



International Civil Aviation Organization

**NINETEENTH MEETING OF THE METEOROLOGY SUB-GROUP  
(MET SG/19) OF APANPIRG**

Bangkok, Thailand, 3 – 6 August 2015

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**Agenda Item 6:            Research, development and implementation issues in the MET field  
6.3)                        Forecasts, advisories and warnings**

**TROPICAL CYCLONE ADVISORIES**

(Presented by MET/H TF Ad Hoc Group)

**SUMMARY**

This paper identifies a number of inconsistencies and deficiencies in the existing guidance and procedures for the generation of tropical cyclone advisories (TCA).

**1. INTRODUCTION**

1.1            The Tropical Cyclone Advisory Centres (TCACs) are a '*meteorological centre designated by regional air navigation agreement to provide advisory information to meteorological watch offices, world area forecast centres and international OPMET databanks regarding the position, forecast direction and speed of movement, central pressure and maximum surface wind of tropical cyclones*' (refer Annex 3, Chapter 1). They do this by issuing tropical cyclone advisories (TCAs) at least every 6 hours when a tropical cyclone (TC) has developed or is expected to develop.

1.2            A Meteorological Watch Office (MWO) is responsible for issuance, among other things, of SIGMET information. Annex 3 (Chapter 7, clause 7.1.4) recommends that '*SIGMET messages concerning volcanic ash cloud and tropical cyclones should be based on advisory information provided by VAACs and TCACs, respectively*'.

1.3            At the conjoint meeting between the thirteenth meeting of the Regional OPMET Bulletin Exchange Working Group (ROBEX WG/13) and the fifth meeting of the Meteorological Hazards Task Force (MET/H TF/5), held in Seoul, Republic of Korea from 18-20 March 2015, it was agreed that an Ad Hoc Group consisting of Australia (rapporteur), Hong Kong-China, Japan and India, in consultation with IATA and IFALPA, review various issues associated with the Tropical Cyclone Advisory (TCA).

1.4            The conjoint ROBEX WG/13 - MET/H TF/5 formulated the following Decision:

***Decision (ROBEX WG/13-MET/H TF/5)/7 – Review guidance for tropical cyclone advisory and SIGMET information***

*That, an ad-hoc group, comprising Australia (rapporteur), Hong Kong-China and Japan*

*(note: Secretariat to invite India), in consultation with IATA and/or IFALPA, develop a working paper for MET SG/19 (highlighting the issues raised in WP/C8 and IP/C5) with proposal(s) for the improvement of guidance material supporting clarity and consistency of information within tropical cyclone advisory and SIGMET messages in the Region.*

## 2. DISCUSSION

2.1 The conjoint ROBEX WG/13 - MET/H TF/5 reviewed a number of apparent inconsistencies or shortcomings in the available guidance for implementation of tropical cyclone advisory and SIGMET information. These included:

- The date-time-group (DTG) of a TCA message is the issuance time (in accordance with Annex 3, Table A2-2), whereas it is generally understood by the TCACs that this is also the observation time. Note that the volcanic ash advisory message has provision for separate DTGs to denote the issuance time and observation time;
- A tropical cyclone SIGMET requires a position of the tropical cyclone at the start and end of the validity of the SIGMET. This may not coincide with a forecast time/position given in a corresponding TCA message;
- The sequence number upper limit of a tropical cyclone advisory is currently 99 based on Annex 3 Table A2-2 which indicates that the advisory number shall be limited to two (2) digits. If the TCA messages were to be issued at more frequently than 6 hourly intervals (say 3 hourly), there may be instances when the TCA sequence number may be required to be larger than 99;
- Information on the radius and vertical extent of cumulonimbus cloud associated with a tropical cyclone is required to be provided in a SIGMET message but this is not provided in an associated TCA message;
- Where the area of frequent cumulonimbus cloud is displaced significantly from the centre of a tropical cyclone (and often confined to just one sector of the cyclone) it can't be adequately represented in a TCA (or the SIGMET); and
- Information on the change in intensity of a tropical cyclone, which must be given explicitly in a SIGMET message (e.g., INTSF, WKN or NC), can only be inferred from an associated TCA message by the forecast maximum wind speeds;

2.2 IATA have also raised the issue of how a user can easily identify whether a TCA with a named TC relates directly to a previous TCA with an unnamed TC.

2.3 An example of the current TCA and WC SIGMET and the shortcomings are given in the **Attachment A**. An example of proposed changes to the TCA template is given in **Attachment B**.

### 3. RECOMMENDATION

3.1 It is recommended that the METSG/19 adopts the following draft Conclusion:

#### **Draft Conclusion 19/x – Tropical Cyclone Advisory (TCA) messages**

That the ICAO Secretariat request the ICAO Meteorology Panel to:

- a) Review the Tropical Cyclone Advisory (TCA) template in Annex 3 and to consider the following changes:
  - Inclusion of a 'Time of Observation' in addition to a 'Time of origin' (consistent with the volcanic ash advisory (VAA));
  - A change to the 'Advisory number' to nnnn/nnnn (consistent with the VAA) to enable sequence numbers greater than 99;
  - Inclusion of an element regarding the radius and vertical extent of cumulonimbus cloud associated with a tropical cyclone; and
  - Inclusion of an element regarding the intensity of the tropical cyclone.
- b) Review the Tropical Cyclone SIGMET (WC SIGMET) template in Annex 3 and to consider the following changes:
  - Allow a forecast position for the tropical cyclone to not be coincident with the start and end of validity of the SIGMET; and
  - Allow the tropical cyclone to be depicted by a polygon (rather than a circle) if the area of frequent cumulonimbus cloud is displaced significantly from the centre of a tropical cyclone.

### 4. ACTION BY THE MEETING

4.1 The meeting is invited to:

- a) note the information contained in this paper;
- b) discuss any relevant matters as appropriate; and
- c) adopt the conclusion in paragraph 3.1

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**ATTACHMENT A**

Tropical Cyclone Advisory (TCA) Template

TC ADVISORY

DTG: nnnnnnnn/nnnnZ  
 TCAC: nnnn or nnnnnnnnnn  
 TC: nnnnnnnnnnnn or NN  
 NR: nn  
 PSN: Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]  
 MOV: N (or NNE or NE or ENE or E or ESE or SE or SSE or S or SSW or SW or WSW or W or WNW or NW or NNW) nnKMH (or nnKT) or SLW or STNR  
 C: nnnHPA  
 MAX WIND: nn[n]MPS (or nn[n]KT)  
 FCST PSN +6HR: nn/nnnnZ Nnn[nn] or Snn[nn] W[nnn[nn] or Ennn[nn]  
 FCST MAX WIND +6HR: nn[n]MPS (or nn[n]KT)  
 FCST PSN +12HR: nn/nnnnZ Nnn[nn] or Snn[nn] W[nnn[nn] or Ennn[nn]  
 FCST MAX WIND +12HR: nn[n]MPS (or nn[n]KT)  
 FCST PSN +18HR: nn/nnnnZ Nnn[nn] or Snn[nn] W[nnn[nn] or Ennn[nn]  
 FCST MAX WIND +18HR: nn[n]MPS (or nn[n]KT)  
 FCST PSN +24HR: nn/nnnnZ Nnn[nn] or Snn[nn] W[nnn[nn] or Ennn[nn]  
 FCST MAX WIND +24HR: nn[n]MPS (or nn[n]KT)  
 RMK: Free text up to 256 characters or NIL  
 NXT MSG: [BFR] nnnnnnnn/nnnnZ or NO MSG EXP

Tropical Cyclone SIGMET Format

CCCC SIGMET [n][n]n VALID YYGGgg/YYGGgg CCCC-  
 CCCC <FIR/CTA Name> FIR TC <Name> OBS/FCST [AT GGggZ] <Location> <Horizontal and vertical extent> <Movement> <Intensity changes> <Forecast position>=

Tropical Cyclone Advisory (TCA) Example

TC ADVISORY

DTG: 20130307/0600Z  
TCAC: DARWIN  
TC: SANDRA  
NR: 02  
PSN: S1500 E15600  
MOV: NE 07KT  
C: 989HPA  
MAX WIND: 35KT  
FCST PSN +6HR: 08/0000Z S1500 E15630  
FCST MAX WIND +6HR: 40KT  
FCST PSN +12HR: 08/0600Z S1448 E15706  
FCST MAX WIND +12HR: 45KT  
FCST PSN +18HR: 08/1200Z S1454 E15736  
FCST MAX WIND +18HR: 50KT  
FCST PSN +24HR: 08/1800Z S1500 E15800  
FCST MAX WIND +24HR: 60KT  
RMK: NIL  
NXT MSG: 20130308/1300Z

Tropical Cyclone SIGMET Example

YBBB SIGMET D02 VALID 070715/071315 YBRF-  
YBBB BRISBANE FIR TC SANDRA OBS AT 0600Z S1500 E15600  
CB TOP FL500 WI 280NM OF CENTRE MOV NE 07KT INTSF  
FCST 1200Z TC CENTRE S1500 E15630=

## ATTACHMENT B

### Proposed Tropical Cyclone Advisory (TCA) Template

#### TC ADVISORY

DTG:	nnnnnnnn/nnnnZ
TCAC:	nnnn or nnnnnnnnnn
TC:	nnnnnnnnnnnn or NN
ADVISORY NR:	nnnn/nnnn
PSN:	Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]
MOV:	N (or NNE or NE or ENE or E or ESE or SE or SSE or S or SSW or SW or WSW or W or WNW or NW or NNW) nnKMH (or nnKT) or SLW or STNR
C:	nnnHPA
INTENSITY CHANGE:	INTSF or WKN or NC
MAX WIND:	nn[n]MPS (or nn[n]KT)
OBS (or EST) TC DTG:	nn/nnnnZ
OBS (or EST) TC CLD:	CB TOP FLnnn WI nnnKM (or nnnNM) OF CENTRE
FCST PSN +6HR:	nn/nnnnZ Nnn[nn] or Snn[nn] W[nnn[nn] or Ennn[nn]
FCST MAX WIND +6HR:	nn[n]MPS (or nn[n]KT)
FCST PSN +12HR:	nn/nnnnZ Nnn[nn] or Snn[nn] W[nnn[nn] or Ennn[nn]
FCST MAX WIND +12HR:	nn[n]MPS (or nn[n]KT)
FCST PSN +18HR:	nn/nnnnZ Nnn[nn] or Snn[nn] W[nnn[nn] or Ennn[nn]
FCST MAX WIND +18HR:	nn[n]MPS (or nn[n]KT)
FCST PSN +24HR:	nn/nnnnZ Nnn[nn] or Snn[nn] W[nnn[nn] or Ennn[nn]
FCST MAX WIND +24HR:	nn[n]MPS (or nn[n]KT)
RMK:	Free text up to 256 characters or NIL
NXT MSG:	[BFR] nnnnnnnn/nnnnZ or NO MSG EXP

#### Note:

xxx The highlighted sections indicate proposed changes to existing template.