Safety Enhancement SE 229
TOMC – Takeoff Configuration Warning System Maintenance and Operational Assurance

Safety Enhancement Action:	Manufacturers and air carriers ensure air carrier maintenance programs include appropriate actions and procedures to ensure proper operation of the takeoff configuration warning system (TCWS).
Implementers: (Select all that apply)	☒ Air Carrier ☒ Industry Association ☐ Commercial Aviation Safety Team (CAST) ☐ Joint Implementation Measurement Data Analysis Team (JIMDAT) ☐ Research Organization ☐ Labor Organization ☒ Manufacturer ☐ Regulator ☐ Other (specify): _____
Statement of Work:	
Total Financial Resources:	**Total: $1.625M** Output 1: $250K Output 2: $1.375M
Relation to Current Aviation Community Initiatives:	
Performance Goal Indicators:	
Key Milestones:	

	Flow time (months)	Start Date	End Date
Output 1	12	11/01/2016	10/31/2017
Output 2	24	11/01/2017 (End of OP1)	10/31/2019
Completion	**36**	11/01/2016	10/31/2019

Potential Obstacles:	
Detailed Implementation Plan Notes:	For labor, 1 Full Time Equivalent (FTE) = $250K
CICTT Code:	LOC–I, RE

Output 1:	
Description:	Manufacturers review their TCWS designs and maintenance programs to ensure acceptable in-service reliability.
Lead Organization:	Aerospace Industries Association (AIA)
Supporting Organizations:	Aircraft manufacturers
Implementers: (Select all that apply)	☐ Air Carrier ☒ Industry Association ☐ Commercial Aviation Safety Team (CAST) ☐ Joint Implementation Measurement Data Analysis Team (JIMDAT) ☐ Research Organization ☐ Labor Organization ☒ Manufacturer ☐ Regulator ☐ Other (specify) _____
Actions:	1. AIA communicates with CAST-represented manufacturers, sharing results of the takeoff misconfiguration (TOMC) study and highlighting the importance of the TCWS in preventing takeoff with flaps up. AIA requests manufacturers review their TCWS designs and maintenance programs for the following: a. For those models that have specific maintenance requirements for the TCWS, evaluate that those requirements are appropriate to ensure acceptable in-service system reliabilities are achieved, in accordance with Federal Aviation Administration (FAA) Advisory Circular 25.703-1, dated March 17, 1993. b. Review system architecture for the TCWS and determine which circuit breakers, if pulled, could directly or indirectly disable the TCWS. c. Review Master Minimum Equipment List (MMEL) to ensure no approved items could affect availability of the TCWS, in accordance with FAA Policy Letter 05, Revision 1, dated August 15, 1997. 2. Manufacturers perform the requested reviews and make any necessary recommended revisions to the MMEL, as applicable. 3. AIA tracks implementation and provides status updates to CAST.
Financial Resources:	$250k (1 FTE)
Itemized Resources:	1 FTE (0.25 FTE per manufacturer) to perform review and communicate results
Output Notes:	
Timeline:	12 months
Target Completion Date:	10/31/2017

Output 2:	
Description:	Air carriers review their maintenance programs related to the TCWS to ensure acceptable in-service reliability.
Lead Organization:	Airlines for America
Supporting Organizations:	National Air Carrier Association Regional Airline Association Air carriers
Implementers: (Select all that apply)	☒ Air Carrier ☒ Industry Association ☐ Commercial Aviation Safety Team (CAST) ☐ Joint Implementation Measurement Data Analysis Team (JIMDAT) ☐ Research Organization ☐ Labor Organization ☐ Manufacturer ☐ Regulator ☐ Other (specify) _____
Actions:	1. Airline industry associations communicate with their air carrier members, providing results of the TOMC study and highlighting the importance of having the TCWS available to prevent flaps up takeoff. Associations request the air carrier members review their maintenance and Minimum Equipment List (MEL) policies and procedures as follows: a. Ensure their maintenance programs meet the latest manufacturer recommendations for maintenance intervals and procedures on TCWS. b. Review maintenance programs to ensure any circuit breakers pulled during maintenance or troubleshooting that could affect availability of the TCWS are re-engaged before release for flight. c. Review MEL to ensure the procedures do not allow flightcrews to disable the TCWS by pulling circuit breakers.
Financial Resources:	$1.375M (5.5 FTEs)
Itemized Resources:	• 5.5 FTEs (0.1 FTE per air carrier) to review procedures and information from manufacturers. • Additional cost (varies) to modify maintenance procedures, if necessary.
Output Notes:	
Timeline:	24 months from end of Output 1 to perform reviews.
Target Completion Date:	10/31/2019

Reference Material	
Supporting CAST Intervention Strategies	N/A