REDUCED VERTICAL SEPARATION MINIMA (RVSM) CHINA AIRSPACE

Effective 21 NOV 07, 1600 UTC:

Metric RVSM will be implemented in the Shenyang, Beijing, Shanghai, Guangzhou, Kunming, Wuhan, Lanzhou, Urumqi FIRs and Sector AR01 (island airspace) of the Sanya CTA between 8900m (FL291) and 12500m (FL411) inclusive. The airspace between 8900m (FL291) and 12500m (FL411) is defined as RVSM airspace. China RVSM airspace is exclusive RVSM airspace, aircraft that are not RVSM compliant may not operate into China RVSM airspace between 8900m (FL291) and 12500m (FL411).

RVSM documentation can be accessed from: http://www.atmb.net.cn/rvsm

FLIGHT LEVEL ALLOCATION SCHEME (FLAS)

China RVSM Flight Level Allocation Scheme (FLAS) is based on Metric Flight Level. ATC will issue the Flight Level clearance in meters, the aircraft shall be flown using the flight level in FEET. There will be no change in flight level allocations and operations at 8400m (FL276) or below in non RVSM airspace.

Pilots should be aware that due to the rounding differences, the metric readout of the onboard avionics will not necessarily correspond to the cleared Flight Level in meters, however the difference will never be more than 30 meters.

Aircraft equipped with metric and feet altimeters shall use the FEET altimeter within RVSM flight level band.

TABLE OF FLIGHT LEVEL ALLOCATION

Aircraft equipped with the altimetry system not capable of flying in FEET shall not flight plan in RVSM airspace.

180° – 359°T			000° – 179°T		
Flight Levels			Flight Levels		
m	ft	FL	m	ft	FL
ETC	ETC	ETC	ETC	ETC	ETC
...	...	...	...	...	...
15500	50900	FL509	14900	48900	FL489
14300	46900	FL469	13700	44900	FL449
13100	43000	FL430	12500	41100	FL411
12200	40100	FL401	11900	39100	FL391
11600	38100	FL381	11300	37100	FL371
11000	36100	FL361	10700	35100	FL351
10400	34100	FL341	10100	33100	FL331
9800	32100	FL321	9500	31100	FL311
9200	30100	FL301	8900	29100	FL291
8400	27600	FL276	8100	26600	FL266
7800	25600	FL256	7500	24600	FL246
7200	23600	FL236	6900	22600	FL226
6600	21700	FL217	6300	20700	FL207
6000	19700	FL197	5700	18700	FL187
5400	17700	FL177	5100	16700	FL167
4800	15700	FL157	4500	14800	FL148
4200	13800	FL138	3900	12800	FL128
3600	11800	FL118	3300	10800	FL108
3000	9800	FL98	2700	8900	FL89
2400	7900	FL79	2100	6900	FL69
1800	5900	FL59	1500	4900	FL49
1200	3900	FL39	900	3000	FL30
600	2000	FL20			

NOTE: FL291-FL411 RVSM Airspace

AIRCRAFT EQUIPMENT

The Minimum Equipment List (MEL) fulfilling the Minimum Aircraft Systems Performance Specifications (MASPS) consists of: (see FAA Interim Guidance (IG) 91-RVSM/JAA TGL6). Before entering RVSM airspace, the pilot should review the status of required equipment should be operating normally:

a. two primary altimetry systems system should be capable that aircraft can be flown using FL in FEET;
b. one automatic altitude-keeping device; and
c. one altitude-alerting device.

Although ACASII (TCAS Version 7.0) is not specifically required for RVSM it is a requirement in Chinese airspace.

NOTE: The altimetry system requirement shall allow the aircraft to be flown using FEET flight levels.

RVSM COMPLIANCE OPERATIONS:

Qualifications

The operator shall ensure that the pilot has been trained on China RVSM Flight Level Allocation Scheme (FLAS) before the pilot can operate into China airspace.

Means of compliance

Except for State aircraft, operators intending to conduct flights within the volume of airspace where RVSM is applied shall require an RVSM approval either from the State in which the operator is based or from the State in which the aircraft is registered.
To obtain such an RVSM approval, operators shall satisfy the said State that:

a. aircraft for which the RVSM approval is sought have the vertical navigational performance capability required for RVSM operations through compliance with the criteria of the RVSM MASPS;
b. they have instituted procedures in respect of continued airworthiness (maintenance and repair) practices and programs, and
c. they have instituted flight crew procedures for operations in the China RVSM airspace.

NOTE 1: An RVSM approval is not restricted to a specific region. Instead - it is valid globally on the understanding that any operating procedures specific to a given region in this case the ME Region, should be stated in the operations manual or appropriate crew guidance.
NOTE 2: Aircraft that have received State approval for RVSM operations will be referred to as 'RVSM approved aircraft'.
NOTE 3: Aircraft that have not received State approval for RVSM operations will be referred to as 'non-RVSM approved aircraft'.

Guidance material of use to those involved in the initial achievement and continued maintenance of the height-keeping performance capability has been issued by ICAO under the title "Guidance Material on the Implementation of a 300m (1000ft) Vertical Separation Minimum (VSM) in the CH RVSM Airspace".

Detailed technical guidance material on the airworthiness, continued airworthiness, and the operational practices and procedures for the CH RVSM airspace is provided in the Joint Aviation Authorities "Administrative and Guidance Material, Section One: General, Part 3: Temporary Guidance Leaflet No. 6".

Monitoring of flight operations in the CH RVSM airspace shall be conducted to assess the continuing compliance of aircraft with the height-keeping performance requirements.

NOTE: Monitoring will be conducted in accordance with the appropriate material issued by ICAO. When notified, operators will be required to cooperate in the monitoring program.

For additional information refer to CAAC web page:
http://www.castc.org.cn/ccar129
Aircraft altitude—keeping performance monitoring Operators are required to participate in the RVSM aircraft monitoring program. Accessing the Monitoring Agency for Asia Region (MAAR):
http://www.aerothai.co.th/maar

For monitoring services in the China airspace operators should contact the MAAR monitoring contractor as follows:
Monitoring Agency for Asia region (MAAR) AEROTHAI
Address: 102 Ngamduplee Rd. Tungmahamek, Sathorn
Bangkok 10120, THAILAND
Tel: +66–2–287–8154 '
Fax: +66–2–287–8155
Email: maar@aerothai.co.th

COMMUNICATIONS

"Pilot level call"- Except in an ADS or radar environment, pilots shall report reaching any altitude assigned within RVSM airspace.

CONTROLLER / PILOT PHRASEOLOGY

Phrase	Purpose
(call sign) **CONFIRM RVSM APPROVED**	Used by the controller to ascertain the RVSM approval status of the acft.
NEGATIVE RVSM[1]	Used by the pilot to report non-RVSM approval status. a. on the initial call on any frequency within the CH RVSM airspace (controllers shall provide a read back with this same phrase), and b. in all requests for flight level changes c. in all read backs of flight level clearances pertaining to flight levels.
AFFIRM RVSM[1]	Used by the pilot to report RVSM approval status.
CONFIRM WHEN ABLE TO RESUME RVSM[1]	Used by the controller to request confirmation that an aircraft has regained RVSM approved status or a pilot is ready to resume RVSM operations.
(call sign) **UNABLE ISSUE CLEARANCE INTO RVSM AIRSPACE, MAINTAIN** [*or* **DESCEND TO,** *or* **CLIMB TO] FLIGHT LEVEL** *(number)*	Used to deny ATC clearance into CH RVSM airspace.
UNABLE RVSM DUE TURBULENCE[1]	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[1]	Used by the pilot to report that the aircraft's equipment has degraded below the minimum aircraft system performance specifications (MASPS).
READY TO RESUME RVSM[1]	Used by the pilot to report the ability to resume operations within the CH RVSM airspace after an equipment or weather-related contingency.
REPORT WHEN 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.
[1] indicates a pilot transmission	

WAKE TURBULENCE PROCEDURES

Pilots encountering or anticipating wake turbulence in Chinese RVSM airspace have the option of requesting;

a. FL change, or
b. a vector (if possible) or
c. a lateral offset (no clearance required in remote continental airspace).

STRATEGIC LATERAL OFFSET PROCEDURE (SLOP)

The flight crew may apply strategic lateral offsets on remote continental airspace (Non-radar airspace) when the aircraft is equipped with automatic offset tracking capability. The decision to apply a strategic lateral offset shall be the responsibility of the flight crew.

The strategic lateral offset shall be established at a distance of 1NM or 2NM to the right of the centre line of the en-route relative to the direction of flight. Pilots are not required to inform ATC that a strategic lateral offset is being applied.

Within radar airspace, the strategic lateral offset procedure requires approval by ATC. 1NM offsets are preferred within radar airspace. Pilots applying SLOP in non-radar airspace, may request approval from ATC to continue with the offset upon entering radar airspace.

AIRSPACE SAFETY ASSESSMENT AND MONITORING

Pilot of aircraft operating in accordance with IFR, when deviating for any reason by 90m (300ft) or more from cleared flight level by ATC in RVSM airspace, shall report to the relevant ATS unit concerned via radio or data link, as soon as practicable on the level deviation.

After completion of the flight, the pilot shall also report to the operator the details of deviation.

TRANSITION BETWEEN FL's

During cleared transition between levels, the aircraft should not overshoot or undershoot the assigned FL by more than 45m (150ft).

TRANSITION AREAS

Transition areas and procedures for transition between China RVSM and adjacent FIRs in neighboring countries are indicated on Jeppesen CH(H/L) enroute charts.

Special attention shall be given to the moment when the China meter to feet converse table shall be used for aircraft entering Chinese RVSM airspace;

a. Aircraft with primary FEET altimeters shall fly using the feet altimeter and use the China RVSM conversion table from the initial clearance to a FL in the China FLAS;
b. Aircraft with primary METER altimeters shall switch and fly using the FEET altimeter and use the China RVSM conversion table from the initial clearance to a FL in the China FLAS;
c. Aircraft equipped with the altimetry system not capable of flying in FEET shall not flight plan in RVSM airspace.

NOTE: It is highly recommended that the CAAC China RVSM Conversion Table be used; substantial human factor considerations were accounted for during its development.

Rule of thumb for transitions from ICAO Feet RVSM airspace to Chinese RVSM airspace: Flights entering China climb 100ft, flights leaving China RVSM descend 100ft.

FLIGHT PLANNING REQUIREMENTS

The letter "W" shall be inserted in item 10 (Equipment) of the ICAO standard flight plan to indicate that both the aircraft and operator are RVSM approved. The request metric flight level within China RVSM in Flight Plan shall be expressed as S followed by 4 figures (such as S1250, S1220 and S1190 represent 12500m, 12200m and 11900m respectively).

SPECIAL COORDINATION PROCEDURES FOR CRUISE OPERATION OF NON-RVSM APPROVED AIRCRAFT IN RVSM AIRSPACE

Aircraft that are not RVSM compliant may not flight plan between 8900m (FL291) and 12500m (FL411), except for the following situations:

a. The aircraft is being initially delivered to the State of Registry or Operator;
b. The aircraft was RVSM approved but has experienced an equipment failure and is being flown to a maintenance facility for repairing in order to meet RVSM requirements and/or obtain approval;
c. The aircraft is being utilized for mercy or humanitarian purposes;
d. State aircraft (those aircraft used in military, customs and police services shall be deemed state aircraft)

Aircraft operators requesting that approval shall, if departing from an airport within China FIR's, obtain approval from the Operational Management Center of ATMB of CAAC normally between 4 – 72 hours prior to the expected departure time. The assignment of cruising levels to non-RVSM approved aircraft as listed above shall be subject to an ATC clearance. Aircraft operators shall include the 'STS/Category of operations (i.e FERRY/HUMANITARIAN/MILITARY/ CUSTOMS/POLICE)/NON-RVSM COMPLIANT' in field 18 of the ICAO Flight Plan.

SUSPENSION OF RVSM

Air traffic services will consider suspending RVSM procedures within affected areas of Chinese FIRs when there are pilot reports of greater than moderate turbulence. Within areas where RVSM procedures are suspended, the vertical separation minimum between all aircraft will be 600m (2000ft).

The same RVSM FLAS will be used.

PROCEDURES FOR IMPLEMENTATION DAY

All aircraft that operate or are planning to operate in the RVSM Flight Levels within the China Sovereign Airspace at and beyond **21 NOV 07 1600 UTC** shall comply with the RVSM requirements described above.

All aircraft entering China Sovereign Airspace between 8900m (FL291) and 12500m (FL411) inclusive at and beyond **21 NOV 07 1600 UTC** will be assigned a Flight Level in accordance with the China RVSM FLAS.

All aircraft departing from China Sovereign Airspace airports that need to file a FL between 8900m (FL291) and 12500m (FL411) inclusive at and beyond 21 NOV 07 1600 UTC will be assigned a Flight Level in accordance with the China RVSM FLAS.

Aircraft operating within China Sovereign Airspace at **21 NOV 07 1600 UTC** can expect; **Implementation Phase 21 NOV 07 1530-1630 UTC**

15:30 UTC

ATC will broadcast: "Attention all aircraft, RVSM operations will begin in 30 minutes."

15:30 – 15:45 UTC

ATC will accommodate RVSM noncompliant aircraft at and below FL 8400m.

15:50 UTC

ATC will broadcast: "Attention all aircraft, RVSM operations will begin at 16:00 UTC."

16:00 – 16:30 UTC and onward

ATC will clear RVSM compliant aircraft to climb or descend to the nearest appropriate RVSM FL in accordance with the China RVSM FLAS.

All aircraft operating in RVSM airspace will be cleared in accordance with the China RVSM FLAS.

WEATHER ENCOUNTERS AND AIRCRAFT SYSTEM FAILURES

Initial Pilot Actions in Contingency Situations

Initial Pilot Actions when unable to maintain flight level (FL) or unsure of aircraft altitude-keeping capability:
Notify ATC and request assistance as detailed below:

– Maintain cleared flight level, to the extent possible, while evaluating the situation;
– Watch for conflicting traffic using all available means;
– Alert nearby aircraft by illuminating exterior lights (commensurate with aircraft limitations);
– If unable to contact ATC, broadcast position, flight level and intention on 121.5 MHz.

CONTIGENCY SCENARIOS

PILOT ACTION	CONTROLLER ACTION
Severe Turbulence and / or Mountain Wave Activity (MWA) Induced Altitude Deviation of Approximately 200 feet	
When experiencing severe turbulence and/or MWA induced altitude deviations of approximately 200 feet or greater, pilot will contact ATC and state: "Unable RVSM Due (state reason)"	Assess the traffic situation to determine if the aircraft can be accommodated through the provision of lateral, longitudinal or increased vertical separation and, if so, apply the appropriate minimum.
– If not issued by the controller, request vector clear of traffic at adjacent FL's;	– Advise pilot of conflicting traffic;
– If desired, request FL change;	– Issue FL change, traffic permitting
– Report location and magnitude or turbulence or MWA to ATC.	– Issue PIREP to other aircraft.
Mountain Wave Activity (MWA) Encounters-General	
– Contact ATC and report experiencing MWA; – If so desired, pilot may request a FL change. – Report location and magnitude of MWA to ATC	– Advise pilot of conflicting traffic at adjacent FL. If pilot requests, vector aircraft to avoid merging target with traffic at adjacent RVSM flight levels, traffic permitting; – Issue FL change or re-route, traffic permitting; – Issue PIREP to other aircraft.
Wake Turbulence Encounters	
– Contact ATC and request vector, FL change or if capable, a lateral offset.	– Issue vector, FL change or lateral offset clearance, traffic permitting
Unable RVSM Due to Equipment Failure of Automatic Altitude Control System, Altitude Alerter or All Primary Altimeters	
– Contact ATC and state "Unable RVSM Due Equipment" – Request clearance out of RVSM airspace unless operational situation dictates otherwise.	– Provide 600m (2,000ft) vertical separation or appropriate horizontal separation, – Clear aircraft out of RVSM airspace unless operational situation dictates otherwise.

One Primary Altimeter Remains Operational	
– Cross check stand-by altimeter; – Notify ATC of operation with single primary altimeter – If unable to confirm primary altimeter accuracy, follow actions for failure of all primary altimeters	– Acknowledge operation with single altimeter; – Relay to other controllers or facilities who will subsequently handle the aircraft and any special handling requirement or being provided.
Transponder Failure	
– Contact ATC and request authority to continue to operate at cleared flight level; – Comply with revised ATC clearance, if issued	– Consider request to continue to operate at cleared flight level; – Issue revised clearance, if necessary
Aircraft Requiring Rapid Descent	
– Notify ATC of aircraft location and request FL change as required; – Upon declaring an emergency a pilot may exercise his right and change his assigned flight level. He shall notify ATC immediately and submit a report upon arrival at the destination; – If unable to contact ATC and rapid descent required: – Deviation procedure for level change: turn 30° right and track out 20 kilometers (i.e. deviate right of airway centerline by 10 km or 5 nm), then, turn left to track parallel the original route, then climb or descend to the new level, and then return to the original one (when appropriate) **NOTE: when returning to the original route, be aware that there may be conflicting traffic on that route.** – Establish communications with and alert nearby aircraft by broadcasting, at suitable intervals: flight identification, flight	– Issue ATC clearance to change flight level

level, aircraft position and intention on the frequency in use, as well as on frequency 121.5 MHz (or, as a backup, the VHF inter-pilot air-to-air frequency 123.45 MHz) – Establish visual contact with conflicting traffic; – Turn on all aircraft exterior lights.	