## 1.18.5 Previous Safety Recommendations Related to the Circumstances of the Flight 903 Accident

After the flight 587 accident, the Safety Board reexamined FDR data from the May 1997 American Airlines flight 903 accident (see section 1.18.2.1).[167] The Board determined that the flight 903 airplane's rudder exceeded its designed travel limits because of a rapid increase in airspeed during the upset and apparent high forces applied to the rudder pedal when it was at the in-flight limit.

As stated in section 1.6.2, the A300-600 rudder has the following travel limits in terms of indicated airspeed: a maximum of 30° at 165 knots and below; 14.5° at 220 knots; 9.3° at 250 knots; 7° at 270 knots; 5° at 310 knots; 4° at 350 knots; and 3.5° at 395 knots and above. The flight 903 investigation determined that the rudder travel limiter could only maintain these limits in response to airspeed changes that occurred at a moderate rate, such as those typically experienced during normal commercial operations. The investigation also determined that the rudder travel limiter could not maintain these limits in response to more rapid airspeed changes, such as those experienced during the flight 903 upset.

The flight 903 investigation specifically determined that, in the airspeed range of 165 to 220 knots, the rudder travel limiter could maintain the designed rudder travel limitations for airspeed changes up to about 2.4 knots per second. However, during the flight 903 upset, the airplane experienced a much more rapid airspeed increase—from 190 to 220 knots in 3 seconds—which equated to an increase of up to 10 knots per second and exceeded the rate at which the rudder travel limiter system could respond by as much as four times. The airspeed then continued to increase during the next 20 seconds at a rate of 2.6 knots per second. Because of the increasing airspeed, the rudder travel limiter position lag (introduced by the previous 3-second rapid increase) was present throughout most of the upset (even though the position lag was decreasing).

Because of the rapid initial airspeed change and continued airspeed increase, the rudder exceeded its designed rudder travel limit for about 20 seconds. During that time, the rudder moved four times in response to pilot input; the rudder exceeded the design limit by about 8° twice and by about 5° twice. The Safety Board stated that rudder travel beyond the designed rudder travel limits could lead to high loads on the vertical stabilizer and that this potential would be especially high during in-flight upsets because rapid airspeed changes accompanied by rudder inputs are more likely to occur during upsets than during normal flight.

A review of the flight 903 FDR data for rudder position showed that, even after accounting for the slow response rate of the rudder travel limiter, the rudder still appeared to exceed the estimated position at which it should have been limited by the rudder travel

[167] The Safety Board agreed to include a statement in this report to address the claims that a linkage exists between American Airlines flight 587 and American Airlines flight 903. By including this statement, the Board seeks to set forth the reasons for declining to make a causal connection between the two events. See appendix C for an explanation of the differences.

limiter. This exceedance was as high as 4° near the end of the upset. Testing of the rudder travel limiter determined that, if a pilot applied a sufficiently large pedal force when the pedal was at its travel limit, such a pedal force would further slow or stop the movement and, consequently, the effectiveness of the rudder travel limiter. The flight 903 event demonstrated that slowing or stopping the rudder travel limiter by application of large pedal forces could result in the rudder position substantially exceeding the designed travel limit. The Safety Board was concerned that such an increase in available rudder beyond its designed rudder travel limits could permit excessive rudder movements and possibly result in high loads on the vertical stabilizer.

As a result of its concerns, the Safety Board issued Safety Recommendations A-04-44 and -45 on May 28, 2004. Safety Recommendations A-04-44 and -45 asked the FAA to take the following actions:

> Require Airbus to develop a design modification for the A300-600 rudder travel limiter system so that it can respond effectively to rapid airspeed changes such as those that might be experienced during upsets and not be adversely affected by pedal forces, and issue an airworthiness directive to require the installation of that modification. (A-04-44)
>
> Evaluate other transport-category airplanes with rudder limiting systems to determine whether any of those systems are unable to effectively respond to rapid airspeed changes such as those that might be experienced during upsets, or whether any of those systems are adversely affected by pedal forces and, if so, require corrective modifications to those systems. (A-04-45)

The FAA responded to Safety Recommendations A-04-44 and -45 on August 12, 2004. Regarding Safety Recommendation A-04-44, the FAA stated that it was aware that the Board was considering additional design-related safety recommendations pertaining to the A300-600 flight control systems. The FAA also stated that it would like to assess these recommendations before making any final decisions about the design of the A300-600 flight control system.

Regarding Safety Recommendation A-04-45, the FAA stated that its aircraft certification offices would ask transport-category airplane manufacturers for information regarding the maximum expected airplane accelerations and maximum rudder travel limiter rates. The FAA indicated that the offices would be also asking the manufacturers if rudder pedal forces might adversely affect their rudder limiting devices. The FAA further stated that, after the manufacturers' systems information was received and analyzed, the FAA would be in a position to determine whether any of those systems would be unable to respond effectively to airspeed changes, such as those that might be experienced during upsets, and would be adversely affected by pedal forces. Such information, according to the FAA, would help determine what airworthiness actions might be required.

## 1.18.6 Previous Safety Recommendations Related to Upset Recovery Training

### 1.18.6.1 Safety Recommendation A-96-120

On October 18, 1996, the Safety Board issued Safety Recommendation A-96-120. This recommendation was issued in response to three uncommanded roll and/or yaw events that occurred while Boeing 737 airplanes were approaching to land: the March 3, 1991, United Airlines flight 585 accident in Colorado Springs, Colorado; the September 8, 1994, USAir flight 427 accident near Aliquippa, Pennsylvania; and the June 9, 1996, Eastwind Airlines flight 517 incident in Richmond, Virginia. Safety Recommendation A-96-120 asked the FAA to take the following action:

> Require 14 CFR Part 121 and 135 operators to provide training to flight crews in the recognition of and recovery from unusual attitudes and upset maneuvers, including upsets that occur while the aircraft is being controlled by automatic flight control systems, and unusual attitudes that result from flight control malfunctions and uncommanded flight control surface movements.

On January 16, 1997, the FAA stated that it agreed with this recommendation and that it was considering a notice of proposed rulemaking (NPRM) "to require that air carriers conduct training that will emphasize recognition, prevention, and recovery from aircraft attitudes normally not associated with air carrier flight operations." On July 15, 1997, the Safety Board classified A-96-120 "Open—Acceptable Response." However, on April 19, 1999, the Board classified the recommendation "Open—Unacceptable Response" because the FAA had not taken the necessary regulatory action to require unusual attitude training for air carrier pilots.

On August 11, 1999, the FAA stated that it initiated an NPRM proposing to revise 14 CFR Part 121, Subparts N and O. The FAA indicated that the NPRM would include training in the recognition and recovery of unusual attitudes and upset maneuvers. The FAA anticipated that the NPRM would be published in December 2000. On December 20, 1999, the Safety Board stated that, on the basis of the FAA's planned actions, Safety Recommendation A-96-120 was classified "Open—Acceptable Response."

On February 11, 2003, FAA staff advised the Safety Board that an NPRM package with changes to 14 CFR Subparts N and O was being coordinated internally and was expected to be submitted to the Office of the Secretary of Transportation in May 2003. On June 16, 2004, FAA staff advised the Board that an aviation rulemaking committee was reviewing the NPRM effort and that the issuance of the NPRM was unlikely before the end of 2004.

### 1.18.6.2 Other Upset Recovery Training Safety Recommendations

The Safety Board had issued three safety recommendations to the FAA (before A-96-120) for upset recovery training for airline pilots. First, on May 1, 1970, the Safety Board issued Safety Recommendation A-70-21 as a result of the November 16, 1968,

accident in which a flight crew lost control of a Boeing 737 near Detroit, Michigan, during poor weather conditions. Safety Recommendation A-70-21 recommended that

> Airlines be required to provide additional flightcrew training, whereby pilots would be required to demonstrate periodically, proficiency in the area of recovery from unusual attitudes. It was suggested that a simulator be utilized to provide flightcrew familiarization in the following areas. A. The various instrument displays associated with and resulting from encounters with unusual meteorological conditions. B. The proper flightcrew response to the various displays. C. Demonstration of and recovery from possible ensuing unusual attitudes.

On May 21, 1970, the FAA stated that unusual attitude maneuvers had been deleted from the pilot proficiency check in 1965 but that airline training now emphasized the proper use of trim, attitude control, and thrust, which the FAA believed was far more effective than the practice of recovery from unusual attitude maneuvers. The FAA also stated that it was inconceivable to require training maneuvers that would place a large jet airplane in a nose-high, low airspeed, high AOA situation. On July 8, 1970, the FAA stated that changes in airline training and operational procedures had resulted from this safety recommendation and cited a "marked decrease in upset events" as evidence that these actions had addressed the intent of the recommendation. The FAA further stated that it would discuss with industry representatives the feasibility of simulating large excursions from flightpath caused by abnormal meteorological conditions. Because no further action was taken by the FAA, the Safety Board classified Safety Recommendation A-70-21 "Closed—Unacceptable Action" on August 17, 1972.

Second, on September 15, 1972, the Safety Board issued Safety Recommendation A-72-152 as a result of the March 31, 1971, accident involving a Boeing 720B, which yawed and crashed while the flight crew was attempting a three-engine missed approach from a simulated engine-out instrument landing system approach. The Safety Board was concerned about the flight crew's inability to rapidly assess the situation and recover. Safety Recommendation A-72-152 recommended that

> [Title] 14 CFR 61, Appendix A, and 14 CFR 121, Appendices E and F be amended to include a requirement for pilots to demonstrate their ability to recover from abnormal regimes of flight and unusual attitudes solely by reference to flight instruments. For maximum safety, these demonstrations should be conducted in an appropriate flight simulator. Should existing or proposed simulators be incapable of realistically duplicating aircraft performance in the regimes of flight beyond normal operation, it is further recommended that the FAA take appropriate measures to require that such existing or proposed simulators be replaced or modified to include such a capability.

On September 26, 1972, the FAA stated that it did not believe that simulators were capable of simulating certain regimes of flight that were beyond the normal flight envelope of an aircraft. The FAA further stated that, because an aircraft simulator was not a required part of an air carrier training program, the FAA could not require that a simulator be replaced or modified to simulate regimes of flight outside the flight envelope

of the aircraft. As a result of the FAA's response, the Safety Board classified Safety Recommendation A-72-152 "Closed—Unacceptable Action" on January 16, 1973.

Third, on April 29, 1992, the Safety Board issued Safety Recommendation A-92-20 as a result of the July 10, 1991, L'Express Airlines Beech C99 accident at Birmingham, Alabama. The airplane was on an instrument approach into clearly identified thunderstorm activity, resulting in a loss of control of the airplane from which the flight crew was unable to recover. Safety Recommendation A-92-20 asked the FAA to take the following action:

> Require that recurrent training and proficiency programs for instrument-rated pilots include techniques for recognizing and recovering from unusual attitudes.

On July 9, 1992, the FAA stated that pilots were required to demonstrate recovery from unusual flight attitudes on their private pilot examination. The FAA also stated that an instrument rating required a pilot to be proficient in recovery from unusual attitudes. The FAA noted that, by the time a pilot had the required experience to become a pilot with an air carrier operating under 14 CFR Part 121 or 135, the pilot would have received extensive training and flight checks for procedures and techniques in recovery from unusual attitudes.

On January 26, 1993, the Safety Board stated that instrument-rated pilots should receive recurrent training in techniques for recognizing and recovering from unusual attitudes and that proficiency programs should include this same training. The Board also stated that requiring such training annually would greatly enhance a pilot's ability to safely recover from an unusual attitude. Because the FAA planned no actions on this recommendation, the Safety Board classified Safety Recommendation A-92-20 "Closed—Unacceptable Action."

## 1.18.7 Previous Safety Board Actions Regarding Data Filtering

### 1.18.7.1 Safety Recommendations A-94-120 and -121

The Safety Board participated in the investigations of three Boeing 767 accidents that occurred overseas during either 1992 or 1993. The investigations determined that flight control position data recorded on the airplanes' FDRs were filtered by the engine instrument crew alert system (EICAS). As a result, the Board issued Safety Recommendations A-94-120 and -121 on June 16, 1994. Safety Recommendation A-94-120 asked the FAA to take the following action:

> Require design modification to the Boeing 757/767 so that flight control position data to the DFDR [digital flight data recorder] is accurate and not filtered by the EICAS. The sample rate should also be increased to an appropriate value.

In an August 29, 1994, letter, the FAA indicated its belief that it was not necessary to redesign the Boeing 757 and 767 FDR to record unfiltered data control positions because the airplanes' FDR installations met the accuracy requirements of

14 CFR 121.343. In an August 1, 1995, letter, the Safety Board disagreed with the FAA's position and stated that the current method used to record flight control position for the Boeing 757 and 767 would meet the regulatory requirement for static, but not dynamic, conditions. (Under dynamic conditions, the parameter is undergoing change at the maximum rate that can be expected.)

On November 20, 1996, the FAA indicated that it issued NPRM 96-7, which proposed to upgrade recorder capabilities in most transport-category airplanes, including the Boeing 757 and 767, and to preclude the use of a filter. On May 16, 1997, the Safety Board noted that the proposed rule appeared to preclude the use of a filter by a statement in new appendixes for 14 CFR Parts 121, 125, and 135. The statement indicated that recorded values had to meet accuracy requirements during dynamic and static conditions; thus, data filtering techniques, including EICAS-filtered data parameters, would not meet this proposed requirement. The Board further noted that airplanes using data filtering systems would need to be retrofitted or would need to undergo design modifications to meet the proposed requirement. The Board indicated that the NPRM was a positive step toward ensuring that correct and adequate control position data would be recorded on FDRs but was concerned that airplane manufacturers and air carriers might overlook the new rules in the appendixes or not realize that data filtering systems had to be replaced. The Board stated that it would appreciate information on the FAA's plans if it did not intend to issue alerts highlighting the new requirements and the time schedule detailed in the NPRM.

In a September 10, 1997, letter, the FAA stated that, on July 9, 1997, it issued the final rule (14 CFR 121.344, Appendix M) to upgrade recorder capabilities in most transport-category airplanes. (The final rule also amended 14 CFR Parts 125 and 135 to require certain operators to upgrade recorder capabilities.) The FAA also stated that the final rule precluded the use of a filter for FDR data and specified the sampling rate for all parameters. On August 4, 1998, the Safety Board noted that the FAA's letter did not mention any alerts or alternate plans to highlight the new requirements. However, the Board thought that the FAA appeared to refer to the Board's concern within the "Discussion of Comments to the NPRM" section of the final rule. In that section, the FAA agreed that further explanation of the dynamic test condition requirement was necessary and stated that it intended to issue an AC to clarify the recording of dynamic and static data and other acceptable means to comply with the rule. The Board stated that it was pleased that the FAA had recognized the need to further emphasize the means for compliance with the new requirements and to notify operators of the elimination of filtered data. The Board urged the FAA to expedite the issuance of the AC because operators and manufacturers had begun preparations to retrofit their fleets.

In a February 25, 2000, letter, the FAA indicated that, on October 5, 1999, it issued AC 20-141, "Airworthiness and Operational Approval of Digital Flight Data Recorder Systems," which addressed all filtered data and not just EICAS data. The AC stated that the applicant must identify any parameters that are filtered before they are recorded and must show, by test, that "no significant difference" exists between these parameters and the recorded parameter data under static and dynamic conditions. On May 11, 2000, the

Safety Board indicated that the final rule and the AC satisfied the intent of Safety Recommendation A-94-120 and classified it "Closed—Acceptable Action."

Safety Recommendation A-94-121 asked the FAA to take the following action:

> Review other airplane designs to ensure that flight control position data filtered by systems such as EICAS are not substituted for accurate data.

In an August 29, 1994, letter, the FAA indicated that it had reviewed the flight control position data to the FDR on McDonnell Douglas MD-80/90 and MD-11 airplanes and found that the flight control positions were recorded accurately. On November 20, 1996, the FAA indicated that it reviewed the flight control position data to the FDR of aircraft manufactured by Aerospatiale, CASA, Cessna, Grumann, Gulfstream, Israel Aircraft Industries, Lockheed, and Saab and concluded that the data filtered by systems such as EICAS were not substituted for accurate data. The FAA also indicated that it was planning to complete similar reviews for airplanes manufactured by Airbus, Canadair, Dassault (Falcon), DeHavilland, Dornier, Embraer, Fokker, Jetstream, Lear, LET, and Illyushin. Further, the FAA indicated that it would take "whatever steps were necessary" to ensure that the recorded data were accurate and representative of control surface positions. In a May 16, 1997, letter, the Safety Board indicated that it was pleased with the FAA's review efforts and commitment to take any necessary action.

On February 9, 1998, the FAA stated that it had issued its final rule to amend 14 CFR Parts 121, 125, and 135, which required certain operators to record additional FDR parameters and precluded the use of a filter. The FAA considered its action to be completed on this safety recommendation. On August 4, 1998, the Safety Board indicated that the FAA's February 9 letter made no mention of the status of its planned review of other manufacturers' airplane designs. The Board stated that, regardless of the issuance of the rulemaking and the rulemaking's elimination of filtering, the FAA should finish its review and notify the Board of the findings. Further, the Board stated that, if the FAA found additional airplanes with filtered control surface data, then it should ensure that all affected operators take the necessary steps to record accurate data.

On April 4, 2000, the FAA indicated that it had completed a review of Embraer and Dassault (Falcon) aircraft and concluded that the recorded data were accurate and representative of control surface positions. The FAA stated that there was "no need to continue an independent review of the remaining existing airplanes" because "implementation of the final rule ensures that the recorded data are accurate and representative of control surface positions." The FAA further stated that its principal aviation safety inspectors assigned to 14 CFR Part 121, 125, and 135 operators were familiar with the rule change and that the inspectors would ensure that their operators comply with the rules. In addition, the FAA stated that it had issued AC 20-141 in response to Safety Recommendation A-94-120.

On August 9, 2000, the Safety Board indicated that it was disappointed that the FAA did not complete the review of airplane designs because it would have provided an additional level of assurance that accurate FDR data were being recorded. However, the

Board stated that it was pleased overall with the FAA's actions on this safety recommendation. As a result, Safety Recommendation A-94-121 was classified "Closed—Acceptable Action."

### 1.18.7.2 Postaccident Correspondence on Data Filtering

In a February 6, 2002, letter, the Safety Board indicated that the flight 587 investigation revealed that vital flight control surface position information was not directly recorded on the accident airplane's FDR because of the SDAC filter (see section 1.11.2). The Board believed that the filtered data supplied by the SDAC did not meet the accuracy requirements under dynamic conditions called for in 14 CFR 121.344, Appendix M.

The Safety Board stated that the presence of filtered data was "surprising and disappointing," considering the FAA's actions regarding Safety Recommendations A-94-120 and -121 (see section 1.18.7.1). Specifically, the Board indicated that it accepted the FAA's assertion that the issuance of the 1997 final rule (which precluded the use of a filter and added the requirement for a dynamic test condition) and AC 20-141 (which specified test procedures for recorded parameter data under static and dynamic conditions), as well as the work of POIs, would ensure that operators would not record filtered FDR data.

The Safety Board believed that the FAA needed to take immediate steps to identify those A300 airplanes that recorded filtered flight control surface data and to take corrective actions as soon as possible to bring these airplanes into compliance with existing regulations. The Board also noted that it was important for the FAA to complete the review called for in Safety Recommendation A-94-121 to ensure that all aircraft that record filtered data are identified and brought into compliance with regulations as soon as possible. In addition, the Board expressed concern that older aircraft, which have not historically recorded filtered data, could be retrofitted with new or upgraded avionics that supply filtered data to the FDR. The Safety Board requested that, within 30 days, the FAA advise the Board, in writing, of the steps that the FAA intended to take to address the problem involving A300 airplanes that record filtered data and to identify and correct any other aircraft that are similarly recording filtered data.

In a March 6, 2002, letter, the FAA stated that, when Safety Recommendations A-94-120 and -121 were issued, it surveyed all transport-category airplane manufacturers to determine if FDR data on their airplane models were filtered. The FAA indicated that the manufacturers might not have had a clear understanding of what filtered data meant in the context of Safety Recommendation A-94-121 and that, as a result, the manufacturers defined "filtered" as they saw fit. The FAA further indicated that Airbus reported that the FDRs on its airplanes did not record filtered data.

The FAA recognized that it gave assurances to the Safety Board that the wording of its 1997 final rule on data filtering would preclude the recording of filtered flight control position data on most transport-category airplanes. However, the FAA stated the following regarding the wording of the final rule:

> Although it [the final rule] did not specifically preclude filtering, it was thought that filtering was technically unfeasible in a compliant system. However, the preamble to the rule left the option open for filtering by use of the undefined term 'readily retrievable.' Filtered data was accepted as long as there was a method of readily retrieving the data.

The FAA added that AC 20-141, which was introduced several months after the final rule, specifically addressed filtering but did not disallow it. The FAA stated, "again, it was thought that the technical guidance outlined in the AC made filtering unfeasible."

The FAA stated that, as a result of the recent concerns about data filtering, it compiled all historical data surrounding Safety Recommendations A-94-120 and -121 and conducted a new survey of transport-category airplane manufacturers to determine whether FDRs on their airplane models recorded filtered flight control position data. The FAA also stated that it contacted Airbus to find out whether the Safety Board's assertions regarding FDR data filtering on its models were accurate. Airbus indicated, contrary to its earlier position, that it did record filtered data but that the filtering did not conflict with the requirements of 14 CFR 121.344.

On September 3, 2002, the Safety Board indicated that it had provided the FAA with a detailed list of concerns regarding filtered data and was prepared to discuss these issues at a planned October 1, 2002, meeting with the FAA and Airbus. The specific issues discussed at this meeting included compliance with FDR rules as they pertained to the recording of filtered data on Airbus airplanes, the possible impact of data filtering and sampling rate on a pending flight recorder NPRM, and the FAA's findings in response to its new manufacturer survey (see section 1.18.7.3).

### 1.18.7.3 Safety Recommendation A-03-50

At the October 1, 2002, meeting with Airbus and the Safety Board, the FAA reported on the results of Phase I of the new manufacturer survey. The FAA stated that Boeing had reported that the 747-400 recorded filtered data for four parameters. The FAA also stated that Phase I of the survey would be complete once Airbus' results were received. Airbus stated that its understanding of the regulatory requirements pertaining to filtered data differed from the intent of the rule but that it was willing to work with the FAA to correct the problem.

In an October 25, 2002, letter to the FAA, Airbus provided the results of its survey, which indicated that the A310 and A300-600 models recorded filtered data for five parameters: aileron left, aileron right, rudder, elevator, and stabilizer position. Airbus also stated that it was willing to develop a service bulletin to increase the sampling rate for flight control parameters on existing and newly manufactured Airbus airplanes.

On November 6, 2003, the Safety Board issued Safety Recommendation A-03-50, which asked the FAA to take the following action:

> Require that within 2 years, all Airbus A300-600/A310 and Boeing 747-400 airplanes and any other aircraft that may be identified as recording filtered data be retrofitted with a flight data recorder system capable of recording values that meet the accuracy requirements through the full dynamic range of each parameter at a frequency sufficient to determine a complete, accurate, and unambiguous time history of parameter activity, with emphasis on capturing each parameter's dynamic motion at the maximum rate possible, including reversals of direction at the maximum rate possible.

On February 2, 2004, the FAA stated that FDRs either should not record filtered flight control surface parameters[168] or, if filtered data were recorded, a proven and unambiguous method must exist for retrieving, to within required tolerances, the original unfiltered values from the filtered data. The FAA also stated that the most recent information on filtered flight control surface parameters revealed that the Boeing 747-400 does not filter such data, contrary to what was originally reported. The most recent information also revealed that the A320 rudder position parameter was filtered and not retrievable. Thus, the only transport-category airplanes determined by the FAA to have filtered, nonretrievable flight control surface parameters are the Airbus A310, A300-600, and A320.

The FAA stated that it planned to initiate clarifying rulemaking to ensure that existing airplane FDR systems that record filtered, nonretrievable flight control surface parameters were corrected and to prevent future occurrences of such filtering. The FAA expressed its concern that 2 years would not be sufficient time to accomplish the necessary rulemaking, design, and incorporation of a cost-effective corrective action.

On May 10, 2004, the Safety Board stated that the FAA's planned actions were responsive to the intent of the recommendation. The Board recognized that displays of information used by a pilot to fly an airplane could be filtered but believed that a global exception that allowed filtering of all signals displayed to the pilot was unacceptable. The Board pointed out that unfiltered, high-sampling-rate flight control position data were critically important for accident/incident investigation purposes. These data could be displayed to pilots in many A310, A300-600, and A320 airplanes, but the pilots would not normally use this information to fly the airplane. The Board believed that the recording of filtered data should be limited only to those data that were normally displayed and used by the pilot for flying the airplane. Pending the issuance of the FAA's planned rulemaking, Safety Recommendation A-03-50 was classified "Open—Acceptable Response."

[168] The FAA stated that it found no regulatory agreement on which non-flight control parameters, if any, should be unfiltered. According to the FAA, the European airworthiness authorities and the FAA agreed that certain recorded parameters should reflect the data displayed to the pilots and not the raw sensor data on which the displayed values were based. The FAA further stated that it planned to address the filtering of non-flight control parameters at a forum with participation from industry, airworthiness authorities, and the Safety Board and then take action on this issue based on the results of the forum.