Dear Colleagues,

With your encouragement on the First Issue, we are delighted to introduce the Second Issue of the Bulletin for the Quarter (Jul – Sep 2017). This issue highlights the challenges of Cyber Terrorism, the threat it poses and assesses its risk to civil aviation industry. The Bulletin also covers the worldwide move towards Risk Management bringing a major shift from our traditional methods of monitoring to a proactive and performance-based surveillance. The change is likely to be so significant that the forthcoming DG CA Conference has made it its Theme Topic. Integration of Remotely Piloted Aircraft Systems (RPAS) into non-segregated airspace is yet another area, looking into the regulatory framework, which may allow the unmanned aircraft to operate alongside manned aircraft.

I may once again encourage all segments of PCAA to contribute articles & material, helping their colleagues to enhance their professional knowledge. Beside hard copies, the Bulletin is also accessible on PCAA web site. (www.caapakistan.com.pk>useful links>ICAO Bulletin). We are open to suggestions and would always appreciate your feedback.
Cyber Security Challenges & Solutions

With global aviation system potentially vulnerable to attacks from hackers and other cyber criminals, the International Civil Aviation Organization (ICAO), together with other major international aviation organizations have agreed on a common roadmap. The intent is to align their respective actions on cyber threats, focused on malicious intent ranging from the theft of information and general disruption to potential loss of life.

Recognizing the multi-faceted and multi-disciplinary nature of cyber security challenges and solutions; the ICAO Assembly Resolution 39-19 has called upon States and industry stakeholders to take the following actions to counter cyber threats to civil aviation:

- **Identify the threats and risks from possible cyber incidents & their consequences**
- **Define the responsibilities of national agencies and industry stakeholders**
- **Encourage the development of a common understanding among Member States to determine the systems that need to be protected**
- **Encourage government/industry coordination on aviation cyber security strategies, policies, and plans to help identify the critical vulnerabilities**
- **Develop and participate in government/industry partnerships nationally and internationally, for sharing of information on cyber threats, and mitigation efforts**
- **By implementing cyber security management systems; adopt a flexible, risk-based approach to protect critical aviation systems**
- **Encourage a robust all-round cyber security culture within national agencies and across the aviation sector**
- **Determine legal consequences for activities that compromise aviation safety by exploiting cyber vulnerabilities**
- **Protection of critical information and communications systems used for civil aviation from interference that may jeopardize the safety of civil aviation**
- **Establish policies for critical aviation to be secure by design; ensuring integrity and confidentiality of data**
- **Collaborate in the development of ICAO’s cyber security framework in all disciplines**

Consequent to 39th ICAO Assembly Resolution, it was in April 2017 that a Cyber Summit convened by the International Civil Aviation Organization (ICAO) in Dubai urged the States to prepare for the threat of cyber-attacks and emphasised that “Every nation should assess the risk that cyber terrorism poses to its civil aviation industry, build its own capability to address such threats and ensure that the laws that govern such crimes are fit for purpose, according to the global aviation industry leadership.”

In the context of Pakistan, any breach in the cyber management system could be highly detrimental and may put the entire industry at risk. Maintaining the security of the aviation industry is critical to growth and development of the industry. Therefore, pilots and air traffic controllers, must have the training and ability to recognise and respond to cyber-attacks and effectively intervene in case of system failures. Sharing knowledge and gaining full understanding of potential risks is of utmost importance.

Moving from Compliance Based to Performance Based Oversight

Risk management is one of the core components of the Safety Management System. The key elements for risk management are the identification of hazards, assessment of the risks associated and mitigation of the unacceptable risks. Both Regulatory Authorities and Service providers have roles in aviation risk management. They both need to manage risk, although the nature and scope of the hazards and processes may be different. For example, while a service provider may identify hazards specific to its unique organization, an Authority may be identifying hazards from emerging trends across an entire aviation system, based on aggregate data from multiple sectors. All these elements require data to support effective risk management. Consequently, proper management of data throughout the risk management lifecycle is essential.

The worldwide implementation of safety management systems (SMSs) by aviation service providers also shifts from traditional reactive and compliance-based oversight to a proactive and performance-based tools and methods. Such a shift, however, introduces a parallel need for civil aviation authorities (CAAs) to perform their safety oversight functions.

DG CAA Launching the First Issue of “PAKISTAN CAA-ICAO BULLETIN” on 10th April 2017

Adapted from ICAO News

Extract from http://www.icao.int
in a similar way. This means accepting –Performance-Based Oversight (PBO) as the upcoming challenge in enforcing safety regulations.

Compliance-based oversight (CBO) uses a traditional audit approach methodology that looks at line-by-line compliance to a set of regulations. Hence, CBO focuses on verifying the compliance of service providers with all applicable regulatory requirements, which is repeated at regular intervals, regardless of the level of compliance and maturity achieved by the organization under scrutiny. However, the regulatory environment in several domains has reached a level of maturity where further safety improvements cannot be achieved by following a purely compliance-based approach.

The fact that compliance alone may not be the proper course of action to mitigate all risks, led the International Civil Aviation Organization (ICAO) to introduce the framework of SMS, an approach that requires service providers to collect risk data, classify threats according to operational exposure and define and apply appropriate mitigation actions.

Regulators needed to find a way to better target the areas posing risks to safety in order to ensure continuing safety improvements in a more challenging environment. Performance-based safety oversight requires an adequate and mature regulatory environment, where safety risk management is the recognized way forward to address, and possibly improve aviation safety.

PBO is an assessment of the level of compliance exhibited by an enterprise with respect to the aviation regulations. This assessment is used to determine whether the organization has effective or non-effective performance, which is one of the considerations in risk-based decision making.

PBO will require authorities to assess the safety management capabilities of regulated entities by developing a different oversight regime from legacy practices, that is, a framework that is more tailored to that organization’s specific identified risks. If technical expertise was the main skill expected from CAA aviation safety inspectors under the CBO framework, additional skills are now expected from them under the developing framework of PBO. To this end, a less rigid and more pragmatic and listening approach would enable inspectors to better understand how risks are mitigated and to assess the effectiveness of the mitigation process.

It is important to note that prescriptive and performance-based regulations are not mutually exclusive. In fact most regulatory structures will continue to contain both elements with different proportions.

At state level, the key enablers for performance-based safety oversight are the mature implementation of state safety programs and the availability of less prescriptive, more performance-based requirements. Several countries have recognized such a need and are on their way to have these enablers in place. The level of achievement so far is quite different, depending on many local and cultural factors, however there is consensus that this is the way forward.

Extracts taken from an Article published by FLIGHE SAFETY FOUNDATION-UK

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**Integrating Remotely Piloted Aircraft Systems into Non-Segregated Airspace**

Integrating Remotely Piloted Aircraft Systems (RPAS) in a non-segregated airspace is a complex topic, which includes both technical challenges unique to remotely controlled aircraft. In recent years, RPAS have been the aviation industry’s most dynamic growth sector and the trend is expected to continue. However, they are currently only allowed to operate in a segregated volume of airspace, in order to avoid any danger of collision with other airspace users. Additionally, RPAS are usually kept away from densely populated areas, so as not to endanger humans on the ground. Nevertheless, once permitted, they are expected to become a significant component within any class of airspace, presently dominated by manned aviation. Consequently, the safe integration of RPAS into non-segregated airspace is currently a key issue in the military and civil aviation community.

All unmanned aircraft are subject to Article 8 of the Chicago Convention which states that “No aircraft capable of being flown without a pilot shall be flown without a pilot over the territory of a contracting State without special authorization by that State and in accordance with the terms of such authorization. Each contracting State undertakes to insure that the flight of such aircraft without a pilot in regions open to civil aircraft shall be so controlled as to obviate danger to civil aircraft”. ICAO is now addressing RPA, as a subset of unmanned aircraft, in an effort to allow them to integrate into airspace and at aerodromes alongside manned aircraft. The question ICAO is working to answer is “How can a seamless integration of RPAS be achieved when there is no pilot-on-board to avoid collisions, follow ATC instructions, and interact with other airspace users?”

Despite inherent advantages such as low cost and no risk to pilot’s life, there are multiple legal & technical issues that must be resolved to facilitate integration of RPAS into...
non-segregated airspace. For instance, the regulatory challenges for their type and airworthiness approvals are unique. As per the Chicago Convention, RPAS must obtain a certificate of airworthiness to operate internationally. However, the issue of the airworthiness is complicated as the RPA itself is not a standalone product; its components may be located in several places. Moreover, unlike conventional manned aviation, some of its operations may last for days, or in exceptional cases, weeks. One resultant issue is that the responsibility of remote pilot-in-command (PIC) cannot effectively remain with a single person throughout such long flights. For these long duration operations, a new concept could be to have multiple remote PIC(s), who could be jointly and individually responsible. In that there shall be heavy dependence on the C2 (Command and Control) link, together with identifying the link performance requirements.

In a controlled airspace, the RPAS must be able to comply with existing ATM procedures. As part of it, the concept of detect and avoid is being developed to keep them well clear of other airspace users. Detect and avoid is defined in Annex 2 – Rules of the Air as “the capability to see, sense or detect conflicting traffic or other hazards and take the appropriate action.” The capability is fundamental in enabling safe integration of RPAS with all airspace users.

ICAO had published a Circular 328 on ‘Unmanned Aircraft Systems’ (UAS), in March 2011. Later, in 2015, ICAO developed a new Guidance Manual on RPAS, which superseded the UAS circular. The purpose of this Manual is to provide guidance on technical and operational issues applicable to the integration of RPA in non-segregated airspace.

The unmanned aviation has significantly evolved and now the technology is on the verge of allowing unmanned aircraft to operate alongside the manned aircraft.

Contributed by: Montreal based Expert on Air & Space Law-Arman Khan

Terminology used in Amendments of SARPs

There is a wide spread misconception in understanding the terms ‘Adopted’, ‘Effective’ and ‘Applicable’. These are the terms which are often used in amendments to the Annexes to the Chicago Convention under ICAO.

They specifically regard new or adjusted civil aviation Standards and Recommended Practices. The States and operators must implement them, as follows:

Adoption date

This is the actual date that the amendment is adopted by the ICAO Council’s 36 Member States. Normally this occurs in March of a given calendar year and the Council is responsible for ICAO’s Governance decisions while full Assembly (every three years) in not in session.

Effective date

A common effective date for all amendments adopted by Council is set as four months after the last day of the Council session when the adoption took place. A standard Council session normally takes four weeks.

The effective date is the date by which States must advise ICAO that they do not approve the amendment. If more than 50 per cent of States indicate disapproval, the amendment does not become effective, but this has not yet happened in the over 70 years that ICAO has been supporting global civil aviation.

Applicability date

This is usually in November (eight months after adoption and approximately four months after the effective date) and is based on the November AIRAC* date.

By this date States should be applying the amendment unless they have notified ICAO of differences between their regulations and the ICAO Standards in the amendment. The deadline to notify differences is one month before the applicability date.


News & Snippets

Extract from http://www.icao.int

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Participants of Auditing Technique Course with Course Instructor Mr. Marie, CAA COISCAP

Participants of Executive SMS Course with DG CAA & Course Instructor Ms. Marie, CAA COISCAP

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