

# Changes to safety investigations prompted by Annex 19

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# SSPIA – AIG Protocol Questions

→ SSP.AIG.01

‘How does the investing. authority ensure that the personnel responsible for addressing safety management-related aspects in aircraft accident and serious incident investigations develop the required competencies?’

Present	Present and effective
<ol style="list-style-type: none"> <li>1. The competencies required for addressing safety management-related aspects in aircraft accident and serious incident investigations are identified and documented.</li> <li>2. A training plan that addresses K/S/A concepts, recurrent training and OJT for the personnel responsible for addressing safety management-related aspects in aircraft accident and serious incident investigations is in place.</li> <li>3. The training plan addresses safety management-related aspects.</li> <li>4. There is a mechanism in place to ensure the competency of the relevant personnel.</li> </ol>	<ol style="list-style-type: none"> <li>1. The investigation authority periodically reviews the competencies required of their personnel responsible for addressing safety management-related aspects in aircraft accident and serious incident investigations.</li> <li>2. The training plan is reviewed periodically to identify new training needs, in order to acquire the competencies required for addressing safety management-related aspects in aircraft accident and serious incident investigations.</li> <li>3. Challenges in investigators’ capabilities to address safety management-related aspects in aircraft accidents and serious incident investigations are recognized and addressed (when applicable).</li> <li>4. The mechanism to ensure the competency of personnel is applied consistently.</li> </ol>

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# SSPIA – AIG Protocol Questions

→ SSP.AIG.02

‘What guidance material has been established for use by the personnel of the State’s accident investigation authority to help ensure that safety management related aspects are appropriately addressed in investigations when relevant?’

Present	Present and effective
<ol style="list-style-type: none"> <li>1. Guidance material for the personnel of the State’s investigation authority has been established to ensure that safety management related aspects are appropriately addressed in investigations (when relevant).</li> </ol>	<ol style="list-style-type: none"> <li>1. Guidance material is used by the personnel responsible for addressing safety management-related aspects in investigations.</li> <li>2. Guidance material is regularly reviewed and amended (if needed).</li> </ol>

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# SSPIA – AIG Protocol Questions

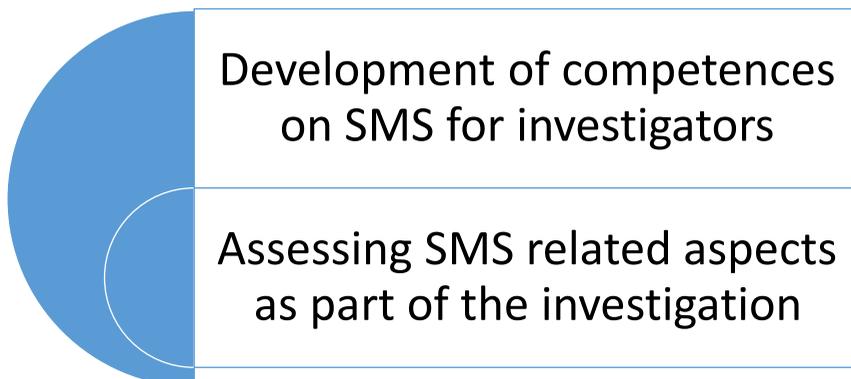
→ *SSP.AIG.03*

‘To what extent has the investigation authority addressed safety management-related aspects in its investigations, when relevant?’

Present	Present and effective
<p>1. There is a mechanism in place to ensure that safety management-related aspects are being addressed adequately in the investigation authority investigations.</p>	<p>1. Relevant final reports consistently address safety management-related aspects.</p> <p>2. Interfaces between different organizations’ SMS are being addressed.</p>

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## Two interrelated subjects



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## Assessing safety management related aspects in the investigation

SMS & safety culture	SMS interfaces between organisations	CAA oversight of the SMS
<ul style="list-style-type: none"> <li>effectiveness of the safety management systems of all organisations involved</li> <li>safety culture of all organisations involved</li> </ul>	<ul style="list-style-type: none"> <li>focus on the identification and management of shared risks</li> <li>focus on how responsibilities for risk management were established</li> </ul>	<ul style="list-style-type: none"> <li>reduced/increased 'level of involvement' in the context of performance-based oversight</li> <li>regulator/regulated</li> <li>impact of the oversight regime</li> </ul>

## Applying safety management principles in the investigation

<b>Systematic Approach</b>	ICAO encourages accident investigators to follow a structured and systematic approach to investigations. This includes establishing clear procedures for data collection, analysis, and reporting to ensure consistency and reliability in the investigation process.
<b>Human Factors Consideration:</b>	Safety management principles underscore the importance of understanding human factors in accident causation. Investigators should analyze human performance, decision-making, and organizational factors to identify contributing elements to the accident.
<b>Risk-Based Analysis:</b>	ICAO emphasizes the importance of conducting risk-based analysis during accident investigations. Investigators should assess the risks associated with identified causal factors and prioritize recommendations based on the potential impact on aviation safety.
<b>Focus on systemic factors:</b>	Investigators are encouraged to conduct causal analysis that allows identifying underlying systemic issues that contributed to the accident. This involves digging beyond immediate causes to uncover organizational, procedural, or cultural factors that may have played a role.
<b>Safety Culture Evaluation:</b>	ICAO stresses the significance of assessing safety culture within organisations involved in the accident. Investigators should examine the organization's safety culture to determine whether cultural factors influenced decision-making, risk management, or safety practices.

## How is/will accident & incident investigation evolve

### Big Data & Artificial Intelligence

access to richer and more detailed information for analysis

advanced data analytics techniques, including artificial intelligence and machine learning

supports the identification of patterns, trends, and contributing factors

## How is/will accident & incident investigation evolve

### Increased level of International Collaboration

**Global nature of aviation:** future accident investigations -> increased international collaboration and information sharing among regulatory authorities, accident investigation agencies, and industry stakeholders.

**Collaborative efforts:** facilitate the exchange of best practices, lessons learned, and safety recommendations to improve aviation safety on a global scale.

### Enhanced Transparency and Communication

Future accident investigation processes may prioritize **transparency and communication** to a greater extent.

Increased **involvement of stakeholders** in meaningful ways throughout the investigation process.

## Accident causation models \_ Example: CAST

- CAST: Causal Analysis based on STAMP model
- STAMP: Systems-Theoretic Accident Model and Processes
  - *developed by the Massachusetts Institute of Technology (MIT) for understanding accidents in complex systems.*
  - *based on systems theory & systems thinking*
  - *provides a structured approach to understanding accidents by focusing on the underlying system design and control structure.*

## Conclusions

Be prepared for future investigations (training for investigators):

- New business models & ops concepts (U-Space, Vertiport, ...)
- UAS
- High Altitude Commercial Flight
- Space flights
- Systemic safety issues
- .....

Need to push forward the Regional/International cooperation between Safety Investigation Authorities (SIAs) and between SIAs and the other aviation stakeholders

# Any other examples?

A blue rectangular slide containing contact information for EASA. In the top left corner is the EASA logo, which consists of a stylized yellow and blue bird/plane icon followed by the text 'EASA' and 'European Union Aviation Safety Agency' below it. In the center, the email address 'Safety.management@easa.europa.eu' is displayed in white text. Behind the email address is a graphic of a white dotted line forming a complex, multi-lobed shape with yellow arrowheads pointing outwards. In the bottom left corner, there is the text 'easa.europa.eu/connect' and a row of social media icons for Facebook, LinkedIn, Twitter, Instagram, YouTube, and a general '@' symbol. In the bottom right corner, the slogan 'Your safety is our mission.' is written in yellow, with 'Your' and 'is' in white. Below the slogan is the text 'An agency of the European Union' followed by the European Union flag icon.