International Civil Aviation Organization

WORKING PAPER

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Twelfth Meeting of the Meteorological Services Working Group (MET/S WG/12)

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Agenda Item 3: Planning and implementation of meteorological services

RECENT PROGRESS OF INTERNATIONAL COOPERATION SCHEME ON COLLABORATIVE SIGMET ISSUANCE (CSI)

(Presented by Japan, Lao PDR, Myanmar, Philippines, Thailand and Vietnam)

SUMMARY

This paper presents the recent progress of the international cooperation scheme of the Collaborative SIGMET Issuance (CSI) including outcomes of CSI workshop held in January 2022. In the workshop, it was agreed to suggest conducting further survey for users in the Region for more efficient SIGMET coordination regarding relevant issues such as acceptable differences of SIGMETs and encourage tool providers for SIGMET coordination to discuss improving convenience of utilizing multiple web platform.

1. INTRODUCTION

1.1 Noting the presence of SIGMET discontinuity between FIRs and the requirements for harmonized en-route hazardous weather information, the Philippine Atmospheric Geophysical and Astronomical Services Administration (PAGASA), the Vietnam Air Traffic Management Corporation (VATM) and the Japan Meteorological Agency (JMA) launched a demonstration project on Collaborative SIGMET Issuance (CSI) in 2015. The Department of Meteorology and Hydrology of Lao PDR (LDMH), the Department of Meteorology and Hydrology of Myanmar (MDMH) and the Thai Meteorological Department (TMD) joined the project in 2016. The members decided to transfer the project into the operational phase with documented scheme of cooperation from 9th April 2018. Furthermore, the Malaysian Meteorological Department (MMD) participates in CSI as an observer.

1.2 The CSI Workshop was held via on-line from 18 to 19 January 2022. Summary of the CSI Workshop is attached to this paper (Appendix A). During the Workshop, CSI Session with CSI members was held on 18 and 19 January and the following agenda items were discussed.

- WC SIGMET Handover
- Expansion of SIGMET coordination
- Dealing with the increased workload on forecasters due to expansion of SIGMET coordination
- Acceptable differences of SIGMETs and further survey

1.3 During the CSI Workshop, the Joint Session was also held on the afternoon of 19 January inviting experts from MWOs in the Region. During the session, expansion of SIGMET coordination was discussed and other results of CSI Session were introduced.

2. DISCUSSION

2.1 At the CSI Workshop, the following issues were found.

Issue on difference of SIGMET

2.2 ICAO Annex 3 recommended that an MWO should coordinate SIGMET with neighbouring MWO(s), especially when the en-route weather phenomenon extends or is expected to extend beyond the MWO's specified area of responsibility. The MWOs try to align the content of their SIGMETs during coordination. However, contents of SIGMETs for significant weather phenomena that straddle multiple FIRs are rarely exactly the same because monitoring tools, content of information, the kind of numerical weather prediction model, the knowledge of forecasters, etc. differ from MWO to MWO. Therefore, degree of approximation of content and the goal of the coordination is a matter of serious concern.

2.3 CSI member States agreed to find a solution to this issue from the user's perspective. JMA as a CSI member State conducted a survey on how users recognize differences in SIGMETs and how much of a difference is acceptable. This can serve as a target for SIGMET coordination and as a basis for consensus. The number of airlines participating in the survey was very small because it was carried out in the COVID-19 pandemic. However, very valuable opinion was obtained.

2.4 In view of the fact that a result of the survey may be a target for future SIGMET coordination and a basis for consensus, it is important to get opinions of a wide range of users. Therefore, CSI member States agreed that conducting such survey not only for CSI member States but also to a wide range of users should be encouraged. After the discussion, CSI members prepared an example of a questionnaire (Appendix B).

Issue on tools for supporting SIGMET coordination

2.5 The web platform for SIGMET coordination provided by the tool providers is very useful and some MWOs use it to coordinate SIGMETs. When coordinating SIGMET beyond the framework, the web platform may be changed depending on MWO to be coordinated due to the different web platform is used in each SIGMET coordination framework. In this context, issues of increasing workload for forecasters in some MWOs was raised. In particular, there is a risk of oversight, confusion and errors as multiple chat rooms have to be monitored. So participants suggested integration of chat rooms, for example, chat messages can be viewed on both chat room, regardless of which chat room they are sent from. It was also suggested that the tool providers discuss ways to improve its usefulness.

2.6 Taking suggestion from users of platforms into consideration, CSI member States agreed to encourage the tool providers discuss and find feasible solutions to improve the usefulness for users.

3. ACTION BY THE MEETING

3.1 The meeting in invited to:

a) note the information contained in this paper;
b) discuss the benefit of conducting further survey for efficient SIGMET coordination, regarding relevant issues such as acceptable difference of SIGMETs;
c) encourage the tool providers discuss multiple platform issue and find feasible solutions to improve the usefulness for users; and
d) discuss any relevant matters as appropriate.

APPENDIX A

Summary of Collaborative SIGMET Issuance (CSI) Workshop

1. INTRODUCTION

1.1 Noting the presence of SIGMET discontinuity between FIRs and the requirements for harmonized en-route hazardous weather information, the Philippine Atmospheric Geophysical and Astronomical Services Administration (PAGASA), the Vietnam Air Traffic Management Corporation (VATM) and the Japan Meteorological Agency (JMA) launched a demonstration project on Collaborative SIGMET Issuance (CSI) in 2015. The Department of Meteorology and Hydrology of Lao PDR (LDMH), the Department of Meteorology and Hydrology of Myanmar (MDMH) and the Thai Meteorological Department (TMD) joined the project in 2016. The members decided to transfer the project into the operational phase with documented scheme of cooperation from 9th April 2018. Furthermore, the Malaysian Meteorological Department (MMD) participates in CSI as an observer.

1.2 Figure 1 shows the overview of the CSI procedures. It is a joint cooperation scheme among CSI members to prepare and issue SIGMET in a collaborative manner based on jointly-developed coordination procedures and using common tools and supporting information.

1.3 The CSI members are conducting monthly online meetings to review and evaluate the performance of coordination and the coordination procedure, including the content and functionality of the web platform.

2. DISCUSSION ON THE CSI WORKSHOP

2.1 The CSI Workshop was held via on-line from 18 to 19 January 2022. During the workshop, CSI Session with CSI members was held on 18 and 19 January and was attended by experts from the JMA, LDMH, MDMH, PAGASA, TMD, VATM and MMD. Ms. Lan Oanh Nguyen from the Civil Aviation Authority of Vietnam (CAAV) and Mr. Peter Dunda, Regional Officer Aeronautical Meteorology and Environment, ICAO APAC Office, also participated. In addition, the Joint Session was held on the afternoon of 19 January with the participation of the CSI Session participants, experts from the Indonesian Agency for Meteorology, Climatology and Geophysics (BMKG), the Meteorological Services Singapore (MSS), the Australian Bureau of Meteorology (BoM) and National Weather Service of the US (NWS).

CSI Session

2.2 The participants reviewed that CSI members revised the Technical Specifications about WC SIGMET Handover procedure based on the discussion in the previous CSI Workshop. They also discussed the smooth handover of WC SIGMET based on some cases, and the following opinions were expressed.

- It is necessary to consider setting the maximum validity period in WC SIGMET when a TC is moving to adjacent FIR to prevent the discontinuity of WC SIGMET issuance and apply cancellation once the adjacent FIR has issued the WC SIGMET (observe) or has reached the start of the validity period of the issued WC SIGMET (forecast).
- Preliminary issuance (maximum lead time is 12 hours) of WC SIGMET based on the forecast is beneficial.
- It would be useful for WC SIGMET handover if TCACs issued TCAs more frequently, for example 3 hourly and if forecasts included a finer time resolution, e.g. every 3 hours.

2.3 The results of a preliminary survey of MWOs on increasing workload of forecasters due to expansion of SIGMET coordination were reported. The outline is as follows.

- While some MWOs feel the increase of workload, there are some MWOs who do not think their workload have been increased. At present, the number of adjacent MWOs with which they conduct SIGMET coordination does not necessarily correspond to the perceived workload, which may vary depending on the circumstances of each MWO (e.g., staffing issues), but may increase as coordination expands.
- External factors of the workload included the staff shortage, the fact that there are tasks other than SIGMET issuance/coordination in significant weather, and the fact that there exist time periods when officers are not able to monitor the communications related to the coordination due to several reasons.

2.4 Any SIGMET coordination are to be recorded in a logbook for review and case studies to support the improvement of procedures and techniques. Most MWOs were recording the logbooks, but some had not yet started. As to the issues with logbook recording, it was pointed out that the format of the logbook differs among the SIGMET coordination frameworks. There was a suggestion to consider the need to identify the minimum common items to be recorded and the criteria for consensus.

2.5 The participants reconfirmed the importance of the SIGMET coordination with Cambodia since Phnom Penh FIR is surrounded by the FIRs of the CSI member States.

2.6 JMA reviewed the result of a survey for airlines conducted last year about the acceptable difference of SIGMETs issued by neighbor MWOs. Due to the COVID-19 outbreak, this survey had been carried out by one airline. Participants agreed to submit a proposal on conducting survey for a wide range of users in the Region, not limited to the CSI member States, at the 12th meeting of the ICAO APAC Meteorological Services Working Group (MET/S WG/12).

Joint Session

2.7 Following progress of expansion of SIGMET coordination was reported.

2.7.1 Regarding two SIGMET coordination trials which is agreed at the Joint Session of the previous CSI Workshop held in January 2021, MDMH-MMD (Kuala Lumpur MWO) and MMD (Kota Kinabalu MWO)-MSS-PAGASA, had transferred to the operational phase from 1 November 2021 and 15 October 2021 respectively.

2.7.2 Coordination trial between PAGASA and NWS (HFO) was transferred to the operational phase on 1 February 2021. The coordination trial between BoM and BMKG was ended in April 2021 and a review meeting would be held to discuss the next stage.

2.8 As further expansion of SIGMET coordination, it was reported that the coordination trial has been started between PAGASA, BMKG and China (Sanya MWO). It was also reported that the SIGMET coordination trial between BMKG and NWS (HFO) is planned. In addition, it was proposed and agreed to involve TMD and VATM in the coordination with MSS-MMD-PAGASA-BMKG.

2.9 Participants expressed a concern that the multiple coordination platforms, particularly the chat tools, would become a workload for forecasters and lead to confusion as SIGMET coordination expands. Participants proposed to raise it in the ICAO APAC MET/S WG meeting to encourage the tool providers to discuss this multiple platform issue and find feasible solutions.

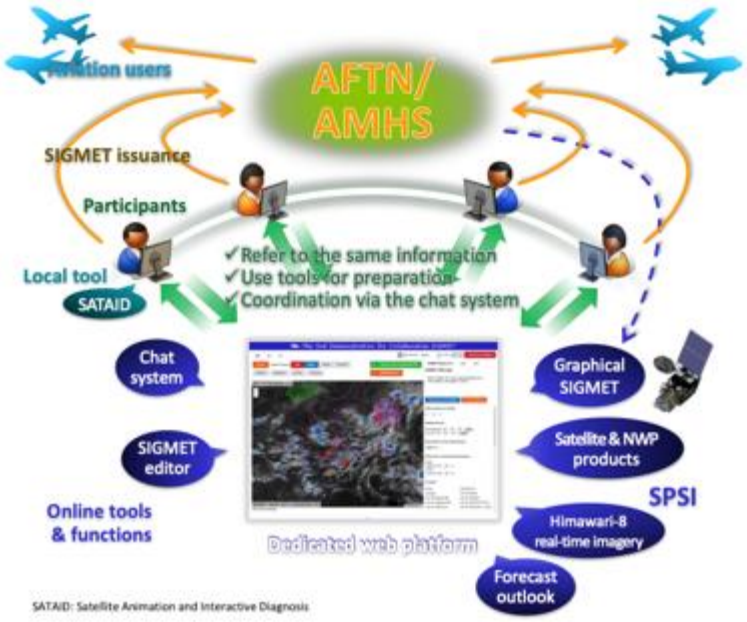


Figure 1 Overview of the CSI procedures

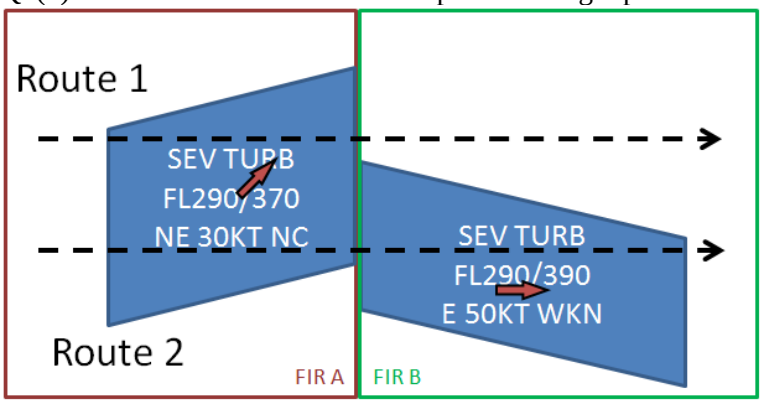
APPENDIX B

Example of QUESTIONNAIRE

Q1. Your job title

- ATC Officer
- ATM Officer
- Other Civil Aviation Officer ( )
- Dispatcher
- Pilot
- Other Airline Staff (
- Other Job title ( )
- Other (please specify) ( )

Q2(1). Does it affect on the aircraft operations/flight plan?



a) when you plan to use Route 1

It may affect flight operation
It does NOT affect flight operation
I'm worried about the difference between the two SIGMETs
I'm NOT worried about the difference between the two SIGMETs

Comments (if any)

b) when you plan to use Route 2

It may affect flight operation
It does NOT affect flight operation
I'm worried about the difference between the two SIGMETs
I'm NOT worried about the difference between the two SIGMETs

Comments (if any)

Q2 (2). Are you worried about the difference of altitude of SIGMETs for SEV TURB?

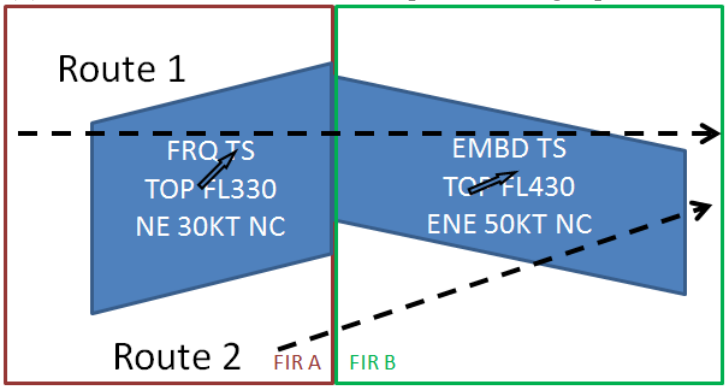
SIGMET for SEV TURB SIGMET A vs SIGMET B	**I am warried about the difference.**	**I do not care.**	**Yes and No.**	**It's OK, if observation / forecast is actually true**
FL300/360 vs FL320/380				
FL300/360 vs FL340/400				
FL300/360 vs FL360/420				

Comments if any

Q2 (3). Do you care about the difference in movement between the contents of the two neighbouring SIGMETs for SEV TURB? How much the difference between two SIGMETs that have different degrees of impact on operation?

Comments

Q3 (1). Does it affect on the aircraft operations/flight plan?



a) when you plan to use Route 1

It may affect flight operation
It does NOT affect flight operation
I'm worried about the difference between the two SIGMETs
I'm NOT worried about the difference between the two SIGMETs

Comments (if any)

b) when you plan to use Route 2

It may affect flight operation
It does NOT affect flight operation
I'm worried about the difference between the two SIGMETs
I'm NOT worried about the difference between the two SIGMETs

Comments (if any)

Q3 (2). Are you worried about the difference of height of SIGMETs for TS (thunderstorm)?

SIGMET for TS SIGMET A vs SIGMET B	**I am warried about the difference.**	**I do not care.**	**Yes and No.**	**It's OK, if observation / forecast is actually true**
TOP FL330 vs TOP FL360				
TOP FL330 vs TOP FL390				
TOP FL330 vs TOP FL420				
TOP FL420 vs TOP FL460				

Comments if any

Q3 (3). Do you care about the difference in movement between the contents of the two neighbouring SIGMETs for TS (thunderstorm)? How much the difference between two SIGMETs that have different degrees of impact on operation?

Comments

Q4. Points to keep in mind,
when SIGMET is issued on the planned air-route or while passing airspace covered by SIGMETs.

Comments (for severe turbulence)

Comments (for thunderstorm)

Q5. What is the degree of difficulty in avoiding adverse weather areas?

Comments (vertical deviation or horizontal deviation)

Q6. Do you recognize the difference between OBSC, EMBD, FRQ and SQL for TS (Thunderstorm) SIGMET?

Comments

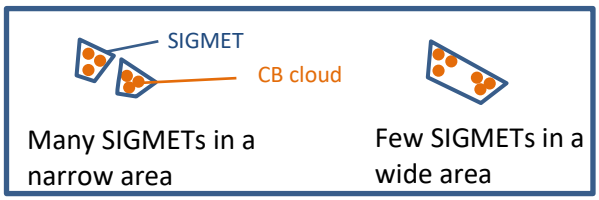
Q7. It may take some time to coordinate SIGMET. In that case, the issuance of SIGMET may be delayed. What is the allowable delay time?

Comments

Q8. Which do you prefer, to update SIGMET on hazard areas at short intervals or to update SIGMET that covers the whole validity period every 4 hours?

Comments

Q9. Which do you prefer, many SIGMET in a narrow area with no gaps or few SIGMET in a wide area with gaps?



Comments