![KCAA logo] **Kenya Civil Aviation Authority**
Efficiently Managing Air Safety

Advisory Circular

CAA-AC-MET009A

December 2025

TECHNICAL SPECIFICATIONS FOR PREPARATION AND ISSUANCE OF WIND SHEAR WARNINGS AND ALERTS

1.0   PURPOSE

1.1   This Advisory Circular (AC) provides guidance to Aeronautical Meteorological Service Provider (AMSP) on the technical specifications for preparation and issuance of wind shear warnings and alerts.

1.2   This advisory Circular supersedes CAA-AC-MET009 issued in December 2024.

2.0   REFERENCES

2.1   The Civil Aviation (Meteorological Service for Air Navigation) Regulations.

2.2   ICAO Doc. 8896; Manual of Aeronautical Meteorological Practice

2.3   ICAO Doc. 9817; Manual on Low-level Wind Shear.

3.0   GUIDANCE AND PROCEDURES
3.1   General

3.1.1   The Civil Aviation (Meteorological Service for Air Navigation) Regulations requires the Aeronautical Meteorological Service Provider (AMSP) to establish aerodrome meteorological office designated to provide meteorological service for aerodrome operations.

3.1.2   The aerodrome meteorological office shall prepare and issue wind shear warnings and alerts in accordance with the Civil Aviation (Meteorological Service for Air Navigation) Regulations.

3.2   Specifications Related to Wind Shear Warnings and Alerts

3.2.1   At aerodromes where wind shear is considered to be a factor, it is necessary to provide all stakeholders with specific wind shear warnings, which would alert ATS units and Pilots, to the existence or expected existence of wind shear that may impact operation of aircraft.

3.2.2   To determine if wind shear is a factor at an aerodrome, a careful assessment should be done by the AMSP and ATS authorities and the operators concerned, in accordance with local arrangements, for each aerodrome. Such an assessment would include;

    3.2.2.1   The consideration of the occurrence at the aerodrome of the meteorological conditions and phenomena that could cause wind shear, in particular, frequency of severe thunderstorms.

    3.2.2.2   It should be based on climatological information available,

    3.2.2.3   Pilot report on frequencies of encountering wind shear on approach and take-off paths

    3.2.2.4   Aerodrome configuration (e.g. obstacles and buildings) and orography near the aerodrome.

3.2.3   The wind shear warnings and alerts should be issued in addition to the inclusion of wind shear information in the supplementary information of local routine reports, local special reports, METAR and SPECI.

3.2.4   **Detection of wind shear**

    3.2.4.1   Wind shear warnings and alerts should be prepared by the aerodrome meteorological office designated to provide service for aerodrome operations and should be prepared to give concise information on the observed or expected existence of wind shear, which could adversely affect:

        1. Aircraft on the approach path or take-off path or during circling approach between runway level and 500 m (1 600 ft) above that level or higher, where local topography produces operationally significant wind shear at greater heights; and

        2. Aircraft on the runway during the landing roll and take-off run.

    3.2.4.2   Evidence of the existence of wind shear should be derived from

        1. Ground-based, Low-Level Wind shear Observation System (LLWOS)

        2. Ground-based, wind shear remote-sensing equipment, for example, Doppler radar;

        3. Ground-based, wind shear detection equipment, for example, 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;

        4. Meteorological satellite observation data

        5. Routine and special aircraft observations during the climb-out or approach phases of flight to be made in accordance with the Civil Aviation (Meteorological Service for Air Navigation) Regulations or

        6. Other meteorological information such as, Radiosonde data, data from appropriate sensors located on existing masts or towers in the vicinity of the aerodrome or nearby areas of high ground.

3.2.4.3   Wind shear conditions should be associated with the following phenomena;

1. thunderstorms, funnel cloud (waterspout) and wind gusts
2. strong surface winds coupled with local topography
3. sea breeze fronts
4. mountain waves (including low-level rotors in the terminal area)
5. Low-level temperature inversions and microbursts

3.2.4.4   Where microbursts are observed, reported by pilots, or detected by ground-based wind shear detection or remote-sensing equipment, the wind shear warnings and alerts shall include a reference to microbursts.

3.2.5   Format and dissemination of wind shear warnings and alerts

3.2.5.1   The wind shear warnings shall be issued in accordance with the template in *Appendix I* to this Advisory Circular and shall be disseminated to aviation users at the aerodrome including the ATS units, Pilots and aerodrome operators.

3.2.5.2   The sequence number referred to in the template in *Appendix I* to this Advisory Circular and shall correspond with the number of wind shear warnings issued for the aerodrome starting at 0001 UTC on the particular day concerned.

3.2.5.3   The use of text additional to the abbreviations listed in the table in *Appendix 1* to this Advisory Circular should be kept to a minimum. Any additional text should be prepared in abbreviated plain language using approved ICAO abbreviations listed in *Appendix II* to this Advisory Circular. If no ICAO approved abbreviations are available for any weather phenomena, English plain language text is used.

3.2.5.4   When an aircraft report is used to prepare a wind shear warning or to confirm a warning previously issued, the corresponding aircraft report, including the aircraft type, should be disseminated unchanged to all aviation users concerned.

3.2.5.5   Following reported encounters by both arriving and departing aircraft, two different wind shear warnings may be issued: one should be issued for arriving aircrafts and one for departing aircrafts.

3.2.5.6   Specifications for reporting the intensity of wind shear should recognize that pilots when reporting wind shear, may use the qualifying terms "moderate," "strong" or "severe," based on their assessment of the intensity of the wind shear encountered.

3.2.5.7   The wind shear alerts can also be disseminated from automated, ground-based, wind shear remote-sensing equipment when such equipment is installed by the meteorological service provider.

3.2.5.8 Where hazardous weather associated with microbursts are observed, reported by pilots, or detected by ground-based wind shear detection system or remote-sensing equipment, the wind shear warning and alert should include a specific reference to microburst.

3.2.5.9 Where information from ground-based, wind shear detection or remote-sensing equipment is used to prepare a wind shear alert, the alert shall, if practicable, relate to specific sections of the runway and distances along the approach path or take-off path.

3.2.5.10 Information on wind shear should be included as supplementary information in local routine reports, local special reports, METAR, and SPECI in accordance with the example in 3.2.3.4 below.

3.2.6 Meteorological Watch Office Reports of Wind Shear

3.2.6.1 Information on low-level wind shear at the aerodromes should be provided to the ATS units, pilots and aerodrome operators by the Meteorological watch office designated to serve a particular aerodrome in the following manner:

1. as wind shear warnings;
2. as wind shear alerts; or
3. as supplementary information on local routine reports, local special reports, METAR and SPECI

3.2.6.2 Wind shear warnings should be based on:

1. Ground-based wind shear warning equipment (e.g., tower-mounted anemometers).
2. Aircraft reports.
3. Direct observations from conventional MET equipment (e.g., anemometer); and
4. Forecasts of meteorological phenomena known to produce wind shear (e.g., convective cloud);

3.2.6.3 The warnings should be prepared in abbreviated language and should be identified as "WS WRNG."

3.2.6.4 Example of reporting strong wind along the runway at a Kenyan aerodrome:

"HKJK WS WRNG 01 211230 VALID 211245/211330 WS APCH RWY17 FCST SFC WIND: 320/30KT 60 M-WIND: 360/25KT". [i.e., assuming actual winds are calmer than the observed].

3.2.6.5 When an aircraft report is used to prepare a warning or to confirm a warning previously issued, the corresponding aircraft report, including aircraft type, should be given unchanged.

3.2.6.6 This is an example of wind shear warning generated from aircraft report for a Kenyan Aerodrome:

> HKJK WS WRNG 02 201500 VALID TL 201545 MOD WS IN APCH REP AT 1455 B737 30KT LOSS 2NM FNA RWY17.

3.2.7 Air Traffic Services (ATS) Reporting of Wind Shear

3.2.7.1 The ATS units are the critical communications interface between aircraft and between aircraft and Meteorological offices. On receipt of an air-report of "wind shear," the ATS unit concerned should:

1. Immediately relay the report to other aircraft concerned;
2. Include a report in the automatic terminal information services (ATIS) broadcast (if available); and
3. Pass the report to the associated meteorological office.

3.2.7.2 The reports should be relayed using the following standard sequence, the contents depending upon the details of the original report:

1. Wind shear - identifier;
2. Aircraft type - added if not included in the original report;
3. Description of event - no change to the report as received from the pilot;
4. Height wind shear encountered - no change to the report as received from the pilot;
5. Phase of flight - no change to the report as received from the pilot;
6. Runway - added if not included in the original report;
7. Time of encounter - no change to the report as received from the pilot; and
8. MET/operational information - no change to the report as received from the pilot.

3.2.7.3   Example of ATS report of wind shear:

> WIND SHEAR B737 REPORTED STRONG WIND SHEAR AT 300 FT ON APPROACH RWY17 AT 0937 MAX THRUST REQUIRED.

3.2.7.4   Wind shear alerts should be updated continuously, and they are cancelled as soon as the headwind/tailwind component falls below 7.5 m/s (15 kt).

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TEMPLATE FOR WIND SHEAR WARNINGS

Key:

M = inclusion mandatory, part of every message;

C = inclusion conditional, included whenever applicable.

Element	*Detailed content*	*Template(s)*	*Example*
Location indicator of the aerodrome	Location indicator of the aerodrome	nnnn	HUEC
Identification of the type of message (M)	Type of message and sequence number	WS WRNG [n]n	WS WRNG 1
Time of origin and validity period (M)	Day and time of issue and, where applicable, validity period in UTC	nnnnnn [VALID TL nnnnnn] *or* [VALID nnnnnn/nnnnnn]	211230 VALID TL 211330 221200 VALID 221215/221315
IF THE WIND SHEAR WARNING IS TO BE CANCELLED, SEE DETAILS AT THE END OF THE TEMPLATE.			
Phenomenon (M)	Identification of the phenomenon and its location	[MOD] *or* [SEV] WS IN APCH *or* [MOD] *or* [SEV] WS [APCH] RWYnnn *or* [MOD] *or* [SEV] WS IN CLIMB-OUT *or* [MOD] *or* [SEV] WS CLIMB-OUT RWYnnn *or* MBST IN APCH *or* MBST [APCH] RWYnnn *or* MBST IN CLIMB-OUT *or* MBST CLIMB-OUT RWYnnn	WS APCH RWY12 MOD WS RWY34 WS IN CLIMB-OUT MBST APCH RWY26 MBST IN CLIMB-OUT
Observed, reported or forecast phenomenon (M)	Identification whether the phenomenon is observed *or* reported and expected to continue, *or* forecast	REP AT nnnn nnnnnnnn *or* OBS [AT nnnn] *or* FCST	REP AT 1510 B747 OBS AT 1205 FCST
Details of the phenomenon (C)[2]	Description of phenomenon causing the issuance of the wind shear warning	SFC WIND: nnn/nnMPS (*or* nnn/nnKT) nnnM (nnnFT)-WIND: nnn/nnMPS (*or* nnn/nnKT) *or* nnKMH (*or* nnKT) LOSS nnKM (*or* nnNM) FNA RWYnn *or* nnKMH (*or* nnKT) GAIN nnKM (*or* nnNM) FNA RWYnn	SFC WIND: 320/5MPS 60M-WIND: 360/13MPS (SFC WIND: 320/10KT 200FT-WIND: 360/26KT) 60KMH LOSS 4KM FNA RWY13 (30KT LOSS 2NM FNA RWY13)

OR

Cancellation of wind shear warning[3]	Cancellation of wind shear warning referring to its identification	CNL WS WRNG [n]n nnnnnn/nnnnnn	CNL WS WRNG 1 211230/211330[3]

APPENDIX II

COMMONLY USED ICAO ABBREVIATIONS IN METEOROLOGICAL MESSAGES

(Extract from the Procedures for Air Navigation Services - ICAO Abbreviations and Codes *(PANS-ABC, Doc 8400)).*

A

AAA	*(or AAB, AAC ... etc., in sequence)* Amended meteorological message *(message type designator)*
ABV	Above
ADS-C‡	Automatic dependent surveillance — contract
AFTN‡	Aeronautical fixed telecommunication network
AIREP†	Air-report
AIRMET†	Information concerning en-route weather phenomena which may affect the safety of low-level aircraft operations
ALT	Altitude
AMD	Amend *or* amended *(used to indicate amended meteorological message; message type designator)*
APCH	Approach
ASHTAM	A special series NOTAM notifying, by means of a specific format, changes in activity of a volcano, a volcanic eruption and/or volcanic ash cloud that is of significance to aircraft operations
AT...	At *(followed by time at which weather change is forecast to occur)*
ATS	Air traffic services

B

BCFG	Fog patches
BECMG	Becoming
BKN	Broken
BL ...	Blowing *(followed by DU = dust, SA = sand or SN = snow)*
BLW	Below...
BR	Mist
BTN	Between
BUFR	Binary universal form for the representation of meteorological data

C

... C	Centre *(preceded by runway designation number to identify a parallel runway)*
C	Degrees Celsius *(Centigrade)*
CALM	Calm
CAT	Clear air turbulence
CAVOK†	*(to be pronounced "KAV-OH-KAY")* Visibility, cloud and present weather better than prescribed values or conditions
CB‡	*(to be pronounced "CEE BEE")* Cumulonimbus
CCA	*(or CCB, CCC ... etc., in sequence)* Corrected meteorological message *(message type designator)*
CLD	Cloud
CLIMB-OUT	Climb-out area
COR	Correct *or* correction *or* corrected *(used to indicate corrected meteorological message; message type designator)*

CPDLC‡	Controller-pilot data link communications
CTA	Control area
CU	Cumulus

D

D	Downward *(tendency in RVR during previous 10 minutes)*
DEG	Degrees
DEPO	Deposition
DIF	Diffuse
DP	Dew point temperature
DR…	Low drifting *(followed by DU = dust, SA = sand or SN = snow)*
DS	Duststorm
DU	Dust
D-VOLMET	Data link VOLMET
DZ	Drizzle

E

E	East *or* eastern longitude
EMBD	Embedded in a layer *(to indicate cumulonimbus embedded in layers of other clouds)*
END	Stop-end *(related to RVR)*
EQN	Equatorial latitudes northern hemisphere
EQS	Equatorial latitudes southern hemisphere
EXER	Exercises *or* exercising *or* to exercise

F

FBL	Light *(used to indicate the intensity of weather phenomena, interference or static reports, e.g. FBL RA = light rain)*
FC	Funnel cloud *(tornado or water spout)*
FCST	Forecast
FEW	Few
FG	Fog
FIR‡	Flight information region
FL	Flight level
FLUC	Fluctuating *or* fluctuation *or* fluctuated
FM …	From *(followed by time weather change is forecast to begin)*
FRONT†	Front *(relating to weather)*
FT	Feet *(dimensional unit)*
FU	Smoke
FZ	Freezing
FZDZ	Freezing drizzle
FZFG	Freezing fog
FZRA	Freezing rain

G

G …	Variations from the mean wind speed (gusts) *(followed by figures in METAR/SPECI and TAF)*
GAIN	Airspeed or headwind gain
GAMET	Area forecast for low-level flights
GR	Hail
GRIB	Processed meteorological data in the form of grid point values expressed in binary form

	(meteorological code)
GS	Small hail and/or snow pellets

H

H	High pressure area *or* the centre of high pressure
HNH	High latitudes northern hemisphere
HPA	Hectopascal
HR	Hours
HSH	High latitudes southern hemisphere
HURCN	Hurricane
HVY	Heavy *(used to indicate the intensity of weather phenomena, e.g. HVY RA = heavy rain)*
HZ	Haze

I

IAVW	International airways volcano watch
ICE	Icing
INC	In cloud
INTSF	Intensify *or* intensifying
ISOL	Isolated

K

KM	Kilometres
KMH	Kilometres per hour
KT	Knots

L

L	Low pressure area *or* the centre of low pressure
LAT	Latitude
LCA	Local *or* locally *or* location *or* located
LINE	Line *(used in SIGMET)*
LONG	Longitude
LOSS	Airspeed or headwind loss
LTD	Limited
LVL	Level
LYR	Layer *or* layered

M

… M	Metres *(preceded by figures)*
M …	Minimum value of runway visual range *(followed by figures in METAR/SPECI)*
MAX	Maximum
MBST	Microburst
MET†	Meteorological *or* meteorology
METAR†	Aerodrome routine meteorological report *(in meteorological code)*
MET	REPORT Local routine meteorological report *(in abbreviated plain language)* .
MID	Mid-point *(related to RVR)*
MIFG	Shallow fog
MNH	Middle latitudes northern hemisphere
MNM	Minimum
MOD	Moderate *(used to indicate the intensity of weather phenomena, interference or static reports, e.g. MODRA = moderate rain)*
MOV	Move *or* moving *or* movement

MS	Minus
MSH	Middle latitudes southern hemisphere
MSL	Mean Sea level
MT	Mountain
MTW	Mountain waves
MWO	Meteorological watch office

N

N	No distinct tendency *(in RVR during previous 10 minutes)*
N	North *or* northern latitude
NC	No change
NE	North-east
NIL*†	None *or* I have nothing to send to you
NM	Nautical miles
NOSIG†	No significant change *(used in trend-type landing forecasts)*
NOTAM†	A notice distributed by means of telecommunication containing information concerning the establishment, condition or change in any aeronautical facility, service, procedure or hazard, the timely knowledge of which is essential to personnel concerned with flight operations
NR	Number
NSC	Nil significant cloud
NSW	Nil significant weather
NW	North-west
NXT	Next

O

OBS	Observe *or* observed *or* observation
OBSC	Obscure *or* obscured *or* obscuring
OCNL	Occasional *or* occasionally
OPMET†	Operational meteorological *(information)*
OVC	Overcast

P

P ...	Maximum value of wind speed or runway visual range *(followed by figures in METAR/SPECI and TAF)*
PL	Ice pellets
PO	Dust/sand whirls *(dust devils)*
PRFG	Aerodrome partially covered by fog
PROB†	Probability
PS	Plus
PSN	Position
PSYS	Pressure system(s)

Q

| QFE‡ | Atmospheric pressure at aerodrome elevation *(or at runway threshold)* |
| QNH‡ | Altimeter sub-scale setting to obtain elevation when on the ground |

R

| R ... | Runway *(followed by figures in METAR/SPECI)* |
| RA | Rain |

RAG	Ragged
RE	Recent *(used to qualify weather phenomena, e.g. RERA = recent rain)*
RNAV†	*(to be pronounced "AR-NAV")* Area navigation
ROBEX†	Regional OPMET bulletin exchange *(scheme)*
RPLC	Replace *or* replaced
RRA	*(or RRB, RRC ... etc., in sequence)* Delayed meteorological message *(message type designator)*
RTD	Delayed *(used to indicate delayed meteorological message; message type designator)*
RVR‡	Runway visual range
RWY	Runway

S

S	South *or* southern latitude
S ...	State of the sea *(followed by figures in METAR/SPECI)*
SA	Sand
SCT	Scattered
SE	South-east
SEA	Sea *(used in connection with sea-surface temperature and state of the sea)*
SECN	Section
SEV	Severe *(used e.g. to qualify icing and turbulence reports)*
SFC	Surface
SG	Snow grains
SH ...	Shower *(followed by RA = rain, SN = snow, PL = ice pellets, GR = hail, GS = small hail and/or snow pellets or combinations thereof, e.g. SHRASN = showers of rain and snow)*
SIG	Significant
SIGMET†	Information concerning en-route weather and other phenomena in the atmosphere which may affect the safety of aircraft operations
SN	Snow
SNOCLO	Aerodrome closed due to snow *(used in METAR/SPECI)*
SPECI†	Aerodrome special meteorological report *(in meteorological code)*
SPECIAL†	Local special meteorological report *(in abbreviated plain language)*
SQ	Squall
SQL	Squall line
SS	Sandstorm
STNR	Stationary
SW	South-west
SWX	Space weather
SWXC	Space weather centre

T

T	Temperature
TAF†	Aerodrome forecast *(in meteorological code)*
TC	Tropical cyclone
TCAC	Tropical cyclone advisory centre
TCU	Towering cumulus
TDO	Tornado
TEMPO†	Temporary *or* temporarily
TL ...	Till *(followed by time by which weather change is forecast to end)*
TN ...	Minimum temperature *(followed by figures in TAF)*
TO	To ... *(place)*

TOP†	Cloud top
TREND†	Trend forecast
TS	Thunderstorm *(in aerodrome reports and forecasts, TS used alone means thunder heard but no precipitation at the aerodrome)*
TS …	Thunderstorm *(followed by RA = RAIN, SN = snow, PL = ice pellets, GR = hail, GS = small hail and/or snow pellets or combinations thereof, e.g. TSRASN = thunderstorm with rain and snow)*
TURB	Turbulence
TX …	Maximum temperature *(followed by figures in TAF)*

U

U	Upward *(tendency in RVR during previous 10 minutes)*
UIR‡	Upper flight information region
UTC‡	Coordinated Universal Time

V

…V…	Variations from the mean wind direction *(preceded and followed by figures in METAR/SPECI, e.g. 350V070)*
VA	Volcanic ash
VAAC	Volcanic ash advisory centre
VC	Vicinity of the aerodrome *(followed by FG = fog, FC = funnel cloud, SH = shower, PO = dust/sand whirls, BLDU = blowing dust, BLSA = blowing sand, BLSN = blowing snow, DS = duststorm, SS = sandstorm, TS = thunderstorm or VA = volcanic ash, e.g. VCFG = vicinity fog)*
VER	Vertical
VHF‡	Very high frequency [30 MHz to 300 MHz]
VIS	Visibility
VOLMET†	Meteorological information for aircraft in flight
VRB	Variable
VV…	Vertical visibility *(followed by figures in METAR/SPECI and TAF)*

W

W	West *or* western longitude
W…	Sea-surface temperature *(followed by figures in METAR/SPECI)*
WAFC	World area forecast centre
WAFS	World area forecast system
WI	Within
WID	Wide
WIND	Wind
WKN	Weaken *or* weakening
WRNG	Warning
WS	Wind shear
WSPD	Wind speed
WX	Weather

Z

Z	Coordinated Universal Time *(in meteorological messages)*

NOTE

†   When radiotelephony is used, the abbreviations and terms are transmitted as spoken words.

‡   When radiotelephony is used, the abbreviations and terms are transmitted using the individual letters in non-phonetic form.

*   Signal is also available for use in communicating with stations of the maritime mobile service.