



INTERNATIONAL CIVIL AVIATION ORGANIZATION

**TWENTY-SECOND MEETING OF THE
ASIA/PACIFIC AIR NAVIGATION PLANNING AND
IMPLEMENTATION REGIONAL GROUP (APANPIRG/22)**

Bangkok, Thailand, 5-9 September 2011

**Agenda Item 3:
3.1**
**Performance Framework for Regional Air Navigation Planning
and Implementation- AOP**
AERODROME MAINTENANCE PROGRAMME

(Presented by the Secretariat)

SUMMARY

The ICAO Regional Office circulated a questionnaire to assess APAC States current status and procedures concerning aerodrome maintenance practices. This paper provides information on the responses provided by the States in the questionnaire.

Strategic Objectives:

A: **Safety** – Enhance global civil aviation safety

C: **Environmental Protection and Sustainable Development of Air Transport** – Foster harmonized and economically viable development of international civil aviation that does not unduly harm the environment

Global Plan Initiatives:

GPI-13 Aerodrome design and management

GPI-14 Runway operations

Action by the meeting is at Para 3 to this paper.

1. INTRODUCTION

1.1 Airport, being an important part of the aeronautical infrastructure, has to meet high safety standards. The required level of safety can only be achieved by proper maintenance of all the elements composing an airport. A proper maintenance of airport facilities is important both for the safe operation of aircraft and extending the life of the facilities and therefore it is essential that these are kept in good operational condition. To this end a maintenance programme including preventive maintenance where appropriate should be established at an aerodrome to maintain facilities in a condition which does not impair the safety, regularity or efficiency of air navigation.

1.2 ICAO Standards and Recommended Practices on Aerodrome Maintenance are contained in Chapter 10 of Annex 14, Volume I - *Aerodrome Design and Operations*. Additional guidance material is available in Airport Services Manual, Part 9 - *Airport Maintenance Practices*.

2. DISCUSSION

2.1 The Regional Office in letter ref T 11/5.10 – AP 004/11 (AGA) dated 19 January 2011 circulated an aerodrome maintenance programme questionnaire to APAC States for completion and submission by 30 April 2011. The results of the survey are shown in Attachment 1. In all, 9 member States [Australia, Cambodia, Japan, Malaysia, New Zealand, Philippines, Republic of Korea, Singapore and Thailand], one other Territory (New Caledonia), USA and one Administration (Hong Kong, China) participated in the survey. The survey shows that:

- 9 States have in place an established maintenance program in accordance with the standard in Para 10.1.1 of Annex 14, Volume I;
- 11 States have in place an established procedure for the inspection and monitoring of the movement areas in accordance with the standard in Para 10.2.1 of Annex 14, Volume I;
- 11 States have reported maintenance of the runways in accordance with the standard in Para 10.2.2 of Annex 14, Volume I.
- 9 States have in place an established procedure for the measurement of friction characteristics in accordance with the standard in Para 10.2.3 of Annex 14, Volume I.
- 10 States have in place established procedures for taking corrective maintenance action when the friction characteristics are below a minimum friction level specified by the State in accordance with the standard in Para 10.2.4 of Annex 14, Volume I.
- 10 States have reported maintenance of the surface condition of the paved runway so as to provide good friction characteristics and low rolling resistance as stated in Para 10.2.8 of Annex 14, Volume I and have in place established procedures for the rapid and complete removal of snow, slush, ice, standing water, mud, dust, sand, oil, rubber deposits and other contaminants to minimize accumulation.
- 4 States have guidelines on the chemicals to be used to remove or to prevent the formation of ice/frost on aerodrome pavements, as some chemicals may have harmful effects on aircraft or pavements or may have toxic effects on the aerodrome environment
- 9 States employ a system of preventive maintenance and checks for visual aids to ensure lighting and marking system reliability, as stated in Para 10.4.2 of Annex 14, Volume I.
- 7 States have established guidelines and methods for in-field measurement of intensity, beam spread and orientation of lights included in approach and runway lighting systems

2.2 The ICAO Regional Office in coordination with the Civil Aviation Authority of Macau and FAA has organized a three day workshop from 2 to 4 November 2011 on Airport Pavements- Design and Evaluation. States are urged to participate at the workshop.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- i) Note the information provided in this paper;
- ii) Urge states to establish maintenance program for their airports in accordance with chapter 10 of Annex 14, Volume I;
- iii) Urge States to participate in the Airport Pavement Workshop scheduled in Macau from 2 to 4 November 2011.

— END —

ATTACHMENT 1

QUESTIONNAIRE ON AERODROME MAINTENANCE PROGRAMME

No.	State/ Administra tion	Does your State have in place a procedure for establishing a maintenance programme including preventive maintenance where appropriate, for an aerodrome to maintain facilities in a condition, which does not impair the safety, regularity or efficiency of air navigation as stated in Annex 14, Volume I, Para 10.1.1 ?	Does your State have in place an established procedure for the inspection and monitoring the condition of the surfaces of all movement areas including pavements (runways/ taxiways/aprons) and adjacent areas, as part of an aerodrome preventive and corrective maintenance programme with the objective of avoiding and eliminating and loose objects/debris that might cause damage to aircraft or impair the operation of aircraft systems, as stated in Para 10.2.1 of Annex 14, Volume I?	Does your State maintain the surface of the runway in a condition such as to prevent formation of harmful irregularities, as stated in Para 10.2.2 of Annex 14, Volume I?	Does your State have in place a procedure for measurements of the friction characteristics of a runway surface periodically with a continuous friction measuring device using self wetting features, as stated in Para 10.2.3 of Annex 14, Volume I ?	Does your State have in place established procedures for taking corrective maintenance action when the friction characteristics for either the entire runway or a portion thereof are below the specified minimum friction level?	Does your state maintain the surface condition of the paved runway so as to provide good friction characteristics and low rolling resistance as stated in Para 10.2.8 of Annex 14, Volume I and have established procedures for the rapid and complete removal of snow, slush, ice, standing water, mud, dust, sand, oil, rubber deposits and other contaminants to minimize accumulation?	Does your State have guidelines on the chemicals to be used to remove or to prevent the formation of ice/frost on aerodrome pavements, as some chemicals may have harmful effects on aircraft or pavements or may have toxic effects on the aerodrome environment?	Does your State employ a system of preventive maintenance and checks for visual aids to ensure lighting and marking system reliability, as stated in Para 10.4.2 of Annex 14, Volume I. ?	Has your State established guidelines and methods for in- field measurement of intensity, beam spread and orientation of lights included in approach and runway lighting systems?	Any other information/comments
1	Australia	No. Refer to comments at 10.0.	Yes.	Yes.	Yes.	Yes.	Yes.	No. Refer to comments at 10.0.	No. Refer to comments at 10.0.	No. Refer to comments at 10.0.	1.0 Casa to review standards MOS part 139, Chapter 10 "Operating standards for certified Aerodromes". 7.0 In australia ice/frost affects one, possibly two, aerodromes. 8.0 No plans to establish preventative
2	Cambodia	Yes. (ref. CCAR 12.10.1.1) Yes. (ref. CCAR 12.10.1.2)	Yes.(ref. CCAR 12.10.2.1.a)	Yes.(ref. CCAR.12.10.2.1.b)	Yes. (ref.CCAR 12.10.4.2)	Yes. (ref. CCAR 12.10.4.3)	Yes. (ref. CCAR 12.10.4.1)	No.	Yes. (ref. 12.10.6.1)	Yes. (ref. CCAR 12.10.6.3)	

3	Hong Kong, China	Yes. Yes.	Yes.	Yes.	Yes.	Yes.	Yes.	Not applicable for the prevailing weather in Hong Kong. Guideline of effluent disposal is available for controlling toxic effect on the environment.	Yes.	Yes.	Nil.
4	Japan	Yes. Yes.	Yes.	Yes.	Yes.	Yes.	Yes.	Yes.	Yes.	No. There are no plans. In Japan, the measurement of intensity, beam spread and orientation of lights in approach and runway lighting systems is not basically done in field but in the maintenance station. As one of the reasons, the measurement in field has low precision due to contain big error cause by the background brightness and so on. Only the measurement in the maintenance station is enough, there is not the problem especially.	
5	Malaysia	Yes. Yes.	Yes.	Yes.	Yes.	Yes.	Yes.	Not applicable.	Yes.	No. There are plans in 2011.	Nil.

6	New Zealand	Yes. Yes.	Yes.	Yes.	Yes.	Yes.	Yes.	No. No plans to establish guidelines. Requirements for the use of chemicals by any organization is governed by other local body legislation.	Yes.	Yes.	All of these requirements are required to be put in place by the aerodrome operator as part of the process for aerodrome certification in accordance with New Zealand Civil Aviation rules, Part 139.
7	Philippines	No. This will be part of the manuals that will be prepared in the certification of aerodromes.	Yes.	Yes.	No. The frequency of operations on majority of our national airports do not warrant this. However, acquiring the friction measurement equipment is included in CAAP CY 2011 fund.	No. Upon acquiring of friction measurement equipment this 2011.	No. Same as stated in Questionnaire 4.0.	No.	Yes, please see attached Manual of Standards for Aerodromes, Chapter 9 Aerodrome Visual Aids- aerodrome lightings; and ANS Facility Operations Manual, Chapter 5, Maintenance Standard Practices and Procedures, Para 2.2.2.	No, these guidelines are being established, equipment for said measurement of intensity, beam spread is in the process of procurement. We have only PAPI Levelling Instrument.	
8	Republic of Korea	Yes. Yes.	Yes.	Yes.	Yes.	Yes.	Yes.	Yes.	Yes.	Yes.	

9	Singapore	Yes. Yes.	Yes.	Yes.	Yes.	Yes.	Yes.	No. Such guidelines are not necessary. Singapore has a tropical climate and does not experience winter conditions leading to ice/frost on aerodrome pavements.	Yes.	Yes. There are established guidelines and methods for in-field measurement of intensity, beam spread and orientation of lights for runway lighting systems. A Photometric Airfield Calibration System mounted on a vehicle is used to conduct such measurements. However, in-field measurement of lights in the approach lighting system is not conducted because the Photometric Airfield Calibration System is mounted onto a vehicle and is therefore not suitable for measuring approach lightings mounted on high masts. There is also no product in the market that is able to perform in-field photometric measurement of elevated approach lights. In the absence of in-field photometric	Nil.
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10	Thailand	Yes. No.	Yes.	Yes.	No. No plan.	Yes.	Yes.	No. No plan.	Yes.	No. No plan.	Maintenance programme including preventive maintenance, corrective maintenance, inspection and monitoring condition of all movement areas are established in Aerodrome Manual.
11	United States	Yes. Yes.	Yes. GC	Yes. GC	Yes. RZ	Yes. RZ	Yes. RZ	Yes. RZ	Yes. RZ via-139.	Yes. AC 150/5340-24B.	

12	New Caledonia	No. France doesn't have any plan to establish such a procedure, imposes that aerodrome operator shall have such a maintenance programme including preventive maintenance. French authority checks through audits and surveys the implementation of such programme.	No. France doesn't have any plan to establish such a procedure, but French regulation (arrêté CHEA du 28 août 2003 modifié and arrêté du 6 mars 2008 relatif aux inspections de l'aire de mouvement d'un aerodrome) imposes that aerodrome operator shall have such a procedure in accordance with some requirements depending of the traffic on the aerodrome. French authority checks through audits and surveys the implementation of such procedure.	No. France doesn't maintain the surface of the runway, but French regulation (arrêté du 10 juillet 2006 relatif aux caractéristiques techniques de certains aérodromes terrestres utilisés par les aéronefs à voilure fixe) imposes that aerodrome operator shall maintain the surface of the runway in a condition such as to prevent formation of irregularities whose result would reduce runway friction characteristics or be harmful for aircraft during take off or landing. French authority checks through audits and surveys the implementation of such maintenance.	No. France doesn't have in place such procedure, but French regulation (arrêté du 10 juillet 2006 relatif aux caractéristiques techniques de certains aérodromes terrestres utilisés par les aéronefs à voilure fixe) imposes that aerodrome operator shall measure periodically with a continuous friction measuring device using self wetting features the surface of the runway. French authority checks through audits and surveys the implementation of such procedure.	No. France doesn't have in place such procedure, but French regulation (arrêté du 10 juillet 2006 relatif aux caractéristiques techniques de certains aérodromes terrestres utilisés par les aéronefs à voilure fixe) imposes that friction characteristic of the runway shall be above a minimum friction level established by the State. French authority checks through audits and surveys the measures provided by the aerodrome operators.	No. France doesn't maintain the runway surface condition, but French regulation (arrêté du 10 juillet 2006 relatif aux caractéristiques techniques de certains aérodromes terrestres utilisés par les aéronefs à voilure fixe and arrêté du 6 mars 2008 relatif aux inspections de l'aire de mouvement d'un aérodrome) imposes that runway surface shall have good friction characteristic when wet and that aerodrome operators shall have a procedure in case of runway contamination. French authority checks through audits and surveys the implementation of such procedures.	Yes.	No. France doesn't maintain visual aids, but French regulation (arrêté CHEA du 28 août 2003 modifié) imposes the implementation of a system of preventive maintenance and checks for visual aids to ensure lighting and marking system reliability. French authority checks through audits and surveys the implementation of such system on each aerodrome.	Yes.	
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