ENR 1 GENERAL RULES AND PROCEDURES

ENR 1.1 GENERAL RULES

1 INTRODUCTION

1.1 The air traffic rules and procedures applicable to air traffic within the Singapore FIR conform to Annexes 2 and 11 to the Convention on International Civil Aviation and to those portions on the Procedures for Air Navigation Services – Air Traffic Management applicable to aircraft and of the regional Supplementary Procedures applicable to the Asia Pacific Region except for the differences listed in GEN 1.7.

1.2 Additionally, aircraft in flight shall comply with the instrument flight rules (IFR) or the visual flight rules (VFR). An aircraft operating between the hours of sunset and sunrise, irrespective of weather conditions shall comply with IFR requirements or, if in a control zone during these hours, shall require special authorisation from ATC.

1.3 Aircraft operating in controlled airspace shall comply with any instruction, clearance or request issued by ATC, or shall immediately advise ATC if unable to comply. Aircraft operating on ATS routes are to maintain track centreline.

2 FLIGHTS ON AIRWAYS

2.1 SEPARATION

2.1.1 Areas of responsibility for the control of flights on airways and the units providing this service are shown in subsection ENR 2.1.

2.1.2 Separation is based on:

a) Estimated and actual times over position reporting points;
b) Reports of visual sighting; and
c) Radar identification.

Note: As position reports are most commonly used it is important for estimates to be revised and notified to the ACC if more than 2 minutes in error.

2.1.3 To preserve standard vertical separation from aircraft operating above and below controlled airspace in the Singapore/Johor Airspace Complex, aircraft shall not be flown within 500ft of the upper and lower limits. Similarly, an encroachment on the horizontal limits of these airspaces should be avoided because of the proximity of restricted and danger areas.

2.2 COMMUNICATIONS AND RADIO NAVIGATION REQUIREMENTS

2.2.1 All aircraft operating under IFR or VFR within controlled airspaces shall be equipped with appropriate communications and navigation equipment enabling them:

a) To maintain two-way communication with the appropriate ATC unit. The minimum requirement is VHF RTF equipment suitable for communicating on ATC frequencies and HF RTF beyond the range of VHF.

b) To maintain track within the lateral limits of the airway and to navigate in accordance with ATC instructions. The minimum requirement is one radio compass.

2.2.2 The pilot-in-command shall maintain a continuous listening watch on the appropriate air/ground frequency.

2.3 AIR TRAFFIC CONTROL CLEARANCE

2.3.1 An air traffic control clearance is an authorisation by ATC for an aircraft to proceed under specified traffic conditions within controlled airspaces. If for any reason an air traffic control clearance is not acceptable to the pilot-in-command, he may request an alternative clearance.

2.3.2 The pilot-in-command shall obtain an air traffic control clearance prior to operating in a controlled airspace.

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2.3.3 An air traffic control clearance will contain the following items:

a) Aircraft identification;
b) Clearance limit and route instruction;
c) Level assignment;
d) Departure instruction when necessary;
e) Approach instruction when necessary;
f) Clearance expiry time when necessary; and
g) Any special instructions and information.

2.3.4 **Request for Amended Clearance**. If the amended clearance is requested at a time a position report is made, the information contained in that report shall be given on the assumption that the aircraft is proceeding in accordance with the current clearance, and not with that which is being requested.

2.3.5 The contents of an air traffic control clearance or any revisions thereto shall apply only to those portions of the flight conducted within controlled airspaces.

2.3.6 An air traffic control clearance may be issued direct to an aircraft by an ACC or through an aerodrome control unit or an air/ground HF RTF communications unit.

2.3.7 Phrases used in air traffic clearances will have the following meanings:

a) “Clearance expires at ..... (time)”.
If the aircraft is not airborne by the time stated, a fresh clearance shall be obtained.
b) “Depart not before ..... (time)”.
An aircraft will not be cleared for departure until the time specified.
c) “Unable to approve ..... (flight planned level)”.
When ATC is unable to approve the flight planned level, an alternative level will be offered whenever possible, to avoid or reduce delay.

2.3.8 A pilot-in-command operating under VFR in controlled airspaces shall not enter instrument meteorological conditions without first obtaining an ATC clearance in accordance with the procedure laid down for flights joining airways. Until such clearance is received, the aircraft must remain in VMC.

2.3.9 Where a flight plan specifies IFR for the first portion of a flight and VFR for the latter portion, the aircraft will normally be cleared to the point where IFR terminates. (Clearance is not necessary beyond that point unless within the Singapore-Johor Airspace Complex and CTR).

2.3.10 If an ATC clearance stipulates VFR climb or descent and it becomes evident to the pilot-in-command that VMC cannot be maintained, he shall hold in VMC and request an alternative clearance.

2.3.11 The pilot-in-command having acknowledged an air traffic control clearance shall not deviate from the provisions of the clearance unless an amended clearance has been obtained.

2.3.12 Subsection ENR 1.6 provides guidance to pilot-in-command compelled to deviate from the provisions of an air traffic control clearance because of communications failure.

2.3.13 A flight shall normally be cleared to the aerodrome of first intended landing and the point of leaving controlled airspace or, in the case of a flight where prior co-ordination with an adjacent unit cannot be established, the FIR boundary. This is known as the clearance limit.

2.3.14 An aircraft which has been cleared to an intermediate point en-route to await further ATC clearance will whenever possible, be issued the required ATC clearance at least 5 minutes before the aircraft arrives at the clearance limit, unless the pilot is instructed to hold over the intermediate holding point until a specified time.

2.3.15 In the event of an aircraft arriving at the clearance limit without having received a further clearance, the pilot-in-command shall immediately request a further clearance and hold in accordance with the specified holding pattern where one is established or otherwise the standard holding pattern, maintaining the last assigned cruising level until further clearance is received. Where no direct ATC coordination facilities between Regional Area Control Centres exist, pilots on such routes must endeavour, when

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airborne, to contact the Area Control Centre of the next FIR which the aircraft is entering and obtain clearance to enter its Control Area before reaching the transfer point of the two ACCs.

2.3.16 When a flight operates successively in a Control Area and subsequently along the advisory route or area, the clearance issued for the flight or any revisions thereto will only apply to those portions of the flight conducted within controlled airspaces.

2.4 ROUTE AND LEVEL ASSIGNMENT

2.4.1 The pilot-in-command shall fly in strict accordance to the route specified by ATC. Deviation from the specified route may be permitted by ATC if traffic conditions permit.

2.4.2 Traffic permitting ATC will assign the flight planned level if in accordance with the table of Semi-Circular System of Cruising Levels. Cruising levels below the minimum specified in subsection ENR 3.1 will not be assigned.

2.5 ESSENTIAL TRAFFIC INFORMATION

2.5.1 Essential traffic is that controlled traffic to which the provision of separation by ATC is applicable but, which in relation to a particular controlled traffic, does not have the required minimum separation.

2.5.2 Essential traffic information will be issued to controlled flights concerned whenever they constitute essential traffic to each other.

Note: This information will inevitably relate to controlled flights which are cleared subject to maintaining own separation and remaining in visual meteorological conditions.

2.5.3 Essential traffic information will include:

a) Direction of flight of aircraft concerned;
b) Type of aircraft concerned;
c) Level(s) of aircraft concerned and estimated time of passing or if this is not available, the estimated time of arrival for the reporting point nearest to where the level will be crossed.

2.6 INSTRUCTIONS TO DEPARTING AIRCRAFT

2.6.1 ATC may specify any or all of the following items when issuing clearance to departing aircraft:

a) Turn after take-off;
b) Track to make good before turning on desired route;
c) Initial level to maintain;
d) Time, point and/or rate at which level change shall be made.

2.6.2 ATC may instruct a departing aircraft to leave a reporting point at a specified time or to be at a specified level at a specified point or time. The pilot-in-command shall notify ATC if these instructions cannot be complied with.

2.7 ARRIVAL/APPROACH INSTRUCTIONS

2.7.1 ATC clearance or control instructions for approach to an aerodrome or holding point will be issued to an arriving aircraft on initial contact with the appropriate ATC unit.

2.7.2 The clearance will specify the clearance limit, route and level to be flown. An Expected Approach Time will be included if it is anticipated that the arriving aircraft will be required to hold.

2.7.3 Pilots are reminded to use the phraseology minimum fuel and MAYDAY MAYDAY MAYDAY fuel to notify ATC of their low fuel state or fuel emergency. For details, refer to CAAS Information Circular IC 5/ 2013 available at URL https://www.caas.gov.sg - Regulations - Safety - Documents and Notices - Information Circulars.

2.8 WEATHER INFORMATION

2.8.1 Weather information is passed to inbound aircraft on request. However, pilots should tune on to ATIS frequency 128.025 MHz for the weather.

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2.8.2 The term CAVOK will be used in place of visibility, weather and cloud when the following conditions apply simultaneously:

a) Visibility 10km or more;
b) No precipitations or thunderstorms;
c) No cloud below 1 500m.

2.8.3 Deterioration and improvement weather reports and significant weather information, e.g. severe turbulence, thunderstorms, icing conditions etc. will be passed to all aircraft concerned.

2.9 AIRCRAFT JOINING OR CROSSING AIRWAYS

2.9.1 Pilots-in-command of aircraft joining or crossing an airway will:

a) When flying under VFR outside the Singapore/Johor Airspace Complex and CTRs notify the appropriate authority; or
b) When flying under IFR, or when joining or crossing the Singapore/Johor Airspace Complex and CTRs request clearance from the appropriate authority not later than 10 minutes on VHF RTF or 20 minutes on HF RTF before joining or crossing.

2.9.2 An in-flight request or notification or intention to join an Airway shall include the following information, as appropriate:

a) Aircraft identification;
b) Aircraft type;
c) Position;
d) Level and flight conditions;
e) Estimated time at point of joining;
f) Desired level;
g) Route and point of first intended landing;
h) True airspeed;
i) The words “Request joining clearance”.

2.9.3 An in-flight request or notification of intention to cross an Airway shall include the following information:

a) Aircraft identification;
b) Aircraft type;
c) True track;
d) Place and estimated time of crossing;
e) Desired crossing level;
f) Ground Speed;
g) The words “Request crossing clearance”

2.9.4 The selected crossing or joining point should, where possible, be associated with a radio facility to assist accurate navigation.

2.10 VFR Flights Crossing Airways

2.10.1 VFR flights intending to cross Airways outside the Singapore/Johor Airspace Complex shall only cross them at various levels plus 500ft at an angle of 90° to the direction of the Airway, or as close as possible to this angle. Condition for operation of VFR flights are given in ENR 1.2.

2.10.2 In an emergency, where neither a radar nor a procedural crossing can be obtained, an Airway may be crossed at various levels plus 500ft. The various levels referred to are flight levels of whole thousands in feet.

2.11 TEMPORARY DANGER AREAS ON AIRWAYS

2.11.1 Military operations, both air and ground, frequently take place within the Singapore FIR and airspace within the Jakarta FIR where ATS is provided by Singapore (see ENR 2.1). Danger Areas will be promulgated by NOTAM, giving the reference point, vertical extent, radius and duration of the operation.

2.11.2 Where danger areas infringe controlled airspace, the areas will not be available for use by civil aircraft at the levels affected.

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2.12 SINGAPORE/JOHOR AIRSPACE COMPLEX - SPECIAL REQUIREMENTS

2.12.1 All flights, IFR and VFR, conducted within the Singapore/Johor Airspace Complex are subject to an Air Traffic Control Clearance and are regulated in accordance with IFR separation standards.

2.12.2 Singapore ACC performs both Area and Approach Control functions for all aircraft landing at Singapore Changi and Seletar Airports. Procedural traffic bound for RSAF Paya Lebar, Tengah or Sembawang are likewise controlled by Singapore ACC but such traffic will normally be released to the respective military aerodrome/approach unit according to traffic circumstances and at the most convenient point within the Singapore/Johor Airspace Complex. Due to the close proximity of these aerodromes, all FIR procedural traffic are processed in order of priority irrespective of destination and slight delays may be expected. The pilot-in-command will call the appropriate Tower at the time, level or place specified by Singapore ACC.

2.12.3 Control instructions for arriving and departing aircraft will be issued in accordance with paras 2.6 and 2.7.

2.13 IFR FLIGHTS OUTSIDE SINGAPORE/JOHOR AIRSPACE COMPLEX IN VMC

2.13.1 The pilot-in-command of an aircraft operating under IFR within 183km (100NM) from Singapore Changi Airport below FL150 may request a VFR clearance for any portion of the flight. In the absence of such a request, ATC will issue a full IFR clearance regardless of weather conditions.

2.13.2 Outside the Singapore/Johor Airspace Complex within 100NM from Singapore Changi Airport, when necessary to expedite traffic, ATC may request a pilot-in-command under IFR below FL150 to conduct portion of the flight under VFR. An alternative clearance will be issued if the pilot-in-command has any doubt as to his ability to maintain VFR.

3 GENERAL FLIGHT PROCEDURES

3.1 RATE OF CLIMB AND DESCENT

3.1.1 Upon receipt of climb or descent instructions from ATC, the Pilot-in-Command shall carry out the climb or descent manoeuvre promptly on acknowledgement of clearance

3.1.2 The Pilot-in-Command of an aircraft commencing a climb or descent shall inform ATC if the anticipated ROC or ROD of aircraft will be lesser than 500ft per minute, or if it is necessary to level off at an intermediate Flight Level or altitude.

Note: This is not a restriction on ROC or ROD that is lesser than 500ft per minute for flight operations. ATC will require the information to better predict flight trajectory for separation purposes.

3.1.3 When ACAS produces a resolution advisory (RA), pilots shall take immediate actions to ensure separation from conflicting aircraft. This may involve following instructions to climb, descend, or as directed by the ACAS, even if the action conflicts with an instruction from the appropriate air traffic control unit.

3.1.4 Pilot-in-Command shall use appropriate procedures to ensure that the ROC or ROD of not exceeding 1500ft per minute is achieved throughout last 1000ft of climb or descent to assigned altitude or Flight Level unless the appropriate ATC unit instructs otherwise.

4 AIR TRAFFIC ADVISORY SERVICE

Not Provided

5 FLIGHT INFORMATION SERVICE

5.1 INTRODUCTION

5.1.1 Flight Information Service is provided to all flights.

5.1.2 Units providing FIS and the areas they serve are shown in section ENR 2.

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5.2 PROVISION OF FLIGHT INFORMATION SERVICE

5.2.1 Under this service the following information is provided to pilots by the FIC or at the request of the pilot:

a) SIGMET Information concerning tropical revolving storm, active thunderstorm areas, severe line squall, heavy hail, severe turbulence, severe icing and marked mountain waves, is provided;
b) Special Air-Reports are provided as available;
c) Landing Forecast (Trend Type) for Singapore is provided to turbine operations when approximately one hour from landing;
d) Aerodrome Forecasts are readily available on request for Singapore, Kuala Lumpur and Soekarno-Hatta; *Note: Aerodrome Forecasts for other aerodromes are also provided on request but are not readily available.*
e) Amended Aerodrome Forecasts for local as well as foreign aerodromes are provided as available;
f) Special Met Reports (aviation selected special weather reports) are provided for Singapore and Kuala Lumpur;
g) Met Reports (aviation routine weather reports) (half-hourly) are readily available on request for Singapore, Kuala Lumpur and Soekarno Hatta; *Note: Met Reports for other aerodromes are also provided on request but are not readily available.*
h) Upper-Air Information - Forecast of en-route upper winds and temperatures are available on request.

5.2.2 In addition, the FIC may arrange diversions of aircraft in consultation with the appropriate operating company representative.

Note: As traffic information may be based on data of doubtful accuracy and completeness and as it may be subject to communication delay, the FIC cannot assume any responsibility by issuing information or professing advice to aircraft in an endeavour to resolve an apparent hazardous traffic situation.

5.2.3 All aircraft on VFR flights and aircraft on IFR flights outside controlled airspace shall maintain watch on the frequency used by the unit providing flight information service and file with the station information as to their position.

Note: No information on position of surface vessels is provided by the Singapore ATC Centre.

6 AERODROME/APPROACH CONTROL SERVICE

6.1 INTRODUCTION

6.1.1 Aerodrome/Approach Control issue air traffic control clearances, instructions and information to aircraft to ensure the safe, orderly and expeditious flow of air traffic.

6.1.2 In VMC all aircraft flying in a control zone (CTR) or aerodrome traffic zone (ATZ) come under Aerodrome Control. This does not, however, relieve the pilot-in-command from responsibility for avoiding collision.

6.1.3 In VMC control of traffic on the runway in use and in the air is shared between Aerodrome Control and Approach Control. Normally, departing aircraft is the responsibility of Approach Control when airborne, whilst arriving aircraft is handed over to Aerodrome Control after it has been properly sequenced for an approach to land. The actual point of transfer depends on traffic conditions and is coordinated between the two units. Control of traffic on other parts of the manoeuvring area, with the exception of the marshalling area, is the responsibility of Aerodrome Control.

6.1.4 CTR dimensions and controlling authorities are specified in section ENR 3.

6.2 PROCEDURE

6.2.1 Holding, instrument approach, arrival and departure procedures are specified in subsections ENR 1.5 and ENR 3.6.

6.2.2 Radio communication shall be established with the appropriate Aerodrome/Approach Control Unit:

a) Prior to taxiing for departure; or
b) When intending to operate in a CTR, CTA or ATZ.

6.2.3 For IFR or VFR operation in a CTR, aircraft shall be equipped with appropriate two-way VHF radio apparatus, plus a radio compass. Exemptions may be granted by the appropriate Controlling Authority.

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6.2.4 A pilot-in-command under IFR or VFR intending to enter, cross or operate within a CTR or ATZ shall request a clearance from the Aerodrome/Approach Control on the appropriate radio frequency. He shall:

a) Pass the aircraft's position, level, track and estimated time of crossing the zone boundary;
b) Maintain a continuous listening watch on that frequency while the aircraft is within the zone;
c) Navigate in accordance with the flight plan and ATC clearance;
d) Carry out any instructions received from Aerodrome/Approach Control.

6.2.5 All flights within a CTR, at night or in IMC, shall be conducted in accordance with IFR or special authorisation by ATC. However, in order to expedite traffic, ATC may clear an aircraft for a visual approach if weather conditions permit.

6.2.6 Special VFR Flight

6.2.6.1 A Special VFR flight is a VFR flight cleared by air traffic control to operate within a control zone in meteorological conditions below VMC.

6.2.6.2 Special VFR flights may be authorised to enter a control zone for the purpose of landing or to take-off and depart directly from a control zone when the ground visibility is not less than 1.5km (1 mile). The pilot of an aircraft on a Special VFR flight:

a) Must comply with ATC instructions;
b) Is responsible for ensuring that his flight conditions enable him to remain clear of cloud, determine his flight path with reference to the surface and keep clear of obstructions;
c) Is responsible for ensuring that he flies within the limitations of his licence. Controllers are not responsible for checking pilot's qualifications.

6.2.6.3 A Special VFR clearance shall be issued only when specifically requested by a pilot.

6.2.6.4 Before clearing a Special VFR flight a controller must consider the prevailing traffic conditions, the extent of the proposed flight and the availability of air/ground communications. IFR flights take precedence over Special VFR flights. Standard separation shall be provided:

a) Between IFR flights and Special VFR flights;
b) Between flights operating on Special VFR clearance except where a reduction is specifically authorised by CAAS.

6.2.6.5 Aircraft on Special VFR clearance are not normally given a specific height to fly but for the purpose of ensuring vertical separation from other aircraft flying above, the Special VFR flight may be required to fly not above a specified level.

6.3 SEPARATION MINIMA

6.3.1 All VFR or IFR flights within CTRs will be regulated in accordance with IFR separation standards unless the conditions stated in ENR 1.7 para 4.10.2 prevail. ATC Services are also provided to aircraft within ATZs.

6.4 WAKE TURBULENCE SEPARATION MINIMA

6.4.1 For arrival aircraft operating into Singapore Changi Airport, distance-based wake turbulence separation minima based on the ICAO seven wake turbulence groups will be applied.

Group	Weight	Wingspan
A	136,000kg or more	Less than or equal to 80m but greater than 74.68m
B		Less than or equal to 74.68m but greater than 53.34m
C		Less than or equal to 53.34m but greater than 38.1m
D	Less than 136,000kg but more than 18,600Kg	Greater than 32m
E		Less than or equal to 32m but greater than 27.43m
F		Less than or equal to 27.43m
G	18,600kg or less	N.A.

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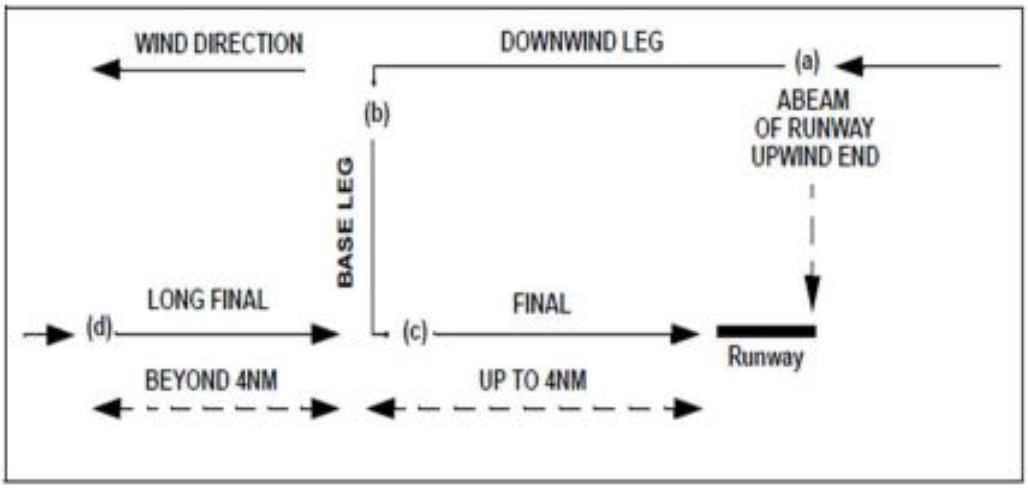
6.4.2 The wake turbulence separation minima are as follows:

		SUCCEEDING						
		A	B	C	D	E	F	G
PRECEEDING	A		4 NM	5 NM	5NM	6NM	6 NM	8 NM
	B			4 NM	4NM	5 NM	5 NM	7 NM
	C					3.5 NM	3.5 NM	6 NM
	D			3 NM				4 NM
	E							4 NM
	F							
	G							

6.5 VISUAL CIRCUIT REPORTING PROCEDURE

6.5.1 The pilot-in-command shall report position in accordance with the following diagram



a) Downwind
Aircraft shall report “Downwind” abeam the upwind end of the runway.
b) Base Leg
Aircraft shall report “Base Leg” on completion of the turn on to base leg.
c) Final
Aircraft shall report “Final” after completion of the turn on to final approach, not more than 4NM from the approach end of the runway.
d) Long Final
Aircraft flying a straight-in approach shall report “Long Final” 8NM from the approach end of the runway, and “Final” when at 4NM.

Note: At grass aerodrome, the area to be used for landing is regarded as the runway for the purposes of reporting position in the circuit.

6.6 USE OF RUNWAY

6.6.1 The Aerodrome Controller will nominate the runway direction according to prevailing conditions.

6.6.2 Notwithstanding the runway direction nominated by ATC, the pilot-in-command shall ensure that there is sufficient length of run and that the crosswind or downwind component is within the operational limits of each particular operation. If the nominated runway direction is not suitable for these reasons or for any other safety reason, he may request for an alternative runway direction. ATC will grant the use of an alternative runway direction but the flight may be subject to some delay because of other traffic.

6.6.3 The decision to undertake a take-off or landing rests solely with the pilot-in-command.

6.6.4 Unless prior permission has been obtained from ATC, the pilot-in-command shall not hold on the runway in use.

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6.6.5 Only one aircraft will be cleared to land on the runway in use at any one time.

6.6.6 In VMC, an aircraft may be cleared to continue approach to a runway occupied by a preceding aircraft but clearance to land will not be given until the runway is vacated.

6.7 CLOSURE OF AERODROMES

6.7.1 Aircraft will not be refused permission to land or take off from airfields in the Singapore FIR solely because of adverse weather conditions. The pilot-in-command of a public transport aircraft shall be responsible for operation in accordance with applicable company weather minima.

6.7.2 Aerodrome will be closed:

a) When the surface of the landing area is unfit (e.g. soft surface or dangerous obstruction on the manoeuvring area); or
b) At such other times and in conditions specified by NOTAM.

6.7.3 In an emergency, an aircraft will be permitted to land regardless of the conditions of the aerodrome and aerodrome facilities, but the pilot will be advised of these conditions.

6.8 REGULATING OF AIR TRAFFIC MOVEMENTS AFTER CLOSURE OF SINGAPORE CHANGI AIRPORT'S RUNWAY/ CONTROL ZONE

6.8.1 In order to prevent unnecessary air traffic congestion which normally occurs following the resumption of air traffic operations after the closure of the Singapore Changi Airport’s Runways/Control Zone, due to VIP Movement or Major Air Exercise, slot-times will be introduced to regulate the flow of aircraft which are scheduled to depart for a period of at least one hour after the commencement of operations. Thus, depending on the prevailing traffic conditions all such departures will be spaced at intervals of 5 minutes or more to minimise unnecessary delays on the ground, which may be caused by arriving aircraft.

6.8.2 During the one hour period, pilots will be required to give ATC 5 minutes notice prior to starting engines.

6.8.3 Slot time is defined as the time during which take-off clearance may be expected.

6.9 AIR TRAFFIC CONTROL CLEARANCES

6.9.1 All flights within a CTR, or ATZ, irrespective of weather conditions, require an air traffic control clearance.

6.9.2 The pilot-in-command of an aircraft departing from a CTR or an ATZ shall obtain an air traffic control clearance prior to departure.

6.9.3 A clearance to enter or cross a CTR or ATZ will include the following information:

a) A clearance limit and holding instructions, if necessary;
b) The route to be flown; and
c) The altitude or flight level.

6.10 NOISE ABATEMENT PROCEDURE

6.10.1 To alleviate the problem of noise, all aircraft on AWY G579 between SINJON and GUMPU shall operate at/above 5,000ft.

6.11 SPEED CONTROL PROCEDURES FOR ARRIVALS INTO AIRPORTS IN SINGAPORE

6.11.1 Speed control procedures are in force unless notified otherwise by ATC or on ATIS.

6.11.2 All arriving turboprop and turbo-jet aircraft are to fly not faster than indicated air speed 250 knots when within 40NM from airports in Singapore or when at or below 10,000ft. Aircraft cleared on RNAV STARS must comply with the published speed restrictions and transitions unless otherwise instructed by ATC.

6.11.3 All arrivals into Singapore Changi Airport instructed to intercept the final approach course, are to maintain 180 knots by 8NM from touchdown, and thereafter 150 knots till 4NM from touchdown.

6.11.4 Pilots who are unable to comply with the speed limits specified above for reasons of flight safety and/or weather must provide timely notifications to ATC and state the acceptable speed(s) which is appropriate.

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6.12 AUTHORIZATION

6.12.1 Either an IFR clearance or a Special VFR authorisation shall be issued by Air Traffic Control prior to every movement within a control zone in the following weather conditions:

When the ceiling is less than 1,500ft and/or a visibility less than 5km.

6.12.2 The deciding factors determining whether conditions are such that compliance with IFR or Special VFR authorisation is required will be the official meteorological observations.

6.12.3 When a pilot so requests and traffic conditions permit, Special VFR flight may be authorised within control zones, clear of cloud and in sight of land or water.

6.12.4 When a Special VFR flight has been authorised, ATC will provide it with standard separation from other similar flights and any IFR flight.

6.12.5 Special VFR flights will not normally be given a special level to fly; they will be merely instructed to remain clear of cloud and in sight of land or water. If, however, it is necessary to provide vertical separation from aircraft above, the Special VFR flight will be instructed not to fly above a certain level.

6.12.6 A Special VFR flight may be required to make good a prescribed track. When no track is prescribed, the pilot must fly directly towards his destination or towards the first turning point shown in the flight plan.

6.12.7 Special VFR absolves the pilot from complying with Instrument Flight Rules. Special VFR flight does not, however, absolve the pilot-in-command from the responsibility of maintaining minimum safe levels as prescribed in Part 2, para 5 of the eleventh Schedule of the Air Navigation Order. He must comply with ATC instructions and it will be entirely his responsibility to ensure that his flight conditions i.e. forward visibility and distance from cloud, will enable him to determine his flight path and remain clear of all obstructions.

6.12.8 Authorisation for Special VFR flight will depend not only upon zonal traffic conditions but also whether or not air/ground communications can be maintained and the extent of the flight proposed.

6.13 APPLICATION OF GENERAL FLIGHT RULES

6.13.1 Aircraft flying under Special VFR authorisation are subject to the general flight rules. Compliance with these rules is the responsibility of the pilot.

7 REQUIREMENTS FOR AERIAL PHOTOGRAPHY

7.1 Section 7 of the Air Navigation Act provides that no aerial photography of protected places in Singapore may be undertaken without the written permission of the Director-General of Civil Aviation. Applications for Aerial Photography Permits must be submitted in duplicate, one copy to the Director-General of Civil Aviation and the other copy to the Head, Field Security Branch, MINDEF, at least ten (10) days prior to the date of the photography flight.

8 LIGHT SIGNALS

Appendix A

Light	From Aerodrome Control To:	
Directed towards aircraft concerned	Aircraft in Flight	Aircraft on the Ground
STEADY GREEN	Cleared to land	Cleared for take-off
STEADY RED	Give way to other aircraft and continue circling	Stop
SERIES OF GREEN FLASHES	Return for landing *	Cleared to taxi
SERIES OF RED FLASHES	Aerodrome unsafe, do not land	Taxi clear of landing area in use

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Light	From Aerodrome Control To:	
SERIES OF WHITE FLASHES	Land at this aerodrome and proceed to apron *	Return to starting point on the aerodrome

* Clearance to land and to taxi will be thereafter given as a steady green light and a series of green flashes respectively.

9 DATA LINK SERVICES IN SINGAPORE FIR

9.1 BACKGROUND

9.1.1 Controller Pilot Data Link Communications (CPDLC) and Automatic Dependent Surveillance (ADS) data link applications will be used to provide services to FANS 1/A equipped aircraft, in particular within the Singapore FIR beyond the range of existing radar / ADS-B and VHF voice communications. Area Navigation (RNAV) routes suitable for ADS-C and / or CPDLC logon are described in ENR 3.2.

9.1.2 Messages will be transferred by VHF and satellite data link.

9.1.3 CPDLC supports the following services:

a) Emergency alerting;
b) Pilot to Controller downlink of position reports and clearance requests;
c) Controller to Pilot uplink of ATC clearances and instructions; and
d) Free text as a supplement to pre-formatted message elements.

9.1.4 Pre-Departure Clearance (PDC) via CPDLC is available on selected ATS routes/destinations as described in WSSS AD 2.22 paragraph 8.4.

9.1.5 Automatic Dependent Surveillance (ADS) supports automatic reporting by the aircraft Flight Management System (FMS) of aircraft position and intent information. The FMS reports the required information in accordance with parameters selected by the ground system.

9.2 LOGON PROCEDURES

9.2.1 The AFN LOGON address for the Singapore FIR is WSJC.

9.2.2 To avoid automatic rejection of the LOGON, the flight identification number used by the pilot in the LOGON process must be identical to the flight identification number filed in the flight plan.

9.2.3 A LOGON must be received from the aircraft before any data link connections can be initiated by the ground system. This is achieved via the ATS facility notification (AFN) LOGON process to be initiated by the pilot in accordance with company procedures.

9.2.4 Aircraft requesting data link services inbound to Singapore FIR are required to manually LOGON onto WSJC at least 10 minutes prior to the estimated time for entering Singapore FIR. Data link equipped aircraft departing from aerodromes within the Singapore FIR and requesting data link may LOGON to WSJC prior to departure. Pilots who are unable to establish a data link connection are to inform ATC on VHF or HF RTF.

9.2.5 Pilots are reminded to provide the flight level on first contact with HF, including when established on data link.

9.3 APPLICATION OF CPDLC

9.3.1 Aircraft operating outside radar coverage and not in the ADS-B exclusive airspace within the Singapore FIR shall establish contact with ATC using CPDLC as a primary means of communication except for the following:

a) prior instruction to contact ATC on VHF;
b) receive notice that CPDLC service is not available; and
c) during data link outage.

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9.3.2 To ensure the correct synchronisation of messages, controller/pilot dialogues opened by CPDLC must be closed by CPDLC. Controller/pilot dialogues opened by voice must be closed by voice.

9.3.3 Due to inherent integrity checks and a coded reference to any preceding related message contained within CPDLC messages, a clearance issued by CPDLC requires only the appropriate CPDLC response, not a read-back as would be required if the clearance had been issued by voice.

9.3.4 The down link response “WILCO” indicates that the pilot accepts the full terms of the whole uplink message.

9.3.5 A down link response “AFFIRM” is not an acceptable acknowledgement or reply to a CLEARANCE issued by CPDLC.

9.3.6 To avoid ambiguity in message handling and response, a CPDLC downlink message should not contain more than one clearance request.

9.3.7 If multiple clearance requests are contained in a single downlink message and the controller cannot approve all requests, the uplink message element “UNABLE” will be sent as a response to the entire message. A separate message containing a response to those requests that can be complied with will be sent by the controller.

9.3.8 If any ambiguity exists as to the intent of a particular message, clarification must be sought by voice.

9.3.9 Standard pre-formatted message elements must be used whenever possible. Free text messages should be used only when an appropriate pre-formatted message element does not exist or to supplement the pre-formatted message element. The use of free text should be kept to a minimum.

9.3.10 When CPDLC connection is established, aircraft will be instructed to transfer from voice to CPDLC.
The phraseology used is:
TRANSFER TO SINGAPORE CONTROL ON DATA LINK [position];
MONITOR [HF frequency primary/secondary]

9.3.11 Pilots should down link a CPDLC position report upon position over first compulsory reporting point when aircraft enters Singapore FIR.

9.3.12 CPDLC connections will be terminated at the FIR boundary position or when entering radar coverage. The CONTACT [unit name][frequency] message and the END SERVICE message will be sent as separate messages. The END SERVICE message will be sent as soon as possible after receipt of the WILCO response to the CONTACT message.

9.4 APPLICATION OF ADS

9.4.1 ADS Periodic contracts will be established automatically on receipt of a LOGON.

9.4.2 The Periodic reporting rate is 10 minutes for aircraft operating outside radar coverage and 15 minutes for aircraft operating within radar coverage.

9.4.3 For ADS logged-on aircraft, CPDLC position reports are required only when aircraft enters Singapore FIR upon the first compulsory reporting point.

9.4.4 ADS contracts will be terminated automatically at a system parameter time after the aircraft has left the Singapore FIR.

9.5 DATA LINK FAILURE

9.5.1 Pilots recognising a failure of a CPDLC connection must immediately establish communications on the appropriate voice frequency. When voice communications have been established, voice must continue to be used as the primary medium until a CPDLC connection has been re-established and the controller has authorised the return to data link.

9.5.2 In the event of an expected CPDLC shutdown, the controller will immediately advise all data link connected aircraft of the failure by voice. Instructions will continue to be issued by voice until the return of the data link system. The return of the system to an operational state will require a new AFN LOGON from the affected aircraft.

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9.6 FLIGHT PLAN NOTIFICATION

9.6.1 Aircraft planning to utilise data link communications must annotate their ICAO flight plan as follows:

a) Data link communication serviceability and capability must be notified by inserting one or more of the following letters in Item 10a (radio communication, navigation and approach aid equipment and capabilities):

J1	CPDLC ATN VDL Mode 2
J2	CPDLC FANS 1/A HFDL
J3	CPDLC FANS 1/A VDL Mode A
J4	CPDLC FANS 1/A VDL Mode 2
J5	CPDLC FANS 1/A SATCOM (INMARSAT)
J6	CPDLC FANS 1/A SATCOM (MTSAT)
J7	CPDLC FANS 1/A SATCOM (Iridium)
P1	CPDLC RCP 400
P2	CPDLC RCP 240
P3	SATVOICE RCP 400
P4-P9	Reserved for RCP

b) Aircraft registration must be inserted in Item 18 as the ground system uses the information during the AFN LOGON.

c) Serviceable ADS equipment carried must be annotated on the flight plan by adding one or more of the following descriptors to describe the serviceable surveillance equipment and/or capabilities on board:

B1	ADS-B with dedicated 1090MHz ADS-B “out” capability
B2	ADS-B with dedicated 1090MHz ADS-B “out” and “in” capability
U1	ADS-B “out” capability using UAT
U2	ADS-B “out” and “in” capability using UAT
V1	ADS-B “out” capability using VDL Mode 4
V2	ADS-B “out” and “in” capability using VDL Mode 4
D1	ADS-C with FANS 1/A capabilities
G1	ADS-C with ATN capabilities

d) Additional surveillance equipment or capabilities are to be listed in Item 18 following the indicator SUR/ .

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