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Airplane States Awareness (ASA) – Training –Flight Crew training (Approach to Stall & Up Set Recovery) Verification and Validation

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Disclaimer

This document has been compiled by members of the aviation industry to provide guidance for air operators and other stakeholders to conduct effective upset prevention and recovery training, including approach-to-stall, in realistic scenarios, using qualified flight simulator training devices in order to reduce the risk of Loss of Control In-flight (LOC-I) accidents. It is not intended to supersede or replace existing materials produced by the National Regulator or in ICAO SARPs. The distribution or publication of this document does not prejudice the National Regulator's ability to enforce existing National regulations. To the extent of any inconsistency between this document and the National/International regulations, standards, recommendations or advisory publications, the content of the National/International regulations, standards, recommendations and advisory publications shall prevail.

RASG-MID Safety Advisory

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**AIRPLANE STATES AWARENESS (ASA) –
TRAINING –FLIGHT CREW TRAINING
(APPROACH TO STALL & UP SET RECOVERY)
VERIFICATION AND VALIDATION**

1. INTRODUCTION

1.1 A CAST study of 18 LOC-I accidents and incidents showed that, in many situations, the flight crew failed to properly respond to and recover with how they had been trained from an unexpected upset, approach to stall, or stall situation resulting from flight crew loss of Airplane State Awareness (ASA). In some of these events, a review of the accident report indicated proficiency issues with the pilot even after checking and qualification, particularly when training had been provided by an external training organization.

1.2 The purpose of this Safety Advisory is to reduce the risk of LOC-I accidents by having Air Carriers conduct effective upset prevention and recovery training, including approach-to-stall, in realistic scenarios, using qualified flight simulator training devices.

2. DESCRIPTION

2.1 To improve flight crew proficiency in handling issues that can lead to loss of Airplane State Awareness (ASA). Air carriers should review, incorporate, and adopt the best practices recognized by the aeronautical community with regards to upset prevention and recovery training, including the following:

- a) Qualification of flight simulation training devices to satisfactorily represent aircraft characteristics for proposed scenarios. Air carriers should coordinate with airplane and simulator manufacturers to ensure that training devices satisfactorily represent aircraft characteristics for proposed scenarios.
- b) Approach-to-stall training in realistic scenarios. (i.e., up to the stall warning activation):
 - i. approach-to-stall with the autopilot engaged (including auto-throttles disengaged, inoperative or not installed), with emphasis on the effect of autopilot trim/auto-trim and combinations of auto-flight modes that can lead to low energy state (e.g., use of vertical speed modes in climb near the airplane's performance ceiling);
 - ii. a demonstration of recognition and recovery from initial improper response to approach-to-stall;
 - iii. high-altitude approach-to-stall (service ceiling for the weight) to include recognition of low and high speed buffet, performance capabilities of the engines and flight control sensitivity;

- iv. low-altitude approach-to-stall (terrain critical) and recovery with ground proximity warning system (GWPS) alerts; and
 - v. air data system failures that can present as, or lead to, stall.
- c) Upset prevention and recovery training (UPRT) realistic scenarios including but not limited to:
- i. Upsets encountered with and without auto-flight engaged;
 - ii. Upsets occurring in instrument meteorological conditions (IMC); and in VMC with no external reference (e.g. taking-off at night over the sea/unlighted terrain)
 - iii. Sub-threshold roll (imperceptible roll rate) in IMC;
 - iv. Pilot-induced upsets; and
 - v. Air data system failures (e.g., unreliable airspeed), with emphasis on subtle or intermittent types of failures that can be particularly difficult to recognize or diagnose.

2.2 Air carriers should verify and validate the quality and consistency of training, with emphasis on externally provided training. This should include examining both the content and conduct of training. Training verification and validation should include improving surveillance of and communication with third-party training providers. To accomplish this, air carriers should:

- a) implement a process to ensure their aircrew training program, including any externally provided training, is consistent with current airline and manufacturer policy and procedures.
- b) implement a process to validate the qualification and currency of trainers, including third-party training providers.
- c) validate contractor training by periodically observing training and/or checking events and auditing records to ensure consistency of aircrew training and pilot proficiency.

References:

CAST SEI 95
FAA Order 8900.1
FAA Information for Operators InFO 13003

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