TXL U2, TWY U7 (between TWY U and TXL U2), TWY U8 (between TWY U and TXL U2), TWY U9 (between TWY U and TXL U2), TXL S6, S8, S9, TWY S7

PCR 710/F/B/X/U - All other taxiways.

APRONS

BEARING STRENGTH

PCR 660/R/B/W/U - Aircraft stands C11, C16, C19, D30, D35, D38, E2, E6, E7, E10, F32, F36, F37, 301, 303, 304, 305, 307, 308, 309, 402, 403, 404, 805, 852, G1 to G17 and 471 to 487

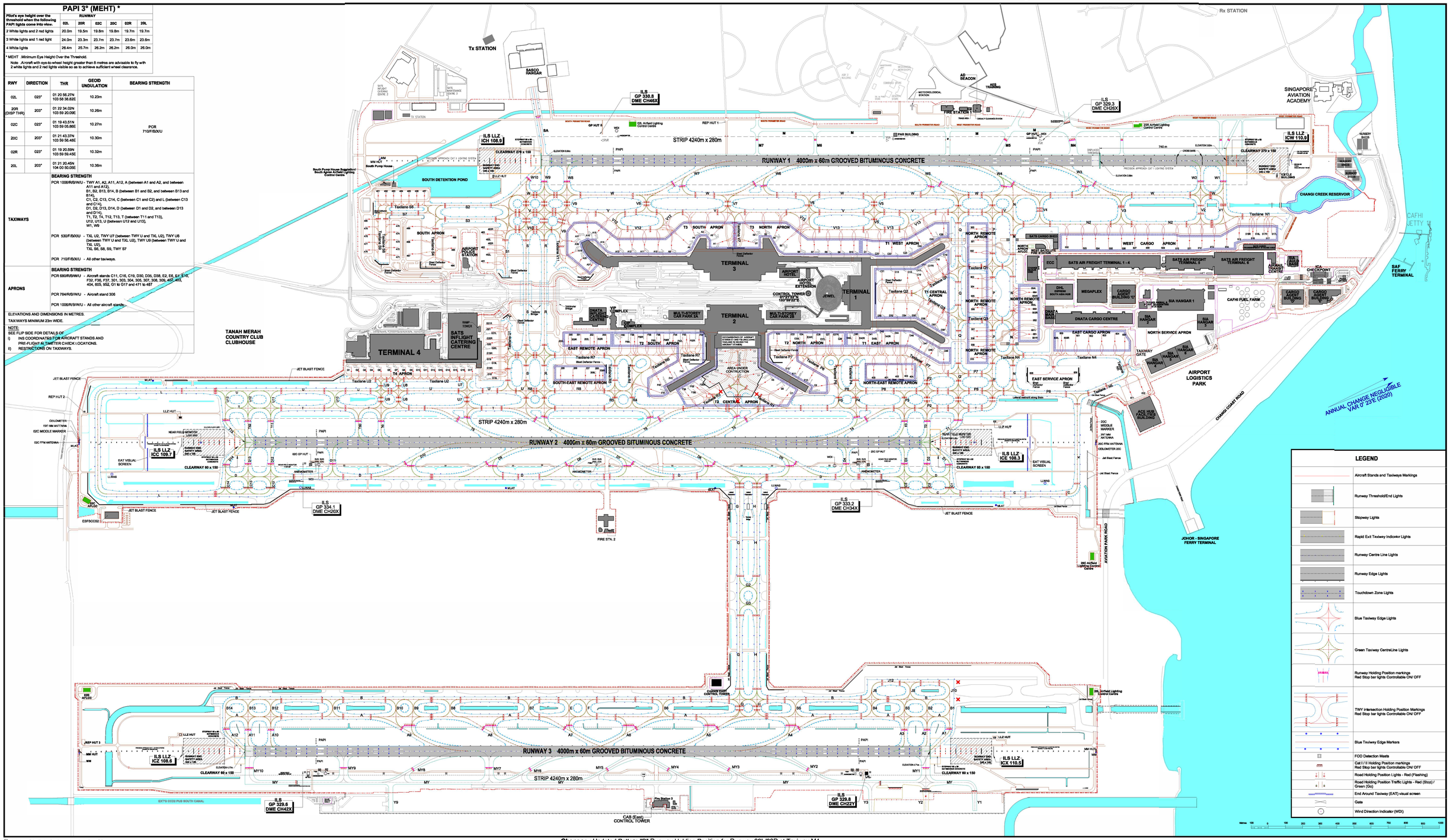
PCR 784/R/B/W/U - Aircraft stand 306

PCR 1006/R/B/W/U - All other aircraft stands.

ELEVATIONS AND DIMENSIONS IN METRES.

TAXIWAYS MINIMUM 23m WIDE.

NOTE:
SEE FLIP SIDE FOR DETAILS OF:
i) INS COORDINATES FOR AIRCRAFT STANDS AND PRE-FLIGHT ALIGNMENT CHECK LOCATIONS.
ii) RESTRICTIONS ON TAXIWAYS.


RUNWAY 1 4000m x 60m GROOVED BITUMINOUS CONCRETE
STRIP 4240m x 280m
RUNWAY 2 4000m x 60m GROOVED BITUMINOUS CONCRETE
STRIP 4240m x 280m
RUNWAY 3 4000m x 60m GROOVED BITUMINOUS CONCRETE
STRIP 4240m x 280m
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TERMINAL 2
TERMINAL 3
TERMINAL 4
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ILS LLZ ICH 108.9
ILS GP 329.3 DME CH26X
ILS LLZ ICW 110.9
ILS LLZ ICC 109.7
ILS LLZ ICE 108.3
ILS LLZ ICZ 108.6
ILS LLZ ICX 110.5
ILS GP 334.1 DME CH20X
ILS GP 333.2 DME CH34X
ILS GP 329.6 DME CH42X
ILS GP 329.8 DME CH22Y
Tx STATION
Rx STATION
FIRE STATION
SATS HANGAR
SATS AIR FREIGHT TERMINAL 1 - 4
SATS AIR FREIGHT TERMINAL 5
SATS AIR FREIGHT TERMINAL 6
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SATS CARGO RHD
SATS CARGO LHD
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DNATA FLIGHT CATERING CENTRE
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DHL EXPRESS SOUTH ASIA HUB
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SAF FERRY TERMINAL
CAFHI FUEL FARM
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ACE HUB FACILITIES BUILDING
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MULTI-STOREY CAR PARK 2B
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CHECKPOINT
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JOHOR - SINGAPORE FERRY TERMINAL
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CHANGI COAST ROAD
ANNUAL CHANGE NEGLIGIBLE VAR 0° 23'E (2020)
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INS COORDINATES FOR AIRCRAFT STANDS AND PRE-FLIGHT ALTIMETER CHECK LOCATIONS

LOCATION	STAND NR	NORTH LAT	EAST LONG	ELEVATION
T3 SOUTH APRON	A1	01 21 21.52	103 59 06.25	4.75m (15.58ft)
	A2	01 21 21.75	103 59 04.00	4.65m (15.26ft)
	A3	01 21 19.86	103 59 02.79	4.68m (15.29ft)
	A4	01 21 17.61	103 59 02.54	4.79m (15.72ft)
	A5	01 21 15.50	103 59 03.62	4.88m (15.94ft)
	A9	01 21 12.56	103 59 03.65	5.02m (16.47ft)
	A10	01 21 10.34	103 59 02.40	5.04m (16.54ft)
	A11	01 21 07.93	103 59 01.41	5.25m (17.22ft)
	A12	01 21 05.76	103 59 00.49	5.38m (17.65ft)
	A13	01 21 03.59	103 58 59.58	5.48m (17.98ft)
	A14	01 21 01.66	103 58 57.59	5.57m (18.27ft)
	A15	01 21 00.77	103 58 55.41	5.46m (17.91ft)
	A16	01 20 59.27	103 58 54.20	5.51m (18.08ft)
	A17	01 20 57.25	103 58 54.06	5.23m (17.16ft)
	A18	01 20 55.67	103 58 55.25	5.37m (17.62ft)
	A19	01 20 55.26	103 58 57.13	5.40m (17.72ft)
	A20	01 20 56.09	103 58 58.83	5.45m (17.88ft)
	A21	01 20 57.10	103 59 00.80	5.49m (18.01ft)
T3 NORTH APRON	B1	01 21 26.86	103 59 08.37	4.82m (15.81ft)
	B2	01 21 28.18	103 59 06.82	4.68m (15.35ft)
	B3	01 21 30.33	103 59 07.30	4.65m (15.26ft)
	B4	01 21 32.03	103 59 08.60	4.75m (15.58ft)
	B5	01 21 32.98	103 59 10.89	4.80m (15.75ft)
	B6	01 21 35.15	103 59 13.16	4.96m (16.27ft)
	B7	01 21 37.65	103 59 13.93	4.97m (16.31ft)
	B8	01 21 39.94	103 59 15.20	5.13m (16.83ft)
	B9	01 21 42.19	103 59 16.16	5.13m (16.83ft)
	B10	01 21 44.47	103 59 17.12	5.15m (16.90ft)
T1 WEST APRON	C1	01 21 46.75	103 59 18.08	5.09m (16.70ft)
	C20	01 21 48.83	103 59 19.23	5.08m (16.67ft)
	C22	01 21 51.00	103 59 20.13	5.15m (16.90ft)
	C23	01 21 53.56	103 59 20.77	5.08m (16.67ft)
	C24	01 21 56.54	103 59 20.97	4.89m (16.04ft)
	C25	01 21 59.12	103 59 20.59	4.99m (16.37ft)
	C26	01 22 01.48	103 59 20.76	5.01m (16.44ft)
T1 CENTRAL APRON	C11	01 21 47.42	103 59 23.82	5.09m (16.70ft)
	C13	01 21 49.63	103 59 24.75	5.03m (16.50ft)
	C15	01 21 51.89	103 59 25.70	5.06m (16.60ft)
	C16	01 21 53.47	103 59 26.62	4.86m (15.94ft)
	C17	01 21 55.50	103 59 26.20	5.01m (16.44ft)
	C17L	01 21 54.75	103 59 26.22	4.96m (16.27ft)
	C17R	01 21 56.01	103 59 25.68	5.12m (16.80ft)
	C18	01 21 57.86	103 59 25.75	4.98m (16.37ft)
	C19	01 21 59.79	103 59 25.63	4.95m (16.24ft)
	D30	01 21 44.54	103 59 30.14	5.08m (16.67ft)
	D32	01 21 46.75	103 59 31.08	5.08m (16.67ft)
	D34	01 21 49.03	103 59 32.04	5.07m (16.63ft)
	D35	01 21 50.87	103 59 32.82	5.02m (16.47ft)
	D36	01 21 51.98	103 59 34.62	5.06m (16.60ft)
	D37	01 21 53.37	103 59 36.28	4.97m (16.31ft)
	D38	01 21 54.58	103 59 37.77	4.99m (16.37ft)
T1 EAST APRON	D40	01 21 38.13	103 59 32.89	5.11m (16.77ft)
	D40L	01 21 37.38	103 59 32.83	5.09m (16.70ft)
	D40R	01 21 38.77	103 59 32.84	5.13m (16.83ft)
	D41	01 21 40.30	103 59 33.81	5.07m (16.63ft)
	D42	01 21 42.77	103 59 34.58	5.15m (16.89ft)
	D42L	01 21 42.00	103 59 34.47	5.12m (16.79ft)
	D42R	01 21 43.45	103 59 34.44	5.21m (17.09ft)
	D44	01 21 44.97	103 59 35.44	5.14m (16.86ft)
	D46	01 21 47.40	103 59 36.72	5.08m (16.67ft)
	D47	01 21 49.19	103 59 38.89	4.93m (16.17ft)
	D48	01 21 50.60	103 59 40.77	4.97m (16.31ft)
	D49	01 21 52.23	103 59 42.35	4.98m (16.34ft)
T2 NORTH APRON	E8	01 21 27.99	103 59 38.45	4.68m (15.35ft)
	E10	01 21 24.12	103 59 32.64	4.75m (15.58ft)
	E11	01 21 25.57	103 59 34.37	4.78m (15.68ft)
	E12	01 21 27.20	103 59 36.42	4.75m (15.58ft)
	E20	01 21 24.36	103 59 27.08	5.04m (16.54ft)
	E22	01 21 26.64	103 59 28.04	5.07m (16.63ft)
	E24	01 21 29.01	103 59 29.06	5.09m (16.70ft)
	E24L	01 21 28.32	103 59 28.77	5.10m (16.73ft)
	E24R	01 21 29.53	103 59 29.28	5.08m (16.67ft)
	E26	01 21 31.19	103 59 29.96	5.08m (16.67ft)
	E27	01 21 33.56	103 59 30.96	5.07m (16.62ft)
	E27L	01 21 32.79	103 59 30.86	5.03m (16.48ft)
	E27R	01 21 34.20	103 59 30.91	5.12m (16.80ft)
	E28	01 21 35.74	103 59 31.89	5.08m (16.67ft)

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

LOCATION	STAND NR	NORTH LAT	EAST LONG	ELEVATION
T2 CENTRAL APRON	E2	01 21 19.28	103 59 27.30	4.90m (16.08ft)
	E3	01 21 18.44	103 59 29.27	4.82m (15.81ft)
	E4	01 21 18.10	103 59 31.70	4.80m (15.75ft)
	E5	01 21 19.56	103 59 33.72	4.90m (16.08ft)
	E6	01 21 21.22	103 59 35.93	4.84m (15.88ft)
	E7	01 21 22.48	103 59 37.46	4.73m (15.52ft)
	F31	01 21 13.87	103 59 25.30	4.91m(16.11ft)
	F32	01 21 13.03	103 59 27.26	4.85m (15.91ft)
	F33	01 21 11.30	103 59 28.54	4.91m (16.11ft)
	F34	01 21 08.98	103 59 28.96	4.92m (16.14ft)
	F35	01 21 06.60	103 59 29.55	4.91m (16.11ft)
	F35L	01 21 06.06	103 59 30.13	4.74m (15.55ft)
	F35R	01 21 06.96	103 59 29.05	5.04m (16.54ft)
	F36	01 21 04.34	103 59 29.67	4.82m (15.81ft)
T2 SOUTH APRON	F37	01 20 59.83	103 59 27.87	4.75m (15.58ft)
	F40	01 21 05.62	103 59 25.34	4.85m (15.91ft)
	F41	01 21 03.19	103 59 25.58	4.82m (15.81ft)
	F42	01 21 00.61	103 59 25.96	4.72m (15.49ft)
	F50	01 21 10.69	103 59 21.32	5.03m (16.50ft)
	F52	01 21 08.51	103 59 20.40	5.11m (16.77ft)
	F52L	01 21 07.82	103 59 20.11	5.16m (16.93ft)
	F52R	01 21 09.04	103 59 20.62	5.08m (16.67ft)
	F54	01 21 06.14	103 59 19.40	5.22m (17.13ft)
	F56	01 21 03.96	103 59 18.48	5.30m (17.39ft)
	F56L	01 21 03.27	103 59 18.18	5.42m (17.78ft)
	F56R	01 21 04.49	103 59 18.70	5.34m (17.52ft)
	F58	01 21 01.58	103 59 17.47	5.49m (18.01ft)
	F59	01 20 59.41	103 59 16.55	5.64m (18.50ft)
	F59L	01 20 58.72	103 59 16.26	5.67m (18.60ft)
	F59R	01 20 59.93	103 59 16.78	5.60m (18.37ft)
	F60	01 20 56.91	103 59 15.50	5.77m (18.93ft)
EAST REMOTE APRON	200	01 20 47.83	103 59 11.67	6.23m (20.44ft)
	200L	01 20 46.91	103 59 11.92	6.29m (20.64ft)
	200R	01 20 48.35	103 59 11.89	6.18m (20.28ft)
	201	01 20 49.99	103 59 12.62	5.96m (19.55ft)
	202	01 20 52.34	103 59 13.57	5.94m (19.49ft)
	202L	01 20 51.65	103 59 13.28	5.76m (18.90ft)
	202R	01 20 52.87	103 59 13.79	5.73m (18.80ft)
	203	01 20 54.52	103 59 14.47	5.92m (19.42ft)
SOUTH-EAST REMOTE APRON	205	01 20 43.91	103 59 17.06	4.77m (15.65ft)
	206	01 20 46.08	103 59 17.98	4.76m (15.62ft)
	207	01 20 48.21	103 59 19.01	4.74m (15.55ft)
	208	01 20 50.68	103 59 20.05	4.75m (15.58ft)
	208L	01 20 50.01	103 59 19.76	4.74m (15.55ft)
	208R	01 20 51.25	103 59 20.29	4.73m (15.42ft)
NORTH REMOTE APRON	300	01 22 06.95	103 59 22.67	4.53m (14.86ft)
	301	01 22 06.41	103 59 24.69	4.93m (16.17ft)
	302	01 22 05.21	103 59 26.75	4.97m (16.31ft)
	303	01 22 03.55	103 59 31.40	5.32m (17.45ft)
	304	01 22 02.84	103 59 33.06	5.35m (17.55ft)
	305	01 22 02.14	103 59 34.71	5.30m (17.39ft)
	306	01 22 01.41	103 59 36.42	5.16m (16.93ft)
	307	01 21 59.39	103 59 40.36	5.16m (16.93ft)
	308	01 21 58.96	103 59 41.35	5.10m (16.73ft)
	309	01 21 58.52	103 59 43.17	5.06m (16.60ft)
	310	01 21 57.42	103 59 44.96	4.74m (15.55ft)
	951	01 22 09.35	103 59 45.23	5.15m (16.90ft)
	951L	01 22 08.91	103 59 44.27	5.00m (16.40ft)
	951R	01 22 08.35	103 59 45.58	5.00m (16.40ft)
	952	01 22 09.94	103 59 42.65	4.89m (16.04ft)
	953	01 22 11.22	103 59 40.85	4.98m (16.34ft)
	953L	01 22 10.78	103 59 39.89	4.83m (15.85ft)
	953R	01 22 10.41	103 59 41.28	4.87m (15.98ft)
	954	01 22 12.46	103 59 37.95	4.84m (15.88ft)
	954L	01 22 12.02	103 59 36.99	4.70m (15.42ft)
	954R	01 22 11.65	103 59 38.38	4.74m (15.55ft)
NORTH-EAST REMOTE APRON	400	01 21 38.71	103 59 40.14	4.31m (14.14ft)
	401	01 21 40.98	103 59 41.10	4.31m (14.14ft)
	402	01 21 42.85	103 59 41.89	4.30m (14.11ft)
	403	01 21 44.37	103 59 42.53	4.29m (14.07ft)
	404	01 21 45.45	103 59 42.98	4.20m (13.78ft)

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

LOCATION	STAND NR	NORTH LAT	EAST LONG	ELEVATION
WEST CARGO APRON	502	01 22 22.23	103 59 31.62	4.35m (14.27ft)
	503	01 22 24.98	103 59 32.78	4.29m (14.07ft)
	504	01 22 27.26	103 59 33.74	4.29m (14.07ft)
	505	01 22 29.54	103 59 34.70	4.32m (14.17ft)
	506	01 22 31.81	103 59 35.66	4.38m (14.37ft)
	507	01 22 34.11	103 59 36.64	4.36m (14.30ft)
	508	01 22 36.41	103 59 37.61	4.29m (14.07ft)
	509	01 22 39.12	103 59 38.76	4.09m (13.42ft)
	510	01 22 41.37	103 59 40.18	4.19m (13.75ft)
	511	01 22 43.54	103 59 41.09	4.22m (13.85ft)
	512	01 22 45.71	103 59 42.01	4.24m (13.91ft)
	513	01 22 47.89	103 59 42.92	4.26m (13.98ft)
	514	01 22 50.19	103 59 43.54	4.36m (14.30ft)
	515	01 22 52.90	103 59 43.20	4.09m (13.43ft)
	516	01 22 55.39	103 59 43.97	4.04m (13.26ft)
	516L	01 22 56.24	103 59 43.80	3.96m (12.98ft)
	516R	01 22 54.93	103 59 43.25	3.95m (12.97ft)
	517	01 22 58.02	103 59 45.08	4.05m (13.27ft)
	517L	01 22 58.83	103 59 44.99	3.98m (13.05ft)
	517R	01 22 57.55	103 59 44.35	3.96m (12.98ft)
EAST CARGO APRON	600	01 22 14.12	103 59 48.10	4.25m (13.94ft)
	600L	01 22 13.28	103 59 48.27	4.22m (13.83ft)
	600R	01 22 14.58	103 59 48.81	4.15m (13.60ft)
	601	01 22 16.52	103 59 49.27	4.27m (14.01ft)
	602	01 22 18.80	103 59 50.23	4.30m (14.11ft)
	603	01 22 21.15	103 59 51.02	4.29m (14.07ft)
	604	01 22 23.46	103 59 51.99	4.31m (14.14ft)
	605	01 22 25.19	103 59 52.75	4.27m (14.01ft)
EAST SERVICE APRON	606	01 22 07.00	103 59 52.53	2.41m (7.91ft)
	609	01 22 12.95	103 59 55.04	2.85m (9.35ft)
ACEHUB	611	01 22 22.14	104 00 02.87	4.01m (13.16ft)
	612	01 22 24.50	104 00 02.87	3.91m (12.83ft)
SOUTH APRON	461	01 20 39.67	103 58 52.75	5.28m (17.32ft)
	462	01 20 40.69	103 58 50.37	5.75m (18.86ft)
	462L	01 20 40.41	103 58 51.02	5.48m (17.98ft)
	462R	01 20 40.97	103 58 49.71	5.71m (18.73ft)
	463	01 20 41.80	103 58 47.76	5.97m (19.59ft)
	463L	01 20 41.52	103 58 48.42	5.82m (19.10ft)
	463R	01 20 42.06	103 58 47.17	5.82m (19.10ft)
	464	01 20 32.33	103 58 49.39	4.98m (16.34ft)
	465	01 20 33.61	103 58 47.20	5.01m (16.44ft)
	466	01 20 34.53	103 58 45.05	5.01m (16.44ft)
	467	01 20 27.32	103 58 45.73	5.01m (16.44ft)
	468	01 20 28.34	103 58 43.34	5.00m (16.41ft)
	469	01 20 29.36	103 58 40.96	5.02m (16.47ft)
	471	01 20 23.76	103 58 44.49	5.16m (16.93ft)
	472	01 20 24.55	103 58 43.24	5.16m (16.93ft)
	473	01 20 25.12	103 58 41.90	5.16m (16.93ft)
	474	01 20 25.70	103 58 40.56	5.16m (16.93ft)
	475	01 20 26.27	103 58 39.22	5.16m (16.93ft)
	476	01 20 19.16	103 58 41.47	5.16m (16.93ft)
	477	01 20 19.74	103 58 40.13	5.16m (16.93ft)
	478	01 20 20.31	103 58 38.79	5.16m (16.93ft)
	479	01 20 20.88	103 58 37.45	5.16m (16.93ft)
	480	01 20 21.45	103 58 36.11	5.16m (16.93ft)
	481	01 20 25.27	103 58 32.56	5.22m (17.13ft)
	482	01 20 26.62	103 58 33.13	5.22m (17.13ft)
	483	01 20 27.96	103 58 33.70	5.22m (17.13ft)
	484	01 20 29.31	103 58 34.27	5.22m (17.13ft)
	485	01 20 30.66	103 58 34.84	5.22m (17.13ft)
	486	01 20 32.01	103 58 35.41	5.22m (17.13ft)
	487	01 20 33.36	103 58 35.98	5.22m (17.13ft)
T4 APRON	G1	01 20 07.58	103 59 00.97	3.95m (12.96ft)
	G2	01 20 08.88	103 59 01.52	3.95m (12.96ft)
	G3	01 20 10.18	103 59 02.07	3.95m (12.96ft)
	G4	01 20 11.48	103 59 02.62	3.94m (12.93ft)
	G5	01 20 12.77	103 59 03.17	3.94m (12.93ft)
	G6	01 20 14.49	103 59 03.89	3.93m (12.89ft)
	G7	01 20 15.70	103 59 04.57	3.89m (12.76ft)
	G8	01 20 17.01	103 59 05.12	3.85m (12.63ft)
	G9	01 20 18.31	103 59 05.67	3.85m (12.63ft)
	G10	01 20 19.60	103 59 06.22	3.86m (12.66ft)
	G11	01 20 20.90	103 59 06.77	3.84m (12.60ft)
	G12	01 20 22.20	103 59 07.31	3.83m (12.57ft)
	G13	01 20 23.50	103 59 07.86	3.82m (12.53ft)
	G14	01 20 24.79	103 59 08.41	3.83m (12.57ft)
	G15	01 20 26.09	103 59 08.96	3.88m (12.73ft)
	G16	01 20 27.39	103 59 09.50	4.05m (13.29ft)
	G17	01 20 28.69	103 59 10.05	4.00m (13.12ft)
	G18	01 20 31.53	103 59 11.86	4.36m (14.30ft)
	G18L	01 20 32.05	103 59 12.85	4.34m (14.24ft)
	G18R	01 20 31.65	103 59 11.26	4.43m (14.53ft)
	G19	01 20 32.64	103 59 09.25	4.56m (14.96ft)
	G19L	01 20 33.17	103 59 10.25	4.47m (14.67ft)
	G19R	01 20 32.77	103 59 08.66	4.56m (14.96ft)
	G20	01 20 33.75	103 59 06.65	4.52m (14.83ft)
	G20L	01 20 34.13	103 59 07.58	4.44m (14.57ft)
	G20R	01 20 33.99	103 59 06.10	4.52m (14.83ft)
	G21	01 20 34.87	103 59 04.04	4.51m (14.80ft)
	G21L	01 20 35.24	103 59 04.98	4.52m (14.83ft)
	G21R	01 20 35.10	103 59 03.49	4.55m (14.93ft)

RESTRICTIONS ON TAXIWAYS

1) Pilots are advised to apply minimum thrust when
   i) turning into TWY P2, P4, P5 and Taxilane P6 while taxiing either northwards or southwards on Taxilane P7, and
   ii) thereafter when taxiing along TWY P2 up to and including the TWY P8/P2 junction.
   This is in view of apron activities at aircraft stands D40, D41, D47, D48, D49, E22, E24, E27 and E28.

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

3) Taxiway Q (between TWY V and TWY P7) can only be used by aircraft with maximum wingspan 65m.

4) Taxiway centreline along TWY T between TWY R1 and R3 offset eastward by 2.5m away from aircraft stands E7 and F36

5) Pilots are advised to apply minimum thrust when turning into Taxiway V from Taxilane V7.

6) Taxilane V11 (behind aircraft stands A18 to A21) can only be used by aircraft with maximum wingspan 61m.

7) Taxilane Q1 (behind aircraft stands C16 to C19 and between TWY P and TWY Q),
   Taxilane Q2 and Taxilane Q3 (behind aircraft stands D35 to D38 and between TWY P and TWY Q)
   can only be used by aircraft with maximum wingspan 65m.

8) Taxilane P7 (behind aircraft stands E20 to E22) and Taxilane R7 (behind aircraft stands F50 to F54) can only be used by aircraft with maximum wingspan 65m (towing and pushback exempted).

9) Taxilane U2 can only be used by aircraft with maximum wingspan 36m.

10) Taxiway U7 (between Taxilane U2 and Taxiway U), Taxiway U8 (between Taxilane U2 and Taxiway U) and Taxiway U9 (between Taxilane U2 and Taxiway U) can only be used by aircraft with maximum wingspan 36m.

11) Pilots are advised to exercise caution when taxiing near Taxilane U2, Taxiway U, U7, U8 and U9.

12) Pilots are advised to apply speed limit of 20 knots when taxiing along TWY R and TWY S.

13) Pilots turning aircraft into aircraft stand A2 or aircraft stand B2 are advised to wait for any aircraft holding at Taxilane V7, at the inner cul-de-sac portion of the terminal building to vacate this portion before turning into aircraft stand A2 or aircraft stand B2.

14) TWY M, M4, M5, M6 and M7, located western side of RWY 02L/20R, are solely for use by Republic of Singapore Air Force (RSAF) aircraft.

15) TWY MY, MY1, MY2, MY3, MY4, MY5, MY6, MY7, MY8, MY9 and MY10, located eastern side of RWY 02R/20L, are solely for use by Republic of Singapore Air Force (RSAF) aircraft.

16) Taxiway S2, S3 and Taxilane S4 can only be used by aircraft with maximum wingspan 65m.

17) Taxilane S6, S8, S9 and Taxiway S7 can only be used by aircraft with maximum wingspan 36m.

18) Pilots are advised to apply minimum thrust when taxiing on Taxilane N4 turning into Taxilane N5 (and vice versa), due to potential jet blast issues affecting Bays 603, 604, 611 and 612. Aircraft shall not stop on TXL N5 between aircraft stands 604 and 611.

NOTE:
Pilots to follow stand lead-in line and taxi through white hatched apron markings of the following aircraft stands:
A5, A9, B5, B6, C17, D40, D42, E24, E27, F35, F52, F56, F59, G18, G19, G20, G21, 200, 202, 208, 462, 463, 600, 516, 517, 951, 953, 954.

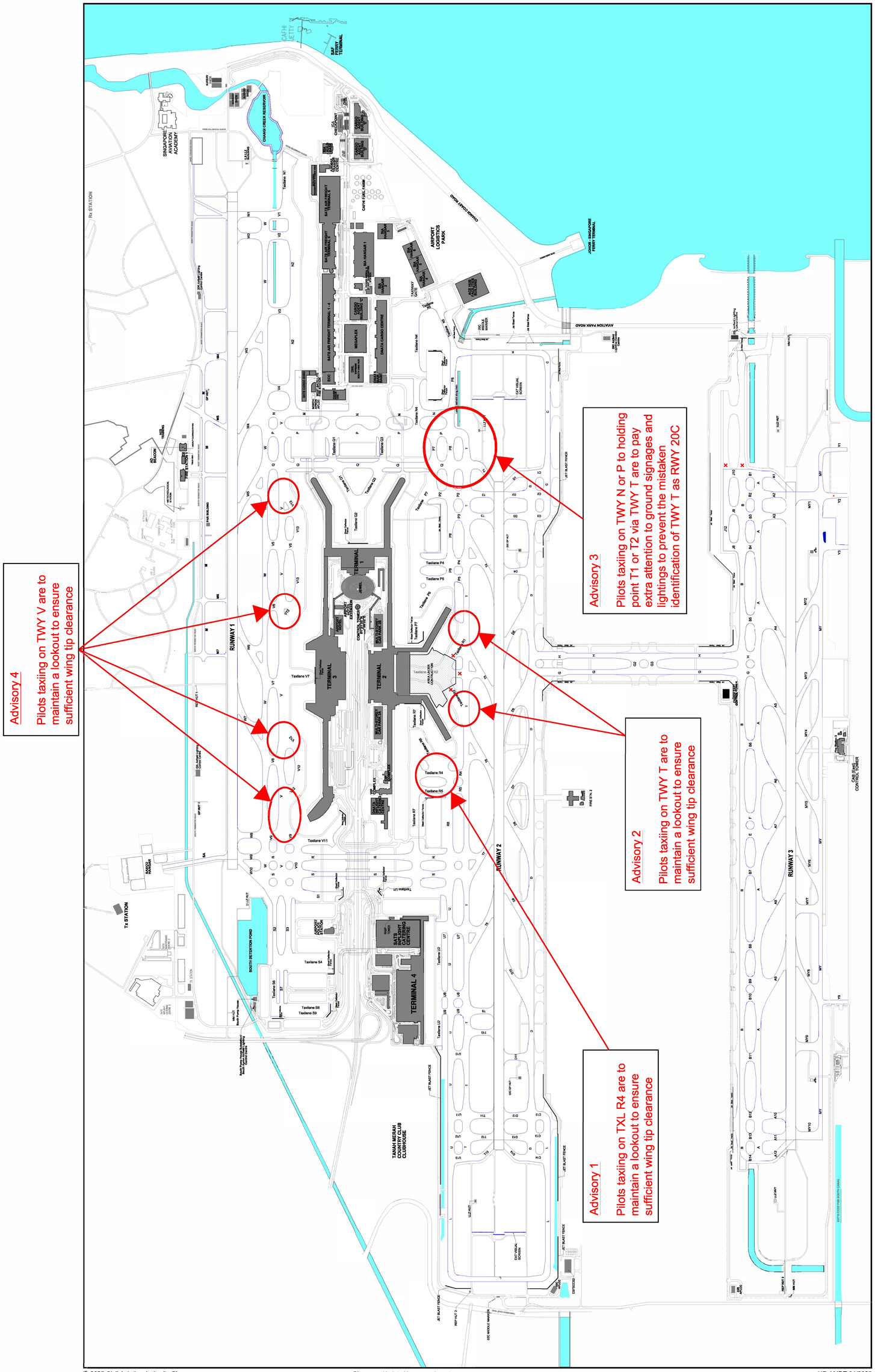
RADIO ALTIMETER OPERATIONS AREA

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

AIRCRAFT STANDS WITH SAFEGATE AIRCRAFT DOCKING GUIDANCE SYSTEM.

Changes : NIL.

AERODROME ADVISORY CHART



Changes : Updated base map layout.

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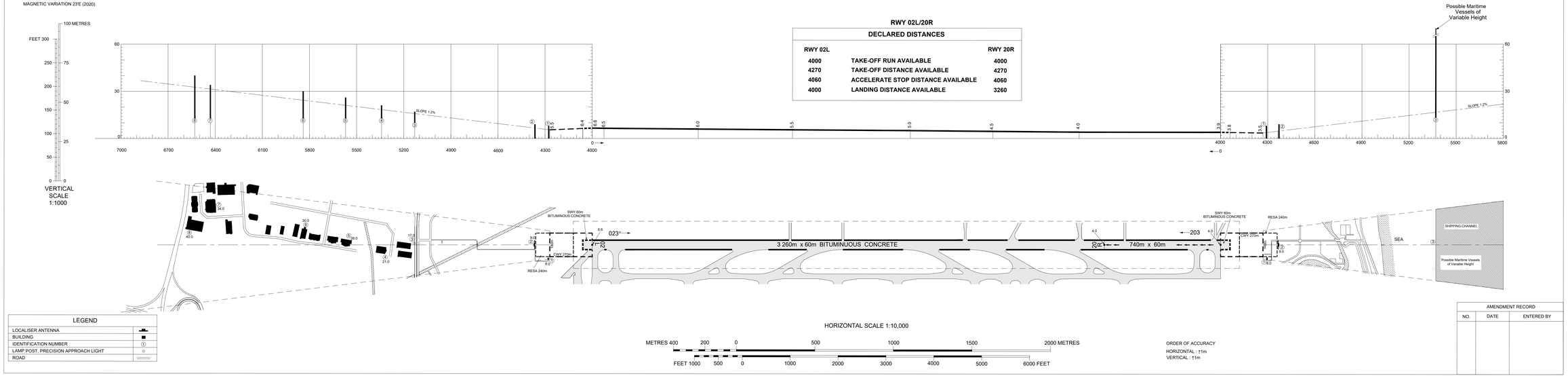
DIMENSIONS AND ELEVATIONS IN METRES

AERODROME OBSTACLE CHART - ICAO
TYPE A (OPERATING LIMITATIONS)

SINGAPORE/Singapore Changi



LEGEND	
LOCALISER ANTENNA	
BUILDING	
IDENTIFICATION NUMBER	1
LAMP POST, PRECISION APPROACH LIGHT	
ROAD	

ORDER OF ACCURACY
HORIZONTAL : ±1m
VERTICAL : ±1m

AMENDMENT RECORD		
NO.	DATE	ENTERED BY

CHANGES : Updated obstacles and runway elevations.

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AERODROME OBSTACLE CHART - ICAO TYPE B

SINGAPORE / Singapore Changi

AERODROME ELEVATION 7m

ELEVATIONS AND DIMENSIONS IN METRES
(ACCURACY OF ELEVATIONS : ± 2.5m)

103°56'E 103°57'E 103°58'E 103°59'E 104°0'E 104°1'E 104°2'E 104°3'E 104°4'E

1°27'N 1°26'N 1°25'N 1°24'N 1°23'N 1°22'N 1°21'N 1°20'N 1°19'N 1°18'N 1°17'N

JOHOR STRAIT

FIR KUALA LUMPUR
FIR SINGAPORE

APPROACH SURFACE SLOPE 1:40

TAKE-OFF CLIMB SURFACE SLOPE 1:50

Pulau Ubin

Pulau Tekong Kechil

Pulau Tekong Reservoir

Pulau Tekong

TAKE-OFF CLIMB SURFACE SLOPE 1:50

WSD34
GND - 500 ft ALT

APPROACH SURFACE SLOPE 1:40

Possible Maritime Vessels of Variable Height

CENTRE-LINE OF SHIPPING CHANNEL

APPROACH SURFACE SLOPE 1:50

20

CAFHI Jetty

Jetty

RESA 240m

CWY 270m

SWY 60m BITUMINOUS CONCRETE

203°

Displaced Threshold

TRANSITIONAL SURFACE SLOPE 1:7

GROOVED BITUMINOUS CONCRETE

Changi Ferry Terminal

20 C

APPROACH SURFACE SLOPE 1:50

CENTRE-LINE OF SHIPPING CHANNEL

CONICAL SURFACE Slope 1:20

Bedok Reservoir

RESA 240m

CWY 60m

SWY 60m BITUMINOUS CONCRETE

TWR 81m

20 L

RESA 240m

CWY 60m

SWY 60m GROOVED BITUMINOUS CONCRETE

023°

02 L

APPROACH SURFACE SLOPE 1:50

TRANSITIONAL SURFACE SLOPE 1:7

TRANSITIONAL SURFACE SLOPE 1:7

CONICAL SURFACE Slope 1:20

INNER HORIZONTAL SURFACE 49m

SWY 60m BITUMINOUS CONCRETE

RESA 240m

CWY 60m

02 C

CWY 60m

SWY 60m GROOVED BITUMINOUS CONCRETE

RESA 240m

02 R

Tanah Merah Ferry Terminal

Restricted Waters
(Prior permission required
for vessels over 15m AMSL)

Obstacles which penetrate the surfaces specified in Annex 14, Chapter 4 are shown with elevations.
Other obstacles which may penetrate these surfaces are possible ships and oil rigs. These maritime vessels may not have obstruction lightings.

VAR 0°23' E (2020)
ANNUAL CHANGE
NEGLIGIBLE

Bedok Jetty

APPROACH SURFACE SLOPE 1:40

TAKE-OFF CLIMB SURFACE SLOPE 1:50

Possible Maritime Vessels of Variable Height

Restricted Waters
(Prior permission required
for vessels over 30m AMSL)

TAKE-OFF CLIMB SURFACE SLOPE 1:50

APPROACH SURFACE SLOPE 1:50

Restricted Waters
(Prior permission required
for vessels over 49m AMSL)

LEGEND

AERODROME REF POINT 01° 21' 33.16"N LAT 103° 59' 21.60"E LONG	⊕
ANTENNA, CHIMNEY, MAST, POLE, SPIRE or CRANE	⊙
SPOT HEIGHT IN METRES	•
BUILDING or STRUCTURE	▙
TREE	*
ROAD	
BUILD - UP AREA	

AMENDMENT RECORD

NO	DATE	ENTERED BY

HORIZONTAL SCALE 1 : 20,000

Meters 1000 500 0 1000 2000 3000 4000 5000

Feet 1000 0 5000 10000 15000 19000

CHANGES : Updated obstacles and runway elevation at runway ends for Runway 02L/20R.

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

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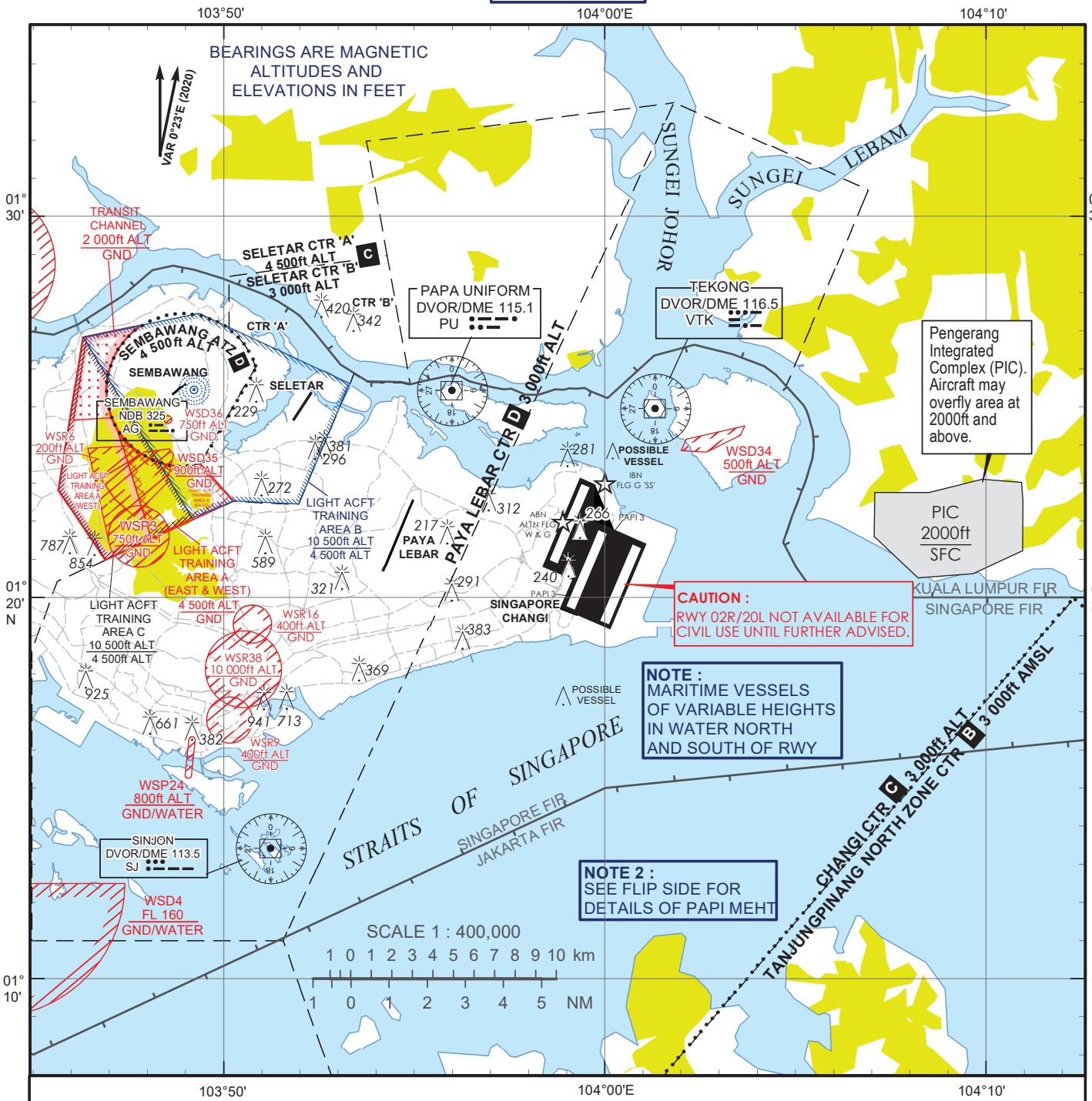
VISUAL APPROACH CHART - ICAO

AERODROME ELEV 22 ft

D-ATIS	AP ID WSSS
	128.025
APP	124.05
	119.3
TWR	118.6
	118.25

SINGAPORE/SINGAPORE CHANGI



VISUAL APPROACH PROCEDURE

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

CHANGES : Revision to Runway 20R MEHT in flip-page.

PAPI 3° (MEHT)*						
Pilot's eye height over the threshold when the following PAPI lights come in view.	**RUNWAY**					
	02L	20R	02C	20C	02R	20L
2 White lights and 2 Red lights	20.0m	19.5m	19.8m	19.8m	19.7m	19.7m
3 White lights and 1 Red light	24.0m	23.3m	23.7m	23.7m	23.6m	23.6m
4 White lights	26.4m	25.7m	26.2m	26.2m	26.0m	26.0m

*MEHT : Minimum Eye Height Over the Threshold.

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

AERODROME CHART - ICAO

01° 25' 01.04"N
103° 52' 03.52"E

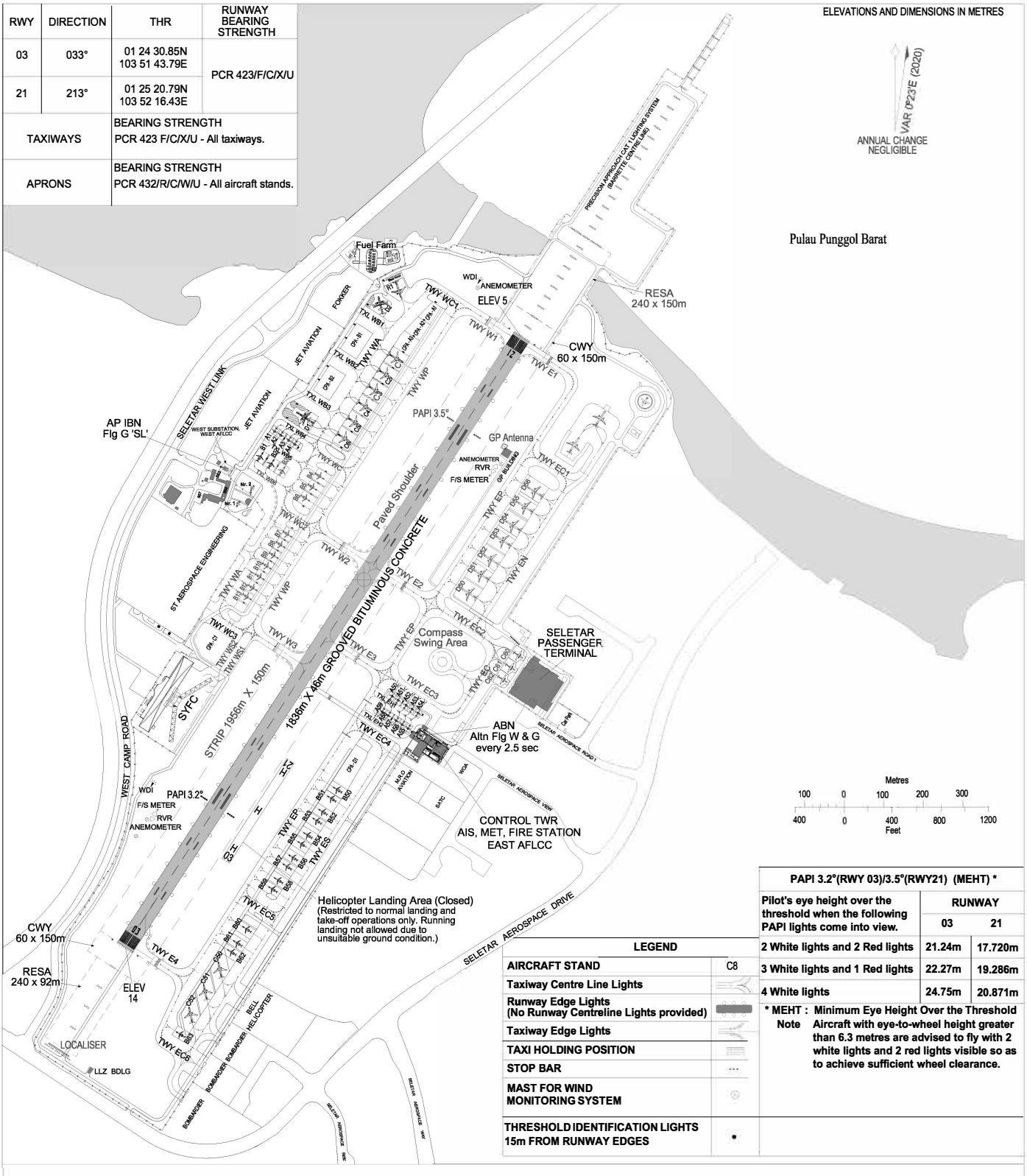
ELEV 14m

TWR	118.45
	121.6

SINGAPORE/SELETAR

RWY	DIRECTION	THR	RUNWAY BEARING STRENGTH
03	033°	01 24 30.85N 103 51 43.79E	PCR 423/F/C/X/U
21	213°	01 25 20.79N 103 52 16.43E	
TAXIWAYS		BEARING STRENGTH PCR 423 F/C/X/U - All taxiways.	
APRONS		BEARING STRENGTH PCR 432/R/C/W/U - All aircraft stands.	

ELEVATIONS AND DIMENSIONS IN METRES



LEGEND	
AIRCRAFT STAND	C8
Taxiway Centre Line Lights	
Runway Edge Lights (No Runway Centreline Lights provided)	
Taxiway Edge Lights	
TAXI HOLDING POSITION	
STOP BAR	
MAST FOR WIND MONITORING SYSTEM	
THRESHOLD IDENTIFICATION LIGHTS 15m FROM RUNWAY EDGES	

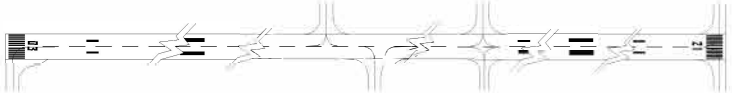
PAPI 3.2°(RWY 03)/3.5°(RWY21) (MEHT) *

Pilot's eye height over the threshold when the following PAPI lights come into view.	RUNWAY 03	RUNWAY 21
2 White lights and 2 Red lights	21.24m	17.720m
3 White lights and 1 Red lights	22.27m	19.286m
4 White lights	24.75m	20.871m

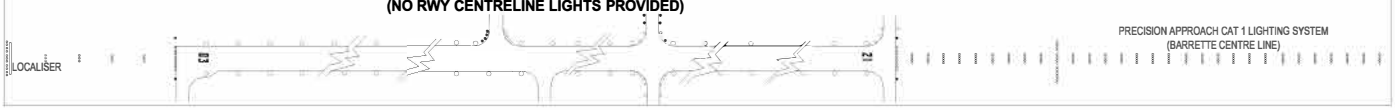
* MEHT : Minimum Eye Height Over the Threshold

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

MARKING AIDS RWY 03/21 AND EXIT TWY



LIGHTING AIDS RWY 03/21 AND EXIT TWY (NO RWY CENTRELINE LIGHTS PROVIDED)



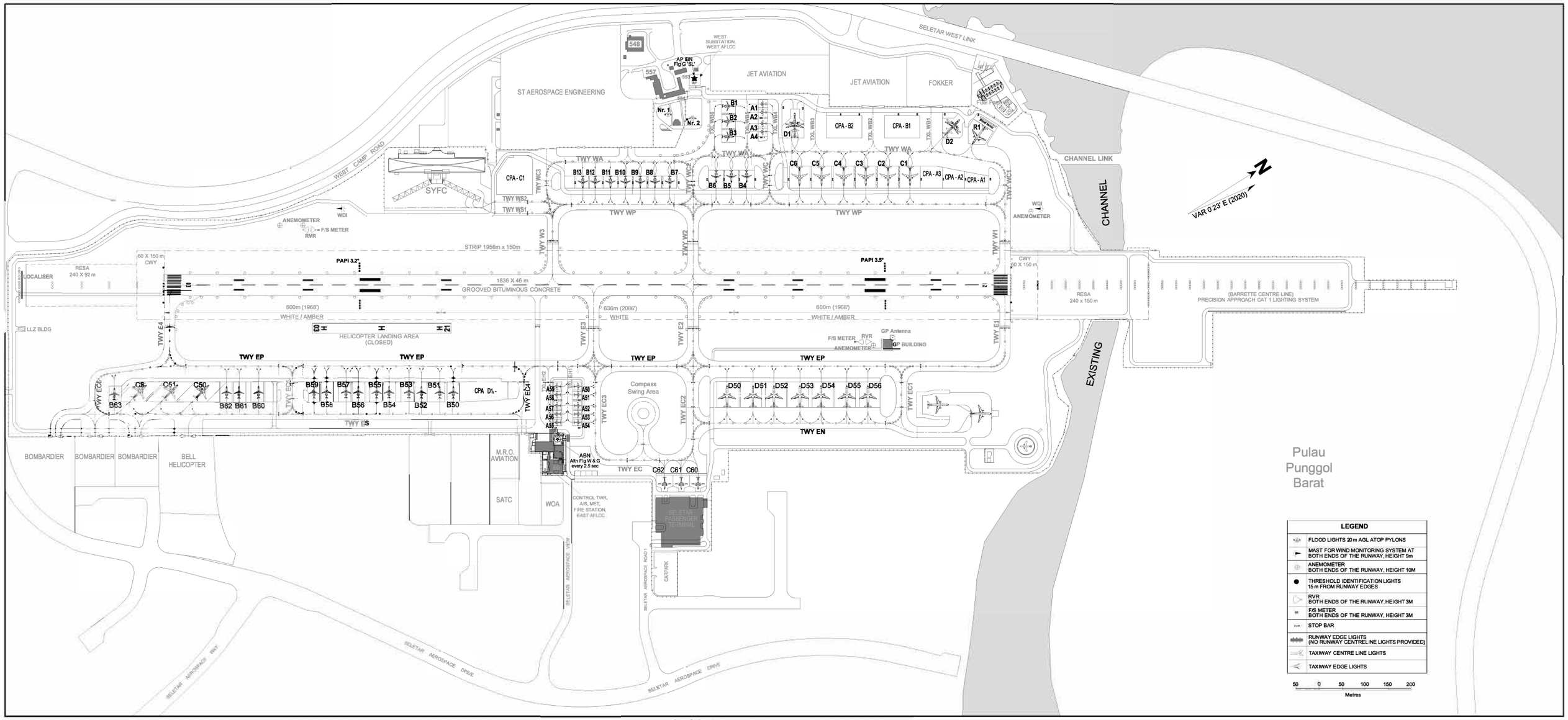
CHANGES : Added annotation "NO RWY CENTRELINE LIGHTS PROVIDED" to LIGHTING AIDS RWY 03/21 AND EXIT TWY diagram.
Remove the word "New" from Seletar Passenger Terminal.
Helicopter landing area (HLA) closed.
Legend updated.

INS COORDINATES FOR AIRCRAFT STANDS

STAND NR	NORTH LATITUDE	EAST LONGITUDE	ELEVATION
A1	01 25 13.10	103 51 56.17	6.18m (20.28ft)
A2	01 25 12.78	103 51 56.65	6.34m (20.80ft)
A3	01 25 12.35	103 51 57.30	6.59m (21.61ft)
A4	01 25 12.03	103 51 57.79	6.76m (22.18ft)
A50	01 24 51.43	103 52 05.77	7.81m (25.62ft)
A51	01 24 51.11	103 52 06.25	7.95m (26.08ft)
A52	01 24 50.68	103 52 06.90	8.11m (26.59ft)
A53	01 24 50.36	103 52 07.39	8.21m (26.94ft)
A54	01 24 50.04	103 52 07.87	8.34m (27.35ft)
A55	01 24 48.59	103 52 06.93	8.75m (28.71ft)
A56	01 24 48.91	103 52 06.44	8.59m (28.17ft)
A57	01 24 49.24	103 52 05.96	8.40m (27.57ft)
A58	01 24 49.67	103 52 05.31	8.18m (26.84ft)
A59	01 24 49.99	103 52 04.82	8.01m (26.29ft)
B1	01 25 11.40	103 51 55.23	6.30m (20.67ft)
B2	01 25 10.82	103 51 56.12	6.64m (21.78ft)
B3	01 25 10.22	103 51 57.01	6.97m (22.86ft)
B4	01 25 09.18	103 52 00.36	7.70m (25.27ft)
B5	01 25 08.26	103 51 59.76	7.93m (26.03ft)
B6	01 25 07.35	103 51 59.16	8.16m (26.78ft)
B7	01 25 04.51	103 51 57.52	8.44m (27.70ft)
B8	01 25 03.64	103 51 56.95	8.41m (27.58ft)
B9	01 25 02.77	103 51 56.38	8.40m (27.55ft)
B10	01 25 01.89	103 51 55.81	8.38m (27.51ft)
B11	01 25 01.01	103 51 55.24	8.33m (27.33ft)
B12	01 25 00.11	103 51 54.65	8.45m (27.72ft)
B13	01 24 59.37	103 51 54.17	8.57m (28.12ft)
B50	01 24 43.89	103 52 00.88	8.75m (28.72ft)
B51	01 24 43.15	103 52 00.39	8.85m (29.03ft)
B52	01 24 42.06	103 51 59.68	8.99m (29.49ft)
B53	01 24 41.33	103 51 59.20	9.18m (30.13ft)
B54	01 24 40.15	103 51 58.44	9.36m (30.70ft)
B55	01 24 39.42	103 51 57.95	9.43m (30.95ft)
B56	01 24 38.35	103 51 57.25	9.59m (31.47ft)
B57	01 24 37.61	103 51 56.77	9.68m (31.76ft)
B58	01 24 36.46	103 51 56.02	9.81m (32.17ft)
B59	01 24 35.73	103 51 55.54	9.93m (32.58ft)
B60	01 24 32.42	103 51 53.38	10.09m (33.12ft)
B61	01 24 31.27	103 51 52.62	10.18m (33.39ft)
B62	01 24 30.53	103 51 52.14	10.25m (33.62ft)
B63	01 24 23.86	103 51 47.94	10.64m (34.91ft)
C1	01 25 18.80	103 52 06.63	5.11m (16.75ft)
C2	01 25 17.50	103 52 05.77	5.42m (17.79ft)
C3	01 25 16.19	103 52 04.92	5.76m (18.90ft)
C4	01 25 14.89	103 52 04.07	6.26m (20.53ft)
C5	01 25 13.58	103 52 03.21	6.82m (22.39ft)
C6	01 25 12.28	103 52 02.36	7.30m (23.96ft)
C50	01 24 29.48	103 51 51.40	10.38m (34.06ft)
C51	01 24 27.63	103 51 50.19	10.59m (34.74ft)
C52	01 24 25.78	103 51 48.98	10.77m (35.34ft)
C60	01 24 54.47	103 52 16.30	6.28m (20.60ft)
C61	01 24 53.48	103 52 15.65	6.30m (20.67ft)
C62	01 24 52.50	103 52 15.01	6.31m (20.71ft)
D1	01 25 14.66	103 51 58.15	6.41m (21.03ft)
D2	01 25 24.03	103 52 04.80	3.47m (11.39ft)
D50	01 25 00.06	103 52 11.56	6.68m (21.92ft)
D51	01 25 01.59	103 52 12.56	6.44m (21.13ft)
D52	01 25 02.83	103 52 13.37	6.28m (20.60ft)
D53	01 25 04.36	103 52 14.37	6.04m (19.82ft)
D54	01 25 05.60	103 52 15.18	5.82m (19.09ft)
D55	01 25 07.13	103 52 16.18	5.55m (18.21ft)
D56	01 25 08.37	103 52 17.00	5.32m (17.45ft)

SELETAR AERODROME

LAYOUT OF SIGNIFICANT AERODROME BUILDINGS AND APRON FACILITIES



LEGEND	
	FLOOD LIGHTS 20 m AGL ATOP PYLONS
	MAST FOR WIND MONITORING SYSTEM AT BOTH ENDS OF THE RUNWAY, HEIGHT 9m
	ANEMOMETER BOTH ENDS OF THE RUNWAY, HEIGHT 10M
	THRESHOLD IDENTIFICATION LIGHTS 15 m FROM RUNWAY EDGES
	RVR BOTH ENDS OF THE RUNWAY, HEIGHT 3M
	F/S METER BOTH ENDS OF THE RUNWAY, HEIGHT 3M
	STOP BAR
	RUNWAY EDGE LIGHTS (NO RUNWAY CENTRELINE LIGHTS PROVIDED)
	TAXIWAY CENTRE LINE LIGHTS
	TAXIWAY EDGE LIGHTS

50 0 50 100 150 200
Metres

CHANGES : Legend updated.
Remove the word "New" from Seletar Passenger Terminal.
Helicopter landing area (HLA) closed.

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RADIO NAVIGATION AND LANDING AIDS					
ILS LLZ RWY 36	ITN	108.1 MHz	H24	012408.43N 1034234.34E	Located 260m from THR RWY 18 along centreline of RWY. Course width 3°
ILS GP RWY 36	-	334.7 MHz	H24	012240.84N 1034231.01E	GP antenna 3°
ILS DME RWY 36	ITN	CH18X	H24	012241.02N 1034226.67E	DME co-located with GP

WSAT AD 2.20 LOCAL AERODROME REGULATIONS

1 INTRODUCTION

1.1 RSAF Tengah Air Base is nominated as the emergency diversionary aerodrome for Singapore Changi Airport. The arrangement outlined below is applicable for the handling of any civil aircraft movement that is diverted to RSAF Tengah Air Base.

1.2 It is emphasised that RSAF Tengah Air Base **is not an ICAO designated alternate aerodrome for Singapore Changi Airport** and therefore should not be flight planned as such. Its use by civil aircraft is permitted for emergency purposes only when Singapore Changi Airport runway is obstructed.

2 MANNING OF TENGAH AIR BASE

2.1 Tengah Air Base is open from 2300-1100 SUN/MON to THU/FRI. It is closed on SAT, SUN and public holidays. Outside the above stipulated operating hours, Tengah Air Base can be opened on 2 hours' prior notice. This arrangement, if necessary, will be undertaken by the Duty Tower Controller or SATCC Watch Manager of Singapore Changi Airport who will inform RSAF Headquarters via Tengah Ops.

2.2 Airline operators are requested to inform the Airport Manager and the Duty Tower Controller or SATCC Watch Manager at Singapore Changi Airport as soon as it is known that their service will require the use of Tengah Air Base. Revised ETAs/ETDs are to be notified as soon as known.

3 OPERATIONAL SERVICES

3.1 The layout of Tengah Airbase with the aircraft parking apron which is available for the use of civil aircraft (except B747 aircraft types) in the event of an emergency diversion from Singapore Changi Airport, is indicated in page WSAT AD 2-11. It is to be noted that only a limited number of civil aircraft can be accommodated at any one time.

3.2 Air-ground-air communication maintained by RSAF Tengah Tower/APP for AD Control Services is VHF 122.0MHz.

4 PASSENGER CLEARANCE

4.1 Once the aircraft has shutdown, only the Captain of the aircraft will be allowed out of the aircraft. All other passengers will remain in the aircraft due to space constraints and to avoid possible immigration problems.

4.2 Arrangements will be made to transport all the passengers back to Singapore Changi Airport for immigration processing.

4.3 The Airport Manager or his representative will be present at the Passenger Terminal to provide assistance when aircraft are required to land at Tengah Air Base.

4.4 No refreshment facilities are available.

5 SECURITY

5.1 All Airline personnel who are required to proceed to Tengah Air Base must wear their Singapore Changi Airport Passes at a prominent position and they will be escorted to the respective areas. All personnel not in possession of the laminated pass except Customs and Government Officers in uniform will be denied entry into Tengah Air Base by the RSAF Security Guard. Entry into the Air Base by both the airline personnel and service equipment is via the main gate. The Airline Engineering Coordinator shall be responsible for the proper positioning of the ground servicing equipment and vehicles in the Apron Area where arriving aircraft are to be parked.

5.2 No equipment, vehicles, stores, cargo or mail shall be left overnight at Tengah Air Base.

5.3 The security of civil aircraft parked in the Apron is the responsibility of the aircraft owner and any security service obtained shall first be cleared with the Tengah Air Base Security Authorities.

6 AIRCRAFT STAND ALLOCATION

6.1 Aircraft parking positions will be issued by the RSAF Tower Controller. A “follow-me” vehicle will be waiting at the accesses to guide the aircraft to the allocated parking stands.

7 COMMUNICATIONS

7.1 No VHF RTF surface movement frequency is available at Tengah Tower. Communication with the Tower will be by telephone, the nearest of which is in the Fire Station Building in front of the aircraft parking apron.

8 FUEL

8.1 Fuel available JET A1 F3X.

9 AIRCRAFT SERVICES

9.1 Airlines will have to provide their own services. Limited aircraft services can be obtained from the Aircraft Maintenance Unit by prior arrangement only.

9.2 Where essential facilities and services are not available at Tengah Air Base, such as the disposal of toilet waste or refuse, the resources available at Singapore Changi Airport shall be used.

10 RESCUE AND FIRE FIGHTING FACILITIES

10.1 The rescue and fire fighting facilities available at Tengah Airbase is up to ICAO CAT 8.

11 FULL EMERGENCY/CRASH PROCEDURE

11.1 In the event of a Full Emergency being declared on a civil aircraft diverted to Tengah Air Base, Full Emergency/Crash Procedures applicable to Singapore Changi Airport will equally apply to Tengah Air Base.

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

11.3 The assembly point for all units attending to the Full Emergency incident will be at the Fire Station. No casualty clearance station is available at Tengah Air Base and in the event of an aircraft crash occurring, casualties if any, will be transported directly from the scene of crash to the Singapore General Hospital.

12 ATC SERVICE OUTSIDE OPERATING HOURS

12.1 Normal radar service will be provided by Singapore Radar (Civil). All aircraft diverting to Tengah will be vectored by Approach Control to SJ or to an agreed transfer control point before they are handed over to Tengah Tower. No radar service will be provided by Tengah.

WSAT AD 2.24 CHARTS RELATED TO AN AERODROME

AERODROME CHART - TENGAH	AD-2-WSAT-ADC-1

WIDN - TANJUNGPINANG / RAJA HAJI FISABILILLAH (INDONESIA)

Note: The following sections in this chapter are intentionally left blank:
AD 2.2, AD 2.3, AD 2.4, AD 2.5, AD 2.6, AD 2.7, AD 2.8, AD 2.9, AD 2.10, AD 2.11, AD 2.12, AD 2.13, AD 2.14, AD 2.15, AD 2.16, AD 2.19, AD 2.20, AD 2.21, AD 2.22, AD 2.23, AD 2.24, AD 2.25.

WIDN AD 2.1 AERODROME LOCATION INDICATOR AND NAME

WIDN - TANJUNGPINANG / RAJA HAJI FISABILILLAH (INDONESIA)

WIDN AD 2.17 ATS AIRSPACE

1	*Designation and Lateral Limits*	**Tanjungpinang North Control Zone (CTR):** 011553N 1040852E - 011638N 1041620E - 011305N 1042029E - 010942N 1043500E Thence along the circle radius 27 NM from “BTM” VOR/DME clockwise until 004236N 1041654E - 005315N 1040335E - 010018N 1035530E - 011553N 1040852E. **Tanjungpinang South Control Zone (CTR):** 004236N 1041654E Follow the circle radius 27 NM from “BTM” VOR/DME anticlockwise until 010942N 1043500E - 010342N 1050018E Thence along the circle radius 30 NM from 005511N 1043134E clockwise until 002448N 1043700E - 004236N 1041654E.
2	*Vertical Limits*	**Tanjungpinang North Control Zone (CTR):** GND/WATER up to 3,000ft **Tanjungpinang South Control Zone (CTR):** GND/WATER up to 6,000ft
3	*Airspace Classification*	C
4	*ATS Unit Callsign*	APP: Tanjungpinang Radar TWR: Raja Tower
5	*Language(s)*	English
6	*Transition Altitude*	11,000ft / FL 130
7	*Hours of applicability*	H24
8	*Remarks*	Aerodrome Control Service is provided within vicinity of Raja Haji Fisabilillah Aerodrome

WIDN AD 2.18 ATS COMMUNICATION FACILITIES

Service designation	Callsign	Channel	SATVOICE number (s)	Logon Address	Hours of operation	Remarks
APP	Tanjungpinang Radar	130.2 MHz 119.35 MHz(SRY)	Nil	Nil	H24	TWR Coordinates: 005524.59N 1043144.53E
TWR	Raja Tower	118.95 MHz	Nil	Nil	0000-1100	

WIDN AD 2.24 CHARTS RELATED TO AN AERODROME

See AIP Indonesia WIDN AD 2.24.

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