



**WORKING PAPER**

**ASSEMBLY — 37TH SESSION**

**TECHNICAL COMMISSION**

**Agenda Item 26: Safety management and safety data**

**EXTENDING THE SCOPE AND REQUIREMENTS CONCERNING HUMAN FACTORS  
AND THEIR APPLICATION IN THE NEW SAFETY FRAMEWORK**

(Presented by Venezuela (Bolivarian Republic of))

**EXECUTIVE SUMMARY**

This paper proposes a need to expand ICAO guidelines related to Human Factors and, within them, organizational factors, given the fact that inappropriate behaviour or action by persons managing, designing, administrating, maintaining, operating and supervising the aeronautical system continue to be the main reasons for breakdown of that system. In this respect, it is important to point out that although official knowledge in this field does exist, its incorporation in day-to-day and operational practice and in managerial practice has apparently not been achieved in some organizations within the industry and even within some States. The reason for this gap between knowledge and practice is a relevant research topic in terms of achieving safety objectives related to human performance efficiency, at all organizational levels.

On the other hand, it is important to recognize the progress that has been achieved in terms of Safety Management, with its foundations based on the combined evolution of Human Factor principles, risk management, and quality principles, among other things. Consequently, given the weight of Human Factors in the context of safety management system (SMS) and State Safety Programme (SSP) safety management processes, it is considered that the States should receive assistance in at least two forms. On one hand, through the generation of documentation and review of Standards and Recommended Practices (SARPs), by updating and extending specific aspects related to the application and supervision of Human Factors, at all organizational levels, with particular emphasis on organizational requirements, and on the other hand, by finding mechanisms to incorporate and extend information concerning the application of Human Factor principles or programs, in the context of SMS and SSP safety management and particularly where the design of safety policies, risk management and safety promotion are concerned.

**Action:** The Assembly is invited to:

- a) designate a group of experts to review and extend the information contained in ICAO SARPs in relation to the requirements, application and supervision of Human Factor principles, including the organizational and managerial spheres;
- b) generate updated and expand documentation to support States in the development of internal Standards and in supervision of the application of Human Factor principles, and increase the availability of courses on Human Factors including information concerning the organizational level; and
- c) study the incorporation of more specific guidelines related to Human Factor principles and programmes, in the context of introducing safety management processes (SMS and SSP), taking into consideration the development of the new Annex on safety management.

<sup>1</sup> Spanish version provided by Venezuela (Bolivarian Republic of).

<i>Strategic Objectives:</i>	This working paper relates to Strategic Objective A.
<i>Financial implications:</i>	The finances required to generate the proposed changes.
<i>References:</i>	Doc 9859, <i>Safety Management Manual (SMM)</i> Doc 9683, <i>Human Factors Training Manual</i>

## 1. INTRODUCTION

1.1 An analysis of the results of investigations into recent accidents indicates that Human Factors continue to account for a high percentage of reasons for their occurrence, including cases where an accident has been the result of technological fault, maintenance fault or aircraft design fault.

1.2 The Reason Model sets out the subject of Human Factors as a complex dynamic which involves both the specific actions of operators and the organizational context in which they occur. The importance of the administrative or managerial level involved is based on the fact that decisions taken in the managerial sphere may generate many underlying or uncertain conditions within the organization, which will subsequently contribute to increasing the probability that operational personnel behave or act in undesirable ways (errors or infringements).

1.3 The focus of safety management views the prevention of accidents and incidents in the context of an organizational process that is capable of identifying dangers and successfully mitigating associated risks, both within the States and within the industry. These management processes are based on Human Factor principles and risk management, from the operations level right up to the managerial level.

1.4 ICAO formalized recognition of the importance of Human Factors when it adopted Resolution A26-9 on flight safety and human factors in 1986. By virtue of this resolution of the Assembly, the Air Navigation Commission formulated the following objective: "Increase aviation safety by urging the States to be more aware of and pay greater attention to the importance of human factors in civil aviation operations, and by adopting texts and practical measures in relation to human factors, developed on the basis of the experience acquired by the States". One of the methods employed to fulfil the resolution was to publish a series of Human Factor compendiums and subsequently the *Human Factors Training Manual* (Doc 9683) in 1998.

## 2. DISCUSSION

2.1 Although ICAO played an important role by making official statements on the subject and by publishing documents to support the States in achieving the proposed objective, they were mostly carried out in the context of operations, between 1985 and 1998 approximately. The environment has now changed and evolved radically, both in terms of the operational reality and in terms of the objectives and strategies that ICAO has in place to embrace safety. However, despite the passing of time, the subject continues to be decisive in the terms of the causes of incidents and accidents.

2.2 The SARPs mention the need for principles in relation to Human Factors in the development of some documents produced by organizations, however, it does not clearly establish how to incorporate them and supervise them as part of the monitoring processes of the States.

2.3 From this perspective, the subject of Human Factors requires review, updating and incorporation into new safety scenarios, both in terms of SARPs and in terms of issuing updated documents and relevant training procedures. The organizational aspect in the context of Human Factors also requires extended coverage.

2.4 The managerial role and the responsibility of organizations in safety events is a complex subject and one that has received little attention in comparison with the study of Human Factors at operational level. In this respect, organizational and managerial responsibility in matters concerning Human Factors and the preventive aspect, have not been sufficiently developed in ICAO SARPs documents.

2.5 Finally, it is considered important that progress in terms of Human Factors be incorporated in a more specific way, in the context of SMS and SSP Safety Management processes.

### 3. CONCLUSIONS

3.1 Although it is recognized and appreciated that significant efforts have been made in the area of Human Factors, knowledge in the field does not appear to govern the day-to-day practices of most organizations in the industry or the States. It appears that a gap exists between knowledge of Human Factors and its incorporation in day-to-day aviation practices.

3.2 The focus of the States and the industry in terms of how to improve human behaviour and actions has concentrated, to a large extent, on operational personnel but not on managerial personnel.

3.3 Efforts must be intensified through a review of SARPs concerning Human Factors and the incorporation of new guidelines that will contribute to improving Operational Safety.

3.4 Current documentation on the subject needs to be expanded and updated.

3.5 Mechanisms need to be incorporated to ensure the inclusion of Human Factor principles, particularly at organizational level, in the context of implementation of safety management processes (SMS and SSP).

3.6 Given the direct repercussions of research and the application of Human Factors in improving safety, this paper recommends that ICAO and the States concentrate their efforts on seeking initiatives and strategies to promote orientation and training on Human Factors, taking into account the fact that application depends on the type of activity involved (air operations, aircraft maintenance, air navigation services and aerodrome operations, among others) and the different organizational levels involved, particularly that of management, which has received little coverage in written documents in relation to its degree of influence.

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