



**Item 4a**  
**Agenda: Human Resources**

**RELATIONSHIP BETWEEN OCCUPATIONAL HEALTH AND SAFETY PROGRAMS AND  
SMS**

Working Paper presented by Colombia, "*The Country of Beauty*"

**EXECUTIVE SUMMARY**

This study note aims to understand the relationship between Occupational Health and Safety (OHS) programs and the Safety Management System (SMS), considering the intervention of air traffic control personnel from a human factors approach. This approach is both preventive, strengthening health promotion, and reactive, addressing assistance after an operational safety event. The goal is to achieve an integrative model that optimizes workplace well-being and improves operational safety.

**References:**

- ICAO (2018). Doc. 9859 Safety Management Manual (SMM) 4th ed.
- ICAO (2021). Doc. 10151. Human Performance Manual for Regulators.
- CANSO (2019). Standard of Excellence in Human Performance.

**ICAO  
Objectives**

**Strategic**

- *Every flight is safe (Safety and Security).*
- *Aviation provides smooth, accessible, and reliable mobility for all.*

**1. Introduction**

1.1 Over several years of analyzing ATS incidents related to human factors, similar taxonomies of preconditions and unsafe acts have been identified. These delimit common patterns with action plans focusing on preventive mitigation. However, these plans have shown limited reach in terms of reactivity after the events occur. That is, while human factors have been confirmed as contributing causes, they have not been effectively addressed as mitigation targets to prevent event recurrence.

1.2 Regulatory and technological defenses are proposed. Others focus on human factors, including behavioral assessment and training according with the main theories of safety management. However, managing the human element from an ontological approach requires broad organizational efforts beyond the capabilities of SMS alone. Therefore, integrating Occupational Health and Safety (OHS) with a differentiated treatment in organizations where the air navigation service provider performs both administrative and operational roles into this context is essential. The distinction should be made between clinical medicine and psychology for administrative personnel and aeronautical/aerospace medicine and psychology for operational personnel. It is important to clarify that this approach does not pertain to aviation authority processes regarding personnel licensing but rather to internal processes within the air navigation service provider using its own OHS resources.

1.3 Air traffic controllers should be the focus of group management efforts, as their work is classified as high-risk from a labor perspective. However, from an operational safety perspective, they should be seen as the first line of operation in an air navigation system. They serve as the interface between service providers and users in a complex ATM environment. Thus, their decision-making competence and the factors affecting them should be considered critical. While similar approaches have been implemented for flight crews (pilots), it is essential to apply the same level of management to air traffic controllers as an equally integral part of the ecosystem.

## 2. Discussion

2.1 Action plans should be developed to precisely coordinate SMS and OHS activities, focusing on air traffic controllers. SMS would identify needs and define the scope of OHS interventions, which, once executed, would be documented along with their results and coverage.

2.2 The proposed action plans must be concrete and require both organizational and participant commitment. Implementation should follow a phased methodology, linking preventive and reactive care types. Ultimately, measurable improvements in the organization's safety culture should be projected over a reasonable period (3 to 4 years after implementation).

2.3 The suggested action plans encompass both preventive and reactive approaches, each with different impacts on operational safety. They can be developed independently, although the reactive approach necessarily requires professionals with expertise in aeronautical knowledge, aeronautical/aerospace medicine, psychology, and/or trained air traffic controllers who can assist in specialized programs such as the peer support program. These action plans should consider the following aspects:

2.3.1 **Organizational Commitment (Preventive):** Supporting the integration of SMS and OHS for air traffic controllers. Key Elements:

- Senior management: Ensure active support for a consistent connection between SMS and OHS.
- Adequate resources: Allocate human, technical, and financial resources to both SMS and OHS, ensuring compliance with aeronautical/aerospace medicine and psychology standards.
- Safety culture: Promote a proactive mindset toward safety at all levels.

2.3.2 **Workplace Condition Monitoring by OHS (Preventive):** Regularly evaluate and improve the work environment. Key Elements:

- Regular assessment: Conduct periodic inspections of the physical and psychological work environment.
- Optimal conditions: Ensure appropriate infrastructure (ergonomics, lighting, etc.).
- Psychosocial risk prevention: Evaluate workload and stress factors.

2.3.3 **Post-Incident Evaluations (Reactive):** Investigate the causes of critical events, implement corrective measures, and update protocols to prevent recurrence. Key Elements:

- Cause investigation: Analyze incidents to identify procedural failures or human factors.
- Immediate corrective actions: Implement necessary short-term changes to prevent future incidents.

- Protocol review: Update operational procedures based on findings.

2.3.4 **Competency Verifications (Reactive):** Conduct simulations and technical tests to ensure personnel maintain necessary competencies after an incident. Key Elements:

- Post-incident review: Evaluate the performance of involved controllers to determine the level of impact, provide necessary support, and assess their operational capability.
- Additional training: Provide further training if gaps are identified.

2.3.5 **Psychological First Aid (PAP) (Reactive):** Offer immediate support to manage the emotional impact of critical events and promote emotional stability. Key Elements:

- Immediate emotional support: Provide psychological assistance with an aeronautical/aerospace medicine and psychology focus to mitigate emotional impact after an incident (e.g., techniques like CISM: Critical Incident Stress Management).
- Peer support program: Implement a peer network for stress management support.

2.3.6 **Peer Support Program (Reactive):** Establish a network of trained colleagues to provide emotional support and build mutual trust.

### 3. **Suggested Action:**

3.1 The Meeting is invited to:

- a) Consider the application of preventive or reactive strategies to link SMS and OHS.

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