

FAA REDAC SUBCOMMITTEE ON HUMAN FACTORS WINTER/SPRING 2021

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MEETING SUMMARY

- Discussed Possible Changes to Industry as a Result of COVID-19
 - Human Factors Subcommittee inputs were submitted

Discussed Aviation Industry Direction and Challenges/Emerging Issues

- Increased demand for single pilot operations for cargo missions and the associated needs for increasingly automated vehicles, pilot state monitoring, and simplified flight decks.
- EASA has a roadmap for use of AI in aviation that describes a 10-year implementation plan. How is the FAA approaching implementation and use of AI/ML, especially for implementations that directly mediate the human-machine interaction?

• Briefings:

- FAA Human Factors and Systems Safety Activities Related to the Aircraft Certification, Safety, and Accountability Legislation, Kathy Abbott, FAA
- Unmanned Aircraft System Traffic Management Human Factors, Lynne Martin, NASA
- Manual on Human Performance for Regulators, Michelle Millar, ICAO

FINDINGS AND RECOMMENDATIONS

Finding 1. Human Factors for Aircraft Certification

The FAA seems to be very responsive to the recent Aircraft Certification, Safety, and Accountability Act, however it is not clear how the identified research requirements are being fulfilled and what the timing/funding would be. The subcommittee was also pleased to hear about the FAA's plans for integration of human factors into policy and processes for certification and flight standards based on scientific, engineering, and operational data, but there was no clarity on the mechanisms for doing so.

Recommendation: The FAA should pursue the research requirements established in the Aircraft Certification, Safety, and Accountability Act, and conduct research needed to support the integration of human factors into policy and processes for certification. This should include identifying and engaging research areas associated with the integration of human factors into the certification process, from identification of metrics and instruments for human performance to policy and guidance updates that account for a human system integration approach.

FINDINGS AND RECOMMENDATIONS

Finding 2. Improved methods to determine individual proficiency of operational personnel

The FAA seems engaged in research on training; however, the current research does not specifically investigate scientifically valid ways to develop, assess, and maintain full-spectrum (psycho-motor, cognitive, etc.) proficiency of operational personnel. Current evaluation methods rely on observable compliance with published procedures, and on performance parameters kept within clearly defined limits. Assessing cognitive skills associated with more complex cognitive processes, such as information integration, are even more difficult to observe. Proficiency in cognitive skills is currently assessed mostly by subjective judgment of instructors/examiners, whose assessments are very difficult to standardize. Research is needed to determine how proficiency and skills are developed, trained, assessed, and maintained, including the length of time after training skill proficiency can be expected to be retained.

Recommendation: The FAA should pursue research to address the assessment of cognitive skills and to determine the length of time after training that proficiency can be expected to be retained. This research should include the definition of proficiency, qualification standards and assessment methods, methods for maintaining and improving proficiency, and realistic proficiency retention timelines that are based on scientifically validated principles for the operational workforce. The results of this work could provide important methods for developing and measuring proficiency and may be extended to include initial definitions of proficiency needs for human interaction with autonomy and automation.