



**THE FORTY-FOURTH MEETING OF THE
INFORMAL PACIFIC ATC CO-ORDINATING GROUP
(IPACG/44)**

(Honolulu, Hawaii, 22 & 23 August 2018)

Agenda Item 6: Air Traffic Management (ATM) Issues

Discussion on the use of variable Mach in the North Atlantic Region

(Presented by the Federal Aviation Administration)

SUMMARY

This paper provides information concerning the North Atlantic Region's efforts to trial the use of the CPDLC phraseology RESUME NORMAL SPEED to allow for the use of variable Mach.

1. Introduction

1.1. In March 2017, the Operations Without Assigned Fixed Speed Project Team (OWAFS PT) was created by the North Atlantic Procedures and Operations Group (NAT POG). The objective of the OWAFS PT was to "facilitate coordinated implementation of clearances in NAT airspace without an assigned fixed speed."

1.2. The purpose of the OWAFS PT is to support the use of aircraft Flight Management Computer (FMC) to allow for the use of a variable Mach (ECON) in the NAT region, where traditionally, a fixed speed is assigned. This is accomplished by inserting a value (cost index) into the FMC that allows for a variable Mach (ECON). Boeing and Airbus advise that variable Mach (ECON) is the most efficient means of operation, and it is currently used worldwide, excluding the NAT.

1.3. The primary outcome defined for the PT is to:

Develop an implementation plan and/or task list for coordinated implementation of oceanic clearances without an assigned fixed speed, which would include, but not be restricted to the following:

- a) ANSP Interfacility procedures that would mitigate any increased controller workload due to coordination requirements.
- b) list of identified required changes in documentation, procedures, common guidance, e.g. common NAT OPS Bulletin.
- c) list of required system changes and estimated timelines.

1.4. This paper provides information on the recent activities of the OWAFS PT and highlights some areas where further guidance may be needed for the pilot and air traffic services communities regarding speed variations.

2. Discussion

2.1. During several meetings of the OWAFS PT, there were detailed discussions on the exact meaning of UM116: “RESUME NORMAL SPEED” and how flight crews would react upon receipt of this uplink. In order to progress the issue, Santa Maria and New York Oceanic offered to participate in a trial of the usage of RESUME NORMAL SPEED via CPDLC uplink message, prior to which operators participating in the trial would train their flight crews on the proper response.

2.2. The trial began on 1 July 2018, with eastbound flights for one participating operator. On 15 July, a second operator joined the trial and on 23 July 2018, a third operator joined the trial. The trial is intended to continue for a 5-week period through 31 August with the primary purpose of demonstrating that with sufficient training, flight crews would correctly interpret the CPDLC uplink RESUME NORMAL SPEED and act accordingly.

2.3. The trial conditions and required flight crew training established in the preparation for the trial included:

- a) flight must be data link connected;
- b) pilot will request RESUME NORMAL SPEED via CPDLC (if not offered);
- c) pilot will insert the appropriate current flight plan “Cost Index” (ECON) into the FMS (this should be within +/- .01 Mach from the requested Mach);
- d) if the Mach varies +/- .02 from the requested Mach, pilot will inform ATC via CPDLC or voice; and
- e) ATC will assign a fixed Mach if variable Mach can no longer be supported.

2.4. Information on the outcome of the trial will be provided to the Operational Data Link Working Group (OPDLWG) regarding clarification in the *Global Operational Data Link (GOLD) Manual, (ICAO Doc 10037)*, on the meaning of RESUME NORMAL SPEED in the context of airspace where variable Mach (ECON) operations may be used.

2.5. It has been noted that the use of variable Mach (ECON) operations does not interfere with the requirements in ICAO Annex 2, concerning deviations from Mach number.

3.6.2.2 *Deviations from the current flight plan.* In the event that a controlled flight deviates from its current flight plan, the following action shall be taken:

...

- b) *Deviation from ATC assigned Mach number/indicated airspeed:* the appropriate air traffic services unit shall be informed immediately.
- c) *Deviation from Mach number/true airspeed:* if the sustained Mach number/true airspeed at cruising level varies by plus or minus Mach 0.02 or more, or plus or minus 19 km/h (10 kt) true airspeed or more from the current flight plan, the appropriate air traffic services unit shall be so informed.

2.6. However, it has also been noted that the expected pilot actions for complying with these requirements in general, i.e. how to “inform” air traffic services, may not be well-defined. For example, in the case of a pilot expecting to vary speed as described in Annex 2, section 3.6.2.2 c), a potential procedure could be:

- Pilot:
 - DM18: “REQUEST (speed)”, and
 - DM65: “DUE TO WEATHER”, DM66: “DUE TO AIRCRAFT PERFORMANCE,” for further explanation.

- Air Traffic Services:
 - UM106: “MAINTAIN SPEED” if assigned speed is needed to ensure separation, or
 - UM3: “ROGER”
 - UM169: “SPEED CHANGE TO M0.84 APPROVED” to advise the aircraft that the requested speed change is approved but no speed restriction has been assigned.

2.7. Further discussion and coordination should be considered to standardize the procedure for ensuring compliance with Annex 2, section 3.6.2.2 c), and common understanding of speed variation between flight crews and air traffic services.

3. Conclusion

3.1 The meeting is invited to note the information provided.