ASRS Database Report Set

Multi-Engine Turbojet Aircraft Upsets Incidents

Report Set Description	A sampling of reports concerning turbojet uncommanded control surface movement and unusual aircraft attitudes.
Update Number	35.0
Date of Update	March 28, 2019
Number of Records in Report Set	50
Number of New Records in Report Set	13
Type of Records in Report Set	For each update, new records received at ASRS will displace a like number of the oldest records in the Report Set, with the objective of providing the fifty most recent relevant ASRS Database records. Records within this Report Set have been screened to assure their relevance to the topic.

National Aeronautics and
Space Administration

Ames Research Center
Moffett Field, CA 94035-1000

TH: 262-7

MEMORANDUM FOR: Recipients of Aviation Safety Reporting System Data

SUBJECT: Data Derived from ASRS Reports

The attached material is furnished pursuant to a request for data from the NASA Aviation Safety Reporting System (ASRS). Recipients of this material are reminded when evaluating these data of the following points.

ASRS reports are submitted voluntarily. The existence in the ASRS database of reports concerning a specific topic cannot, therefore, be used to infer the prevalence of that problem within the National Airspace System.

Information contained in reports submitted to ASRS may be amplified by further contact with the individual who submitted them, but the information provided by the reporter is not investigated further. Such information represents the perspective of the specific individual who is describing their experience and perception of a safety related event.

After preliminary processing, all ASRS reports are de-identified and the identity of the individual who submitted the report is permanently eliminated. All ASRS report processing systems are designed to protect identifying information submitted by reporters; including names, company affiliations, and specific times of incident occurrence. After a report has been de-identified, any verification of information submitted to ASRS would be limited.

The National Aeronautics and Space Administration and its ASRS current contractor, Booz Allen Hamilton, specifically disclaim any responsibility for any interpretation which may be made by others of any material or data furnished by NASA in response to queries of the ASRS database and related materials.

B Hooey

Becky L. Hooey, Director
NASA Aviation Safety Reporting System

CAVEAT REGARDING USE OF ASRS DATA

Certain caveats apply to the use of ASRS data. All ASRS reports are voluntarily submitted, and thus cannot be considered a measured random sample of the full population of like events. For example, we receive several thousand altitude deviation reports each year. This number may comprise over half of all the altitude deviations that occur, or it may be just a small fraction of total occurrences.

Moreover, not all pilots, controllers, mechanics, flight attendants, dispatchers or other participants in the aviation system are equally aware of the ASRS or may be equally willing to report. Thus, the data can reflect **reporting biases**. These biases, which are not fully known or measurable, may influence ASRS information. A safety problem such as near midair collisions (NMACs) may appear to be more highly concentrated in area "A" than area "B" simply because the airmen who operate in area "A" are more aware of the ASRS program and more inclined to report should an NMAC occur. Any type of subjective, voluntary reporting will have these limitations related to quantitative statistical analysis.

One thing that can be known from ASRS data is that the number of reports received concerning specific event types represents the **lower measure** of the true number of such events that are occurring. For example, if ASRS receives 881 reports of track deviations in 2010 (this number is purely hypothetical), then it can be known with some certainty that *at least* 881 such events have occurred in 2010. With these statistical limitations in mind, we believe that the **real power** of ASRS data is the **qualitative information** contained in **report narratives**. The pilots, controllers, and others who report tell us about aviation safety incidents and situations in detail – explaining what happened, and more importantly, **why** it happened. Using report narratives effectively requires an extra measure of study, but the knowledge derived is well worth the added effort.

Report Synopses

ACN: 1631678 *(1 of 50)*

Synopsis

EMB190 Captain reported uncommanded rudder deflection in cruise flight resulting in a diversion.

ACN: 1629282 *(2 of 50)*

Synopsis

B767-300 flight crew reported various anomalies with the FMS.

ACN: 1626109 *(3 of 50)*

Synopsis

CRJ-200 flight crew reported encountering turbulence on approach into MSP that was possibly related to the Medium Transport they were following.

ACN: 1620197 *(4 of 50)*

Synopsis

A300 flight crew reported losing 500 feet in altitude and experienced large airspeed fluctuations during an encounter with severe turbulence at FL370.

ACN: 1619356 *(5 of 50)*

Synopsis

Embraer regional jet flight crew reported experiencing a "violent" roll to the right on approach to CYUL 7 miles in trail of a B777.

ACN: 1618084 *(6 of 50)*

Synopsis

Citation Captain reported a hydraulic problem during initial climb forcing them to return to the departure airport.

ACN: 1615821 *(7 of 50)*

Synopsis

E145 Captain reported a runaway stabilizer trim issue resulted in a return to the departure airport.

ACN: 1614873 *(8 of 50)*

Synopsis

B737 flight crew reported rejecting the takeoff at approximately 120 kts when the aircraft began to pitch up. It was later determined the stab trim was incorrectly set to an excessive nose up setting.

ACN: 1613267 *(9 of 50)*

Synopsis

EMB-145 flight crew reported an altitude deviation occurred after encountering wake turbulence on arrival into ORD in trail of a heavy aircraft.

ACN: 1609145 *(10 of 50)*

Synopsis

Falcon 20 First Officer reported an autopilot issue resulted in an altitude excursion and TCAS Traffic Advisory.

ACN: 1605188 *(11 of 50)*

Synopsis

C500 First Officer reported an engine loss at cruise led to flight crew communication and navigation issues.

ACN: 1605019 *(12 of 50)*

Synopsis

B737-800 flight crew reported the aircraft was unable to meet the published crossing restrictions.

ACN: 1603173 *(13 of 50)*

Synopsis

LJ35 flight crew reported an unstabilized approach and missed approach, along with severe turbulence, culminated with a hard landing in microburst, windshear conditions.

ACN: 1602782 *(14 of 50)*

Synopsis

B737NG flight crew reported a trim problem during climbout resulting in a return to field.

ACN: 1602134 *(15 of 50)*

Synopsis

A321 Captain reported QRH shortcomings and communication breakdown between flight crew and cabin attendants while troubleshooting uncommanded stabilizer trim malfunction.

ACN: 1601731 *(16 of 50)*

Synopsis
B737 Flight crew reported uncommanded 25-30 degree roll while retracting speedbrake. Uncommanded roll previously reported.

ACN: 1596965 *(17 of 50)*

Synopsis
A320 flight crew reported numerous system malfunctions during climb and returned to departure airport.

ACN: 1596615 *(18 of 50)*

Synopsis
Air carrier flight crew reported poor CRM when they entered an area of severe turbulence.

ACN: 1594888 *(19 of 50)*

Synopsis
B737 flight crew reported an overspeed situation while on descent to ORD.

ACN: 1594726 *(20 of 50)*

Synopsis
B737NG flight crew reported encountering wake turbulence on approach to IAH.

ACN: 1593828 *(21 of 50)*

Synopsis
ERJ flight crew reported receiving a terrain warning while on radar vectors for a visual approach to CHO, likely due to a nearby tower.

ACN: 1590852 *(22 of 50)*

Synopsis
CRJ-200 Captain reported an encounter with severe turbulence resulted in momentary loss of control on arrival into IAD.

ACN: 1590688 *(23 of 50)*

Synopsis
EMB-175 Captain reported system anomalies were annunciated after encountering wake turbulence 5 nm in trail of an A321 on approach to LAX.

ACN: 1590385 *(24 of 50)*

Synopsis
E145 Captain reported encountering severe turbulence which caused the auto pilot to fail.

ACN: 1590117 *(25 of 50)*

Synopsis
CRJ-900 flight crew reported encountering severe wake turbulence 10 nm in trail of a wide body transport aircraft climbing through FL175 departing CLT. Reporter recommended increased separation.

ACN: 1586140 *(26 of 50)*

Synopsis
A321 Captain reported uncommanded rotation prior to V1 that could not be overcome by the side stick.

ACN: 1585754 *(27 of 50)*

Synopsis
B787 flight crew reported a hydraulic system malfunction that led to a zero flap approach and alternate gear extension landing.

ACN: 1585089 *(28 of 50)*

Synopsis
B737NG flight crew reported uncommanded roll with autopilot engaged during descent when spoilers/speedbrakes were extended and retracted.

ACN: 1584964 *(29 of 50)*

Synopsis
B757 Captain reported the ailerons consistently rolled right after releasing the yoke during the off-gate flight control checks.

ACN: 1583652 *(30 of 50)*

Synopsis
Small Transport flight crew reported an autopilot malfunction as they were capturing the localizer causing them to leave their assigned altitude.

ACN: 1583331 *(31 of 50)*

Synopsis
ERJ-175 Captain reported severe turbulence event.

ACN: 1582182 *(32 of 50)*

Synopsis
737 Captain reported the flight returned to base due to a malfunctioning autopilot.

ACN: 1581122 *(33 of 50)*

Synopsis
B737-700 Captain reported pitot static indications on the First Officer's PFD blanked and were replaced with warning flags.

ACN: 1580051 *(34 of 50)*

Synopsis
CE680 First Officer reported their aircraft made an uncommanded climb due to the autopilot malfunctioning.

ACN: 1577255 *(35 of 50)*

Synopsis
B737-800 flight crew reported a Flight Attendant was injured during a wake turbulence encounter on approach to PHX in trail of an A321.

ACN: 1574356 *(36 of 50)*

Synopsis
B737-800 flight crew reported breaking off the approach to MCO when a wake turbulence encounter contributed to a track deviation during localizer intercept.

ACN: 1572548 *(37 of 50)*

Synopsis
CE-525 First Officer reported the pitch trim wheel was frozen at the top of descent.

ACN: 1572524 *(38 of 50)*

Synopsis
CE-525 Captain reported the elevator trim control froze at 39,000 feet then descending to warmer air to thaw it.

ACN: 1569866 *(39 of 50)*

Synopsis
CE560 flight crew reported an autopilot malfunction resulting in a return to the departure airport.

ACN: 1567233 *(40 of 50)*

Synopsis
Lear 60 test pilot reported a 2000 ft altitude excursion due to an autopilot pitch malfunction.

ACN: 1566464 *(41 of 50)*

Synopsis
A319 First Officer reported uncommanded rudder inputs with the autopilot engaged due to rudder trim fault.

ACN: 1565948 *(42 of 50)*

Synopsis
B737NG flight crew reported a hard landing and subsequent go-around occurred following a wake turbulence encounter just before touchdown.

ACN: 1564641 *(43 of 50)*

Synopsis
B737 Captain reported aircraft encountered a thermal downdraft causing a tail strike while landing.

ACN: 1562625 *(44 of 50)*

Synopsis
A320 flight crew reported a runway excursion in gusty wind conditions that resulted in damage to the belly and engine nacelle.

ACN: 1553280 *(45 of 50)*

Synopsis
EMB-145 pilot reported a NMAC that required an evasive maneuver.

ACN: 1553241 *(46 of 50)*

Synopsis
B757 Captain reported difficulties in managing the air conditioning system, followed by a loud noise and damage to several cabin sidewall panels.

ACN: 1512142 *(47 of 50)*

Synopsis
Citation pilot reported an altitude deviation due to a loud window leak noise interfering with radio communication and altitude warnings.

ACN: 1507869 *(48 of 50)*

Synopsis

ERJ-190 flight crew reported uncommanded trim movement in both the yaw and roll axis.

ACN: 1504429 *(49 of 50)*

Synopsis

CRJ-700 First Officer reported several messages and instrument indications associated with a malfunction of the Attitude and Heading Reference System.

ACN: 1501625 *(50 of 50)*

Synopsis

A321 flight crew reported encountering windshear on approach with no predictive windshear indication and then severe turbulence on the go-around with thunderstorms in the vicinity.

Report Narratives

ACN: 1631678 *(1 of 50)*

Time / Day

Date : 201903
Local Time Of Day : 1201-1800

Place

Locale Reference.ATC Facility : ZZZ.ARTCC
State Reference : US
Altitude.MSL.Single Value : 30000

Environment

Flight Conditions : VMC
Light : Daylight

Aircraft

Reference : X
ATC / Advisory.Center : ZZZ
Aircraft Operator : Air Carrier
Make Model Name : EMB ERJ 190/195 ER/LR
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Passenger
Nav In Use : FMS Or FMC
Flight Phase : Cruise
Airspace.Class A : ZZZ

Component

Aircraft Component : Rudder
Aircraft Reference : X
Problem : Malfunctioning

Person

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Captain
Function.Flight Crew : Pilot Flying
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Multiengine
Experience.Flight Crew.Total : 10000
ASRS Report Number.Accession Number : 1631678
Human Factors : Confusion
Human Factors : Training / Qualification
Human Factors : Troubleshooting

Events

Anomaly.Aircraft Equipment Problem : Critical
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Diverted
Result.Flight Crew : FLC Overrode Automation
Result.Flight Crew : Requested ATC Assistance / Clarification
Result.Flight Crew : Landed in Emergency Condition
Result.Air Traffic Control : Provided Assistance

Assessments

Contributing Factors / Situations : Aircraft
Primary Problem : Aircraft

Narrative: 1

While at FL300 we experienced multiple uncommanded rudder deflections. The first occurred over a waypoint and was very subtle. We were fortunate because due to the first event I maintained positive contact with the flight controls. The second event was more violent and resulted in an undesired aircraft state. By referencing the turn and slip coordinator and our own senses, we knew the aircraft was "cross controlled". I pressed and held the quick disconnect button and took control of the aircraft. We immediately [requested priority handling] and requested a diversion to ZZZ. Unfortunately there was no EICAS [Engine Indicating and Crew Alerting System] messages to provide an appropriate course of action. We realized it was a rudder issue so I felt it was wise to slow the aircraft to 250 knots and minimize bank angles to 10 degrees or less while turning the aircraft. There was no apparent incorrect rudder trim and realized that the problem was due to uncommanded rudder deflections. While being vectored for the approach, I transferred controls to the First Officer and referenced the QRC and QRH for any guidance. We found that there was no action to be taken and we elected to land with flaps full. A successful approach and landing was made resulting in no damage to the aircraft or injuries. Upon landing we received a Flight Control No Dispatch EICAS message.

Synopsis

EMB190 Captain reported uncommanded rudder deflection in cruise flight resulting in a diversion.

ACN: 1629282 *(2 of 50)*

Time / Day

Date : 201903

Place

Locale Reference.Airport : ZZZ.Airport
State Reference : US
Altitude.MSL.Single Value : 17000

Aircraft

Reference : X
ATC / Advisory.Center : ZZZ
Aircraft Operator : Air Carrier
Make Model Name : B767-300 and 300 ER
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Cargo / Freight
Flight Phase : Cruise
Airspace.Class A : ZZZ

Person : 1

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Pilot Not Flying
Function.Flight Crew : First Officer
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Instrument
ASRS Report Number.Accession Number : 1629282
Human Factors : Situational Awareness

Person : 2

Reference : 2
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Pilot Flying
Function.Flight Crew : Captain
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Instrument
ASRS Report Number.Accession Number : 1629287
Human Factors : Situational Awareness

Events

Anomaly.Aircraft Equipment Problem : Critical
Anomaly.ATC Issue : All Types

Anomaly.Deviation - Procedural : Other / Unknown
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Overcame Equipment Problem

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : Procedure
Primary Problem : Aircraft

Narrative: 1

So we had multiple strange events on cruise and descent. During cruise we noticed an execute light on the FMS. Neither of us was sure what the execute light was for and the Captain scrolled through the FMS pages to try to figure out what wasn't executed. We were in normal cruise as I recall and had recently stepped to FL 370. Somewhere through the scrolling of pages the plane went into continuous thrust mode and started slowing down to drift down speed. Neither of us executed the drift-down. Neither of us even attempted to get drift down speed and altitude during the short flight to ZZZ. So I was not the designated Flying Pilot for the flight but I had control at the time and overrode the auto-throttles to keep us at cruise speed while the Captain attempted to fix the FMS and get us back to Econ cruise speed. Nothing happened but we were told by maintenance after the flight that the aircraft had done something similar on a previous flight. Secondly, on the descent while on the VNAV path the Captain extended the speed brakes and we got an "Unscheduled stab trim caution and an autopilot caution" no one touched the electric or alternate trim and the autopilot stayed engaged. We did not notice any changes in the aircraft. When I was about to run the QRH the message went away and we continued and mentioned the situation to maintenance.

And on the ATC side, not to be whining, but we did get the tight visual approach inside the final approach fix. The Captain went off automation as the glideslope would not have been able to be tracked on the AP. We started out high and then ended up low on the glideslope with a correction. We were able to make the 1000 foot stable gate on the glideslope just barely. However I am noting these things because it is my opinion that ATC needs to stop treating heavy Boeing 767s carrying cargo like we are CRJs capable of making aggressive last second maneuvers in the landing pattern. I realize that some of us more aggressive pilots can use skill to make things happen, but we should not have to. ATC needs to treat us like every other heavy, low maneuvering jet. This sort of situation could lead a less experienced pilot to make a mistake.

For the drift-down situation, I felt we did a good job preventing the situation. No one freaked out or did anything radical and we corrected the problem. The unscheduled stab trim was handled without any major issues. However we are occasionally getting these strange cautions on the auto-flight system that pop up and then disappear. We shouldn't be getting them at all if the plane is not having any problems. It makes you have to decide whether you run a QRH or not and whether you need to write it up or not. It also creates a distraction and a feeling of distrust on the aircraft. This is not a good feeling, especially considering recent events. As to the visual approach, the Captain probably could have said "no" to the tight vector to final. We were in a left downwind to base and I could not see the runway but our vector was inside the FAF. We probably should have said no to the super tight vector. Once again, we made it work but should not have had to fly a heavy cargo plane that aggressively.

Narrative: 2

TWO EVENTS:
Ev. 1 - at cruise, 370. I had brought up the VNAV Crz (Vertical Navigation Cruise) page to look at the Econ speed. For some unexplained reason, VNAV commanded the thrust to CON (Continuous), and the speed to the EO (Engine Out) speed. The MCP altitude was set at 370, neither of us had made any change to the CDU. The thrust levers had to be prevented from retarding. Pushing the CRZ (Cruise) button on the TMSP (Thrust Mode Select Panel) did not work. Eventually, I had to delete the speed in the VNAV CRZ page, at which point the FMC caught up and VNAV went back to CRZ. AP and AT (Auto Throttle) were engaged all this time. No altitude or lateral deviations were observed.

Ev. 2 - On the arrival into ZZZ, we descending 13000, just coming up to [the next fix], when ATC cleared us to descend 11000. I selected 11000, hit the button on the MCP and to help the descent, started to deploy the speedbrakes. We were at 280 KIAS. The 'AutoPilot" and 'Unscheduled STAB TRIM' came on the EICAS for 1-2 seconds before disappearing. The AP did not disengage. No further incidents, no lateral nor vertical deviations were noted. We landed without further incident.

This flight seemed to have a couple of glitches in the software in the FMC. It was really inexplicable that the thrust went to CON without either of us selecting any other mode, either from the TMSP or in the VNAV CRZ page. While it may be possible that one of us could have hit the EO prompt, we were pretty sure that did not happen. And in any case, the EXEC (Execute) light would have been high-lighted. Neither of us saw that. As for the Uncommanded STAB TRIM, it appears that the AP was trying to compensate for a pitch movement, but the aircraft was not pitching down at all, we were leveling at 13000, on speed at 280 KIAS, 11000 was selected and the MCP button depressed once. Only when I started to deploy the speedbrakes (gently I might add), then the messages appeared on the EICAS. I had my hands and feet on the flight controls already, so was ready to respond to any deviations. Fortunately, the messages extinguished, the AP and AT remained engaged, and nothing untoward occurred. These two events appeared to be aberrations, from what we noted. Perhaps the software need to be updated, fine-tuned.

Synopsis

B767-300 flight crew reported various anomalies with the FMS.

ACN: 1626109 *(3 of 50)*

Time / Day

Date : 201903
Local Time Of Day : 1801-2400

Place

Locale Reference.Airport : MSP.Airport
State Reference : MN
Altitude.MSL.Single Value : 4000

Environment

Flight Conditions : IMC
Light : Dusk

Aircraft : 1

Reference : X
ATC / Advisory.TRACON : M98
Aircraft Operator : Air Carrier
Make Model Name : Regional Jet 200 ER/LR (CRJ200)
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Passenger
Flight Phase : Initial Approach
Airspace.Class B : MSP

Aircraft : 2

Reference : Y
ATC / Advisory.TRACON : M98
Aircraft Operator : Air Carrier
Make Model Name : Medium Transport, Low Wing, 2 Turbojet Eng
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Passenger
Flight Phase : Initial Approach
Airspace.Class B : MSP

Person : 1

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Pilot Flying
Function.Flight Crew : First Officer
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Air Transport Pilot (ATP)
ASRS Report Number.Accession Number : 1626109
Analyst Callback : Attempted

Person : 2

Reference : 2
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Pilot Not Flying
Function.Flight Crew : Captain
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Multiengine
ASRS Report Number.Accession Number : 1626103

Events

Anomaly.Inflight Event / Encounter : Weather / Turbulence
Anomaly.Inflight Event / Encounter : Wake Vortex Encounter
Anomaly.Inflight Event / Encounter : Loss Of Aircraft Control
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Requested ATC Assistance / Clarification
Result.Flight Crew : Regained Aircraft Control

Assessments

Contributing Factors / Situations : Environment - Non Weather Related
Contributing Factors / Situations : Procedure
Primary Problem : Ambiguous

Narrative: 1

We were on final approach for Runway 12L in MSP. We were assigned 4000' and 170 kts. We were configured with flaps 20. Just prior to glideslope intercept at HAMML (10.9 DME), we experienced a sudden and momentary pocket of turbulence, possibly from the preceding Aircraft Y's wake. Our aircraft instantly rolled to a 45 degree right bank, and a momentary pitch up attitude of approximately 5 degrees and brief stick shaker and the autopilot disconnected. I reacted immediately pushing the nose over, rolling the wings level and adding max thrust, all simultaneously. The encounter was very sudden and we were able to return to stable flight fairly quickly. Once stable we were still at assigned altitude but fast and were able to slow to assigned speed and engage the autopilot. We then captured the glideslope and finished configuring the aircraft prior to the FAF and made a safe and uneventful landing. I believe it was an encounter of wake turbulence from the Aircraft ahead of us. Even though our aircraft experienced the stick shaker, we were at a safe airspeed and we believe it was triggered by the sudden increased load factor associated with the turbulence. Once at the gate we confirmed that there were no injuries and we contacted Maintenance to report our encounter with severe turbulence. We encountered a pocket of severe turbulence on approach. I strongly believe it was due to the preceding aircraft's wake.

Narrative: 2

On final approach into MSP at approximately 4000' MSL prior to glide slope intercept with flaps at 20 we encountered severe turbulence that led to a significant roll upset of about 45 degrees or more to the right, and about a 5 degree pitch up. The roll upset caused the autopilot to disengage and the stick shaker was immediately activated. The FO (First Officer) was PF (Pilot Flying) and was able to promptly recover the aircraft once normal

control was regained. At the time of the incident we were assigned and flying 170 kts IAS as assigned by ATC. I believe the stick shaker activation was caused by the sudden pitch up and increase in load factor, as the airspeed did not decrease significantly. The airspeed increased normally with the application of max power and once control was regained we reduced power to prevent a flap overspeed having confirmed that normal control and flight was regained. The recovery was prompt and the aircraft did not deviate any more than 100' from the altitude that we were at for the segment of the approach. We were able to re-engage the autopilot and intercept the glide slope shortly after and complete the approach without further incident. I queried ATC about our preceding traffic and they said that it was an Aircraft Y, which shouldn't create significant wake. I am not sure if it was wake turbulence or a pocket of turbulence in the cloud. We landed without incident and taxied to the gate. We ensured that all passengers and crew were okay, and contacted Maintenance to have them inspect the aircraft following the severe turbulence encounter. I believe the cause was either wake turbulence or an area of turbulence embedded in the cloud.

Synopsis

CRJ-200 flight crew reported encountering turbulence on approach into MSP that was possibly related to the Medium Transport they were following.

ACN: 1620197 *(4 of 50)*

Time / Day

Date : 201902
Local Time Of Day : 0601-1200

Place

Locale Reference.ATC Facility : ZME.ARTCC
State Reference : TN
Altitude.MSL.Single Value : 37000

Environment

Flight Conditions : IMC
Weather Elements / Visibility : Turbulence
Light : Daylight

Aircraft

Reference : X
ATC / Advisory.Center : ZME
Aircraft Operator : Air Carrier
Make Model Name : A300
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Cargo / Freight
Nav In Use : FMS Or FMC
Flight Phase : Cruise
Airspace.Class A : ZME

Person : 1

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Pilot Not Flying
Function.Flight Crew : Captain
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Instrument
ASRS Report Number.Accession Number : 1620197

Person : 2

Reference : 2
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Pilot Flying
Function.Flight Crew : First Officer
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Multiengine
ASRS Report Number.Accession Number : 1620199

Events

Anomaly.Deviation - Altitude : Excursion From Assigned Altitude
Anomaly.Deviation - Speed : All Types
Anomaly.Deviation - Procedural : Clearance
Anomaly.Inflight Event / Encounter : Weather / Turbulence
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Returned To Clearance

Assessments

Contributing Factors / Situations : Weather
Primary Problem : Weather

Narrative: 1

In cruise at FL370, [we] began to encounter moderate turbulence. Then encountered an area of severe turbulence and wind shear. Airspeed rapidly increased (not reaching zipper) then rapidly decreased approximately 15 knots into the hook. Full power was applied as the aircraft began to buffet. Aircraft entered an uncommanded descent as well. Autopilot was disconnected and full power applied. Nose down pitch was initiated in order to recover from the buffet condition. Aircraft was recovered normally with an altitude loss of approximately 500 feet.

Narrative: 2

[Report narrative contained no additional information.]

Synopsis

A300 flight crew reported losing 500 feet in altitude and experienced large airspeed fluctuations during an encounter with severe turbulence at FL370.

ACN: 1619356 *(5 of 50)*

Time / Day

Date : 201902
Local Time Of Day : 1201-1800

Place

Locale Reference.Airport : CYUL.Airport
State Reference : PQ

Environment

Flight Conditions : VMC
Light : Night

Aircraft : 1

Reference : X
ATC / Advisory.TRACON : CYUL
Aircraft Operator : Air Carrier
Make Model Name : Embraer Jet Undifferentiated or Other Model
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Passenger
Flight Phase : Initial Approach

Aircraft : 2

Reference : Y
ATC / Advisory.TRACON : CYUL
Aircraft Operator : Air Carrier
Make Model Name : B777 Undifferentiated or Other Model
Crew Size.Number Of Crew : 2
Flight Plan : IFR
Flight Phase : Initial Approach

Person

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Pilot Flying
Function.Flight Crew : Captain
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Multiengine
ASRS Report Number.Accession Number : 1619356
Human Factors : Situational Awareness
Analyst Callback : Attempted

Events

Anomaly.ATC Issue : All Types
Anomaly.Deviation - Procedural : Published Material / Policy
Anomaly.Inflight Event / Encounter : Wake Vortex Encounter
Anomaly.Inflight Event / Encounter : Loss Of Aircraft Control
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Took Evasive Action
Result.Flight Crew : Requested ATC Assistance / Clarification
Result.Flight Crew : Regained Aircraft Control

Assessments

Contributing Factors / Situations : Environment - Non Weather Related
Contributing Factors / Situations : Procedure
Primary Problem : Procedure

Narrative: 1

On final approach, aircraft started a violent uncommanded right roll. The autopilot disengaged and we got an "autopilot fail" caution message. Captain and First Officer both grabbed the controls before the Captain called "My aircraft". Captain reestablished control and hit the auto pilot disconnect to silence the alarm. With the aircraft under control and well above 1,000 feet, Captain continued the approach by hand, staying above glide path on approach. [We] asked ATC if were following a heavy. ATC confirmed we were 7 miles in trail of a B777.

Sudden right roll detective by outside reference and instrument scan. Autopilot disconnecting by master warning and autopilot aural warning. Wake turbulence from a B777 7 miles ahead. Regained manual control and stayed high of glide slope to avoided further wake encounters.

ATC should have warned us we were following a heavy. Also ATC and the other aircraft were conversing in French so we were not even aware of a heavy on freq. All aircraft and ATC conversing in one language would have reduced the possibility of this happening.

Synopsis

Embraer regional jet flight crew reported experiencing a "violent" roll to the right on approach to CYUL 7 miles in trail of a B777.

ACN: 1618084 *(6 of 50)*

Time / Day

Date : 201902
Local Time Of Day : 0601-1200

Place

Locale Reference.ATC Facility : ZZZ.ARTCC
State Reference : US

Environment

Flight Conditions : VMC
Light : Daylight

Aircraft

Reference : X
ATC / Advisory.Center : ZZZ
Aircraft Operator : Corporate
Make Model Name : Cessna Citation Sovereign (C680)
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 91
Flight Plan : IFR
Mission : Passenger
Nav In Use : FMS Or FMC
Flight Phase : Climb
Airspace.Class A : ZZZ

Component

Aircraft Component : Hydraulic System
Aircraft Reference : X
Problem : Malfunctioning

Person

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Corporate
Function.Flight Crew : Pilot Flying
Function.Flight Crew : Captain
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Instrument
ASRS Report Number.Accession Number : 1618084
Human Factors : Troubleshooting
Human Factors : Time Pressure

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.Inflight Event / Encounter : Loss Of Aircraft Control
Detector.Automation : Aircraft Other Automation

Detector.Person : Flight Crew
Were Passengers Involved In Event : Y
When Detected : In-flight
Result.Flight Crew : Landed in Emergency Condition
Result.Flight Crew : Overcame Equipment Problem
Result.Flight Crew : Returned To Departure Airport
Result.Flight Crew : Regained Aircraft Control
Result.Air Traffic Control : Provided Assistance

Assessments

Contributing Factors / Situations : Aircraft
Primary Problem : Aircraft

Narrative: 1

XA10 LT (Local Time) - First indication of hydraulic problem occurred between waypoints ZZZZZ and ZZZ3 at FL290. "Hydraulic Pressure Low R" amber CAS (Crew Alerting System) message posted. Quick Reaction Handbook (QRH) checklist was called for and completed. Fault did not clear. Condition was announced with Center but no emergency was declared.

XA15 LT - "Hydraulic Volume Low" then "Hydraulic Pressure Low L and R" amber CAS messages posted. Autopilot became disengaged and airplane rolled slightly to the right. Altitude loss occurred and [requested priority handling] with Center and descent to FL240 was assigned. Unfamiliar with surrounding airports, we requested clearance to an airport with the longest runway. ATC cleared us to ZZZ. Passengers were informed of the emergency and briefed to remain seated and secured with seat belt and shoulder harness.

XA25 LT - After working through the QRH checklist procedures for "Hydraulic Volume Low" and "Hydraulic Pressure Low L and R", I instructed the FO (First Officer) to send an AFIS (Automatic Flight Inspection System) message to "[Fleet Y Dispatch]" by my mistake instead of "[Fleet X Dispatch]". That was due to memory fallback from coming from the [another] fleet.

XA30 LT - Since we were closer to ZZZ1, ATC offered clearance to ZZZ1. We accepted and proceeded to ZZZ1, and descended to 10,000 MSL

XA35 LT - After completing the FMS (Flight Management System) landing initialization data for ZZZ and applying the emergency checklist Flaps 35 landing distance 1.63 multiplier, we decided that runway X, with the displacement and landing distance available (LDA) of 7280 feet was unacceptable. We informed Center and requested clearance to ZZZ2. Also requested they inform [the FBO] for towing after landing. During this time we reviewed the QRH checklist again and discussed the failed components as well as the possibility of a fire upon landing. The Evacuation checklist was reviewed as well as individual actions should it become necessary. The box pattern towards ZZZ to ZZZ1 to ZZZ2 gave us time to burn off fuel and reduce the airplane gross weight from takeoff at 30,240 lbs. to approximately 28,000 lbs. upon landing.

XA45 LT - Radar vectored for the ILS XXL at 3,600 MSL. Weather at ZZZ2 was VMC, dry runway. Approach checklist completed and emergency checklist actions reviewed again. Airplane was configured early on final due to manual gear extension. When I called for flaps 35, FO selected flaps 35, and the airplane rapidly rolled uncommanded to the right approximately 45-60 degrees and pitched down. FO immediately returned flaps to 15 and I was able to regain aircraft control. Loss of aircraft control and recovery was announced

to ATC and flight path for ILS XXL was reestablished. Since there was no published landing multiplier for Flaps 15 in emergency checklist for loss of hydraulics, I doubled the landing distance for wet runway and rounded up to determine that 10,000 ft. would be required with 11,095 LDA. Approached continued with Flaps set to 15. At approximately 1000 ft. AGL, I had FO control the power levers throughout to touchdown and I focused on maintaining aircraft control and runway centerline.

XA49 LT - Crew coordinated landing at 15 Flaps Vref and rollout was performed. After touchdown FO maintained forward pressure on the Yoke and I controlled the nosewheel steering with tiller while applying emergency braking. Rollout and complete stop occurred with 1,000 ft. of runway remaining.

XA51 LT - Engines off. Crash rescue gave an all clear and FBO personnel hooked up and towed airplane to FBO and parking without incident.

XB00 LT - Passengers deplaned. Notification to company about emergency landing.

XB05 LT - Post flight revealed hydraulic fluid dripping from right engine drain mast and right wing spoiler panels #7 and #9 extended. No visible damage to main landing gears or airplane was found.

XB20 LT - Debriefed passengers on details of hydraulic fluid loss and crew emergency corrective actions. They were somewhat shaken but relieved.

XB30 LT - Follow-up telephone conversations with company personnel and maintenance report write-ups.

Given the successful outcome of this emergency, it is apparent to me that the flight training [the company] provides contributed to this success. Two pilots that have never met, much less, flown together just one day prior for the first time, was able to coordinate and apply CRM (Crew Resource Management), threat analysis, and emergency procedure execution. FO deserves special recognition on retracting the flaps at a critical moment and his professional duties throughout this event.

I feel the "Hydraulic Pressure Low" and "Hydraulic Volume Low" QRH checklist needs to be revised. There must to be a "warning" or "caution" that states - If uncommanded roll occurs during flap extension, flap handle return to previous position. This may be due to spoiler panels not fully stowed. The spoiler EICAS (Engine Indicating and Crew Alerting System) speedbrake/spoiler display never indicated that the spoiler panels on the right wing were extended. Flight control system description (Flight Safety International Initial Pilot Training Manual) states that "Loss of hydraulic pressure results in a loss of spoiler control, and the spoiler panels ratchet to a stowed position." I found nothing that made that statement in the Cessna AFM (Aircraft Flight Manual). Also, there needs to be a landing distance multiplier for less than 35 flaps. Final approach is no place to swag a landing distance requirement when flaps 35 are not available. The only location for landing distance multiplier that would be applicable is in the Cessna AFM for Dual Engine Flameout - "For flaps 15, multiply flaps 35 landing distance by 1.90." Luckily we guessed correctly.

Synopsis

Citation Captain reported a hydraulic problem during initial climb forcing them to return to the departure airport.

ACN: 1615821 *(7 of 50)*

Time / Day

Date : 201803
Local Time Of Day : 0601-1200

Place

Locale Reference.ATC Facility : ZDC.ARTCC
State Reference : VA

Aircraft

Reference : X
ATC / Advisory.Center : ZDC
Aircraft Operator : Air Carrier
Make Model Name : EMB ERJ 145 ER/LR
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Ferry
Flight Phase : Climb

Component

Aircraft Component : Horizontal Stabilizer Trim
Aircraft Reference : X
Problem : Malfunctioning

Person

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Pilot Flying
Function.Flight Crew : Captain
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Multiengine
ASRS Report Number.Accession Number : 1615821

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Detector.Person : Flight Crew
When Detected : In-flight
Result.General : Flight Cancelled / Delayed
Result.Flight Crew : Returned To Departure Airport
Result.Flight Crew : Landed in Emergency Condition

Assessments

Contributing Factors / Situations : Aircraft
Primary Problem : Aircraft

Narrative: 1

Aircraft suffered a stab trim runaway followed by failure of main and standby trim as indicated by EICAS messages. Crew completed stab trim runaway and stab trim failure QRC (Quick Reference Checklist) procedures. Returned to airport and [advised ATC]. Landed without incident.

Synopsis

E145 Captain reported a runaway stabilizer trim issue resulted in a return to the departure airport.

ACN: 1614873 *(8 of 50)*

Time / Day

Date : 201902

Place

Locale Reference.Airport : ZZZ.Airport
State Reference : US
Altitude.AGL.Single Value : 0

Environment

Flight Conditions : VMC
Light : Daylight

Aircraft

Reference : X
ATC / Advisory.Tower : ZZZ
Aircraft Operator : Air Carrier
Make Model Name : B737 Next Generation Undifferentiated
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Passenger
Nav In Use : FMS Or FMC
Flight Phase : Takeoff
Airspace.Class B : ZZZ

Person : 1

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : First Officer
Function.Flight Crew : Pilot Flying
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Instrument
Experience.Flight Crew.Last 90 Days : 179
Experience.Flight Crew.Type : 1540
ASRS Report Number.Accession Number : 1614873
Human Factors : Situational Awareness

Person : 2

Reference : 2
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Pilot Not Flying
Function.Flight Crew : Captain
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Multiengine

Qualification.Flight Crew : Instrument
Experience.Flight Crew.Last 90 Days : 214
ASRS Report Number.Accession Number : 1615330
Human Factors : Situational Awareness

Events

Anomaly.Deviation - Procedural : Published Material / Policy
Detector.Person : Flight Crew
When Detected.Other
Result.General : Maintenance Action
Result.Flight Crew : Became Reoriented
Result.Flight Crew : Returned To Gate
Result.Flight Crew : Rejected Takeoff

Assessments

Contributing Factors / Situations : Human Factors
Primary Problem : Human Factors

Narrative: 1

We rejected our takeoff at approximately 120 knots after an uncommanded nose up pitch at 115 knots. Our bugged Vr speed was approximately 143 knots. I was the pilot flying and when the nose started to pitch up uncommanded, I felt the aircraft was not in a normal flight configuration, being approximately 30 knots below Vr and initiated the reject. The Captain took control of the aircraft as we rejected straight ahead. At a safe taxi speed, we exited the runway while I made the "Remain seated" call.

Once we came to a stop on the parallel taxiway, we ran the Rejected Takeoff checklist. We then referenced the Rejected T/O (Take-off) Brake Cooling chart in the QRH and determined we had a brake cooling time of approximately 57 minutes with the taxi in. We elected to return to the gate and coordinated as such with Operations and Maintenance. It was during this time that we noticed the T/O trim setting was in a nose up trim configuration that was near the limit of the green band. We had run the Before Take-Off checklist and had not caught that incorrect setting, and since it was still within the takeoff band did not get a takeoff configuration warning when tested as part of the Before Take-Off checklist.

Upon return to the gate, we wrote up the rejected takeoff and discussed the event with maintenance personnel. The Captain kept the passengers informed of the situation and also contacted the [Chief Pilot].

One side note, when we began our take off roll we did get a Speed Brake Lever Do Not Arm light. However, it went out and we deemed it spurious. All other operations up to that point had been normal.

Narrative: 2

[Report narrative contained no additional information.]

Synopsis

B737 flight crew reported rejecting the takeoff at approximately 120 kts when the aircraft began to pitch up. It was later determined the stab trim was incorrectly set to an excessive nose up setting.

ACN: 1613267 *(9 of 50)*

Time / Day

Date : 201901
Local Time Of Day : 1801-2400

Place

Locale Reference.Airport : ORD.Airport
State Reference : IL
Altitude.MSL.Single Value : 7000

Environment

Flight Conditions : VMC

Aircraft : 1

Reference : X
ATC / Advisory.TRACON : C90
Aircraft Operator : Air Carrier
Make Model Name : EMB ERJ 145 ER/LR
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Passenger
Nav In Use : FMS Or FMC
Flight Phase : Descent
Route In Use.STAR : MADII FOUR
Airspace.Class B : ORD

Aircraft : 2

Reference : Y
ATC / Advisory.TRACON : C90
Aircraft Operator : Air Carrier
Make Model Name : Heavy Transport
Operating Under FAR Part : Part 121
Flight Plan : IFR
Nav In Use : FMS Or FMC
Flight Phase : Initial Approach
Route In Use.STAR : MADII
Airspace.Class B : ORD

Person : 1

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Pilot Not Flying
Function.Flight Crew : Captain
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Instrument
Experience.Flight Crew.Total : 5830

ASRS Report Number.Accession Number : 1613267
Analyst Callback : Attempted

Person : 2

Reference : 2
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : First Officer
Function.Flight Crew : Pilot Flying
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Multiengine
ASRS Report Number.Accession Number : 1613146
Human Factors : Communication Breakdown
Communication Breakdown.Party1 : Flight Crew
Communication Breakdown.Party2 : ATC

Events

Anomaly.Deviation - Altitude : Excursion From Assigned Altitude
Anomaly.Inflight Event / Encounter : Wake Vortex Encounter
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Requested ATC Assistance / Clarification
Result.Air Traffic Control : Issued New Clearance

Assessments

Contributing Factors / Situations : Environment - Non Weather Related
Contributing Factors / Situations : Procedure
Primary Problem : Ambiguous

Narrative: 1

On flight to ORD air traffic control advised First Officer and I of a heavy aircraft ahead and 1,000 ft above our assigned altitude. I reported aircraft in sight. As the other aircraft appeared closer and closer on TCAS I had the flight attendant sit down for possible wake turbulence. While on the MADII 4 Arrival somewhere after SOOLU ATC told us to descend [to] 7,000 ft. While slowing in order to descend we encountered a wake, losing about 100 ft than gaining 150 ft but no more than 200 feet. After the encounter I asked ATC for a heading to aid in reestablish on the arrival. He gave us a heading of 090 and we descended to 7,000 ft and complied with new assigned heading. At no point did the aircraft [TCAS] give any type of proximity caution / warning. Would like more distance between heavy aircraft.

Narrative: 2

On [our] flight to ORD, on the MADII 4 Arrival, between SOOLU and KURKK we were instructed to descend from 10,000 to 7,000. While we were slowing to descend our aircraft encountered uncommanded pitch and attitude inputs that resulted in altitude changes of +/- 100/150 ft. We quickly realized that we had entered the wake turbulence from a Heavy Aircraft in close proximity. The Captain asked for a heading from ATC, while I maintained aircraft control. Once in the clear, I began the descent to 7000. We proceeded to fly the ILS to 27R. Upon landing we were told to give TRACON a call. We explained the

situation, fortunately, no one was hurt. We were a little frazzled by the event. I feel as a crew, we could have done a better job of communicating with ATC.

Synopsis

EMB-145 flight crew reported an altitude deviation occurred after encountering wake turbulence on arrival into ORD in trail of a heavy aircraft.

ACN: 1609145 *(10 of 50)*

Time / Day

Date : 201901
Local Time Of Day : 0601-1200

Place

Locale Reference.ATC Facility : ZZZ.ARTCC
State Reference : US
Relative Position.Angle.Radial : 150
Relative Position.Distance.Nautical Miles : 50
Altitude.MSL.Single Value : 36000

Environment

Flight Conditions : VMC
Light : Daylight

Aircraft

Reference : X
ATC / Advisory.Center : ZZZ
Aircraft Operator : Personal
Make Model Name : Falcon 20FJF/20C/20D/20E/20F
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 91
Flight Plan : IFR
Mission : Ferry
Flight Phase : Descent
Route In Use : Vectors
Airspace.Class A : ZZZ

Component

Aircraft Component : Autoflight System
Aircraft Reference : X
Problem : Malfunctioning

Person

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Personal
Function.Flight Crew : First Officer
Function.Flight Crew : Pilot Flying
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Instrument
Experience.Flight Crew.Total : 17500
Experience.Flight Crew.Last 90 Days : 25
Experience.Flight Crew.Type : 80
ASRS Report Number.Accession Number : 1609145
Human Factors : Distraction
Human Factors : Situational Awareness

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.Conflict : Airborne Conflict
Anomaly.Deviation - Altitude : Excursion From Assigned Altitude
Anomaly.Deviation - Procedural : Clearance
Detector.Automation : Aircraft TA
Detector.Person : Flight Crew
Miss Distance.Horizontal : 26000
Miss Distance.Vertical : 1100
When Detected : In-flight
Result.Flight Crew : Overcame Equipment Problem
Result.Flight Crew : Took Evasive Action
Result.Air Traffic Control : Issued Advisory / Alert

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : Human Factors
Contributing Factors / Situations : Procedure
Primary Problem : Ambiguous

Narrative: 1

While cruising at FL360, we were told by ATC Center to descend in less than 2 minutes to FL340, and turn to heading 220. I am not sure what order those instructions were given. I was the Pilot Flying. I decided to initially start my descent around 2,000 feet a minute, to guarantee compliance. I uncoupled altitude hold on the APS-80 autopilot, and engaged altitude select, I started the airplane descending by rolling the autopilot vertical trim wheel down. The only way to know how much trim has been imputed is by watching the airplane react. I also selected the heading mode and turned the airplane to [heading] 220, I am not sure about the sequence. The airplane was descending at 2,000 feet per minute plus, at approximately 35,000 feet, I used the autopilot trim wheel to slow the descent. After slowing the descent and at approximately 34,400 feet, both pilots called out that the altitude select mode was engaged, because we know that it is imperative to check that the altitude select mode is engaged, as it sometimes disengages without warning. We both saw the airplane leveling at FL340.

ATC Center gave us a direct to ZZZZZ intersection and a frequency change. I [entered] Direct to ZZZZZ in the left FMS, while the other pilot changed frequencies and updated his FMS.I looked at the altimeter and noticed that the airplane was climbing through approximately 35,000 feet at a high rate of climb. I did not hear an altitude alert. I shouted a couple of expletives getting the other pilots attention, disengaged the autopilot and rapidly descended back to FL340. During that time, I heard our TCAS I report a traffic alert. I looked out the window, but did not see any traffic. We were also given instructions by ATC Center again to descend to FL340 during the time we were recovering from the uncommanded climb. The most reasonable answer for this situation is a late and over-correcting with the autopilot trim wheel, but to the best of my knowledge I did not do that. I also fly a Falcon 10 with a similar autopilot. The little experience I have had with these airplanes has taught me not to over correct or correct the rate of assent or descent close to the programmed altitude. It is possible that we had a trim malfunction or runaway. I have experienced autopilot runaway on older airplanes with similar autopilots.

Although we were not excessively busy, the need for an immediate descent, a heading

change, a Direct to, and a frequency change in less than two minutes was probably a contributing factor, taking our full attention from noting a total completion of the level off.

Synopsis

Falcon 20 First Officer reported an autopilot issue resulted in an altitude excursion and TCAS Traffic Advisory.

ACN: 1605188 *(11 of 50)*

Time / Day

Date : 201812
Local Time Of Day : 1201-1800

Place

Locale Reference.ATC Facility : ZZZ.ARTCC
State Reference : US
Altitude.MSL.Single Value : 34000

Environment

Flight Conditions : IMC

Aircraft

Reference : X
ATC / Advisory.Center : ZZZ
Aircraft Operator : Air Taxi
Make Model Name : Citation I (C500)
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 135
Flight Plan : IFR
Mission : Passenger
Flight Phase : Cruise
Route In Use : Direct
Airspace.Class A : ZZZ

Component : 1

Aircraft Component : Engine
Aircraft Reference : X
Problem : Failed

Component : 2

Aircraft Component : Rudder Trim System
Aircraft Reference : X
Problem : Improperly Operated

Component : 3

Aircraft Component : Microphone
Aircraft Reference : X
Problem : Malfunctioning

Person

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Taxi
Function.Flight Crew : First Officer
Function.Flight Crew : Pilot Not Flying
Qualification.Flight Crew : Multiengine

Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Instrument
ASRS Report Number.Accession Number : 1605188
Human Factors : Troubleshooting
Human Factors : Time Pressure
Human Factors : Workload
Human Factors : Communication Breakdown
Human Factors : Human-Machine Interface
Communication Breakdown.Party1 : Flight Crew
Communication Breakdown.Party2 : ATC

Events

Anomaly.Aircraft Equipment Problem : Critical
Anomaly.Deviation - Track / Heading : All Types
Anomaly.Deviation - Procedural : Published Material / Policy
Anomaly.Deviation - Procedural : Clearance
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Took Evasive Action
Result.Flight Crew : Overcame Equipment Problem
Result.Air Traffic Control : Provided Assistance

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : Human Factors
Primary Problem : Aircraft

Narrative: 1

While in cruise at FL340 the right engine suddenly shutdown. Concerned about losing pressurization, the Captain had me [notify ATC] and request lower. The Captain disconnected the Autopilot and descended for lower. I dawned my O2 mask. I then took the controls while he attempted to put on his mask. While I was hand flying, the Captain was having trouble getting his mask on. Simultaneously, ATC was attempting to obtain information from us regarding the [situation] but despite the mic switch in the mask position, ATC was unable to hear my radio transmissions. After the Captain got his mask on he made several attempts to speak with ATC with no success as well. Seeing the Captain was unable to reach ATC, I proceeded to adjust my headset mic just below my mask, switched the mic switch back to headset and pulled my mask off to make radio transmissions then place the mask back on. With all the distractions we managed to get slightly right of course as the aircraft tended to yaw into the dead engine. About the time I noticed and started correcting, ATC alerted us we were off course. I responded that we were aware and already started correcting. Due to the mask/mic issue, ATC repeated their transmission and heard my reply the second time and we got back on course. By this time the Captain was situated and took the controls back. We then coordinated with ATC to choose a proper/nearest airport to land. ATC set us up for vectors for the RNAV and we landed without incident.

The primary cause for the deviation was the yaw out of trim. Contributing factors were the distraction caused by inability to communicate with ATC through the mask mic with the Captain's struggle to dawn his mask and failed attempt to communicate with ATC through his mask as a secondary contributing factor.

Going forward, when a control handoff occurs during an engine out I will confirm proper rudder trim has been set. Prior to flight in an aircraft I have not been in before and/or as part of a periodic check in an aircraft I fly regularly, I will conduct a radio check with the mask mic to insure the ability to communicate during an emergency requiring the O2 mask.

Synopsis

C500 First Officer reported an engine loss at cruise led to flight crew communication and navigation issues.

ACN: 1605019 *(12 of 50)*

Time / Day

Date : 201812
Local Time Of Day : 1201-1800

Place

Locale Reference.ATC Facility : ZTL.ARTCC
State Reference : GA

Environment

Flight Conditions : VMC

Aircraft

Reference : X
ATC / Advisory.Center : ZTL
Aircraft Operator : Air Carrier
Make Model Name : B737-800
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Passenger
Flight Phase : Descent
Route In Use.STAR : BNKR2
Airspace.Class A : ZTL

Person : 1

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : First Officer
Function.Flight Crew : Pilot Flying
Qualification.Flight Crew : Air Transport Pilot (ATP)
Experience.Flight Crew.Total : 3750
ASRS Report Number.Accession Number : 1605019

Person : 2

Reference : 2
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Captain
Function.Flight Crew : Pilot Not Flying
Qualification.Flight Crew : Air Transport Pilot (ATP)
ASRS Report Number.Accession Number : 1605029
Human Factors : Human-Machine Interface
Human Factors : Situational Awareness

Events

Anomaly.Deviation - Altitude : Crossing Restriction Not Met
Anomaly.Deviation - Speed : All Types
Anomaly.Deviation - Procedural : Published Material / Policy
Anomaly.Deviation - Procedural : Clearance
Detector.Person : Flight Crew
Detector.Person : Air Traffic Control
When Detected : In-flight
Result.Flight Crew : Requested ATC Assistance / Clarification
Result.Air Traffic Control : Issued New Clearance
Result.Air Traffic Control : Provided Assistance

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : Procedure
Contributing Factors / Situations : Weather
Primary Problem : Procedure

Narrative: 1

We were filed for the CHPTR2 arrival and just prior to its first point ATC asked if we were able to fly the BNKR2 arrival. We reviewed and discussed the arrival as published, conducted a route check, checked NOTAMS and concluded that we would be able to conduct that arrival. Upon acceptance, we updated the FMC with the BNKR2 and updated the altitude and airspeed constraints as well as the forecast winds for the descent. We made the first point of PONZE a hard altitude to enable geopath descent, and were given a speed of 270 knots by ATC prior to BANKR. At around CONTR prior to OPALS I ascertained that the autopilot VNAV would not be able to meet its restriction at OPALS and elected to utilize speed brakes and idle descent to increase descent rate. The autopilot upon passing OPALS then increased its downward pitch to meet the restriction by BLNCE and increased airspeed to 290 Knots. Shortly afterwards, we received a vector from ATC to aid in slowing to the published airspeed. After slowing below 270 knots I elected to utilize the gear to further increase our drag and descent rate to get on profile for the ILS 36L approach. During the approach the Controller asked us to contact their Supervisor upon landing to discuss this arrival as there were other instances of 737NG's not being able to meet the restrictions. The Captain discussed the scenario on the phone after landing via the number provided.

After review of the arrival between the points DEBBT and BLNCE there is a large amount of altitude to lose in relatively short distance that the VNAV descent could not accomplish or calculate correctly. That in conjunction with a large tail wind further complicates the arrival. The VNAV function in the 737NG has difficulty commanding the aircraft for descent while conducting this arrival which is most evident at points CONT to OPALS. Altering CONT or OPALS to hard altitudes may aid the VNAV in calculating proper descent profiles.

Narrative: 2

Initially we were filed for the CHPTR2 arrival. Approaching IRQ the Controller asked if we could fly the BANKR2. We checked the NAV database in the FMC and the arrival was listed. I checked the company pages and comments and saw no restrictions for this arrival. The First Officer reconfigured the FMC and we completed a new route check to include published altitudes and airspeeds. In addition, the predicted winds were entered on the descent page for VNAV accuracy. We were recleared to PONZE and given a crossing restriction to cross PONZE at 27,000 feet and the VNAV descent switched to a geopath descent after crossing PONZE. The controller assigned a descent speed of 270 knots and

the First Officer entered the new airspeed on the descent page. The VNAV profile was on speed and altitude from PONZE until CONTR when it suddenly indicated the aircraft was over 3000 feet high. The First Officer asked for the landing gear to be extended to help with the speed reduction and descent. The Controller noted our altitude just as I was going to ask for relief and gave us a vector to extend our base. We descended to the profile and descended to the assigned altitude. The Controller asked us to call their Supervisor upon landing. I called the Supervisor and he stated multiple 737-800 were having problems with this arrival similar to what we experienced. I noted that there were specific notes on the CHESLY arrival in our company pages, but nothing on the BANKR2. He indicated that it was his understanding there were company notes on this arrival. I checked our pages and flight paperwork and didn't find anything.

After reviewing the arrival post landing it doesn't appear that the aircraft can handle the descent profile from CONTR above 11000 feet to the subsequent points and associated altitudes for OPALS and BLANCE. It is worth noting that we had a 90 knot tailwind in the descent making the restrictive crossing restrictions harder to reach. The altitudes on the STAR need to be adjusted to be less demanding during the final segment of the arrival or lower altitudes need to be published further back on the approach to ensure the arrival doesn't require a steep descent and deceleration at the same time

Synopsis

B737-800 flight crew reported the aircraft was unable to meet the published crossing restrictions.

ACN: 1603173 *(13 of 50)*

Time / Day

Date : 201812
Local Time Of Day : 0601-1200

Place

Locale Reference.Airport : ZZZ.Airport
State Reference : US
Altitude.MSL.Single Value : 1700

Environment

Flight Conditions : Mixed
Weather Elements / Visibility : Thunderstorm
Weather Elements / Visibility : Rain
Weather Elements / Visibility : Turbulence
Weather Elements / Visibility : Windshear
Weather Elements / Visibility.Visibility : 7
Ceiling.Single Value : 1100

Aircraft

Reference : X
ATC / Advisory.TRACON : ZZZ
Aircraft Operator : Air Taxi
Make Model Name : Learjet 35
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 135
Flight Plan : IFR
Mission : Ferry
Flight Phase : Landing
Airspace.Class D : ZZZ

Person : 1

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Taxi
Function.Flight Crew : Captain
Function.Flight Crew : Pilot Flying
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Flight Instructor
Qualification.Flight Crew : Instrument
Experience.Flight Crew.Total : 1930
Experience.Flight Crew.Last 90 Days : 40
Experience.Flight Crew.Type : 1150
ASRS Report Number.Accession Number : 1603173
Human Factors : Situational Awareness

Person : 2

Reference : 2
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Taxi
Function.Flight Crew : First Officer
Function.Flight Crew : Pilot Not Flying
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Commercial
Qualification.Flight Crew : Flight Instructor
Experience.Flight Crew.Total : 1620
Experience.Flight Crew.Last 90 Days : 127
Experience.Flight Crew.Type : 320
ASRS Report Number.Accession Number : 1603460
Human Factors : Workload

Events

Anomaly.Deviation - Altitude : Overshoot
Anomaly.Deviation - Procedural : Clearance
Anomaly.Ground Event / Encounter : Other / Unknown
Anomaly.Inflight Event / Encounter : Weather / Turbulence
Anomaly.Inflight Event / Encounter : Unstabilized Approach
Detector.Person : Flight Crew
When Detected : In-flight
Result.Aircraft : Aircraft Damaged

Assessments

Contributing Factors / Situations : Human Factors
Contributing Factors / Situations : Weather
Primary Problem : Weather

Narrative: 1

As we were approaching ZZZ, we were keeping an eye on the weather with at the destination using the stratus. We briefly talked to approach about the weather and what was painting on his radar and he informed us of some light to moderate precipitation. Shortly thereafter we began our first approach into the airport. My First Officer was flying at this time. He performed the approach, however, we were unable to visually identify the runway prior to having to go missed. Approach had given us some revised missed approach instructions, which included a turn to heading 180 and a climb to 1500 feet.

As I was cleaning up the airplane from going missed, I noticed that my First Officer had busted our altitude by 200 feet. I called out the error and he began correcting. As we continued flying, I noticed he continued having trouble maintaining the assigned altitude and decided to ask for a block altitude for him and to switch our roles to where I became the pilot flying and he would perform the duties of pilot monitoring. While being vectored around for the missed approach, we were vectored into an area where we received a brief moment of severe to extreme turbulence. At this point I told my FO (First Officer) to request a vector to the north where the weather was better and to inform ATC that we would like to hold to the north.

As we were about to cross the approach path, ATC informed us that another aircraft had made it in on the approach and asked if we'd like to give it another look. We accepted the

offer and he gave us a vector and approach clearance. Before we reached the final approach fix, we were informed that the winds had shifted and were now favoring the other runway and we'd be landing with a tailwind on our current runway. We elected to not shoot the current approach and get vectors for the approach into the other runway. ATC vectored us and we began to shoot the approach into the other runway.

The approach was flown as published and we flew at the MDA for a little while before spotting the runway and beginning our descent to land. The descent to landing appeared normal with only minor airspeed fluctuations, which at the time I attributed to the winds that were now gusty at the airport. When we got down over the threshold and began our flare to arrest the descent rate, I began to notice that something was not right. As I pulled the yoke back, the nose rose as expected, however, the aircraft's descent rate was not arresting or slowing down. Before I could add power we had landed hard on the runway. We completed the landing roll and turned off the runway. We informed tower that we believed we may have blown a tire and pulled off into a ramp to check the airplane. Upon inspection, we noticed some damage and reported the damage to our company/the operator, along with a report of what happened.

In reflection, the altitude issues my copilot suffered, stemmed from up/down drafts in the showers we were flying through, with my task saturation of cleaning the airplane up from the missed approach contributing, as I was unable to keep my typical close eye on him. As for the hard landing, I believe it can be attributed to a microburst/windshear event on short final. I had never experienced anything like it before. I think it would be beneficial for windshear avoidance on final to be added to the curriculum for pilots in both the ATP/CTP (Captain), as well as training for type ratings. I also believe that is important to point out at how much more insidious a microburst/windshear event can be when shooting a non-precision approach, and the microburst/windshear is entered at the same time as the descent to the runway. This masks typical cue to microbursts/windshear by creating the expectation of changes in performance due to commanding a descent.

Narrative: 2

We were set up for the RNAV/GPS XX. We had been cleared for the approach. As I was flying the approach, we descended to the MDA of about 600 feet. Maintaining 600 feet, we reached the MAP, and I saw the runway directly below us. We went missed, and followed our alternate missed approach instructions of heading 180, climb to 1600 feet. We were then given a heading of 270. We also had one or two instances of severe to extreme turbulence, along with continuous moderate turbulence.

After being told another aircraft behind us was able to land, we were setting up for a second RNAV/GPS XX approach. Prior to the FAF, we were told the runway winds had switched (approximately 40 degrees). We maintained 1600, and continued outbound to set up for the RNAV/GPS XY. We were getting additional turbulence in the vectors to the approach.

We began the approach to runway XY. After crossing the FAF, we descended to MDA, about 500 feet. We saw the runway environment, and began a descent to the runway. The descent did not feel unusual. As we approached the runway, we began to flare as normal. While the nose pitched up, the descent rate did not slow. We landed hard.

After landing, I informed the tower I thought we had blown a tire. We pulled off onto the ramp. I opened the main door, and noticed fuel leaking from the left wing. I told the rest of the crew that there was a fuel leak, and we evacuated the plane. I flagged down an emergency vehicle and told them we had a fuel leak.

There were no factors, even looking back on it, that I can point to that say "you shouldn't have tried this." During the final descent to landing, there did not appear to be any speed fluctuations indicating a windshear or microburst event. The descent rate did not appear to be outside a normal descent profile.

I think the cause of the hard landing was a sudden downdraft or windshear during the flare, even though there didn't appear to be any indication of those conditions during the descent.

Synopsis

LJ35 flight crew reported an unstabilized approach and missed approach, along with severe turbulence, culminated with a hard landing in microburst, windshear conditions.

ACN: 1602782 *(14 of 50)*

Time / Day

Date : 201812
Local Time Of Day : 0601-1200

Place

Locale Reference.Airport : ZZZ.Airport
State Reference : US
Relative Position.Distance.Nautical Miles : 15
Altitude.MSL.Single Value : 10000

Environment

Flight Conditions : VMC
Weather Elements / Visibility.Visibility : 10
Light : Daylight

Aircraft

Reference : X
Aircraft Operator : Air Carrier
Make Model Name : B737 Next Generation Undifferentiated
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Passenger
Flight Phase : Initial Climb
Route In Use : Direct
Maintenance Status.Maintenance Deferred : N

Component

Aircraft Component : Horizontal Stabilizer Trim
Aircraft Reference : X
Problem : Malfunctioning

Person

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Captain
Function.Flight Crew : Pilot Flying
Qualification.Flight Crew : Flight Engineer
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Instrument
Experience.Flight Crew.Total : 22000
Experience.Flight Crew.Last 90 Days : 180
Experience.Flight Crew.Type : 700
ASRS Report Number.Accession Number : 1602782

Events

Anomaly.Aircraft Equipment Problem : Critical
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Returned To Departure Airport
Result.Flight Crew : Overcame Equipment Problem

Assessments

Contributing Factors / Situations : Equipment / Tooling
Primary Problem : Equipment / Tooling

Narrative: 1

Noted on preflight, a write up, for a cycling trim situation on the inbound leg. With no faults noted by maintenance, it was cleared. First Officer (FO) and I discussed the situation as one of the threats possible, with emphasis on being alert for the cycling trim situation to possibly repeat. Reviewed applicable procedure for a possible runaway trim scenario. Upon takeoff, Autopilot A was engaged at approximately 1,200 FT AGL. As flaps were retracted and airspeed began to increase, additional trim inputs were immediately noticed by both pilots. With flaps now up, FMC called for 250 KTS. Aircraft pitched to 260 KTS with trim inputs, then re-pitched to 240 KTS. The trim system would activate for 1-2 seconds and then immediately reverse itself, trimming in opposite direction. I directed FO to ask for intermediate stop on climb, where we then stopped at FL230. Advised ATC we were experiencing a trim system problem, but the aircraft was stable and trim stopped fluctuating once a stable and level pitch was attained. I chose not to declare an emergency at this time as we did have a stable aircraft, but contacted dispatch via radio, and informed dispatcher of the situation, that it was a reoccurring event, and that I was not comfortable taking the aircraft to ZZZ1 with a primary flight control system not operating properly. Therefore I would return to ZZZ. Dispatcher brought Maintenance Control in I believe at that point and I gave them a description of the problem. We then completed those calls, informed ATC of our desire to return to ZZZ, and no emergency being declared at this time. The trim problem immediately reappeared when given a descent to 11,000, executed via Level Change on the Mode Control Panel. I was flying and at that point disconnected the autopilot, and hand flew the remainder of the approach to the landing. No trim problems were noted with autopilot disconnected. Maintenance ACARSed us several times, requesting us to attempt to troubleshoot the failure and gather information. I elected to not do this. I knew I had a failed trim system and did not wish to engage a deeper problem if something else went wrong with the system while troubleshooting. In addition we [were] now under 15000 FT, in the terminal area, and I was hand flying the aircraft. Too many distractions, as well as a potential bigger problem if something else went wrong. We both put on the table the trim motor / elevator jackscrew failure a few years back that happened to another carrier. That situation was perhaps the final reason I did not want to troubleshoot the failure. We finally told Maintenance Control via ACARS. "We are busy ", as they were now a distraction with their requests as we were near or under 10,000 FT. Aviate, Navigate, Communicate. That is what I start every brief off with a new pilot at the beginning of a trip.

Synopsis

B737NG flight crew reported a trim problem during climbout resulting in a return to field.

ACN: 1602134 *(15 of 50)*

Time / Day

Date : 201812
Local Time Of Day : 1201-1800

Aircraft

Reference : X
Aircraft Operator : Air Carrier
Make Model Name : A321
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Passenger
Flight Phase : Cruise

Component

Aircraft Component : Elevator Trim System
Aircraft Reference : X
Problem : Malfunctioning

Person

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Captain
Function.Flight Crew : Pilot Flying
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Instrument
ASRS Report Number.Accession Number : 1602134
Human Factors : Communication Breakdown
Human Factors : Troubleshooting
Human Factors : Workload
Communication Breakdown.Party1 : Flight Crew
Communication Breakdown.Party2 : Flight Attendant

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.Flight Deck / Cabin / Aircraft Event : Other / Unknown
Anomaly.Deviation - Procedural : Published Material / Policy
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Overcame Equipment Problem

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : Manuals
Primary Problem : Aircraft

Narrative: 1

The First Officer did an outstanding job flying the aircraft, setting up the MCDU for the approach, and communicating with ATC during the arrival until I was ready to take back control. He properly made this his first priority and avoided distraction, thereby allowing me to focus on managing the emergency. He was the first to suggest holding on to the pitch trim wheel and, later, [advising ATC]. The First Officer should be specifically and highly commended.

No one I talked to during or after this event had ever heard of an uncommanded stabilizer trim malfunction on an Airbus fly-by-wire aircraft before. This event should be documented and a de-identified summary should be published to [Company] pilots so that others can learn from this event.

The pagination of the System Reset Tables in COM Book 2 was confusing and delayed my ability to determine that there were no applicable resets for several minutes. It has been mentioned by Flight Operations Management that there is the intent to eventually provide tail number-specific QRHs in the cockpit and thereby return towards Airbus manufacturer philosophy regarding Abnormal/Emergency Procedure and ECAM handling. This must be properly implemented, and it carries risks because the manufacturer-provided QRHs are not compatible with our current procedures, manual set, or ECAM handling philosophy, so these items would require appropriate modifications. But properly implemented, returning to tail number-specific QRHs would solve the issue I encountered, and many others.

The Safety Department should determine whether or not a brace command was issued by flight attendants, without flight crew awareness, and contrary to what I believed were my very clear instructions. For example: did this not occur, did it occur due to a miscommunication between myself and the Lead FA, did it occur due to a miscommunication between the Lead FA and the other FAs, or did a FA deliberately disregard my instructions? If this occurred due to a miscommunication, I would like to be made aware of it so we can learn what went wrong and how to communicate better in the future. If this occurred due to a deliberate decision by a FA to disregard my instructions (but then not inform us they had done this), the FA should be debriefed in a non-punitive manner to determine the reason for that FA's decision and then to ensure that they understand: that it was not appropriate for this particular situation, what were the risks associated with doing this, and what were the risks associated with not telling the pilots they had done this.

Synopsis

A321 Captain reported QRH shortcomings and communication breakdown between flight crew and cabin attendants while troubleshooting uncommanded stabilizer trim malfunction.

ACN: 1601731 *(16 of 50)*

Time / Day

Date : 201812
Local Time Of Day : 0601-1200

Place

Locale Reference.ATC Facility : ZZZ.ARTCC
State Reference : US
Altitude.MSL.Single Value : 36000

Environment

Flight Conditions : VMC

Aircraft

Reference : X
ATC / Advisory.Center : ZZZ
Aircraft Operator : Air Carrier
Make Model Name : B737 Undifferentiated or Other Model
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Phase : Descent

Person : 1

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Pilot Flying
Function.Flight Crew : First Officer
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Multiengine
Experience.Flight Crew.Total : 992.63
Experience.Flight Crew.Type : 992.63
ASRS Report Number.Accession Number : 1601731

Person : 2

Reference : 2
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Pilot Not Flying
Function.Flight Crew : Captain
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Multiengine
ASRS Report Number.Accession Number : 1601737

Events

Anomaly.Aircraft Equipment Problem : Critical
Anomaly.Inflight Event / Encounter : Loss Of Aircraft Control
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Overcame Equipment Problem
Result.Flight Crew : Regained Aircraft Control

Assessments

Contributing Factors / Situations : Aircraft
Primary Problem : Aircraft

Narrative: 1

Started a descent from 36,000 [feet] following VNAV path with autopilot on. Aircraft was a touch high, so opened speed brakes at normal rate to detent. When retracted speed brakes at normal to slow rate, aircraft banked to 25-30 degrees to right in approximately 2 seconds. Attempted to stop bank by turning off AP, autothrottles, and rotating yoke in opposite direction. Took approximately 2 seconds to return to level flight. Continued flight without using speedbrakes. Had been a previous Maintenance write up for this, but had been closed the day before. Other flights had occurred since closing of write up. Continued on to destination.

Narrative: 2

Aircraft had a previous report of a roll to the right when retracting the speed brakes. During our descent at about FL360 and 300 kias, the First Officer, who was flying, extended the speed brakes in a very normal fashion. When he retracted the speed brakes in the same, very normal fashion, at about the mid-point of retracting them, the aircraft rolled at about 15 degrees per second to about 30 degrees right wing down. At that point, the autopilot had responded with about 60 degrees of left aileron which stopped the roll, and by this time, the First Officer's hands were on the controls which then caused the autopilot to revert to CWS mode. Then, the aircraft returned to wings level and the First Officer stowed the speed brake handle. There were no further anomalies and the remainder of the flight was unremarkable.

Synopsis

B737 Flight crew reported uncommanded 25-30 degree roll while retracting speedbrake. Uncommanded roll previously reported.

ACN: 1596965 *(17 of 50)*

Time / Day

Date : 201811
Local Time Of Day : 1201-1800

Place

Locale Reference.Airport : ZZZ.Airport
State Reference : US
Altitude.MSL.Single Value : 21000

Environment

Flight Conditions : VMC

Aircraft

Reference : X
ATC / Advisory.Center : ZZZ
Aircraft Operator : Air Carrier
Make Model Name : A320
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Passenger
Flight Phase : Climb
Airspace.Class A : ZZZ

Component

Aircraft Component : Electrical Distribution Relay
Aircraft Reference : X
Problem : Malfunctioning

Person : 1

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Captain
Function.Flight Crew : Pilot Not Flying
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Instrument
Experience.Flight Crew.Total : 21000
Experience.Flight Crew.Last 90 Days : 200
Experience.Flight Crew.Type : 8260
ASRS Report Number.Accession Number : 1596965

Person : 2

Reference : 2
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck

Reporter Organization : Air Carrier
Function.Flight Crew : First Officer
Function.Flight Crew : Pilot Flying
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Instrument
Experience.Flight Crew.Total : 4500
Experience.Flight Crew.Last 90 Days : 270
Experience.Flight Crew.Type : 2175
ASRS Report Number.Accession Number : 1596979

Events

Anomaly.Aircraft Equipment Problem : Critical
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Returned To Departure Airport
Result.Air Traffic Control : Provided Assistance

Assessments

Contributing Factors / Situations : Aircraft
Primary Problem : Aircraft

Narrative: 1

While climbing through FL210 approximately with the FO (First Officer) operating as the PF (Pilot Flying) and autopilot 2 engaged, the aircraft experienced an abrupt yaw to the left, and the Captain's PFD, ND, and the upper ECAM screen momentarily went blank. The aircraft quickly recovered, and the blank screens returned to normal. Both the First Officer and I scanned the overhead panel and circuit breaker panels, and found nothing amiss. We also cycled through the systems pages on the ECAM display, and all was normal. Approximately two minutes later, the same thing happened, only the yaw was more abrupt, and the Captain's screens and upper ECAM display remained blank for several seconds. We then experienced the following ECAM's:

ENG 1 EPR MODE FAULT
NAV GPWS FAULT
AUTO FLT RUDDER TRIM 1 FAULT
BRAKES SYS 1 FAULT
ELEC GEN 1 FAULT
ELEC BCL 2 FAULT

I directed the First Officer to fly the aircraft and communicate with ATC, and to ask to level the aircraft at FL240. Given the multiple malfunctions and our proximity to ZZZ, I consulted with the First Officer and decided that a return to ZZZ was in order. While the First Officer coordinated with ATC for our return to ZZZ, I started working through the displayed ECAM procedures, which resulted in taking generator 1 off line, and placing both engines in the N1 mode. We started the APU, and I coordinated with the flight attendants, made a PA announcement to the passengers, sent dispatch a brief ACARS message telling them that we were experiencing multiple issues and were returning to ZZZ, and asked for landing performance data. We completed an uneventful overweight landing back at ZZZ, and taxied back to the gate.

Narrative: 2

During the climb out heading west passing through FL210, airspeed 315 KIAS, autopilot and auto-thrust on, the aircraft made an uncommanded yaw to the left while simultaneously the Captain's side PFD, ND, and the E/WD screens momentarily went blank. The aircraft returned to stable flight conditions almost immediately, no ECAMs or other warnings were present, and all systems appeared to be operating normally, therefore the climb was continued. Approximately two minutes later climbing through FL240 there was a second uncommanded yaw to the left that was of greater magnitude than the first, causing the aircraft to also roll to the left, while again the Captain's side PFD, ND, and the E/WD screens went blank and flickered for several seconds. At this time the first of multiple ECAMs began to appear, which included ENG 1 EPR Mode Fault, NAV GPWS Fault, Auto Flt Rud Trim 1 Fault, Elec Gen 1 Fault, BCL Fault, and Brake Sys 1 Fault, along with several others.

As I was the PF (Pilot Flying), and after briefly confirming with the Captain, I disconnected the Autopilot and Auto-thrust systems and initiated a level off, and after another quick discussion with the Captain, he began working the ECAMs while I continued to fly the aircraft and assume control of radio communications with ATC. I coordinated with ATC for a slight descent back down to maintain FL240, while I reduced thrust to slow the aircraft to 280 KIAS. While I was descending and slowing the aircraft (with Autopilot and Auto-thrust off), the aircraft again made several large, uncommanded yawing/roll movements to the left. With the Captain's concurrence, I [notified] Center and requested an immediate left turn and a heading vector back to ZZZ while also initiating a descent. There were many what I describe as "cascading" ECAMs the Captain was working through at the time as it seemed that multiple systems were being affected simultaneously. One notable failure was the loss of GEN 1, so we elected to immediately start the APU in order to have a second generator available. The Captain continued to work through the list of ECAMs, confirming with me before shutting off or resetting any systems as directed by the ECAM while I maintained aircraft control and initiated a continuous descent and return.

I coordinated for a visual approach to runway XX, as it was the longest runway for the winds, and I also requested emergency vehicles to be dispatched to the runway. The Captain meanwhile coordinated with the flight attendants, made an announcement to the passengers about our return, and sent an ACARS message to dispatch informing them of we had multiple system failures and requesting landing data. The Captain went through the overweight landing checklist as we were at still approximately 148,000 lbs. Approach reference speed was approximately 149 KIAS with full flaps. I maintained control of the aircraft and performed a visual approach backed up by the ILS followed by an uneventful landing using Max reverse thrust and minimal braking. However during rollout, the E/WD screen indicated that the #1 engine thrust reverser was not deployed, however I did not perceive any directional control problems while using reverse thrust, and only minimal braking was required to clear the runway. The Captain performed an uneventful taxi to the gate and once the aircraft was secured, the passengers were deplaned using normal procedures.

Synopsis

A320 flight crew reported numerous system malfunctions during climb and returned to departure airport.

ACN: 1596615 *(18 of 50)*

Time / Day

Date : 201811
Local Time Of Day : 1201-1800

Place

Locale Reference.ATC Facility : ZZZ.ARTCC
State Reference : VA
Altitude.MSL.Single Value : 33460

Environment

Flight Conditions : IMC
Weather Elements / Visibility : Icing
Weather Elements / Visibility : Turbulence
Weather Elements / Visibility : Thunderstorm
Light : Night

Aircraft

Reference : X
Aircraft Operator : Air Carrier
Make Model Name : EMB ERJ 145 ER/LR
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Passenger
Flight Phase : Cruise

Person : 1

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : First Officer
Function.Flight Crew : Pilot Not Flying
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Multiengine
ASRS Report Number.Accession Number : 1596615
Human Factors : Communication Breakdown
Human Factors : Confusion
Human Factors : Situational Awareness
Communication Breakdown.Party1 : Flight Crew
Communication Breakdown.Party2 : Flight Crew

Person : 2

Reference : 2
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Pilot Flying

Function.Flight Crew : Captain
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Instrument
ASRS Report Number.Accession Number : 1596616
Human Factors : Situational Awareness

Events

Anomaly.Deviation - Altitude : Overshoot
Anomaly.Inflight Event / Encounter : Weather / Turbulence
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Took Evasive Action
Result.Flight Crew : Regained Aircraft Control
Result.Air Traffic Control : Provided Assistance

Assessments

Contributing Factors / Situations : Weather
Contributing Factors / Situations : Human Factors
Primary Problem : Weather

Narrative: 1

While serving as PM (Pilot Monitoring), on the ground in ZZZ the CA (Captain) briefed me on the flight which included the weather and a chance for turbulence. While on initial climb through 16000 ft. ATC asked about our ride saying we should be getting some cop to turn. We were in smooth air until after going from ZZZZZ to ZZZZZ1, which was a reroute given by ATC. Both our weather radars were on and returning very little to no echos.

At fl360 crossing bills about 50nm ahead was a very small patch of green on the weather radar covering the 12 o'clock to 1 o clock position and less than 15 miles in size.

We were on a 210 heading about and the CA instructed me to ask for a 245 heading which I did and which we got with little to no delay. The CA then informed the FA (Flight Attendant) of possible turn in about 5 to 10 and to be seated by then. The passenger sign was still on. Once reaching the green area depicted on the radar, the ride started to toughen and the radio became statistic.

From here the event started and I have no real clue as to what exactly happened. I know the following things then occurred in a very short and possibly overlapping manner. I noticed the CA using the TCS to turn the aircraft more west, a visual indication of possible ice formation on the windscreen with no auto anti-ice activation. And then shortly the sound of the AP (autopilot) disconnect with the autopilot fail EICAS but the YD was still engaged. At that point the CA instructed me to turn the anti ice on.

Our ride was pretty bad. A heavy turbulence and chop although I was in my seat with just the lap belt and was not using the grab handle or being pushed against the seat or seat belt in any direction. The CA then stated to ATC he was in severe turbulence and needed to descend to FL340. We got some static from the precipitation and the CA continued to assume control of the radio saying he needed a descent to FL340 and a west turn. ATC told him to proceed. We hit one pretty good bump with him in a right turn and decent with the FD still showing a correction to the up and left.

The CA got on the radio and stated mayday mayday and that he was in severe turbulence and descending to FL340 and turning to a 270 heading. I noticed the aircraft in a descent rate up to 4500 fpm with chop and no shaker or visible PLI. Bank was about 20 degrees and pitch no more than 10 degrees.

During the CA's maneuver and transmissions with ATC I received no instructions, no communication and no feedback of the aircrafts state...not even the CA talking to himself out loud which would have been more useful than what I received. Within 30 seconds we were in the clear and the ride went from a moderate turbulence to a constant light chop with occasional moderate to then just light chop.

The CA was still descending through FL340 and I questioned him on that. He stated he was correcting. ATC was asking him for a PIREP and he was trying to describe to event while still flying manually and below our assigned altitude. The CA turned on the AP and set the airplane up to re-navigate to our next fix and had the aircraft in alt hold mode while still being at FL334.

I again quarried him and then ATC actually asked and he again took the radio and said we were correcting. After that we pretty much reassessed the navigation state of the aircraft and continued without incident. The CA called the FA and asked in any injuries had occurred and she stated no. The CA then sent all messages to Dispatch Maintenance through the ACARS.

A lot happened in a very short confusing time frame. Zero CRM (Crew Resource Management) or crew communication. No proper assignments of duties. The aircraft was defending at one point greater than 4000 FPM. We had turbulence and poor radio clarity. Threat of weather radar limitations. CA assumed PF (Pilot Flying) and PnF (Pilot not Flying) roles just because

Honestly I don't know how much there is to learn since I really don't know what exactly happened. I feel that the event was mostly pilot induced the CA basically just took over and tried to do everything, most likely interfered with the AP causing it to turn off and then assuming all communication with ATC, hand-flying and by using the glare shield PTT also no less.

I only turned on the anti ice called EICAS messages aloud and stated an altitude deviation with zero response at all during the event. Debriefing the event was equally frustrating as the whole flight I felt all I received was a defending conflicting account of how bad the turbulence was and a throwing of the CA 20 years experience into every counterpoint of my discussion with him.

I kept telling him I was more disappointed in the lack of communication and his radio hijacking then the actual event. I didn't feel like a pilot, I felt like a passenger. All I kept getting was that he felt it was so time critical that he had to articulate his requests directly with ATC, apparently to the point of using a mayday (which was a first for me) I asked him why he could not simply said aloud what he was doing and I can then tell ATC.

He agreed that there was a definite lack of communication but then continued for the remaining flight and two legs after that defending his position that "in my 20 years I just saw how bad that could have been." The I've been around longer attitude was there and he admitted to being aware of that, but still continued to pursue that as his main defense.

I just don't see a way we could have seen the turbulence event coming any better, but there is a huge need for improvement to how a crew handles such an event in real time.

Narrative: 2

Fully aware of weather enroute. Minimal convection noted. Absence at the time of departure of WST's. No Turbulence SIGMETS at the time of departure. Between ZZZZZ and ZZZZZ1, detected weather which required right deviation. Weather was 40 nm ahead. Deviated right to heading of 245. Radar tilt exercised between -1 and -2. FL360 for ride and tops. In and out of tops. No errant PIREPS. Deviations occurring. On new path, airborne weather radar indicated no echos. Returns faded and cleared display as we went further west. Began to encounter sudden and continuous moderate turbulence. It was near SEVERE, but not necessarily so, in my opinion.

Condition's deteriorated rapidly to low KIAS (200) and PLI GREEN. I had intentionally kept the airplane at a slower speed as I knew we might encounter some level of rough air/ie precaution. This likely facilitated a slow down in IAS. As such, I selected CLB thrust as I felt this was necessary to maintain safe speed.

Further, I requested immediate descent to FL340 for airspeed maintenance and hopes of a better ride. Also, it is my opinion that moderate to severe ice was encountered. I manually activated ANTI-ICE. This likely deprived us of further airspeed maintenance, but likely was necessary to prevent ice accumulation.

Radio chatter began to increase. As such, I declared a "mayday" call in order to advise ATC immediately that we needed his attention and use of the frequency. At times, radio static was severe on both radios. Our encounter ranged in altitude from FL 360-to FL 340. Further, we turned right further to HDG 275. All the while, I knew we were on the back edge of IMC/VMC conditions.

I do not believe we had altitude deviation as we were cleared to descend. I know of no traffic conflicts.

The cabin was briefed prior to this event. This applies to the passengers as well. Upon assessment, no injuries and all occupants were belted. The fact that it might have been bumpy was not a surprise. The near SVR turbulence was whoever a surprise.

To be clear, we were both fully aware of where the weather was and briefed as such. Flying in the proverbial debris area of convection. Undetectable turbulence. PLI. It would seem a wider berth was necessary. However, I am certain we avoided all echoes by more than 20 miles. I feel there was nothing to do in order to avoid.

Synopsis

Air carrier flight crew reported poor CRM when they entered an area of severe turbulence.

ACN: 1594888 *(19 of 50)*

Time / Day

Date : 201811
Local Time Of Day : 0601-1200

Place

Locale Reference.Airport : ORD.Airport
State Reference : IL
Altitude.MSL.Single Value : 18000

Environment

Flight Conditions : VMC

Aircraft

Reference : X
ATC / Advisory.TRACON : C90
Aircraft Operator : Air Carrier
Make Model Name : B737 Undifferentiated or Other Model
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Nav In Use : FMS Or FMC
Flight Phase : Descent
Route In Use.STAR : WATSN3
Airspace.Class B : ORD

Component

Aircraft Component : Autopilot
Aircraft Reference : X

Person : 1

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Captain
Function.Flight Crew : Pilot Not Flying
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Commercial
Qualification.Flight Crew : Instrument
Experience.Flight Crew.Total : 5881
ASRS Report Number.Accession Number : 1594888
Human Factors : Workload
Human Factors : Situational Awareness
Human Factors : Human-Machine Interface

Person : 2

Reference : 2
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Pilot Flying
Function.Flight Crew : First Officer
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Commercial
Qualification.Flight Crew : Air Transport Pilot (ATP)
Experience.Flight Crew.Total : 4196
ASRS Report Number.Accession Number : 1594889
Human Factors : Situational Awareness
Human Factors : Human-Machine Interface
Human Factors : Workload

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.Deviation - Speed : All Types
Anomaly.Deviation - Procedural : Published Material / Policy
Anomaly.Inflight Event / Encounter : Weather / Turbulence
Detector.Person : Flight Crew
Were Passengers Involved In Event : N
When Detected : In-flight
Result.Flight Crew : Became Reoriented
Result.Flight Crew : FLC Overrode Automation
Result.Flight Crew : Returned To Clearance
Result.Air Traffic Control : Issued Advisory / Alert

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : Human Factors
Primary Problem : Aircraft

Narrative: 1

While on WATSN arrival at FL250 and expecting to cross HULLS at 120 [heading], we were issued a descent to cross PRISE intersection at 12,000 [feet]. Aircraft was level flight, VNAV / LNAV engaged with autopilot on, utilizing good CRM. At approximately 35 miles from PRISE, Pilot Monitoring noticed we should have begun our descent (3 miles per 1,000 feet at normal descent speeds), but verified the path at our increased speed (310 KIAS) that we still had a few miles of level flight remaining. Pilot Monitoring made PA to cabin and upon return ATC asked whether we would make our crossing restriction at PRISE. At that point, both Pilot Flying and Pilot Monitoring realized we were no longer in VNAV and Pilot Flying selected LVL CHG and we began a high speed descent in accord with ATC instructions to maintain 310 or greater. Pilot Flying increased airspeed to 320 and extended speed brakes to make the crossing at 12,000 [feet].

When within 5 kts of barber pole, both pilots expected the autopilot to slowly pitch up when there was a sudden increase in airspeed due to unexpected turbulence and the high speed alert sounded and we exceed Vmo by 15-20 kias. Both pilots announced upset and Pilot Flying disengaged autopilot and slowly made the upset recovery to desirable state.

We flew the rest of the arrival and landed in ORD without incident. We made a MX entry and talked to maintenance personnel upon arrival at gate.

Narrative: 2

On descent into ORD on WATSN3 star ATC issued descent from 26 to 25k. Pilot Flying initiated DES NOW on DES page executing VVM with Pilot Monitoring. Aircraft descended from 26 to 25k on autopilot B with LNAV/VNAV engaged. ATC issued cleared us direct PRISE and to cross PRISE at 12,000 [feet] while maintaining speed of 310. After approximately 1 minute, autopilot was flying when ATC called and asked if we would be able to make PRISE at 12k. Both Pilot Flying and Pilot Monitoring simultaneously noticed VNAV was disengaged. Pilot Flying immediately reached up and engaged LVL CHG mode, extended speed brake and verbally stated the change. Pilot Monitoring acknowledged and aircraft began uneventful descent. Both Pilot Flying and Pilot Monitoring stated that it was coming down nicely and making PRISE at 12,000 [feet] shouldn't be an issue. Pilot Flying selected 320 in the IAS window which was approx. 20 kias below the barber pole. Pilot Flying also verbalized that he wanted to maintain plenty of buffer below VMO to which the Pilot Monitoring concurred. Passing thru approximately 17,000 [feet], the aircraft pitched slightly over and approached VMO. Thinking the autopilot would raise the pitch angle to catch the speed increase, the Pilot Flying paused to allow it to catch up. As it exceeded VMO, both pilot knew it was at an undesirable aircraft state. Pilot Flying then took hand control of aircraft and initiated upset recovery procedure. I am not sure if prior to doing this if the autopilot was still engaged, but no audible warning was noted. Aircraft exceeded VMO by approx. 15 KIAS. Aircraft was hand flown back to desirable state making PRISE AT 12,000 [feet]. Approach and recovery flown uneventfully.

Synopsis

B737 flight crew reported an overspeed situation while on descent to ORD.

ACN: 1594726 *(20 of 50)*

Time / Day

Date : 201811
Local Time Of Day : 1801-2400

Place

Locale Reference.Airport : IAH.Airport
State Reference : TX
Altitude.MSL.Single Value : 3000

Environment

Flight Conditions : IMC

Aircraft : 1

Reference : X
ATC / Advisory.Tower : IAH
Aircraft Operator : Air Carrier
Make Model Name : B737 Next Generation Undifferentiated
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Passenger
Nav In Use : FMS Or FMC
Flight Phase : Final Approach
Airspace.Class B : IAH

Aircraft : 2

Reference : Y
Aircraft Operator : Air Carrier
Make Model Name : Commercial Fixed Wing
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR

Person : 1

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Pilot Not Flying
Function.Flight Crew : First Officer
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Multiengine
Experience.Flight Crew.Type : 1066
ASRS Report Number.Accession Number : 1594726
Human Factors : Situational Awareness

Person : 2

Reference : 2
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Captain
Function.Flight Crew : Pilot Flying
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Air Transport Pilot (ATP)
Experience.Flight Crew.Last 90 Days : 200
Experience.Flight Crew.Type : 3153.08
ASRS Report Number.Accession Number : 1594733
Human Factors : Situational Awareness

Events

Anomaly.Deviation - Track / Heading : All Types
Anomaly.Deviation - Procedural : Clearance
Anomaly.Inflight Event / Encounter : Wake Vortex Encounter
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Returned To Clearance
Result.Air Traffic Control : Issued Advisory / Alert

Assessments

Contributing Factors / Situations : Environment - Non Weather Related
Contributing Factors / Situations : Procedure
Primary Problem : Ambiguous

Narrative: 1

I was First Officer and Pilot Monitoring for the flight in question. We had the autopilot and autothrottles engaged and were coupled to the localizer with approach mode selected and ALT Hold prior to GS intercept. While on approximately a 10 mile final to the ILS 8L at IAH, we experienced a quick (1-2 seconds) upset in the roll axis resulting in an uncommanded right roll in excess of 30 degrees. The feel of the upset was wake turbulence/vortex as flight conditions were mostly smooth prior to and after the event while on approach. As the aircraft rolled right, the yoke deflected nearly full left quickly followed by "CWS ROLL" annunciation on the FMA. The Captain took immediate action in attempting to roll the aircraft level while in Control Wheel Steering (CWS) Roll and disconnected the autopilot shortly after. I called out the upset and called CWS Roll as the new FMA roll mode. The bank took the aircraft off center of the localizer although I don't recall how much. I believe it was not full deflection as I began calling to turn back left as we were deviating right. The Captain righted the aircraft and began to turn back to the left while hand flying the aircraft. At this point ATC called for us to turn left to rejoin the final approach course. I notified them that we had experienced a wake turbulence event that caused an uncommanded roll and that we were attempting to rejoin the localizer. ATC asked if we were able to continue the approach and we advised that we were able to do so. We asked what we were following and were told it was an E-170. We also asked what was on the parallel approach (8R) and were told it was also an E-170. It should be noted that the winds at 3000 feet were approximately 150/45 while lower in the approach they were 050/15. When we landed and taxied to hold short of 8R, we noted that a 747 landed before we crossed and taxied to the gate. As it had been a few minutes since we had landed we wondered where that heavy was in the approach pattern when we experienced

the upset. We did debrief the event after the flight. We concluded that our actions were an appropriate response to the wake turbulence and upset that occurred. The decision to continue the approach when queried by ATC was largely based on the fact that the immediate recovery actions were to return to our course while maintaining altitude. We did not reach GS intercept until after we recovered from the upset.

Narrative: 2

Cleared for and established on the IAH ILS 8L, autopilot on and LOC/GS captured. Approximately 9 miles from touchdown and in the vicinity of FLIBZ, the aircraft rolled to the right to approximately 35 degrees. The autopilot remained engaged and as I counteracted the roll, the roll mode reverted to CWS, pitch mode remained captured. I disengaged the autopilot, rolled wings back to level and noticed we were approximately 3/4 scale deflection right of the localizer centerline. The First Officer was also aware of the situation and advised me to come back left to center the localizer. As we were correcting, ATC also notified us to correct to the left. We informed ATC that we had encountered what we thought was wake turbulence. We were asked if we were able to continue the approach. We had corrected the deviation, the aircraft was stabilized and again established on the localizer and glide slope and the autopilot was re-engaged. We answered ATC that we were able to continue the approach and we landed without incident.

Synopsis

B737NG flight crew reported encountering wake turbulence on approach to IAH.

ACN: 1593828 *(21 of 50)*

Time / Day

Date : 201811
Local Time Of Day : 1801-2400

Place

Locale Reference.Airport : CHO.Airport
State Reference : VA
Altitude.AGL.Single Value : 3000

Environment

Flight Conditions : VMC
Light : Night

Aircraft

Reference : X
ATC / Advisory.TRACON : PCT
Aircraft Operator : Air Carrier
Make Model Name : Embraer Jet Undifferentiated or Other Model
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Passenger
Nav In Use.Localizer/Glideslope/ILS : 3
Flight Phase : Descent
Route In Use : Visual Approach
Airspace.Class E : PCT

Person : 1

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Pilot Not Flying
Function.Flight Crew : Captain
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Instrument
ASRS Report Number.Accession Number : 1593828
Human Factors : Situational Awareness

Person : 2

Reference : 2
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Pilot Flying
Function.Flight Crew : First Officer
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Multiengine

Qualification.Flight Crew : Instrument
ASRS Report Number.Accession Number : 1594120
Human Factors : Situational Awareness

Events

Anomaly.Inflight Event / Encounter : CFTT / CFIT
Detector.Automation : Aircraft Terrain Warning
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Took Evasive Action
Result.Flight Crew : FLC complied w / Automation / Advisory

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : Environment - Non Weather Related
Primary Problem : Ambiguous

Narrative: 1

I checked in with Potomac Approach and they descended us to 3000 feet and told us to expect vectors for the ILS 3 at KCHO. Some minutes later they gave us a turn to a heading of 220. Correcting for the wind out of the west, this put us on a right downwind for Runway 3.

It surprised us because in the minutes leading up to this we had visual on the terrain below, including cars on the roads and building lights. It was not dark/invisible terrain. However I knew the safest thing would be to climb anyway. The autopilot came off but before the FO (First Officer) flying could really react much the warning stopped. We had only gained about 150 feet since the caution sounded. We didn't immediately know what had happened. In the past I had experienced RA malfunctions in the [ERJ] that had produced false landing gear warnings, bank angle warnings, ground prox warnings etc and I considered if that had happened but the RA seemed to be working okay. It showed us slowly fluctuating in the range of about 1900-2300 AGL at 3000 MSL. Field elevation at KCHO nearby is 640 feet MSL.

As we approached the point where we would be abeam the field, ATC asked us to say our flight conditions. I replied that we were in VMC but could not yet see the field. The controller asked us if we wanted a vector to a visual or the ILS. The FO and I agreed we wanted the ILS. I told ATC this and they acknowledged. During this time we were looking off our right or 2 o clock position a lot, trying to make out the field position. Soon after this, the EGPWS gave us a Ground Prox caution box in the PFD attitude indicator area and an Aural "Terrain terrain pull up!"

When I looked over at my IPad approach plate, my Geo-Referenced aircraft symbol showed us and our track having just passed over an obstacle/tower labeled 1795 feet just east of KCHO near the missed approach track line. I then theorized that our RA might have bounced a wave off this probably metal tower and received enough beam back to cause our RA to read about 1200 feet, an instant drop of hundreds of feet. This led the EGPWS to trigger a warning due either to us not being configured for landing, or due to the EGPWS calculating a false rapid rise in terrain, and possibly coupled with the EGPWS database knowing that tower was there very close by.

Possibly an ATC change to raise the Minimum vectoring altitude there, and/or a wider downwind closer to GVE VOR to avoid the possibility of this false warning.

Narrative: 2

I was the pilot flying. We were nearing the destination airport KCHO from the north. ATC gave us a heading to fly which set us up for a wide right downwind for runway 3. We were holding our last assigned altitude of 3000 thousand when the event occurred. Suddenly, several indications including an aural "pull up" went off. This occurred approximately 7 nm east of the airport, and coincided with the position of a charted obstruction of 1795 ft MSL, which we did not see at the time. It was night time and the surrounding area was sparsely lit.

Various messages. I can't recall all of them, but I do distinctly remember the aural "pull up." I also remember several seconds after the event occurred, looking at the radio altitude and noticing we were a little more than 2000 feet above the ground and gradually increasing that height.

Aircraft was in such a position to the obstruction on the ground, that the aircraft systems alerted the crew to danger, and to pull up.

A few seconds after the indications went off, I clicked the autopilot off. I slowly began to pitch the aircraft up and slowly began increasing the thrust levers. All messages had cleared a short period after the event occurred. As it became clear to the Captain and I that we had flown over a random tall obstruction and would be safe returning to 3000 feet, I selected the auto pilot back on. I don't recall how much altitude we had deviated when we began our slow climb, but it couldn't have been more than a couple hundred feet.

I will be more vigilant in the future about terrain at night. I will start having my position turned on while using flight deck pro. This will increase my situational awareness in the terminal area in regards to obstructions.

Synopsis

ERJ flight crew reported receiving a terrain warning while on radar vectors for a visual approach to CHO, likely due to a nearby tower.

ACN: 1590852 *(22 of 50)*

Time / Day

Date : 201811
Local Time Of Day : 1801-2400

Place

Locale Reference.ATC Facility : PCT.TRACON
State Reference : VA
Altitude.MSL.Single Value : 20000

Environment

Weather Elements / Visibility : Turbulence
Light : Night

Aircraft

Reference : X
ATC / Advisory.TRACON : PCT
Aircraft Operator : Air Carrier
Make Model Name : Regional Jet 200 ER/LR (CRJ200)
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Passenger
Flight Phase : Final Approach
Airspace.Class B : PCT

Person

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Captain
Function.Flight Crew : Pilot Flying
Qualification.Flight Crew : Air Transport Pilot (ATP)
ASRS Report Number.Accession Number : 1590852

Events

Anomaly.Deviation - Altitude : Excursion From Assigned Altitude
Anomaly.Deviation - Speed : All Types
Anomaly.Inflight Event / Encounter : Weather / Turbulence
Anomaly.Inflight Event / Encounter : Loss Of Aircraft Control
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Took Evasive Action
Result.Air Traffic Control : Issued New Clearance
Result.Air Traffic Control : Issued Advisory / Alert

Assessments

Contributing Factors / Situations : Weather
Primary Problem : Weather

Narrative: 1

During our flight to IAD we encountered severe turbulence during the descent phase of our flight just prior to the approach. We were holding at the RIC VOR when we were given a clearance to IAD via vectors. After our initial heading leaving the hold, we saw an area of weather between us and the airport. We asked for a deviation left of course to go west of the weather. The Controller indicated that east was better and sighed into the microphone. We agreed to go right (east) of the weather. After going around that band of weather we turned towards the airport and were in a descent to 3,000 feet initially, and then 2,000 feet. During this stage of the descent approximately 25-30 miles from the airport (est) we encountered severe turbulence. This was noted by the momentary loss of control, the inability to maintain altitude (in what I suspect was a downdraft), significant and abrupt changes in attitude causing blurry vision of the instruments, increase in airspeed from 250 up to 280-290 within just a few seconds without any change in power or pitch, uncommanded loss of the autopilot along with multiple caution messages which included all of but not limited to the following: stab and mach trim disconnect, right or left wing down (I don't remember which), autopilot pitch trim, and I think I remember seeing an AOA caution as well. During the portion of the event where we were unable to maintain our altitude, we temporarily descended to 1,800 feet. ATC noted that we were below the minimum vectoring altitude and to make an immediate climb to 3,000 feet. Initially I was unable to climb, but then was able to and the aircraft began climbing. We reach approximately 2,600 feet when we were given the descent by ATC back down to 2,000 feet. Once we were out of the severe turbulence and were in smoother air, we were vectored to final approach of 1R and concluded the flight uneventfully.

A few things to note:

-We did notify ATC of our inability to maintain altitude and that we were experiencing severe turbulence.
-We were unable to see the weather that was near the airport until after we deviated around the initial band of weather, so we did not know until we were in a position where we could not turn around that it was there until it was too late.

Our gut told us to divert to ZZZ while we were in the hold for almost an hour. We should have done that. We had about 25 minutes of hold fuel left so we decided to hold off. There is nothing that says we need to wait until the last drop of fuel is expended. So when we began to get the itch to get on the ground and wait for the weather to pass we should've.

-We should have been made aware long before we were in that position that there was moderate to severe precipitation along final approach and between us and the airport. Our radar was not painting what was behind the initial band that we encountered, so our request to fly west of the weather should not have been met with hesitation from ATC.

Synopsis

CRJ-200 Captain reported an encounter with severe turbulence resulted in momentary loss of control on arrival into IAD.

ACN: 1590688 *(23 of 50)*

Time / Day

Date : 201811
Local Time Of Day : 0601-1200

Place

Locale Reference.Airport : LAX.Airport
State Reference : CA
Altitude.AGL.Single Value : 1000

Environment

Flight Conditions : VMC
Weather Elements / Visibility : Turbulence
Light : Dawn

Aircraft : 1

Reference : X
ATC / Advisory.Tower : LAX
Aircraft Operator : Air Carrier
Make Model Name : EMB ERJ 170/175 ER/LR
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Passenger
Flight Phase : Initial Approach
Airspace.Class B : LAX

Aircraft : 2

Reference : Y
ATC / Advisory.Tower : LAX
Aircraft Operator : Air Carrier
Make Model Name : A321
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Passenger
Flight Phase : Initial Approach
Airspace.Class B : LAX

Person

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Captain
Function.Flight Crew : Pilot Not Flying
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Multiengine
Experience.Flight Crew.Total : 4500

Experience.Flight Crew.Type : 2500
ASRS Report Number.Accession Number : 1590688
Human Factors : Situational Awareness
Analyst Callback : Attempted

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.Deviation - Procedural : Published Material / Policy
Anomaly.Inflight Event / Encounter : Wake Vortex Encounter
Detector.Person : Flight Crew
When Detected : In-flight
Result.General : None Reported / Taken

Assessments

Contributing Factors / Situations : Environment - Non Weather Related
Contributing Factors / Situations : Human Factors
Contributing Factors / Situations : Procedure
Primary Problem : Environment - Non Weather Related

Narrative: 1

While on approach to Runway 25L in LAX we encountered significant wake turbulence. We intercepted the LOC and GS outside of LIMMA and were already flaps 2. We further configured to flaps 3. Approaching LIMMA we started to get GS oscillations and the First Officer (FO) elected to turn off the autopilot and hand fly. He also called for gear down. Passing LIMMA I switched to Tower frequency. As the aircraft slowed the FO called for flaps 5. Shortly after selecting flaps 5 the aircraft began to buffet and bank 20 degrees to each side. The FO applied power and bank to control the uncommanded bank. By the time we were through the wake turbulence we were about 155kts and flaps 5. The FO called for Vapp and landing check. I set Vapp and checked in with Tower for the landing clearance and advised we had experienced wake turbulence. He advised the proceeding aircraft was an A321 and cleared us to land. During this exchange with the Tower the master caution illuminated and we received caution messages; AOA LIMIT FAIL, WINDSHEAR FAIL and SHAKER ANTICIPATED on the EICAS. Other than the caution messages the aircraft indications were normal and the aircraft was handling normally and we elected to continue with the approach and landing. With only about 300 feet before the stable approach altitude I completed the landing check. At the 1000 feet AFE we were stable and I called "1000 feet instruments normal" and got a "checks" response from the FO and a normal landing proceeded. On roll out the three caution messages disappeared and ADS PROBE 1,2, & 4 FAIL crew advisory messages appeared on the EICAS. We contacted the Maintenance radio frequency on taxi in and advised them of the messages. Upon parking we called Dispatch and Maintenance Control and advised them of the messages and filled out the logbook. We then looked at the QRH for the 3 caution messages and while the AOA LIMIT FAIL and WINDSHEAR FAIL were just to heighten the crew's awareness to the environment and aircraft condition, The SHAKER ANTICIPATED message required a crew action including changing the landing configuration, which we did not perform. It was at that moment that we realized we should have performed a go around and worked the messages prior to landing. Both the FO and I were very surprised by the wake turbulence since we were at least 5nm behind the A321, in fact the aircraft had already touched down when we hit the wake. There was a slight tailwind which could have contributed to the wake staying in the glide path. We briefly discussed the messages in flight and decided since the plane was stable and we were fully configured it was best to land and look into the messages on the ground. I had a similar situation happen a few years prior but at an

altitude of about 4000 feet on a long straight in approach to SEA. In that instance we did do a go around and went through the messages in the QRH however I don't remember the SHAKER ANTICIPATED message and checklist. It's possible that message didn't appear in that instance. But I had in the back of my mind that previously when I had this happen they were just awareness type cautions and that basically be extra vigilant as you configure and land. This previous experience bias and our lower altitude gave me the sense that it was best to just land the aircraft. Task saturation at the time the wake and messages occurred also contributed to not fully thinking trough the possible issues. However, on look back and reading the SHAKER ANTICIPATED checklist and thinking about it more critically we should have gone around, performed the checklist and been flaps full as prescribed by the checklist for landing.

Synopsis

EMB-175 Captain reported system anomalies were annunciated after encountering wake turbulence 5 nm in trail of an A321 on approach to LAX.

ACN: 1590385 *(24 of 50)*

Time / Day

Date : 201811

Place

Altitude.MSL.Single Value : 27000

Environment

Weather Elements / Visibility : Turbulence

Aircraft

Reference : X
ATC / Advisory.Center : ZZZ
Aircraft Operator : Air Carrier
Make Model Name : EMB ERJ 145 ER/LR
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Passenger
Nav In Use : FMS Or FMC
Flight Phase : Climb
Route In Use : Direct
Airspace.Class A : ZZZ

Component

Aircraft Component : Autopilot
Aircraft Reference : X
Problem : Failed

Person

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Pilot Flying
Function.Flight Crew : Captain
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Instrument
ASRS Report Number.Accession Number : 1590385
Human Factors : Situational Awareness
Human Factors : Physiological - Other

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.Flight Deck / Cabin / Aircraft Event : Illness
Anomaly.Inflight Event / Encounter : Weather / Turbulence
Anomaly.Inflight Event / Encounter : Loss Of Aircraft Control
Detector.Person : Flight Crew

When Detected : In-flight
Result.Flight Crew : Regained Aircraft Control
Result.Flight Crew : Became Reoriented
Result.Air Traffic Control : Issued New Clearance

Assessments

Contributing Factors / Situations : Weather
Primary Problem : Weather

Narrative: 1

We were climbing towards our cruising altitude with roughly one hour left to go in the flight. Between 27,000 and 28,000 feet we began encountering what I would classify as moderate turbulence which was soon followed by a brief pocket of stronger turbulence causing the aircraft to enter a sharp and abrupt roll to the left. At this point in the flight the auto pilot was engaged. Due to the large change in bank angle, I reached for the autopilot disengage button to regain control of the aircraft as soon as possible. As I reached up for the control wheel and pressed the disengage switch we received an AUTOPILOT FAIL warning message. I was quickly able to regain control of the aircraft and after a few moments of more moderate turbulence, the flight conditions improved. It was at this point that I asked the First Officer to run the appropriate checklist for the warning message. We informed ATC that we had encountered a pocket of moderate to severe turbulence, had lost our autopilot, and needed to remain in non-RVSM airspace. We were cleared up to 28,000 feet. I called the flight attendant to ensure that she was unharmed and that the passengers were alright as well. She explained that she was doing her service near the exit row and hit her head on the side of one of the overhead bins. She assured me that she was ok, did not hit her head hard, and was not feeling any discomfort. She told me that she was willing and able to continue the flight. I explained that if she, at any point during the flight, began to feel any discomfort or felt that she was unable to perform her duties to let me know. She also explained to me that all the passengers were seated with their seat belts fastened, as we had not turned off the fasten belt sign. No one was injured or uncomfortable, and that she had only received a few comments of concern primarily for her to make sure she was ok after seeing her hit her head. She again assured me that she was ok to continue. We messaged Dispatch informing them of the turbulence, the autopilot failure, and let them know we would be cruising at 28,000 feet, which we had the appropriate data for. Besides the autopilot failure, myself and the first officer noticed nothing else wrong with the aircraft or the flight controls and decided that we could safely continue to [destination] without the autopilot. We landed and concluded the flight with no other issues. I made sure once again that the flight attendant was ok, and that no passengers had complained about any discomfort during any point in the flight. I feel I should mention that I decided to classify the moment of turbulence as severe because, although brief, it seemed worse than any moderate turbulence I had encountered in the past. Although I'm not sure of the exact bank angle at the time of the incident, it caused a sharp uncommanded roll to the left which was dramatic and severe enough that I would classify it as a momentary loss of control, which also seemingly failed our autopilot. Myself and the First Officer were in agreement that we should classify it as moderate to severe.

Synopsis

E145 Captain reported encountering severe turbulence which caused the auto pilot to fail.

ACN: 1590117 *(25 of 50)*

Time / Day

Date : 201810
Local Time Of Day : 0601-1200

Place

Locale Reference.Airport : CLT.Airport
State Reference : NC
Altitude.MSL.Single Value : 17500

Environment

Flight Conditions : VMC
Weather Elements / Visibility : Turbulence
Light : Daylight

Aircraft : 1

Reference : X
ATC / Advisory.Center : ZTL
Aircraft Operator : Air Carrier
Make Model Name : Regional Jet 900 (CRJ900)
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Passenger
Flight Phase : Climb

Aircraft : 2

Reference : Y
ATC / Advisory.Center : ZTL
Aircraft Operator : Air Carrier
Make Model Name : Widebody Transport
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Flight Phase : Climb
Airspace.Class A : ZTL

Person : 1

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Captain
Function.Flight Crew : Pilot Flying
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Instrument
ASRS Report Number.Accession Number : 1590117
Human Factors : Communication Breakdown
Communication Breakdown.Party1 : Flight Crew

Communication Breakdown.Party2 : ATC
Analyst Callback : Attempted

Person : 2

Reference : 2
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : First Officer
Function.Flight Crew : Pilot Not Flying
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Multiengine
ASRS Report Number.Accession Number : 1590682
Human Factors : Communication Breakdown
Communication Breakdown.Party1 : Flight Crew
Communication Breakdown.Party2 : ATC

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.ATC Issue : All Types
Anomaly.Deviation - Track / Heading : All Types
Anomaly.Deviation - Procedural : Clearance
Anomaly.Inflight Event / Encounter : Wake Vortex Encounter
Anomaly.Inflight Event / Encounter : Loss Of Aircraft Control
Detector.Person : Flight Crew
Detector.Person : Air Traffic Control
When Detected : In-flight
Result.Flight Crew : Took Evasive Action
Result.Flight Crew : Returned To Clearance
Result.Flight Crew : Regained Aircraft Control
Result.Air Traffic Control : Issued Advisory / Alert

Assessments

Contributing Factors / Situations : Environment - Non Weather Related
Contributing Factors / Situations : Procedure
Primary Problem : Procedure

Narrative: 1

We were [departing] CLT. A Heavy aircraft took off immediately before us on 36C in CLT [along the same route]. Tower gave us a "caution wake turbulence" when they gave us the lineup and wait. After the Heavy departed, Tower crossed a couple of aircraft downfield before giving us takeoff clearance (my estimate was about 2 minutes after issuing the takeoff clearance for the Heavy). We briefed CONT IGN on for possible wake and noted where the Heavy lifted off. We were able to rotate before his rotation point and turned slightly upwind of him. Initial climbout was uneventful and we selected continuous ignition OFF at approximately 12,000 feet as we felt the wake turbulence threat was over. We were keeping an eye on the Heavy that we were following on the TCAS. As we passed through FL175, the Heavy was approximately 10 NM in front of us and 3800 feet above us (with a slightly quartering headwind of 40 knots). We suddenly encountered severe wake turbulence. I immediately turned on continuous ignition. The autopilot disconnected itself and the airplane went through a series of rather violent pitch and roll oscillations. I

assumed manual control and had difficulties controlling the flight path of the aircraft. My initial reaction was to change altitude to get out of the wake, but without knowing the climb rate of the other aircraft, I was unable to determine if we could out climb it. I made the decision that the quickest and safest way to exit the wake was to make a slight turn to the left (upwind) to get out of the flight path of the heavy. As I did this, I told the First Officer (FO) to let Center know we were deviating left for severe wake turbulence. After a few seconds on the new heading, we exited the wake turbulence. The Controller did not hear us/understand us the first call, so we had to make additional calls to her to tell her what was going on. She did not sound happy with us and snapped at us for deviating without "asking first." We simply did not have time to ask nor did we have time to explain the situation. I exercised my PIC authority to deviation for what in my mind was an emergency situation (aircraft out of control). By the time we were able to converse with ATC, the situation was over, so we did not officially declare an emergency. I also had the TCAS on ABV/BLW modes and saw no potential traffic conflicts. We stayed on the offset heading for a few more miles until we were comfortable with the spacing and then continued on our flight. After the situation stabilized, I had my FO call the FA's to make sure everyone was ok. They reported there were no injuries but that the flight deck door had come unlocked and opened during the event (it was locked prior to the wake encounter). We re-secured the flight deck door and I made a PA to the passengers explaining the encounter in an attempt to calm their nerves. We continued without further incident. Inadequate spacing between us and a Heavy aircraft on the same route. Increase spacing requirements between medium/heavy aircraft, even in the enroute environment. ZTL Controllers did not caution us about the wake from the heavy, nor did they try to give us any additional spacing even after the severe wake encounter.

Narrative: 2

[Report narrative contained no additional information.]

Synopsis

CRJ-900 flight crew reported encountering severe wake turbulence 10 nm in trail of a wide body transport aircraft climbing through FL175 departing CLT. Reporter recommended increased separation.

ACN: 1586140 *(26 of 50)*

Time / Day

Date : 201810
Local Time Of Day : 0601-1200

Place

Locale Reference.Airport : SFO.Airport
State Reference : CA
Altitude.AGL.Single Value : 0

Aircraft

Reference : X
ATC / Advisory.Tower : SFO
Aircraft Operator : Air Carrier
Make Model Name : A321
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Passenger
Flight Phase : Takeoff
Airspace.Class B : SFO

Component

Aircraft Component : Autoflight System
Aircraft Reference : X
Problem : Malfunctioning

Person

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Air Traffic Control : Local
Function.Flight Crew : Captain
Function.Flight Crew : Pilot Flying
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Instrument
ASRS Report Number.Accession Number : 1586140
Human Factors : Troubleshooting
Human Factors : Situational Awareness

Events

Anomaly.Aircraft Equipment Problem : Critical
Anomaly.Deviation - Procedural : Published Material / Policy
Anomaly.Deviation - Procedural : Weight And Balance
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Regained Aircraft Control
Result.Flight Crew : Took Evasive Action

Assessments

Contributing Factors / Situations : Aircraft
Primary Problem : Aircraft

Narrative: 1

Aircraft TOW (Take-Off Weight) approximately 140K lbs, CG 17.7, T.O. trim setting 2.7NU. During takeoff roll, approximately ten knots prior to rotate speed, nose gear began lifting off of runway. Nose down force applied to side stick controller failed to control pitch. At five knots prior to rotate speed nose gear became fully airborne and the aircraft continued an uncommanded rotation until fully airborne. For several seconds the side stick controller was unable to overcome the continued increase in pitch. As the automated pitch trim system continued to trim, normal flight characteristics were restored after approximately 20-30 seconds. Aircraft accelerated near the flap speed limit until control of the aircraft was restored.

Both dispatch and maintenance were fully debriefed about this incident. I am waiting for the results of their investigations. Improper aircraft loading and/or errors in the [performance calculations] are suspected.

Feedback from dispatch and maintenance are required to determine the cause of the incident prior to making any recommendations.

Synopsis

A321 Captain reported uncommanded rotation prior to V1 that could not be overcome by the side stick.

ACN: 1585754 *(27 of 50)*

Time / Day

Date : 201810
Local Time Of Day : 0001-0600

Place

Locale Reference.ATC Facility : ZZZZ.ARTCC
State Reference : FO

Environment

Flight Conditions : VMC

Aircraft

Reference : X
ATC / Advisory.Center : ZZZZ
Aircraft Operator : Air Carrier
Make Model Name : B787-800
Crew Size.Number Of Crew : 3
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Passenger
Nav In Use : FMS Or FMC
Nav In Use : GPS
Flight Phase : Descent

Component

Aircraft Component : Hydraulic System
Aircraft Reference : X
Problem : Malfunctioning
Problem : Failed

Person : 1

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Captain
Function.Flight Crew : Pilot Flying
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Instrument
ASRS Report Number.Accession Number : 1585754
Human Factors : Troubleshooting
Human Factors : Workload
Human Factors : Time Pressure

Person : 2

Reference : 2
Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Relief Pilot
Function.Flight Crew : Pilot Not Flying
Function.Flight Crew : First Officer
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Instrument
ASRS Report Number.Accession Number : 1585761
Human Factors : Troubleshooting
Human Factors : Time Pressure
Human Factors : Workload

Person : 3

Reference : 3
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : First Officer
Function.Flight Crew : Pilot Not Flying
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Multiengine
ASRS Report Number.Accession Number : 1585766
Human Factors : Time Pressure
Human Factors : Workload
Human Factors : Troubleshooting

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.Flight Deck / Cabin / Aircraft Event : Illness
Anomaly.Deviation - Procedural : Published Material / Policy
Detector.Automation : Aircraft Other Automation
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Diverted
Result.Flight Crew : Executed Go Around / Missed Approach
Result.Flight Crew : FLC complied w / Automation / Advisory
Result.Flight Crew : Landed in Emergency Condition
Result.Flight Crew : Requested ATC Assistance / Clarification
Result.Air Traffic Control : Provided Assistance

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : Human Factors
Contributing Factors / Situations : Manuals
Primary Problem : Aircraft

Narrative: 1

Enroute we first had a medical emergency. Contacted [Operations] through dispatch. I linked the [Operations Control] with the available doctor on board so they could discuss. It was determined to stop in ZZZZ to provide medical help to our passenger. We [notified

ATC] and requested to head to ZZZZ. Upon configuring into ZZZZ, we had no flap/slats so we decided to continue on to ZZZZ1 because of a longer runway and we were still in communications with Boeing. Obviously, we [notified ATC of our medical situation]. Upon determining best course of action without procedure, we dumped fuel, headed to ZZZZ1 and manually extended gear as normal extension was inoperative as well and landed uneventfully. Towed to gate. Mechanical failure, no defined procedure. Only indication was a status message which indicated HYD VLV ISOL NOSE GEAR. Maybe this valve should be rated higher than just a status message. No other indications until trying to extend slats, flaps and gear.

Narrative: 2

Flight diverted to ZZZZ for passenger medical. Aircraft experienced mechanical malfunction on approach to land, Slats Drive failure. During checklist execution aircraft experienced additional mechanical malfunction, Flaps Primary Fail. SATCOM with [Ops], [Maintenance Control], fleet pilot and Boeing representative, confirmed No Slat, No Flap landing not covered in QRH procedures or inflight performance. Coordinated with ATC to proceed to ZZZZ1 for longer runway, clear weather and burn fuel to lessen gross weight adjustment. Adjusted gross weight to below max landing weight and assist with landing distance. EICAS only status message HYD VLV ISLN Nose Gear impacted aircraft when nose gear would not extend, Alternate Gear Extension checklist resulted in gear down and lock but loss of nose wheel steering. Captain emergency authority exercised, approach to full stop executed. Aircraft towed to parking from the runway where EMT personnel tended to ill passenger.

Narrative: 3

Enroute diverted to ZZZZ for a medical issue, dispatch and the onboard responding physician. Decided on and briefed a heavy weight landing. (425,000 lbs approximately). Coordinated with Center, dispatch and operations for arrival and paramedics. Began approach. Captain called for flaps 1. Flaps one was selected immediately followed by master caution and 'slats drive' message. Priority handling and a vector [was] requested. Ran the slats drive checklist and set up for a second approach. Flaps 1 with no slat deployment and then flaps 5 was called for followed by master caution and 'flaps primary fail' message. This approach was discontinued with a further request for priority handing. Vectors were requested and given. Flaps primary fail checklist calls for alternate flaps due to the possibility of asymmetry and Uncommanded motion. We were at this time in a no flaps/no slats condition. There is no checklist for this issue. Dispatch was contacted for a phone patch to Maintenance Control. Maintenance Control connected us to Boeing. After concurrence it was decided to dump down to max landing weight. I recommended diverting to ZZZZ1 and make use of their longer runway. Clearance was requested and given by ATC. ATC climbed us to 9,000 feet and authorized fuel dumping. Approach was briefed with possible threats. At this time I noticed a status cue, HYD VLV ISLN NOSE GEAR. Boeing advised the probability of no nose steering. Approach was advised that we would be stopping straight ahead. The purser was called to the cockpit and TESTed due to the possibility of a high speed runway departure. The approach was begun. The jumpseat pilot recommended an early configuration. Gear down was called. After the handle was lowered main gear took a while to drop. Nose gear did not extend with 'gear disagree' message. Approach was broken off and the gear disagree checklist was run. Nose did deploy with alternate method. Spoilers are not to be armed and deployed manually. I felt that the Captain Pilot Flying (PF) would be fully occupied with a high speed no flaps no slat flat approach and landing and with only differential braking and I briefed with his concurrence in position to the operations manual that I would deploy the spoilers on landing. An uneventful landing was accomplished and a roll out and full stop on the

runway. Aircraft was towed to the gate and ill passenger removed by the paramedics. The use of Captain's authority was of paramount importance in this multiple [scenario] situation made more difficult by the lack of checklist guided.

Major kudos to everyone involved in the safe and positive outcome of this event. Dispatch and ATC were tremendous help with timely info and great vectors. The purser and her crew did a fantastic job in keeping the situation in the cabin calm. Also to this point the Captain made excellent PAs to the passenger. Airport personnel and staff bent over backwards to ensure the passengers crew and plane were all taken care and in a very timely manner.

Synopsis

B787 flight crew reported a hydraulic system malfunction that led to a zero flap approach and alternate gear extension landing.

ACN: 1585089 *(28 of 50)*

Time / Day

Date : 201810

Place

Locale Reference.ATC Facility : ZZZ.ARTCC
State Reference : US
Altitude.MSL.Single Value : 35000

Environment

Flight Conditions : VMC

Aircraft

Reference : X
ATC / Advisory.Center : ZZZ
Aircraft Operator : Air Carrier
Make Model Name : B737 Next Generation Undifferentiated
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Ferry
Flight Phase : Descent
Airspace.Class A : ZZZ

Component

Aircraft Component : Spoiler System
Aircraft Reference : X
Problem : Malfunctioning

Person : 1

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Captain
Function.Flight Crew : Pilot Flying
Qualification.Flight Crew : Air Transport Pilot (ATP)
Experience.Flight Crew.Total : 18475
Experience.Flight Crew.Last 90 Days : 240
Experience.Flight Crew.Type : 10635
ASRS Report Number.Accession Number : 1585089

Person : 2

Reference : 2
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : First Officer
Function.Flight Crew : Pilot Not Flying

Qualification.Flight Crew : Air Transport Pilot (ATP)
Experience.Flight Crew.Last 90 Days : 65
Experience.Flight Crew.Type : 2241
ASRS Report Number.Accession Number : 1585102

Events

Anomaly.Aircraft Equipment Problem : Critical
Anomaly.Inflight Event / Encounter : Loss Of Aircraft Control
Detector.Person : Flight Crew
Were Passengers Involved In Event : N
When Detected : In-flight
Result.Flight Crew : Landed in Emergency Condition
Result.Flight Crew : Regained Aircraft Control
Result.Flight Crew : Requested ATC Assistance / Clarification
Result.Flight Crew : Overcame Equipment Problem

Assessments

Contributing Factors / Situations : Aircraft
Primary Problem : Aircraft

Narrative: 1

During descent into ZZZ, extended speed brakes and experienced a strong uncommanded roll to the right. Retracted the speed brakes and aircraft rolled even stronger to the left, nosed down, and overspeed clacker sounded momentarily. [We notified ATC] since this was a flight control issue and uncertainty existed as to how the aircraft would respond after landing with auto spoiler activation. Aircraft continued descent and approach without further use of speed brakes and no further controllability issues occurred. Visual approach and landing were performed without incident. Spoilers were used for landing and controllability was not an issue during landing rollout. This is the fourth write-up of this issue in a few days. This is the second such write-up from this crew. The same event occurred to us on descent...yesterday. This was a reposition flight...following a spoiler panel removal and replacement.

Narrative: 2

[On the previous flight] we...had an uncommanded 10-degree roll to the right when speed brakes applied during descent. Upon stowing speed brakes, the aircraft rolled left further than 10 degrees with the autopilot. Aircraft was written up twice prior and supposedly fixed. We wrote up this issue. The Number 3 spoiler was removed and replaced... We took off uneventfully and had no issues until descent. This time the roll seemed more exacerbated than before and when stowing the spoilers, the aircraft rolled rapidly left.

Synopsis

B737NG flight crew reported uncommanded roll with autopilot engaged during descent when spoilers/speedbrakes were extended and retracted.

ACN: 1584964 *(29 of 50)*

Time / Day

Date : 201810

Place

Relative Position.Angle.Radial : 000
Relative Position.Distance.Nautical Miles : 0
Altitude.AGL.Single Value : 0

Environment

Flight Conditions : VMC
Light : Night

Aircraft

Reference : X
Aircraft Operator : Air Carrier
Make Model Name : B757-200
Operating Under FAR Part : Part 121
Mission : Cargo / Freight
Flight Phase : Taxi
Route In Use : None

Component

Aircraft Component : Aileron
Aircraft Reference : X
Problem : Malfunctioning

Person

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Pilot Not Flying
Function.Flight Crew : Captain
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Multiengine
Experience.Flight Crew.Total : 17500
ASRS Report Number.Accession Number : 1584964

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Detector.Person : Flight Crew
Were Passengers Involved In Event : N
When Detected : Aircraft In Service At Gate
Result.Flight Crew : Returned To Gate

Assessments

Contributing Factors / Situations : Aircraft
Primary Problem : Aircraft

Narrative: 1

During our Flight Control check, the ailerons rolled 6 units to the right when the Yoke was released. Numerous attempts were made to do a successful Flight Control check, but each time the ailerons would consistently roll to the right when released. In discussing the issue with the mechanic on the headset, it was thought that perhaps the strong 30 knot quartering tailwind might be causing the problem. Therefore it was decided to [reposition] and attempt another Flight Control check once the aircraft was positioned differently in regards to the strong surface winds. With the aircraft facing different directions on both the ramp and the taxiway, multiple Flight Control Checks were attempted. Each time the ailerons would roll uncommanded to the right when the control yoke was released. In addition, the controls then became difficult to manually move back to the left. In discussing the matter with both our Dispatcher and Maintenance Control, it was decided to return to the gate.

Synopsis

B757 Captain reported the ailerons consistently rolled right after releasing the yoke during the off-gate flight control checks.

ACN: 1583652 *(30 of 50)*

Time / Day

Date : 201810
Local Time Of Day : 1201-1800

Place

Locale Reference.Airport : TEB.Airport
State Reference : NJ
Altitude.MSL.Single Value : 2000

Environment

Flight Conditions : IMC
Light : Daylight

Aircraft

Reference : X
ATC / Advisory.TRACON : N90
Make Model Name : Small Transport, Low Wing, 2 Turbojet Eng
Operating Under FAR Part : Part 91
Mission : Passenger
Flight Phase : Initial Approach

Component

Aircraft Component : Autopilot
Aircraft Reference : X
Problem : Malfunctioning

Person : 1

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Function.Flight Crew : Pilot Not Flying
Function.Flight Crew : Captain
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Multiengine
ASRS Report Number.Accession Number : 1583652
Human Factors : Troubleshooting

Person : 2

Reference : 2
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Function.Flight Crew : Captain
Function.Flight Crew : Pilot Flying
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Multiengine

ASRS Report Number.Accession Number : 1583653
Human Factors : Troubleshooting

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.Deviation - Altitude : Excursion From Assigned Altitude
Anomaly.Deviation - Procedural : Clearance
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : FLC Overrode Automation
Result.Flight Crew : Returned To Clearance

Assessments

Contributing Factors / Situations : Aircraft
Primary Problem : Aircraft

Narrative: 1

While intercepting ILS 19 Approach into TEB the aircraft did not capture the localizer and approach mode was re-engaged. At that time the aircraft climbed uncommanded while autopilot was engaged and in altitude hold. We both recognized the "uncommanded pitch up" and corrected our altitude. ATC (NY TRACON) then queried our altitude and we replied with our current corrected altitude of 2,000 feet. I also noticed a yellow FD1 on my copilot PFD.

Narrative: 2

At 2,000 feet assigned, being vectored to ILS 19, cleared for approach. Avionics showed us ALT Hold, 2,000 feet, approach armed, TERM mode, with no error messages. Upon intercepting LOC course it was obvious that a switchover to "green needles" was not occurring. I announce that I was switching manually and did so. Switchover to LOC (green needles) occurred and autopilot captured normally. At this time, on localizer, the aircraft pitched upward and began a climb. I've seen weird behavior from TEB ILS approaches before so I decided to give it to 2,100 feet to allow it to correct. It did not, in fact, the FD bars moved further upward and pitch seemed to be following. Pilot Monitoring (PM) called the deviation at this same time as I disconnected autopilot to correct- maximum deviation observed was 2,300 (300 feet above assigned 2,000). Length of deviation was only a few seconds and there was no traffic in the vicinity above us. When level at 2,000 again, ATC called and verified our altitude, said "looked like you guys were at 2,400... be careful" We advised that we were in fact level at 2,000. PM at this time advised that he had a yellow "FD-1 flag." At this point, hand flying, level at 2,000, just inside UNVIL, on speed and on glide slope. Approach was stable so we continued approach. Autopilot was reengaged as there was not flags or abnormalities on the left side and we were stable on the approach. Approach and landing were normal, and the event was not noticed by passengers (no negative gee on the altitude return). We were never told to contact anyone nor were we advised of any possible deviation. Upon landing we wrote up the malfunction ("uncommanded pitch up on ILS approach") as per policy and notified Fleet. Again, we've seen weird stuff similar to this (mostly with the localizer) at TEB. Furthermore, there have been times when this exact scenario has occurred before (not switching to green needles and we manually switch). We have never seen this be accompanied by any type of uncommanded pitch. Also, we verified that the "go around" button was not accidentally pushed (it would have sequenced FMS and disconnected autopilot if it had).

Synopsis

Small Transport flight crew reported an autopilot malfunction as they were capturing the localizer causing them to leave their assigned altitude.

ACN: 1583331 *(31 of 50)*

Time / Day

Date : 201810
Local Time Of Day : 1801-2400

Place

Locale Reference.ATC Facility : ZSE.ARTCC
State Reference : WA
Altitude.MSL.Single Value : 26500

Environment

Weather Elements / Visibility : Turbulence

Aircraft

Reference : X
ATC / Advisory.Center : ZSE
Aircraft Operator : Air Carrier
Make Model Name : EMB ERJ 170/175 ER/LR
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Passenger
Flight Phase : Descent
Route In Use.STAR : GLASR1
Airspace.Class A : ZSE

Person

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Captain
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Multiengine
ASRS Report Number.Accession Number : 1583331

Events

Anomaly.Inflight Event / Encounter : Weather / Turbulence
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Regained Aircraft Control

Assessments

Contributing Factors / Situations : Weather
Primary Problem : Weather

Narrative: 1

Encountered severe turbulence while in descent on the GLASR1 arrival. Approximately 25 miles NNE of GLASR. Encounter was from 26,500 to 20,000 feet. Aircraft in lead reported moderate turbulence at 26,500 and we encountered almost immediately. Aircraft had drastic changes in altitude and roll and heading deviations upwards of 30 degrees. No overspeeds occurred. Autopilot never disengaged even though drastic movements of the control column were observed. We had already slowed to 270 KIAS before anything more than continuous light turbulence was encountered. We further slowed to 250 at the onset of the continuous aggressive moderate. No injuries indicated from the FAs (Flight Attendants). One FA and a passenger that had exited the lavatory could not stand and therefore chose to sit on the floor and ride out the experience.

Reported to Maintenance, Dispatch and recorded in the maintenance log. On walkaround no apparent issues seen in regards to the aircraft condition. Appeared to be as it should. We had knowledge of the potential for turbulence in the area and were prepared for the possibility. The encounter with severe conditions was sudden and unexpected. Any suggestions or recommendations from leadership is always welcome.

Synopsis

ERJ-175 Captain reported severe turbulence event.

ACN: 1582182 *(32 of 50)*

Time / Day

Date : 201810
Local Time Of Day : 0601-1200

Place

Altitude.MSL.Single Value : 39000

Environment

Flight Conditions : VMC

Aircraft

Reference : X
Aircraft Operator : Air Carrier
Make Model Name : B737 Undifferentiated or Other Model
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Flight Phase : Cruise
Airspace.Class A : Y

Component

Aircraft Component : Autopilot
Aircraft Reference : X
Problem : Malfunctioning

Person

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Pilot Flying
Function.Flight Crew : Captain
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Instrument
ASRS Report Number.Accession Number : 1582182
Human Factors : Workload
Human Factors : Troubleshooting

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Diverted
Result.Flight Crew : FLC Overrode Automation
Result.Flight Crew : Overcame Equipment Problem
Result.Flight Crew : Returned To Departure Airport
Result.Flight Crew : Landed As Precaution

Assessments

Contributing Factors / Situations : Aircraft
Primary Problem : Aircraft

Narrative: 1

FL390 in clear smooth air enroute, [the Captain Pilot Flying (PF)], autopilot had been on since 7,000 with no issues. Rudder trim as seen by yoke deflection seemed not normal. With yoke arrow pointing at centered, plane made a series of sudden "kicks" to the left (gyro needle deflected right). Autopilot disconnect by PF and yoke showed steep deflection to the right. Trimmed out by rudder knob but when autopilot reengaged, same series of kicks occurred. Pilots decided to ZZZ before situation became worse and more severe. Autopilot seemed too dangerous, so hand flown entire trip back to [departure airport]. Dispatch notified, FAs coordinated well, PA announcements timely, and radio comms to [departure airport] worked fine. ZZZ decided more suitable than [a secondary diversion airport]. Descent, approach, and landing uneventful and smooth, with no recurrence of kicks/fluxuations. Trim held well.. Did notice drop of Hyd A fluid from 97 to 68 compared to departure amount, but recovered to 90 by block-in; had QRH out to "Loss of Hyd System A" page, just in case.

Synopsis

737 Captain reported the flight returned to base due to a malfunctioning autopilot.

ACN: 1581122 *(33 of 50)*

Time / Day

Date : 201809
Local Time Of Day : 1801-2400

Place

Locale Reference.ATC Facility : ZZZ.ARTCC
State Reference : US
Altitude.MSL.Single Value : 39000

Environment

Flight Conditions : Mixed
Weather Elements / Visibility.Visibility : 10
Light : Dusk
Ceiling.Single Value : 4000

Aircraft

Reference : X
ATC / Advisory.Center : ZZZ
Aircraft Operator : Air Carrier
Make Model Name : B737-700
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Passenger
Flight Phase : Cruise
Airspace.Class A : ZZZ

Component

Aircraft Component : Flight Dynamics
Aircraft Reference : X
Problem : Malfunctioning

Person

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Captain
Function.Flight Crew : Pilot Not Flying
Qualification.Flight Crew : Air Transport Pilot (ATP)
Experience.Flight Crew.Last 90 Days : 315
Experience.Flight Crew.Type : 15000
ASRS Report Number.Accession Number : 1581122
Human Factors : Troubleshooting
Human Factors : Workload

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Detector.Automation : Aircraft Other Automation
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : FLC complied w / Automation / Advisory
Result.Flight Crew : Overcame Equipment Problem
Result.Flight Crew : Requested ATC Assistance / Clarification
Result.Air Traffic Control : Provided Assistance

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : Manuals
Primary Problem : Aircraft

Narrative: 1

Cruising at FL390 on First Officer's (FO) leg, at approximately half-way [into the flight], the First Officer's primary flight display (PFD) did not display airspeed, altitude, vertical speed indicator, VNAV pitch bar, or Baro bug information. The B autopilot also self-disconnected. The FO's PFD did have the attitude indicator, LNAV course bar, and Horizontal Situation Indicator displayed normally. SPEED and ALT warning flags occupied the blank space where the airspeed and altitude information were normally displayed. No other warning flags, FMC alerts, or annunciators, including any IRS annunciators, were present. One small clue of the cause of the issue was an unusual code on the IRS control panel indicating a "07" when status was selected on the right IRS. All information was displayed normally on the Captain's instruments and control was transferred to the good side as trouble shooting took place. Reviewing the QRH gave neither indication of the cause of the problem nor any definitive procedure to correct the issue. With lack of any guidance on the situation, we decided to take inventory of the remaining flight instruments and troubleshoot what we reasonably could. We did not attempt to select Attitude on the IRS control panel as we had good attitude indicator on the FO's PFD. We did attempt to select the IRS both on 1, but that was unsuccessful in regaining lost information displays but did cause a loss of the A autopilot; therefore, that switch was re-selected to the neutral position. No other switch reposition was determined to be of aid. After exhausting reasonable ideas to regain the information, we concluded attempts at correcting the deficiency, declared "Unable RVSM" to ATC, and were given clearance to descend to FL270. We informed Dispatch of the loss of pitot static flight indicators on the FO's PFD and queried about potential issues with weather and visibility at [destination] which had been experiencing rain and thunderstorms prior to our departure. We concluded that we would not want to have to do an instrument approach and would divert to a VMC alternate if an instrument approach would be necessary. The weather in [destination] was currently VMC with good visibility and ceilings above 4000 FT, and radar indicated it would remain VMC through our ETA. We elected to continue to the original destination with the caveat of a divert if the weather deteriorated. An otherwise uneventful visual approach and landing ensued. During taxi to the gate the lost pilot static instruments were suddenly redisplayed. Logbook write up was made and Maintenance was called. After over an hour of maintenance work on the aircraft and no cause or solution found, the decision was made to find another aircraft for the next leg.

Synopsis

B737-700 Captain reported pitot static indications on the First Officer's PFD blanked and were replaced with warning flags.

ACN: 1580051 *(34 of 50)*

Time / Day

Date : 201809
Local Time Of Day : 0001-0600

Place

Locale Reference.ATC Facility : ZKC.ARTCC
State Reference : KS
Altitude.MSL.Single Value : 40200

Environment

Flight Conditions : VMC
Light : Daylight

Aircraft

Reference : X
ATC / Advisory.Center : ZKC
Aircraft Operator : Fractional
Make Model Name : Cessna Citation Sovereign (C680)
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 135
Flight Plan : IFR
Flight Phase : Cruise
Route In Use : Direct
Airspace.Class A : ZKC

Person

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Fractional
Function.Flight Crew : Pilot Not Flying
Function.Flight Crew : First Officer
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Instrument
ASRS Report Number.Accession Number : 1580051
Human Factors : Situational Awareness
Human Factors : Human-Machine Interface

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.Deviation - Altitude : Excursion From Assigned Altitude
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Diverted
Result.Flight Crew : Landed in Emergency Condition
Result.Flight Crew : Regained Aircraft Control
Result.Air Traffic Control : Issued New Clearance

Assessments

Contributing Factors / Situations : Aircraft
Primary Problem : Aircraft

Narrative: 1

At cruise at 40,000 feet, 3 hours into our flight between navigation points while scanning the instruments I noticed a flashing "PITCH" mode annunciation on the PFD (Primary Flight Display). The aircraft then started an uncommanded climb. During this brief time I also saw the standby attitude indicator show red X's on attitude, altitude and airspeed. I told the Pilot in Command "we are climbing in pitch mode, select vertical speed and recover!" During the altitude recovery the standby altitude showed as high as 47,000 feet then flashed a series of numbers. We never exceeded an actual altitude of more 40,200 feet. Once restabilized at 40,000 feet, the standby attitude, airspeed and altimeter also stabilized but the standby altitude was off as much as 260 feet high.

The autopilot changed modes uncommanded from ALT to PITCH and the aircraft started an uncommanded climb. We recovered, called the company and Maintenance. We were then told to divert. We also notified ATC of an avionics issue and that we were diverting for maintenance.

Synopsis

CE680 First Officer reported their aircraft made an uncommanded climb due to the autopilot malfunctioning.

ACN: 1577255 *(35 of 50)*

Time / Day

Date : 201809
Local Time Of Day : 1801-2400

Place

Locale Reference.Airport : PHX.Airport
State Reference : AZ
Altitude.MSL.Single Value : 3000

Aircraft : 1

Reference : X
ATC / Advisory.TRACON : P50
Aircraft Operator : Air Carrier
Make Model Name : B737-800
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Passenger
Flight Phase : Initial Approach
Route In Use : Visual Approach
Airspace.Class B : PHX

Aircraft : 2

Reference : Y
ATC / Advisory.TRACON : P50
Aircraft Operator : Air Carrier
Make Model Name : A321
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Passenger
Flight Phase : Initial Approach
Airspace.Class B : PHX

Person : 1

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Pilot Not Flying
Function.Flight Crew : First Officer
Qualification.Flight Crew : Air Transport Pilot (ATP)
ASRS Report Number.Accession Number : 1577255
Analyst Callback : Attempted

Person : 2

Reference : 2
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck

Reporter Organization : Air Carrier
Function.Flight Crew : Captain
Function.Flight Crew : Pilot Flying
Qualification.Flight Crew : Air Transport Pilot (ATP)
ASRS Report Number.Accession Number : 1577245

Events

Anomaly.Inflight Event / Encounter : Wake Vortex Encounter
Detector.Person : Flight Crew
When Detected : In-flight
Result.General : Physical Injury / Incapacitation

Assessments

Contributing Factors / Situations : Environment - Non Weather Related
Contributing Factors / Situations : Procedure
Primary Problem : Procedure

Narrative: 1

On approach to Runway 26, outside the final approach fix, with autopilot engaged at around 3000ft. The aircraft exhibited an uncommanded roll to the right followed by an immediate roll left which we attributed to wake turbulence from the preceding A321. Both rolls were excessive but I am uncertain of the bank angle that was reached. After the roll left the Captain as Pilot Flying disengaged the autopilot and continued the approach and landed without further incident. It was soon after landing that we were informed that the #2 Flight Attendant was out of her seat in the rear galley and was injured during the event. Wake turbulence is difficult to predict especially without sufficient warning. We discussed the fact that a quicker disconnect of the autopilot to arrest the roll sooner may have helped. Also we were surprised at the fact that a Flight Attendant would be standing at that point in the flight.

Narrative: 2

At approximately FAF, the aircraft banked sharply. I turned off the autopilot, leveled the wings and resumed the visual approach and landing. On taxi-in, the flight attendants called on the intercom and said that the a Flight Attendant was injured. We called Operations and requested paramedics meet us at the gate. We asked Tower what aircraft we followed and were told that it was an [A321] and that they sometimes have more wake turbulence than a heavy. Tower asked if we had the aircraft in front of us in sight. First Officer said that we did. We changed runway FMC data for the third time after being cleared for the visual approach. PHX Tower should plan on ILS approaches at night unless pilot requests a visual approach. This would increase safety and separation.

Synopsis

B737-800 flight crew reported a Flight Attendant was injured during a wake turbulence encounter on approach to PHX in trail of an A321.

ACN: 1574356 *(36 of 50)*

Time / Day

Date : 201809
Local Time Of Day : 0601-1200

Place

Locale Reference.Airport : MCO.Airport
State Reference : FL
Altitude.MSL.Single Value : 4000

Aircraft : 1

Reference : X
ATC / Advisory.TRACON : F11
Aircraft Operator : Air Carrier
Make Model Name : B737-800
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Passenger
Nav In Use : FMS Or FMC
Nav In Use.Localizer/Glideslope/ILS : Runway 17L
Flight Phase : Initial Approach
Airspace.Class B : MCO

Aircraft : 2

Reference : Y
ATC / Advisory.TRACON : F11
Make Model Name : Commercial Fixed Wing
Crew Size.Number Of Crew : 2
Flight Phase : Initial Approach
Airspace.Class B : MCO

Person : 1

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Pilot Flying
Function.Flight Crew : Captain
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Air Transport Pilot (ATP)
ASRS Report Number.Accession Number : 1574356
Analyst Callback : Attempted

Person : 2

Reference : 2
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier

Function.Flight Crew : Pilot Not Flying
Function.Flight Crew : First Officer
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Multiengine
ASRS Report Number.Accession Number : 1574134

Events

Anomaly.Deviation - Track / Heading : All Types
Anomaly.Deviation - Procedural : Clearance
Anomaly.Inflight Event / Encounter : Wake Vortex Encounter
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Executed Go Around / Missed Approach
Result.Air Traffic Control : Issued New Clearance

Assessments

Contributing Factors / Situations : Environment - Non Weather Related
Contributing Factors / Situations : Procedure
Primary Problem : Procedure

Narrative: 1

During radar vectors to final approach ILS 17L MCO base leg encountered severe wake turbulence. Aircraft on a 90 degree base leg, assigned speed 210 KIAS, descending 4000 to 3000 ft, aircraft suddenly rocked side to side disengaging autopilot. I immediately determined we were going to overshoot localizer because [of the] angle to localizer. I am hand flying at this point trying to get aircraft back on localizer and not bust altitude. Controller noticed our difficulty and asked if we would want to do a 360 and try again. I told FO (First Officer) to report the wake turbulence to controller which he did. No traffic in our vicinity at the time of occurrence.

Too close to traffic ahead of us on same flight path. ATC should not be assigning a speed of 210 KIAS on a 90 degree angle to localizer when less than 2 miles from intercept.

Narrative: 2

On a short vector, 90 degrees to final approach course received a 210 degree heading to intercept final approach course on 17L at MCO. Upon starting turn, we hit significant wake turbulence that forced the auto pilot to disconnect and revert to CWS (Control Wheel Steering) in pitch and roll. PF (pilot flying) disconnected auto pilot and began course correction and as we started our turn we overshot final. Advised ATC of the issue and were vectored to approximately a 090 degree heading to circle back around and resume approach. No apparent conflict with other traffic was observed.

We were advised by ATC to keep speed up during approach so we were in a steeper and faster and closer to final approach than normal. This compounded the course intercept when the auto pilot disconnected due to the wake turbulence. Due to the phase when the disconnect happened, quick corrective action was needed to avoid further overshoot.

This was perceived to be a somewhat normal approach on a VMC day that was compounded by automation problems upon hitting wake turbulence. No suggestion for improvements at this time.

Synopsis

B737-800 flight crew reported breaking off the approach to MCO when a wake turbulence encounter contributed to a track deviation during localizer intercept.

ACN: 1572548 *(37 of 50)*

Time / Day

Date : 201808
Local Time Of Day : 1801-2400

Place

Locale Reference.ATC Facility : ZZZ.ARTCC
State Reference : US
Altitude.MSL.Single Value : 32000

Environment

Flight Conditions : Mixed
Weather Elements / Visibility.Visibility : 10
Light : Daylight

Aircraft

Reference : X
ATC / Advisory.Center : ZZZ
Aircraft Operator : Air Taxi
Make Model Name : Citationjet (C525/C526) - CJ I / II / III / IV
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 91
Flight Plan : IFR
Mission : Ferry
Flight Phase : Descent
Route In Use : Direct
Airspace.Class A : ZZZ

Component

Aircraft Component : Elevator Trim System
Aircraft Reference : X
Problem : Malfunctioning

Person

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Taxi
Function.Air Traffic Control : Enroute
Function.Flight Crew : First Officer
Function.Flight Crew : Pilot Not Flying
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Air Transport Pilot (ATP)
Experience.Flight Crew.Total : 3468
Experience.Flight Crew.Last 90 Days : 62
Experience.Flight Crew.Type : 312
ASRS Report Number.Accession Number : 1572548
Human Factors : Troubleshooting
Human Factors : Workload

Events

Anomaly.Aircraft Equipment Problem : Critical
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Overcame Equipment Problem
Result.Aircraft : Equipment Problem Dissipated

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : Human Factors
Primary Problem : Aircraft

Narrative: 1

Upon starting descent from FL390 the amber boxed autopilot out of trim box appeared on both PFD's. After reviewing the abnormal checklist, the captain disconnected the autopilot and the aircraft made an uncommanded pitch up, which was arrested with manual control wheel pressure.

Next, in the course of running the abnormal checklist the Captain discovered the pitch trim wheel was frozen and unable to be moved up or down with manual or electric trim.

The Captain was able to maintain positive control of the aircraft using heavy forward pressure on the control wheel except for the brief moment when the autopilot was disconnected and we did not deviate from ATC instructions. Therefore, an emergency was not declared at the time.

Upon reaching warmer air, around 11,000 MSL, the pitch trim freed up. A normal descent and landing at our destination airport followed.

Synopsis

CE-525 First Officer reported the pitch trim wheel was frozen at the top of descent.

ACN: 1572524 *(38 of 50)*

Time / Day

Date : 201808
Local Time Of Day : 1801-2400

Place

Locale Reference.ATC Facility : ZTL.ARTCC
State Reference : GA
Altitude.MSL.Single Value : 32000

Environment

Flight Conditions : Mixed
Weather Elements / Visibility.Visibility : 10
Light : Daylight

Aircraft

Reference : X
ATC / Advisory.Center : ZTL
Aircraft Operator : Air Carrier
Make Model Name : Citationjet (C525/C526) - CJ I / II / III / IV
Crew Size.Number Of Crew : 1
Operating Under FAR Part : Part 135
Flight Plan : IFR
Mission : Ferry
Flight Phase : Descent
Route In Use : Direct
Airspace.Class A : ZTL

Component

Aircraft Component : Elevator ControlSystem
Aircraft Reference : X
Problem : Malfunctioning

Person

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Air Traffic Control : Enroute
Function.Flight Crew : Captain
Function.Flight Crew : Pilot Flying
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Instrument
Experience.Flight Crew.Total : 3070
Experience.Flight Crew.Last 90 Days : 86
Experience.Flight Crew.Type : 626
ASRS Report Number.Accession Number : 1572524
Human Factors : Troubleshooting

Human Factors : Workload
Analyst Callback : Completed

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.Deviation - Procedural : Published Material / Policy
Detector.Automation : Aircraft Other Automation
Detector.Person : Flight Crew
Result.Flight Crew : Regained Aircraft Control
Result.Flight Crew : FLC complied w / Automation / Advisory
Result.Flight Crew : FLC Overrode Automation
Result.Aircraft : Equipment Problem Dissipated

Assessments

Contributing Factors / Situations : Aircraft
Primary Problem : Aircraft

Narrative: 1

Upon starting descent from 39,000 MSL the amber boxed auto pilot out of trim box appeared on both PFDs. After reviewing the abnormal checklist, I disconnected the auto pilot and the aircraft made an uncommanded pitch up.

Next, I discovered the pitch trim wheel was frozen and unable to be moved up or down with manual or electric trim. Both with the electric trim breaker pulled or without.

I was able to maintain positive control of the aircraft using heavy forward pressure on the control yoke except for the brief moment when the auto pilot disconnected and did not deviate from ATC instructions. Therefore, I felt no need to declare an emergency at the time of the event.

Upon reaching warmer air, around 11,000 MSL the pitch trim freed up. A normal descent and landing at our destination airport followed.

Callback: 1

Reporter stated aircraft actuator was lubed and flown at low altitude with no issues. At high altitude, same control issue was present. The reporter heard water was found in the actuator from a second hand source.

Synopsis

CE-525 Captain reported the elevator trim control froze at 39,000 feet then descending to warmer air to thaw it.

ACN: 1569866 *(39 of 50)*

Time / Day

Date : 201808
Local Time Of Day : 1801-2400

Place

Locale Reference.Airport : ZZZ.Airport
State Reference : US

Environment

Flight Conditions : VMC
Weather Elements / Visibility.Visibility : 10
Light : Night

Aircraft

Reference : X
Aircraft Operator : Corporate
Make Model Name : Citation V/Ultra/Encore (C560)
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 135
Flight Plan : IFR
Mission : Passenger
Flight Phase : Initial Climb
Route In Use : Vectors

Component

Aircraft Component : Autopilot
Aircraft Reference : X
Problem : Malfunctioning

Person : 1

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Corporate
Function.Flight Crew : First Officer
Function.Flight Crew : Pilot Not Flying
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Commercial
Qualification.Flight Crew : Instrument
Experience.Flight Crew.Total : 801.1
Experience.Flight Crew.Last 90 Days : 59.4
Experience.Flight Crew.Type : 94.4
ASRS Report Number.Accession Number : 1569866
Human Factors : Troubleshooting

Person : 2

Reference : 2
Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck
Reporter Organization : Corporate
Function.Flight Crew : Captain
Function.Flight Crew : Pilot Flying
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Flight Instructor
Experience.Flight Crew.Total : 7800
Experience.Flight Crew.Last 90 Days : 42
Experience.Flight Crew.Type : 280
ASRS Report Number.Accession Number : 1569879
Human Factors : Troubleshooting

Events

Anomaly.Aircraft Equipment Problem : Critical
Anomaly.Deviation - Track / Heading : All Types
Anomaly.Deviation - Procedural : Clearance
Anomaly.Deviation - Procedural : Published Material / Policy
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : FLC Overrode Automation
Result.Flight Crew : Regained Aircraft Control
Result.Flight Crew : Returned To Departure Airport

Assessments

Contributing Factors / Situations : Aircraft
Primary Problem : Aircraft

Narrative: 1

In compliance with the SID we were climbing to the assigned altitude departing ZZZ on the ZZZZZ departure. We were assigned a new heading to proceed northwest bound. The Captain set the new heading then we quickly noticed that the autopilot was not engaging. The Captain was able to use the Touch Control Steering to initiate the turn to the assigned heading. Shortly after, the aircraft started a sudden left roll which was unexpected. This was when we attempted to disengage the autopilot. The Captain asked me to inform ATC that we needed to return back to ZZZ. We were able to regain directional control. We landed at ZZZ, VFR conditions with no issues.

Narrative: 2

[Report narrative contained no additional information.]

Synopsis

CE560 flight crew reported an autopilot malfunction resulting in a return to the departure airport.

ACN: 1567233 *(40 of 50)*

Time / Day

Date : 201808
Local Time Of Day : 0601-1200

Place

Locale Reference.ATC Facility : ZZZ.ARTCC
State Reference : US
Altitude.MSL.Single Value : 26000

Environment

Flight Conditions : VMC
Light : Daylight

Aircraft

Reference : X
ATC / Advisory.Center : ZZZ
Aircraft Operator : Corporate
Make Model Name : Learjet 60
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 91
Flight Plan : IFR
Mission : Test Flight
Flight Phase : Descent
Route In Use : Vectors
Airspace.Class A : ZZZ

Component

Aircraft Component : Autopilot
Aircraft Reference : X
Problem : Malfunctioning

Person

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Corporate
Function.Flight Crew : Captain
Function.Flight Crew : Pilot Flying
Qualification.Flight Crew : Flight Instructor
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Air Transport Pilot (ATP)
Experience.Flight Crew.Total : 7000
Experience.Flight Crew.Last 90 Days : 50
Experience.Flight Crew.Type : 500
ASRS Report Number.Accession Number : 1567233
Human Factors : Situational Awareness

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.Deviation - Altitude : Excursion From Assigned Altitude
Anomaly.Deviation - Procedural : Clearance
Anomaly.Inflight Event / Encounter : Loss Of Aircraft Control
Detector.Person : Flight Crew
Detector.Person : Air Traffic Control
When Detected : In-flight
Result.Flight Crew : Returned To Clearance
Result.Flight Crew : Regained Aircraft Control
Result.Air Traffic Control : Issued Advisory / Alert

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : Human Factors
Primary Problem : Aircraft

Narrative: 1

I was conducting a stall test flight on a Lear 60 between 15,000 and 17,000 ft MSL. This was a test flight with flight crew only on board following extensive maintenance prior to the aircraft being returned to service. At this time we were operating VFR with Flight Following from Approach. During this time we encountered some issues with the autopilot. The LH side autopilot would not operate properly due to the ALTS (Altitude Select) indicator light being inoperative and therefore we were unable to verify its status. We also noted a red trim message would post occasionally on the autopilot panel with the autopilot engaged, indicating the autopilot servos may not be trimming properly. We did not see this anomaly on the RH side autopilot so we decided to continue with our plan to go to high altitude using only the RH autopilot. After completing the stalls, I activated our IFR flight plan and we climbed to FL410. Note also that we filed non-RVSM.

After completing our systems observations at FL410, we requested a descent and return to [departure airport]. We had been using the autopilot while in Class A airspace with no issues. While descending to an assigned altitude of FL260 with an autopilot connected descent in SPD (Speed) mode at an approximate airspeed of 280 KIAS, we observed the autopilot slowly pulling the nose upwards to begin leveling off, as expected. Suddenly, the autopilot disconnected and the nose went violently downward with a subsequent rapid increase in airspeed. The control yoke snapped almost full forward.

The thrust levers were already at idle so I deployed the spoilers and pulled carefully on the control yoke while monitoring airspeed. It went into overspeed as I began leveling the aircraft. I retracted the spoilers at this point since they create more nose down force when above Vmo/Mmo. I continued to pull the nose upward carefully to avoid over stressing the aircraft. I got the airplane back to level flight and began assessing our situation when ATC called and instructed an immediate climb, which is when I first noted the altitude deviation...we were at about FL240 when we got the airplane back under control. We immediately climbed back to FL260 and did not engage the autopilot for the remainder of the flight. It is likely the red trim light had posted during the descent indicating the autopilot was having trouble with the pitch trim but we did not notice it.

At this time I considered reporting the malfunction to the controller, but since he had already called us I knew we would be having a discussion back on the ground regarding the altitude deviation. Therefore, since we were back in control of the airplane I elected not to advise ATC. During the subsequent phone call, I provided them with details of the

deviation.

In retrospect, the autopilot anomalies observed at low altitude were more serious than originally thought even though the RH autopilot seemed to be functioning normally. In the future, I will give more consideration to possible system malfunctions and plan the remainder of the flight accordingly. I will also keep ATC advised whenever an issue or malfunction develops.

Synopsis

Lear 60 test pilot reported a 2000 ft altitude excursion due to an autopilot pitch malfunction.

ACN: 1566464 *(41 of 50)*

Time / Day

Date : 201808
Local Time Of Day : 0001-0600

Place

Locale Reference.ATC Facility : ZZZ.ARTCC
State Reference : US
Altitude.MSL.Single Value : 38000

Environment

Flight Conditions : VMC

Aircraft

Reference : X
Aircraft Operator : Air Carrier
Make Model Name : A319
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Passenger
Flight Phase : Cruise

Component

Aircraft Component : Autopilot
Aircraft Reference : X
Problem : Malfunctioning

Person

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Pilot Not Flying
Function.Flight Crew : First Officer
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Instrument
Experience.Flight Crew.Total : 9600
ASRS Report Number.Accession Number : 1566464
Human Factors : Situational Awareness

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Diverted
Result.Flight Crew : FLC Overrode Automation
Result.Flight Crew : Landed in Emergency Condition

Result.Flight Crew : Overcame Equipment Problem
Result.Flight Crew : Landed As Precaution

Assessments

Contributing Factors / Situations : Aircraft
Primary Problem : Aircraft

Narrative: 1

In cruise at FL380 at the VOR with the autopilot engaged we felt 3 separate uncommanded rudder inputs. They were separated about a minute each. After the third time the aircraft yawed and stayed in a side slip with about 3.6 units of rudder trim input. We then got the ECAM Message: AUTO FLT RUD TRIM1 FAULT. Captain continued flying and I executed the ECAM follow up (there was none) and consulted the ECAM Supplemental Manual for more information. The aircraft was under control, although uncoordinated, with the autopilot engaged so we agreed the safest course initially was to leave the autopilot engaged. I notified ATC and requested the longest runway for a landing at ZZZ. We were vectored to join the arrival to ZZZ and ATC cleared us to descend VIA. We declared unable since we were reluctant to use the speed brakes with the aircraft in a side slip. Below 8000 feet Captain slowed the aircraft, leveled off and disconnected the autopilot. With the autopilot off the trim was re-centered and the aircraft was again coordinated. Captain then transferred the controls to me, and we landed uneventfully. Failure of the Autopilot Rudder Trim system caused the aircraft to be in uncoordinated flight at high altitude. This failure had been written up previously by another crew and signed off as repaired by Maintenance in ZZZ1.

Synopsis

A319 First Officer reported uncommanded rudder inputs with the autopilot engaged due to rudder trim fault.

ACN: 1565948 *(42 of 50)*

Time / Day

Date : 201808
Local Time Of Day : 0601-1200

Place

Locale Reference.Airport : DEN.Airport
State Reference : CO
Altitude.AGL.Single Value : 0

Environment

Flight Conditions : VMC

Aircraft : 1

Reference : X
ATC / Advisory.Tower : DEN
Aircraft Operator : Air Carrier
Make Model Name : B737 Next Generation Undifferentiated
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Passenger
Nav In Use : FMS Or FMC
Flight Phase : Landing

Aircraft : 2

Reference : Y
ATC / Advisory.Tower : DEN
Make Model Name : Commercial Fixed Wing
Crew Size.Number Of Crew : 2
Flight Phase : Landing

Person : 1

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : First Officer
Function.Flight Crew : Pilot Flying
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Instrument
Experience.Flight Crew.Last 90 Days : 270
Experience.Flight Crew.Type : 10779
ASRS Report Number.Accession Number : 1565948
Human Factors : Situational Awareness
Analyst Callback : Attempted

Person : 2

Reference : 2
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Captain
Function.Flight Crew : Pilot Not Flying
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Instrument
Experience.Flight Crew.Type : 7995
ASRS Report Number.Accession Number : 1565793

Events

Anomaly.Inflight Event / Encounter : Wake Vortex Encounter
Anomaly.Inflight Event / Encounter : Unstabilized Approach
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Executed Go Around / Missed Approach

Assessments

Contributing Factors / Situations : Environment - Non Weather Related
Contributing Factors / Situations : Human Factors
Contributing Factors / Situations : Weather
Primary Problem : Ambiguous

Narrative: 1

Approach was stable and uneventful through below 500 ft AGL. At that point, I let the aircraft dip below glideslope to capture three red PAPI. As the aircraft passed through 100 feet AGL, I noticed four red PAPI and began to adjust pitch and power.

As the threshold neared, the aircraft began to be affected by the previous arrival's wake, and required control inputs as aircraft crossed the threshold to maintain path and centerline. These inputs were more significant than any inputs on the approach and began rather suddenly.

My last look as we crossed the threshold had airspeed on target. I began to increase the back pressure for the flare, but the aircraft did not respond as I expected, never arrested descent, and contacted the runway before planned, resulting in a hard bounce.

With the power still up, the resulting bounce was high, and I immediately called for a go around. Go around was accomplished and subsequent landing was uneventful. Thankfully, we later heard from Maintenance the aircraft inspection showed all ok.

Narrative: 2

[Report narrative contained no additional information.]

Synopsis

B737NG flight crew reported a hard landing and subsequent go-around occurred following a wake turbulence encounter just before touchdown.

ACN: 1564641 *(43 of 50)*

Time / Day

Date : 201807
Local Time Of Day : 1201-1800

Place

Locale Reference.Airport : LAS.Airport
State Reference : NV
Altitude.AGL.Single Value : 0

Environment

Flight Conditions : VMC
Weather Elements / Visibility : Windshear
Work Environment Factor : Temperature - Extreme
Light : Night

Aircraft

Reference : X
ATC / Advisory.Tower : LAS
Aircraft Operator : Air Carrier
Make Model Name : B737 Undifferentiated or Other Model
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Passenger
Flight Phase : Landing
Route In Use : Visual Approach

Person

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Pilot Not Flying
Function.Flight Crew : Captain
Qualification.Flight Crew : Air Transport Pilot (ATP)
Experience.Flight Crew.Type : 822
ASRS Report Number.Accession Number : 1564641
Human Factors : Workload

Events

Anomaly.Ground Event / Encounter : Ground Strike - Aircraft
Detector.Person : Flight Attendant
Were Passengers Involved In Event : N
When Detected : In-flight
Result.General : Maintenance Action
Result.Flight Crew : Regained Aircraft Control
Result.Aircraft : Aircraft Damaged

Assessments

Contributing Factors / Situations : Weather
Primary Problem : Weather

Narrative: 1

This was the second leg of the first day of our trip. First Officer (FO) was flying pilot. LAS was night, T 40 C, winds on ATIS 070/12/ but tower winds 360/5. FO flew a stable visual/ILS approach to RWY 26L LAS. We intercepted GS at 7000. Approach was stable, and FO crossed the threshold target speed plus a few knots and on glidepath. Just prior to crossing the paved surface, the FO remarked that he anticipated a thermal that comes every time you land in Vegas. Sure enough, as soon as we crossed over the paved surface, at approximately 100-80 feet AGL, we had a sudden wing rock that felt like a wake turbulence event but seemed more in line with a thermal event as anticipated by the FO. We were spaced 3-4 miles in trail of an Airbus 319. The FO recovered nicely from this short but abrupt disruption and landed. I remarked on landing roll "nice recovery" and did not even consider that we had scraped the tail on landing. I never felt the situation was unsafe or warranted a go around and felt the FO did a great job executing the approach and landing. It was only upon reaching the gate that an aft Flight Attendant (FA) called and informed us that he felt we scraped the tail. Upon inspection of the tail, we found that we in fact scraped the paint off the skid but did not compress the strut. We checked ACARS and found the pitch attitude at landing was 7.6, which was under the 8.3 considered probable for tail contact. We made a logbook write up, contacted Maintenance, the Operations Manager and an Ops Report was filed.

Synopsis

B737 Captain reported aircraft encountered a thermal downdraft causing a tail strike while landing.

ACN: 1562625 *(44 of 50)*

Time / Day

Date : 201807
Local Time Of Day : 0601-1200

Place

Locale Reference.Airport : ZZZ.Airport
State Reference : US
Altitude.AGL.Single Value : 0

Environment

Flight Conditions : Mixed
Light : Daylight

Aircraft

Reference : X
ATC / Advisory.Tower : ZZZ
Aircraft Operator : Air Carrier
Make Model Name : A320
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Nav In Use : FMS Or FMC
Flight Phase : Landing
Airspace.Class D : ZZZ

Person : 1

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Captain
Function.Flight Crew : Pilot Flying
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Instrument
ASRS Report Number.Accession Number : 1562625
Human Factors : Communication Breakdown
Human Factors : Situational Awareness
Communication Breakdown.Party1 : Flight Crew
Communication Breakdown.Party2 : Flight Crew

Person : 2

Reference : 2
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : First Officer
Function.Flight Crew : Pilot Not Flying
Qualification.Flight Crew : Air Transport Pilot (ATP)

Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Instrument
ASRS Report Number.Accession Number : 1562607
Human Factors : Communication Breakdown
Human Factors : Situational Awareness
Communication Breakdown.Party1 : Flight Crew
Communication Breakdown.Party2 : Flight Crew

Events

Anomaly.Ground Excursion : Runway
Anomaly.Ground Event / Encounter : Ground Strike - Aircraft
Anomaly.Inflight Event / Encounter : Weather / Turbulence
Anomaly.Inflight Event / Encounter : Loss Of Aircraft Control
Detector.Person : Ground Personnel
Detector.Person : Flight Crew
When Detected : Aircraft In Service At Gate
Result.General : Maintenance Action
Result.Flight Crew : Executed Go Around / Missed Approach

Assessments

Contributing Factors / Situations : Human Factors
Contributing Factors / Situations : Weather
Primary Problem : Weather

Narrative: 1

On final [weather radar] was painting yellow at the end of the runway with red off the end. A "splattering" of green on and in front of and to the side of the runway. We could see centerline on final to the end on the runway. Very near touchdown, below 30 ft, we encountered a very strong gust of wind from the right side. At the same time, visibility dropped to very low. The airplane weather-vaned into the wind [and got] pushed the [to] right of the runway. I tried to keep the airplane on the runway by using rudder and as little ailerons as I could because I did not want to [get a] wing strike. I could no longer see the center line but I could tell we were still on pavement. The airplane floated just a bit due to the sudden added wind speed we touched down with a side load. Just before we touched down, the F/O (First Officer) said "we need to go left." I tried but the aircraft didn't respond right away. The FO said again "left, left" and then because he didn't feel me trying he [input] rudder as well. We got a dual input.

I then said "my controls" and the aircraft started responding and I was able to get it back to centerline. This all happened in a matter of seconds from the gust/ sudden loss of visibility to touchdown right of center line, side-loaded. Just as quickly it passed and visibility returned to what is was before. In the second it happened, I thought of a go-around and very quickly dismissed because of the thunderstorm at the end of the runway and our very low energy. I was worried about wind shear with the low energy and didn't think we could get enough altitude to turn before heavy rain at the departure end of the runway.

Exited the runway and taxied back to the terminals normally. When we reached the gate, local Maintenance was waiting on us. I asked them to the cockpit. I told them that we had a hard landing and a side-loaded landing. I told them I was going to write it up for that. I was in the process of writing it up and calling Dispatch and Maintenance Control when local [Maintenance] came back up and said there was damage and grass on the

underbelly. I finished writing up the side-loading and then went out to take a look to see what I needed to write up. The left engine appeared to have ingested FOD (grass) and there was damage to the right engine lower outboard reverser door. I returned to the cockpit and wrote these up as well. Looking back on it, I don't think I should have written up a hard landing. I don't feel like it was a hard landing but it was definitely a side-loaded landing.

I might have been able to glance back inside and continued to use the localizer guidance to be able to tell how far off of center line the aircraft was for the few seconds that the visibility dropped.

Narrative: 2

[We] were on final [and] both noticed that there was some yellow painting on the radar at the very end of the runway, with red painting well off the end of the runway. The only thing that we actually painted on the runway was green.

On short final, at 500 feet AGL, we were able to see the centerline of the runway all the way to the end. The Tower stated the wind was 170 at 18 gust 27. There was rain present also. I never at any time saw any lightning. At approximately 10 feet off the runway, I placed the Captain's windshield wiper on low then followed by high, just to make sure that we had visibility through the rain. As soon as we entered the rain area, there was what appeared to be a strong gust and significant rain, and the plane's nose [weather-vaned] into the wind. At the point where I felt like we were going to touch down, the plane floated a bit, and moved to the right side of the runway. At which point, I stated, "left, left"..... I never heard my Captain's response, so I stated it again, "we need to go left, left" and at which point I did give some input to the left rudder, due to feeling like we might go off the runway. After stating the 2nd time of needing to go left, my Captain acknowledged me and we slowed enough to maneuver to the left and then back to center line.

At no point did I believe a go-around would be a good idea, due to the fact of having little to no energy for a safe go-around. This entire incident took a total of less than 4-8 seconds.

After getting back on centerline, I heard [another aircraft] 3 miles behind us, and advised them to NOT LAND, due to low visibility. They got a heading and broke off the visual approach. There was also [a second aircraft] and I advised the Tower to ask them to also, NOT LAND too due to the same reasons. They too, took a heading and landed later.

We taxied to the ramp without further incident. My Captain talked to Maintenance, wrote it up in the log book and also, did the post flight walk around.

Preventive measures would be to go around/break off the visual approach. However we didn't have anyone to attempt prior to us, which would have been nice, because we did not have any visibility reports prior to landing.

Synopsis

A320 flight crew reported a runway excursion in gusty wind conditions that resulted in damage to the belly and engine nacelle.

ACN: 1553280 *(45 of 50)*

Time / Day

Date : 201806
Local Time Of Day : 1801-2400

Place

Locale Reference.Airport : EWR.Airport
State Reference : NJ
Altitude.MSL.Single Value : 3000

Environment

Flight Conditions : VMC
Light : Dusk

Aircraft : 1

Reference : X
ATC / Advisory.Tower : EWR
Aircraft Operator : Air Carrier
Make Model Name : EMB ERJ 145 ER/LR
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Passenger
Nav In Use.Localizer/Glideslope/ILS : ILS RWY 4R
Flight Phase : Initial Approach
Airspace.Class B : EWR

Aircraft : 2

Reference : Y
Aircraft Operator : Personal
Make Model Name : Skyhawk 172/Cutlass 172
Crew Size.Number Of Crew : 1
Operating Under FAR Part : Part 91
Mission : Personal
Flight Phase : Cruise
Airspace.Class B : EWR
Airspace.Class E :

Person

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Pilot Flying
Function.Flight Crew : First Officer
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Multiengine
ASRS Report Number.Accession Number : 1553280

Events

Anomaly.Conflict : NMAC
Anomaly.Deviation - Procedural : Clearance
Detector.Automation : Aircraft RA
Detector.Person : Flight Crew
Miss Distance.Horizontal : 500
Miss Distance.Vertical : 300
When Detected : In-flight
Result.Flight Crew : Took Evasive Action
Result.Flight Crew : FLC complied w / Automation / Advisory

Assessments

Contributing Factors / Situations : Airspace Structure
Contributing Factors / Situations : Human Factors
Primary Problem : Airspace Structure

Narrative: 1

I was a pilot flying on the right seat. We got a clearance "maintain 170 kt to DOOIN, maintain 3000 feet until established, cleared for ILS 4R approach." The airplane was configured flaps 9 and I kept 170 knots on the approach to runway 4R KEWR at 3000 ft before GRITY intersection. And all of sudden, one object was detected at the right next to us on our TCAS radar about 300 feet below us and within a second it shouted "traffic, traffic" and "climb, climb, climb." I disconnected the autopilot right then and simultaneously brought a pitch up with increased thrust on the steady course of ILS 4R approach. And the pilot monitoring called tower that we had a TCAS climb and traffic below us around 2700 feet. When I reached 3300 feet, TCAS warning was disappeared. There was no more traffic on our TCAS radar. I was still able to stabilize the approach. We were on the ILS 4R approach course with no deflection of HSI and GS on 2 dots above. And the Pilot Monitoring let the tower know that we were still able to continue the approach. Then I continued the ILS 4R approach and landed on runway 4R KEWR. We finished the flight at the gate.

Before we got a TCAS warning and RA climb instruction, we didn't have any traffic within 6 miles except an airplane ahead of us on the approach course for RWY 4R. We didn't get any traffic report from tower. It was at 3000 feet right before intermediate fix on the ILS approach as the critical phase of flight. Even if it was VFR condition, it was dusk of the day and tower already gave us ILS approach clearance. Although a pilot flying and a pilot monitoring tried to remain vigilant at all times, it was really hard to catch the small traffic without radar surveillance of the tower control, especially on the final course of the approach.

Synopsis

EMB-145 pilot reported a NMAC that required an evasive maneuver.

ACN: 1553241 *(46 of 50)*

Time / Day

Date : 201806

Place

Locale Reference.Airport : ZZZ.Airport
State Reference : US

Environment

Flight Conditions : VMC

Aircraft

Reference : X
ATC / Advisory.TRACON : ZZZ
Aircraft Operator : Air Carrier
Make Model Name : B757 Undifferentiated or Other Model
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Flight Phase : Climb

Component

Aircraft Component : Air Conditioning Distribution Ducting, Clamps, Connectors
Aircraft Reference : X
Problem : Failed

Person

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Captain
Function.Flight Crew : Pilot Not Flying
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Multiengine
Experience.Flight Crew.Total : 4464
Experience.Flight Crew.Type : 2209
ASRS Report Number.Accession Number : 1553241
Human Factors : Troubleshooting

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.Flight Deck / Cabin / Aircraft Event : Other / Unknown
Anomaly.Deviation - Speed : All Types
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Overcame Equipment Problem
Result.Aircraft : Equipment Problem Dissipated

Assessments

Contributing Factors / Situations : Aircraft
Primary Problem : Aircraft

Narrative: 1

R RECIRC Fan and Trim Air deferred. Taxi out requires constant cycling of both PACK TEMP selectors from "N" to "C" to "H" in order to balance out the temperatures. Louder than normal pack noise noted as PACKS operate in HI FLOW with a RECIRC fan INOP/off. As the power is increased for taxi, the PACK noise increases significantly. When the power is at idle, PACK noise appears to be normal.

During departure, extremely loud pack noise noted, similar to what we experienced on the ground during taxi operations. It is now difficult to hear ATC and other pilots. [We] leveled off at 3000 off Runway XX. Speed window opened shortly after rotation, causing monitor pilot (me) to select CMS. We leveled at 3000 and flying pilot requests SPD 250. I select 250 in the SPD window. Aircraft continues to accelerate. Shortly after leveling at 3000, ATC gives us 8000. Noise in cockpit [was] still very loud with packs in HI FLOW. Airplane continues to accelerate through 250 to 300 knots as First Officer begins to pull the nose up and follow command bars for 250 knot VNAV SPD climb to 8000. I call out "AIRSPEED" as he's well past 250 knots and doesn't seem to be correcting.

All of a sudden we hear a loud "THUMP," which I would equate to a leaky door seal finally sealing. There's a noticeable pop in my ear drum and the PACK noise decreases significantly to what I would consider normal levels. Pressurization panel indicates normal pressurization as we continue our climb. Established in the VNAV climb, the autothrottles still don't seem to be tracking with the airspeed (250/10000 on VNAV climb page), so the First Officer engages the autopilot and begins to pull the throttles back manually in the climb. ATC gives us 10000 before we get ALT CAP at 8000. Airspeed [was] stable at 250 knots and autopilot/autothrottle climb to 10000 is normal.

Upon arrival in ZZZ, [we] found both sidewalls at row 10 ABC and DEF detached from the fuselage of the aircraft. Entered in MRD and advised Maintenance. Not sure if the detachment is related to the 'pop' we experienced on departure.

Synopsis

B757 Captain reported difficulties in managing the air conditioning system, followed by a loud noise and damage to several cabin sidewall panels.

ACN: 1512142 *(47 of 50)*

Time / Day

Date : 201801
Local Time Of Day : 1201-1800

Place

Locale Reference.Airport : PIT.Airport
State Reference : PA
Altitude.MSL.Single Value : 3500

Environment

Flight Conditions : VMC
Weather Elements / Visibility.Visibility : 10
Light : Daylight
Ceiling.Single Value : 25000

Aircraft

Reference : X
ATC / Advisory.TRACON : PIT
Make Model Name : Citation Excel (C560XL)
Crew Size.Number Of Crew : 2
Flight Plan : IFR
Mission : Passenger
Nav In Use : FMS Or FMC
Flight Phase : Initial Climb
Route In Use : Vectors
Airspace.Class B : PIT

Component

Aircraft Component : Cockpit Window
Aircraft Reference : X
Problem : Improperly Operated

Person

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Function.Flight Crew : Pilot Flying
Function.Flight Crew : First Officer
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Instrument
Experience.Flight Crew.Total : 32000
Experience.Flight Crew.Last 90 Days : 150
Experience.Flight Crew.Type : 275
ASRS Report Number.Accession Number : 1512142
Human Factors : Distraction
Human Factors : Communication Breakdown
Communication Breakdown.Party1 : Flight Crew
Communication Breakdown.Party2 : ATC

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.Flight Deck / Cabin / Aircraft Event : Other / Unknown
Anomaly.Deviation - Altitude : Overshoot
Anomaly.Deviation - Procedural : Clearance
Detector.Person : Flight Crew
Detector.Person : Air Traffic Control
When Detected : In-flight
Result.Flight Crew : Overcame Equipment Problem
Result.Flight Crew : Returned To Clearance

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : Environment - Non Weather Related
Contributing Factors / Situations : Human Factors
Primary Problem : Environment - Non Weather Related

Narrative: 1

We were assigned heading 280, climb to 3000 feet. On takeoff roll, a loud air noise developed in the cockpit, making it difficult to hear any conversation or radio call. I attempted to press down on the left side window latch, and the noise got worse. We cleaned up the aircraft, and attempted to call departure. It was impossible to hear anything on the radio from the noise level. The altitude warning was not audible from the noise level. I reached over and pulled the window lock upwards to the open position. The noise suddenly stopped as the window latch seated into the air leak. I heard the first call from departure asking what our altitude was. We were climbing through 3500 feet. I immediately leveled off, and said we were descending back to 3000 feet. The controller cleared us to 14000 feet, asking us what our assigned altitude on departure was. I said it was 3000 feet, and we missed our level off because of a distraction in the cockpit.

Synopsis

Citation pilot reported an altitude deviation due to a loud window leak noise interfering with radio communication and altitude warnings.

ACN: 1507869 *(48 of 50)*

Time / Day

Date : 201712
Local Time Of Day : 0601-1200

Place

Locale Reference.Airport : ZZZ.Airport
State Reference : US

Environment

Flight Conditions : VMC
Light : Dawn

Aircraft

Reference : X
ATC / Advisory.Tower : ZZZ
Aircraft Operator : Air Carrier
Make Model Name : EMB ERJ 190/195 ER/LR
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Passenger
Flight Phase : Landing
Flight Phase : Takeoff

Component : 1

Aircraft Component : Rudder Trim System
Aircraft Reference : X
Problem : Malfunctioning

Component : 2

Aircraft Component : Aileron Trim System
Aircraft Reference : X
Problem : Malfunctioning

Person : 1

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : First Officer
Function.Flight Crew : Pilot Flying
Qualification.Flight Crew : Air Transport Pilot (ATP)
ASRS Report Number.Accession Number : 1507869
Human Factors : Troubleshooting

Person : 2

Reference : 2
Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Captain
Function.Flight Crew : Pilot Not Flying
Qualification.Flight Crew : Air Transport Pilot (ATP)
ASRS Report Number.Accession Number : 1507885
Human Factors : Confusion

Events

Anomaly.Aircraft Equipment Problem : Critical
Detector.Person : Flight Crew
When Detected : In-flight

Assessments

Contributing Factors / Situations : Aircraft
Primary Problem : Aircraft

Narrative: 1

While rotating for takeoff I noticed the aircraft yawing around 20-30 degrees with no crosswind component. Upon completion of the after takeoff check list the captain and I discussed the odd flight characteristics on rotation. We noticed the yaw trim wasn't centered and corrected it.

After adjusting the yaw and roll trim were noticed both were moving past the commanded position. The captain ran the applicable QRH and we proceeded to [our destination]. The flight continued without incident until I disconnected the autopilot for landing.

I had a difficult time maintaining roll control due to a pronouncement right rolling tendency with roll and yaw trim centered. I was able to compensate for the abnormal rolling tendency and landed normally. We notified maintenance of the malfunctions and control issues.

Narrative: 2

It was the first flight of the day and second day of a three day. VFR morning and the First Officer the PF (Pilot Flying). He had limited time on the airplane but extremely sharp and in tune with the airplane. During a normal takeoff (no wind/x-wind), my First Officer rotated and I notice the nose starting to yaw to the right as if there was a large x-wind. No substantial wind was noted, I looked at all the engine indications and everything looked normal.

After clean up I informed him his inclinometer ball wasn't centered and what happened on takeoff? He was as shocked as I was and didn't know why the nose inadvertently drifted. Upon looking at the trim we noticed the yaw indicating half right and the roll 1/4 left.

Upon returning the aircraft to a coordinated state the trim indication showed uncommanded movement of both the yaw and roll trim. Upon leveling at cruise to ensure we were seeing the same we disconnected the autopilot and re-trimmed the aircraft and noticed upon selecting the yaw trim the indicators kept moving more than commanded. The trim would creep but did not meet the threshold for the automated "trim" aural warning. This function was tested and worked during my flow. I know the trim was centered on the ground. Being that the trim was not a complete runaway and was controllable in the sense of repeated centering and constant monitoring, we continued to

[our destination]. We reviewed the immediate action items and the QRH but nothing was cut and dry on having more than one trim runaway. The FO (First Officer) and I agreed that if this problem persisted that we would utilize the AP/DISC (Autopilot Disconnect) press and hold memory item and work out a solution from there. I tried to speak with [Maintenance Control] but another aircraft had an Emergency and I was unable to make contact. I advised dispatch via ACARS of our issue and was told to call tech ops on the ground.

On approach, the FO disconnected the AP and I quickly observed him placing large amounts of left aileron (8- 9 o'clock position) with current winds showing only a 2 knot crosswind. Upon landing and follow up with tech ops, the aircraft had a small history of recent flight control issues.

The FO taking over the aircraft was one of the crews who had previously written the aircraft up for similar issue in regards to the ailerons. Upon meeting up with crew who flew the aircraft and overnighted this aircraft, they too had a similar condition but didn't notice the trim.

I've never seen or heard of two trims moving uncommanded at the same time let alone in opposite directions. No QRH procedure exists nor can you account for everything that can and will go wrong.

If I had followed the QRH preemptively by isolating both yaw and trim computers I was unsure if it was safer to do so or if by doing so might inadvertently put me in a worse situation. Was it the Trim Panel, wiring issues, a rogue rudder PCU (Power Control Unit)? I didn't know, but we did our best to monitor, stabilize and create readiness for a plan B.

Synopsis

ERJ-190 flight crew reported uncommanded trim movement in both the yaw and roll axis.

ACN: 1504429 *(49 of 50)*

Time / Day

Date : 201712
Local Time Of Day : 1201-1800

Place

Locale Reference.Airport : ZZZ.Airport
State Reference : US
Altitude.MSL.Single Value : 6000

Environment

Flight Conditions : VMC
Light : Dusk

Aircraft

Reference : X
ATC / Advisory.TRACON : ZZZ
Aircraft Operator : Air Carrier
Make Model Name : Regional Jet 700 ER/LR (CRJ700)
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Passenger
Flight Phase : Initial Approach
Airspace.Class B : ZZZ

Component : 1

Aircraft Component : Autoflight Yaw Damper
Aircraft Reference : X
Problem : Malfunctioning

Component : 2

Aircraft Component : Attitude Indicator(Gyro/Horizon/ADI)
Aircraft Reference : X
Problem : Malfunctioning

Component : 3

Aircraft Component : Indicating and Warning - Flight & Navigation Systems
Aircraft Reference : X
Problem : Malfunctioning

Person

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Pilot Not Flying
Function.Flight Crew : First Officer
ASRS Report Number.Accession Number : 1504429

Human Factors : Time Pressure
Human Factors : Troubleshooting

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Detector.Automation : Aircraft Other Automation
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Landed in Emergency Condition
Result.Flight Crew : Overcame Equipment Problem

Assessments

Contributing Factors / Situations : Aircraft
Primary Problem : Aircraft

Narrative: 1

We were operating from ZZZ-ZZZ1. Due to delays into ZZZ1 we pushed back out of the gate at XB:24 local from the original time of XA:07. We had light to moderate snow in ZZZ so after pushback we proceeded to the deice pad to get the aircraft free of contaminants before takeoff. We departed ZZZ at XB:59. The flight started mostly in IMC conditions but by the time we began our descent on the arrival we were in VMC. We were at 10,000 ft and approach was beginning to vector us for the LOC due to strong winds in ZZZ1. There were strong winds in ZZZ1 that evening but it was VMC with visibility of 10 SM. The CA was PF and I was PM. At 10,000 ft while heading to ZZZ1, we had the autopilot on and it was coupled to the CA's side. Suddenly the autopilot disconnected. We had no indications other than a Yaw Damper 1 status message. We reengaged the autopilot, Yaw damper 1, and continued with our descent to 6,000 ft. At approximately 6,000 ft, the captain's altitude indicator started showing an increasing roll to the left, the autopilot disconnected again, we got and EFIS COMP MON caution message and the captain's attitude indicator continued its roll to the left until it was completely inverted. Due to the increasing bank angle on the attitude indicator, the captain's screen decluttered and we had an almost continuous "BANK ANGLE" aural warning. While this was happening, my attitude indicator indicated a slight roll to the right and showed an amber ROLL and PIT flag on the lower portion of the attitude indicator. The captain's airspeed indications also did not match what was on the standby instruments nor did it match my instruments. At this point, the captain had taken manual control after the autopilot disengaged and we both tried to figure out the problem while using the outside horizon to determine our attitude since it was VMC and confirming it with our standby attitude indicator.

ATC had cleared us to 4,000 ft and right heading 060. On request from the CA, I reported to the controller that we had an instrumentation error. The controller asked if we needed any assistance and we decided to [advise ATC] since we weren't able to trust our speed, altitude, and attitude indications. The controller asked us if we still wanted to go to ZZZ1. Since we were very close to the airport, and in VMC conditions, the CA agreed to proceed to ZZZ1. I replied to the controller; "Affirmative" to confirm our intentions to land at ZZZ1. Meanwhile, the CA was flying using visual references. Keeping the aircraft level with the horizon. The captain and I continued scanning our instruments and noticed that my attitude indicator started to come back to wings level and that my airspeed, altitude, and attitude all matched the standby instruments. The captain decided that since my side matched the standby that I should take the controls and I did. I continued to fly manually while the captain talked on the radio and assisted me by bugging speeds and altitude. ATC stated that they planned to put us on a right downwind for the visual since the

meteorological conditions permitted it. Once aligned with the extended centerline, we had the runway in sight and got cleared for a visual. At this point, my instruments looked accurate but I was still double checking with the standby instruments and the captain kept double checking my airspeed and altitude to make sure we were stabilized on glide path. Aside from the malfunctioning instruments, we were flying the approach as normal. We landed the aircraft safely and proceeded to the gate as normal.

This incident happened very close to the ground, flying during evening hours, in congested airspace. This made the situation a bit more challenging. We were ready for the approach. We had loaded it into the FMS and had briefed it way before we initiated our final descend into ZZZ1. However, when faced with the instrumentation failure that we experience, I felt we did not have as much time as we would have liked to try to troubleshoot the problem. We were very close to landing and decided that since the meteorological conditions were favorable, we should just go ahead and land the aircraft. As a crew we would have liked more time to run our QRH procedures, as trained by the company, but at the time this did not seem suitable since we more than likely would have had to be vectored out somewhere away from all the traffic. With night time approaching, as well as weather from the west, we decided that time was critical and landing immediately was the better decision. The aircraft was never in an undesired state. We are both very familiar with this airspace and having the airport in sight when this happened helped us maintain our situational awareness up and maneuver the aircraft to a safe landing.

I believe that as a cockpit crew, the CA and I had great communication and good CRM. However, due to the time constraints, we were unable to brief the cabin crew like we wanted. Everything happened very quickly and we never thought it was going to end up badly so we never briefed them. In hindsight, we should have briefly told them what was happening and that we were landing immediately just in case something did happen upon touchdown and they could proceed in the way they were trained.

Also, from a human factors point of view, I believe the CRJ does a poor job in telling the pilot that the AHRS system has failed. We are used to receiving caution and warning messages on our EICAS but for this particular system failure all we got was a EFIS COMP MON message. I remember this from ground school but unfortunately, during day to day line flying, when we see an EFIS COMP MON message we normally just associate it with magnetic interference so we are a bit desensitized to it. When we got this message during this incident, we knew it was the AHRS acting up but it takes a lot of crosschecking between instruments to figure out which one is right and which is wrong. I believe that a more efficient system should be develop to let the pilot know exactly what's being affected so the pilot has to work less determining the problem and use his time to troubleshoot.

If I ever encounter an event like this again, I think trying to slow things down might help. I will use this as a learning experience and take away the things that worked and leave the ones that didn't so that I can be more prepared to deal with this in the future.

Synopsis

CRJ-700 First Officer reported several messages and instrument indications associated with a malfunction of the Attitude and Heading Reference System.

ACN: 1501625 *(50 of 50)*

Time / Day

Date : 201712
Local Time Of Day : 1801-2400

Place

Locale Reference.Airport : ZZZ.Airport
State Reference : US

Environment

Flight Conditions : VMC
Weather Elements / Visibility : Turbulence
Weather Elements / Visibility : Windshear
Weather Elements / Visibility : Thunderstorm

Aircraft

Reference : X
ATC / Advisory.Tower : ZZZ
Aircraft Operator : Air Carrier
Make Model Name : A321
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Passenger
Nav In Use : FMS Or FMC
Flight Phase : Final Approach
Route In Use : Vectors
Airspace.Class B : ZZZ

Person : 1

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : Captain
Function.Flight Crew : Pilot Flying
Qualification.Flight Crew : Air Transport Pilot (ATP)
ASRS Report Number.Accession Number : 1501625
Human Factors : Human-Machine Interface
Human Factors : Situational Awareness
Human Factors : Workload

Person : 2

Reference : 2
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Carrier
Function.Flight Crew : First Officer
Function.Flight Crew : Pilot Not Flying

Experience.Flight Crew.Total : 5212
ASRS Report Number.Accession Number : 1501608

Events

Anomaly.Deviation - Speed : All Types
Anomaly.Inflight Event / Encounter : Weather / Turbulence
Anomaly.Inflight Event / Encounter : Unstabilized Approach
Detector.Person : Flight Crew
Were Passengers Involved In Event : N
When Detected : In-flight
Result.Flight Crew : Took Evasive Action
Result.Flight Crew : Diverted
Result.Air Traffic Control : Provided Assistance
Result.Air Traffic Control : Issued New Clearance

Assessments

Contributing Factors / Situations : Weather
Primary Problem : Weather

Narrative: 1

On vectors for approach...Tower reported previous aircraft reported a plus 20 knot increase on final. Fully configured, inside of ZZZZZ [Waypoint] approximately 1200 feet, encountered a plus 40 knot increase in airspeed with an ascent. I executed a go-around. No predicative wind shear indications. It seemed like immediately on the go-around we encountered severe turbulence. I directed the First Officer to tell ATC we needed an immediate right turn. Thunderstorms were painting about 10 miles north of the field at the time of the approach and I suspected that was the cause. ATC gave us a heading but I did not think it was enough. Keep in mind this was all happening very fast. I wanted a 180 degree turn away from the storms.... All this while in severe turbulence. The jet was shaking so violently I could not read the airspeed, altitude or heading. I could see the red and amber in the airspeed indicator and the blue on the HSI. Again, this was all occurring simultaneously; the autopilot kicked off. I had a handful of airplane and could not read the instruments. I tried to reengage the autopilot 2 or 3 times but it continued to kick off. The airspeed during all of this, as best I could tell, seemed to go from the red to the amber, over speed to low speed and back rapidly. Also had rapid, uncommanded, pitch and roll. I don't really know how long it lasted but I would guess 2 or 3 minutes.

After we were out of the turbulence and had the jet under control ATC vectored us back around for another approach. I asked if other airplanes got in after us. Not sure if I asked the First Officer or ATC. I was trying to clear my mind after what just happened but I don't think I was successful. I was thinking get this thing on the ground. Somewhere on final encountered the moderate to severe turbulence again and broke out to the right and started heading south again.

Made the decision to divert.... I had over 12,000 lbs. of fuel so was not concerned about that.... No time to consult with dispatch, but did call enroute. Landed uneventfully.

As we were being vectored for the approach the runway and airport was in the clear. I could see it all just fine. We were painting the storms north of the field but the other aircraft ahead of us were getting in. With the exception of the report of a 20 knot gain by the previous jet there were no indications of a real threat. It all happened suddenly and for the most part unexpectedly. I was aware of the potential for wind shear and was thinking

about the possibility. I called dispatch prior to leaving to ask about the weather and was told it should pass [destination] to the north. The alternate was a "just in case." I'm still not sure what we encountered. Was it a microburst? Blow off from the storms just north of the field? I don't know.

Narrative: 2

At approximately 600 feet AGL, the airspeed began to increase, consistent with a strong gust. As the airspeed continued to increase approximately 40 knots above planned VREF, the Captain initiated a go-around. Turbulence was encountered in the climb as we configured the aircraft, and gradually worsened as we climbed and proceeded over the field and northeast of the field. With the proximity of the storm cells north of the field, we requested a vector to the right away from the weather. At that time, the line was still north, extending northeast, so ATC gave us a 020 heading.

During this time, the turbulence had increased to severe, and it was difficult to see the instruments or manipulate the FCU, and the Captain attempted to utilize the autopilot but it kicked offline. We asked for and received a vector further right to 040, and when it was apparent this was not enough, we told ATC that a vector directly away from the line was required. ATC provided a 090 vector, and at this time, while at 5,000 feet we were in and out of the bottom of the clouds, still experiencing severe turbulence. ATC gave us a vector to 170 and the turbulence died down and the ride south of the field was smooth. Aircraft were still being vectored to final, and I considered that the airspeed increase may have been due to a gust front.

Synopsis

A321 flight crew reported encountering windshear on approach with no predictive windshear indication and then severe turbulence on the go-around with thunderstorms in the vicinity.