Metric airspace and metric leveling

General info

Russia is very different. Russia uses the *Metric Leveling System*. The Metric Leveling System is applicable only within the airspace of Russia Federation, Kazakhstan, Kyrgyzstan and Uzbekistan.

The problem with the metric system is ofcourse that altitudes, airspeeds, windspeeds and altimeter settings will be given in units that you're not used to, so it takes a bit more brainpower to convert the ATC instructions into something that you can understand, especially as far as situational awareness is concerned.

The differences are as follows:

- Altitudes and Flight Levels given in Meters
- Airspeeds given in kilometers per hour (km/h) and miles per hour (mph)
- Windspeeds given in meters per second MPS
- Altimeter settings are given in:
  - Millimeters (MM)
  - QFE (height above ground)
  - or on request as QNH (altitude above mean sea level)

> Example: QFE 975mb (731mm)

Flight Levels

All flight levels reported by ATC and airborne crew are given in meters.

For example:

> "Moscow-Control, Japan Air 765, good evening, at flight level nine thousand six hundred meters, Tango Uniform [NDB] estimated in zero six minutes".

> "Vladivostok-Control, Aeroflot 872 is level at flight level ten thousand six hundred meters".

! Note the addition of "meters" at the end of the transmission.

Level Changes

When you entering or leaving Russian airspace you need to change you FL to the correspondent values into airspace you are entering. Note that all transitions must be done in IKAO airspace.

Example:

> You are entering Russian airspace. Entry point is Point1 and your current FL is FL310. You must pass Point1 at 9600 meters (FL315), so you need to climb and maintain FL315 before you enter Russian airspace.
>
> You are leaving Russian airspace. Your current altitude is 11100 meters (FL364). Exit point is Point2. You must pass Poin2 at 11000 meters and only when you leave Russian airspace you need to adjust your FL. In this case climb and maintain FL370.

Note that due to the slight differences in altitude between feet and meters, this will result in a (minor) step-down or step-climb prior to entering/leaving the FIR.

Also note, that simple conversions of metric numbers not allowed. You need to use conversion table (wich is given at the end of this document).

In any way, listen to ATC commands. If unable to copy metric numbers advise ATC and use correspondent FL numbers in hundreds of feet.

Transition level/height

Beneath transition level, you fly in QFE (height above ground level, AGL) and QNH (on request). Above transition altitude you fly in QNH (altitude above mean sea level, AMSL). Horizontal flights in transition layer (between the transition height and transition level) are forbidden.

> QFE/QNH conversion: QFE=QNH-Field elevation, whereas 25ft/8.25m contains 1(one)mBar.

QNH is a reference to air pressure measured in millibars (mb), which when set on the altimeter reads the aerodrome height above sea level when at said aerodrome - thus a measure of your height above sea level or simply put - altitude.

When QFE is set, the altimeter reads '0' when at aerodrome level - a measure of your height above aerodrome level.

Examples:

DLH645: "Sheremetyevo-Radar(Krug), good evening, DLH645, at 1800 meters standard, information PAPA, expect ILS 07L"

RADAR: "DLH645, good evening, squawk ident. Cleared for ILS approach runway 07L, descend to 900 meters height, transition level 1500, QFE 996"

DLH645: "Cleared ILS 07L, descent to 900 meters height, transition level 1500, QFE 996"

Or - if using QNH

DLH645: "Sheremetyevo-Radar(Krug), good evening, DLH645, at 1800 meters standard, information PAPA - QNH 1017, expect ILS 07L"

RADAR: "DLH645, good evening, squawk ident. Cleared for ILS approach runway 07L, descent to 1100 meters, transition level 1500, QNH 1017"

DLH645: "Cleared ILS 07L, descent to 1100 meters, transition level 1500, QNH 1017"

Most if aircrafts (by default) will be given an ILS approach (automatically or manual). By request – an NDB or visual approach will be approved.

Especialy for “Japan Russia” Flyin
Revision 1.1 (17 Jan 07)
Composer: Zimin Roman [RZimin@gmail.com]
Uses info from BAV and Vatsim

Metric Leveling System – Meters conversion table

	Westbound (H_m 180º-359º)		Nearest ICAO		Eastbound (H_m 0º-179º)	
1000 meters separation				FL490	FL528	16100 m
	15100 m	FL495	FL470			
				FL450	FL463	14100 m
	13100 m	FL430	FL430			
				FL410	FL397	12100 m
500 meters separation	11600 m	FL381	FL390			
				FL370	FL364	11100 m
	10600 m	FL348	FL350			
				FL330	FL331	10100 m
	9600 m	FL315	FL310			
				FL290	FL299	9100 m
	8600 m	FL282	FL280			
				FL270	FL266	8100 m
300 meters separation	7800 m	FL256	FL260			
				FL250	FL246	7500 m
	7200 m	FL236	FL240			
				FL230	FL226	6900 m
	6600 m	FL217	FL220			
				FL210	FL207	6300 m
	6000 m	FL197	FL200			
				FL190	FL187	5700 m
	5400 m	FL177	FL180			
				FL170	FL167	5100 m
	4800 m	FL157	FL160			
				FL150	FL148	4500 m
	4200 m	FL138	FL140			
				FL130	FL128	3900
	3600 m	FL118	FL120			
				FL110	FL108	3300 m
	3000 m	FL098	FL100			
				FL90	FL089	2700 m
	2400 m	FL079	FL80			
				FL70	FL069	2100 m
	1800 m	FL059	FL60			
				FL50	FL049	1500 m
	1200 m	FL039	FL40			
					FL030	900 m