METEOROLOGICAL WARNINGS STUDY GROUP (METWSG)

FIRST MEETING

Montréal, 20 to 22 November 2007

Agenda Item 6: Amendment to provisions related to the content and issuance of SIGMET to meet the evolving needs of flight operations
6.1: Methods to improve the implementation of the issuance of SIGMETs

INCLUSION OF THE TIME OF FORECAST IN SIGMET

(Presented by C.M. Shun)

SUMMARY

This paper presents a proposal to include the time of forecast in the SIGMET and to amend the SIGMET template in Table A6-1 of Annex 3 accordingly.

1. INTRODUCTION

1.1 In the ASIA/PAC SIGMET Seminar held in Bangkok, Thailand, during 11-13 July 2007, important feedback from States was received on common implementation problems which would need to be addressed by ICAO. APANPIRG/18 agreed that these issues should be brought to the attention of the new Meteorological Warnings Study Group (METWSG) and adopted the following Conclusion:

> ***Conclusion 18/46 – Issues related to Implementation Improvement of the SIGMET Provisions***
>
> *That, the implementation issues identified by the ASIA/PAC SIGMET Seminar, listed in Appendix **N** to the Report on Agenda Item 3.3, be brought to the attention of the Meteorological Warnings Study Group (METWSG) for further study and development of additional guidance to improve the implementation.*

1.2 The list of SIGMET implementation issues given in Appendix N to the APANPIRG/18 Report is attached to this study note (see Appendix A).

1.3 In METWSG-SN No. 3 prepared by the Secretariat, only three of the ten implementation issues identified were singled out in paragraph 2.5 of the paper. In particular, the item on inclusion of the time of forecast in the SIGMET was not considered. This study note focuses on the need to include the time of forecast in the SIGMET and puts forward a proposal to amend the SIGMET template in Table A6-1 of Annex 3 accordingly. As regards the other items not covered in SN No. 3, the METWSG/1 meeting might wish to discuss the ways to properly address them, in response to the action called for by APANPIRG/18.

2. DISCUSSION

2.1 At present, following the SIGMET template in Table A6-1 of Annex 3 and the guidance given in the regional SIGMET Guide, the indication whether the weather phenomenon is observed or forecast is given by using the abbreviations “OBS” or “FCST”. “OBS” is followed by an optional time group in the form “AT GGggZ”, where “GGgg” is the time of the observation in hours and minutes UTC. When “FCST” is used for a forecast weather phenomenon, no indication of the time of the forecast can be given and it is assumed that the time of occurrence or commencement of the phenomenon coincides with the beginning of the period of validity included in the first line of the SIGMET.

2.2 For a TC with 10-minute mean surface wind speed of 34 kt or more which is forecast to enter into the FIR concerned within the next 12 hours, if “FCST” is to be used, the SIGMET message will read something like "TC CHANCHU FCST N1740 E11450". For a TC which is forecast to intensify into one with 10-minute mean surface wind speed of 34 kt or more within the next 12 hours, irrespective of whether the TC is already centred within the FIR or is forecast to enter into the FIR, the SIGMET message will read something like “TC FCST N2000 E 11430”.

2.3 The issue with the use of “FCST” identified in the ASIA/PAC SIGMET Seminar has been further discussed among some ASIA/PAC States and a concern on whether or not the end users, i.e. the airlines and pilots, are clear about the assumption that “the time of occurrence or commencement of the phenomenon coincides with the beginning of the period of validity included in the first line of the SIGMET”. The following users’ feedback is provided by Mr. Keith Mackersy of New Zealand CAA on the issue:

> *‘I would like to take this opportunity to offer some information from airlines operating between NZ and the South Pacific Is (where TCs occur). They are generally of the view that it is very useful to them to know the actual location of a TC at a particular time ("OBS") and also have information (in the same SIGMET) indicating where the TC is expected to be at a particular time ("FCST"). Only one of 8 airlines we asked to comment was aware that "when a SIGMET is issued for a forecast phenomenon, the beginning of validity period is normally the time of the expected commencement of the phenomenon in the FIR concerned". This may simply be an education thing, but it does show some lack of understanding about interpreting SIGMETs intended to convey FCST information about a phenomenon not yet in an FIR but expected to enter it.’*
>
> *‘If you will permit me, I'd like to copy you additional comment from the Chief Pilot (22,000 hrs of flight time, mainly B747/767/737) of a Pacific based airline: "Airline pilots are trained to ATPL*

Met level which as you know gives them a thorough understanding of Met matters. We are more than capable of extrapolating the movement of Met phenomena. This is why we really appreciate being advised of the actual observed position of a feature such as the centre of a tropical cyclone (as indicated in a SIGMET), and in the same message being advised of the expected position of the centre as assessed by professional meteorologists. This coupled with an indication of direction and speed of movement of the tropical cyclone allows us to make our decision about when the tropical cyclone will enter a FIR. While I accept that some SIGMETs are intended to signal when a tropical cyclone (or other weather phenomena) is expected to cross a FIR boundary (as indicated in the "start of validity time" in some SIGMETs), this procedure is not well understood by many pilots. The very nature of piloting and their training is that they prefer to deal with "actual times", whether this be the time to start engines, the time to set a course, the time to set direction and speeds or the TOD (top of descent) time, It is second nature to pilots to be able to calculate "next positions" or time to a waypoint, or ETA. So armed with information about tropical cyclones and where they are located at a particular time and where they are expected to be at some time in the future, plus the direction and speed of their track, it is relatively easy for a pilot to calculate where a tropical cyclone will be at any time in between these two points (i.e. between the actual time and position, and the future time and position). Hope this is helpful in understanding how pilots think and act."'

2.4 In view of the above, it is apparent that, from the users' point of view, the time of the forecast location of the TC centre should be included in TC SIGMET when "FCST" is used, i.e. in the form "TC CHANCHU FCST 1200Z N1740 E11450" or "TC FCST 1800Z N2000 E 11430" for the two scenarios described in para. 2.2 above. It is therefore proposed to amend the SIGMET template in Table A6-1 of Annex 3 to allow the inclusion of the time of forecast as an optional field, viz. in the form "FCST [nnnnZ]".

2.5 Furthermore, before this proposed amendment to Annex 3 becomes effective, for the first scenario in which a TC with 10-minute mean surface wind speed of 34 kt or more is forecast to enter into the FIR concerned within the next 12 hours, the use of "OBS" is preferred by the users due to the availability of the time of the observed location of the TC centre. Indeed, a number of States are already providing the observed location and time of the TC using "OBS" in the TC SIGMET, instead of the forecast location when the TC is expected to enter into the FIR concerned, for such scenario. In this connection, the relevant guidance material, e.g. regional SIGMET Guide, is proposed to be clarified to allow the continuation of this practice, until the above-mentioned amendment to Annex 3 becomes effective. On the other hand, for the second scenario in which a TC is forecast to intensify into one with 10-minute mean surface wind speed of 34 kt or more within the next 12 hours, there is currently no choice but to use "FCST" without including the time of forecast. This is because the use of "OBS" in this case is not appropriate as the TC concerned has not (yet) reached the prescribed intensity.

2.6 The group may wish to agree with the following action:

Action agreed 1/.. — Amendment to Annex 3 and relevant guidance material regarding SIGMET provisions

That,

(a) the proposal to amend the SIGMET template in Table A6-1 of Annex 3 to allow the inclusion of the time of forecast as an optional field, viz. in the form "FCST [nnnnZ]", given in Appendix XX, be consolidated with other elements of Amendment 75 to Annex 3 by the Secretary; and

(b) the relevant guidance material be clarified to allow the continuation of the practice of using "OBS [AT nnnnZ]" to provide the time of the observed location of the TC in the SIGMET message for the scenario in which a TC with 10-minute mean surface wind speed of 34 kt or more is forecast to enter into the FIR concerned within the next 12 hours, until Amendment 75 to Annex 3 becomes effective.

3. ACTION BY THE METWSG

3.1 The METWSG is invited to:

a) note the information in this paper; and

b) decide on the draft action proposed for the group's consideration.

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APPENDIX A

APANPIRG/18 – APPENDIX N TO THE REPORT ON AGENDA ITEM 3.3

IMPLEMENTATION ISSUES IDENTIFIED BY THE ASIA/PAC SIGMET SEMINAR

The ASIA/PAC SIGMET Seminar held from 11 to 13 July 2007 at the ICAO Regional Office, Bangkok, provided feed-back on common issues in regard to implementation of SIGMET provision. The 11th meeting of the CNS/MET Sub-group of APANPIRG agreed that these issues should be brought to the attention of an appropriate ICAO body for consideration and provision of additional guidance to States and/or amendment to SIGMET SARPs as necessary. These issues are summarized as follows:

— In the volcano name in VA SIGMET, "MT" should be optional – not all volcanoes are mountains; the name should be taken from VA advisory;

— For VA SIGMET, additional guidance is necessary for reporting multiple layers, as well as, procedures for reporting more than one eruption within FIR (e.g., one ceasing and one new eruption);

— In VA SIGMET, when the VA cloud crosses the FIR boundary the description of the VA cloud should not be limited to the FIR boundaries because this may be misleading information for pilots;

— In TC SIGMET: align the TC SIGMET format with the changes to the format of TC advisory in Amendment 74 in regard to: the use of 16 compass points for the direction of movement of TC centre; use of "NIL" in the TC name field;

— It was considered necessary to have a provision for including the time of forecast: FCST [nnnnZ];

— Enable the use of "SFC" in reporting layer, i.e., SFC/FLnnn;

— Reporting of more than one area in the FIR affected by the same meteorological phenomenon – current provision require separate SIGMET. This was considered not efficient and creating additional work load, as well as information load on systems, such as VOLMET. It was proposed to use "AND" which would enable the description of two geographical areas for the same phenomenon, e.g., TS;

— It was requested that the use of sequence numbers be clarified. The SIGMET Guide currently recommends that separate SIGMETs should be issued for different phenomena affecting the same FIR, and for keeping more than one SIGMETs at a time valid for the FIR concerned, different series of sequence number could be used, e.g. series A1, A2, … for "phenomenon A" and B1, B2, … for "phenomenon B". However, Annex 3 currently specifies that "The sequence number referred to in the

template in Table A6-1 shall correspond with the number of SIGMET messages issued for the flight information region since 0001 UTC on the day concerned. Separate series of sequence numbers shall be used for "SIGMET" and "SIGMET SST" messages". It therefore appears that the current Annex 3 provisions do not expect separate series of sequence numbers for different phenomenon affecting the same FIR. It is also unclear whether separate series of sequence numbers should be used for WS, WC and WA SIGMETs;

— It was requested that the examples provided in Annex 3, Appendix 6, Table A6-1 should encompass more "difficult" cases;

— The participants emphasized that training events like the ASIA/PAC SIGMET Seminar were extremely useful and necessary for the Region. It was suggested that they should be organized every 2 to 3 years in order to assist States in the implementation of the ICAO provisions.

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APPENDIX B

NOTES ON THE PRESENTATION OF THE PROPOSED AMENDMENT TO ANNEX 3

The text of the proposed amendment is arranged to show deleted text with a line through it and new text highlighted with grey shading as shown below:

1.	~~text to be deleted is shown with a line through it~~	text to be deleted
2.	new text to be inserted is highlighted with grey shading	new text to be inserted
3.	~~text to be deleted is shown with a line through it~~ followed by the new text which is highlighted with grey shading	new text to replace existing text

PROPOSED AMENDMENT TO

**INTERNATIONAL STANDARDS
AND RECOMMENDED PRACTICES**

**METEOROLOGICAL SERVICE
FOR INTERNATIONAL AIR NAVIGATION**

**ANNEX 3
TO THE CONVENTION OF INTERNATIONAL CIVIL AVIATION**

SIXTEENTH EDITION — JULY 2007

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APPENDIX 6. TECHNICAL SPECIFICATIONS RELATED TO SIGMET AND AIRMET INFORMATION, AERODROME WARNINGS AND WIND SHEAR WARNINGS AND ALERTS

(See Chapter 7 of this Annex.)

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Table A6-1. Template for SIGMET and AIRMET messages and special air-reports (uplink)

Key: M = inclusion mandatory, part of every message;
C = inclusion conditional, included whenever applicable;
= = a double line indicates that the text following it should be placed on the subsequent line.

Note.— The ranges and resolutions for the numerical elements included in SIGMET/AIRMET messages and in special air-reports are shown in Table A6-4 of this appendix.

Element as specified in Chapter 5 and Appendix 6	*Detailed content*	*Template(s)*			*Examples*
		SIGMET	*AIRMET*	*SPECIAL AIR-REPORT*[1]	
Observed or forecast phenomenon (M)	Indication whether the information is observed and expected to continue, *or* forecast (M)	OBS [AT nnnnZ] FCST [nnnnZ]		OBS AT nnnnZ	OBS AT 1210Z OBS
. . .					

— END —