

**Eighteenth Meeting of the Cross Polar Trans East Air Traffic Management Providers' Work Group
(CPWG/18)**

(Paris, France, 16-19 December 2014)

Agenda Item 8: Communications, Navigation, Surveillance (CNS) and Air Traffic Management (ATM) issues

DIFFERENCE BETWEEN CRUISE CLIMB AND BLOCK FLIGHT LEVELS

(Presented by Isavia)

SUMMARY

This working paper presents information regarding difference between cruise climb and block flight levels.

1. Introduction

1.1 Within the NAT aircraft are on occasion, when traffic permits, cleared for a cruise climb or to operate within a block of flight levels. The operational difference between cruise climbs and block of flight levels does however not always seem to be fully understood. This section is intended to clarify what is meant by a cruise climb clearance vs. a clearance to operate within a block of flight levels.

1.2 Changes to NAT Doc007 have been proposed to clarify the difference between cruise climb and clearances to operate within block of flight levels.

2. Discussion

2.1 ICAO defines cruise climb as follows: "An aeroplane cruising technique resulting in a net increase in altitude as the aeroplane mass decreases". As far as is known, no aircraft currently have the capability to automatically conduct a cruise climb. Cruise climb can however be approximated by the pilot instructing the aircraft to climb in small incremental steps (for example 100 or 200 feet at a time) as the weight of the aircraft decreases and the optimum flight level increases.

PANS-ATM section 5.3.4.1 specifies the following:

5.3.4.1 An aircraft may be cleared to a level previously occupied by another aircraft after the latter has reported vacating it, except when:

.....

b) the higher aircraft is effecting a cruise climb;

.....

in which case such clearance shall be withheld until the aircraft vacating the level has reported at or passing another level separated by the required minimum.

2.2 Accordingly, when an aircraft is executing a cruise climb and reports at a specific level, the controller will release the airspace that is more than 1000 feet (in RVSM airspace) below the aircraft and may assign that airspace to another aircraft. The flight level report may be received by ATC in a position report delivered by the pilot, by radar or ADS-B information or in an ADS-C periodic or event report. If the aircraft is within ATS surveillance airspace or ADS-C equipped the pilot must be aware that ATC is periodically being informed about the aircraft level and the controller will adjust the aircraft's protected airspace accordingly.

2.3 It is therefore imperative that aircraft conducting a cruise climb **do not under any circumstances descend**. A cruise climbing aircraft may only climb or maintain a level.

2.4 By contrast, when an aircraft is cleared into a block of flight levels the pilot may operate anywhere within the block of levels and may climb and/or descend within the block as desired. ATC will not release the protection of the block of flight levels, regardless of flight level reports from the aircraft, until the block clearance is cancelled.

CPDLC message elements for cruise climb

Pilots may request a cruise climb clearance by using the following message element:

DM 8: REQUEST CRUISE CLIMB TO [level]

The controller will issue a cruise climb clearance using the following message element:

UM 34: CRUISE CLIMB TO [level]

CPDLC message elements for block of flight levels

Pilots may request a clearance to operate within a block of flight levels by using the following message element:

DM 7: REQUEST BLOCK [level] TO [level]

The controller will issue a clearance to operate within a block of flight levels using one of the following message elements:

UM 30: MAINTAIN BLOCK [level] TO [level]

UM 31: CLIMB TO AND MAINTAIN BLOCK [level] TO [level]

UM 32: DESCEND TO AND MAINTAIN BLOCK [level] TO [level]

When a pilot desires to operate with a “flexible” vertical profile he should keep the following in mind when making the request to ATC:

- ✓ Request a cruise climb when the desire is to gradually climb as the aircraft weight decreases and the optimum flight level increases.
- ✓ Request a block of flight levels when there is a requirement to vary the aircrafts altitude up or down due to factors such as turbulence or icing.

Note: Requesting a block of flight levels when the intention is to only climb results in an inefficient use of airspace and may deny other aircraft to receive economic flight profiles.

3. Action by the Meeting

3.1 The meeting is invited to:

- a. review the information contained in this Working Paper;
- b. endorse the information provided in this Working paper.