

FAA Human Factors and Systems Safety Activities Related to the Aircraft Certification, Safety, and Accountability (ACSA) Act



Federal Aviation
Administration



Presented At: REDAC SAS

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Boeing 737 MAX Recommendations and the Aircraft Certification Bill





Introduction

- Several common themes
 - Approach certification holistically
 - Integrate human factors considerations more effectively
 - Improve the agency's oversight process
 - Focus on the workforce of the future
 - Continue to improve and refine our certification process
- Existing strategic safety initiatives are sound, but we have opportunities to improve



Boeing 737 MAX Recommendation Status

- The FAA is fully committed to addressing all of the recommendations received from expert reviews related to the Boeing 737 MAX and Aircraft Certification processes.
- The FAA laid out a path forward in its *Response to the Official Report of the Special Committee on the Federal Aviation Administration's Aircraft Certification Process*.^{*}
The plan documented the agency's efforts in ten focus areas:
 - Safety Management Systems
 - System Safety (& Human Factors)
 - Globalization
 - Data
 - Coordination Between the FAA's Aircraft Certification Service & Flight Standards Service Functions
 - Personnel
 - Delegation
 - Amended Type Certificates
 - Innovation
 - Existing Recommendations
- All 737 MAX recommendations will be implemented in conjunction with provisions laid out in the Aircraft Certification, Safety, and Accountability Act.

^{*}The FAA's Special Committee response can be found at https://www.faa.gov/foia/electronic_reading_room/boeing_reading_room/media/FAAActionPlanResponseToSpecialCommitteeReport.pdf



ACSA Act Provisions related to Human Factors (HF)

Section	Title	Requirements Summary
119(b)	Prohibition on Issuing New TCs/ATCs without addressing Pilot Response Time	Prohibits issuing a new or amended TC unless the applicant has demonstrated to the Administrator that the applicant has accounted for realistic assumptions regarding the time for pilot responses to non-normal conditions in designing the systems and instrumentation of such airplane
124(a)	HF Education Program	Develop a HF education program that addresses the effects of modern flight deck systems on human performance for transport airplanes and the approaches for better integration of human factors in airplane design and certification.
124(b)	Transport Airplane Manufacturers Consider HF	Requires each "transport airplane" manufacturer to provide the Administrator with information or findings necessary for flight crew to be trained on flight deck systems
126	Human Factors Research	Requires FAA, in consultation with manufacturers, operators, and pilots, and in coordination with NASA, to develop research requirements to address integration of HF into design and certification of aircraft
127	Center for Excellence: Automated Sys. & HF	Develop or expand a Center of Excellence focused on automated systems and human factors in transport category aircraft



ACSA Act Provisions related to HF-Sec 119(b)

Beginning the day after regulations required under this Act are issued, the Administrator is prohibited from issuing a new or amended type certificate for an airplane unless the applicant for such certificate has demonstrated to the Administrator that the applicant has accounted for realistic assumptions regarding the time for pilot responses to non-normal conditions in designing the systems and instrumentation of such airplane.

Starting a project to do a literature review on pilot response time to alerts.



Research Requirements Responsive to ACSA Act - Sec 126 (and 124(b))

Improved Transport Operational Safety through Pilot Training, Qualification, Procedures and Flight Operations (A11G.HF.11)

Objective: Potential training and procedural mitigations for incorrect pilot response & response time

Advances and Innovation in Equipment, Technology, Systems, and Operations (A11G.HF.2)

Objective: Human factors aspects of pilot interactions with new flight deck technologies

Improved Integration of Human Factors into Aviation Safety Regulatory Policy and Processes for Aircraft Certification and Flight Standards (A11G.HF.15)

Objective: Provide human factors data to support human factors regulatory and guidance materials used by aircraft certification and flight standards personnel



ACSA Act Provisions related to HF-Sec 127

Develop or expand a Center of Excellence focused on automated systems and human factors in transport category aircraft

Current plan is to use the existing CoE on Technical Training and Human Performance



ACSA Act Sec. 136. INDEPENDENT STUDY ON TYPE CERTIFICATION REFORM.

Not later than 30 days after the date of enactment of this title, the Administrator shall enter into an agreement with an appropriate Federally-funded research and development center to review, develop, and submit a report to the Administrator in accordance with the requirements and elements set forth in this section.



Related Recommendations - HF

- **Department of Transportation Special Committee**
 - Rec 2 System Safety: Includes Human Factors
- **Joint Authorities Technical Review**
 - Rec 2.2: Update AC 25.1302-1
 - Rec 2.8: Establish appropriate pilot recognition and reaction times
 - Rec 2.10: Appropriate timing for flight test pilot recovery actions
 - Rec 3.6: Review use of non-standard flight test techniques
 - Rec 3.8: Review use of three seconds for mis-trim conditions
 - Rec 7: Emphasize HF throughout the certification processes
 - Rec 11.2: Consider and mitigate errors by maintenance and ground handling personnel
- **House Transportation Committee Report**
 - Concern over assumptions and scope of Systems Safety and HF approach



Questions?

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