International Civil Aviation Organization

NINTH MEETING OF THE COMMUNICATIONS/NAVIGATION/SURVEILLANCE AND METEOROLOGY SUB-GROUP OF APANPIRG (CNS/MET SG/9)

Bangkok, Thailand, 11–15 July 2005

Agenda Item 9:   **Exchange of OPMET Information**

ASIA-PACIFIC OPMET PERFORMANCE INDICES

(Presented by Singapore)

SUMMARY

This paper presents the results of OPMET monitoring conducted in March 2005 in Singapore. Three performance indicators, viz., Availability, Regularity and ROBEX Compliance indices for the Asia-Pacific OPMET bulletins were used to show the results of the exercise.

1.   Introduction

1.1   As part of the continuing effort to improve the flow of OPMET data to and from Singapore, a monitoring exercise was conducted in the month March 2005. Based on data captured during this month, values of three performance indices viz., Availability, Regularity and ROBEX Compliance Indices were computed for all the aerodromes listed in the ROBEX Handbook. The daily values for each bulletin were then averaged for the 31 days in March 2005. In the case of Regularity Index, a separate data set was needed for the calculating characteristics of the distribution (mean, standard deviation and threshold) of the daily number of reports. February 2005 data were used for this purpose.

2.   Method

2.1   The determination of the values of availability index was performed on a daily basis from the data captured during the monitoring period (March 2005). For each data type (SA, FC and FT) a count was made of the aerodromes that were found "available". An aerodrome was considered "available" if at least 1 non-NIL reports of the correct type was received on the day. Retarded reports were also counted for this index. For a bulletin, the daily values of Availability Index were calculated using:

$$V_{bulletin\ availability} = \frac{no.\,aerodromes\ for\ which\ 1\ or\ more\ Non-NIL\ reports\ of\ the\ correct\ type\ are\ received}{no.\,of\ aerodromes\ required\ in\ the\ bulletin}$$

The daily values were averaged for 31 days in March 2005 and tabulated in Attachment 1. As the qualifying criterion -1 report a day for an aerodrome was quite easy, most bulletins scored 1.0 for the month for this index.

2.2   Though the number of reports required for an aerodrome in a day is specified in the ROBEX Handbook, the actual numbers received fluctuate due to various reasons, such as communication failure. The computation of Regularity Index values assumes that the number of reports follows a *normal* distribution. The *normal* distribution characteristics, mean (μ) and standard deviation (σ) can be ascertained from a set of data, prior to the monitoring period. In the later monitoring period, if the number of reports for an aerodrome in a day equals or exceeds that of the threshold ($\tau = \mu - \sigma$), it is considered "regular". At the bulletin level, the daily values for the index can be calculated using:

$$V_{bulletin\ regularity} = \frac{no.\ of\ aerodromes\ for\ which\ the\ no.\ of\ reports\ equals\ or\ exceeds\ the\ threshold}{no.\ of\ aerodromes\ required\ in\ the\ bulletin}$$

For this exercise, the February 2005 data were used for the computation of μ, σ and threshold τ. The thresholds were then used for determining the Regularity Index values for the ROBEX bulletins. Daily values were then averaged for the 31 days of March 2005. Retarded reports were not counted. Attachment 2 shows the results.

2.3   All the ROBEX bulletins have very high values for Availability Index (Attachment 1). For the purpose of assessing the level of compliance to the ROBEX schedule, it may be useful to devise a separate index capturing the fraction of required reports of a bulletin that are actually received. The values for this index, the ROBEX Compliance index can be calculated from:

$$V_{bulletin\ compliance} = \frac{no\ of\ reports\ received\ for\ a\ bulletin}{no.\ of\ reports\ required\ for\ the\ bulletin},$$

OPMET data in March 2005 were again used. Care taken to exclude corrections and amendments in the counting so as to ensure the numbers to be as close to the ROBEX tables as possible. However, retards were counted. Attachment 3 shows how the ROBEX bulletins fare as regards to this index.

3.   Results

3.1   As seen in Attachment 1, there was a high level of availability of the SA and FT OPMET data in March 2005. However, only 6 bulletins were available for type FC. The average Regularity Index values for all SA and FT ROBEX bulletins were 0.90 and 0.95 (see Attachment 2). March 2005 data also shows a high level of compliance to the ROBEX schedule. Singapore received and distributed 90% and 95% of the SA and FT reports required by ROBEX Handbook in March 2005.

4.   Action For The Meeting

4.1   The meeting is invited to discuss the monitoring results.

Attachment 1: Values of Availability Index for ASIA/PAC OPMET bulletins (Mar 2005)

Bulletin Name	Availability Index		
	SA	FT	FC
AE31 VECC	0.98	--	
AS31 VABB	--	1.00	
AS31 VTBB	0.99	1.00	
SA32 VABB	--	0.99	
AS32 VTBB	--	0.96	
AU31 YBBN	1.00	1.00	1.00
AU32 YBBN	1.00	1.00	
BN31 OBBI	1.00	1.00	
BN32 OBBI	1.00	0.99	
CI31 ZBBB	1.00	1.00	
CI32 ZBBB	1.00	1.00	
CI41 ZBBB	1.00	1.00	
EG31 HECA	--	1.00	
HK31 VHHH	1.00	1.00	1.00
ID31 WIII	0.98	--	
IN31 VIDP	--	1.00	
IN31 VABB	1.00	--	1.00
IN32 VIDP	0.98	--	
IR31 OIII	1.00	1.00	
JP31 RJTD	1.00	1.00	1.00
JP32 RJTD	1.00	1.00	1.00
KO31 RKSI	1.00	1.00	
ME31 OLBA	--	0.99	
MS31 WMKK	1.00	'--	
NZ31 NZKL	--	1.00	
PK31 OPKC	1.00	0.99	
SB31 VCCC	1.00	--	
SD31 OEJD	1.00	--	
SR31 WSSS	--	1.00	1.00
SR32 WSSS	--	1.00	
TH31 VTBB	0.97	1.00	
TH32 VTBB	0.88	1.00	
TH33 VTBB	0.83	1.00	
AVERAGE	**0.98**	**1.00**	**1.00**

Note: *Entry dashed out (--) means no reports of this type (SA or FT) are required*

Attachment 2 : Values of Regularity Index For ASIA/PAC bulletins Mar 2005

Regularity Index For ASIA-PAC Bulletins (Mar 05)
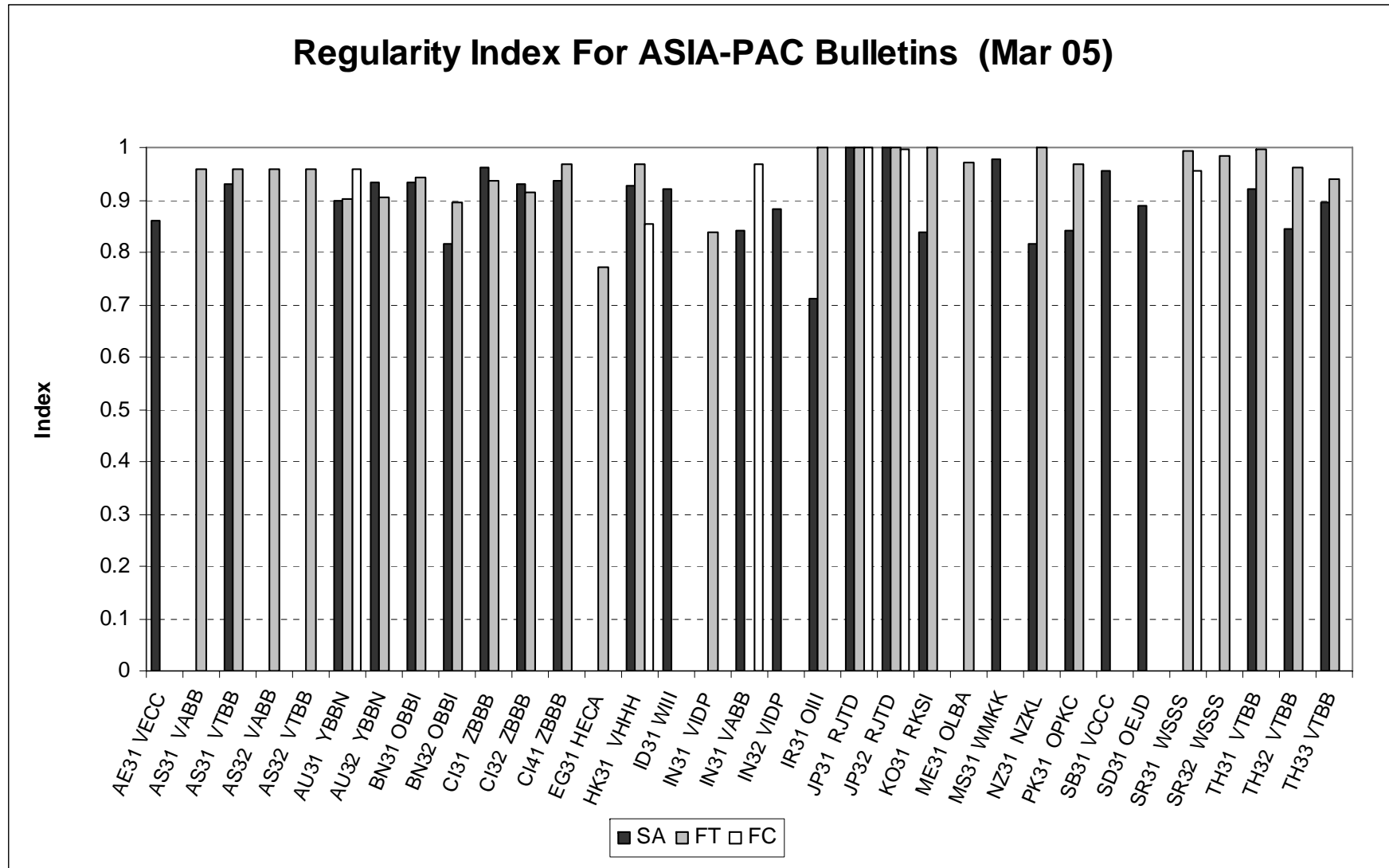
Attachment 3: Values of ROBEX Compliance Indexfor ASIA/PAC OPMET bulletins (Mar 2005)

Compliance Index To ROBEX Schedule(MAR 05)