

**54<sup>th</sup> CONFERENCE OF  
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ASIA AND PACIFIC REGIONS**

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**AGENDA ITEM 1:            THEME TOPIC**

*“The Challenge of Managing Outcome Focused and Risk Based  
Regulations for Asia Pacific States”*

**MANAGEMENT OF SAFETY INFORMATION  
FOR RISK BASED REGULATIONS**

(Presented by Pakistan)

**INFORMATION PAPER**

**SUMMARY**

Risk management is one of the main components of the Safety Management System. The key elements of risk management are the identification of hazards, assessment of the risks associated and the mitigation of the risks which are considered as unacceptable. For successful implementation of Outcome Focused & Risk Based Regulations one of the most significant enablers is availability of data on such risks. Therefore, it is the precise data, pertinent evidence and timely information with the Authority and its regulated entities, which plays a key role in the success of managing such Regulations. In this regard, Pakistan Civil Aviation Authority has taken the necessary measures.

## **MANAGEMENT OF SAFETY INFORMATION FOR RISK BASED REGULATIONS**

### **1. INTRODUCTION**

1.1 The trends in the field of aviation indicates that safety performance has reached a stage where we need to act in a more proactive way to identify the safety risks. Moreover ICAO has also noted that further safety gains under the traditional methodology to check compliance of rule alone would continue to have its limitations. In April 2013, ICAO adopted a risk-based approach under Annex 19, to assess the compliance of member states on annexes. The decision was taken consequent to the limitations observed with prescriptive rule-based compliance system which was earlier in vogue.

1.2 The proposed methodology calls for proactively addressing the potential risks. Two of the main ICAO requirements include:

1.2.1 Member states are obliged to develop a State Safety Programme (SSP), outlining the regulations and activities implemented by the state to manage aviation safety

1.2.2 Safety Management Systems (SMS) is the risk management system required by ICAO to be implemented by aviation operators.

1.3 One of the most significant enabler of Outcome Focused and Risk Based Regulations is managing the Safety Information & data collection, which has been covered in this Paper.

### **2. DISCUSSION**

2.1 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 their 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.

2.2 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 in a similar way. This means accepting Outcome Focused & Risk Based Regulations as the upcoming challenge in enforcing safety regulations.

2.3 Compliance-Based Oversight (CBO) uses a traditional audit approach 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.

2.4 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.

2.5 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. Outcome Focused & Risk Based Regulations requires an adequate and mature regulatory environment, where safety risk management is the recognized way forward to address, and possibly improve, aviation safety.

2.6 Outcome Focused & Risk Based Regulations 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 - Outcome Focused & Risk Based Regulations. 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.

2.7 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.

2.8 At state level, the key enablers for Outcome Focused & Risk Based Regulations 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 no denying that data governs more and more of our processes and decision-making as well as the management of risks, particularly the way competent authorities collect the data & manage safety information on aviation activities, under their responsibility.

## 2.9 **Management of safety information**

2.9.1 Element 3.3 of Annex 19 under the State Safety Programme calls for 'Safety-data-driven targeting of oversight in areas of greater concern or need', which means that the States should establish procedures to select inspections, audits and surveys of activities which have greater safety concern, identified by analysis of data on hazards, their operational consequences and the related safety risks. Consequently, the knowledge of potential risks would enable safety actions which are more targeted, thus complementing oversight in achieving the safety objectives set out by the SSP.

2.9.2 The safety systems of present-day aviation are dependent on reports, which are accurate and covering the details on safety. A system for the collection, analysis, and exchange of safety data at the level of State and regulated entity is a prerequisite for Outcome Focused & Risk Based Regulations. Exchange of information on safety risks between competent authorities and regulated entities should be done in partnership with involved stakeholders.

2.9.3 Each State has to develop mechanisms to capture and record data on hazards and safety risks for each organization under its jurisdiction. The State also needs to formulate a mechanism to exchange safety information with service providers and/or other States. It is pertinent to consider information collected from earlier oversight, including information on audit of the oversight of sub-contracted activities and exchange of safety data with other authorities in the context of oversight agreements.

2.9.4 Modern aviation safety systems are dependent on timely, accurate and informative reports about safety incidents and events. Having sufficient intelligence about what is happening within the system enable trends to be identified, recurring issues to be rectified and risks within the system to be measured. To achieve this end, there needs to be a positive reporting culture where pilots, engineers, and other industry participants, are willing to disclose the incidents that occur and any mistakes they make. To encourage reporting, PCAA has introduced a 'just culture' approach. Under this approach, people who report incidents and mistakes are not normally prosecuted or punished unless the action was willful or grossly negligent.

2.9.5 A well-established oversight system requires availability of data for successful implementation of Outcome Focused & Risk Based Regulations. In other words, the Authority and its regulated entities should have all enablers in place to effectively move towards Risk based Regulations. Nevertheless, the use of data is to be made with expert judgment during the risk profile definition.

2.9.6 Risk Based Regulations must stress on data collection by the regulated entities which contribute towards measuring and monitoring their level of safety performance. Moreover, information on the effectiveness of the mitigation strategies must be monitored. ICAO Annex 19, emphasises that the information is systematically collected, analysed and monitored to identify the risks.

2.9.7 To assemble an integrated total system picture we will need to look beyond the conventional compliance and occurrence reporting data, and include a broad type of information alongside expert judgment. To enable development of a total risk picture, the breadth of data needs to encompass both hard data, such as accident reports and compliance data, and softer cultural and organisational indicators. Such elements may include: organisation health checks, resource and staffing levels, compliance and complexity of the aviation system and SMS maturity.

2.9.8 A consistent systematic data management approach is required involving categorisation, harmonisation and consolidation of multiple data sources onto a common platform. This enables reliable processing, analysis and monitoring. Analysts then have access to a wide range of data where they can aggregate, compare and calculate metrics to measure and track safety performance. Safety and key performance (leading and lagging) indicators are good examples of analysed data. They can be used as monitoring metrics to measure effectiveness of actions and, when considered in combination with other indicators, can provide a broader and more comprehensive picture.

2.9.9 It is important that performance indicators and other outputs of data analysis are combined with expert judgment to generate compelling evidence. The subject matter experts, using their expertise and field experience, are in a position to verify and complement the outputs derived from data analysis. Such a process results in developing thorough, balanced views on issues that matter, ultimately creating pictures of intelligence which become the basis of useful conclusions and informed decisions. When these elements are combined they set the foundations for a proactive approach in managing risk and an outcome based, data-driven regulatory system.

2.9.10 Therefore, to develop Risk based Regulations, it is essential that the basis of information is judiciously identified, authenticated and consolidated on a common platform to lead to conclusive decision making. Once again it may be reiterated that Data is a key enabler and therefore, Aviation Authorities must establish data management approaches, which are suitable to their needs and regulatory ambitions, making the Outcome Focused & Risk Based Regulations a success, in Asia Pacific Region.

2.10 **ACTIONS TAKEN BY PCAA:**

2.10.1 Legislation regarding voluntary incident reporting system and safety data collection and processing system has been issued.

2.10.2 State Safety Policy issued.

2.10.3 Regulations on SSP issued.

2.10.4 Regulations on SMS issued.

2.10.5 Implementation of SMS in service provider function in accordance with ICAO framework.

2.10.6 Training on SMS is a continuous process (To date, 66 in house SMS courses have been conducted).

2.10.7 Regulatory oversight audits and SMS internal audits are continuous processes.

2.10.8 Safety assessment/hazard risk management of all operational activities is being carried out on regular basis.

2.10.9 Collection of safety related data from different sources is being done.

### **3. ACTION BY THE CONFERENCE**

3.1 The Conference is invited to note the information contained in this Paper.

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