1.0 PURPOSE

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

2.0 REFERENCES

2.1 The Civil Aviation (Meteorological Services for International Air Navigation) Regulations, 2017 (as amended)

2.2 The Civil Aviation (Meteorological Service for International Air Navigation) (Amendment) Regulations, 2023

2.3 ICAO Doc 8896 – Manual of Aeronautical Meteorological Practice.

2.4 WMO No. 306 Manual on codes

3.0 GUIDANCE AND PROCEDURES

3.1 GENERAL

3.1.1 The Civil Aviation (Meteorological Service for Air Navigation) Regulation, require the AMSP to establish aerodrome meteorological offices to prepare and issue aerodrome warnings in accordance with the Civil Aviation (Meteorological Service for Air Navigation) Regulations, and the detailed criteria set out in this Advisory Circular.

3.1.2 The Aerodrome warnings shall provide concise information of meteorological conditions that could adversely affect aircraft on ground, including parked aircrafts and aerodrome facilities and services.

3.2 SPECIFICATIONS RELATED TO AERODROME WARNINGS

3.2.1 **Users of aerodrome warnings**

Aerodrome warnings should be made available to aviation users, including air traffic control units, airport operators and aviation pilots. Warnings are displayed via the meteorological Briefing offices. Warning alerts by email may also be made available, ensuring that aviation users can be alerted in advance of conditions that may affect aerodrome operations in accordance with specified lead times.

3.2.2 **Format and dissemination of aerodrome warnings**

3.2.2.1 The aerodrome warnings shall be issued as required by operators or aerodrome services and shall be disseminated in accordance with local arrangements to those concerned.

3.2.2.2 The sequence number in the warnings shall correspond with the number of aerodrome warnings issued for the aerodrome starting from 0001 UTC on a particular day.

3.2.2.3 Aerodrome warnings should relate to the occurrence or expected occurrence of one or more of the following phenomena:

i) Tropical cyclone (to be included if the 10-minute mean surface wind speed at the aerodrome is expected to be 17 m/s (34 kt) or more.

ii) Thunderstorm

iii) Hail

iv) Sandstorm and dust storm

v) Rising sand or dust

vi) Strong surface wind and gusts

vii) Squall

viii) Frost

ix) Tsunami

x) Volcanic ash; Volcanic ash deposition

xi) Toxic chemicals and other phenomena as agreed locally.

3.2.3 The use of text additional to the abbreviations listed in the table in Appendix I1 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. If no ICAO approved abbreviations are available for any weather phenomena, English plain language text should be used.

3.2.4 The warnings should be disseminated directly to aviation users including air traffic services units, aerodrome operators in accordance with arrangements between the AMSP and the users concerned. The warnings should be disseminated to pilots via the meteorological Briefing office and/or displayed on aviation briefing service monitors.

3.2.5 Warning alerts by email could be used to ensure that aviation users are alerted in advance of conditions that may affect aerodrome operations in accordance with specified lead times.

3.2.6 Aerodrome warnings should be issued with at least a six-hour lead time, except for thunderstorm warnings that should be issued with a lead time of one hour. The warnings should cover all or part of the six-hour periods. The maximum validity period for aerodrome warnings should be 6-hour validity period of warnings and minimum lead time of at least 15 mins for thunderstorm warnings and 6 hours for other warnings.

3.2.7 The set times for updating the aerodrome warnings allows the AMSP appropriate lead times for providing advance notice of hazards relevant to aviation. This assists aerodromes and pilots planning to respond to these hazards accordingly.

3.2.8 When the phenomenon is forecasted the aerodrome warning shall be issued not more than 24 hours before the commencement of the period of validity.

Table 1: Meteorological Phenomena reported in Aerodrome warnings

Phenomenon (1)	Template (2)
Mean wind speed with maximum wind gust	SFC WSPD nn[n]KT MAX nn[n]
Mean surface wind (direction and speed) and maximum wind gust	SFC WIND nnn/nn[n]KT MAX nn[n]
Accumulated precipitation in 1 or 12 hours	RAINFALL IN 1HR MORE THAN nnMM RAINFALL IN 12HR MORE THAN nn[n]MM
Thunderstorm	[HVY] TS
Squall (3)	SQ
Hail	GR
Freezing precipitation	[HVY] FZRA o [HVY] FZDZ
Sandstorm	[HVY] SS
Duststorm	[HVY] DS
Swirling sand or dust	SA (sand), DU (dust)
Volcanic ash [volcanic ash deposition]	VA [DEPO]
Toxic chemicals substances	TOX CHEM

3.2.9 From the table 1 above, the weather phenomena should be interpreted as follows;

3.2.9.1 In every warning only one phenomenon is included.

3.2.9.2 Brackets [ ] indicate that information inside brackets is included if needed.

3.2.9.3 Squall (SQ): Strong wind that arises suddenly and usually lasts at least one minute. It differs from wind gusts in its duration. The sudden increase in wind speed is 16 kt (32km/h), and the speed increases to 22 kt or more and lasts at least one minute. Squalls are often associated with large cumulonimbus clouds and a violent convective activity, extending several kilometres horizontally and several thousand feet vertically.

3.2.9.4 FROST shall always be used with temperature information in degrees Celsius. Negative temperature after FROST shall be preceded by abbreviation MS. T is the ICAO abbreviation for temperature and C for degrees Celsius. Only forecast warnings are given for frost.

3.2.10 Contents of aerodrome warnings

3.2.10.1 Message heading

The heading of the message consists of a line that includes the following:

WWEN	CCCC	DDHHMM
(a)	(b)	(c)

i) Aerodrome warning identification. WW is aerodrome warning and (STATE) aerodrome. E.g in WWEN, “EN” is for Entebbe

ii) Location indicator of the aerodrome originating the warnings, (STATE) Aerodrome, E.g. HUEN for Entebbe Airport; HSSJ for Juba and HRYR for Kigali and HTDA for Dar Es Salaam.

iii) Day, hour and minutes of message issue in UTC

3.2.10.2 Message content

The message consists of a line that includes the following:

CCCC	AD WRNG n[n]	VALID nnnnnn/nnnnnn	(MET Phenomena)	(observed and/or forecast)	(intensity)
(a)	(b)	(c)	(d)	(e)	(f)

i) CCCC: Location indicator of the aerodrome originating the warning; same as Warning Heading

ii) Message identification: AD WRNG n[n]

- AD WRNG: Type of message in this case Aerodrome Warning.
- n: sequence number starting at 0001 UTC of the day the warning is issued. Numbering is different for every aerodrome. Only one digit is included for numbers less than 10.

iii) Period of validity: VALID nnnnnn/nnnnnn

- Start and end of the validity period using 6 digits (two for the day, two for the hour and two for the minutes, in UTC), for each group separated by «/». Example: VALID 220900/220913.
- The validity period may be extended up to a maximum of 24 hours.

iv) Meteorological phenomenon

- Each warning includes only one phenomenon from the table 1.

v) Observed or forecast phenomenon

- The following ICAO abbreviations are used:

OBS [AT nnnnZ]: Indicates that the phenomenon was observed [at nnnnZ].

FCST: Indicates that the phenomenon is forecast.

- Brackets [ ] after OBS indicate that when time of observation is known it will be included using the format inside the brackets. Example: OBS AT 1045Z.

vi) Intensity changes

- When the forecast intensity changes are known the following abbreviations are used:

  INTSF: Intensifying

  WKN: weakening

  NC: No changes

3.2.11 Quantitative Criteria for Aerodrome Warnings

The AMSP shall ensure that when quantitative criteria are necessary for the issuance of aerodrome warnings covering, for example, the expected maximum wind speed or the expected total rainfall, the criteria used should be as agreed between the aerodrome meteorological office and the users concerned.

3.2.12 Examples of aerodrome warnings

Example 1

WWDA HTDA 100600 HTDA AD WRNG 5 VALID 101200/101800 RAINFALL IN 1HR MORE THAN 45MM FCST NC=

Meaning: Aerodrome Warning No. 5 issued on 10th day of the month at 0600Z for the Julius Nyerere International airport, valid for 10th day of the month between 1200Z and 1800Z: total rainfall in 1 hour more than 45mm. Forecast, No changes in intensity expected.

Example 2

WWDA HTDA 122100 HTDA AD WRNG 4 VALID 130600/130800 FROST T MS02C FCST NC=

Meaning: Aerodrome Warning No. 4 issued on 12th day of the month at 2100Z for Julius Nyerere International airport,) valid for 13th day of month between 0600Z and 0800Z: frost with forecast temperature of -2ºC. Forecast, No changes in intensity expected.

Example 3

WWSJ HSSJ 070800 HTDA AD WRNG 2 VALID 071200/071600 SFC WSP 30KT MAX 40 OBS AT 1155Z INTSF=

Meaning: Aerodrome Warning No. 2 issued on 7th day of the month at 0800Z for Julius Nyerere International airport, valid for 7th day of the month between 1200Z and 1600Z: wind gusts of 40 knots observed at 1155Z and intensifying.

Example 4

WWYR HRYR 071400 HRYR AD WRNG 3 VALID 071400/071600 CNL AD WRNG 2 071200/071600=

Meaning: At 1400Z strong wind that caused the warning No.3 at. Kigali Int, Airport) is no longer observed or forecast, and the warning is cancelled.

3.2.13 Update of the aerodrome warnings

3.2.13.1 An update of a warning is accomplished by cancelling it and issuing a new one, as long as it is the same phenomenon, and its period of validity has not yet expired.

3.2.13.2 Updates of surface wind warnings will be issued when a change of ±10 KT is observed and/or forecasted, as long as the value continues to be greater than the given threshold.

3.2.13.3 Updates of frost warnings will be issued when the change of temperature is ±2ºC, as long as it is lower than 0ºC.

3.2.14 Cancellation

Aerodrome warnings shall be cancelled when the conditions that originated it no longer hold/exist.

Tanzania Civil Aviation Authority

APPENDIX I

TEMPLATE FOR AERODROME WARNINGS

Key: M = inclusion mandatory, part of every message.
C = inclusion conditional, included whenever applicable.

Note: The explanations for the abbreviations can be found in Appendix II of this Advisory Circular

Element	***Detailed content***	***Templates***	***Examples***
Location indicator of the aerodrome (M)	Location indicator of the aerodrome	nnnn	HUEC
Identification of the type of message (M)	Type of message and sequence number	AD WRNG [n]n	AD WRNG 2
Validity period (M)	Day and time of validity period in UTC	VALID nnnnnn/nnnnnn	VALID 211230/211530
IF THE AERODROME WARNING IS TO BE CANCELLED, SEE DETAILS AT THE END OF THE TEMPLATE.			
Phenomenon (M)	Description of phenomenon causing the issuance of the aerodrome warning	TS nnnnnnnnnn *or* [HVY] TS *or* GR *or* [HVY] RA [nnMM] *or* [HVY] TSRA *or* [HVY] HAIL *or* [HVY] DS *or* SA *or* FU *or* SFC WSPD nn[n]MPS MAX nn[n] (SFC WSPD nn[n]KT MAX nn[n]) *or* SFC WIND nnn/nn[n]MPS MAX nn[n] (SFC WIND nnn/nn[n]KT MAX nn[n]) *or* TS *or* RA *or* TSRA *or* VA[DEPO] *or* TOX CHEM *or* *Free text up to 32 characters*[5]	TS HVY RA 50MM SFC WSPD 20MPS MAX 30 VA
Observed or forecast phenomenon (M)	Indication whether the information is observed and expected to continue, *or* forecast	OBS [AT nnnnZ] *or* FCST	OBS AT 1200Z OBS
Changes in intensity (C)	Expected changes in intensity	INTSF *or* WKN *or* NC	WKN

OR

Cancellation of aerodrome warning	Cancellation of aerodrome warning referring to its identification	CNL AD WRNG [n]n nnnnnn/nnnnnn	CNL AD WRNG 2 211230/211530

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.