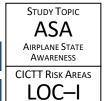
CAST Safety Enhancement (SE)

OPERATIONS — NON-STANDARD, NON-REVENUE FLIGHTS



SECTION I: SE OVERVIEW

Study Topic Overview Summary CAST chartered the Airplane State Awareness (ASA) Joint Safety Analysis Team (JSAT) in August 2010 and the ASA Joint Safety Implementation Team (JSIT) in 2012 as a follow-on activity to the previous Loss of Control (LOC) JSAT in 2000. Historically, Loss of Control-Inflight (LOC-I) has been, and continues to be, one of the largest categories of commercial aviation fatal accidents. Loss of ASA is a subset of LOC-I accidents and incidents, defined as events in which the flightcrew lost awareness of the airplane's attitude or energy state. Between 2001 and 2010, half of all LOC-I accidents involved loss of ASA. The ASA JSIT recommended, and CAST adopted, 19 ASA SEs, 2 of which focus on air carrier operations.

The ASA JSAT's study of 18 LOC events identified 1 accident in which flightcrew members were not adequately prepared for a high-risk test maneuver performed during a functional check flight.

SE Objective

CAST recommends air carriers reduce accidents and incidents due to loss of ASA during high-risk maneuvers in functional check flights by improving the safety of non-standard flight, non-revenue operations (functional check flights, ferry flights, demonstration flights, etc.).

Primary Risks Mitigated

Loss of Control-Inflight (LOC-I)

Action	Organization(s)	Strategy	Description	Due Date
Action 1	FAA AFS, Air Carriers	Procedures	Develop guidance material providing best practices on the conduct of non-standard, non-revenue flights.	04/30/2016
	Comments: CAST	FO) 16006.		
Action 2	Air Carriers	Procedures	Develop operational risk assessment guidelines and training standards that mitigate risk associated with non-standard, non-revenue flights.	11/30/2016
	Comments: CAST closed this action based on air carrier industry association member implementation surveys.			

See section II of this SE for detailed action descriptions.

References: The detailed analysis in the ASA JSAT Final Report (June 5, 2015) and the ASA JSIT Final Report (December 31, 2014) is available through CAST.



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OPERATIONS — NON-STANDARD, NON-REVENUE FLIGHTS

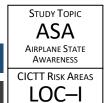


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SECTI	ION II: DETAILED ACTION INFORMATION	Page 3
SE 19.	3 consists of two actions, which this section lays out in detail.	
•	Action 1 (FAA AFS, Air Carriers, Air Carrier Industry Associations) Develop guidance material providing best practices on non-standard, non-revenue flights	PAGE 3
•	Action 2 (Air Carriers, Air Carrier Industry Associations)	PAGE 5

SECTION III: SUPPLEMENTAL INFORMATION

PAGE 7

This section contains the following additional information that may be of interest to implementers:

- Source Study
- Related Initiatives
- Total Cost / Resource Overview

SECTION IV: REVISION LOG

PAGE 8

This section provides a history of revisions to this SE.



CAST Safety Enhancement (SE)

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SECTION II: DETAILED ACTION INFORMATION

Action 1: Develop guidance material providing best practices on non-standard, non-revenue flights

Primary Implementer			FAA	Flight Standards Service, Safety Standards (AFS); Air Carriers	
Action Objective		Objective	FAA AFS should develop guidance material providing best practices on the conduct of non-standard, non-revenue flights (such as functional check flights, ferry flights, and demonstration flights).		
40	Action Timeline		Flow Time: 32 months		
AL			D	ue Date: 04/30/2016	
Timeline/Flow for Future Adopters		N/A			
CA	ST Le	ead	FAA /	AFS	
	#	Organizati	on(s)	Detailed Steps	
	1a	Air Carrier Industry Assns.		Communicate with member air carriers, explaining the analysis undertaken by CAST regarding loss of ASA and the issues noted with non-standard, non-revenue flights.	
		Complete.			
	1b Air Carriers		S	 Review the types of non-standard, non-revenue flights desired to perform and communicate with their industry associations and FAA AFS. Examples include— a. Operational check flights: Flights to check for a proper operational functioning after service or repair. b. Maintenance check flights: Flights to check continuing airworthiness after maintenance. c. General check of aircraft systems. d. Ferry flights of aircraft with degraded capability or systems. e. Demonstration flights. f. Display flights. 	

Complete.

1c FAA AFS

Develop appropriate guidance material addressing the following for the non-standard, non-revenue flights listed in Subaction 1a:

- a. Define a minimum level of flight preparation including safety criteria (such as risk assessment).
- b. Define the flightcrew qualification requirements for this type of flight, including—
 - High-level knowledge of aircraft to be checked;
 - ii. Specific training dedicated to the non-standard flights identified above and the anticipated test maneuvers to be performed;
 - iii. Emphasizing importance of conducting a thorough pre-flight after maintenance;
 - iv. Flightcrew with the skills to observe, interpret, analyze, and communicate;
 - v. Consider the added value of a third observer trained for the specifics of the flight (for example, maintenance personnel, flight test engineer, etc.); and
 - vi. Guidance to air carriers on potentially hazardous maneuvers.

Complete.



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SECTION II: DETAILED ACTION INFORMATION

1d FAA AFS

Publish the appropriate guidance material and communicate completion of this action to CAST.

Information for Operators (InFO) 16006, Non-Revenue Flight Procedures, published May 29, 2016.

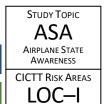
Notes

FAA to determine appropriate format of guidance after review with air carriers.



CAST Safety Enhancement (SE)

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SECTION II: DETAILED ACTION INFORMATION

Action 2: Develop risk assessment guidelines/training standards for non-standard, non-revenue flights

Action 2. Develop risk assessment galdelines, training standards for non-standard, non-revenue nights				
Primary Implementer		Carriers		
Action Objective		Air carriers should update operational risk assessment guidelines and training standards that mitigate risk associated with non-standard, non-revenue flights (for example, functional check flights, demonstration flights, etc.).		
Action Timeline		Flow Time: 12 months (upon completion of <u>Action 1</u>) Due Date: 11/30/2016		
Timeline/Flow for Future Adopters		D		
CAST L	•	tional Air Carrier Association (NACA)		
#	Organizati			
2a	Air Carrier	Communicate with members the analysis undertaken by CAS with non-standard, non-revenue flights, and highlight the important to the intervenue flights.		
	Complete.			
2b	Air Carrier	Implement the guidance in Action 1 to develop non-standard guidelines that take into account the following, as a minimum a. The exact purpose of the flight; b. Risk assessment performed before each flight; c. The identification of the specific equipment and systems must be verified in flight, or that is degraded/inoperative d. Mandatory review by the flightcrew of any maintenance obeen performed; e. The defined procedure to be used to ensure the validity of checks performed; f. Awareness of non-normal procedures to follow in the ever failure or malfunction during the flight; g. Weather conditions needed for the purpose of the flight; h. Minimum required levels of flightcrew experience and qui. The importance to have an accurate pre-flight briefing, in and taking into account possible air traffic control constration. Warnings and associated limits not to be exceeded during non-revenue flights; k. Emphasizing the strict adherence to the flight plan without improvisation; and l. Consultation with manufacturers concerning best practice maneuvers related to non-normal flight operations (such	whose functional operation operations that have of the results of any functional ent of system/equipment alification; cluding task sharing definition ints; onn-standard, ut unnecessary es and potentially hazardous	
	Complete.			
	J			



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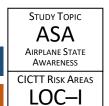
SECTION II: DETAILED ACTION INFORMATION

2c	Air Carriers	Incorporate these practices into standard operating procedures (SOP), policies, and Safety Management Systems.	
	Complete.		
2d	Air Carriers	 Air carrier actions are complete when the air carrier has— a. Reviewed the guidance from Action 1. b. Revised SOPs and policies regarding conduct of non-standard, non-revenue flight operations to reflect the guidance, as applicable. 	
	Complete.		
2e	Air Carrier Industry Assns.	Track implementation and report progress to JIMDAT and CAST.	
	Reported to JIMDAT and CAST in February 2017.		
es			



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SECTION III: SUPPLEMENTAL INFORMATION

Source Study ASA Joint Safety Analysis Team (JSAT) Final Report (June 5, 2014) ASA Joint Safety Implementation Team (JSIT) Final Report (December 31, 2014) Related Initiatives Flight Safety Foundation (FSF) Functional Check Flight Symposium, 2011 European Aviation Safety Agency (EASA) Safety Information Bulletin on functional checkers.				
Total Cost \$4,700,000 Note: For labor, 1 Full Time Equivalent (FTE) = \$250,000				
<u>Action 1</u> \$1,200,000 4.8 FTE				
<u>Action 2</u> \$3,500,000 14.0 FTE				
Organization Resources Needed				
Direct FAA AFS • Action 1: 1.5 FTE.				
Resource Overview – FAA AIR Government • Action 1: 0.5 FTE.				
Organization Resources Needed				
Direct Resource Overview − Action 1: 2.8 FTE (assumes 55 air carriers @ ~0.05 FTE per carriers for support). Action 2: 13.75 FTE (assumes 55 carriers @ ~0.25 FTE per ca				
 Action 2: 0.25 FTE (assumes ~0.05 – 0.1 FTE per association to the implementation and coordinate with CAST). Air Carrier Industry Assns. Airlines for America (A4A), Regional Airline Association (RAA), and National Air Carrier Association (NACA). 				
Indirect The organizations identified in this section are not expected to incur direct costs associat implementing this SE, but they may incur indirect costs within their normal line of work.	ed with			
Overview Organization Description				
N/A N/A				



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OPERATIONS — NON-STANDARD, NON-REVENUE FLIGHTS

STUDY TOPIC ASA AIRPLANE STATE AWARENESS CICTT RISK AREAS LOC—I

SECTION IV: REVISION LOG

Major revisions (whole numbers) represent CAST-approved changes to SE language. Minor revisions (decimals) represent minor changes to target dates or completion notes that do not affect implementer actions.

Revision	Date	Description
1.0	09/17/2018	New SE format. Content reorganized and terminology updated. No substantive changes.
0.2	02/02/2017	Action 2 closed. Action 1 closed at June 2016 CAST meeting.
0.1	02/04/2016	Action 1 due date extended from 11/30/2015 to 02/29/2016.
Original	08/01/2013	CAST adopted SE 193.



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