



International Civil Aviation Organization

**MIDANPIRG Meteorology Sub-Group
Eighth Meeting (MET SG/8)**

(Cairo, Egypt, 1-3 July 2019)

Agenda Item 4.2: Review implementation of the Meteorological Advisories and Warnings

RESULTS of the QUESTIONNAIRE on LOW-LEVEL WIND SHEAR

(Presented by the Secretariat)

SUMMARY

This paper provides the results of the Questionnaire on Low-Level Wind Shear for the MET aspect (criteria) and SAFETY aspect (requirement).

Action by the meeting is at paragraph 3.

1. INTRODUCTION

1.1 The meeting may recall that, in order to identify the International Aerodromes for which wind shear is considered a safety factor for operation; and determine the requirement and applicability area for Wind Shear warning/alert, a Questionnaire was distributed to States on 21 February 2018 (State letter Ref.: ME 3/2.3 – 18/066 refers). Replies have been received from eight States (Bahrain, Egypt, Iran, Kuwait, Libya, Qatar, Sudan and Yemen) as provided at **Appendix A**.

2. DISCUSSION

2.1 The meeting may recall that the Sixth Meeting of the Middle East Air Navigation Planning and Implementation Regional Group (MIDANPIRG) Steering Group (MSG/6) noted that the Questionnaire mainly focused on the MET issues and, since wind shear is considered as a safety issue, the meeting agreed that there is a need to further investigate wind shear occurrences from a Safety perspective (to be addressed by RASG-MID).

2.2 MSG/6 also noted that the replies provided by States on the Questionnaire could not effectively contribute to the identification of the Wind Shear warning/alerts requirement. Accordingly, MSG/6 urged States to identify those International Airports, for which wind shear is a safety factor (based on the occurrences/incidents and statistics for the past 3 to 5 years); and inform the ICAO MID Office by 15 February 2019, in order to include them in the applicability area for wind shear warning/alerts requirement (MSG Conclusion 6/36 refers). The meeting may note that only 4 States (Bahrain, Egypt, Jordan and Oman) replied to the associated State Letter dated 18 February 2019 and States are urged to respond to the ICAO MID RO as soon as possible.

2.3 In connection with the above, the meeting may note that, further to MSG/6 meeting, wind shear was identified by the MID ASRT/3 meeting as an emerging Risk; and through Draft Conclusion 3/1, the MID-ASRT/3 meeting urged States to provide the ICAO MID Office by the end of March 2019 with the number of accidents, serious incidents and incidents, for the period 2015-2018;

the safety data analysis, and associated safety recommendations related to the identified occurrence categories (including wind shear). As a follow-up action, the ICAO MID Office issued a State Letter dated 20 December 2018 for which 7 States (Bahrain-40, Egypt-0, Jordan-4, Libya-3, Oman-29, Syria-0 and Yemen-0) replied indicating the number of wind shear incidents. This information was reported by States using their safety data analysis.

2.4 MIDANPIRG/17 RASG-MID/7 noted that the information provided was still not specific enough (e.g. which aerodromes these wind shear incidents occurred and details related to wind shear events) and therefore the MIDANPIRG/17 RASG-MID/7 agreed that the appropriate groups (e.g. MET SG and ASRT) continue identifying whether wind shear is assessed to be a safety risk at specific aerodromes; and if a wind shear system is necessary to deploy at these aerodromes.

2.5 The meeting is invited to note that in selecting the appropriate wind shear system, it is important for States to know what wind shear types (e.g. microbursts due to convection) occur at their aerodromes. The meeting may also recall that the Manual on Low-Level Wind Shear (ICAO Doc 9817) could assist States in the selection of the appropriate wind shear system(s).

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) note the contents in this paper;
- b) continue to identify whether wind shear is assessed to be a safety risk at specific aerodromes;
- c) determine if a wind shear system is necessary to deploy at these aerodromes; and
- d) select the most appropriate wind shear system with the assistance of ICAO Doc 9817 and experts in the field.

APPENDIX A

(UPDATED 16 APRIL 2018)

Question/ State	Bahrain	Egypt	Iran	Iraq	Jordan	Kuwait	Lebanon	Libya	Oman	Qatar	Saudi Arabia	Sudan	Syria	UAE	Yemen
1	Y	Y	N		Y	Y		N		Y		Y			N
2	Y	Y	Y		Y	Y		Y		Y		Y			N
3	OBBI	HECA	N		N	OKBK		N		OTHH		HSSS			N
3a	OBBI	HECA	N		N	OKBK		N		OTHH		HSSS			N
3b	Y	Y	N		N	Y		N		N 10 min		Y			N
3c	Y	Y	N		N	Y		N		Y		Y			N
4	N/A	N	Y*		N	N		N		N/A		Note 2			N
5	Y	Y	N		N	Y		N		N		Y			N
Systems	Wind & Temp Profile (2016) Aircraft observ Forecasti ng using sounding	No system/ mechanis m in place to collect and dissemin ate informati on related to wind shear. But the detection equipme nt to detect wind shear is found only in Cairo internati onal airport	*in a few airports in Iran, IRIMO (I.R. of Iran Met. Org.) has ground based Doppler weather radars that can be used to alert on WS, but it can be used just in times that there is an active weather system with meteors			Not provided		Due to the exceptio nal situation our country is experien cing, regulatio ns and procedur es concerni ng wind shear have not been establish ed and promulg ated by Aerodro me MET offices. We shall		Wind Profiler automate d equipme nt updated every 10 minutes <i>Note that WS is consider ed a rare event</i>		Not provided			

Question/ State	Bahrain	Egypt	Iran	Iraq	Jordan	Kuwait	Lebanon	Libya	Oman	Qatar	Saudi Arabia	Sudan	Syria	UAE	Yemen
		and MWO in Cairo is responsible of issuing wind shear warnings/alerts. (HEAR, HEBA, HEAX – Alexandria Airport Forecast Center) (HEAR, HESH, HEGN, HEMA – Hurgada Airport Forecast Center) (HEBL – Luxor Airport Forecast Center) (HECA, HEPS – Cairo Airport Forecast Center)	like rain and snow on the air in order to get back radar reflectivities. Otherwise, in clear air which sometimes has considerable WS due to surface temp/pressure differences or synoptic conditions without considerable particulate matter on the air, this is impossible					establish and promulgate such regulations and procedures when the situation improves							

Questionnaire on Low-Level Wind Shear

NAME OF STATE:

1. Has your State established/promulgated Regulations and/or Procedures concerning wind shear by Aerodrome MET offices?

Yes No In Progress Other (please specify)

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2. Has your State determined/identified those International Aerodromes for which wind shear is considered a safety factor for operation; and require the issuance of wind shear warnings/alerts? (Ref Annex 3, para. 7.4.1)? (**see end notes*)

Yes No

3. Which International Aerodromes in your State are issuing wind shear warnings/alerts?

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a) Which Aerodromes are equipped with automated, ground-based, wind shear remote-sensing or detection equipment to detect wind shear?

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b) Are the wind shear alerts updated at least every minute?

Yes No Other (please specify)

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c) Are the wind shear alerts cancelled as soon as the headwind/tailwind change falls below 7.5 m/s (15 kt)?

Yes No Other (please specify)

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.....

4. For the Aerodromes issuing wind shear warnings/alerts but not equipped with automated, ground-based, wind shear remote-sensing or detection equipment to detect wind shear; are there any other system/mechanism in place to collect and disseminate information related to wind shear? *(Please explain)*

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5. Does your State ensure that the wind shear warnings and alerts are issued in accordance with Annex 3 requirements? (Ref Annex 3, para. 7.4.1, Appendix 6 para. 6.2 & Table A6-3)

Yes No

**Notes:*

Note 1 - In determining whether or not wind shear is a factor to operations, the following can be used: ground-based, wind shear remote-sensing equipment (e.g. Doppler radar); ground-based, wind shear detection equipment (e.g. a system of surface wind and/or pressure sensors located in an array monitoring a specific runway or runways and associated approach and departure paths); aircraft observations during the climb-out or approach phases of flight to be made in accordance with Chapter 5 of Annex 3; other meteorological information (e.g. from appropriate sensors located on existing masts or towers in the vicinity of the aerodrome or nearby areas of high ground).

Note 2 - Wind shear conditions are normally associated with the following phenomena: thunderstorms, microbursts, funnel cloud (tornado or waterspout), gust fronts, frontal surfaces, strong surface winds coupled with local topography, sea breeze fronts, mountain waves (including low-level rotors in the terminal area), and low-level temperature inversions.