AMERISTAR AIR CARGO, INC.

Lorenda Ward
Investigator-in-Charge
Office of Aviation Safety
National Transportation Safety Board
490 L'Enfant Plaza East, SW
Washington, DC 20594 Summary

May 1, 2018

Re. Ameristar Air Cargo, Inc. Party Submission re. Ameristar Air Cargo, Inc., dba Ameristar Charters, Flight 9363: March 8, 2017: Ypsilanti Michigan: NTSB Investigation no. DCA 17FA076

Ms. Ward,

Ameristar Air Cargo, Inc. (Ameristar) appreciates the opportunity to submit its comments, conclusions and recommendations to the NTSB for its consideration in investigation into Ameristar's Boeing MD-83 accident at Ypsilanti, Michigan airport (NTSB case DCA17FA076).

On March 8, 2017, Ameristar Flight 9363, a Boeing MD-83 aircraft, rejected its takeoff on Ypsilanti, Michigan's airport (KYIP) and ran off the end of Runway 23L. The following facts, conclusion and recommendations are presented for your consideration.

Ameristar was certificated as a 14 CFR part 121 air carrier and in addition it was subject to 14 CFR parts 117, 119 and 120.

Crew Qualification and information

1. Pilots - The flight crew held valid Airline Transport Pilot certificates with DC-9 type ratings and were properly qualified for 14 CFR part 121 operations. In addition, both held valid First Class medical certificates, received ground training within the last 12 months, simulator proficient checks on the MD-83 aircraft within the last 6 months. Proficiency checks and training were conducted by Ameristar instructors at the American Airlines training facilities in Fort Worth, Texas. These proficiency checks were completed within the last 6 months prior to the accident. Both pilots were experienced airman on the MD83 including being simulator check airman on the MD83. The pilot in command (the Check Airman) was also a line check airman on the MD83.
2. The Flight Attendants, including the deadheading FA, were qualified and had completed initial and within the last 12 months recurrent training on the MD83 aircraft.

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Ameristar Management Actions and Response

1. Ameristar contacted the NTSB and its FAA principals within 15 minutes of the accident time to advise that its aircraft was involved in an accident that met the requirements for NTSB notification.
2. Ameristar actively participated in the field investigation of the accident
3. Ameristar supported the NTSB in its field investigation

Ameristar Crew Actions and Response

1. The flight crew used standard callouts during start, taxi and the takeoff
2. During the takeoff roll the flight crew called rotate as briefed – Performance Study page 11
3. The Captain rejected the takeoff based on the fact that the aircraft "wasn't flying" CVR 14:52:41
4. The aircraft came to a stop at a calculated time of 14:52:35 [Performance Study with CVR Snippets Page 6]
5. The Check Airman in the right seat assisted the Captain on the reject by stepping on the brakes and adjusting the reverse thrust to maximum. [Interview Gruseus]
6. The Check Airman, when the aircraft came to a complete stop, shutdown the engines and then within 2 seconds announced "evacuate, evacuate evacuate" CVR 14:52:37
7. The check airman stated that he had called Detroit approach control using his cell phone to have the fire and rescue send the trucks to respond to the takeoff overrun. [Interview Gruseus]
8. After calling Detroit Approach, the Check Airman and Captain accomplished the written evacuation checklist [Interview Gruseus]
9. The A and C FAs began yelling "heads down stay down" when the aircraft left the runway surface. CVR 14:52:27 Survival Group Factual
10. FA A and C did not hear the evacuate command from the cockpit but FA A began an evacuation as soon as the aircraft came to stop on his own due to the up and down movements of the aircraft – [Survival Group Factual]
11. FA C moved to the 1R Door and assessed the conditions pulled the 1R slide but it did not inflate – FA C blocked 1R and directed passengers to exit via 1L [Survival Group Factual]
12. FA B, after hearing the evacuation announcement assessed the aft entry door area for heat and then attempted to open the aft exit door, but a seat belt and debris had jammed between the door and seat.
13. A dead heading Ameristar FA, not part of the official 4-person crew, yelled that the aft entry (tailcone) exit was blocked and for the passengers to "go forward"
14. The seat belt was untangled and FA B opened the aft entry door and noticed that the tailcone had not jettisoned.
15. FA B traveled down the "catwalk" and manually released the tailcone and inflated the tailcone slide
16. FA D stated that the evacuate command from the cockpit was heard after the aircraft stopped
17. Flight Attendant D assessed the area through the Door 2L window
18. FA D momentarily blocked 2L due to her belief that the engine was still running. After realizing that the door was useable she allowed passengers to exit through Door 2L
19. All four FAs gathered the passengers and conducted a head count using the passenger manifest provided by the GSC.
20. The head count matched the passenger manifest of 109 passengers. [Zerke handwritten statement Page 2]
21. The B FA stated that the "Evacuate" command came shortly after the aircraft came to a stop. [Ladenberger statement FA Interview]
22. The passengers left their personal belongings as instructed. [Zerke handwritten statement Page 1]

Conclusions

1. Briefings and checklist accomplishments by the crew were in accordance with Ameristar's policy.
2. Crew Resource Management was exhibited prior to takeoff between pilots and between pilots and flight attendants. There did not appear to be any acrimony among crewmembers. Information flowed smoothly between crewmembers.
3. The Captain rejected the takeoff due to the fact that the aircraft "wasn't flying". The pilots rejected the takeoff after determining that the aircraft was not lifting off as expected determining that it was unsafe to take the aircraft into flight.[1]

[1] In accordance with the FAA's Takeoff Safety Aid recommendation on page 2.11 "It is therefore recommended that pilots consider V1to be a limit speed: Do not attempt an RTO once the airplane has passed V1 unless the pilot has reason to conclude the airplane is unsafe or unable to fly. This recommendation should prevail no matter what runway length appears to remain after V1"

4. The Check Airman expeditiously initiated the emergency evacuation signal "evacuate, evacuate, evacuate" as soon as the aircraft came to a stop – within 2 seconds [CVR 14:52:37].
5. FAs A and C expeditiously, initiated an emergency evacuation as soon as the aircraft stopped based on the perceived damage of the aircraft.
6. There was no confusion or delay initiating the evacuation by either the pilots or flight attendants
7. FA B Effectively, with the help of the dead heading FA, and correctly managed the failure of the aft entry exit by blocking the exit and telling passengers to go forward.
8. The crewmembers directed a head count and accounted for all of the passengers.
9. It is not known why the forward FAs did not hear the evacuate command. It appears that the evacuation in the cabin started just before the evacuate signal was given and that the wind noise after opening the 1L door may have prevented the forward FAs from hearing the command.

Weather Factual

1. METAR for YIP – last reported prior to the accident

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METAR KYIP 081653Z 26035G50KT 10SM CLR 11/M11 A2981 RMK AO2 PK
  WND 26055/1639 SLP095 T01061106=

METAR KYIP 081753Z A2979 RMK AO2 PK WND 24046/1656 SLPNO 58012
  $=
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2. At the time of takeoff, the altimeter was set at 29.81, based on field elevation and the altimeter provided by Detroit approach control, was consistent for the area CVR 13:12:24
3. The Detroit Metro Wayne (KDTW) 1453Z METAR reported an altimeter setting of 29.80 and Ann Arbor (KARB) an altimeter of 29.82
4. YIP is located between KDTW and KARB
5. The wind reported on the METARS for KDTW and KARB were respectively 260° at 33 knots, gusting to 44 and 230° at 29 gusting to 37.
6. As shown in a System Factual picture, the flight crew had set the altimeter to 29.81 with an altimeter reading of approximately 722' field elevation. The airport reference point (ARP) was 716'[2]
7. Ameristar's Operations Specification ¶078 minimum visibility for takeoff was 1600 Runway Visual Range (RVR) or 1/4 of a mile visibility.
8. The flight crew requested an RTMA temperature from Ameristar at 1816Z – CVR 13:16:11T.
9. The RTMA temperature given by Ameristar was from the NWS report valid from 1747Z to 1847Z was **10.3°C** and was recorded by the flight crew on the Load Manifest and Takeoff Information Form. See Wx Factual Attachment 8
10. The RTMA temperature from the NWS that was valid during the time of the accident was **11.05°**C. See Wx Factual Attachment 8
11. The METAR at DTW at 1953Z indicated a temperature of 12°C and an exact temperature of **11.7°C** at the time of takeoff.

    [1453 EST] METAR KDTW 081953Z 26033G44KT 10SM FEW050 12/M14 A2980 RMK AO2 PK WND 24051/1926 SLP095 T01171144=

12. The METAR at ARB at 1953Z indicated a temperature of 11°C and an exact temperature of **10.6°C** at the time of takeoff

    [1453 EST] METAR KARB 081953Z 23029G46KT 10SM CLR 11/M12 A2982 RMK AO2 PK WND 23053/1914 SLP102 T01061122 $=

13. The following National Weather Service's (NWS) 24 hour Terminal Aerodrome Forecast (TAF) issued for YIP at 1401Z was contained in the flight release package

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KYIP 081401Z 0814/0912 23028G42KT P6SM SKC
     FM081600 24033G47KT P6SM SKC
     FM082100 26034G48KT P6SM SKC
     FM082300 26025G38KT P6SM FEW250
     FM090100 26014KT P6SM FEW150 SCT250
     FM090600 27009KT P6SM SCT150 BKN250=
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[2] Picture of altimeter and altimeter setting in NTSB Systems Group Factual Report page 5

14. Both pilots made numerous departures and arrivals at YIP (Ypsilanti, Michigan) airport and were very familiar with the airport layout.
15. Windsocks were positioned in clear view for takeoffs on YIP runways 23L and 27. CVR 14:36:56 also see WX Factual page 18.
16. Title 14 CFR 121.651 Takeoff and landing weather minimums: IFR: All certificate holders, stated the following in part:

    "(a) Notwithstanding any clearance from ATC, no pilot may begin a takeoff in an airplane under IFR when **the weather conditions** reported by the U.S. National Weather Service, a source approved by that Service, or a source approved by the Administrator, are less than those specified in –

    The certificate holder's operations specifications; or…"

17. Conditions at takeoff:

    A. Clear skies
    B. The pilots had a clear view of the 2 windsocks near 23L and 27 to determine wind direction runway selection; taxing on YIP Runway 27 to line up on the and on 23L once line up. See Windsock positions in Weather Factual.
    C. Predominant wind and windsock from pilot interviews favored either YIP Runway 23L or 27
    D. The flight crew noted the 1653Z ATIS winds at 260° at 35 gusting to 50
    E. The wind was "a little bit from the right". CVR 14:51:18

18. The FDR indicates that the pilot had corrected for a right crosswind (the maximum left aileron down was -6.67 (Less than one half of full travel)[3] that occurred at FDR 14:51:43.6)[4].
19. The aircraft maintained the centerline of the runway until entering the overrun where it began a slight deviation to the south of the centerline.
20. It was determined that the high winds reduced the ground speed of the aircraft by 10 knots.
21. Assuming a right 40° wind component from 23L, the resulting headwind would be 27 knots and a crosswind component of 23 knots based on a steady wind from 270° at 35 knots.
22. Aircraft limitations – There are no MD83 aircraft headwind limitations. The maximum **demonstrated** cross wind limitations for takeoff was 30 knots on the MD83.[5] There is no stated maximum crosswind limit.
23. The security video at 1 minute to 1 minute and 25 seconds indicates dust blowing parallel to the runway. In addition, it appears that an American flag to the left of the fire station (most likely the FAA building) indicates the wind is also parallel to the runway.

Conclusion

1. There were not any restrictions to headwind or crosswind imposed on the MD83.
2. The forecast weather (TAF) for YIP, used to release Flight 9363, was consistent with actual conditions at the time of departure as determined official arear observations (DTW and ARB).
3. The weather "condition" was irrefutably VMC at the time of takeoff.
4. The VMC weather conditions allowed the departure from YIP in accordance with ¶¶ C056 and C077 of Ameristar's Operations Specifications. ¶C078 of Ameristar's operations specifications was not applicable since the visibility was greater than 1 mile.
5. Based on the windsocks and the American flag, the crew was able to determine the most favorable runway for their departure. Even though a precise crosswind cannot be determined:

    A. The flight crew chose the most favorable runway based upon the windsock indications
    B. The Captain stated that the wind was "…a little bit from the right"
    C. The amount of aileron deflection, correcting for a crosswind, was minimal. This indicated more of a direct headwind on takeoff

[3] Maximum Trailing Aileron Down is -14.5° and 12.5° Trailing Aileron Up - Boeing MD83 Maintenance Manual27-10-0
[4] See FDR Attachment 1
[5] MD83 Cockpit Operating Manual Chapter 1

6. The RTMA temperature obtained and utilized for YIP during the time of takeoff was valid and consistent with both KARB and KDTW at the time of Flight 9363's departure[6].
7. The resulting headwind increased the field limited weight
8. The flight crew conservatively applied the current weather conditions in their computation of takeoff weight and windshear calculations.
9. The flight crew of Ameristar Flight 9363 were legal to takeoff from YIP based on the actual "***weather conditions***" that were forecast by the U.S. National Weather Service for the timeframe in which the aircraft was scheduled and actually began its takeoff. This is based upon the wording of *Title 14 CFR 121.651 and the FAA legal interpretation*[7]
10. The temperature variations between the RTMA reports and the actual temperatures reported at ARB and DTW were minimal
11. The currency of the weather, actual weather including the wind, was not a factor in this accident.

14 CFR part 117 and Fatigue

1. Last 672 Hours – all crewmembers had less than 20 hours
2. Last 190 Hours – All crewmembers had less than 5 hours
3. Last 365 Days – All crewmembers had less than 250 hours
4. Duty time in the last 190 hours – all crewmembers had less than 20 hours
5. Duty Time in the last 672 hours – all crewmembers had less than 55 hours
6. Off Duty on March 6, 2017 at 0150 EST until reporting for duty March 8, 2017 at 1230 EST (34 hours and 40 minutes)
7. Current Calendar year – All crewmembers had less than 50 hours
8. Long Call Notification – March 7, 2017 at 15:59 EST
9. Reported for Duty on March 8th, 2017 at 12:30 EST
10. The entire flight crew was scheduled for less than 9 hours of flight time
11. The entire flight crew was scheduled for 2 legs YIP-IAD-LAF.
12. The duty time was projected to be 6 hours and 15 minutes.
13. Table A flight time limit was 9 hours. Flight time projection was 2 hours and 42 minutes
14. Table B duty time limit was 14 hours.
15. Fit for duty was signed by all crewmember on the flight release

Conclusion

1. All FAR part 117 requirements were met.
2. A Fit for Duty statement was acknowledged by each crewmember on the flight release[8]
3. All crewmembers performed their job function in accordance with applicable regulations and in a timely manner indicating fitness for duty and alertness levels.
4. There were no noticeable or reported fatigue issues related to this accident during the investigation

14 CFR part 120

All crewmembers were subject to drug testing and all were tested for drug and alcohol use at the Concentric Medical Center in Livonia, Michigan at approximately 1800 EST. Results for all crewmembers showed negative for drug and alcohol use.

Conclusion

Ameristar and its crewmembers complied with post-accident drug and alcohol testing as prescribed in the 14 CFR part 120.

[6] KARB is approximately 9.5 nautical miles (NM) West from KYIP. KDTW is approximately 8 NM East of KYIP

[7] FAA Legal interpretation of 14 CFR §121.651(a) in Response to NTSB Information Request 17-125, dated June 8, 2017

[8] 14 CFR part 117.5 and Flight Release shown in Operation Factual Attachement 3.

Aircraft Performance

1. Ameristar Flight 9363 was released for takeoff at a maximum gross weight of 146,400 lbs. This was based on a temperature of 30°C (86°F).
2. The flight crew was given an RTMA temperature of 10.3°C temperature (See Load Manifest and Takeoff Information form)
3. The 1946Z-2046Z RTMA temperature was reported to be 11.37°C (53°F) (Weather Attachment 8)
4. Interpolating the 23L Airport Analysis (Operations Factual Attachment 8) for a temperature of 11.3°C with 10 knots of headwind the resulting field length maximum gross weight would have been approximately 154,300 lbs.
5. Based upon the adjustment for additional taxi fuel due to the delay from engine start to takeoff[9], the after accident takeoff weight is calculated to be 145,826 lbs.
6. The flight crew chose YIP runway 23L – the longest runway
7. The headwind component varied between approximately 9 to 14 knots according to the calculations of airspeed vs. integrated ground speeds as shown in the Performance Study with CVR snippets on page 9
8. The crew utilized the windshear procedure to increase the rotation speed by setting the V speeds for their actual gross weight (V1-139, VR-142 & V2-150) and increasing their rotation speed to the speed indicated for the field length limited weight (149 knots).[10]

Conclusion

1. According to the NTSB Performance Study, the actual rotation speed was approximately 149 knots and the runway distance remaining was approximately 3443 feet (7543'-4100')
2. The NTSB Performance Study indicated that the aircraft could have stopped within 2543'.
3. The aircraft's gross weight was within the limits for takeoff on YIP Runway 23L using the higher rotation speed.
4. The calculated V speeds for takeoff were correct for temperature, pressure, gross weight and runway length.
5. The methodology and calculations that the crew utilized to account for the possibility of windshear was correct and within the performance parameters of the aircraft.

[9] CVR Transcript After Start Checklist started at 14:34:32 and Takeoff Power applied at 14:51:35 – 17 minutes. Normal taxi out is approximately 6 minutes and 400 lbs of fuel burn.

[10] This procedure is outlined in Ameristar's Aircraft Operating Manual Volume I Section 4.

Weight and Balance Information

1. There were at 10 passengers 14 years or younger; 1 passenger was 14, 7 passengers between the age of 5 and 12 and 2 passengers under the age of 2. Each of these passengers was considered to weigh 195 lbs.
2. There were 28 female passengers and 71 Male passengers[11]
3. The passengers were a mixture of band members, cheerleaders, basketball players, team assistants, coaches and their spouses and children.
4. The actual weights of the passengers was not determined
5. Ameristar was authorized to utilize standard weights for its operations in accordance with its Operations Specification Paragraph A099. The standard weight for March 8, 2017 was 195 lbs. per passenger regardless of the sex of the passenger or age of the passenger.
6. The weights computed after the accident was calculated to be 146,426. This included a subtraction of 400 lbs. for taxi fuel. Due to a 17 minute delay in getting the ATC clearance with the engines running, the taxi fuel was closer to 1000 lbs. making the after accident computed takeoff weight 145, 826[12].
7. The flight crew's computation of the center of gravity was 11.7% of the Mean Aerodynamic Chord (MAC)
8. The computed Stabilizer trim by the flight crew was 7.0 units.
9. The FDR indicated a stabilizer trim setting of 6.8 to 7.1
10. After the accident computation produced a stabilizer trim of 7.1 units
11. The % of MAC computed by the flight crew was 11.7% of MAC
12. The % of MAC computed after the accident was 10.3% of MAC
13. The forward and aft limits computed before and after the accident was 3.7% to 22.1% of MAC respectively.
14. Attempted rotation began at 14:52:04 with a FDR stabilizer setting of 6.7 units
15. The Stabilizer trim was set at 7.0. The FDR recorded between 6.6 to 7.1 units on the stabilizer trim from the beginning of takeoff until just after the takeoff rejection commenced.

Conclusion

1. The aircraft was loaded within the center of gravity limits of the aircraft
2. The aircraft's stabilizer trim was set in accordance with the computerized weight and balance program
3. The FDR recordings closely matched the computed stabilizer trim setting[13]
4. The crew verified the stabilizer trim setting on 2 occasions prior to takeoff. CVR 14:25:55 & 14:30:56 and 14:36:55
5. The stabilizer trim setting differences between computations before and after the accident were insignificant and had no bearing on the inability of the aircraft to rotate in a normal manner.
6. The passenger weight was not determined, but average weights were used in accordance with industry standards and authorized in Ameristar's operations specifications.
7. The aircraft's weight was well below the maximum takeoff weight for runway 23L at YIP for the temperature at takeoff.

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[11] The females were determined by obvious first names; Kathy, Caitlin, Emily, etc. the rest were considered males. T

[12] Normally, the taxi out fuel is computed at 400 lbs. for a 6 minute taxi. The accident taxi time before takeoff was 16 minutes.

[13] The stabilizer trim setting by the pilot is not digital or accurate to within a tenth of a unit.

Aircraft Maintenance

1. All prescribed aircraft maintenance checks were accomplished within the time frames required by Ameristar's maintenance program. The checks include:

   A. Service Check conducted on March 8, 2017
   B. "A" Check
   C. "R" Check on December 30, 2017 – airworthiness released signed.
   D. "C" Check

2. There were no deferrals in accordance with Ameristar's Minimum Equipment List (MEL)
3. All Airworthiness Directives related to the accident aircraft were complied with
4. There were no flight control discrepancies from October 16 through March 2017[14]
5. There were no major alterations of the flight controls.
6. The aircraft was properly weighed and the center of gravity arm was determined within the required timeframe of 36 months.
7. There was one Service Difficulty Report (SDR) in September 2015. The Zee channel and fasteners on the right-hand cockpit window were replaced due to corrosion that was found.
8. No discrepancies were found on time limited parts on the APU or two installed engines
9. The last Flight Data Recorder (FDR) review on July 21, 2015 found discrepancies that were corrected.
10. All maintenance related manuals were found to be satisfactory
11. No non-routine work cards were generated in the flight controls including a corrosion control (CPCP) inspection that found no area of corrosion in the horizontal stabilizer or elevator area.
12. Elevator required checks were conducted within the time frames set forth in Ameristar maintenance programs including lubrication

Conclusion

1. The appropriate manuals were utilized to maintain the aircraft
2. All maintenance checks were current
3. There were no MELs open on the aircraft
4. All ADs were complied with
5. There was no recent maintenance related to the elevator or any other flight controls.
6. There were no indications that maintenance actions or lack of maintenance actions contributed to the accident.

[14] This was the timeframe that the NTSB reviewed aircraft flight logbooks looking for flight control discrepancies

Systems Factual

1. Boeing issued Bulletin DC-9-01-02 on June 25, 2001 (Boeing Bulletin) with the following guidance:

   "IF THERE IS ANY POSSIBILITY THAT THE AIRCRAFT HAS BEEN SUBJECTED TO WINDS IN EXCESS OF 75 MPH, PERFORM VISUAL AND PHYSICAL INSPECTIONS (MOVING THE SURFACES BY HAND) OF ALL FLIGHT CONTROLS, AND AN OPERATIONAL CHECK OF THE SYSTEMS."

2. The highest recorded winds in the Ypsilanti area were recorded to be 59 knots (67.85 mph)
3. The right elevator performed as expected during the previous flight, 2 days earlier
4. The right elevator was found to be locked in the nose down position at approximately -13° at takeoff. See FDR data
5. Tests of the right elevator in the trailing edge up position with winds simulated at 60 knots (69 mph) caused the inboard geared tab linkage to over-center and the elevator remained jammed in a trailing edge down position. See System Factual
6. The systems group did not perform trailing edge up tests at 65 and 70 kts due to the 60 kts TEU test result.
7. During the 65 knot (74.75 mph) neutral elevator starting position, the inboard geared tab linkage did not over center.
8. During the 70 knot and 75 knot neutral test, the inboard geared tab linkage over-centered and the elevator remained jammed in a trailing edge down position.

Conclusion

1. The Boeing bulletin was in response to an aircraft that had a left elevator jam similar to the accident aircraft except that aircraft was exposed to 100 mph wind gusts
2. Ameristar did not have a program in place to monitor the winds as described in the Boeing Bulletin
3. According to the forecasts and actual winds, even if Ameristar had a program in place, there would not have been a requirement to perform the test required by the bulletin.
4. Ameristar did have the Boeing Bulletin incorporated in its manual.
5. During post-accident testing the elevator jammed in a nose down position when subjected to simulated winds below the threshold of the Boeing Bulletin when starting with the elevator in the full up position.
6. The elevator neutral test at 74.75 mph did not produce an over-centering of the inboard geared tab linkage. However, the 80.5 mph test did produce an over-centering of the inboard geared tab linkage in the neutral position
7. The Boeing Bulletin did not indicate that a failure of the elevator could occur below or near 75 mph nor did it imply the position of the elevator could be a factor in increasing or decreasing the inspection of the elevator.
8. In the accident, it is very probable that the over-centering of the inboard geared tab linkage, causing the elevator to be locked in a nose down position, was caused by winds that were not recorded or observed.
9. Due to the improbability of detecting winds that could cause a locked elevator, it is doubtful that the 2001 Boeing Bulletin is the most effective way of preventing this type of accident.

Summary Comments

1. The NTSB and Ameristar's FAA Certificate Management Office were notified in a timely manner of the accident
2. The flight and cabin crews were qualified for this flight
3. Each crewmember performed his/her job functions as required by Ameristar manuals
4. The emergency evacuation was executed in an efficient manner even though 1 slide did not operate properly
5. The weather played no part in the operational aspect of the accident flight
6. Flight and duty limits were observed
7. Aircraft weight and balance limits were observed
8. Aircraft performance limits were observed
9. Aircraft required maintenance was complied with
10. Ameristar personnel assisted in the accident response and subsequent investigation
11. Due to the improbability of detecting winds that could cause a locked elevator in all cases, it is doubtful that the 2001 Boeing Bulletin is the most effective way of preventing this type of accident.

Probable Cause

The right elevator locked in the full nose down position and prevented the aircraft from rotating at the speed projected for rotation to occur. The locked right elevator of the aircraft was unknown to the crew and could not be detected during preflight, taxi or during takeoff.

Recommendations

Since the DC9 type aircraft have aerodynamic elevators and may be in any position during preflight, it may be impossible to determine that an elevator is stuck in the either the nose up or nose down position prior to flight. In addition, it may be difficult or impossible for an operator to determine whether or not a wind in excess of a pre-determined value has occurred or affected the elevator flight control mechanisms

Recommendations

1. Add a visual indication, such as a light, that alerts the pilots that the elevator has returned to the neutral position or is responsive to pilot inputs prior to 80 knots. This recommendation is based upon two issues that are apparent as a result of this rejected takeoff concerning the elevator:

   A. Since the DC9 type aircraft have aerodynamic elevators and it is normal that they may be in any position during preflight, it is currently impossible to determine that an elevator is stuck in the either the nose up or nose down position prior to flight.

   B. It may be difficult or impossible to determine whether or not a wind in excess of a pre-determined value has occurred regardless of how it is monitored.

2. Silence all alarms after a rejected takeoff that do not require an immediate action by the pilots. This recommendation is based on:

   A. The alarms that sounded after the aircraft came to a stop were extraneous and most likely would be a distraction to any crewmember that was attempting to sort out the next step that they should be taking.[15] The following aural warnings did not provide the pilots with useful information after the aircraft came to a stop[i]:

      1) "Speed Brake, Speed Brake, Speed Brake"
      2) "Landing Gear, Landing Gear" multiple repetitions
      3) Any other aural annunciations not associated with a fire

3. The FAA should emphasize to pilots that during takeoff and if the pilot thinks that the aircraft is unable or unsafe to fly, even after V1, a rejected takeoff is warranted.

[15] DCA17FA076_CVR_Factual.pdf beginning at 1452:27

Ameristar Actions

1. Evaluated tracking wind speeds at aircraft layover points
2. Has evaluated simulator training using a nose down mis-trim to simulate possible rejection at speeds above V1.
3. Ameristar has participated in FAA's Infoshare where the NTSB and airlines have had discussions regarding issues involving evacuations
4. Changed Weather criteria for takeoff based on FAA Interpretation [FAA Legal interpretation of 14 CFR §121.651(a) in Response to NTSB Information Request 17-125, dated June 8, 2017]
5. Ongoing evaluation of evacuation procedures including preliminary findings of recent ground evacuations to include minimizing delays when an evacuation is required.
6. Ongoing evaluation of flight deck and flight attendant procedures when an evacuation is required considering at least

    A. Expediting the shutdown of engines so as to not render an exit located behind an engine unusable
    B. Emphasizing to flight deck crewmembers and flight attendants the importance of communicating the intention to evacuate the aircraft.
    C. Emphasize to flight crewmembers to not discontinue an evacuation after it has been started by a flight attendant
    D. Flight Attendants should make every effort to inform the flight deck that an evacuation is in progress

Ameristar would like to thank the NTSB for allowing it to participate in the course of this accident investigation and to consider its comments and recommendations. In addition, Ameristar appreciates the professionalism and hard work of all the NTSB personnel that have worked on this investigation.

Sincerely,

Pat Hulsey
Director of Operations
Ameristar Air Cargo, Inc.
[redacted]
phulsey[redacted]