



MEETING OF THE METEOROLOGY PANEL (METP) WORKING GROUP MOG

SEVENTH MEETING

Frankfurt, Germany, 10 to 13 April 2018

- Agenda Item 4: Matters relating to WAFS**
4.4: Long term planning (ASBU 1 – 2018-2023)
4.4.2: Work required relating to Amendment 79 and 80

ACTION 4/8: REVIEW OF THE EDDY DISSIPATION RATE (EDR) VALUES IN ANNEX 3

(Presented by Pat Murphy)

SUMMARY

This Study Note (SN) presents an update to Action 8 from MOG/WAFS/4, which addressed the review of the eddy dissipation rate (EDR) values in Annex 3 – *Meteorological Service for International Air Navigation*. This SN also presents the draft working paper on the proposed changes to Annex 3 regarding EDR reporting values to be forwarded to the Fourth Meeting of the METP for inclusion in the consolidated amendments to Amendment 79 of Annex 3 (applicable November 2020).

Action by the METP-WG/MOG is in paragraph 4.

1. INTRODUCTION

1.1 This Study Note (SN) addresses Action 8 from MOG/WAFS/4 regarding the review of eddy dissipation rate (EDR) reporting values in Annex 3 – *Meteorological Service for International Air Navigation*.

1.2 Action 8 states:

Action agreed 4/WAFS8: Review of the Eddy Dissipation Rate (EDR) Values in Annex 3

That an ad hoc group [Pat, Stéphanie, Gabriele, Nigel, Greg] be set up to review the Eddy Dissipation Rate (EDR) Values in Annex 3, and produce a paper that can be presented to METP/3. Additionally consider how this matter can be brought to the attention of Flight Ops Panel.

1.2.1 It should be noted that what was known as METP/3 back in April 2017 is now MET/4.

1.3 This SN also presents the draft working paper on the proposed changes to Annex 3 regarding EDR reporting values to be forwarded to the Fourth Meeting of the METP for inclusion into the consolidated amendments to Amendment 79 of Annex 3 (applicable November 2020).

2. DISCUSSION

2.1 The meeting will recall SN/29 from the Fourth Meeting of the WG-MOG WAFS (4-7 April 2017, Exeter, UK), which presented information on the need to revise the EDR values and gave several options to consider. These options included: an update to the EDR values for medium-sized aircraft; including EDR values for heavy-aircraft in Annex 3; updating the values but changing them from a standard to a recommended practice in Annex 3; and removing the EDR threshold values from Annex 3 and putting them in the planned *Procedures for Air Navigation Services – Meteorology* (PANS-MET) or Doc 8896 – *Manual of Aeronautical Meteorological Practice*.

2.2 Recall that the meeting had concerns with moving these values to the PANS-MET since it was still in a concept phase and tasked an ad hoc group to further review the options and propose the best option to provide to METP/4. In its review, the ad-hoc group was informed that it was important for aircraft operators and the research community to retain EDR in Annex 3 as a standard.

2.3 The ad-hoc group was also informed that additional studies may occur in the next year as a result of the installation of EDR reporting capabilities on many B-767 and B-777 aircraft (i.e., heavy-sized) in the US. The ad-hoc group felt that it was best to not include discrete EDR thresholds for heavy-sized aircraft in the Annex at this time. Therefore, the ad-hoc group agreed the best course was to update the threshold values turbulence in Annex 3 that apply only to medium-sized aircraft.

2.4 In addition to the revised EDR values, the proposed changes remove the text “of the cube root” relating to the EDR values. Technically the terminology “EDR” refers to the cube root of the energy or eddy dissipation rate estimated from aircraft data parameters (e.g., vertical wind velocity or aircraft vertical acceleration). But the text in Annex 3 states “the cube root of EDR”. This can be confusing to some users if they believe they need to derive the cubic root of the EDR value reported by the aircraft when referring to the values in Annex 3. Clearly this is not the intention, thus the text “of the cube root” is removed from all EDR related provisions in Annex 3.

2.5 The last part of Action 4/WAFS8 called upon the ad hoc group to consider bringing this change to the attention of the Flight Operations Panel (FLTOSP). The Secretary to the METP (Neil) contacted the Secretary of the FLTOSP who informed Neil that he saw no reason to involve the FLTOSP in any decisions, rather he believes the FLTOSP would welcome an Information Paper informing them of the changes and reasons, which can be written after METP/4.

2.6 The lowering of the turbulence thresholds for moderate and severe turbulence will increase the number of turbulence reports for these categories. On at least one airline, its pilots see the EDR values in the cockpit, thus depending on the airline, voice reports of turbulence will likely be reflecting the observed EDR value. If more severe turbulence reports are relayed by voice, it would likely increase the number of SIGMETs issued. It is beyond the scope of this group to conduct the research to determine the possible increases in SIGMETs or any impact on operations.

2.7 Lastly, a review of the Doc 4444 - *PANS-ATM*, Doc 8896 – *Manual of Aeronautical Meteorological Practice* and Doc 9377 – *Manual on Coordination between Air Traffic Services*,

Aeronautical Information Services and Aeronautical Meteorological Services, showed there are no consequential amendments needed to these documents.

3. CONCLUSION

3.1 The attached (separate document) presents the draft working paper on the revised changes to Annex 3 regarding EDR to be forwarded to the METP/4 for endorsement and inclusion into the consolidated amendments for Amendment 79 of Annex 3 (applicable November 2020).

3.2 The METP/WG-MOG is invited to agree on the following draft action:

Draft Action 7/xx — Revised eddy dissipation rate (EDR) threshold values in Annex 3 - Meteorological Service for International Air Navigation

That, the WG-MOG (WAFS) recommends that the proposed changes to Annex 3 relating to EDR, as shown at Appendix XX to this report, be submitted by the WG-MOG rapporteur to the METP/4 meeting for consideration.

3.3 The discussion presented above along with the content in the accompanying working paper represents closure to Action 8 from MOG/WAFS/4.

4. ACTION BY THE METP-WG/MOG

4.1 The METP-WG/MOG is invited to:

- a) note the information contained in this Study Note and accompanying working paper;
- b) consider the draft action proposed in 3.2; and
- c) agree to close Action 8 from MOG/WAFS/4.

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