SE 85

Loss of Control
Joint Safety Implementation Team

Implementation Plan for Vertical Situation Displays – All Airplane Designs

Statement of Work:

To reduce fatal accidents due to loss of control, all airplane designs should be modified, if feasible, to include a real time graphical depiction of their vertical situation.

Lead Organization for Overall Project Coordination (LOOPC):

AIA

Safety Enhancement: (SE-85)

Where feasible, all airplane designs will include vertical situation displays. It is expected that new airplanes will incorporate this feature.

Score: 2007-(3.8) 2020-(9.5) 100%-(19.0)

Outputs:

Output 1:

Applicants for new airplane designs agree to incorporate vertical situation displays.

Resources: AIA (LOOC), manufacturers

Total government/industry resources: $0.07M (see separate worksheet for details)

Timeline: 60 days for AIA to issue communication, 180 days for manufacturers to respond to AIA letter.

Actions:

1. CAST requests that the AIA communicate with manufacturers, encouraging them to incorporate vertical situation displays in their new airplane designs.
2. Manufacturers respond by indicating their intentions regarding incorporation vertical situation displays into new airplane designs.

Relationship to Current Aviation Community Initiatives:

- Industry activity on display standards

Performance Goals & Indicators for Outcomes/outputs:

Goal: Model-specific feasibility study of incorporating vertical situation displays.

- Indicator: Completed survey of all existing airplane models submitted to CAST via AIA
- Indicator: FAA conduct a biennial survey of the type certificate holders and operators to report back on implementation progress

Programmatic Approach:

Organizational Strategy

The LOC JSIT identified Bob Robeson, AIA, as the JSIT project lead Vertical Situation Displays. The project lead will assist with the implementation of the activities outlined in this Implementation Plan and will, when requested, provide progress reports to the CAST. Implementation of this project is viewed as a shared responsibility and tasks will be divided between the FAA and organizations/persons in industry. The Lead Organization for Overall project Coordination (LOOPC) is AIA. The Lead Organizations for Output Coordination (LOOC) are identified in each Output of this Implementation Plan. The roles and responsibilities of the LOOPC and LOOC are described in the CAST approved JSIT Process Document.

Implementation Activities

Several Controlled Flight Into Terrain, approach and landing, and loss-of-control accidents involved flight crew loss of vertical situation awareness. The problems are centered on not having sufficient, obvious and unambiguous information available to the pilot to adequately assess the aircraft vertical situation and then to accomplish the appropriate action to resolve problems. The objective of this project is to request the manufacturers to survey existing fleets to determine the feasibility of implementing vertical situation displays on all future production and existing in-service airplanes. The implementation of this project will require cooperation of the manufacturers and operators to incorporate changes in cockpit displays in the existing fleet, as appropriate.

Because current airplanes do not include this feature, a model-specific study should be performed to understand the feasibility of incorporating this feature. It is expected that each manufacturer, in coordination with their avionics suppliers, will develop an appropriate display for their individual airplane designs that will result in an integrated design consistent with the manufacturer's flight deck design philosophies.

Key Products and Milestones:

- AIA request for Vertical Situation Display Studies – 60 days
- Study results – 2 year from receipt of AIA request

- CAST endorsement of completed studies – 120 days from receipt
- FAA communication to type certificate holders and operators encouraging implementation of study results and requesting response regarding intentions – 60 days from CAST endorsement
- Type certificate holders' and operators' response to FAA letter – 180 days from receipt of letter

Plan and Execution Requirements:

Design changes, by nature, take a long time and require significant resources. Incorporating new safety features into existing aircraft or derivatives can have an impact on overall fleet safety, but these changes are usually expensive, technically complex, and can have significant operational impacts. Often the return on investment is low for retrofits to aging aircraft. Any near-term benefits to be realized through retrofit of the existing fleet require voluntary implementation by manufacturers and operators.

Model-specific feasibility studies for the existing fleet are required to establish the technical and operational feasibility of each applicable project aspect. This will determine the magnitude of the economic impacts and the likelihood that voluntary implementation will be undertaken. The resources to conduct the feasibility studies must be provided by the affected participants in order to proceed with any hope of implementation.

Risk Description:

- Potential economic burden on manufacturers and operators
- Potential inadequate resource availability for manufacturers and operators and FAA
- Potential inadequate findings from required surveys/studies
- Potential unwillingness to voluntarily implement project outputs
- Reluctance to retrofit aging fleets

Risk Mitigation Plan:

- CAST will advocate voluntary implementation among non-aligned air carriers
- Failure to implement advisory material for existing aircraft may require additional rulemaking
- Seek consensus on the use of existing studies and surveys by citing use in industry
- Model-specific feasibility study for implementation in existing aircraft will be used to mitigate economic impacts and inadequate resource availability

Impact on Non - Part 121 or International Applications:

All operators of the airplane will be impacted by changes to the design.