

# **Interim Report**

**International Civil Aviation Organisation**

**COSCAP-SA Aviation Medicine:**

**16 February – 02 March 2008**



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**Note**

**Draft Report**

This report is a draft document. A number of items are still under active development and require either additional data or further discussion and refinement for completion.

All of the information, conclusions, and recommendations in this document are subject to possible change before the final report is completed. The purpose of providing this draft is to seek feedback, corrections, and advice that can be considered for incorporation into the final report.

**Draft Report**

**Note**

## **Introduction**

The International Civil Aviation Organisation (ICAO) contracting States of the South Asian Association for Regional Cooperation (SAARC - Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka) identified regulatory aviation medicine as a focus area for technical assistance effort<sup>1</sup>. In response to the need identified by the SAARC States the ICAO Cooperative Development of Operational Safety and Continuing Airworthiness Programme for the South Asia region (COSCAP-SA) undertook this project to provide aviation medicine technical assistance to the SAARC States.

This project was undertaken during calendar year 2008 under the auspices of the ICAO COSCAP-SA, and was funded through the International Financial Facility for Aviation Safety (IFFAS). The ICAO Technical Co-operation Bureau (TCB) administers COSCAP-SA, while the ICAO Air Transport Bureau (ATB) administers IFFAS.

The first phase of this COSCAP-SA aviation medicine project was undertaken during the two week period 16 February – 01 March 2008. Two Aviation Medicine Experts, Drs J Singh and D Watson, visited India and Pakistan to provide aviation medical technical assistance.

It is anticipated that later during 2008 Drs Singh and Watson will visit additional SAARC States to continue the provision of aviation medical technical assistance.

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<sup>1</sup> **Is there a more-ICAO way to say this, and is there a formal reference I should mention?**

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Interim Report

This is an interim report of the COSCAP-SA missions to provide aviation medical technical assistance to SAARC States. This report focuses primarily on India and Pakistan, the two States visited. Interim recommendations are offered for those two states as well as for States not visited and ICAO / COSCAP-SA in general.

As this project continues, later in 2008, it is anticipated that the report sections, and recommendations, concerning Bangladesh, Bhutan, Maldives, Nepal, and Sri Lanka will change significantly. It is also possible that the further work will also lead to changes in the sections concerning India and Pakistan.

## **Method**

The two aviation medicine experts visited Delhi, India during the week 16 – 22 February 2008, and Karachi, Pakistan during the week 23 February – 01 March 2008. Each visit included a two-day regulatory aviation medicine seminar / workshop as well as several days of discussions and meetings with local civil aviation medicine stakeholders. In Pakistan, the seminar was augmented to incorporate material concerning Pandemic Preparedness planning in the aviation sector.

## **Results, Discussion, & Recommendations**

States from the SA region are each discussed below in sections sorted in alphabetical order by State name (Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka) and followed by a section concerning ICAO / COSCAP-SA and all States of the SA region. Each section contains observations and recommendations concerning the State or ICAO / COSCAP-SA.

### **Bangladesh**

Bangladesh was not visited during this COSCAP-SA mission. Bangladesh personnel attended the two-day aviation medicine seminar held in Delhi, India.

During the period of this mission advice was received suggesting that the Bangladesh civil regulatory aeromedical system was centralised in structure with the central *medical assessor*

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function staffed currently by a medical practitioner who has no formal aviation medicine training.

Recommendations (Bangladesh)

**BD 1** It is recommended that this COSCAP-SA mission be continued or extended to allow direct review of the Bangladesh civil aviation medical system and the provision of advice and, if required, training of personnel via seminar / workshop.

## **Bhutan**

Bhutan was not visited during this COSCAP-SA mission. No Bhutan personnel attended either of the two two-day aviation medicine seminars (Delhi, India or Karachi, Pakistan). No additional information was obtained concerning Bhutan.

Recommendations (Bhutan)

**BT 1** It is recommended that this COSCAP-SA mission be continued or extended to allow review of the Bhutan civil aviation medical system and the provision of advice and, if required, training of personnel via seminar / workshop.

## **India**

India was visited during this COSCAP-SA mission.

### **Civil Regulatory Aviation Medicine Seminar in India**

India hosted a very successful two-day aviation medicine seminar in Delhi on 20 – 21 February 2008. Participants included personnel from the Directorate General of Civil Aviation (DGCA-India), the airlines, individual medical examiners, the hospitals involved in medical examination of applicants, and personnel involved with regulatory aeromedicine in Bangladesh and the Maldives.

### **The Civil Regulatory Aviation Medicine System in India**

In India the Directorate General of Civil Aviation (DGCA-India) is the organisation with responsibility for the civil aviation medical regulatory system (aeromedical system). The current Chief Medical Officer (CMO) is an Indian Air Force (IAF) Group Captain aerospace medicine specialist on secondment / posting to DGCA-India. Previous CMOs have also been

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senior IAF aerospace medicine specialist medical officers. The CMO's position title is Director of Medical Services (Civil Aviation). Other than the CMO, there are no staff medical officers at DGCA-India, and the current incumbent is directly supported by a small group of administrative staff. There is no formal civilian aviation medicine training required of, or provided to, the CMO.

During 2007 DGCA-India issued approximately 12,000 medical assessments (approximately 43% class 1 and 57% class 2), of which approximately 9,500 were initial assessments (approximately 30% class 1 and 70% class 2). Class 3 medical assessments are issued directly to applicants by Medical Examiners and not by DGCA. Approximately 6000 initial medical assessments were issued during 2006, 2500 during 2005, and several hundred during each of the previous several years. The 2008 initial medical assessment numbers are likely to exceed those of 2007.

***Legislation***

The legislative basis for the Indian civil aviation aeromedical regulatory system is found primarily in Rule 39B of the Aircraft Rules 1937. This requirement is implemented through a variety of additional legislation, including:

Government of India, Office of Director General of Civil Aviation, Civil Aviation Requirements, Section 7 – Flight Crew standards, Series 'C', Part 1, "Medical requirements and Examination for flight crew licences and ratings", Issued 26 August 1999, current amendment (Rev 5) 04 July 2007 (CAR 7);

Five Aeronautical Information Circulars (AICs) - AIC 5/2007 Disposal Post Abdominal Surgery Cases; AIC 4/2007 Chronic Obstructive Pulmonary Disease and Asthma (COPD); AIC 3/2007 Diabetes Mellitus; AIC 4/1995 Periodic Stress test and Biochemical Profiles of flight crew; & AIC 28/1999 Disposal of cases of Ischaemic Heart Disease; and

One flight crew licensing circular (No. 1/2000) titled "Flying by Pilots having Medical Restrictions".

This legislation is supported by a 2005 "Handbook on Medical Assessment of Civil Flight Crew in India", a number of forms, and various other items of guidance material that can be accessed from the DGCA-India website ([www.dgca.gov.in](http://www.dgca.gov.in)).



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***Structure***

At a basic level DGCA-India's aeromedical system comprises a number of people and institutions that act as *medical examiners* (per ICAO Annex 1 definition) with the DGCA CMO (Director of Medical Services (Civil Aviation)) providing a centralised *medical assessor* (per ICAO Annex 1 definition) function<sup>2</sup>.

The medical examiners are divided broadly into two groups:

Those that are able to perform only class 2 and 3 examinations (50 – 70 in number); and

Those that are able to perform class 1, as well as class 2 and 3, examinations (15).

The medical examiners for class 1 medical assessments are further divided into several overlapping subgroups based on which medical examinations (e.g. initial issue, renewal, fourth yearly renewal, lapsed for two year etc) they are authorised to perform. These aspects of the DGCA-India aeromedical system is prescribed in section 3 of CAR 7.

The medical examiners that are only able to perform class 2 and 3 medical examinations are individual medical practitioners in private practice who are approved for that purpose by DGCA-India. The remainder of the medical examiner function is undertaken by institutions, a combination of 12 Indian Air Force medical facilities and 3 private, or *corporate*, hospitals. Two institutions, the Air Force Central Medical Establishment (New Delhi) and the Air Force Institute of Aerospace Medicine (Bangalore), are authorised to perform all of the class 1 medical examination types specified in CAR 7.

Six institutions, three Indian Air Force facilities and three private hospitals, are authorised to perform the medical examinations for initial issue class 1 medical assessments. DGCA-India anticipates that the three private hospitals will soon also be able to perform the medical examinations for class 1 renewal medical assessments.

**Observations**

A number of matters were observed where changes might be made that may result in regulatory aeromedical improvements.

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<sup>2</sup> This is the case with the exception of Class 3 medical assessments. For class 3 medical assessments the Medical Examiners also act as Medical Assessors and issue the medical assessments directly to the applicant. DGCA is not directly involved in these assessments unless the Medical Examiner seeks advice or assistance.

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***1. Regulatory philosophy***

The medical personnel of DGCA-India take a somewhat holistic view of their regulatory role. Interviews with various personnel suggest that local airline economics and recruiting can play a role in the approach to medical assessment: “If you have a licence you will get a job” and “the airline is an integral part of the nation ... and so we have a responsibility to support the airline”. DGCA’s medical personnel also viewed their responsibilities in a social context: “If you get a licence today you must be fit for the next 10 – 15 years”.

As a result the role of DGCA-India’s aeromedical assessment function appears to extend beyond that which is seen in most states. Where many regulatory authorities would see themselves as being quite separate from the needs or desires of the State airlines, and would see their aeromedical assessments as relating solely to the applicant’s medical “fitness” to fly during the assessment period, DGCA-India appears to see their role, in-part, as part of the supply chain for these airlines. This “dual” role of being the regulator and employer has the potential to result in a conflict of interest with regard to the aeromedical decisions being made. In this context, it is to be noted that an employment decision carries with it many more considerations that are socio-economic rather than aeromedical in nature. Purely regulatory aeromedical decision making, on the other hand, adopts a risk management approach and caters only to flight safety concerns.

It is to be noted that at no time was any activity or decision-making observed that might suggest that safety was compromised through this philosophy.

Recommendations (India)

It is recommended that:

**IN 1.1** The DGCA-India aeromedical decision-making process should assume a regulatory philosophy and that the socio-economic concerns pertaining to employability / employment decisions are left to the applicants and the airlines;

**IN 1.2** Consideration is given to the induction training of seconded Indian Air Force doctors to DGCA-India, possibly with the support of international civil aviation regulatory authorities, to familiarise those new personnel with civil regulatory aeromedical practices and principles.

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**2. *Workload changes over time***

The growth of India's civil aviation sector has been phenomenal over recent years. It is inconceivable that the same single medical officer position is able to cope with the 30 - 50 fold workload increase in medical assessment throughput without some aspect of their duties suffering.

Recommendations (India)

It is recommended that DGCA-India:

**IN 2.1** Review their medical staffing requirements in the context of the growth of India's aviation industry;

**IN 2.2** Consider induction training of seconded Indian Air Force doctors to DGCA-India, possibly with the support of international civil aviation regulatory authorities, to familiarise those new personnel with civil regulatory aeromedical practices and principles.

**IN 2.3** Review some of their medical assessment practices and standards, as described below, in an effort to both increase ICAO compliance and to reduce unnecessary DMS workload.

**3. *Medical Standards and related practices***

Some of India's medical assessments are for a 6-months period of validity whereas the ICAO equivalent is 12-months. Aligning medical assessment validity periods with the Annex 1 provisions would also reduce DGCA's medical assessment workload.

DGCA-India continues to require routine EEGs of aircrew applicants. As far as the authors are aware India is in the minority of States that follow this practice, and ICAO does not recommend routine EEGs

The authors are not aware of a convincing, high quality, literature base to support the screening use of EEGs in an otherwise healthy population such as aircrew applicants.

Removal of the EEG requirement would improve compliance with ICAO provisions, would reduce medical assessment compliance costs, and would reduce overall administrative workload. There is no convincing evidence to suggest that removal of the requirement for a screening EEG would lead to any aviation safety reduction.

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Recommendations (India)

It is recommended that DGCA-India's regulatory medical standards and practices be more closely aligned with the provisions of the ICAO SARPS. In particular it is recommended that:

**IN 3.1** The periods of validity of medical assessments (in particular Class 1 assessments) be adjusted in accordance with Annex 1 [SARP reference];

**IN 3.2** DGCA-India critically reviews the requirement for an EEG to be undertaken as a part of initial class 1 medical examinations (CARs 7 series C part 1 2.6.1), with a view to the possibility of removing that requirement.

**4. *Access to up-to-date aeromedical information***

Discussion with DGCA-India personnel suggested that even though the Indian civil aviation medical personnel (including uniformed medical personnel on posting / secondment to DGCA) are very highly trained in the field of aviation medicine, this training is normally acquired in the context of military operations and they have limited appreciation of, and access to, the most up-to-date information in the field of civil regulatory requirements, processes and procedures.

Recommendations (India)

**IN 4.1** It is recommended that DGCA-India, perhaps in liaison with ICAO COSCAP-SA, increase efforts to provide their Chief Medical Officer (DMS DGCA) with access to current and up-to-date aeromedical knowledge and other information.

This could be achieved, in part, by inviting international speakers from other major civil aviation regulatory authorities to local aviation medical conferences and / or by regularly sending DGCA-India medical personnel to the major international aviation medicine conferences.

**5. *Access to up-to-date ICAO provisions***

Discussion with DGCA-India personnel suggested that their Medical Services were not always as up-to-date on ICAO provisions as might be desirable. They were not aware of many of the changes of the recent several amendments to Annex 1.

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Recommendations (India)

**IN 5.1** It is recommended that DGCA-India establish processes to ensure that ICAO amendments of medical relevance are communicated to DGCA-India medical personnel.

**6. *Training and quality assurance for Medical Examiners***

India has military aviation medicine training programs but no civil equivalents. Most of the current Medical Examiners in India have gained their aviation medicine training via the armed forces and / or via additional overseas specialty training.

The system for certificating Medical Examiners, and the quality control systems applied to the work of those Medical Examiners, was not discussed in detail with DGCA-India personnel. While the excellence of the local military aviation medicine training was regularly noted by interviewees, the absence of local training directly suitable for civilian Medical Examiners, covering relevant aviation medicine and related regulatory functions and responsibilities, was also mentioned by many.

The provisions under discussion in the subsequent ICAO State Letter AN 5/22-08/33 of 05 May 2008 are worthy of note in this context. The proposed changes to Annex 1, especially 1.2.4.4.3 and 1.2.4.7.1, will place a direct responsibility upon the medical assessor (often the senior medical personnel of the regulatory authority) for the quality assurance of medical examiners, ensuring that they comply with applicable requirements.

Recommendations (India)

It is recommended that DGCA-India review ICAO State Letter AN 5/22-08/33 in the context of both:

**IN 6.1** The roles and responsibilities of DGCA-India medical personnel; and

**IN 6.2** Opportunities to encourage the development of local or regional aviation medical training as well as mutual-support and information-sharing structures.

The issue of developing a regional committee or ‘board’ of CMOs and aeromedical experts is also discussed in the “ICAO, COSCAP-SA, and all SA regional civil aviation regulatory authorities” section below and is subject to recommendation **ICAO 1** and, less directly, recommendation **ICAO 2**.

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## **Maldives**

Maldives was not visited during this COSCAP-SA mission. Maldives personnel attended the two-day aviation medicine seminar held in Delhi, India. No additional information was obtained concerning Maldives.

### Recommendations (Maldives)

**MV 1** It is recommended that this COSCAP-SA mission be continued or extended to allow review of the Maldives civil aviation medical system and the provision of advice and, if required, training of personnel via seminar / workshop.

## **Nepal**

Nepal was not visited during this COSCAP-SA mission. No Nepal personnel attended either of the two two-day aviation medicine seminars (Delhi, India and Karachi, Pakistan). No additional information was obtained concerning Nepal.

### Recommendations (Nepal)

**NP 1** It is recommended that this COSCAP-SA mission be continued or extended to allow review of the Nepal civil aviation medical system and the provision of advice and, if required, training of personnel via seminar / workshop.

## **Pakistan**

Pakistan was visited during this COSCAP-SA mission.

### **Civil Regulatory Aviation Medicine Seminar in Pakistan**

Pakistan hosted a very successful two-day aviation medicine seminar in Karachi on 25 – 26 February 2008. Participants included staff from the Civil Aviation Authority (CAA-Pakistan), the airlines, individual medical examiners, personnel from the Pakistan Armed Forces, and academics from the Aga Khan University.

### **The Civil Regulatory Aviation Medicine System in Pakistan**

In Pakistan the Civil Aviation Authority (CAA-Pakistan) is the organisation with responsibility for the civil aviation medical regulatory system (aeromedical system). The

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current Chief Medical Officer (CMO) is a CAA-Pakistan employee medical officer with aviation medicine training. The CMO's position title is currently *Director General Aeromedical* and was previously *Chief of Aviation Medicine*. The CMO's role extends beyond his main role of the medical assessment of aircrew and air traffic control personnel to include such activities as (for example) maintenance of the workplace health and safety of airport personnel, and the CMO is supported by a number of medical officers and other personnel in these various roles.

During 2007 CAA-Pakistan issued approximately 2400 medical assessments, of which close to 100% were class 1 (XX% initial and YY% renewal) <sup>4</sup>. Of those 2400 medical assessments approximately 1500 were examined in Karachi, 600 in Islamabad, 200 in Lahore, and less than 100 in various other locations. These numbers do not represent a substantial change from recent previous years. The Pakistan aeromedical system does not currently issue class 3 medical assessments, and there is no provision in their legislation for Class 3 medical assessments, although it is planned for this to change in the near future.

***Legislation***

The legislative basis for the Pakistan civil aviation aeromedical regulatory system is found primarily in the Civil Aviation Rules, 1994 (CAR94, especially Part V – Personnel Licences). CAR94 is issued by the Pakistan Federal Government.

The medical requirements of CAR94 are implemented primarily through an Air Navigation Order (ANO 91.0101, Manual of Flight Crew Medical Requirements, May 1999) (ANO91) and a number of forms. ANO91 is issued by the Director General of the CAA (DGCAA).

Aeronautical Information Circulars (AICs) can also be issued to further support the provisions of ANO91 and CAR94, although there are currently no valid AICs. AICs are issued by the Departmental Head responsible for the area of operation covered by the AIC (e.g. Director Airworthiness, Director Flight Standards, Director Operations etc).

The CAA-Pakistan website ([www.caapakistan.com.pk](http://www.caapakistan.com.pk)) does not provide online access to legislation, guidance material, or forms related to medical assessment.

***Structure***

At a basic level CAA-Pakistan's aeromedical system comprises a number of individuals and groups of people that act as *medical examiners* (per ICAO Annex 1 definition) with the CAA

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CMO (Director General Aeromedical) providing a centralised *medical assessor* (per ICAO Annex 1 definition) function<sup>3</sup>.

The medical examiners are divided broadly into two groups: Individual Aviation Medical Examiners (AMEs), approved by DGCAA; “Boards” of several medical practitioners, constituted by DGCAA at various locations. The Boards are headed by a President. Pakistan has [?number]<sup>4</sup> individual AMEs located at Karachi [?number]<sup>4</sup>, Islamabad [?number]<sup>4</sup>, Lahore [?number]<sup>4</sup>, and [other locations and numbers]<sup>4</sup>. There are three Boards, based in Karachi, Islamabad, and Lahore.

Individual AMEs are able to perform medical examinations for:

Private Pilot Licence holders (initial and renewal);

Glider Pilot Licence holders (initial and renewal);

Cabin / crew attendant competency certificates (initial and renewal);

Some renewals of Commercial Pilot Licences and Airline Transport Pilot Licences (renewals other than every fourth, if 40 years of age or less, or every second if greater than 40 years of age).

The Boards perform medical examinations for:

Initial issue of Commercial Pilot Licences and Airline Transport Pilot Licences;

Some renewals of Commercial Pilot Licences and Airline Transport Pilot Licences (every fourth, if 40 years of age or less, or every second if greater than 40 years of age);

Other individual cases required to undergo Board examination for other reasons (e.g. complex cases and appeal / review cases).

At the conclusion of the medical examination the AME or the President of the Board completes, and signs, a Medical Certificate (form CAA-43) which is then submitted, along with the applicant’s medical file, to the CMO (Director General Aeromedical). The CMO

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<sup>3</sup> It is also possible to interpret the legislation and the observed practices as representing a system where most *medical examiners* are also *medical assessors*, but that a central medical assessor also retains an approval (or perhaps veto) power over the assessments made by the other medical assessors.

<sup>4</sup> CAA-Pakistan medical personnel have been contacted and the outstanding data has been requested.



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endorses each Medical Certificate with a “verified” stamp and signature and the certificate is then passed on to the Licensing department for the issue of the appropriate license.

**Observations**

A number of matters were observed where changes might be made that may result in regulatory aeromedical improvements.

***1. Regulatory philosophy***

The role of CAA-Pakistan’s aeromedical assessment function appears to extend beyond that which is seen in most states. Where many regulatory authorities would see themselves as being quite separate from the needs or desires of the State airlines, and would see their aeromedical assessments as relating solely to the applicant’s medical “fitness” to fly during the assessment period, CAA-Pakistan appears to see their role partly as a component of the supply chain for these airlines. This “dual” role of being the regulator and employer has the potential to result in a conflict of interest with regard to the aeromedical decisions being made. In this context, it is to be noted that an employment decision carries with it many more considerations that are socio-economic rather than aeromedical in nature. Purely regulatory aeromedical decision making, on the other hand, adopts a risk management approach and caters only to flight safety concerns.

It is to be noted that at no time was any activity or decision-making observed that might suggest that safety was compromised through this philosophy.

Recommendations (Pakistan)

**PK 1.1** It is recommended that the CAA-Pakistan aeromedical decision-making process assume a regulatory philosophy and that the socio-economic concerns pertaining to employability / employment decisions are left to the applicants and the airlines.

***2. Clarity concerning Medical Assessor function***

There were two main groups of opinions concerning who (or what) discharged the Medical Assessor responsibilities within the Pakistan aeromedical system. One view was that it was the President of the Board (or the Aviation Medical Examiner) that made the medical assessment decisions and that the CAA Director General Aeromedical provided administrative and other support. The other main view was that the CAA Director General Aeromedical (formerly Chief of Aviation Medicine) made the medical assessor decisions.

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Review of ANO91 failed to clarify the situation. While ANO91 contains a range of provisions concerning the responsibilities of various people within the aeromedical system those provisions appear, in places, to be contradictory, inconsistent with observed practices, and ambiguous. Two examples are included below while twelve others have been listed in Appendix 1 of this report:

The definition of “CAMBs” (p2) suggests a possible medical assessor role (“accredited medical opinion”) in respect of cases referred by “DGCAA, Chief of Aviation Medicine and AMEs”.

The definition of “Competent Medical Authority” (p2), in reference to the authority of the Chief of Aviation Medicine, refers to that position’s role in ascertaining the medical fitness for flying duties. This suggests that the Chief of Aviation Medicine may act as a medical assessor.

Discussion with personnel and review of documents indicates that:

The Medical Certificates (medical assessments) are signed, in the box titled “Authorized Signature”, by the Presidents of the Civil Aviation Medical Boards or by Aviation Medical Examiners. This suggests that Presidents of Boards and Aviation Medical Examiners are acting as medical assessors.

The Chief of Aviation Medicine stamps and signs each Medical Certificates (medical assessments) to indicate that it has been “verified”. Some view this as a purely administrative check while others view it as being the legal authority under which the certificate (assessment) is issued. This may suggest that the Chief of Aviation Medicine is acting as the medical assessor.

All waiver / flexibility cases require sign-off by DGCAA to be issued medical certificates. This suggests that, in the case of flexibility assessments, DGCAA himself is acting as a medical assessor.

Of the individuals and groups referred to above, only the Chief of Aviation Medicine (currently titled GM Aero Medical), the Aviation Medical Examiners, and some presidents of the Civil Aviation Medical Boards have training and / or expertise in aviation medicine.

The Chapter 1 (section 1.1 Definitions) provisions of Annex 1 include the definitions of Medical Assessment, Medical Assessor, and Medical Examiner. The Medical Assessor is

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required to be “A physician qualified and experienced in the practice of aviation medicine ...” with the term physician being used in the general context of a medical practitioner rather than the more limited context of an internal medicine specialist medical practitioner. The Medical Examiner is required to be “A physician with training in aviation medicine and practical knowledge and experience of the aviation environment.”

The current legislation and the practices of the CAA Pakistan aeromedical system do not clearly indicate who (singular or plural) it is that acts as the medical assessor(s) in the system. Various provisions and practices suggest that individual Aviation Medical Examiners, several types of Boards, the Presidents of those Boards, the Chief of Aviation Medicine, and the Director General of the CAA act as medical assessors. Not all of these people are physicians and some of the physicians are not qualified and experienced in the practice of aviation medicine.

The practice of referring flexibility decisions to the Director General of Civil Aviation (DG) himself was felt to be unnecessary and inefficient. The decision to issue (or not) a medical assessment, whether in response to an applicant meeting the medical standards or after flexibility considerations, is a medical one. Sending such decisions to the DG himself adds additional levels of paperwork and approvals and adds the potentially problematic dimension of a non-physician issuing a medical assessment. It is the opinion of the ICAO aviation medicine experts that this decision should reside with the person, or persons, who fulfil the medical assessor role as defined in ICAO Annex 1.

Recommendations (Pakistan)

It is recommended that CAA-Pakistan review the structure and function of their aeromedical system so as to:

**PK 2.1** Clearly identify the individual(s) or group(s) that function as medical assessors;

**PK 2.2** Ensure that those who are acting as medical assessors and medical examiners comply with the Annex 1 requirements that relate to those roles.

**PK 2.3** It is also recommended that CAA-Pakistan review the need for any medical assessment decisions to be referred to the Director General of the CAA, or to any point within the organisation beyond the person or persons who fulfil the medical assessor role.

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**3. *Air Navigation Order 91.0101***

ANO91 was reviewed throughout this mission. The document was found to be internally inconsistent, ambiguous, and non-compliant with Annex 1 provisions. It also contained material that might better be placed in guidance material (medical manuals etc) than in legislation.

Recommendations (Pakistan)

**PK 3.1** It is recommended that CAA Pakistan engage personnel familiar with the drafting of legislation to revise and update the current Air Navigation Order 91.0101 and to bring it in line with the ICAO SARPs. A sample of draft legislation was provided to CAA-Pakistan for this purpose.

**4. *Constitution of Boards***

ANO91 requires that Civil Aviation Medical Boards, constituted by DGCAA, comprise of “Physician, ENT Specialist, and a co-opted Cardiologist where-ever necessary.” These Boards do not only consider complex cases but undertake routine (initial and periodic) examinations and assessments of all medical assessment applicants.

While the experts accept that there are cases that may warrant the expert opinion of such specialists, it was felt that such cases were too few and far between to justify them as permanently constituting the Boards. Requiring these medical specialists for all such Boards seemed to represent inefficient, and expensive, utilisation of specific medical specialists.

It was felt that a more efficient model for the CAA-Pakistan aeromedical system might be found in Annex 1. Such a model might incorporate medical examiners at various locations throughout the country (as occurs presently with AMEs and Boards) and a small number of medical assessor(s) located either centrally or regionally. In this model the medical examiners would undertake, supported by their nursing or other personnel, the examination of applicants while the medical assessor(s) would consider the results of those examinations and decide whether to issue a medical assessment (certificate) to the applicant. Both the medical examiners and the medical assessor(s) would be free to utilise the specialist medical expertise of people such as Internal Medicine physicians, ENT or Eye specialists, and Cardiologists as the specific features of a case may warrant.

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Recommendations (Pakistan)

**PK 4.1** It is recommended that CAA-Pakistan review the structure and function of their aeromedical system encapsulating the earlier recommendations (PK 2.1 and 2.2) concerning Medical Assessors and Medical Examiners, and utilising the services of specialist medical practitioners (such as physicians, ENT & Eye specialists, or cardiologists) only when necessary to do so.

**5. *Access to up-to-date aeromedical information***

Discussion with CAA-Pakistan personnel suggested that they have limited appreciation of, and access to, the most up-to-date information in the field of regulatory aviation medicine.

Recommendations (Pakistan)

**PK 5.1** It is recommend that CAA-Pakistan, perhaps in liaison with ICAO COSCAP-SA, increase efforts to provide their senior medical personnel with access to current and up-to-date aeromedical knowledge and other information.

This could be achieved, in part, either by encouraging international speakers at local aviation medical conferences, and / or by regularly sending CAA-Pakistan medical personnel to the major international aviation medicine conferences.

**6. *Access to up-to-date ICAO provisions***

Discussion with CAA-Pakistan personnel suggested that their Medical Services were not up-to-date on ICAO provisions. They were not aware of changes of the recent amendments to Annex 1.

Recommendations (Pakistan)

**PK6.1.** It is recommended that CAA-Pakistan establish processes to ensure that ICAO amendments of medical relevance are communicated to CAA medical personnel in a timely manner.

**7. *Policies relating to “OML” aircrew.***

The experts observed an apparently high proportion of class 1 medical assessments resulting in “OML” restrictions (limiting their flight to multicrew operations). Some of the medical conditions for which OML restrictions were issued were conditions that did not necessarily result in an increased risk of medical incapacitation. It appeared that in some of these cases an

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OML restriction was utilised where perhaps a reduced validity-period assessment or additional surveillance (reports or tests required during the validity period of the medical assessment) during the validity of the assessment might be more appropriate.

CAA-Pakistan also has a policy whereby two airline pilots who both have “OML” restrictions (limiting their flight to multicrew operations) are unable to fly together.

A review of the ICAO SARPs and guidance material revealed nothing to either endorse this practice or to suggest it is inappropriate. Further enquiry indicated that some other countries that employ “OML” restrictions, such as the JAA/EASA States in Europe, employ a similar policy while some others do not.

The coupling of a high number of OML pilots and the operational pairing (of OML pilots) restriction may place an unnecessary administrative and scheduling load on the airlines.

Recommendations (Pakistan)

**PK 7.1** It is recommended that CAA-Pakistan review their policies concerning the issue of “OML” restricted medical assessments.

This review will have to take into consideration the medical conditions that warrant the use of an OML restriction. Note: Many medical conditions may be appropriately handled with a reduced validity-period assessment or additional medical surveillance (reports or tests required) during the validity period of the medical assessment rather than an OML restriction.

**8. *Licensing and the medical examination of flight attendants***

ICAO has no requirements for the licensing of Flight Attendants (Cabin Crew).

The forms for the medical examination of Cabin Crew viewed included sections requiring vaginal and rectal examination of the crew.

Recommendations (Pakistan)

**PK 8.1** It is recommended that CAA-Pakistan review the current requirement to license Cabin Crew.

**PK 8.2** It is further recommended that the requirement for vaginal and rectal examination be reviewed considering that there is little conceivable safety benefit in such examinations on a routine basis.

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**9. *Four different application forms***

Pink form CAA-105 is an initial application form for “aircrew members other than private or glider pilots”: Class 1 initial. Blue form CAA-112 is the renewal application for “aircrew members other than private or glider pilots”: Class 1 renewal. Pale green form CAA-41 is for initial examination of “private / glider pilot’s licence or air traffic controller’s licence”: Class 2 initial. Yellow form CAA-42 is for renewal of “private / glider pilot’s licence or air traffic controller’s licence”: Class 2 renewal.

Recommendations (Pakistan)

**PK 9.1** It is recommended that CAA-Pakistan review their application forms with the view to merging the requirements of some of these forms and reducing the overall number of forms published and printed. There may also be some cost-saving in changing to plain-paper forms (rather than purpose-printed on coloured paper) and developing the forms in digital (perhaps PDF) format so that applicants might be able to download the forms from the CAA-Pakistan website, print them out and fill-in the relevant sections themselves before presenting for their examinations.

**10. *Training and quality assurance for Medical Examiners***

Pakistan has military aviation medicine training programs but no civil equivalents. Most of the current Medical Examiners in Pakistan have gained their aviation medicine training via the armed forces and / or via additional overseas specialty training.

ANO 91.0101 includes the requirement, 2.2.2, that an “approved medical examiner shall have or had training in aviation medicine from recognized Aero-Medical Institute, with requisite experience in aviation medicine”. In paragraph 2.2.8(f) of ANO 91.0101 a passing reference is made to some quality assurance responsibilities of CAA-Pakistan in respect to the Medical Examiners, although section 2.3 (Role of Chief of Aviation Medicine) makes no mention of this function. Section 2.3 does contain a provision, 2.3.2(a), relating to Medical Examiners, Airline Aviation Medical Advisors, and Central Aviation Medical Board specialists attending international aviation medical seminars.

The system for certificating Medical Examiners, and the quality control systems applied to the work of those Medical Examiners, was not discussed in detail with CAA-Pakistan personnel. The absence of local training suitable for civilian Medical Examiners, covering relevant

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aviation medicine and related regulatory functions and responsibilities, was mentioned by seminar participants and interviewees.

The provisions under discussion in the subsequent ICAO State Letter AN 5/22-08/33 of 05 May 2008 are worthy of note in this context. The proposed changes to Annex 1, especially 1.2.4.4.3 and 1.2.4.7.1, will place a direct responsibility upon the medical assessor (often the senior medical personnel of the regulatory authority) for the quality assurance of medical examiners, ensuring that they comply with applicable requirements.

Recommendations (Pakistan)

It is recommended that CAA-Pakistan review ICAO State Letter AN 5/22-08/33 in the context of both:

**PK 10.1** The roles and responsibilities of CAA-Pakistan medical personnel; and

**PK 10.2** Opportunities to encourage the development of local or regional aviation medical training as well as mutual-support and information-sharing structures.

Local aviation medicine training is considered in Pakistan subsection section 11, below, and also subject to recommendation **PK 11.1**. The issue of developing a regional committee or ‘board’ of CMOs and aeromedical experts is also discussed in the “ICAO, COSCAP-SA, and all SA regional civil aviation regulatory authorities” section below and is subject to recommendation **ICAO 1** and, less directly, recommendation **ICAO 2**.

***11. Aga Khan University and civil aviation medicine training***

During the visit, after the workshop/seminar, meetings were held with medical academic personnel from the Aga Khan University (AKU). The AKU personnel expressed an interest in the possibility of establishing a program of civil aviation medicine training, initially for Pakistan students but with the potential of offering such training to others in the region.

The experts saw great merit and potential benefit in these ideas, provided what information they could, and undertook to assist any such effort that AKU chose to pursue. The general development model under discussion saw some initial benefit in using international experts to help establish a program and deliver some of the initial training material, to concurrently have some pivotal AKU staff undertake external post-graduate civil aviation medicine training (such as via Kings College, UK or Otago University, New Zealand), and then to progressively shift the program to become entirely dependent on local resources.



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It was apparent, from the earliest of discussions, that not only did CAA-Pakistan stand to benefit in the long run from such training being established in Pakistan, but also that the support of CAA-Pakistan and associated enterprises would be essential to AKU being able to establish such a course. Also, given the likelihood that the majority of those who complete the course (at least initially) will want to be engaged within the CAA-Pakistan regulatory aeromedical system it is important that CAA-Pakistan endeavour to maintain a degree of oversight involvement in the course and its development.

Recommendations (Pakistan)

**PK 11.1** It is recommended that CAA-Pakistan give consideration to providing support to, and oversight of, of Aga Khan University in establishing Pakistan-based civil aviation medicine training.

## **Sri Lanka**

Sri Lanka was not visited during this COSCAP-SA mission. No Sri Lanka personnel attended either of the two two-day aviation medicine seminars (Delhi, India or Karachi, Pakistan).

Discussion with other personnel suggests that Sri Lanka has a USOAP audit scheduled in the near future. There may, therefore, be some additional benefits in extending / continuing this COSCAP-SA mission to Sri Lanka in the near future.

Recommendations (Sri Lanka)

**LK 1** It is recommended that this COSCAP-SA mission be continued or extended to allow review of the Sri Lanka civil aviation medical system and the provision of advice and, if required, training of personnel via seminar / workshop.

**LK 2** It is recommended that Sri Lanka, because of the forthcoming USOAP audit, be afforded a high priority for extension / continuation of this COSCAP-SA mission.

## **ICAO, COSCAP-SA, and all SA regional civil aviation regulatory authorities**

It is recommended that ICAO, through COSCAP-SA and the South Asian regional civil aviation regulatory authorities:

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**ICAO 1** Encourage and support the establishment of a regional committee or ‘board’ of CMOs and aeromedical experts for the purpose of regulatory aeromedical information sharing and mutual peer support in the consideration of difficult cases and other regulatory aeromedical matters.

If needed, especially initially, such a committee could be augmented with the support of international regulatory aeromedical personnel.

**ICAO 2** Encourage and support the flow of current civil regulatory aeromedical information, opinions, and trends into the SA region through the provision of international experts to assist any regional committee that may be established and to periodically provide update workshops / seminars as felt suitable by the committee.

**ICAO 3** It is recommended that COSCAP-SA continue this program and provide support to other SA states during the near future. We understand that Sri Lanka has a USOAP audit in the near future so it seems sensible for Sri Lanka and possibly Bangladesh (or Maldives) to be the next priority, followed by Maldives (or Bangladesh), Nepal, and Bhutan.

## **Conclusions**

ICAO and in particular COSCAP-SA is to be highly commended for arranging these seminars / workshops and consultative visits. The reception and feedback obtained from regulatory officials and other personnel during these technical assistance visits was overwhelmingly positive, supportive, and appreciative.

The ICAO aviation medicine experts are of the opinion that the interim mission objectives have been successfully concluded. It is hoped that the recommendations made will directly benefit the States of the SA region by helping streamline their medical assessment systems and by aligning those systems more closely with the ICAO SARPs ... thereby fostering the global harmonization that is necessary for reliable and safe air operations.

## **Appendix 1. Clarity concerning Medical Assessor function in Pakistan**

The examples listed below supplement the two included in the text of Observations, subsection 2 “Clarity concerning Medical Assessor function”, for Pakistan. These additional examples are provided in this Appendix purely to improve the readability of the main section of the report.

The examples, including the two listed in the body of the report, are:

The definition of “CAMBs” (p2) suggests a possible medical assessor role (“accredited medical opinion”) in respect of cases referred by “DGCAA, Chief of Aviation Medicine and AMEs”.

The definition of “Competent Medical Authority” (p2), in reference to the authority of the Chief of Aviation Medicine, refers to that position’s role in ascertaining the medical fitness for flying duties. This suggests that the Chief of Aviation Medicine may act as a medical assessor.

Paragraph 1.4.1 (p5) refers “... will leave many decisions relating to the assessment of medical fitness to the judgement of the examiner.” This suggests that the Aviation Medical Examiner acts as a medical assessor.

Paragraph 1.5.2 (p6) refers to cases being “invariably” referred, by the Chief of Aviation Medicine, to Board of Examiners for accredited medical opinion to ascertain flying status. This suggests that the Chief of Aviation Medicine may not be making any decision (invariably) and that the Board of examiners may be taking a medical assessor role.

Paragraph 1.7.4 (p9) mentions that the medical examination forms must be forwarded to “the Chief of aviation medicine, Civil Aviation Authority immediately but not later than 10 days, for his evaluation and approval on behalf of DGCAA”. This may suggest that the Chief of Aviation Medicine is acting as a medical assessor.

Paragraph 1.7.5 (p9) mentions that “After evaluation of medical assessment either by Medical Examiner or by Board of Medical Examiners medical certificate will be issued

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to the candidates if they meet the required medical standards”. This suggests that the medical Examiners and / or the Board of Medical Examiners act as medical assessors.

Paragraph 1.7.5 (p9) also mentions that if “DG CAA is not satisfied with the findings of AME / CAMB, he shall inform the AME / CAMB and the candidate that the certificate issued is considered invalid”. This may suggest that in some situations DGCAA himself acts as a medical assessor.

Paragraph 1.7.6 (p10) commences with “DG CAA might not approve the findings and observations of AMEs or Board of Medical Examiners ...”. This may suggest that in some situations DGCAA himself acts as a medical assessor.

Paragraph 2.2.8(a) (p17) states that “Having completed the medical examination of applicants in accordance with specified medical standards, AME shall issue the fitness certificate of appropriate medical class duly signed and shall forward the Examination Forms to CAM for evaluation and approval”. This suggests that the AME has a medical assessor function.

Paragraph 2.2.8(a) (p17) continues that “CAM may, if he so finds any departure from the laid-down practices, may dis-approve such assessment and shall notify about it to the examinee and the AME within 30 days”. This suggests that CAM may be the medical assessor.

Paragraph 2.3.2(c) (p2), describing the roles of the Chief of Aviation Medicine, “Shall evaluate medical assessment conducted by all the aviation medical boards / AMEs with a view to analyze / evaluate various medical reports submitted to him ...” This suggests that the aviation medical boards and AMEs are medical assessors but also that CAM may also be acting as a medical assessor.

Paragraph 2.4.1 (p24) states that “Aviation Medical Examiners of CAMB shall defer medical fitness certificates in case the licence holder –”. This suggests that the Aviation Medical Examiners of CAMB are acting as medical assessors.

Paragraph 4.8.1 (p80) refers to DGCAA, in consultation with CAM, issuing medical certificates under the flexibility provisions. This suggests that in some circumstances the Director General himself acts as the medical assessor.

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Paragraph 4.9.3 (p82) refers to flexibility being “approved” by DGCAA. This may suggest that in some circumstances the Director General himself acts as the medical assessor.