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WORKING PAPER

TWELFTH AIR NAVIGATION CONFERENCE

Montreal, 19 to 30 November 2012

Agenda Item 6: Future direction
6.1: Implementation plans and methodologies

OPTIMIZATION OF THE HUMAN PERFORMANCE, ESSENTIAL ELEMENT IN THE ASBU MODULES

(Presented by Uruguay on behalf of SAM States)

SUMMARY

In the draft *Global Air Navigation Plan*, Fourth Edition (Doc. 9750, GANP), the new aviation systems block upgrades (ASBU) methodology is introduced. The improvements by blocks involve a set of modules, each having essential elements that serve to progressively perfect various civil aviation operations topics, with the aim of achieving improvements in efficiency and safety.

This paper analyzes the need to integrate the human performance optimization as one of the essential elements in the ASBU modules, since the individual continues being the centre of the system, and is the facilitator by excellence.

Action: The Conference is invited to agree to the recommendation in paragraph 7.2.

1. AVIATION SYSTEMS BLOCKS UPGRADE MODULES METHODOLOGY

1.1 The aviation system block upgrade (ASBU) framework includes modules in a series of blocks, to progressively perfect various civil aviation operations aspects. Through the improvements by blocks, a description is made on how the concepts defining the *Global Air Navigation Plan* (Doc 9750) are applied, with the aim of achieving improvements in the efficiency.

1.2 The ASBUs are a set of modules, each having the following essential elements:

a) a clearly defined and measurable operational improvement, as well as parameters to measure its success;

b) equipment and/or systems necessary in aircraft and on ground, together with a plan for operational approvals or certifications;

c) standards and procedures for on board and ground systems; and

d) a positive profit analysis for a clearly defined period.

2. ANALYSIS

2.1 Considering that the main goal of ASBU is to achieve improvements in efficiency and safety, and taking into account that the individual is the centre of the system, it is indispensable that human performance (HP) improvement be considered as an essential element of the modules.

2.2 HP centres in all aspects related with the performance of work functions, at individual, group and organizational level. Levels which can bear impact on the capability, efficiency of the individual for the

successful compliance of a wide variety of tasks and requirements, including the management of changes, as well as facilitate a successful implementation.

2.3 The HP area involves expertise in human factors (HF), human resources management (HRM) as well as social and changing factors, as shown in the figure below.

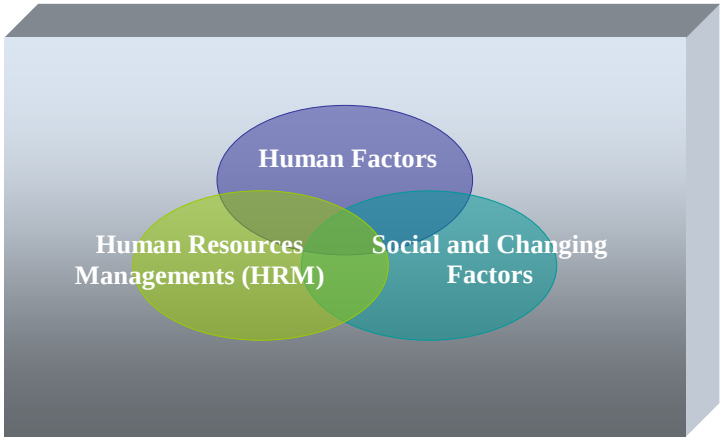

Figure 1. The three human performance facilitators

2.4 The mentioned area develops, implements and supports processes, methods and tools, with the aim of achieving an optimization through organizational, operational and technological changes and thus obtains efficiency and safety, finding

2.4.1 HUMAN FACTORS, discipline that develops and applies knowledge on the performance of staff at work. It centres upon task requirements, the use of equipment and technology, regulations and procedures, communications, in addition to the physical/organizational environment in which they perform.

2.4.2 HUMAN RESOURCES MANAGEMENT, discipline with an effective planning, selection, incorporation, development and training of personnel within the working environment, to achieve organizational goals, as well as personal needs. The priorities are to attract and retain talented and competent personnel, who will ultimately determine the success and sustainability of the organization.

2.4.3 SOCIAL AND CHANGING FACTORS refer to a social dialogue and process of changes, which prepare the ground for future concepts, if they were to be adopted by all parties involved, and affected by the changes.

2.4.4 The above three disciplines superimpose, with the aim of covering the extensive areas to be considered for the optimization of human performance in aviation, as can be appreciated in the figure below.

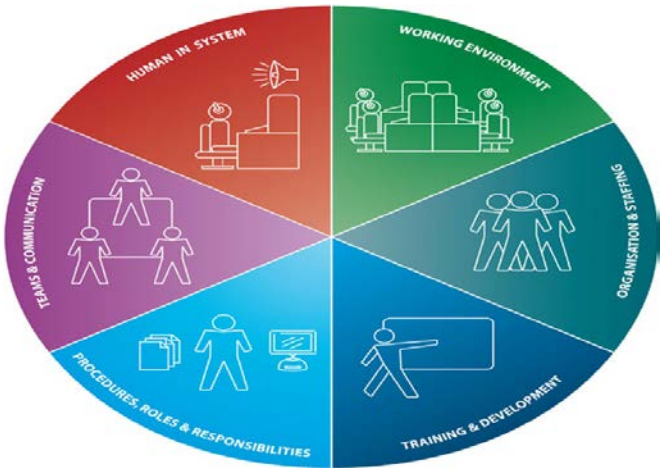

Figure 2. Areas to consider for the optimization of human performance

3. INVESTING IN HUMAN PERFORMANCE

3.1 The future of ATM will depend on the success of the new concepts and new technology. It is there where early consideration to human performance will enable a greater cost-benefit. Focusing in human performance will permit achieving benefits in safety, capacity and efficiency from the moment a Project starts, until its end, or during any change and inclusive in daily operations.

4. HUMAN PERFORMANCE

4.1 Human performance refers to the operational staff's appropriate yield in work, tasks and activities, both in an individual and collective manner. Performance depends in both the person as the labour context.

4.2 Capacity refers to the basic characteristics of an individual, as for example: aptitude, ability, skill, physical aptitude, knowledge, experience and health. Capacity is obtained through selection and promotion, giving it form and improving it through training, and considering it in the design of tasks, activities, systems and tools.

4.3 Motivation and attitude exert influence over the individual's capacity, being this a critical element to ensure capacity with regard to human performance. Motivation, attitude and trust will significantly improve through a correct approach.

4.4 The system, organization and environment provide opportunities for a good performance, considering a systemic vision, an effective management in support of human resources.

4.5 The three factors should be carefully taken under consideration, since they can make performance to vary, affecting it in a positive or negative manner, depending on the capacity, motivation, systems support, organization and/or environment.

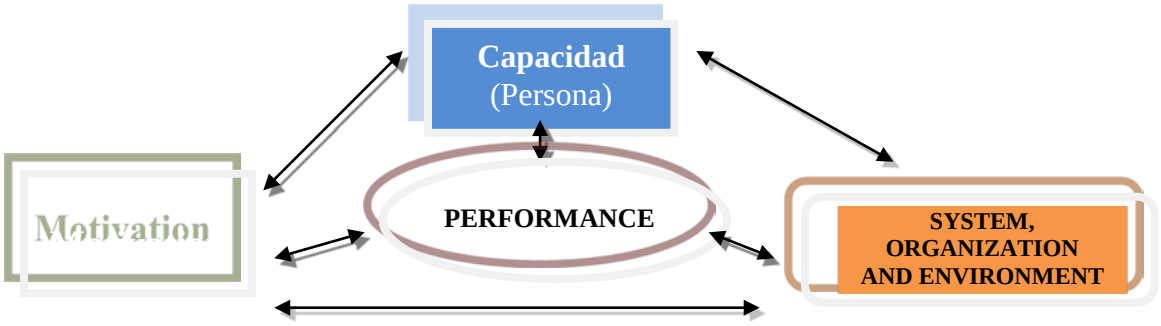

Figure 3. Performance Determinants

5. INTEGRATING HUMAN PERFORMANCE IN SAFETY MANAGEMENT

5.1 Safety and human performance are closely related. Human performance is the greater cause for aviation accidents and incidents. Safety assessment is fundamental for decision taking, it is why human performance should assume a more important role when evaluating the impact of the changes in the system's performance.

5.2 This relationship between human factors and safety provides an extra benefit for those concerned for the HF and HP, and this is that safety requirements are mandatory. This means a change with regard to the normal situation of human factors design requirements, where integration sometimes leads to a negotiation process. The synergy between the HF and the safety assessment results in a better and safety human performance.

6. CONCLUSION

6.1 Strategically, the operational concept provides a vision, and the global plan offers a worldwide framework for the implementation of air navigation systems. The performance of the human being directly affects in the implementation and development of the operational concept, as well as of the global plan, being an essential and central element in the aviation system.

6.2 The policies on human performance (HP) should encourage an integrated approach, sharing coherent regulatory frameworks, locating the individual in the centre of the aviation system and recognizing him as the motor of the change bringing challenges and improvements (see the Appendix).

6.3 The implementation should be conducted as each Block is included, transversally, and as it should correspond. Identifying competency standards linked to roles, introducing them as of Block 0 and sharing the better practices. Each module would have a different human performance requirement, some would only cover technical, operational or management training, and other would include substantial changes in the performance of abilities.

7. RECOMMENDATION

7.1 The Conference is invited to take note of the paper, support the ASBUs, and include within the ASBUs, since it is just as much an essential element as those already existing, due to its fundamental character as a central system element directly related with achieving improvements in efficiency and safety: the optimization of human performance.

7.2 The Conference is invited to approve the following recommendation:

Recommendation 6/xx – Inclusion of human performance as an essential element in the aviation system block upgrade modules

That the Conference analyze the possibility of including human performance as an essential element for the implementation of the aviation system block upgrade modules, with the aim that the capacity, motivation, organization and environment required for each module can be identified in the various blocks, in order to achieve improvements in the efficiency and safety of air navigation.

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APPENDIX

FUTURE CHALLENGES IN HUMAN PERFORMANCE

The future of ATM will depend on how one will act upon a number of critical challenges related with human performance. Six key challenges are shown hereunder:

Designing the correct technology - Focus should be made in collaboration among sectors and centres, as well as between ground and air; therefore, technology will need the support of new working methods requiring the sharing of "situational awareness".

Selecting the correct staff - Both the new technology as the organizational changes will require moving the type and number of personnel operating efficiently. This will require modifications in the human resources, selection and hiring plans, in order to make sure that one counts with the right personnel, in the proper amount and at the appropriate moment.

Organizing personnel into proper roles and responsibilities – Upon a new ATM collaborative operation, the need for new roles and responsibilities for controllers, as well as other ground-based staff, will arise. As the delegation of tasks increase, these changes will extend on to flight crew. The human performance implications in the transition between roles should be understood and managed in a very clear manner.

Ensuring that staff possess the right procedures, as well as the corresponding training – The new technology, personnel, roles and responsibilities, all will impact in the required training and procedures, for both the current and future staff. It will be necessary to keep abreast in the abilities to be acquired, which might be exceptionally used in the light of the new technology, but that are critical at the time of their need.

Managing the human factors process as a Project and at the level of the air navigation services providers – The consideration of topics on human performance requires that the human factors be totally integrated with the development and the safety management of the systems. The goals are to reach the demands on efficiency, taking under consideration the capability and improvements in safety. The use of performance indicators might be of use to quantify the maturity of the human performance that can guarantee the organizational level.

Managing the change and the transition process – the success of the project depends on a successful change and transition, where social, cultural and demographic factors impacting upon human performance are taken under consideration and also considered together with technological factors and procedures.

HUMAN PERFORMANCE IMPROVEMENT

A wide range of possibilities are available in the human performance improvement, first of all from the human factors discipline, together with human resources management, and organizational activities:

a) first line operations;

b) design of operational areas;

c) design of technology;

d) simulation;

e) safety assessments;

f) accidents investigations;

g) planning of human resources;

h) training; and

i) selection and hiring of personnel.

Some typical human factors approaches for their performance evaluation, analysis and improvement in operation and design

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