Safety Enhancement SE 127R3.2 Remaining Risk – Cargo – Fire Management	
Safety Enhancement Action:	Regulators will determine existing fire suppression and containment capabilities and revise standards to reduce accidents and incidents from cargo fires. Manufacturers will develop new fire systems for operator implementation.
Implementers: (Select all that apply)	☐ Air Carrier ☐ Industry Association ☐ CAST ☐ JIMDAT ☐ Research Organization ☐ Labor Organization ☒ Manufacturer ☒ Regulator ☐ Other (specify) _____
Statement of Work:	To reduce the occurrence of accidents and incidents from cargo fires, improved fire containment/suppression systems in Class B, E or F cargo areas should be developed. These systems could include: 1) Improved unit load device (ULD) containers capable of internally containing or suppressing a fire; 2) Fire containment covers (FCCs) or bags/blankets that would be used to cover palletized, netted cargo or ULD containers; or 3) Fire suppression systems external to the pallets / ULDs. These improved containment/suppression systems should be implemented when available.
Total Financial Resources:	$600,000 + TBD additional costs to develop/purchase FCCs and fire-resistant ULDs.
Relation to Current Aviation Community Initiatives:	• SAE Standards Development for FCCs • International Standards Organization (ISO) work in the area of cargo fire safety • Industry development and testing of fire containment covers and fire-resistant container ULDs • Industry development and certification of airplane-level fire suppression systems with Class E cargo areas • Industry research in new fire suppression chemicals (e.g. “Firebane”) • Industry and government work in the area of mitigating the risk of HazMat onboard airplanes <u>Impact on Non-Part 121 or International Applications:</u> • ISO is an international body • Harmonization of TSO with FCAAs (EASA, TCCA, etc.)
Performance Goal Indicators:	

Key Milestones:	

	Flow time (mo)	Start Date	End Date
Output 1:	6	1/8/09	6/30/09
Output 2:	18	3/7/13	8/31/14
Output 3:	24	9/1/14	8/31/16
Output 4:	24	9/1/16	8/31/18
Output 5:	54	3/7/13	8/31/17
Output 6:	37	4/3/14	4/30/17
Output 7:	Withdrawn	Withdrawn	Withdrawn
Output 8	24	5/1/17	4/30/19
Completion:	124	1/8/09	4/30/19

Potential Obstacles:	
Detailed Implementation Plan Notes:	
CICTT Code:	F-NI

Output 1:	
Description:	Survey and report capabilities of available fire suppression and containment systems for container and palletized cargo fires.
Lead Organization:	FAA Technical Center
Human Resources:	Cargo Airline Association (CAA) National Air Carrier Association (NACA) Air Transport Association (ATA)
Implementers: (Select all that apply)	☐ Air Carrier ☐ Industry Association ☐ CAST ☐ JIMDAT ☒ Research Organization ☐ Labor Organization ☐ Manufacturer ☐ Regulator ☐ Other (specify) _____
Actions:	• FAA Technical Center will conduct a survey of available fire suppression systems for container and cargo compartment fires (e.g., fire-suppressing blankets and/or FedEx and UPS cargo fire suppressions systems currently in development). • Determine whether existing technology is sufficient and feasible, or if there is a need for further development. • Report feasibility findings based on results of cost-benefits study of various cargo fire protection/suppressions systems and technologies.
Financial Resources:	$150,000
Itemized Resources:	$50,000 – Administration costs, meetings, and travel $100,000 – Possible testing for sufficiency
Output Notes:	
Time Line:	6 months
Target Completion Date:	June 30, 2009 (Completed)

Output 2:	
Description:	Based on demonstrated feasibility of various fire suppression/protection technologies, as determined in action 3 under Output 1, FAA Aircraft Certification Service (AIR) will task an SAE International industry standards committee to develop and/or revise standards for FCCs to suppress Class A fires within palletized and netted ULDs carried in Class B, E, or F cargo areas. These standards could become the basis for a revised or new Technical Standard Order (TSO) for FCCs. (Class C cargo areas already required to have detection and suppression on passenger aircraft).
Lead Organization:	FAA Aircraft Certification Service
Human Resources:	Cargo Airline Association (CAA) National Air Carrier Association (NACA) Airlines for America (A4A)
Implementers: (Select all that apply)	☒ Air Carrier ☒ Industry Association ☐ CAST ☐ JIMDAT ☐ Research Organization ☐ Labor Organization ☐ Manufacturer ☒ Regulator ☐ Other (specify) _____
Actions:	• Based on action 3 of Output 1, determine if any proposed methods of cargo fire protection/suppression are feasible. • Based on the determination in the first action of this output, FAA Aircraft Certification Service will task an SAE International industry committee to develop and/or revise standards for FCCs that suppress Class A fires within palletized and netted ULDs. • SAE committee will report out on standards developed • FAA AIR will determine if the standards should be incorporated into a TSO, and publish revised or new TSO if applicable.
Financial Resources:	$150,000
Itemized Resources:	$150,000 – Administration, meetings, and travel
Output Notes:	
Time Line:	18 Months
Target Completion Date:	August 31, 2014 (Completed)

Output 3:		
Description:	Manufacturers will develop standardized fire suppression and/or containment systems in accordance with the standards developed in Output 2.	
Lead Organization:	Aerospace Industries Association (AIA)	
Human Resources:	Caro Airline Association (CAA) National Air Carrier Association (NACA) Airlines for America (A4A)	
Implementers: (Select all that apply)	☐ Air Carrier ☐ Industry Association ☐ CAST ☐ JIMDAT ☐ Research Organization	☐ Labor Organization ☒ Manufacturer ☐ Regulator ☐ Other (specify) _____
Actions:	• Manufacturers will develop standardized fire suppression and/or containment systems in accordance with the standards developed in Output 2.	
Financial Resources:	Cost of developing fire suppression/containment systems. Figure not available.	
Itemized Resources:		
Output Notes:		
Time Line:	24 Months	
Target Completion Date:	August 31, 2016	

Output 4:		
Description:	Cargo air carriers/operators to implement use of the new fire suppression and/or containment systems developed under Output 3 as applicable to mitigate operational risks.	
Lead Organization:	Airlines for America (A4A)	
Human Resources:	Cargo air carriers/operators National Air Carrier Association (NACA) Cargo Airline Association (CAA) Regional Airline Association (RAA)	
Implementers: (Select all that apply)	☒ Air Carrier ☐ Industry Association ☐ CAST ☐ JIMDAT ☐ Research Organization	☐ Labor Organization ☐ Manufacturer ☐ Regulator ☐ Other (specify) _____
Actions:	• CAST to encourage cargo air carriers to use the fire containment and/or suppression systems developed under Output 3. • Cargo air carriers/operators to perform a risk assessment and incorporate the new fire suppression and/or containment systems developed under Output 3 as necessary to mitigate identified risk.	
Financial Resources:	Figure not available	
Itemized Resources:	Cost of buying, implementing, maintaining, and replacing FCCs in cargo operations	
Output Notes:		
Time Line:	24 Months	
Target Completion Date:	August 31, 2018	

Output 5:	
Description:	Through the JIMDAT, CAST to monitor ongoing activity and development of new fire-resistant container ULD's capable of either— 1) Internally containing a Class A fire long enough to ensure continued safe flight and landing after detection, or 2) Suppressing a fire through an internal fire suppression system installed inside the container ULD. At the end of the monitoring period, CAST will determine whether to proceed with Output 6 and/or Output 7. Activities to monitor include— • SAE discussion and decision to pursue development of standards for fire-resistant container ULDs in 2013 meetings, • FAA Tech Center Fire Lab full-scale testing of fire-resistant container ULDs currently underway by UPS and other cargo carriers, • FAA RE&D planning for support of the FAA Tech Center fire lab activity, and • Other industry development efforts.
Lead Organization:	JIMDAT
Human Resources:	FAA Aircraft Certification Service FAA Tech Center SAE International UPS FedEx National Air Carrier Association (NACA)
Implementers: (Select all that apply)	☐ Air Carrier ☐ Industry Association ☒ CAST ☒ JIMDAT ☐ Research Organization ☐ Labor Organization ☐ Manufacturer ☒ Regulator ☐ Other (specify) _____
Actions:	• JIMDAT will identify a focal point for monitoring and reporting activity. • JIMDAT to monitor work by SAE, UPS, FedEx, and the FAA Tech Center and provide bi-monthly update to JIMDAT. • JIMDAT to report out on ongoing activities at regular CAST meetings. • JIMDAT to coordinate with FAA Aviation Safety (AVS) Research, Engineering, and Development (RE&D) program manager, FAA Tech Center, and FAA technical specialists in cargo fire safety in the Transport Standards Staff to define potential for FAA funding of Tech Center Fire Lab testing of fire-resistant ULDs and submit RE&D requirements through FAA RE&D process.

	• JIMDAT to summarize status at the end of the monitoring period and make a recommendation to CAST.
Financial Resources:	$10,000
Itemized Resources:	$10,000 – Administration, meetings, and travel
Output Notes:	
Time Line:	54 months
Target Completion Date:	August 31, 2017

Output 6:	
Description:	Based on the outcome of Output 5, FAA AIR will task an SAE industry standards committee to develop and/or revise standards for fire-resistant container ULDs capable of internally containing a Class A fire for such duration as necessary to ensure continued safe flight and landing after detection of the fire. Such standards should include detection and alerting criteria, a minimum demonstrated containment time and a standardized flammability test that shows the product can meet the required containment time. These standards could become the basis for a revised or new Technical Standard Order (TSO) for container ULDs.
Lead Organization:	FAA Aircraft Certification Service (AIR)
Human Resources:	SAE International (SAE) Airlines for America (A4A) Regional Airline Association (RAA) National Air Carrier Association (NACA) Cargo carriers FAA Flight Standards Service (AFS)
Implementers: (Select all that apply)	☐ Air Carrier ☒ Industry Association ☐ CAST ☐ JIMDAT ☐ Research Organization ☐ Labor Organization ☐ Manufacturer ☒ Regulator ☐ Other (specify) _____
Actions:	• FAA AIR send formal tasking to SAE • SAE accept FAA tasking and assign to appropriate subcommittee • SAE subcommittee develop standards for fire-resistant container ULDs capable of detecting and alerting a fire and containing a Class A fire long enough to ensure continued safe flight and landing. These standards would include standardized flammability testing criteria. • SAE approve standards and send to FAA AIR • FAA AIR develop and publish Technical Standard Order (TSO)
Financial Resources:	>$150,000
Itemized Resources:	$150,000 – Administration costs, meetings, and travel Additional resources for flammability testing costs at the FAA Tech Center – total test cost is unknown and dependent upon progress of testing and standards work.
Output Notes:	
Time Line:	37 Months
Target Completion Date:	April 30, 2017

Output 7: [OUTPUT WITHDRAWN]		
Description:	Based on the outcome of Output 5, FAA AIR will task an SAE industry standards committee to develop and/or revise standards for fire-resistant container ULDs capable of suppressing a fire through an internal fire suppression system installed inside the container ULD. Such standards should include detection and alerting criteria, a minimum demonstrated suppression time and a standardized flammability test that shows the product can meet the required suppression time. These standards could become the basis for a revised or new Technical Standard Order (TSO) for container ULDs.	
Lead Organization:	FAA Aircraft Certification Service (AIR)	
Human Resources:	SAE International (SAE) Airlines for America (A4A) Regional Airline Association (RAA) National Air Carrier Association (NACA) Cargo carriers FAA Flight Standards Service (AFS)	
Implementers: (Select all that apply)	☐ Air Carrier ☐ Industry Association ☐ CAST ☐ JIMDAT ☐ Research Organization	☐ Labor Organization ☐ Manufacturer ☒ Regulator ☐ Other (specify) _____
Actions:	• FAA AIR send formal tasking to SAE • SAE accept FAA tasking and assign to appropriate subcommittee • SAE subcommittee develop standards for fire-resistant container ULDs capable of detecting and alerting a fire and suppressing the fire through an internal fire suppression system installed inside the container ULD. These standards would include standardized flammability testing criteria. • SAE approve standards and send to FAA AIR • FAA AIR develop and publish Technical Standard Order (TSO)	
Financial Resources:	>$150,000	
Itemized Resources:	$150,000 – Administration costs, meetings, and travel Additional resources for flammability testing costs at the FAA Tech Center – total test cost is unknown and dependent upon progress of testing and standards work.	
Output Notes:	CAST will decide if it should pursue this output contingent upon the results of Output 5.	
Time Line:	To be determined	
Target Completion Date:	Withdrawn	

Output 8:	
Description:	Manufacturers of container ULDs develop new fire-resistant containers per TSO standards developed in either Output 6 or Output 7, and cargo carriers begin implementing their use in operations.
Lead Organization:	National Air Carrier Association (NACA)
Human Resources:	Aerospace Industries Association (AIA) Container ULD manufacturers FAA Aircraft Certification Service (AIR) OEMs Cargo carriers Regional Airline Association (RAA) Airlines for America (A4A)
Implementers: (Select all that apply)	☒ Air Carrier ☒ Industry Association ☐ CAST ☐ JIMDAT ☐ Research Organization ☐ Labor Organization ☒ Manufacturer ☐ Regulator ☐ Other (specify) _____
Actions:	• CAST (through NACA and AIA) to encourage manufacturers of container ULDs to develop new containers in accordance with the revised TSO in Outputs 6 and/or 7. • Container manufacturers develop and produce new container ULDs in accordance with the revised TSO from Outputs 6 and/or 7. • CAST (through NACA, RAA, and A4A) to encourage cargo carriers to use the new fire-resistant container ULDs. • Cargo air carriers/operators to perform a risk assessment and incorporate the new fire-resistant container ULDs as necessary to mitigate identified risk.
Financial Resources:	To be determined
Itemized Resources:	The costs of this output depend on the fire containment and /or suppression systems that are implemented, but are generally the development costs of the new container ULDs and the differential costs between current container ULDs and new ULDs that would meet the standards of Output 6 and/or 7.
Output Notes:	
Time Line:	Product available for use within 24 months of TSO publication
Target Completion Date:	April 30, 2019