

## **Aerospace Article: What's In ICAOs Newest Annex - and Why Did We Need It?**

### **What Does ICAO Annex 19 Mean for Aerospace?**

ICAO Annex 19 on Safety Management introduces Standards & Recommended Practices for safety across aviation all domains including SMS for aviation Design Organisations. Why do we need it?

Annex 19 covers three main areas:

- **State Safety Programmes (SSP)** compelling States to implement a formal structure for aviation safety, including primary legislation and independent investigation of accidents
- **Safety Management Systems (SMS)** compelling States to mandate SMS for their Service Providers, including (for the first time) aircraft design organisations
- **Safety Information Protection (SIP)** compelling States to protect safety reporting – vital to SMS

**State Safety Programmes (SSP)** make sure that all States have the fundamental infrastructure and mechanisms to protect and sustain aviation safety. ICAO recognises that it is typically the more mature States who will have progressed with this, but the Standards & Recommended Practices (SARPs) are now in place and so gradually all States will be expected to achieve them.

**Safety Management Systems** are now recognised as important for ensuring safety in the complex aviation system. Some people in aerospace question the relevance of SMS for design organisations, but in some ways it represents a system integration test of the overall aviation system. An engineer would check compliance of an individual part against the requirement specification but would still look to identify and mitigate operating risks and then monitor it when it is integrated into the aircraft system and finally into the operational context. Integration is often a challenge because a collection of acceptable parts doesn't always perform as an acceptable system. In the same way, regulators would check compliance of each element of the aviation system against its individual standards (an aeroplane must comply with the design codes, a pilot must comply with the licensing requirement, an airport must meet aerodrome standards, and so on). SMS demands that risks continue to be identified, and performance in service monitored, once each element is integrated into the greater 'system', the operational aviation environment. Technical data is one source of in-service information, and reports from the people who use or interface with the product is another important source. Just like with an individual aircraft part, compliance with requirements is important but it's not the whole story. With a system that is complex and dynamic like aviation, not every situation or future interface with other elements of aviation is foreseeable. When accidents occur, we often find that similar events have happened, or nearly happened, before. If they had been reported at the time and action taken, the accident might have been avoided. This is why it is crucial to have systematic monitoring of safety related data and reports in service, and mechanisms to make sure this information is assessed and actions taken when necessary. This is exactly what SMS does. It's hard to argue it's a bad idea.

**Safety Information Protection** is a key enabler for SMS. Much of the most important information the SMS receives comes from reports made by the people who work on the aviation front line every day – the pilots, engineers, ATCOs, ground handlers and others. Those people are the eyes and ears

that know how well the integration of the full aviation system is working in practice. They see the situations that arise that could lead to an accident in slightly different circumstances. If they are willing, they can report them and we can fix the problems one by one before the different circumstances occur and an accident happens. Much of the excellent safety record enjoyed by aviation today came from lessons learned from safety reports. Yet those people will not report the safety issues they see if it means they will face punishment. If they forget to fasten a latch because it is hard to see whether it is open or closed, they will not tell us about it if they think they will face a disciplinary or dismissal. But if we received repeated reports about the same latch we might change procedures, or training, or even redesign it. Even if reporting is mandatory, it is hard to make sure reports are made when nobody else knows that the situation occurred. That is why ICAO commissioned a Safety Information Protection Task Force, an international group of lawyers, to find a way to legally protect reports and safety data. This is not simple because of the many different legal systems and cultures in different States. The Safety Management Panel adopted their work and integrated it into a Safety Management context within Annex 19.

### **Why Did ICAO Commission a New Annex**

The ICAO Annexes that drive safety regulation globally have historically published Standards & Recommended Practices (SARPs) on the individual elements of the system (Airworthiness, Flight Operations, ATC and so on). There were SARPs in individual Annexes referring to SMS, but they were low level, buried in other detail and not consistent across all areas; as a result the uptake had been variable in different areas of the world and different parts of the industry. In 2010, at the ICAO High Level Safety Conference, the States agreed that it was time to drive attention toward the development of a Safety Management approach because aviation had become too complex to regulate only by checking compliance of individual system elements in isolation: some part of our activity had to ensure the system was working safely overall, and SMS has proven a good way to do that. SMS is a simple concept but the challenge is in real implementation, not lip service.

The Conference agreed that for the first time in 30 years they would commission the drafting of a new Annex: Annex 19 Safety Management. The Conference also agreed that the previously accepted timeline of 7 years to produce a new Annex was not realistic in today's fast moving world. They demanded a timescale of 2 years – to include formation of a large international Panel including Members plus their Advisors from 27 States and 7 International Organisation, producing a draft that embedded and harmonised the references to Safety Management already existing in the detail of other Annexes, agreement to the material by the Panel, formal Consultation with the 191 ICAO States, production of a final draft for approval by the Air Navigation Commission and formal Adoption by the ICAO Council. Apart from the timescale, this involved finding common ground and language on safety and risk between the different aviation disciplines. I can tell you that differences between States from around the world melt to nothing in comparison with the differences in approach between Airworthiness, Flight Ops, ATC, Airports and Accident Investigation specialists – all of which must be reflected in the Safety Management material. Annex 19 was Adopted by ICAO in 2012 and became Applicable on the 14<sup>th</sup> November 2013.

### **What Next?**

Since then the Safety Management Panel has worked on a substantial Amendment to the Annex including:

- **SSP** Framework harmonised with the USOAP 8 Critical Elements of Oversight (so that States have to comply with one integrated system, not two similar but separate systems) and adds two new elements: State Level Safety Management and Safety Performance Improvement
- **SMS** expanded Applicability (Engines & Propellers) and clarifies SMS for International GA, Scalability for large and small service providers, introduces Safety Culture and aligns Safety Objectives to Safety Performance standards
- **Safety Information Protection** is elevated from an Attachment to an Appendix (this effectively promotes it from 'optional' to 'mandatory' legal protection of safety reports in all States)

Amendment 1 was Adopted by the ICAO Council on 2 March 2016 and has an Applicable date of 2019 to give States the chance to implement the legal changes necessary for Safety Information Protection in their widely different legal and cultural approaches to reporting of safety events. The Safety Management Panel will now continue to support ICAO in generating the Guidance Material necessary to support the Annex and its Amendment and this will be published in the next version of the ICAO Safety Management Manual. In addition ICAO are exploring new means of communicating material such as eLearning and iKits currently under development. There are also moves to use Regional ICAO groups to support SMS implementation through sharing of experience and this will help SMS evolve and grow. Safety Management is an excellent principle but it will only work effectively with the right education, skills and capability and these are still being evolved. In some ways it has to work – the alternative is to pin all our hopes on compliance of individual elements and ignore the risks of integration in a rapidly changing system. Would any engineer vote for that?