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BULLETIN TYPE: Flight Standards Information Bulletin (FSIB)
for Air
Transportation (FSAT)

BULLETIN NUMBER: FSAT 95-13

BULLETIN TITLE: Recurrent Training on the Hazard of
Attempting to Counter Autopilot Commands by Manual Control
Forces when the Airbus A-300/310 Series Airplane Is Being Flown
with the Autopilot Engaged in the Land or Go-Around Mode.

EFFECTIVE DATE: 05-15-95

TRACKING NUMBER: NTSB Recommendation A-94-164

1. BACKGROUND. The National Transportation Safety Board (NTSB) issued a safety recommendation to the Federal Aviation Administration (FAA) that would require operators of the Airbus A-300 and A-310 series airplanes to provide immediate and recurrent training to flightcrews on the hazard of attempting to counter autopilot (AP) commands by manual control forces when the airplane is being flown with the autopilot engaged in the land or go-around mode.

A. This recommendation was made because of an accident involving a flightcrew that may have attempted to override the autopilot while it was engaged in the COMMAND mode. This may have resulted in a out-of-trim condition between the trimmable horizontal stabilizer (THS) and the elevator.

B. After reviewing accident data, the NTSB expressed concerns regarding certain A-300 autopilot systems, since the cockpit voice recorder (CVR) transcript indicated the flightcrew did not understand why the airplane failed to respond to their control inputs. Apparently, the flightcrew did not realize their manual control inputs were causing the autopilot to trim to an out-of-trim condition in the airplane nose up (ANU) direction.

C. The NTSB believes certain features of some A-300 autopilot/flight directors (AP/FD) may have contributed to the crew's confusion:

(1) The A-300 operating manual indicates that above 1,500 feet AGL, a force on the control column of about 33 pounds will result in the disengagement of the autopilot. However, when the airplane is below 1,500 feet AGL and the autopilot/flight director is in the land or go-around mode, the autopilot cannot be disengaged by a force on the control column; AND, if a pilot input force is applied to the control column at this time, the input may result in the THS moving in a direction opposite to the input, thereby possibly creating an out-of-trim condition.

(2) The operating manual for the airplane provides that, except during the glideslope and localizer capture phase of the land mode (when the "Supervisory Override Function" permits the pilots to make control movement inputs to assist the autopilot to make a smooth capture), pilots should not attempt to override the autopilot.

(3) The A-300 is not equipped with an out-of-trim warning light.

(4) During manual flight, use of the control wheel pitch trim switches result in an audible "whooper" sound; but, when the autopilot is engaged, autotrim movement of the trimmable horizontal stabilizer has no such audible signal.

(5) In most autopilot/flight director modes, activation of the control wheel pitch trim switches disengages the autopilot - BUT, in the land or go-around mode, the pitch trim switches neither disengage the autopilot nor move the trimmable horizontal stabilizer.

2. INDUSTRY-ISSUED BULLETINS. Airbus Industries issued Service Bulletin (SB) A-300-22-6021 which provides for a modification to the flight control computer to change the software control laws for the A-300-600. This modification provides for the disengagement of the autopilot when a force of about 33 pounds is applied to the control column in the land or go-around modes above 400 feet AGL. Below this altitude, the autopilot cannot be disengaged by a force on the control column. The manufacturer provides that below 400 feet, only slight inputs on the control column would be needed to refine the approach. Additionally, if a pilot tried to counter the autopilot inputs, the control forces should not become very high prior to landing. However, the possibility for unintended pilot-induced trim movement and maximum stabilizer up or down trim still exists. Such a situation could result in a stall or the airplane landing in a nose-down attitude.

A. The A-300 models affected by the SB are the B4-601, B4-603, B4-605R, B4-622, B4-622R, and C4-620. A similar SB has been issued for the A-310.

3. AUTOPILOT DISCONNECT DIFFERENCES. The autopilot disconnect systems in the Airbus A-300 and A-310 are significantly different from the disconnect systems provided in other large transport-category airplanes. The lack of a stabilizer-in-motion warning appears to be unique to the Airbus A-300 and A-310. Pilots may not be aware that under some circumstances the autopilot may create an out-of-trim condition if they try to manually control the airplane. The A-300 and A-310 do not have the autopilot disconnect safety features to alert pilots that the THS is moving to oppose their manual control inputs. The accident may have been prevented if the autopilot had disconnected as the pilot pushed forward on the control column or if an alert had been provided to the pilots that the THS was in motion.

4. POLICY. Principal operations inspectors (POI) whose carriers operate Airbus A-300 and A-310 series aircraft should immediately share the information contained in this FSIB with their carriers.

A. POIs should ensure that the operators of the affected Airbus A-300 and A-310 series airplanes provide immediate and recurrent training to flightcrews on the hazards of attempting to counter autopilot commands by manual control forces when the aircraft is flying with the autopilot engaged and in the land or go-around mode.

B. POIs should ensure that their operators' initial, upgrade, transition, and recurrent training programs include training on acceptable corrective actions which include disconnecting the autopilot with the control wheel disconnect button or through mode control panel. Training should also emphasize that if the autopilot has not captured the stabilized approach, the pilot can disconnect the autopilot and "hand" or manually fly the approach if recoverable, or can initiate an immediate go-around.

C. POI's should ensure that their carriers operating the affected Airbus A-300 and A-310 series aircraft comply with the requirements of Airworthiness Directive (AD) 94-21-07, "Airbus Model A310 and A300-600," effective November 2, 1994.

5. INQUIRIES. This bulletin was developed by AFS-210. Any questions or comments should be directed to AFS-210 at (202) 267-3718.

6. EXPIRATION. This bulletin will expire on 05-31-96.

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Reference Only