



香港天文台

HONG KONG OBSERVATORY

Reprint 569

BUFR Migration Operational Trial and Airlines' Feedback

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World Area Forecast System Operations Group (WAFSOPSG)

Second Meeting, Bangkok, Thailand, 8-11 March 2005



WORLD AREA FORECAST SYSTEM OPERATIONS GROUP (WAFSOPSG)

SECOND MEETING

Bangkok, Thailand, 8 to 11 March 2005

Agenda Item 6: Development of the WAFS

**BUFR MIGRATION OPERATIONAL TRIAL AND AIRLINES'
FEEDBACK**

(Presented by China)

SUMMARY

This paper highlights feedback from airlines operating in Hong Kong, China regarding an operational trial of new SIGWX charts generated from BUFR coded WAFS data. Some suggestions on the BUFR chart format are also made.

1. INTRODUCTION

1.1 As required in Amendment 73 to Annex 3, which has become applicable on 25 November 2004, the two World Area Forecast Centres (WAFCs) are required to prepare global SIGWX forecasts in the BUFR code form. The responsibility of the individual Meteorological Offices in respect of the use of WAFS products is stated as “In order to ensure uniformity and standardization of flight documentation, the WAFS GRIB and BUFR data received shall be decoded into standard WAFS charts in accordance with relevant provisions in this Annex, and the content and identification of the originator of the WAFS forecasts shall not be amended” (Appendix 2 to Annex 3, para. 2.1.3). In order to achieve this, the WAFS user States have to acquire/develop the necessary operational BUFR decoding and visualization software and to train the relevant staff to operate the software.

1.2 As regards the availability of BUFR decoding and visualization software, by the end of December 2004, according to information on the UK Met Office website regarding SADIS software evaluations, five WAFS/SADIS workstation companies have produced visualization software that can depict WAFS data in an ICAO compliant manner.

1.3 This paper describes an operational trial provision of SIGWX charts generated from BUFR coded WAFS data to airlines operating at the Hong Kong International Airport (HKIA) and a survey

conducted by Hong Kong, China to collect feedback from these airlines on the new BUFR charts. In particular, some suggestions on the BUFR chart format are summarized for consideration of the group.

2. OPERATIONAL BUFR TRIAL AND AIRLINE SURVEY

2.1 Starting 30 September 2004, in preparation for BUFR migration, the Hong Kong Observatory (HKO) started to provide SIGWX charts generated from BUFR coded WAFS data on a trial basis to airlines operating at HKIA. These new BUFR charts are generated by a visualization software package that can depict WAFS data in an ICAO compliant manner (see para. 1.2 above). The new BUFR charts are provided through HKO's web-based Aviation Meteorological Information Dissemination System (AMIDS) in addition to the T4 facsimile WAFS charts. The AMIDS is an automated pre-flight information system for briefing, consultation, flight planning and flight documentation provided to authorized users of airlines operating at HKIA in accordance with Annex 3 technical specifications in Appendix 8 Section 5. During 30 November - 23 December 2004, HKO conducted a survey to collect feedback from these airlines on the BUFR charts. The survey questionnaire is given in Appendix A.

3. AIRLINES' FEEDBACK

3.1 A total of 15 returns from airlines operating at HKIA were received. Their responses to the survey questions and their comments/suggestions are given in Appendix B. In respect of the survey questions, the results are summarized below:

- a) 95% of the responses consider the overall quality of the new BUFR charts good or acceptable;
- b) 87% of the responses find the timeliness of provision of the new BUFR charts good or acceptable;
- c) 93% of the responses consider the user friendliness of the AMIDS interface to access the new BUFR charts good or acceptable;
- d) 93% of the responses find the new BUFR charts an improvement over the existing T4 charts; and
- e) 80% of the responses support the replacement of the existing T4 charts by the new BUFR charts.

3.2 The comments and suggestions made by the airlines can be summarized as follows:

- a) the new charts are very legible, the colour is pleasant to the eye and all chart areas are well presented;
- b) in respect of timeliness of the new charts, while some airlines are not yet using them operationally, some find them available in a timely manner and suite the airline schedule well;
- c) the new charts should cater for black and white printing and fax transmission

Note. — Automatic conversion of the colour charts into black and white charts for *printing and fax transmission is being explored*;

- d) some airports are found missing from the new BUFR charts;

Note. — The missing airports will be re-instated.

- e) the airports should be indicated using the ICAO location indicators instead of the single characters currently used (e.g. “VHHH” instead of “H” for the Hong Kong International Airport);
- f) labels of any kind should at all times not to patch or cover the airports (origin, destination and alternate); and
- g) some areas are not covered by the new charts (e.g. the area covered by the T4 chart PGDE15_EGRR).

4. DISCUSSION ON THE AIRLINES' FEEDBACK

4.1 The majority of the airlines find the new BUFR charts an improvement over the existing T4 charts and support them replacing the existing T4 charts. In the light of this positive feedback, HKO plans to include more BUFR charts on the AMIDS for additional areas based on airlines' requests (one example given in Appendix C).

4.2 Concerning the comment that some areas are not covered by the new BUFR charts (see para. 3.2(g) above), the chart concerned pertains to the medium-level SIGWX (SWM) forecast over Europe and its availability is subject to the dissemination of SWM forecasts in BUFR format by WAFC London. In WP/7, UK advised that WAFC London SWM forecasts in BUFR format were not expected to start operational dissemination until March 2005.

4.3 As regards the airlines' suggestions on the BUFR chart format (see para. 3.2(e) and (f) above), the group may wish to consider whether or not the guidelines developed by the WAFCs on “Representing WAFS Significant Weather (SIGWX) Data in BUFR” and the relevant Annex 3 SARPs should be amended:

- a) indicating on the SIGWX charts the airports using the standard ICAO location indicator instead of the first letter of the city the airport serves (re. para. 3.2(e) above and Appendix 8 para. 4.1.1.1 d) of Annex 3); and
- b) labels of any kind should at all times not to patch or cover the airports (origin, destination and alternate) (re. para. 3.2(f) above and Appendix 8 para. 4.1.1.1 c) of Annex 3).

4.4 The group may wish to deliberate on the need and the way in which the airlines' suggestions should be addressed and, subject to these deliberations, formulate the following conclusion:

RSPP **Conclusion 2/... — Amendment to Annex 3 concerning the
depiction of aerodrome on SIGWX charts**

That, the proposal to amend Annex 3 — *Meteorological Service for International Air Navigation* given in Appendix¹.... to this report be included as part of Amendment 74 to Annex 3.

5. **ACTION BY THE WAFSOPSG**

5.1 The WAFSOPSG is invited to:

- a) note the information in this paper; and
- b) decide on the draft conclusion proposed for the group's consideration.

¹ The draft proposal is at Appendix D to this working paper.

APPENDIX A

Survey on New Significant Weather Charts for Flight Documentation

Background

To speed up the transmission of significant en-route weather data, the World Area Forecast Centre (WAFC) at London had started disseminating significant weather forecasts in digital format. Weather charts generated from these digital forecasts will replace the current charts (in T4 fax format) in mid-2005 in accordance with ICAO's transition plan for the World Area Forecast System (WAFS).

New significant weather charts produced by the Hong Kong Observatory from these digital forecasts have been made available on a trial basis through the Observatory's web-based Aviation Meteorological Information Dissemination System (AMIDS) [AMIDS main page → En-route and Destination Weather → Select/Print Flight Document → click "BUFR" for "Prognostic Significant Weather Charts"] since 30 September 2004.

Purpose

The use of the digital WAFS data would enable tailoring of the forecast charts according to user's needs. For instance, significant weather charts can be presented in colours and the chart areas and map projection can be customized to suit the airline's operation (see attachment).

The purpose of this survey is to invite feedback from airlines and pilots on the new significant weather charts so that further tailoring and adjustments could be made prior to their full operational use. Specifically, the survey is focused on the following areas :

- (a) To invite feedback on the quality and user-friendliness of the new charts; and
- (b) To identify the areas for improvement to meet users' needs.

Results of the survey will be used by the Observatory in improving the new products.

Submission of questionnaire

- (a) Please visit the website http://www.weather.gov.hk/aviat/survey_wxp_2004.htm, fill in and submit the questionnaire online following the instructions contained therein; or
- (b) Fill in and return the attached questionnaire to us either by fax (2375-2645) or by mail.

Deadline for submission: **23 December 2004**.

Thank you for spending your valuable time and effort in responding to this questionnaire. Your views are very useful to the improvement of our products and service for the aviation community.

To: Aviation Forecast Systems Division
Aviation Services Branch
Hong Kong Observatory
134A, Nathan Road
Tsim Sha Tsui, Kowloon
Hong Kong
Fax: (852) 2375 2645

Section I – General information

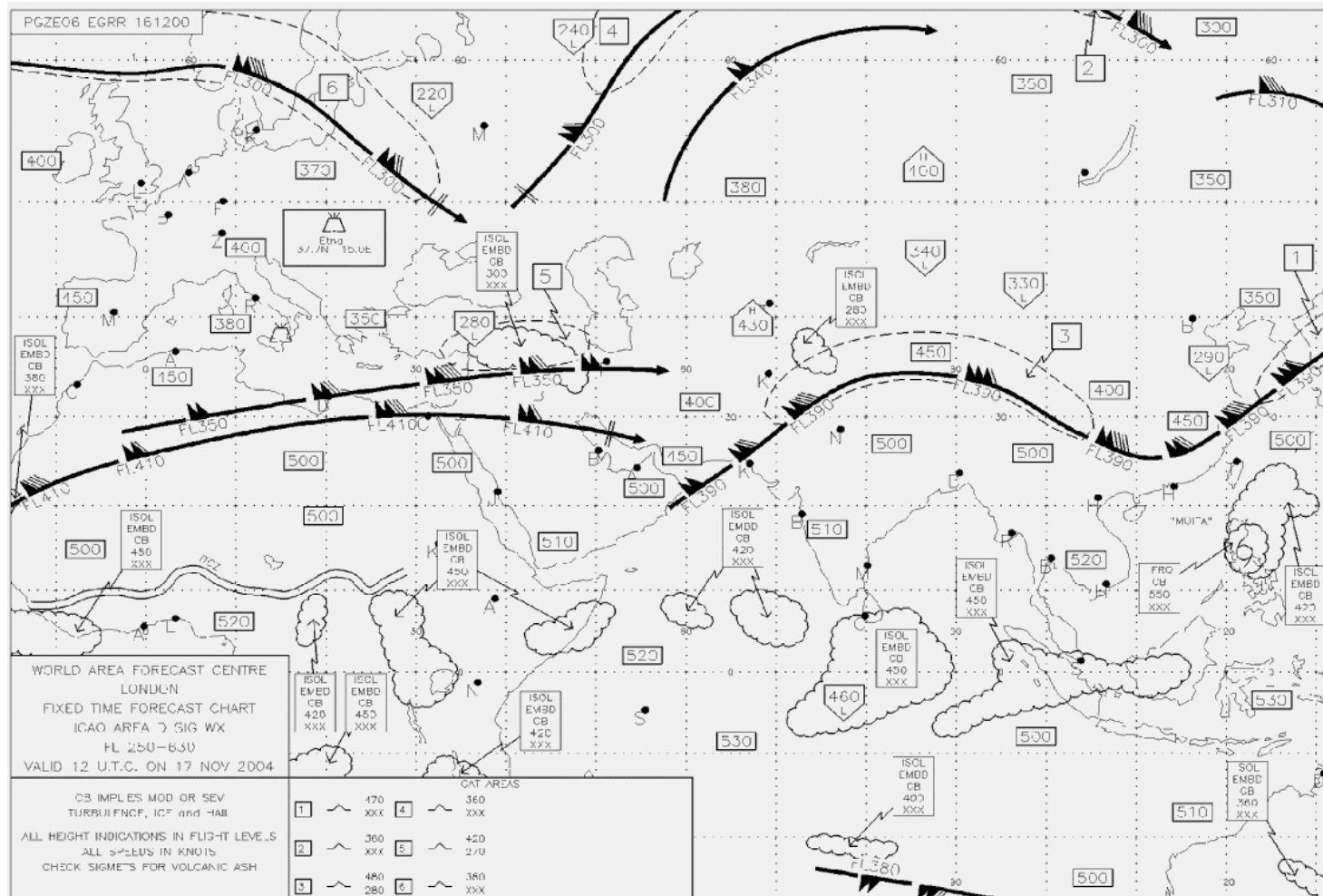
Signature: _____ Position: _____
Name: _____ Airline: _____
Email: _____ Date: _____

Section II – Feedback on New Significant Weather Charts for Flight Documentation

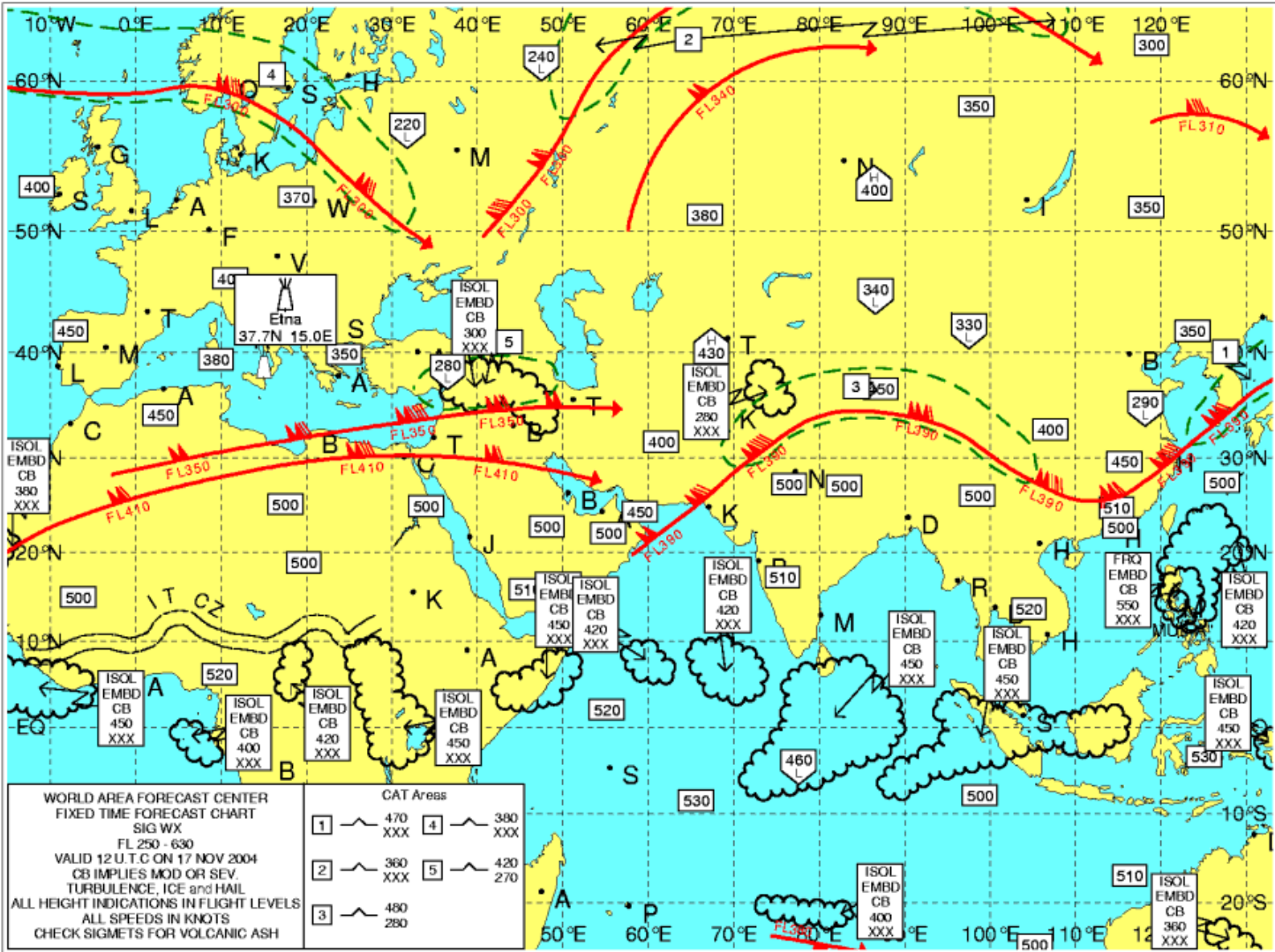
| Survey Items | Information / products acceptable? G = good A = acceptable I = improvement/new product required | Areas for improvement / development in respect of content, format or user friendliness of product/interface (<i>please provide details below.</i>) |
|--|--|--|
| 1. Overall quality of the new charts (a) functional aspects (i.e. whether significant en-route weather is properly depicted) (b) presentation aspects (e.g. colour, legibility) (c) chart areas and map projection (i.e. whether the chart areas suit your flight routes) | <input type="checkbox"/> G <input type="checkbox"/> A <input type="checkbox"/> I <input type="checkbox"/> G <input type="checkbox"/> A <input type="checkbox"/> I <input type="checkbox"/> G <input type="checkbox"/> A <input type="checkbox"/> I | |
| 2. Timeliness (e.g. compared with T4 fax charts) | <input type="checkbox"/> G <input type="checkbox"/> A <input type="checkbox"/> I | |
| 3. User friendliness of AMIDS interface to access the new charts | <input type="checkbox"/> G <input type="checkbox"/> A <input type="checkbox"/> I | |
| 4. Are the new charts an improvement over the existing T4 charts? | Better / Same / Worst <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | |
| 5. Do you support the replacement of the existing T4 charts by the new charts? | Support / Neutral / Object <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | |
| 6. Other comments/suggestions | | |

Attachment - Samples of Significant Weather Charts

1. Existing Significant Weather Chart in T4 Fax Format



2. New Significant Weather Chart



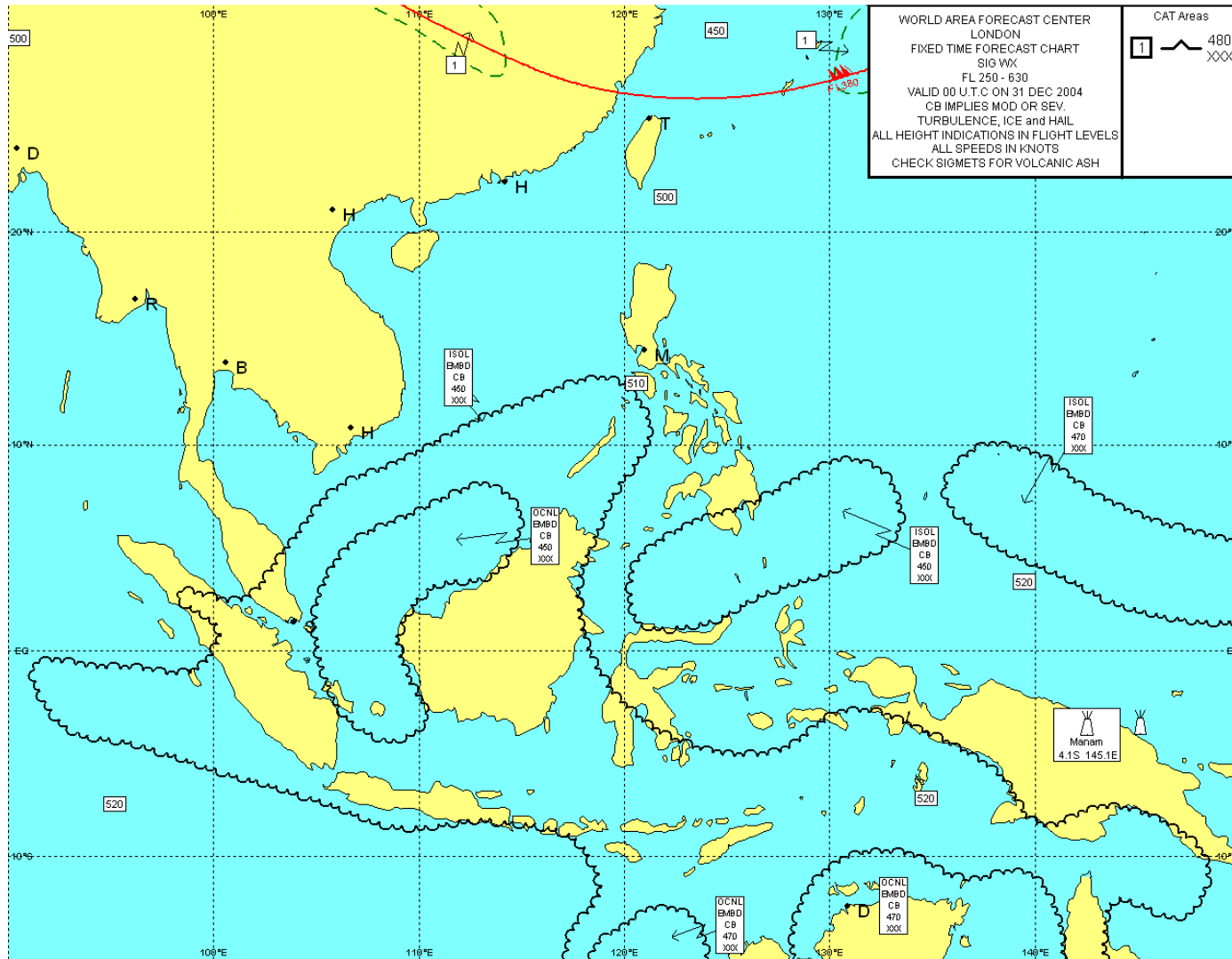
Results of Survey on New Significant Weather Charts for Flight Documentation Generated from BUFR coded WAFS Products

| Survey Items | Information / products acceptable? | | | Areas for improvement / development in respect of content, format or user friendliness of product/interface |
|---|------------------------------------|-------------------|-----------------------------|--|
| 1. Overall quality of the new charts (a) functional aspects (i.e. whether significant en-route weather is properly depicted) (b) presentation aspects (e.g. colour, legibility) | <u>Good</u> | <u>Acceptable</u> | <u>Improvement Required</u> | <p>1. Excellent presentation.</p> <p>2. The airports on some of the charts are represented by one character. To avoid confusion and to be consistent, suggest to use ICAO code for the airport in all charts.</p> <p>Very legible, color is pleasant to the eye.</p> |
| | 73% [10/15] | 20% [3/15] | 7% [1/15] | |

| | <u>Good</u> | <u>Acceptable</u> | <u>Improvement Required</u> | |
|--|---|--|--|---|
| (c) chart areas and map projection (i.e. whether the chart areas suit your flight routes) | 53% [8/15] | 40% [6/15] | 7% [1/15] | 1. All areas are well presented. 2. 'Paris' is missing from the New Significant Weather Chart. |
| 2. Timeliness (e.g. compared with T4 fax charts) | 40% [6/15] | 47% [7/15] | 13% [2/15] | 1. Timeliness suits schedule well. 2. Not applicable. The charts are not yet used regularly right now. |
| 3. User friendliness of AMIDS interface to access the new charts | 60% [9/15] | 33% [5/15] | 7% [1/15] | User friendly. |
| 4. Are the new charts an improvement over the existing T4 charts? | <u>Better</u> 93% [14/15] | <u>Same</u> 7% [1/15] | <u>Worst</u> 0% [0/15] | Well improved. |
| 5. Do you support the replacement of the existing T4 charts by the new charts? | <u>Support</u> 80% [12/15] | <u>Neutral</u> 20% [3/15] | <u>Object</u> 0% [0/15] | We hope that new charts covering all required areas will be available before the T4 charts are being replaced. |

| | |
|----------------------------------|---|
| 6. Other comments/suggestions | <ol style="list-style-type: none">1. Charts available for Black & White printing.2. Labels of any kind should at all times not to patch or cover stations (origins, destinations, alternates).3. Some areas are not covered by the new charts (e.g. the area covered by the T4 chart PGDE15_EGRR).4. We require flight documents send to our office by fax as current procedures even with the replacement of the new charts.5. Put ICAO Airport for the capital letter in each country. |
|----------------------------------|---|

High-level SIGWX Chart for a Tailored Area Generated from BUFR Coded WAFS Data



APPENDIX D

PROPOSED AMENDMENT TO

**INTERNATIONAL STANDARDS
AND RECOMMENDED PRACTICES**

**METEOROLOGICAL SERVICE
FOR INTERNATIONAL AIR NAVIGATION**

ANNEX 3

TO THE CONVENTION OF INTERNATIONAL CIVIL AVIATION

FIFTEENTH EDITION — JULY 2004

PART II

APPENDICES AND ATTACHMENTS

...

**APPENDIX 8. TECHNICAL SPECIFICATIONS RELATED
TO SERVICE FOR OPERATORS AND FLIGHT CREW MEMBERS**
(See Chapter 9 of this Annex.)

...

4. SPECIFICATIONS RELATED TO FLIGHT DOCUMENTATION

4.1 General

...

Editorial Note.— Under new paragraph 4.2.1.1 c), (WAFSOPSG/3-WP/3, Appendix B refers), *insert* “and labels should not cover the aerodromes of departure and intended landing, nor alternate aerodromes” after “overlap”; and under new paragraph 4.2.1.1 d), (WAFSOPSG/3-WP/3, Appendix B refers), *amend* “the first letter of the name of the city” to read “the location indicator”.

— END —