ASRS Database Report Set

Altitude Deviations

Report Set Description.....A sampling of reports referencing altitude deviations for all types of operations

Update Number.....33

Date of Update.....March 25, 2022

Number of Records in Report Set.....50

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. Such incidents are independently submitted and are not corroborated by NASA, the FAA or NTSB. 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 clarified 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: 1843366 *(1 of 50)*

Synopsis

EMB-145 First Officer reported descending below a minimum approach altitude while the Captain was making a late change to aircraft configuration. The crew climbed back to the correct altitude and executed a missed approach.

ACN: 1843337 *(2 of 50)*

Synopsis

Air Carrier flight crew reported receiving ATC low altitude alert during visual approach. Excursion from altitude was due to flight crew failure to verify vertical VNAV mode selected.

ACN: 1841966 *(3 of 50)*

Synopsis

MU-2G/K pilot reported descending below minimum vectoring altitude on approach and not realizing the autopilot was descending on glide path while the aircraft was one mile off course. Pilot was vectored back around for another approach which was conducted safely to a landing.

ACN: 1841020 *(4 of 50)*

Synopsis

Air carrier First Officer reported they failed to make a crossing restriction after encountering wake turbulence on descent into HOU.

ACN: 1837293 *(5 of 50)*

Synopsis

Flight crew reported they failed to meet a crossing restriction while descending on a new arrival into TPA after misinterpreting the crossing restrictions and ATC clearance. Issue was further complicated by the use of the same fixes across multiple arrivals.

ACN: 1836220 *(6 of 50)*

Synopsis

ASE TRACON Controller reported a Traffic Conflict in Aspen airspace and recommends a change to Class C for the airport to avoid future similar conflicts.

ACN: 1835343 *(7 of 50)*

Synopsis

Air carrier flight crew reported descending in response to an RA from an opposite direction Airbus on approach to PHX.

ACN: 1834668 *(8 of 50)*

Synopsis

B757 flight crew reported an incorrect selection on the auto-flight system control panel resulted in a descent below a crossing altitude during final approach and an altitude alert from ATC.

ACN: 1833479 *(9 of 50)*

Synopsis

Air carrier Captain reported an altitude excursion during approach.

ACN: 1833101 *(10 of 50)*

Synopsis

Flight crew reported being low on final into Tampa while conducting a visual approach and was unaware until the PAPI was in sight.

ACN: 1832221 *(11 of 50)*

Synopsis

A Center Controller reported a C208 rapidly descended below its assigned altitude, was not responding to ATC calls, and flew below the Minimum IFR Altitude, later the pilot established communications, climbed to a safe altitude and returned to its point of departure.

ACN: 1831731 *(12 of 50)*

Synopsis

E145 First Officer reported a wake turbulence encounter in trail of a heavy aircraft resulted in altitude loss of 500 to 700 feet on arrival into IAD.

ACN: 1831728 *(13 of 50)*

Synopsis

Light Transport Corporate Pilot reported encountering wake turbulence departing OAK in trail of an A321.

ACN: 1831683 *(14 of 50)*

Synopsis

Cessna 172 Pilot reported taking evasive action to avoid an aircraft that disregarded the Tower's instructions.

ACN: 1831420 *(15 of 50)*

Synopsis

B737NG flight crew reported a distraction from wake turbulence contributed to climbing through an altitude restriction departing DEN in trail of a B777.

ACN: 1831146 *(16 of 50)*

Synopsis

First Officer reported the aircraft weather radar failed in heavy weather and the flight crew elected to divert to a precautionary landing.

ACN: 1831010 *(17 of 50)*

Synopsis

Flight crew reported descending below minimum altitude on approach and climbed back to correct altitude. ATC advised flight crew that there had previously been problems with the glide slope.

ACN: 1830724 *(18 of 50)*

Synopsis

Flight crew reported descending 1000 feet below minimum altitude on approach as cleared by ATC.

ACN: 1830406 *(19 of 50)*

Synopsis

A TRACON Controller reported an aircraft experienced a complete electrical failure/communication loss and descended through the altitude of another aircraft while reversing course to return to their departure airport.

ACN: 1830049 *(20 of 50)*

Synopsis

B737-800 Captain reported an upset at FL340 descending into LAX in trail of a B787.

ACN: 1829622 *(21 of 50)*

Synopsis

Flight crew reported a loss of aircraft control in severe turbulence.

ACN: 1829547 *(22 of 50)*

Synopsis

Captain reported a crossing restriction was not met due to an occasional software glitch which reportedly causes the descent to shallow out temporarily.

ACN: 1829214 *(23 of 50)*

Synopsis

MD-11 Captain reported flight control computer issues during approach resulted in loss of all autoflight capability. Pilot also reported the aircraft had been previously refused due to flight control computer malfunctions.

ACN: 1829035 *(24 of 50)*

Synopsis

C25B pilot reported encountering wake turbulence climbing out of SJC in trail of a B737.

ACN: 1828895 *(25 of 50)*

Synopsis

B737-800 flight crew reported unreliable airspeed and altimeter in IMC conditions. Systems returned to normal after exiting IMC.

ACN: 1828679 *(26 of 50)*

Synopsis

First Officer reported receiving a low altitude alert from ATC and climbed back to correct altitude, continuing the approach to landing.

ACN: 1828673 *(27 of 50)*

Synopsis

Flight Crew reported executing a go around due to being below altitude, uncomfortable with the approach, and the airport environment.

ACN: 1827657 *(28 of 50)*

Synopsis

First Officer reported descending below altitude on approach and climbed back to correct altitude to continue the approach to landing.

ACN: 1827593 *(29 of 50)*

Synopsis

Flight crew reported that the First Officer made errors during final approach to landing and the Captain elected to call for a go around.

ACN: 1827504 *(30 of 50)*

Synopsis

TRACON Controller reported they did not notice an aircraft descending below its assigned altitude and below the Minimum Vectoring Altitude.

ACN: 1827500 *(31 of 50)*

Synopsis

EVV TRACON controller reported misunderstanding JO 7110.65 approach clearance procedure which resulted in aircraft being below the MVA.

ACN: 1827345 *(32 of 50)*

Synopsis

Captain reported receiving a Low Altitude Alert call from tower while on final approach and surmised that it was caused by multiple departures while on short final to SEA airport.

ACN: 1826901 *(33 of 50)*

Synopsis

SCT TRACON Controller reported an air carrier aircraft had departed its assigned altitude below the minimum vectoring altitude and was on a conflicting track with an aircraft departing a satellite airport.

ACN: 1826622 *(34 of 50)*

Synopsis

Air carrier First Officer reported descending below assigned altitude on approach to BWI resulting in a low alert warning from Tower.

ACN: 1826455 *(35 of 50)*

Synopsis

Air Carrier Captain reported an ATC Low Altitude Warning while on approach into RNO.

ACN: 1826339 *(36 of 50)*

Synopsis

777 Flight Crew reported an NMAC during the departure climb

ACN: 1826245 *(37 of 50)*

Synopsis

C560 Pilot reported being vectored by ATC directly into a cloud cell and lost several hundred feet of altitude and 50 knots of airspeed resulting in a subsequent slow climb back to assigned altitude.

ACN: 1826180 *(38 of 50)*

Synopsis

Captain reported taking evasive action to avoid a NMAC while on a SID resulting in a missed crossing restriction.

ACN: 1826177 *(39 of 50)*

Synopsis

PC-12 Pilot reported the Propeller Heat System failed while climbing through icing conditions causing a temporary loss of control.

ACN: 1825959 *(40 of 50)*

Synopsis

Air carrier flight crew reported the pilot flying drifted below the glideslope on visual approach resulting in a GPWS alert and evasive action.

ACN: 1825928 *(41 of 50)*

Synopsis

Air Carrier Flight Crew reported a miscommunication with ATC. A change of STAR and instrument approach resulted in a crew communication error and response to GPWS alert.

ACN: 1825294 *(42 of 50)*

Synopsis

PA-24 Pilot reported being out of radio contact with ATC while on an IFR flight plan due to distractions.

ACN: 1825023 *(43 of 50)*

Synopsis

Flight crew reported encountering severe updrafts and downdrafts resulting in deviations from their assigned altitude. The flight crew recovered from the upset condition and continued the flight without issue.

ACN: 1825015 *(44 of 50)*

Synopsis

A Center Controller reported a flight crew descended below the minimum IFR altitude after he missed the crews incorrect read back of the assigned altitude.

ACN: 1824947 *(45 of 50)*

Synopsis

Flight Instructor reported taking evasive action due to a Near Mid Air Collision.

ACN: 1824766 *(46 of 50)*

Synopsis

Air carrier Captain reported similar sounding waypoints FASOP and FASON contributed to an altitude and heading deviation while on the VANZE TWO arrival to MEM airport.

ACN: 1824559 *(47 of 50)*

Synopsis

MD-11 flight crew reported an airspeed and altimeter cross-side mismatch and elected to perform an air turn back and precautionary landing.

ACN: 1824526 *(48 of 50)*

Synopsis

A321 Captain reported confusion during a Bump Thrust takeoff which resulted in the aircraft entering Alpha Floor, requiring the Captain to assume control and descend 300 additional feet to recover airspeed.

ACN: 1824447 *(49 of 50)*

Synopsis

Air carrier Dispatcher reported one of the assigned aircraft reported a NMAC and the pilot crew would submit the necessary reports.

ACN: 1824081 *(50 of 50)*

Synopsis

B737 MAX flight crew reported an altitude deviation caused by the aircraft reverting to MCP SPD that has no altitude protection.

Report Narratives

ACN: 1843366 *(1 of 50)*

Time / Day

Date : 202110
Local Time Of Day : 0601-1200

Place

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

Environment

Flight Conditions : IMC

Aircraft

Reference : X
ATC / Advisory.Tower : 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
Flight Phase : Initial Approach
Airspace.Class D : ZZZ
Airspace.Class E : ZZZ

Person

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 : Instrument
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Air Transport Pilot (ATP)
Experience.Flight Crew.Total : 2200
ASRS Report Number.Accession Number : 1843366
Human Factors : Human-Machine Interface
Human Factors : Situational Awareness
Human Factors : Workload
Human Factors : Distraction

Events

Anomaly.Deviation - Altitude : Excursion From Assigned Altitude
Anomaly.Inflight Event / Encounter : CFTT / CFIT
Detector.Person : Air Traffic Control
When Detected : In-flight
Result.Flight Crew : Returned To Clearance

Result.Flight Crew : Executed Go Around / Missed Approach
Result.Flight Crew : Became Reoriented
Result.Air Traffic Control : Issued Advisory / Alert

Assessments

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

Narrative: 1

While coming into ZZZ after holding for weather, an aircraft before us was able to get into the field at minimums. We were cleared to cross the initial app had fix at or above 3,000 ft. After crossing, I, the First Officer, had set the new altitude for 2,100 ft. which was the lowest altitude on that segment of the approach. After leveling off I had set the MDA of 800 ft. Prior to the FAF the Captain had suggested to switch to a flaps 45 landing instead of 22 to get a lower deck angle. I agreed so the Captain was heads down for a few moments while getting the new speeds. We were told to contact tower and after check-in they said to check our altitude. I had noticed we were lower than the segments assigned altitude and promptly corrected back up to the correct altitude. This was correct before the FAF so we continued the approach. This was followed by a missed approach. Lack of crosschecking and part of the crew was heads down during a critical phase of flight. [Suggest] Heads up cross check on final approach segment. Also not changing the configuration of the airplane at such late notice on arrival/ approach.

Synopsis

EMB-145 First Officer reported descending below a minimum approach altitude while the Captain was making a late change to aircraft configuration. The crew climbed back to the correct altitude and executed a missed approach.

ACN: 1843337 *(2 of 50)*

Time / Day

Date : 202110
Local Time Of Day : 1201-1800

Place

Locale Reference.ATC Facility : ZZZ.Tower
State Reference : US
Altitude.MSL.Single Value : 1500

Environment

Flight Conditions : VMC

Aircraft

Reference : X
ATC / Advisory.Tower : ZZZ
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
Mission : Passenger
Flight Phase : Final Approach
Route In Use : Visual Approach
Airspace.Class B : ZZZ

Person : 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
Experience.Flight Crew.Total : 1148
Experience.Flight Crew.Last 90 Days : 177
Experience.Flight Crew.Type : 1148
ASRS Report Number.Accession Number : 1843337
Human Factors : Human-Machine Interface
Human Factors : Distraction

Person : 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
Experience.Flight Crew.Total : 2748
Experience.Flight Crew.Last 90 Days : 192
Experience.Flight Crew.Type : 2748
ASRS Report Number.Accession Number : 1843712
Human Factors : Human-Machine Interface
Human Factors : Distraction

Events

Anomaly.Deviation - Altitude : Excursion From Assigned Altitude
Anomaly.Deviation - Speed : All Types
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Anomaly.Inflight Event / Encounter : Unstabilized Approach
Anomaly.Inflight Event / Encounter : CFTT / CFIT
Detector.Person : Flight Crew
Detector.Person : Air Traffic Control
When Detected : In-flight
Result.Flight Crew : Overcame Equipment Problem

Assessments

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

Narrative: 1

We were cleared to 2000 ft. on the lateral path of Runway XX. I was at 210 kts. and in level change descending to 2000 ft. We called the runway and were cleared visual approach for Runway XX around ZZZZZ. I thought VNAV was engaged and asked for touch down elevation. I did not verify that VNAV was engaged. I asked for flaps 1 and flaps 5 to slow down. I was inadvertently in level change and the aircraft pitched nose down to maintain the 210 kts. I disconnected the autopilot and leveled the aircraft. During the repair, ATC called low altitude alert. We acknowledged that we were correcting and continued the landing normally.

Narrative: 2

Aircraft automation was selected with LNAV and level change while descending to 2000 ft. Subsequently cleared visual approach and PF (Pilot Flying) started configuring to slow and asked to set touchdown elevation in the altitude window. PF and PM (Pilot Monitoring) didn't verify appropriate vertical mode for phase of flight and aircraft pitched for speed on pitch descent below glidepath. PF disconnected automation and corrected while PM communicated altitude correction to Tower.

Synopsis

Air Carrier flight crew reported receiving ATC low altitude alert during visual approach. Excursion from altitude was due to flight crew failure to verify vertical VNAV mode selected.

ACN: 1841966 *(3 of 50)*

Time / Day

Date : 202109
Local Time Of Day : 1201-1800

Place

Locale Reference.Airport : ZZZ.Airport
State Reference : US
Altitude.MSL.Single Value : 4000

Environment

Flight Conditions : VMC
Weather Elements / Visibility.Visibility : 8
Light : Daylight

Aircraft

Reference : X
ATC / Advisory.TRACON : ZZZ
Aircraft Operator : Personal
Make Model Name : MU-2G/K
Crew Size.Number Of Crew : 1
Operating Under FAR Part : Part 91
Flight Plan : IFR
Mission : Personal
Flight Phase : Initial Approach
Route In Use : Vectors
Airspace.Class E : ZZZ

Person

Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Personal
Function.Flight Crew : Pilot Flying
Function.Flight Crew : Single Pilot
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Commercial
Experience.Flight Crew.Total : 2500
Experience.Flight Crew.Last 90 Days : 25
Experience.Flight Crew.Type : 600
ASRS Report Number.Accession Number : 1841966
Human Factors : Communication Breakdown
Human Factors : Human-Machine Interface
Human Factors : Situational Awareness
Human Factors : Confusion
Communication Breakdown.Party1 : Flight Crew
Communication Breakdown.Party2 : ATC

Events

Anomaly.Deviation - Altitude : Excursion From Assigned Altitude
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Anomaly.Inflight Event / Encounter : CFTT / CFIT
Detector.Person : Air Traffic Control
When Detected : In-flight
Result.Flight Crew : Became Reoriented
Result.Air Traffic Control : Issued New Clearance
Result.Air Traffic Control : Issued Advisory / Alert

Assessments

Contributing Factors / Situations : Human Factors
Contributing Factors / Situations : Software and Automation
Contributing Factors / Situations : Procedure
Primary Problem : Human Factors

Narrative: 1

I was being vectored to the RNAV (GPS) Runway XXL approach to ZZZ at 4,000 feet in hazy VMC. I received a short vector of 260 degrees to intercept the final approach course and 'join the approach.' I was flying on autopilot in heading mode and when given the instruction to 'join the approach' I pressed the approach button on my autopilot. I had previously switched my Garmin GTN725 to VTF (Vectors To Final) mode when I began receiving vectors from ATC. Upon hitting the approach button on the AP two things happened: 1) the autopilot enabled glide path capture and 2) the autopilot made a wide turn flying through the final approach course and initiating an s-turn to track the inbound course attempting to capture the approach. I did not hear ATC's informational statement that they would issue lower when I was clear of traffic (but I heard this when I subsequently listened to the ATC recording). While tracking back to center-line of the approach the controller informed me that I was 1 mile south of the approach course; I question that it was a full mile, so am reviewing my GPS data to ascertain exact performance of my autopilot capture versus specs for the M4D autopilot. The autopilot specs allow an s-turn to capture, but it may not meet TERPS (Terminal Instrument Procedures) requirements if too close to the FAF and at high speed. The controller then informed me that I was below his MVA. This is apparently because I was descending per glide path but wide south of procedure course line. I was given instructions to climb back to 4,000 feet and given a vector to start back around for another approach. All went well from this point, and I cancelled IFR and made a visual approach to landing at ZZZ when I was realigned with the approach course. Retrospectively, there are limitations to my autopilot's capabilities and had I remained in GPSS mode and allowed my GTN725 to sequence, and resumed the approach to the next way point, turn anticipation would have made the appropriate turn onto final approach course. Also, even though I missed that I had captured the glide path and began a descent I was not yet cleared for, staying in GPSS mode would not have allowed glide path capture. I should not have left the assigned 4,000 feet altitude until cleared or issued another altitude. 'Join the approach' does not mean cleared for the approach. I was always VMC, saw my traffic, and had terrain visually - none of this is an excuse, just facts. Systemic issues. 'Join the approach' is confusing wording. I am going to go review the ATC handbook. I am used to 'join the localizer' and know that join the localizer does not mean cleared on an ILS. Now, thinking it through without the task pressures in the cockpit yesterday, I see that 'join the approach' does not mean cleared. None the less, join the approach is bad wording and not clear. I am a relatively experienced commercial instrument pilot, and this is the first time I have every been issued the instruction to 'join' an RNAV approach. I see the parallels to joining a localizer, but a localizer is purely horizontal guidance, and we all know that. ATC never

says 'join the ILS' for example. But saying join an RNAV approach is like saying join the ILS - it is bad wording and confusing. I learned a lot from this experience yesterday and am confident I will not repeat it.

Synopsis

MU-2G/K pilot reported descending below minimum vectoring altitude on approach and not realizing the autopilot was descending on glide path while the aircraft was one mile off course. Pilot was vectored back around for another approach which was conducted safely to a landing.

ACN: 1841020 *(4 of 50)*

Time / Day

Date : 202109

Place

Locale Reference.ATC Facility : I90.TRACON
State Reference : TX
Relative Position.Angle.Radial : 360
Relative Position.Distance.Nautical Miles : 6
Altitude.MSL.Single Value : 11000

Aircraft : 1

Reference : X
ATC / Advisory.TRACON : I90
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
Mission : Passenger
Flight Phase : Descent
Airspace.Class B : IAH

Aircraft : 2

Reference : Y
ATC / Advisory.TRACON : I90
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
Mission : Passenger
Flight Phase : Descent
Airspace.Class B : IAH

Person

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
Experience.Flight Crew.Last 90 Days : 170
Experience.Flight Crew.Type : 2735
ASRS Report Number.Accession Number : 1841020
Human Factors : Situational Awareness
Human Factors : Distraction
Analyst Callback : Attempted

Events

Anomaly.Deviation - Altitude : Crossing Restriction Not Met
Anomaly.Deviation - Altitude : Undershoot
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Anomaly.Inflight Event / Encounter : Wake Vortex Encounter
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Became Reoriented

Assessments

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

Narrative: 1

I was PF (Pilot Flying) on this leg, we were cleared to descend via KIDDZ 3 RNAV Arrival into HOU. Winds aloft were light and we were about eight miles behind a Company aircraft also following the same clearance and flight path, which led to some intermittent moderate turbulence. We were at 12,000 ft from the crossing restriction at SNIFY [when we] encountered the wake turbulence. I elected to descend early to 11,000 ft to avoid the conditions. The first attempt to do this I selected the ALT INT option to start the descent early to the next 11,000 ft restriction at RVEEE. That did not work for some reason, and the turbulence was not letting up, so I set the altitude to 11,000 ft from 6,000 ft (from the descend via clearance) and descended in Vertical Speed mode to get the aircraft down. I selected VNAV again once established at 11,000 ft to continue the arrival. Shortly after reaching 11,000 ft and selecting VNAV, we crossed RVEEE and I was expecting the aircraft to descend to make AAHZZ at 10,000 ft. The aircraft did not descend and I couldn't figure out why, and immediately was in the Yellow if not Red per the RRM (Risk and Resource Management) model. I quickly figured out the altitude selection in the MCP (Mode Control Panel) was not reselected to 6,000 ft. I quickly set the lower altitude and initiated a descend as quickly and safely as I could, but the delay in descent put us 700 ft high over AAHZZ. ATC didn't say anything, nor did we as there weren't any other aircraft conflicts. It is vital to maintain situational awareness and vigilance especially when changing descent modes during an RNAV arrival. The turbulence distraction should have been a trigger to do so to avoid errors such as not resetting the clearance altitude after reselecting the original MCP vertical mode VNAV. Another option was to request vectors from ATC or a delay vector to laterally escape and avoid the wake and alleviate the VNAV demand until we were well clear of the rough air.

Synopsis

Air carrier First Officer reported they failed to make a crossing restriction after encountering wake turbulence on descent into HOU.

ACN: 1837293 *(5 of 50)*

Time / Day

Date : 202109
Local Time Of Day : 1201-1800

Place

Locale Reference.ATC Facility : ZJX.ARTCC
State Reference : FL
Altitude.MSL.Single Value : 27000

Environment

Flight Conditions : VMC

Aircraft

Reference : X
ATC / Advisory.Center : ZJX
Aircraft Operator : Corporate
Make Model Name : Light Transport
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 91
Flight Plan : IFR
Mission : Passenger
Flight Phase : Descent
Route In Use.STAR : MAATY1
Airspace.Class E : ZJX

Person : 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 : Flight Instructor
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Multiengine
Experience.Flight Crew.Total : 2800
Experience.Flight Crew.Last 90 Days : 60
Experience.Flight Crew.Type : 440
ASRS Report Number.Accession Number : 1837293
Human Factors : Confusion
Human Factors : Human-Machine Interface
Human Factors : Situational Awareness
Human Factors : Communication Breakdown
Communication Breakdown.Party1 : Flight Crew
Communication Breakdown.Party2 : ATC

Person : 2

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

Reporter Organization : Corporate
Function.Flight Crew : Pilot Not Flying
Qualification.Flight Crew : Flight Instructor
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Instrument
Experience.Flight Crew.Total : 7200
Experience.Flight Crew.Last 90 Days : 80
Experience.Flight Crew.Type : 420
ASRS Report Number.Accession Number : 1837489
Human Factors : Situational Awareness
Human Factors : Human-Machine Interface
Human Factors : Communication Breakdown
Human Factors : Confusion
Communication Breakdown.Party1 : Flight Crew
Communication Breakdown.Party2 : ATC

Events

Anomaly.ATC Issue : All Types
Anomaly.Deviation - Altitude : Crossing Restriction Not Met
Anomaly.Deviation - Altitude : Undershoot
Anomaly.Deviation - Track / Heading : All Types
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Detector.Person : Air Traffic Control
When Detected : In-flight
Result.Flight Crew : Became Reoriented

Assessments

Contributing Factors / Situations : Chart Or Publication
Contributing Factors / Situations : Human Factors
Contributing Factors / Situations : Procedure
Primary Problem : Ambiguous

Narrative: 1

We were proceeding direct to HEVVN when ATC instructed us to cross LEGGT at FL270. The RNAV arrival had already been loaded in the FMS and briefed with the altitude crossing restrictions confirmed in the flight plan. FL270 was set and confirmed in the Altitude Preselect and the VNAV was armed. The airplane intercepted the VPATH and we were given a frequency change. When the Pilot Monitoring (PM) checked in with the controller advising we were FL28.5 descending to cross LEGGT at FL270, the controller responded that we were past LEGGT and to confirm our crossing restriction. The PM advised ATC we had an issue/conflict with our FMS and ATC cleared us to expedite a descent to FL190. The rest of the flight was completed without further event. Reflecting back on the event, I think there are several factors that contributed. First, the MAATY1 RNAV Arrival is one of the new arrivals as part of the greater Florida Metroplex airspace revamp. However, the first two fixes in our flight plan on the arrival, HEVVN and LEGGT, are the same first two fixes on the FOOXX5 arrival. Up until the last month, we had routinely flown the FOOXX5 arrival into TPA numerous times each month for the last several years. From my perspective, one of the key important differences between the FOOXX5 and MAATY1 arrivals is that all the altitudes listed in the FOOXX5 are "expect", while in the MAATY1 they are published as mandatory (without "expect"). Another key

difference is that in the FOOXX5, the procedure calls for a crossing restriction "AT" LEGGT at FL270...The new MAATY1 procedure calls for a crossing restriction "AT OR ABOVE" LEGGT at FL270. When previously loading the FOOXX5 arrival into our FMS, we had to manually enter the crossing altitudes into the flight plan since all of the altitudes in the procedure were "expect". When loading the MAATY1 arrival into our FMS, all of the altitude restrictions are automatically loaded into the flight plan. So, today when we loaded the MAATY1 into the FMS, both the PM and myself saw the "at or above FL270" at LEGGT that was automatically loaded in the flight plan when the procedure was selected. We both mistook that as crossing "AT FL270". Hence, when our VNAV VPATH was intercepted, it had us crossing LEGGT "at or above FL270" as properly depicted in the published procedure - despite our ATC clearance to cross LEGGT "AT" FL270. In short summary the factors contributing to this event were: 1) New MAATY1 RNAV ARRIVAL in use with common fixes from FOOXX5. 2) Same altitude with difference constraints between MAATY1/FOOXX5 ("Expect" FL270 "AT" LEGGT in FOOXX5 vs. published "AT OR ABOVE" FL270 at LEGGT in MAATY1). 3) FMS programming error in FMS VNAV/lack of close cross-checking altitude constraints vs. ATC clearance by crew. 4) ATC issuing a crossing restriction at a fix (LEGGT "AT" FL270) on the assigned RNAV arrival that differed from the STAR published restriction (LEGGT "AT or ABOVE" FL270) without emphasizing the change. To prevent this recurrence, we as a crew will be much more diligent in cross-checking altitudes in the FMS flight plan whenever crossing restrictions are issued by ATC, specifically when differentiating between crossing "AT" vs "AT or ABOVE". We will also query ATC if there are any questions when the clearance issued by ATC contradicts published altitudes or crossing restrictions in a procedure. I also think it would be beneficial for all involved if there was a way for ATC to emphasize crossing altitude instructions whenever they differ from published altitudes or crossing restrictions in the SID/STAR. I think something along the lines of "descend via MAATY1 except cross LEGGT AT FL270" may have helped in this scenario, though it is possible that may be too redundant or possibly be cause for additional confusion for other crews/controllers. It comes down finding a way to differentiate between the assigned clearance of crossing a fix "AT" compared to the published restriction "AT or ABOVE".

Narrative: 2

While flying the MAATY1 arrival yesterday into TPA, we were given an altitude restrictions to "cross LEGGT at FL270." 27,000 was entered into the altitude preselector and FL270 was already pre-programmed into the FMS, as this is the altitude shown on the arrival. VNAV on the auto-pilot was armed, and we intercepted the VPATH to FL270. We were given a frequency change and when I checked in I said that we were "28,500 descending to 27,000 at LEGGT". The controller said that we had already crossed LEGGT and asked what our previously assigned altitude restriction was. I saw that we were on the Glide Path to 27,000 and wasn't sure immediately why we hadn't arrived at 27,000 at LEGGT. I said that "we were assigned 27,000 at LEGGT and that we were having an FMS issue." The detail that the crew failed to notice was that the FL270 is an AT OR ABOVE altitude as depicted on the arrival plate and as pre-programmed in the FMS. We used the VNAV mode on the autopilot and the display on the G5000 appeared to be bringing us to 27,000 at LEGGT. We were then cleared to FL190 and told to expedite, which we did. Later we were given MAATY at 13,000 and 250kts and the FMS functioned as expected. After taking some time to diagnose the issue, we learned that the FMS was pre-programmed to cross LEGGT AT OR ABOVE FL270. Not to cross AT FL270 as instructed. After thoroughly debriefing the flight, there are multiple factors as to why I believe this event occurred. 1) The implementation of the new arrivals from the Florida Metroplex and the similarities (and subtle differences) between the MAATY1 and the FOOXX5 arrivals. 2) Even though the altitudes in the FMS were briefed, the crew failed to notice the altitude constraint difference between the pre-loaded altitudes in the FMS and the clearance received from

ATC. 3) ATC used an altitude restriction from the FOOXX5 as an altitude restriction on the MAATY1. 4) ATC did not emphasize the difference between the clearance and the published arrival. 1) The pilots have been flying the FOOXX5 arrival regularly for many years. The FOOXX5 says to EXPECT LEGGT at FL270, and it was very common for the controllers to issue this restriction. We would always enter FL270 AT LEGGT manually into the FMS. By entering the altitude manually, we always create an "AT" altitude. Since the new procedure shows the same altitude at the same point I think that it is easy for the crew to assume that the FMS will cross LEGGT at FL270, just as it always has. However, "AT OR ABOVE" FL270 is now pre-programmed in the FMS and the auto-pilot will not cross LEGGT at FL270 like it did previously. It now requires re-entering the altitude into the FMS as an "AT" altitude if the controller issues the "cross LEGGT "AT" FL270" like they have done for many years. 2) To prevent this from happening in the future, the crew must be sure to cross-check the constraints ("AT OR ABOVE" vs "AT" altitudes) for the arrival. The crew must also be aware that ATC altitude restrictions MAY NOT coincide with the published arrival procedures and must be sure to cross-check each clearance. 3) There are similarities between the FOOXX5 and the MAATY1 in that they use some of the same fixes (HEVVN and LEGGT). The published altitudes at LEGGT are subtly different. FOOXX5 publishes expect LEGGT "AT" FL270 and MAATY1 publishes cross LEGGT "AT OR ABOVE" FL270. The controller used the altitude constraint from the FOOXX5 as opposed to the altitude constraint on the MAATY1. The controller that issued "cross LEGGT at FL270" may have issued that clearance hundreds of times in his career from the FOOXX5 and may not think anything of it, even though this clearance differs from the published altitude in the MAATY1. With MAATY1 programmed, the FMS in our aircraft schedules the crossing of LEGGT somewhere between FL280 and FL290 since it is projecting a 3 degree glidepath to GOJOE between FL260 and FL210 and MAATY AT 13,000. To make our FMS cross LEGGT "AT" FL270, it requires reprogramming the altitude restriction in the FMS. This is easily missed since the altitude displayed next to LEGGT is FL270 within the FMS. 4) If a clearance differs from the published arrival procedure, it would be helpful if ATC would emphasize that difference. For example "Descend via the MAATY1 EXCEPT cross LEGGT at FL270." Going forward the crew will also be sure to question ATC when a clearance does not match a published procedure.

Synopsis

Flight crew reported they failed to meet a crossing restriction while descending on a new arrival into TPA after misinterpreting the crossing restrictions and ATC clearance. Issue was further complicated by the use of the same fixes across multiple arrivals.

ACN: 1836220 *(6 of 50)*

Time / Day

Date : 202109
Local Time Of Day : 1201-1800

Place

Locale Reference.ATC Facility : ASE.TRACON
State Reference : CO
Altitude.MSL.Single Value : 12200

Environment

Flight Conditions : VMC

Aircraft : 1

Reference : X
ATC / Advisory.TRACON : ASE
Make Model Name : Any Unknown or Unlisted Aircraft Manufacturer
Crew Size.Number Of Crew : 1
Operating Under FAR Part : Part 91
Flight Plan : VFR
Mission : Personal
Flight Phase : Climb
Route In Use : None
Airspace.Class E : ASE

Aircraft : 2

Reference : Y
ATC / Advisory.TRACON : ASE
Aircraft Operator : Air Taxi
Make Model Name : Medium Transport, Low Wing, 2 Turbojet Eng
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 135
Flight Plan : IFR
Mission : Passenger
Flight Phase : Climb
Airspace.Class E : ASE

Person

Location Of Person.Aircraft : X
Location Of Person.Facility : ASE.TRACON
Reporter Organization : Government
Function.Air Traffic Control : Approach
Qualification.Air Traffic Control : Fully Certified
Experience.Air Traffic Control.Time Certified In Pos 1 (yrs) : 1
ASRS Report Number.Accession Number : 1836220
Human Factors : Human-Machine Interface
Human Factors : Communication Breakdown
Communication Breakdown.Party1 : ATC
Communication Breakdown.Party2 : Flight Crew

Events

Anomaly.Conflict : Airborne Conflict
Anomaly.Deviation - Altitude : Excursion From Assigned Altitude
Anomaly.Inflight Event / Encounter : CFTT / CFIT
Detector.Automation : Air Traffic Control
Detector.Automation : Aircraft RA
Detector.Person : Flight Crew
Detector.Person : Air Traffic Control
When Detected : In-flight
Result.Flight Crew : Took Evasive Action
Result.Air Traffic Control : Issued Advisory / Alert
Result.Air Traffic Control : Provided Assistance
Result.Air Traffic Control : Issued New Clearance

Assessments

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

Narrative: 1

Additional documentation for Aspen's need for Class C [Airspace]. Aircraft Y was departing, a VFR (Aircraft X), not talking to ATC, flew into the departure corridor, climbing. Aircraft Y wasn't able to turn because of the mountains, was flying through a 12,100 foot MVA (Minimum Vectoring Altitude), was given a traffic alert. The VFR (Aircraft X) was at 12,200 feet, climbing, Aircraft Y got an RA and descended from 12,100 feet back into high terrain to 11,700 feet to avoid. Had ATC been talking to the VFR (Aircraft X), they would have been able to turn Aircraft Y away from the conflict. Aspen needs Class C Airspace to require VFR aircraft flying through arrival and departure areas are talking to ATC.

Synopsis

ASE TRACON Controller reported a Traffic Conflict in Aspen airspace and recommends a change to Class C for the airport to avoid future similar conflicts.

ACN: 1835343 *(7 of 50)*

Time / Day

Date : 202108
Local Time Of Day : 1201-1800

Place

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

Environment

Flight Conditions : VMC
Light : Daylight

Aircraft : 1

Reference : X
ATC / Advisory.TRACON : P50
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
Mission : Passenger
Flight Phase : Initial Approach
Airspace.Class B : PHX

Aircraft : 2

Reference : Y
ATC / Advisory.TRACON : P50
Aircraft Operator : Air Carrier
Make Model Name : Airbus Industrie 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
Airspace.Class B : PHX

Person : 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 : Multiengine
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Instrument
ASRS Report Number.Accession Number : 1835343
Human Factors : Situational Awareness
Human Factors : Distraction

Person : 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)
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Multiengine
ASRS Report Number.Accession Number : 1835344

Events

Anomaly.ATC Issue : All Types
Anomaly.Conflict : Airborne Conflict
Anomaly.Deviation - Altitude : Excursion From Assigned Altitude
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Detector.Automation : Aircraft RA
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Took Evasive Action

Assessments

Contributing Factors / Situations : Airspace Structure
Contributing Factors / Situations : Chart Or Publication
Contributing Factors / Situations : Environment - Non Weather Related
Contributing Factors / Situations : Procedure
Primary Problem : Procedure

Narrative: 1

We were being vectored onto the ILS approach Runway 26 into PHX. There was an Airbus that was being vectored on to the parallel approach for 25L into PHX. Because we were both intercepting our respective localizers at the same lateral point from the field, we got an RA to descend. The TCAS did exactly what it was supposed to do- it doesn't know that we are intercepting a localizer, and so it sees two airplanes that are opposite direction and converging and issues the RA command. The Captain turned off the autopilot, turned away slightly from the traffic, and descended approximately 300 feet. We had the traffic in sight the entire time, and we were able to stabilize the aircraft before the "1,000 ft above the field" call out. Why does ATC keep on having aircraft on parallel approaches intercept parallel localizers at the same lateral point? If they would space it out by a mile, this wouldn't happen. And if it's happened to me twice now in the last 6 months, it must be happening to other people as well.

Narrative: 2

While on the visual approach to Runway 26 we received a Descent TA. Another aircraft was on approach to 25L and also joining final. We had the aircraft in sight and we also complied with the TA and started a descent. Our position was just outside PRUNN on approach to Runway 26. We were at 3,000 [feet], and descent was to approximately 2,700 [feet]. We then leveled off and joined the glide slope and landed on Runway 26. ATC was notified of the TA.

Synopsis

Air carrier flight crew reported descending in response to an RA from an opposite direction Airbus on approach to PHX.

ACN: 1834668 *(8 of 50)*

Time / Day

Date : 202108
Local Time Of Day : 1201-1800

Place

Locale Reference.Airport : ZZZ.Airport
State Reference : US
Altitude.AGL.Single Value : 900

Environment

Flight Conditions : VMC

Aircraft

Reference : X
ATC / Advisory.Tower : ZZZ
Aircraft Operator : Air Carrier
Make Model Name : B757-200
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

Component

Aircraft Component : Autopilot
Aircraft Reference : X
Problem : Improperly Operated

Person : 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 : Multiengine
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Instrument
Experience.Flight Crew.Total : 1618
Experience.Flight Crew.Last 90 Days : 46
Experience.Flight Crew.Type : 9
ASRS Report Number.Accession Number : 1834668
Human Factors : Situational Awareness
Human Factors : Confusion
Human Factors : Human-Machine Interface

Person : 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 : Air Transport Pilot (ATP)
Qualification.Flight Crew : Instrument
Experience.Flight Crew.Total : 18000
Experience.Flight Crew.Last 90 Days : 207
Experience.Flight Crew.Type : 10400
ASRS Report Number.Accession Number : 1834698
Human Factors : Human-Machine Interface
Human Factors : Confusion
Human Factors : Situational Awareness

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.Deviation - Altitude : Overshoot
Anomaly.Deviation - Altitude : Crossing Restriction Not Met
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Anomaly.Inflight Event / Encounter : CFTT / CFIT
Detector.Automation : Air Traffic Control
Detector.Person : Flight Crew
Detector.Person : Air Traffic Control
Were Passengers Involved In Event : N
When Detected : In-flight
Result.Flight Crew : Took Evasive Action
Result.Flight Crew : Overcame Equipment Problem
Result.Flight Crew : Became Reoriented
Result.Air Traffic Control : Provided Assistance

Assessments

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

Narrative: 1

Assigned ZZZZZ Visual to Runway XX at ZZZ. Briefed use of VNAV in accordance with Approach Briefing Guide. Prior to ZZZ1 VOR, instructed to descend from 4,000 to 3,000 ft. MSL and FLCH was utilized. Upon crossing ZZZ1, pilot not flying, while also saturated with LCA (Line Check Airman) duties, set 1,500 ft. for ZZZZZ1 and then touchdown zone elevation while slowing and configuring aircraft. We did not notice FLCH was still engaged until ATC provided an altitude alert at 900 ft. MSL. Pilot not flying/LCA took command of aircraft and performed a momentary level-off before giving aircraft back to original pilot flying for a stabilized approach and landing.

Narrative: 2

Pilot not flying is an LCA (Line Check Airman) conducting an Initial Operating Experience flight for pilot flying, who is a transition First Officer from the other aircraft builder.

Assigned to fly the ZZZZZ Visual Approach to Runway XX at ZZZ. Installed the RNAV V XX procedure in FMC and briefed RNAV/visual approach procedures. ATC cleared us direct ZZZ1 and cross ZZZ1 at 3,000 ft. LNAV was engaged to fly direct ZZZ1 and FLCH was engaged to descend to 3,000 ft. Crossing ZZZ1, pilot not flying entered 1,500 ft. in MCP altitude window for ZZZZZ1 crossing altitude. While descending on profile, aircraft was slowing to 180 kt. and configuring for landing. PM was tracking the configuration changes and verifying on course with LNAV, and then selected TDZE after passing ZZZZZ2 intersection. Pilot flying was having difficulty finding the runway which was out his right window behind [of] his shoulder line. Pilot not flying looked outside to acquire runway to direct pilot flying to look in the right direction. At that moment, ZZZ Tower Controller called "Altitude Alert" for our flight. Pilot not flying looked inside and noticed altitude was 900 ft. crossing ZZZZZ1, below the 1,500-ft. altitude that was programmed in the FMC. Pilot not flying then also noticed that VNAV was not engaged but the aircraft was descending in FLCH, so was therefore not on the VNAV descent path. Pilot not flying took control of the aircraft, leveled the descent, and continued to follow the LNAV course to line up with Runway XX. Once aligned and in proper position to land, pilot not flying gave control of aircraft back to pilot flying, who conducted a stable visual approach to a safe landing.

Synopsis

B757 flight crew reported an incorrect selection on the auto-flight system control panel resulted in a descent below a crossing altitude during final approach and an altitude alert from ATC.

ACN: 1833479 *(9 of 50)*

Time / Day

Date : 202108
Local Time Of Day : 1201-1800

Place

Locale Reference.ATC Facility : ANC.Tower
State Reference : AK
Relative Position.Distance.Nautical Miles : 6.7
Altitude.MSL.Single Value : 1000

Environment

Light : Daylight
Ceiling.Single Value : 9000

Aircraft

Reference : X
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
Mission : Cargo / Freight / Delivery
Flight Phase : Final Approach
Route In Use.Other

Person

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 : Multiengine
Qualification.Flight Crew : Instrument
Experience.Flight Crew.Total : 15000
Experience.Flight Crew.Last 90 Days : 210
Experience.Flight Crew.Type : 8000
ASRS Report Number.Accession Number : 1833479
Human Factors : Situational Awareness

Events

Anomaly.Deviation - Altitude : Excursion From Assigned Altitude
Anomaly.Deviation - Altitude : Overshoot
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Anomaly.Inflight Event / Encounter : CFTT / CFIT
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Overcame Equipment Problem

Assessments

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

Narrative: 1

Descended 1,000 ft. then climb to 1,600 ft. to cross final approach fix.

Synopsis

Air carrier Captain reported an altitude excursion during approach.

ACN: 1833101 *(10 of 50)*

Time / Day

Date : 202108
Local Time Of Day : 1201-1800

Place

Locale Reference.Airport : TPA.Airport
State Reference : FL

Environment

Flight Conditions : VMC

Aircraft

Reference : X
ATC / Advisory.Tower : TPA
Aircraft Operator : Air Carrier
Make Model Name : Commercial Fixed Wing
Crew Size.Number Of Crew : 2
Flight Plan : IFR
Flight Phase : Final Approach
Airspace.Class B : TPA

Person : 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 : Multiengine
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Air Transport Pilot (ATP)
ASRS Report Number.Accession Number : 1833101
Human Factors : Situational Awareness
Human Factors : Troubleshooting
Human Factors : Distraction
Human Factors : Human-Machine Interface

Person : 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)
ASRS Report Number.Accession Number : 1833108
Human Factors : Situational Awareness
Human Factors : Human-Machine Interface

Human Factors : Distraction
Human Factors : Troubleshooting

Events

Anomaly.Deviation - Altitude : Overshoot
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Anomaly.Ground Event / Encounter : Ground Equipment Issue
Anomaly.Inflight Event / Encounter : CFTT / CFIT
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Overcame Equipment Problem
Result.Air Traffic Control : Provided Assistance

Assessments

Contributing Factors / Situations : ATC Equipment / Nav Facility / Buildings
Contributing Factors / Situations : Human Factors
Primary Problem : Human Factors

Narrative: 1

On visual approach to Runway 01L Tower Controller called an "altitude alert". We were cleared for the visual to Runway 01L to Tampa. The glideslope to the ILS 01L was NOTAM'd Out of Service. Tower instructed us to maintain 2,600 feet until north of Macdill AFB. I had briefed that this would cause us to be high and that I would configure the aircraft for landing at 2,600 feet and prior to Macdill. I had also briefed that we would need a high rate of descent to get us on glide path. Once north of Macdill, and runway in sight, I disconnected the autopilot, and started to hand fly the visual approach. At approximately 1,000 feet the First Officer stated we were approaching the (visual 3:1) glidepath. At that time, I had started to reduce the rate of descent. At about the same time the Tower called an altitude alert for Aircraft X. I started to pick up the PAPI and saw we were below glidepath. I continued reducing descent rate to intercept the PAPI glidepath. Aircraft was on glidepath and stable at 500 feet. Landed normally. [Suggest] Brief the visual in more detail on 3:1 glidepath and required rate of descent to intercept from above.

Narrative: 2

On visual approach to Runway 01L Tower Controller called an "altitude alert". We were cleared for the visual to Runway 01L to Tampa. The glideslope to the ILS 01L was NOTAM'd Out of Service. Tower instructed us to maintain 2,600 feet until north of Macdill AFB. I had briefed that this would cause us to be high and that I would configure the aircraft for landing at 2,600 feet and prior to Macdill. I had also briefed that we would need a high rate of descent to get us on glide path. Once north of Macdill, and runway in sight, I disconnected the autopilot, and started to hand fly the visual approach. At approx 1,000 feet the First Officer stated we were approaching the (visual 3:1) glidepath. At that time I had started to reduce the rate of descent. At about the same time the Tower called an altitude alert for Aircraft X. I started to pick up the PAPI and saw we were below glidepath. I continued reducing descent rate to intercept the PAPI glidepath. Aircraft was on glidepath and stable at 500 feet. Landed normally. [Suggest] Brief the visual in more detail on 3:1 glidepath and required rate of descent to intercept from above.

Synopsis

Flight crew reported being low on final into Tampa while conducting a visual approach and was unaware until the PAPI was in sight.

ACN: 1832221 *(11 of 50)*

Time / Day

Date : 202108
Local Time Of Day : 1201-1800

Place

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

Aircraft

Reference : X
ATC / Advisory.Center : ZZZ
Aircraft Operator : Air Taxi
Make Model Name : Caravan Undifferentiated
Operating Under FAR Part : Part 135
Flight Plan : IFR
Mission : Passenger
Flight Phase : Climb
Airspace.Class E : ZZZ

Person

Location Of Person.Aircraft : X
Location Of Person.Facility : ZZZ.ARTCC
Reporter Organization : Government
Function.Air Traffic Control : Enroute
Qualification.Air Traffic Control : Fully Certified
Experience.Air Traffic Control.Time Certified In Pos 1 (yrs) : 12
ASRS Report Number.Accession Number : 1832221
Human Factors : Communication Breakdown
Human Factors : Distraction
Human Factors : Workload
Human Factors : Confusion
Communication Breakdown.Party1 : ATC
Communication Breakdown.Party2 : Flight Crew

Events

Anomaly.ATC Issue : All Types
Anomaly.Deviation - Altitude : Excursion From Assigned Altitude
Anomaly.Deviation - Altitude : Overshoot
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Anomaly.Inflight Event / Encounter : Loss Of Aircraft Control
Anomaly.Inflight Event / Encounter : CFTT / CFIT
Detector.Person : Flight Crew
Detector.Person : Air Traffic Control
When Detected : In-flight
Result.Flight Crew : Requested ATC Assistance / Clarification
Result.Flight Crew : Regained Aircraft Control
Result.Flight Crew : Overcame Equipment Problem
Result.Air Traffic Control : Issued New Clearance
Result.Air Traffic Control : Provided Assistance

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : Airspace Structure
Contributing Factors / Situations : Software and Automation
Contributing Factors / Situations : Weather
Contributing Factors / Situations : Human Factors
Primary Problem : Airspace Structure

Narrative: 1

Aircraft X was level at 10,000 feet westbound to ZZZ. The pilot asked for a block 10,000 to 12,000 feet, which I issued. Lots of aircraft were taking that same block due to weather in the area. Shortly after the minimum safe altitude warning sounded, and when I looked, Aircraft X was at 7,100 feet in a 5,000 feet minimum IFR altitude. Confused, I continued to watch and realized it was sounding because the aircraft was dropping so rapidly. Knowing something was definitely wrong I reached out to the pilot, but no response. After the aircraft went from 7,100 feet to 6,400 feet to 2,400 feet, I reached out two more times with no response. Finally, the pilot responded and requested descent to 1,000 feet and I informed them they were in a 5,000 feet minimum IFR altitude. They then canceled IFR but never descended and actually climbed to 2,800 feet. Eventually they reached 5,900 feet and requested to return to ZZZ1. A clearance was issued direct and assigned 6,000 feet which they had requested but then climbed to 7,000 feet, so I just issued 7,000 feet. The pilot was very shaken up. It sounds like a software issue? I recommend fixing that or grounding the C208's until it is fixed.

Synopsis

A Center Controller reported a C208 rapidly descended below its assigned altitude, was not responding to ATC calls, and flew below the Minimum IFR Altitude, later the pilot established communications, climbed to a safe altitude and returned to its point of departure.

ACN: 1831731 *(12 of 50)*

Time / Day

Date : 202108
Local Time Of Day : 1201-1800

Place

Locale Reference.Airport : IAD.Airport
State Reference : DC
Altitude.MSL.Single Value : 20000

Environment

Flight Conditions : VMC
Light : Daylight

Aircraft : 1

Reference : X
ATC / Advisory.Center : ZNY
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
Route In Use.STAR : HYPER8
Airspace.Class A : ZNY

Aircraft : 2

Reference : Y
ATC / Advisory.Center : ZNY
Aircraft Operator : Air Carrier
Make Model Name : Heavy Transport
Flight Plan : IFR
Airspace.Class A : ZNY

Person

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 : Flight Instructor
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Air Transport Pilot (ATP)
Experience.Flight Crew.Total : 1751
Experience.Flight Crew.Last 90 Days : 103
Experience.Flight Crew.Type : 233
ASRS Report Number.Accession Number : 1831731
Analyst Callback : Attempted

Events

Anomaly.Deviation - Altitude : Excursion From Assigned Altitude
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Anomaly.Inflight Event / Encounter : Wake Vortex Encounter
Detector.Person : Flight Crew
Miss Distance.Vertical : 700
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

Wake turbulence caused aircraft to lose 500-700 feet altitude abruptly. Maintained control of aircraft. NY Center reached out why we are descending. We advised it was from moderate/heavy wake turbulence. We were in trail of heavy aircraft landing IAD. We were cleared down to FL180 and the remainder of flight was normal.

Synopsis

E145 First Officer reported a wake turbulence encounter in trail of a heavy aircraft resulted in altitude loss of 500 to 700 feet on arrival into IAD.

ACN: 1831728 *(13 of 50)*

Time / Day

Date : 202108
Local Time Of Day : 0601-1200

Place

Locale Reference.Airport : OAK.Airport
State Reference : CA
Altitude.AGL.Single Value : 700

Environment

Flight Conditions : IMC
Weather Elements / Visibility : Turbulence
Weather Elements / Visibility.Visibility : 10
Light : Daylight
Ceiling.Single Value : 700

Aircraft : 1

Reference : X
ATC / Advisory.Tower : OAK
Aircraft Operator : Corporate
Make Model Name : Light Transport, Low Wing, 2 Turbojet Eng
Crew Size.Number Of Crew : 1
Operating Under FAR Part : Part 91
Flight Plan : IFR
Mission : Passenger
Flight Phase : Initial Climb
Route In Use.SID : CNDEL FOUR
Airspace.Class C : OAK

Aircraft : 2

Reference : Y
ATC / Advisory.Tower : OAK
Aircraft Operator : Air Carrier
Make Model Name : A321
Crew Size.Number Of Crew : 2
Flight Plan : IFR
Mission : Passenger
Flight Phase : Initial Climb
Airspace.Class C : OAK

Person

Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Corporate
Function.Flight Crew : Pilot Flying
Function.Flight Crew : Single Pilot
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Multiengine

Qualification.Other
Experience.Flight Crew.Total : 9000
Experience.Flight Crew.Last 90 Days : 50
Experience.Flight Crew.Type : 5500
ASRS Report Number.Accession Number : 1831728
Human Factors : Situational Awareness
Analyst Callback : Attempted

Events

Anomaly.ATC Issue : All Types
Anomaly.Deviation - Altitude : Crossing Restriction Not Met
Anomaly.Deviation - Altitude : Overshoot
Anomaly.Deviation / Discrepancy - Procedural : Clearance
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 : Environment - Non Weather Related
Contributing Factors / Situations : Human Factors
Contributing Factors / Situations : Procedure
Primary Problem : Ambiguous

Narrative: 1

I was preparing to conduct a Part 91 IFR flight from OAK. My clearance was Runway 30, CNDEL4 Departure EBAYE AVE EHF and to climb via the SID. Upon reaching Runway 30, I was holding on Taxiway Whiskey behind an A321. After the A321 started its takeoff roll, I watched and noted the point at which it lifted off. At the same time I was instructed to "Line up and wait". After what I thought to be a very short time, less than a minute from lining up, I was cleared for takeoff with a caution warning for wake turbulence. Upon reaching Vr and prior to the A321's rotation point, I rotated and began my initial climb. I had 1900 ft set in my Altitude Select as I was to cross LECHE at or below 2,000 ft, on a heading of 296 degrees which I had set on my DG's bug. At approximately 600 ft I engaged the autopilot. Almost immediately after entering IMC conditions at approximately 700 ft, I entered very heavy turbulence. I disengaged the autopilot at which time the plane entered an un-commanded roll to the left. I tried to recover but the plane was shaking very violently and kept wanting to violently roll to the left between 35 to 40 degrees of bank angle. The plane was really not responding to my control inputs, at least not according to my flight director. I really had no idea what was happening at the time and was very startled. At first I thought I might have a control surface failure. Then I realized that I must have flown through and was now within the A321 wake vortices. I had a very hard time controlling the aircraft. I was worried if I could not keep the plane out of an upset condition, I was way too low for a successful recovery. I could also hear that my passengers were very uncomfortable. At this point, I just reverted to flying 101, aviate, navigate, communicate. I hit my Takeoff/Go-Around switch which also disengaged the yaw damper and put my command bars at a 10 degree nose up and wings level command. At that point I was just trying to concentrate on putting the airplane symbol into the command bars and just keep wings level. All the while keeping my eye on my TCAS for

any aircraft near or around me. (I never got one traffic warning or alert during this whole event). At some point a controller came on and began giving me vectors. I had not yet talked to the controllers or advised them of my situation as I had not gotten to the ''communicate'' part yet. I was also told to squawk my assigned transponder code. I had selected the code prior to taxi but failed to enter it. At approximately 1800 feet I began to try to level the airplane but was having a hard time doing so. I did not want to push down too hard and put the plane in an excessive negative G situation. I think I passed the max altitude by 150 ft but, immediately corrected to 1800 ft. When I was switched to the next frequency I was still attempting to regain my composure and just follow the controller's instructions. The turbulence completely disappeared out of about 2,500 feet. Out of 10,000 feet, I cancelled IFR and continued VFR with flight following. The rest of the flight was uneventful until I was advised by NorCal of a possible pilot deviation and was given a phone number to call upon landing. How the problem arose: Inadvertent flight into wake turbulence. Contributing Factors: Too early release behind a heavy aircraft. IMC Conditions. Failure to ask for a possible short delay to my takeoff clearance due to wake turbulence. How it was discovered: Difficulty in controlling the aircraft due to violent and uncommanded aircraft attitudes. Corrective Actions: Maintain wings level attitude. Follow ATC Instructions. Perceptions: Fear of possible loss of control in IMC conditions and very low altitude for recovery. Judgements: Just fly the plane. Aviate, Navigate, Communicate. Decisions: Do whatever it takes to keep wings level attitude. Factors affecting the quality of human performance: The startle effect. Actions or Inactions: Have hand written, "Enter Squawk Code", in my Pre-Taxi Checklist. Just did what I could to fly my plane out of an inadvertent but bad situation.

Synopsis

Light Transport Corporate Pilot reported encountering wake turbulence departing OAK in trail of an A321.

ACN: 1831683 *(14 of 50)*

Time / Day

Date : 202108
Local Time Of Day : 1201-1800

Place

Locale Reference.ATC Facility : ZZZ.Tower
State Reference : US
Relative Position.Distance.Nautical Miles : .75
Altitude.AGL.Single Value : 1000

Environment

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

Aircraft : 1

Reference : X
ATC / Advisory.Tower : ZZZ
Aircraft Operator : Personal
Make Model Name : Skyhawk 172/Cutlass 172
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 91
Flight Plan : VFR
Mission : Training
Flight Phase : Initial Approach
Route In Use : Visual Approach
Airspace.Class D : ZZZ

Aircraft : 2

Reference : Y
ATC / Advisory.Tower : ZZZ
Make Model Name : Skyhawk 172/Cutlass 172
Crew Size.Number Of Crew : 1
Operating Under FAR Part : Part 91
Flight Phase : Takeoff / Launch
Airspace.Class D : ZZZ

Person

Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Personal
Function.Flight Crew : Instructor
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Commercial
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Flight Instructor
Experience.Flight Crew.Total : 975
Experience.Flight Crew.Last 90 Days : 80
Experience.Flight Crew.Type : 900

ASRS Report Number.Accession Number : 1831683
Human Factors : Confusion
Human Factors : Situational Awareness
Human Factors : Communication Breakdown
Communication Breakdown.Party1 : Flight Crew
Communication Breakdown.Party2 : ATC

Events

Anomaly.Conflict : NMAC
Anomaly.Deviation - Altitude : Excursion From Assigned Altitude
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Detector.Automation : Aircraft TA
Detector.Person : Flight Crew
Miss Distance.Horizontal : 100
Miss Distance.Vertical : 300
Were Passengers Involved In Event : N
When Detected : In-flight
Result.Flight Crew : Took Evasive Action

Assessments

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

Narrative: 1

We were at TPA (Traffic Pattern Altitude) (1000 ft.) and had entered a direct downwind Runway XXL as instructed by ZZZ Tower. Aircraft departing XXL, Aircraft X, did not comply with their departure instructions and began a crosswind departure in our direction. Tower called "Aircraft X, fly runway heading, you were instructed to turn left at the river. Traffic 12 o clock, one thousand." The aircraft responded "We were cleared for a left standard departure" and Aircraft Y continued their climbing turn straight at us approaching our same altitude. TCAS alerted traffic. I had to take controls and immediately descended to the right away from the aircraft down to 700 ft. as they climbed above us. As Aircraft Y passed over they called Tower "Below traffic in sight".

Synopsis

Cessna 172 Pilot reported taking evasive action to avoid an aircraft that disregarded the Tower's instructions.

ACN: 1831420 *(15 of 50)*

Time / Day

Date : 202108
Local Time Of Day : 0601-1200

Place

Locale Reference.ATC Facility : D01.TRACON
State Reference : CO
Altitude.MSL.Single Value : 12250

Environment

Flight Conditions : VMC

Aircraft : 1

Reference : X
ATC / Advisory.TRACON : D01
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
Flight Phase : Climb
Airspace.Class B : DEN

Aircraft : 2

Reference : Y
ATC / Advisory.TRACON : D01
Aircraft Operator : Air Carrier
Make Model Name : B777 Undifferentiated or Other Model
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Flight Phase : Climb
Airspace.Class B : DEN

Person : 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 : Multiengine
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Instrument
Experience.Flight Crew.Last 90 Days : 17
Experience.Flight Crew.Type : 3302
ASRS Report Number.Accession Number : 1831420
Human Factors : Situational Awareness
Analyst Callback : Attempted

Person : 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 : Multiengine
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Instrument
Experience.Flight Crew.Last 90 Days : 55
Experience.Flight Crew.Type : 204
ASRS Report Number.Accession Number : 1831416
Human Factors : Situational Awareness

Events

Anomaly.Deviation - Altitude : Crossing Restriction Not Met
Anomaly.Deviation - Altitude : Overshoot
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Anomaly.Inflight Event / Encounter : Wake Vortex Encounter
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Returned To Clearance
Result.Flight Crew : Became Reoriented

Assessments

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

Narrative: 1

We were climbing out of DEN on the EEONS 8. Crossed HIDEF at 10,000 feet and started the climb again. We started to pick up wake turbulence from the 777 in front of us through about 11,000 feet. We received a call from ATC for traffic northeast of us as we were coming through 11,500 feet. We started looking for the traffic and when I looked back inside we were going through 12,000 feet about 1-2 miles prior to SHOBO. We began correcting back to 12,000 feet. Max altitude was about 12,300 feet. No call or mention of the deviation from ATC.

Narrative: 2

While climbing out on flight from DEN via EEONS8 departure from 34L, we were given a traffic call from ATC as we neared SHOBO. At the same time, we encountered wake turbulence from a heavy aircraft on the same departure. As Pilot Monitoring, I was looking north for traffic as the aircraft was responding to the turbulence and controlling the aircraft. Simultaneously, we neared SHOBO, which has a no higher than 12,000 feet restriction. PIC called altitude at approx 250 feet above the restriction, and smoothly leveled, then began descent to maintain 12,000 feet until passing SHOBO, then resumed climb. No ATC comm was received during this time.

Synopsis

B737NG flight crew reported a distraction from wake turbulence contributed to climbing through an altitude restriction departing DEN in trail of a B777.

ACN: 1831146 *(16 of 50)*

Time / Day

Date : 202108
Local Time Of Day : 1201-1800

Place

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

Environment

Flight Conditions : IMC
Weather Elements / Visibility : Hail
Weather Elements / Visibility : Turbulence
Weather Elements / Visibility : Rain
Weather Elements / Visibility : Thunderstorm
Light : Daylight

Aircraft

Reference : X
ATC / Advisory.Center : ZZZ
Aircraft Operator : Air Taxi
Make Model Name : Beechjet 400
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 135
Flight Plan : IFR
Mission : Passenger
Flight Phase : Cruise
Route In Use : Vectors
Airspace.Class A : ZZZ

Component

Aircraft Component : Weather Radar
Aircraft Reference : X
Problem : Malfunctioning

Person

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 : 1831146
Human Factors : Workload
Human Factors : Troubleshooting
Human Factors : Situational Awareness

Events

Anomaly.Aircraft Equipment Problem : Critical
Anomaly.Deviation - Altitude : Excursion From Assigned Altitude
Anomaly.Inflight Event / Encounter : Weather / Turbulence
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 : Diverted
Result.Flight Crew : Regained Aircraft Control
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 : Weather
Primary Problem : Weather

Narrative: 1

When cruising at FL350 and deviating right of course for thunderstorm avoidance on a heading of 075 we began to encounter blow off and overhangs from other cells in the area reducing visibility to IMC. ATC was overwhelmed and could not give us requested higher altitude and due to high traffic in the area we did not initiate a further deviation right of course until we could ask ATC. Our radar was operating and being manipulated by the Captain showing no cells along our route of flight. We did not realize our radar had failed (no cockpit indications) and suddenly we were in a extreme thunderstorm cell. Our altitude deviated considerably 1,500 feet up and 700 feet down from FL350. We encountered light hail extreme precipitation and severe turbulence. Upon exiting the cell we immediately flew towards clear air and made the decision to divert to ZZZ. Suspecting possible negative G limits had been exceeded and concerned about possible aircraft damage. ATC was able to immediately accommodate our diversion and I landed on runway XX at ZZZ without further issue. The radar and possible turbulence damage was written up in the maintenance log and the company notified according to SOPs and Op Specs. Ensure all radars are operational and checked regularly by Maintenance. Also release this incident to the entire pilot group so that they are aware of this possible issue when operating near thunderstorms.

Synopsis

First Officer reported the aircraft weather radar failed in heavy weather and the flight crew elected to divert to a precautionary landing.

ACN: 1831010 *(17 of 50)*

Time / Day

Date : 202108
Local Time Of Day : 1201-1800

Place

Locale Reference.ATC Facility : ZZZ.TRACON
State Reference : US
Altitude.MSL.Single Value : 8100

Environment

Flight Conditions : VMC
Light : Daylight

Aircraft

Reference : X
ATC / Advisory.TRACON : ZZZ
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.Localizer/Glideslope/ILS : ZZZ
Flight Phase : Final Approach
Airspace.Class D : ZZZ

Component

Aircraft Component : Autopilot
Aircraft Reference : X
Problem : Malfunctioning

Person : 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)
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Instrument
Experience.Flight Crew.Total : 288.58
Experience.Flight Crew.Last 90 Days : 58.88
Experience.Flight Crew.Type : 288.58
ASRS Report Number.Accession Number : 1831010
Human Factors : Situational Awareness
Human Factors : Confusion

Person : 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 : Multiengine
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Instrument
Experience.Flight Crew.Total : 15000
Experience.Flight Crew.Last 90 Days : 45.27
Experience.Flight Crew.Type : 10000
ASRS Report Number.Accession Number : 1831036
Human Factors : Situational Awareness

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.ATC Issue : All Types
Anomaly.Deviation - Altitude : Excursion From Assigned Altitude
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Anomaly.Ground Event / Encounter : Ground Equipment Issue
Anomaly.Inflight Event / Encounter : CFTT / CFIT
Detector.Person : Air Traffic Control
Were Passengers Involved In Event : N
When Detected : In-flight
Result.Flight Crew : Took Evasive Action
Result.Flight Crew : Became Reoriented
Result.Air Traffic Control : Provided Assistance

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : ATC Equipment / Nav Facility / Buildings
Primary Problem : Ambiguous

Narrative: 1

During approach into ZZZ while receiving vectors was cleared to 9,500 feet MSL and told cleared for the ILS XX and to maintain 9,500 feet until established. Selected APP and aircraft captured GS and LOC and was descending on the app with GS and LOC locked on. Got a call from approach at 8,100 feet letting us know we were low and to climb up to 8,600 feet I immediately disconnected the auto pilot and initiated a climb while maintaining LOC. After crossing ZZZZZ I then recommenced my descent and flew visually using the PAPI as my guidance. Landed the aircraft within the touch down range and stopped on the runway. CA taxied aircraft to gate. During taxi we were informed by approach that the GS had issues and they thought it had been fixed. We initially intercepted the GS and LOC approximately 20 miles out. At approximately 2 miles out the GS was back in line with the PAPI.

Narrative: 2

We were doing the ILS Z Runway XX into ZZZ. Night time, good visibility, no clouds. ATC had us at 9,500 feet, turned us to intercept final outside of ZZZZZ and cleared us for the approach. Autopilot was on. We were flaps 1 about 190 knots at the time and about 22 miles on final. We intercepted the localizer and the glide slope at about the same time. At

which point we were busy setting touch down zone, putting flaps down and gear. A moment later ATC gives us an altitude low warning, climb immediately to 8,600 feet. The flying pilot (first officer) immediately disconnected auto pilot and initiated climb. We were around 8,100 feet, on the glide slope, auto pilot on when this was initiated from what we could tell. We had just passed ZZZZZ (FAF, but 17 miles out). The controller mentioned they had some glide slope problems just a week or two prior, and asked us if we were ok to proceed visually. Still being over 10 miles out, runway and PAPI in site, and glide slope still showing slightly below us, we proceeded visually with reference to PAPI and GS. The problem may have been from the auto pilot intercepting the LOC and GS at the same time and possibly overshooting the GS as it sometimes does when far out and possibly exasperated by configuration changes. This all happened about 15 to 20 miles from touchdown. Or it could have been from a faulty GS signal that they have had problems with previously.

Synopsis

Flight crew reported descending below minimum altitude on approach and climbed back to correct altitude. ATC advised flight crew that there had previously been problems with the glide slope.

ACN: 1830724 *(18 of 50)*

Time / Day

Date : 202108
Local Time Of Day : 1201-1800

Place

Locale Reference.ATC Facility : ZZZ.TRACON
State Reference : US
Altitude.MSL.Single Value : 5000

Environment

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

Aircraft

Reference : X
ATC / Advisory.TRACON : 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
Flight Phase : Final Approach
Route In Use : Vectors
Airspace.Class B : ZZZ

Person : 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 : Multiengine
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Instrument
Experience.Flight Crew.Total : 3687
Experience.Flight Crew.Last 90 Days : 85
Experience.Flight Crew.Type : 3687
ASRS Report Number.Accession Number : 1830724
Human Factors : Communication Breakdown
Communication Breakdown.Party1 : Flight Crew
Communication Breakdown.Party2 : ATC

Person : 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 : Multiengine
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Air Transport Pilot (ATP)
Experience.Flight Crew.Total : 3888
Experience.Flight Crew.Last 90 Days : 81
Experience.Flight Crew.Type : 140
ASRS Report Number.Accession Number : 1830733
Human Factors : Communication Breakdown
Communication Breakdown.Party1 : ATC
Communication Breakdown.Party2 : Flight Crew

Events

Anomaly.ATC Issue : All Types
Anomaly.Deviation - Altitude : Excursion From Assigned Altitude
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Anomaly.Inflight Event / Encounter : Weather / Turbulence
Anomaly.Inflight Event / Encounter : CFTT / CFIT
Detector.Person : Air Traffic Control
Were Passengers Involved In Event : N
When Detected : In-flight
Result.Flight Crew : Took Evasive Action
Result.Flight Crew : Became Reoriented
Result.Air Traffic Control : Provided Assistance

Assessments

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

Narrative: 1

Flight was deviating off the ZZZZZ arrival due to thunderstorm activity. Subsequently cleared direct ZZZZZ and told to descend to 5,000 feet. While it is possible both the Captain and FO (First Officer) heard the wrong altitude, the FO read back 5,000 feet. Even though the published altitude is 6,000 feet, this did not seem unusual to us as we were flying below storm overhangs and had barely flown any of the arrival up to this point. After reaching 5,000, the controller asked why we were at 5,000. We informed him that was our cleared altitude. He informed us 6,000 was the minimum vectoring altitude.

Narrative: 2

On arriving into ZZZ, we were taken off the ZZZZZ4 arrival due to thunderstorms in the terminal area. Upon contact with Terminal Radar Control we were issued radar vectors. The Air Traffic Controller stated that we would rejoin the arrival at ZZZZZ. We were told to fly heading 090 and cleared to descend from 9,000 to 6,000. The clearance was read back and confirmed by both of us. Shortly thereafter the controller gave us a further descent down to 5,000. The clearance was read back and confirmed by both of us. After the clearance was read back, ATC never intervened on the altitude that we read back. ATC then told us to fly direct to ZZZZZ. Whilst we were level at ZZZZZ at 5,000, ATC stated

that [the next fix] had an altitude of 6,000 ft. I stated that we were cleared by him down to 5,000. There were no traffic conflicts.

Synopsis

Flight crew reported descending 1000 feet below minimum altitude on approach as cleared by ATC.

ACN: 1830406 *(19 of 50)*

Time / Day

Date : 202108
Local Time Of Day : 1201-1800

Place

Locale Reference.ATC Facility : ZZZ.TRACON
State Reference : US
Altitude.MSL.Single Value : 4000

Environment

Flight Conditions : VMC
Light : Daylight

Aircraft : 1

Reference : X
ATC / Advisory.TRACON : ZZZ
Aircraft Operator : Personal
Make Model Name : Skylane 182/RG Turbo Skylane/RG
Operating Under FAR Part : Part 91
Flight Plan : IFR
Mission : Personal
Flight Phase : Cruise
Airspace.Class E : ZZZ3

Aircraft : 2

Reference : Y
ATC / Advisory.TRACON : ZZZ
Make Model Name : SR20
Crew Size.Number Of Crew : 1
Operating Under FAR Part : Part 91
Flight Plan : IFR
Flight Phase : Climb
Route In Use : Vectors
Airspace.Class E : ZZZ3

Person

Location Of Person.Aircraft : X
Location Of Person.Facility : ZZZ.TRACON
Location In Aircraft : Flight Deck
Reporter Organization : Government
Function.Air Traffic Control : Approach
Qualification.Air Traffic Control : Fully Certified
Experience.Air Traffic Control.Time Certified In Pos 1 (yrs) : 15
ASRS Report Number.Accession Number : 1830406

Events

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

Anomaly.Conflict : Airborne Conflict
Anomaly.Deviation - Altitude : Excursion From Assigned Altitude
Anomaly.Deviation - Track / Heading : All Types
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Detector.Person : Air Traffic Control
When Detected : In-flight
Result.Flight Crew : Returned To Departure Airport
Result.Air Traffic Control : Provided Assistance
Result.Air Traffic Control : Issued New Clearance

Assessments

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

Narrative: 1

Aircraft X departed ZZZ IFR initially assigned 040 heading and 4,000 altitude. Pilot checked on, was identified, handed off and shipped to ZZZ1 Approach having reported established on the airway northbound. Aircraft Y was cleared for the RNAV30 approach at ZZZ and issued direct ZZZ2 (roughly 010) climbing to 4,000 feet on his missed. He was switched to advisory. Aircraft X experienced a total electrical failure. He lost comms and transponder. Pilot elected to return to ZZZ VFR. I was unaware of his intentions and had only a primary only target on his aircraft. When Aircraft Y checked on, I stopped Aircraft Y at 3,000 feet as Aircraft X's last observed altitude was 4,200 feet with an assigned altitude of 4,000 feet. Aircraft X descended into ZZZ and the altitude of Aircraft X as they passed about 2 miles lateral from Aircraft Y and whether or not he was VFR was unknown. The operation was as safe as it could be given the circumstances.

Synopsis

A TRACON Controller reported an aircraft experienced a complete electrical failure/communication loss and descended through the altitude of another aircraft while reversing course to return to their departure airport.

ACN: 1830049 *(20 of 50)*

Time / Day

Date : 202108
Local Time Of Day : 1801-2400

Place

Locale Reference.ATC Facility : ZLA.ARTCC
State Reference : CA
Altitude.MSL.Single Value : 34000

Environment

Flight Conditions : VMC

Aircraft : 1

Reference : X
ATC / Advisory.Center : ZLA
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
Airspace.Class A : ZLA

Aircraft : 2

Reference : Y
ATC / Advisory.Center : ZLA
Aircraft Operator : Air Carrier
Make Model Name : B787 Dreamliner Undifferentiated or Other Model
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Passenger
Flight Phase : Descent
Airspace.Class A : ZLA

Person

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 : 91
Experience.Flight Crew.Type : 393
ASRS Report Number.Accession Number : 1830049
Analyst Callback : Completed

Events

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

Assessments

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

Narrative: 1

Upset/wake turbulence event. Approximately five minutes prior to this event First Officer and I had completed our arrival brief and I had given a PA to the passengers that the seat belt sign would be coming on in the next 10 minutes. Ahead of us was a B787 at [our altitude], FL360. [The B787] was directed by ATC to descend and maintain FL340. Within a few minutes we were assigned the same clearance. Shortly after leveling at FL340, our aircraft entered a rapid, shuddering turbulence, followed by a rapid roll to the right. We both immediately put our hands on the controls and recited the upset recovery call outs. We disconnected the autopilot, though the autopilot may have disconnected by itself, and autothrottle. We both fly with our FPV (Flight Path Vector) up so we could see immediately, intuitively that we weren't stalled, but our push was slight, not even half a G, which added to our effective counter roll rate. Prior to our response to the upset, the autopilot had already put in aileron control forces counter to the roll, but the aircraft was still rolling to the right. As we took control, the aircraft reached approximately 40 degrees before the aircraft responded to our control inputs, then rolled left to approximately 20 degrees. Based on the fact we were at FL340 we left the thrust where it was positioned, possibly a slight reduction, as the energy state was good and a large thrust change was not necessary. Our altitude loss was minimal and the descent was very shallow. The recovery point at which we managed our flight path divergence started at approximately FL337, only a 300 FT loss. Rudder may have been used - Indicated by both an overshoot, subsequent bank to the left and a report from the flight attendants that we not only rolled, but yawed. We advised ATC that we had encountered wake turbulence which had caused our descent. They offered us direct HLYWD moving us from the wake of the preceding aircraft. We then checked on the Flight Attendants and passengers to ensure there were no injuries. The seat belt sign had been off and there was a passenger in the lav, but no injuries were reported. The First Officer and I debriefed the event but, because ATC started our descent onto the Arrival, I failed to make a PA to the passengers. After landing, I waited at the flight deck door to thank the passengers. I saw that the event was more impactful than I had realized and a PA would have gone a long way to reassure the passengers and Flight Attendants.

Callback: 1

Reporter stated he was surprised at the strength of the wake when he was 8 to 9 miles in trail of the B787.

Synopsis

B737-800 Captain reported an upset at FL340 descending into LAX in trail of a B787.

ACN: 1829622 *(21 of 50)*

Time / Day

Date : 202108
Local Time Of Day : 1801-2400

Place

Locale Reference.Airport : PWK.Airport
State Reference : IL
Altitude.MSL.Single Value : 1800

Environment

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

Aircraft

Reference : X
ATC / Advisory.TRACON : C90
Aircraft Operator : Air Taxi
Make Model Name : Light Transport, Low Wing, 2 Turbojet Eng
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 135
Mission : Passenger
Flight Phase : Descent
Airspace.Class E : C90

Person : 1

Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Taxi
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 : 1829622

Person : 2

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 : Air Transport Pilot (ATP)
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Multiengine
ASRS Report Number.Accession Number : 1829623

Events

Anomaly.ATC Issue : All Types
Anomaly.Deviation - Altitude : Excursion From Assigned Altitude
Anomaly.Deviation / Discrepancy - Procedural : Clearance
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 : Requested ATC Assistance / Clarification
Result.Flight Crew : Regained Aircraft Control
Result.Air Traffic Control : Provided Assistance

Assessments

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

Narrative: 1

ATC given heading for vector for weather and entered cloud with severe turbulence with down draft auto pilot disconnected, and power and pitch up with continued down draft about 1,200 ft. altitude lost and severe turbulence until aircraft was out the cloud, report it to ATC. We were vectored by ATC and we did not see the weather on the radar in IMC.

Narrative: 2

We were getting vectored by ATC to go around weather and on the final vector before the occurrence we got vectored into a cloud that began to produce moderate turbulence. We attempted to get deviations but could not reach the Controller. It was then that we experienced what we described as a severe downward wind shear that made us lose control of the aircraft and the aircraft had an immediate 4000+ ft. per minute drop in altitude. Autopilot disengaged and we found ourselves at 1800 ft. MSL and I began to slow to maneuvering speed to regain control of the aircraft. Once I did I immediately began a climb and we finally had the Controller provide deviation instructions and we exited the cloud and the turbulence subsided. We had nothing on radar and thought the Controller was guiding us away from thunderstorms but he was not seeing it as well.

Synopsis

Flight crew reported a loss of aircraft control in severe turbulence.

ACN: 1829547 *(22 of 50)*

Time / Day

Date : 202108
Local Time Of Day : 1201-1800

Place

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

Environment

Flight Conditions : VMC
Light : Daylight

Aircraft

Reference : X
ATC / Advisory.TRACON : ZZZ
Aircraft Operator : Air Carrier
Make Model Name : B737 MAX Series Undifferentiated
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Passenger
Flight Phase : Descent
Route In Use.STAR : ZZZZZ
Airspace.Class B : ZZZ

Component

Aircraft Component : Autoflight System
Aircraft Reference : X
Problem : Improperly Operated

Person

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 : Instrument
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Air Transport Pilot (ATP)
Experience.Flight Crew.Total : 18000
Experience.Flight Crew.Last 90 Days : 250
Experience.Flight Crew.Type : 12000
ASRS Report Number.Accession Number : 1829547
Human Factors : Human-Machine Interface
Human Factors : Situational Awareness
Human Factors : Communication Breakdown
Communication Breakdown.Party1 : Flight Crew
Communication Breakdown.Party2 : Flight Crew

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.Deviation - Altitude : Crossing Restriction Not Met
Anomaly.Deviation - Altitude : Undershoot
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Detector.Person : Flight Crew
Were Passengers Involved In Event : N
When Detected : In-flight
Result.Flight Crew : Overcame Equipment Problem

Assessments

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

Narrative: 1

Inbound to ZZZ on ZZZZZ arrival and Level at FL330 the controller gave us descend via ZZZZZ Arrival. FMC was Active in the Cruise page after a cruise descent earlier from FL 360 which is normal with a Top of Descent computed to start approximately 4 Miles prior to ZZZZZ to cross at or below FL320 as the VNAV is designed to do at IDLE Thrust. We had 12,000 feet set in the MCP per normal FM "descend via" procedures for the arrival. Everything was set per FM procedures, light winds, Normal descent speeds. Just prior to the Top of Descent the FMC transitioned from the Cruise page to the Descent Page and the throttles started retarding and the aircraft started descending. Approximately 200 feet into the descent the Pitch Stagnated and shallowed and the Path indicator "hung" and the Airspeed started bleeding off as the throttles retarded instead of maintaining speed and descending on the path. I saw the FMC/Autopilot was not acting correctly so I told the FO he needed to started inputting Vertical Speed down to make the restriction. He wheeled in vertical speed and at that time the Path "Unstuck" and dumped out showing us 400 feet high. He wheeled in enough vertical speed to get the descent going but since the VNAV did its normal computation of TOD so close to the FIX we crossed it approximately 240 feet high as it was impossible to react fast enough to the VNAV glitch to stay on path. The FO did everything right per the FM procedures. So what happened here is a very common thing that I see about 20 percent of the time that should NOT be happening and started after the Planes were reconfigured to default into VNAV Speed from Path instead of honoring PATH even if it had to dive for it. In this case a MAX. Most of the time when it happens you are not right on top of a restriction so you have time to correct it. There is a occasional glitch in the VNAV system I believe tied to FMC software not aircraft specific that happens and I'm not sure why when the FMC transitions from Cruise Page to Descent page. What Happens is the FMC hits top of descent and begins to retard the throttles and pitch over but for some reason the Pitch stagnates because the path incorrectly and temporarily shallows out instead of continuing to pitch over to descend and the result is the airspeed starts to bleed off. After 5-10 seconds the FMC comes out of this Foggy zone and the path indicator then drops out to reflect where the plane should be and it Drops out of VNAV Path into VNAV Speed because when this happens the planes usually ends up 500 feet high. When you have room to correct it you can get the plane back on PATH before hitting a restriction but in our case since it started down so close to the fix as its designed to do we did not have room to fix it. The only thing you can do to possibly mitigate this from happening is to force the plane into the Descent page early by hitting the "descent now" button, which is NOT Standard but not prohibited, to get it started down. I have

never seen this anomaly happen once the FMC is established in the Descent Page even when temporarily leveling off while it waits for the next TOD if an arrival has a level segment. This is purely an issue during transition from FMC Cruise Page to Descent page and is very random as to when it happens and should be considered a known anomaly because I have seen it so many times. Had we not been at FL330, 1000 feet above the FL320 restriction, and had we descended from a higher Altitude with more distance from the restriction we would have had time to correct the deviation in path but in this close in situation we were not.

Synopsis

Captain reported a crossing restriction was not met due to an occasional software glitch which reportedly causes the descent to shallow out temporarily.

ACN: 1829214 *(23 of 50)*

Time / Day

Date : 202108
Local Time Of Day : 1201-1800

Place

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

Environment

Flight Conditions : VMC
Light : Daylight

Aircraft

Reference : X
ATC / Advisory.Tower : ZZZZ
Aircraft Operator : Air Carrier
Make Model Name : MD-11
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Cargo / Freight / Delivery
Flight Phase : Descent
Route In Use : Vectors
Airspace.Class C : ZZZZ

Component : 1

Aircraft Component : FCC (Flight Control Computer)
Aircraft Reference : X
Problem : Malfunctioning

Component : 2

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

Person

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 : Instrument
Qualification.Flight Crew : Multiengine
ASRS Report Number.Accession Number : 1829214
Human Factors : Troubleshooting
Human Factors : Time Pressure
Human Factors : Communication Breakdown

Human Factors : Situational Awareness
Communication Breakdown.Party1 : Flight Crew
Communication Breakdown.Party2 : Flight Crew

Events

Anomaly.Aircraft Equipment Problem : Critical
Anomaly.Deviation - Altitude : Excursion From Assigned Altitude
Anomaly.Deviation - Speed : All Types
Anomaly.Deviation - Track / Heading : All Types
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Anomaly.Deviation / Discrepancy - Procedural : Maintenance
Anomaly.Deviation / Discrepancy - Procedural : FAR
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Detector.Person : Flight Crew
Were Passengers Involved In Event : N
When Detected : In-flight
Result.General : Maintenance Action
Result.Flight Crew : Became Reoriented
Result.Flight Crew : Overcame Equipment Problem

Assessments

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

Narrative: 1

Descending through approx 12-13,000 feet for landing at ZZZZ, my FMS timed out as they occasionally do. Gave it a few moments to catch up and then selected the FMC1 prompt in the upper left hand corner of the FMC. Not only did it not reset, there was no standby option listed and I then noticed my First Officer's FMC had also lost all data. On a descent into ZZZZ at about 10,000 feet I decided it would be best if I assumed control of the airplane and we did a positive transfer of control. At about the same time I glanced over at the approach chart for ILS XXR went to the NAV page and manually entered the frequency and inbound course for ILS runway XXR. We had a Level 1 alert to set field altitude manually and I tasked that duty to my First Officer. I also said I had the radios at the time. I called ATC and informed them we had lost most of our normal navigation equipment, that we would be unable to proceed directly to any fix and that I would need vectors to join the runway XXR localizer. Passing 10,000 feet I would estimate we were approx 20-25 miles from the field. Several times the flight director was commanding directives that did not comply with our ATC directives so I was forced to turn it off as it was a distraction. The autothrottles also were not responding in an appropriate manner either and rather than trying to fight them I disconnected them as well. Conditions at the field were day VMC. On a vector and once cleared for the approach approach mode armed although I doubt it did any good I looked for the localizer to come alive and when it did I attempted to track it manually. There were a couple S turns as I was in real time having to adjust my scan away from looking for a flight director and towards just a localizer needle and a heading and trying to bracket it. Things became more stable as we continued down the localizer until we had the runway in sight still at many thousands of feet above the ground I transitioned to line up visually and then cross checking my localizer it showed right of course and I realized the piece of pavement many miles in front of me was the taxiway not the runway and shifted back to the left onto localizer at I would estimate

2,500-3,000 ft AGL. We probably should have asked for a visual approach at that time but we were too busy to even think of it. Now hand flying the airplane fully manually with no automation nor flight director assistance at around 2,000-2,500 feet I would estimate I leveled the airplane as the glide slope was approx 1 dot below us to join it. I did not even look at the approach plate to see were intercept altitude was as we were in visual conditions and I was too focused on maintaining manual aircraft control to be distracted looking away from the panel. ATC did ask us several times during the approach are you stabilized. We had the situation under control so I told me First Officer tell her yes. We were fully configured on glide slope and localizer with landing checklist complete by 1,000 feet AGL (actual more like 1,500-2,000 ft). There was a high speed foot on the airspeed indicator but no low speed foot. Based upon our landing weight and my prior experience in the airplane I flew the approach at 165 knots flaps 35. The approach and landing from 1000 feet AGL to touchdown was uneventful. This airplane had recent prior multiple flight control computer malfunctions that caused a prior crew to have a sudden pitch down moment according to the prior Captain. My goal was to get it on the ground as soon as it was safely possible and try to separate the automation from control of the aircraft to a reasonable extent. When we lost all our navigation data from both FMS so close to the airfield and with day VMC conditions at the field and my First Officer focusing on another checklist and given the recent history of this airplane, I decided the safest course was to revert back to old school flying and not waste time trying to manage the problem through running an extended Dual FMS Loss checklist and focus our efforts on getting the airplane on the ground. The prior day I witnessed two aircraft mechanics on this same jet in conflict over whether the airplane should be returned to service or not. One mechanic thought there was only 1 flight control computer having issues the other thought both computers were malfunctioning. One mechanic said the airplane was AOG to me 2 times. After that I went into the cockpit to observe their trouble shooting. One mechanic was simply trying to clear the fault in the CFDS (Centralized Fault Display System) the other wanted to know why and wanted more time to diagnose it. When one mechanic said to me the airplane is AOG a 3rd time I took the extraordinary step of calling the Duty Officer and telling him I was not crewing this airplane until the mechanics were given some time to troubleshoot and requested we be placed into rest. After minimum rest we came back to the jet and I spoke with the mechanic that was objecting to the return to service the previous night and he now seemed comfortable releasing the jet to fly. I personally witnessed one mechanic trying to pressure another to push the jet back on the line and I commend the mechanic who resisted. I don't know what happened after we left the airplane to then make him comfortable having it signed off, but I was told there would be 2 replacement flight control computers sent to this jet after I left it. Not sure if that actually occurred. I know we have a business to run but one of the mechanics told me at least one of the flight control computer issues was a repeat write up. Maybe we need to give more time and attention to issues that are repeatedly written up with a common problem source.

Synopsis

MD-11 Captain reported flight control computer issues during approach resulted in loss of all autoflight capability. Pilot also reported the aircraft had been previously refused due to flight control computer malfunctions.

ACN: 1829035 *(24 of 50)*

Time / Day

Date : 202108
Local Time Of Day : 1201-1800

Place

Locale Reference.Airport : SJC.Airport
State Reference : CA
Relative Position.Distance.Nautical Miles : 2
Altitude.MSL.Single Value : 4600

Environment

Flight Conditions : VMC
Light : Daylight

Aircraft : 1

Reference : X
ATC / Advisory.TRACON : NCT
Aircraft Operator : Personal
Make Model Name : Citationjet (C525/C526) - CJ I / II / III / IV
Crew Size.Number Of Crew : 1
Operating Under FAR Part : Part 91
Flight Plan : IFR
Mission : Personal
Flight Phase : Initial Climb
Route In Use.SID : TECKY3
Airspace.Class C : SJC

Aircraft : 2

Reference : Y
ATC / Advisory.TRACON : NCT
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 : Climb
Airspace.Class C : SJC

Person

Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Personal
Function.Flight Crew : Single Pilot
Function.Flight Crew : Pilot Flying
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Multiengine
Experience.Flight Crew.Total : 3272

Experience.Flight Crew.Last 90 Days : 103
Experience.Flight Crew.Type : 1950
ASRS Report Number.Accession Number : 1829035
Analyst Callback : Attempted

Events

Anomaly.Deviation - Altitude : Excursion From Assigned Altitude
Anomaly.Inflight Event / Encounter : Loss Of Aircraft Control
Anomaly.Inflight Event / Encounter : Wake Vortex Encounter
Detector.Person : Flight Crew
When Detected : In-flight
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 : Ambiguous

Narrative: 1

Holding short of runway 30L at taxiway B, my takeoff clearance was "back taxi to taxiway Alpha for wake separation, cleared for takeoff 30L". There was a 737 departing immediately ahead of me, apparently also on the TECKY3 SID. After climbing up and around on the TECKY3, level at 5000 feet per the procedure, autopilot engaged in altitude hold mode, speed of 200 knots (under a Class B shelf) and just as NORCAL gave me a climb instruction, the plane entered an uncommanded sudden drop of 400 feet, at a rate of 1200fpm. I disconnected the autopilot and began the climb just as NORCAL advised me that I appeared to be descending. Even with thoughtful wake separation on the initial takeoff sequencing, precisely following a larger aircraft on the same lateral and vertical routing, at the same speeds, can lead to some surprises.

Synopsis

C25B pilot reported encountering wake turbulence climbing out of SJC in trail of a B737.

ACN: 1828895 *(25 of 50)*

Time / Day

Date : 202108
Local Time Of Day : 0601-1200

Place

Locale Reference.ATC Facility : ZZZ.ARTCC
State Reference : US
Altitude.MSL.Single Value : 37000

Aircraft

Reference : X
ATC / Advisory.Center : ZZZ
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 : Cruise
Airspace.Class A : ZZZ

Component

Aircraft Component : Air Data Computer
Aircraft Reference : X
Problem : Malfunctioning

Person : 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 : 1828895

Person : 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)
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Multiengine
ASRS Report Number.Accession Number : 1828896

Events

Anomaly.Aircraft Equipment Problem : Critical
Anomaly.Deviation - Altitude : Excursion From Assigned Altitude
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Anomaly.Inflight Event / Encounter : Weather / Turbulence
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Overcame Equipment Problem

Assessments

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

Narrative: 1

During cruise at FL370 while deviating for thunderstorms in IMC conditions we encountered an airspeed unreliable condition. After performing memory items we ran the Airspeed Unreliable checklist. While going through the checklist we may have deviated from our assigned FL370 however we don't think we did. While running the checklist the event seemed to end. We continued through the entire checklist to make sure we were aware of all of the possible actions required if the event returned. This event occurred on the same aircraft about 3 weeks prior and maintenance addressed it at that time. I don't have any suggestions as we followed SOP and checklist usage. We don't think we had an altitude deviation but we aren't sure.

Narrative: 2

During Airspeed Unreliable event at FL370 and IMC, CA (Captain) was pilot flying. Both CA and FO (First Officer) airspeed and altitude were unreliable for at least a minute or more, Airspeed Low and IAS Disagree alerts. Accomplished procedures, and hand flew based on Standby Flight Display. As best we could tell, stayed within +- 200 ft of FL370. Exiting IMC, indications returned to normal. ATC made no comment about altitude. Factors include equipment malfunction and icing. Equipment malfunctions unavoidable

Synopsis

B737-800 flight crew reported unreliable airspeed and altimeter in IMC conditions. Systems returned to normal after exiting IMC.

ACN: 1828679 *(26 of 50)*

Time / Day

Date : 202108
Local Time Of Day : 1201-1800

Place

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

Environment

Flight Conditions : VMC
Light : Daylight

Aircraft

Reference : X
ATC / Advisory.TRACON : ZZZ
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 : Initial Approach
Route In Use : Vectors
Airspace.Class B : ZZZ

Person

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 : Instrument
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Air Transport Pilot (ATP)
ASRS Report Number.Accession Number : 1828679
Human Factors : Distraction
Human Factors : Human-Machine Interface
Human Factors : Situational Awareness
Human Factors : Time Pressure
Human Factors : Communication Breakdown
Communication Breakdown.Party1 : Flight Crew
Communication Breakdown.Party2 : Flight Crew

Events

Anomaly.Deviation - Altitude : Excursion From Assigned Altitude
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Anomaly.Inflight Event / Encounter : CFTT / CFIT
Detector.Automation : Air Traffic Control

Detector.Person : Flight Crew
Detector.Person : Air Traffic Control
Were Passengers Involved In Event : N
When Detected : In-flight
Result.Flight Crew : Took Evasive Action
Result.Flight Crew : Became Reoriented
Result.Air Traffic Control : Provided Assistance

Assessments

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

Narrative: 1

On approach, ATC called out a low altitude warning while we were turning to final. We leveled off in the turn and resumed descent once rolled out on final. We were above the minimum altitude of 500 feet for crossing the bridge. First time executing the approach, very busy. [We should] Practice charted visuals in the simulator.

Synopsis

First Officer reported receiving a low altitude alert from ATC and climbed back to correct altitude, continuing the approach to landing.

ACN: 1828673 *(27 of 50)*

Time / Day

Date : 202108
Local Time Of Day : 1201-1800

Place

Locale Reference.ATC Facility : ZZZ.TRACON
State Reference : US
Altitude.MSL.Single Value : 6500

Environment

Flight Conditions : VMC
Light : Daylight

Aircraft

Reference : X
ATC / Advisory.TRACON : ZZZ
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
Mission : Passenger
Flight Phase : Initial Approach
Route In Use : Vectors
Airspace.Class D : ZZZ

Person : 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 : Multiengine
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Instrument
ASRS Report Number.Accession Number : 1828673
Human Factors : Time Pressure
Human Factors : Situational Awareness
Human Factors : Distraction

Person : 2

Location Of Person.Aircraft : X
Reporter Organization : Air Carrier
Function.Flight Crew : First Officer
Function.Flight Crew : Pilot Not Flying
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Instrument
ASRS Report Number.Accession Number : 1828677

Human Factors : Situational Awareness
Human Factors : Time Pressure

Events

Anomaly.Deviation - Altitude : Excursion From Assigned Altitude
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Anomaly.Inflight Event / Encounter : Weather / Turbulence
Anomaly.Inflight Event / Encounter : Unstabilized Approach
Anomaly.Inflight Event / Encounter : CFTT / CFIT
Detector.Automation : Air Traffic Control
Detector.Person : Air Traffic Control
Were Passengers Involved In Event : N
When Detected : In-flight
Result.Flight Crew : Took Evasive Action
Result.Flight Crew : Executed Go Around / Missed Approach
Result.Flight Crew : Became Reoriented
Result.Air Traffic Control : Provided Assistance

Assessments

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

Narrative: 1

Visual approaches to Runway XXR were in use at ZZZ at the time. Due to heavy traffic in the vicinity of the airport, and terrain to the southwest, ATC kept us on a vector that aligned us with a roughly 2 mile final approach to XXR. The airport was extremely difficult to obtain visually, and neither the FO nor myself had it in sight until about 4 miles out. We called the airport in sight, and were cleared for visual approach. At that time, I turned the aircraft to the right to align the aircraft for a downwind in a left hand traffic pattern, and descended the aircraft to 6,500 feet, the appropriate altitude for the 5 mile visual fix. Reaching 6,500 feet, we began to feel uneasy, as the terrain south of the airport forms a bowl, with terrain reaching 8,000 feet in places. Once at the 6,500 feet altitude, we could visually see that there wasn't any room to maneuver the aircraft in the valley to align it with the final approach course (we had about a 3 mile wide, terrain-free swath to work with). At about the same time, ATC issued us a low altitude warning, with the accompanying "check altitude immediately" instruction. At that time, while on a heading corresponding with base leg, we executed a climb to 7,500 feet, and told tower we were aborting the approach. We overflew the airport and executed a right hand turn to set up for right traffic for XXR, a visual approach which was completed successfully. [Cause was] ATC's vector that led us into a valley not wide enough to maneuver the aircraft on approach. Poor charting of terrain on VFR maps in company publications. I'm filling out a separate safety concern report recommending an additional alert page on the company charts advising pilots of the difficulty of shooting a close-in visual approach to runway XXR from the West.

Narrative: 2

ZZZ was conducting visual approaches to runways XXR and XXL at the time of the event. ZZZ Approach was descending us for arrival and told us to expect the visual approach for

Runway XXR. At about 20 miles from the airport, we were told to proceed direct to the airport and report the field in sight for the visual. At this time we were also told to maintain 9,000 feet for terrain and traffic in the area. We did not obtain visual contact with the airport until about 5 miles away, at which point we informed ZZZ Approach and they cleared us for the visual and told us to contact the tower. At this point the approach controller has us on a vector to intercept approximately 2 mile final for Runway XXR. The Captain made a turn to the right and began a descent to traffic pattern altitude of 6,500 feet to maneuver the aircraft for a stable approach and landing. This turn brought us toward gradually rising terrain northeast of the airport. As we continued to maneuver the aircraft, it became apparent that there was not enough room to safely align with the runway. We initiated a climb and turned back toward the airport. At this time tower issued a low altitude warning and told us to "check altitude immediately" (we were climbing through 7,000 feet at this time). We responded and said that we were climbing and turning back toward to the airport and that we would need to abort the approach and turn right to re-enter right traffic for XXR. A safe approach and landing was then completed without further incident. ZZZ Approach kept us high due to terrain and traffic and issued a tight vector for a visual approach that only allowed for a 2 mile final for the landing runway. Contributing factors included a busy GA traffic environment and inability to see the airport visually until about 5 miles away. A better way to conduct this approach when arriving from the west would be to join the RNAV approach from vectors or an initial approach fix (especially if this were to be conducted at night) or to vector the aircraft over the airport and down the valley to enter a right downwind for XXR.

Synopsis

Flight Crew reported executing a go around due to being below altitude, uncomfortable with the approach, and the airport environment.

ACN: 1827657 *(28 of 50)*

Time / Day

Date : 202107
Local Time Of Day : 0601-1200

Place

Locale Reference.ATC Facility : ZZZ.Tower
State Reference : US
Altitude.MSL.Single Value : 7000

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
Flight Phase : Landing
Route In Use : Visual Approach
Route In Use : Vectors
Airspace.Class B : ZZZ

Person

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 : Air Transport Pilot (ATP)
Qualification.Flight Crew : Multiengine
Experience.Flight Crew.Total : 4292.53
Experience.Flight Crew.Last 90 Days : 136.2
Experience.Flight Crew.Type : 2785.77
ASRS Report Number.Accession Number : 1827657
Human Factors : Situational Awareness
Human Factors : Human-Machine Interface

Events

Anomaly.Deviation - Altitude : Excursion From Assigned Altitude
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Anomaly.Inflight Event / Encounter : Weather / Turbulence
Anomaly.Inflight Event / Encounter : CFTT / CFIT
Detector.Automation : Air Traffic Control

Detector.Person : Air Traffic Control
Were Passengers Involved In Event : N
When Detected : In-flight
Result.Flight Crew : Took Evasive Action
Result.Flight Crew : Became Reoriented
Result.Air Traffic Control : Provided Assistance

Assessments

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

Narrative: 1

Thunderstorms were quickly approaching XXL final approach course upon our arrival at ZZZ. ATC provided significant vectoring and cleared us for visual XXL during base leg of approach. Base leg was squared off toward final approach fix due to approaching weather. During turn to final approach course, pilot flying went below GS (Glide Slope). Tower issued low altitude warning. Pilot initiated corrective action. Aircraft Landed uneventfully.

Synopsis

First Officer reported descending below altitude on approach and climbed back to correct altitude to continue the approach to landing.

ACN: 1827593 *(29 of 50)*

Time / Day

Date : 202107
Local Time Of Day : 1801-2400

Place

Locale Reference.ATC Facility : ZZZ.Tower
State Reference : US
Altitude.AGL.Single Value : 500

Environment

Flight Conditions : VMC
Light : Night

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
Mission : Passenger
Flight Phase : Initial Approach
Route In Use : Vectors
Airspace.Class B : ZZZ

Person : 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 : 1827593
Human Factors : Communication Breakdown
Human Factors : Human-Machine Interface
Human Factors : Situational Awareness
Communication Breakdown.Party1 : Flight Crew
Communication Breakdown.Party2 : Flight Crew

Person : 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 : Multiengine

Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Air Transport Pilot (ATP)
ASRS Report Number.Accession Number : 1826700
Human Factors : Human-Machine Interface
Human Factors : Confusion
Human Factors : Communication Breakdown
Human Factors : Situational Awareness

Events

Anomaly.Deviation - Altitude : Excursion From Assigned Altitude
Anomaly.Deviation - Speed : All Types
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Anomaly.Deviation / Discrepancy - Procedural : FAR
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Anomaly.Inflight Event / Encounter : Weather / Turbulence
Anomaly.Inflight Event / Encounter : Unstabilized Approach
Anomaly.Inflight Event / Encounter : CFTT / CFIT
Detector.Automation : Air Traffic Control
Detector.Automation : Aircraft RA
Detector.Person : Air Traffic Control
Detector.Person : Flight Crew
Were Passengers Involved In Event : N
When Detected : In-flight
Result.General : Flight Cancelled / Delayed
Result.Flight Crew : Became Reoriented
Result.Flight Crew : Requested ATC Assistance / Clarification
Result.Flight Crew : Executed Go Around / Missed Approach
Result.Air Traffic Control : Provided Assistance

Assessments

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

Narrative: 1

On the final phase of the Visual Approach, backed up by the ILS Runway XY to ZZZ, with the intention to capture the glide path from above, the Auto Pilot (AP) and Auto Throttles were disengaged. Prevailing conditions were Good Visibility and varying Tail Winds of up to nine (9) Knots. During the final portion of the descent to touchdown, with a visual transition to the PAPI reference already established (PAPI were showing 3 RED-1 WHITE), the Aircraft descended below the referenced visual glide path, with the tendency to fly over the Runway XY overrun area at an altitude (AGL) of less than 50 ft. The moment the Captain, having the Pilot Monitoring (PM) duties, mentioned his estimation for being low on the glide path, the aircraft was overflying a point short of the RWY by about 500 feet. He consecutively called for a Go Around, which was immediately executed by the PF (Pilot Flying). The Flight landed after a RADAR pattern on the same runway uneventfully. [The cause was] Human Factors / Pilot Flying error on visually estimating the projected Glide Slope to Runway XY, with the current Tail Wind conditions. Root cause is the initially higher angle of descent / rate of descent to capture the glide slope from above, that ended up to an over correction - reverse situation of flying finally lower than the projected/correct slope. [I suggest] earlier Aircraft configuration for the Final Approach

Phase and timely request from the ATC for lower altitudes / earlier descent to the recommended altitudes that lead to a better projected sequence of flying tasks.

Narrative: 2

FO was flying pilot. Performed visual approach and FO had a hard time trying to catch the glide slope from above because he was trying to slow down and put flaps down while on OPEN DESC. FO called for "the bird", which caught me off guard because it is the first time anyone has asked for the flight path vector while trying to intercept the ILS and while disconnecting the AP. He not only disconnected AP but also eventually the auto thrust without previously briefing it. I told him to never disconnect the auto thrust again while trying to save a visual approach. Finally he was established on the ILS. Below 500 feet he said he was going to follow the PAPI. I glanced down at the VSI to make sure we were stable and when I looked backed up we had 4 red on the PAPIs and at the same time we received a GS GPWS warning. Became unstable. I loudly and sternly called "unstable, go-around." Performed go-around as RA called 50 feet. FO performed a soft go-around. I overrode his decision after he brought back TL (Thrust Lever) to CLB and I pushed TL to TOGA since we were in ZZZ (high airport elevation) with high OAT. I honestly could not tell you the altitude when the FO brought back the TL to CLB. I wanted to make sure we were safe since the go-around was performed at 50 feet from an unsafe position. At 50 feet RA, aircraft was not anywhere near the approach end of the runway. Came back for an uneventful landing. FO descended below glide slope and PAPI showed 4 red. Soft Go-around procedure should be changed or at least highlight the need to take into account airport elevation and OAT when deciding to make a soft go-around from a low altitude with an obvious performance deterioration. Soft Go-around procedure should be changed or at least highlight the need to take into account airport elevation and OAT when deciding to make a soft go-around from a low altitude with an obvious performance deterioration.

Synopsis

Flight crew reported that the First Officer made errors during final approach to landing and the Captain elected to call for a go around.

ACN: 1827504 *(30 of 50)*

Time / Day

Date : 202107
Local Time Of Day : 1201-1800

Place

Locale Reference.ATC Facility : BOI.TRACON
State Reference : ID
Altitude.MSL.Single Value : 9000

Aircraft

Reference : X
ATC / Advisory.TRACON : BOI
Aircraft Operator : Corporate
Make Model Name : Premier 1
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 91
Flight Plan : IFR
Mission : Passenger
Flight Phase : Descent
Route In Use : Vectors
Airspace.Class E : BOI

Person

Location Of Person.Aircraft : X
Location Of Person.Facility : BOI.TRACON
Reporter Organization : Government
Function.Air Traffic Control : Approach
Qualification.Air Traffic Control : Fully Certified
Experience.Air Traffic Control.Time Certified In Pos 1 (yrs) : 15
ASRS Report Number.Accession Number : 1827504
Human Factors : Communication Breakdown
Human Factors : Situational Awareness
Human Factors : Distraction
Communication Breakdown.Party1 : ATC
Communication Breakdown.Party2 : Flight Crew

Events

Anomaly.Deviation - Altitude : Overshoot
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Anomaly.Inflight Event / Encounter : CFTT / CFIT
Detector.Person : Air Traffic Control
When Detected : In-flight
Result.Air Traffic Control : Issued New Clearance

Assessments

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

Narrative: 1

Aircraft X was given a descent to the Minimum Vectoring Altitude of 9,000 feet which he read back correctly. I observed him starting the descent and responded to another aircraft checking onto the frequency. The other aircraft failed check on properly so I had to query the check on information, issue a heading and an altitude to descend to. The other aircraft did not read back altitude or give a complete read back so I was in the process of getting him squared away. I then noticed Aircraft X was exiting the edge of the 9,000 foot Minimum Vectoring Altitude and descending through 8-something. He had obviously descended through the assigned altitude. He was already in the 7,000 foot (next) Minimum Vectoring Altitude so I issued a new altitude to maintain of 7,000 feet which he read back and complied with. [I recommend] proper staffing levels, [and a] standalone Supervisor in the TRACON. Had there been another set of eyes scanning as well this may have been avoided.

Synopsis

TRACON Controller reported they did not notice an aircraft descending below its assigned altitude and below the Minimum Vectoring Altitude.

ACN: 1827500 *(31 of 50)*

Time / Day

Date : 202107
Local Time Of Day : 1201-1800

Place

Locale Reference.ATC Facility : EVV.TRACON
State Reference : IN
Altitude.MSL.Single Value : 2000

Aircraft

Reference : X
ATC / Advisory.TRACON : EVV
Aircraft Operator : Personal
Make Model Name : Small Aircraft, Low Wing, 1 Eng, Fixed Gear
Crew Size.Number Of Crew : 1
Operating Under FAR Part : Part 91
Flight Plan : IFR
Nav In Use : GPS
Flight Phase : Descent
Airspace.Class E : ZID

Component

Aircraft Component : Air/Ground Communication
Aircraft Reference : X
Problem : Malfunctioning

Person

Location Of Person.Facility : EVV.TRACON
Reporter Organization : Government
Function.Air Traffic Control : Approach
Qualification.Air Traffic Control : Fully Certified
Experience.Air Traffic Control.Time Certified In Pos 1 (yrs) : 5
ASRS Report Number.Accession Number : 1827500
Human Factors : Communication Breakdown
Human Factors : Situational Awareness
Human Factors : Confusion
Communication Breakdown.Party1 : ATC
Communication Breakdown.Party2 : Flight Crew

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.ATC Issue : All Types
Anomaly.Deviation - Altitude : Excursion From Assigned Altitude
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Anomaly.Inflight Event / Encounter : CFTT / CFIT
Detector.Automation : Air Traffic Control
Detector.Person : Air Traffic Control

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : Chart Or Publication
Contributing Factors / Situations : Human Factors
Primary Problem : Chart Or Publication

Narrative: 1

Aircraft X checked on approximately 30 [miles] north [of] CUL airport requesting to descend. Marginal VFR to IFR conditions in airspace. Attempted to request type approach and verification from pilot. Pilot advised they could not hear me and switched radios. The pilot switched but was broken and unreadable and when the pilot called back, I attempted to switch to standby transmitter but the pilot could only get me "2x5". I told the aircraft to proceed direct the IAF for the RNAV 18 approach at CUL. The pilot responded "proceeding direct HGOOD, cleared RNAV 18 approach." I chose not to respond to the pilot as the pilot seemed to be having difficulty possibly with radios or navigation with the weather, so I chose not to reiterate "cleared RNAV 18 approach". Moments later I observed the aircraft at 2,000 feet level direct to the IAF (not on a published portion of the approach). The MVA in the area is 2,500. I then pulled the approach plate to verify the crossing altitude at the IAF (2,100 feet) and pulled up the VFR chart located above the position to verify obstructions in the area. There were no obstructions on the route of flight above 800 feet which the aircraft was more than 1,000 feet above. I chose not to climb the aircraft and accepted the altitude as variance of what I thought was an appropriate altitude considering the following: 7110.65 4-8-5 Specifying Altitude: "Specify in the approach clearance the altitude shown in the approach procedures when adherence to that altitude is required for separation. When vertical separation will be provided from other aircraft by pilot adherence to the prescribed maximum, minimum, or mandatory altitudes, the controller may omit specifying the altitude in the approach clearance." Additionally, I was thinking of the example given in 4-8-1 for RNAV approaches of the 7110.65: "Aircraft 1 can be cleared direct to CENTR. The intercept angle at that IAF is 90 degrees or less. The minimum altitude for IFR operations (14 CFR, section 91.177) along the flight path to the IAF is 3,000 feet." After the event a controller who had seen the altitude asked what was going on with the Aircraft X from earlier at 2000. I told him the situation and what I thought was an appropriate response. He told me that he does not believe that applied to this circumstance. I followed up with two additional more senior radar controllers who agreed that an altitude should be given but didn't know what 4-8-5 was in reference to. The next morning I asked a supervisor about the scenario and asked what 4-8-5 refers to, he showed me an approach plate for ORD with multiple crossing altitudes on the approach. I asked him how he knew that this is what that paragraph referred to and he just noted experience. I would recommend clarification of 4-8-5 in the 7110.65 to be more easily understood to which scenario this applies. Additionally, in the example given in 4-8-1 for RNAV application, the use of minimum IFR altitude is confusing as this altitude could be lower than an MVA for the area. I would change this to MVA, or DVA if applicable, to ensure better understanding that a lower MIA than MVA is not acceptable on an unpublished route.

Synopsis

EVV TRACON controller reported misunderstanding JO 7110.65 approach clearance procedure which resulted in aircraft being below the MVA.

ACN: 1827345 *(32 of 50)*

Time / Day

Date : 202107
Local Time Of Day : 0601-1200

Place

Locale Reference.Airport : SEA.Airport
State Reference : WA

Environment

Flight Conditions : VMC
Light : Daylight

Aircraft

Reference : X
ATC / Advisory.Tower : SEA
Aircraft Operator : Air Carrier
Make Model Name : Widebody Transport
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Cargo / Freight / Delivery
Nav In Use : FMS Or FMC
Nav In Use.Localizer/Glideslope/ILS : 34R
Flight Phase : Final Approach
Airspace.Class B : SEA

Person

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
ASRS Report Number.Accession Number : 1827345

Events

Anomaly.Deviation - Altitude : Excursion From Assigned Altitude
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Anomaly.Inflight Event / Encounter : CFTT / CFIT
Detector.Automation : Air Traffic Control
Detector.Person : Air Traffic Control
Were Passengers Involved In Event : N
When Detected : In-flight
Result.General : None Reported / Taken

Assessments

Contributing Factors / Situations : Airport
Primary Problem : Airport

Narrative: 1

On final approach to SEA 34R, Tower gave us a "Low Altitude Alert" Call. Indications within the cockpit showed we were on glide slope. I informed the Tower. Approach continued to uneventful landing. I suspect the 2 aircraft that departed as we were on short final causing glide slope fluctuation, coupled with the 2.75 glide slope for Runway 34R ILS caused us to momentarily go below the threshold. Multiple departures on short final coupled with a 2.75 glide slope.

Synopsis

Captain reported receiving a Low Altitude Alert call from tower while on final approach and surmised that it was caused by multiple departures while on short final to SEA airport.

ACN: 1826901 *(33 of 50)*

Time / Day

Date : 202107
Local Time Of Day : 1201-1800

Place

Locale Reference.ATC Facility : SCT.TRACON
State Reference : CA
Altitude.MSL.Single Value : 3000

Aircraft : 1

Reference : X
ATC / Advisory.TRACON : SCT
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
Mission : Passenger
Flight Phase : Initial Climb
Airspace.Class E : ZLA

Aircraft : 2

Reference : Y
ATC / Advisory.TRACON : SCT
Make Model Name : Any Unknown or Unlisted Aircraft Manufacturer
Crew Size.Number Of Crew : 1
Operating Under FAR Part : Part 91
Flight Plan : VFR
Mission : Skydiving
Flight Phase : Initial Climb
Airspace.Class E : ZLA

Person

Location Of Person.Facility : SCT.TRACON
Reporter Organization : Government
Function.Air Traffic Control : Approach
Qualification.Air Traffic Control : Fully Certified
Experience.Air Traffic Control.Time Certified In Pos 1 (yrs) : 15
ASRS Report Number.Accession Number : 1826901
Human Factors : Confusion
Human Factors : Distraction
Human Factors : Situational Awareness
Human Factors : Time Pressure
Human Factors : Workload
Human Factors : Human-Machine Interface

Events

Anomaly.ATC Issue : All Types
Anomaly.Conflict : Airborne Conflict

Anomaly.Deviation - Altitude : Overshoot
Anomaly.Deviation - Track / Heading : All Types
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Anomaly.Ground Event / Encounter : Ground Equipment Issue
Anomaly.Inflight Event / Encounter : CFTT / CFIT
Detector.Person : Air Traffic Control
When Detected : In-flight
Result.Air Traffic Control : Separated Traffic
Result.Air Traffic Control : Issued New Clearance
Result.Air Traffic Control : Issued Advisory / Alert
Result.Air Traffic Control : Provided Assistance

Assessments

Contributing Factors / Situations : Airspace Structure
Contributing Factors / Situations : ATC Equipment / Nav Facility / Buildings
Contributing Factors / Situations : Chart Or Publication
Contributing Factors / Situations : Company Policy
Contributing Factors / Situations : Human Factors
Contributing Factors / Situations : Procedure
Primary Problem : ATC Equipment / Nav Facility / Buildings

Narrative: 1

I'm working two radar sectors combined. Total normal for the summer. Even if it wasn't normal we don't have the staffing to split it off. I'm working about X airplanes at the time. Sure, not a lot. Two airplanes are going the same direction. I separate the two airplanes via altitude separation. One's an IFR small aircraft (Aircraft Y) west bound on the airway at 10,000 feet. The other is a VFR small aircraft (Aircraft Z) west bound restricted at 9,500 feet wanting 10,500 feet. There's an air carrier jet (Aircraft A) which was a departure off of PSP heading east bound. Then there's this IFR small aircraft (Aircraft B) at 14,000 feet without a proper scratchpad flashing at me from the Center from the east. There are thunderstorms in and around the area so I suspect it's someone deviating. So I call the flight data and get a full route. Of course, thunderstorm or not, it's a bad route. I don't take radar, I have some time to deal with that issue later. Now here are the two players. The first one is what this whole story is about: Aircraft X. I release Aircraft X on the RNAV departure. I then go over and deal with the skydiver at the Banning Airport (BNG). This is a problem. It's been somewhere between 2 to 4 years since someone [opened] a skydiving joint in the middle of a pass in between two large mountains. Many reports [have been filed] about this. Now, I will give you all this much, the skydiving is finally depicted on the VFR chart. However, the folks at SCT have dropped the ball. There's no Letter of Agreement (LOA) with us and the BNG skydiving operation. We have an LOA for every other skydiving organization within SCT. There's no definitive anything on what should or shall happen with any of the procedures. We have a little piece of paper taped to the radar sector for controllers to spout off on the recorded line to invoke their Article 65 rights. Doesn't that seem like a glaring issue? Is it because no one has died yet or there haven't been enough TCAS RAs or significant event/MORs (Mandatory Operation Report) filed yet to have to worry about it? The BNG jumper calls two minutes. I give my two minute call. I call the Hemet sector and give them the notice that the jumper is two minutes out. [I have] to coordinate with a separate sector about a jump zone that is on the border of three airspaces and there's nothing written anywhere about who's responsible for what? The initial altitude for departures off of 31L is 8,000 feet. The lowest altitude you can issue off of 31L is 5,000 feet. There was about a two year period where it

was 400 feet but that changed when PSP was absorbed into SCT. I'd like to mention to everyone that's ever seen the craziness of the Minimum Vectoring Altitudes (MVA) of PSP that the Cath1 departure is runway heading until about 5ish miles before it's a right turn to the east into the valley. So the Aircraft X goes up the final (if you will) to Runway 13R. The MVAs look scary but it's a pretty clear shot...albeit not for very long at all. JEXOT which is the Final Approach Fix for Runway 13R is supposed to be crossed at or above 2900 feet which is 7.5 miles north of the airport. It was also 10 miles visibility and Sky Clear that day. Upon Aircraft X's second call he checked in either at 3,000 or leveling at 3,000. Either way, it wasn't what it was supposed to be. I was literally in disbelief. I asked him again, "Verify assigned altitude?" To see an aircraft where he was at there at 3,000 feet wasn't shocking. It gets a little warm in the summer time at PSP. Climb rates are bad. Once it was verified, it was clear there was a problem. I solved it. I issued "Climb and maintain 8,000." I think I said it twice just in case. [I was told] I should have issued a low altitude alert. The FAA 7110.65 says, "low altitude alert check your altitude immediately the MVA in your area is..." The altitudes are a little hyperbolic but it's the truth. Look at the MVAs. They're insane and there are a lot of them. I didn't assign 3,000 feet. He needed to climb. I believe the .65 literally says, "Give first priority to separating aircraft and issuing safety alerts as required in this order." That's what I did. I separated the plane from the terrain. So Aircraft X is up to 8,000 feet. He's flying the departure. Everyone's separated. He's passing traffic so I assign a higher altitude. "Aircraft X climb and maintain 15,000." He reads back 16,000. I immediately catch it and fix it. He clears a higher MVA so I want to turn him on course. I tell him, "Aircraft X turn left heading 360 when you are able proceed direct to YUCCA." We do this 1,000 times a day. He reads back 260. I catch immediately. "Negative, 360." Honestly, I don't think I used his callsign. That's on me. But he reads it back. Should be fine right? I'm guessing CRM (Crew Resource Management) wasn't optimal that day. He definitely turns right, not left, to a 260 heading. I think it was at this moment that I noticed a VFR aircraft departing the BNG airport within two minutes of jumping. I say, "Safety alert (almost ironically I know since I didn't say low altitude alert with the Aircraft X)" to the BNG jump aircraft and I inform him about the traffic. I know there are safety alerts even though the phrase safety alert isn't phraseology. It gets the message across. I hold the jumper and ask if he's talking to the departure. Unsurprisingly he's not because the departing traffic isn't on the UNICOM. That's when I notice the Aircraft X is turning right instead of left. Now he's heading for terrain and two unsuspecting small aircrafts. I deem that trying to turn back to the left would be a catastrophic decision. I felt that just continuing the right turn but stopping the climb would be the absolute safest decision. So, phraseology didn't work the first time so I go to plain language. I say something to the effect of, "Aircraft X it looks like you turned right instead of left. That's okay, just continue your right hand turn to a heading of 030 and just stop your climb for traffic." Not sure if it matters or not at this point but I did ask the Aircraft X, about two minutes before, when he was out of 3,000 for 8,000 that I wanted to triple check to make sure that he was assigned 3,000 by clearance delivery. So because I had said that, I was a little concerned that maybe the Aircraft X would think that he was in trouble and he might not have been as responsive as I would have liked him to be. That's why I said the whole "that's okay" bit. I just didn't want him to go into a mountain and I didn't want him to say, "you said right not left" all the while he's not turning. It happens way too often. So I stopped his climb. Well, I asked him to...but he didn't. He was at about 8,100 feet when I said stop your climb. He wasn't exactly climbing at 4000 feet a minute either. I could have said climb and maintain 090 but he was converging with a small aircraft that was out of 9,300 feet for 9,500 feet and another small aircraft above that guy at 10,000 feet. Sure I'd have "separation" but I didn't want a TCAS RA. I had hoped he could level off at or around 8,500 feet or so, clear the MVA, not get a TCAS RA and be on with this show. But he kept climbing. I saw this and used a more authoritative voice and said stop your climb for traffic. I probably could have called traffic but there was

a lot going on at the time. I might have called traffic but I don't think I did to the Aircraft X. Center was crying for me to take a hand off on a guy. I told them I couldn't take him. They refused to accept that an answer and kept calling. The VFR aircraft at BNG was posing a dangerous threat. The Aircraft X was turning away from a mountain. I was trying to tell the other two small aircraft about each other but I felt I kept getting blocked. Eventually, the Aircraft X stopped climbing. He said he had traffic in sight. There was no MVA violation with the high terrain. There was no TCAS RA. I got the Aircraft X back on course. I climbed him up and got him on the way. The VFR departure eventually cleared and the skydiver let out skydivers. It all worked out. The Low Altitude Alert (LA) never went off on the radar scope I was working. Hard to believe right? I thought so too. I was shocked about the LA alert going off. This is clearly a pilot deviation. It seems apparent it's a CRM issue. Please intervene and get us an LOA with the Banning jump zone and SCT. The FALCON program that SCT uses is faulted. The LA never went off on the scope. And if I missed it initially, surely it didn't go off continuously over several minutes and thousands of feet in the climb. There's a bug that needs to get addressed with that system.

Synopsis

SCT TRACON Controller reported an air carrier aircraft had departed its assigned altitude below the minimum vectoring altitude and was on a conflicting track with an aircraft departing a satellite airport.

ACN: 1826622 *(34 of 50)*

Time / Day

Date : 202107
Local Time Of Day : 1801-2400

Place

Locale Reference.Airport : BWI.Airport
State Reference : MD
Altitude.MSL.Single Value : 1500

Environment

Flight Conditions : VMC
Light : Night

Aircraft

Reference : X
ATC / Advisory.Tower : BWI
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
Mission : Passenger
Flight Phase : Initial Approach
Route In Use : Vectors
Airspace.Class C : BWI

Person

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
Experience.Flight Crew.Last 90 Days : 178
ASRS Report Number.Accession Number : 1826622
Human Factors : Situational Awareness

Events

Anomaly.Deviation - Altitude : Excursion From Assigned Altitude
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Anomaly.Inflight Event / Encounter : CFTT / CFIT
Detector.Automation : Aircraft Terrain Warning
Detector.Person : Flight Crew
Detector.Person : Air Traffic Control
Were Passengers Involved In Event : N
When Detected : In-flight

Result.Flight Crew : Took Evasive Action
Result.Air Traffic Control : Provided Assistance

Assessments

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

Narrative: 1

On base to final to Runway 10, we were turning base to final and descending to 1,500 feet to conduct a visual approach. As I looked outside to align the aircraft with Runway 10 and considering the tailwind I descended to 1,300 feet and Tower called Low Altitude Alert. I was two miles from JEANS waypoint, the final approach fix for the ILS 10. I immediately climbed and crossed JEANS at 1,500 feet. Completed the approach.

Synopsis

Air carrier First Officer reported descending below assigned altitude on approach to BWI resulting in a low alert warning from Tower.

ACN: 1826455 *(35 of 50)*

Time / Day

Date : 202107
Local Time Of Day : 0001-0600

Place

Locale Reference.ATC Facility : RNO.Tower
State Reference : NV
Altitude.MSL.Single Value : 6200

Aircraft

Reference : X
ATC / Advisory.Tower : RNO
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
Mission : Passenger
Nav In Use : GPS
Nav In Use : FMS Or FMC
Flight Phase : Initial Approach
Flight Phase : Final Approach

Person

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 : 1826455
Human Factors : Troubleshooting
Human Factors : Workload
Human Factors : Situational Awareness
Human Factors : Time Pressure

Events

Anomaly.Deviation - Altitude : Excursion From Assigned Altitude
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Anomaly.Inflight Event / Encounter : Weather / Turbulence
Anomaly.Inflight Event / Encounter : CFTT / CFIT
Detector.Automation : Air Traffic Control
Detector.Person : Air Traffic Control
Were Passengers Involved In Event : N
When Detected : In-flight
Result.Flight Crew : Executed Go Around / Missed Approach

Result.Flight Crew : Diverted
Result.Air Traffic Control : Issued Advisory / Alert

Assessments

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

Narrative: 1

During the RNAV X 16L approach into RNO, we passed the KNACK approach fix at 6,900 ft., as depicted, then set 6,200 ft. for WARAX and descended. The weather was IFR and our aircraft was not equipped with vertical guidance for this approach, so we descended quickly to see if we could get below the smoke layer. Reno Tower advised us to check altitude and said that we had a Low Altitude Warning. We double checked the approach charts and our altitude settings and found no error. We continued with the approach with no further Altitude Warning and did not need to adjust our altitude. The approach terminated with a missed approach due to low visibility and a diversion. Possibly a higher descent rate than what would have been suggested by an aircraft equipped with vertical guidance. Possibly a slower rate of descent or a navigation system with vertical guidance and would be very helpful. Upon arriving at LNAV minimums on the RNAV 16L approach into Reno, we were unable to get the runway or runway environment in sight due to smoke and low visibility. We decided to go around at the missed approach point and divert to ZZZ because it did not seem that conditions would improve for a second attempt at a landing. Low visibility, inaccurate meter report.

Synopsis

Air Carrier Captain reported an ATC Low Altitude Warning while on approach into RNO.

ACN: 1826339 *(36 of 50)*

Time / Day

Date : 202107
Local Time Of Day : 0601-1200

Place

Locale Reference.ATC Facility : ZZZ.TRACON
State Reference : US
Altitude.MSL.Single Value : 10000

Environment

Flight Conditions : VMC

Aircraft : 1

Reference : X
Aircraft Operator : Air Carrier
Make Model Name : B777 Undifferentiated or Other Model
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Passenger
Nav In Use : GPS
Nav In Use : FMS Or FMC
Flight Phase : Climb
Route In Use.SID : ZZZZZ

Aircraft : 2

Reference : Y
Make Model Name : Small Aircraft, Low Wing, 2 Eng, Retractable Gear

Person : 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 : Instrument
Qualification.Flight Crew : Multiengine
Experience.Flight Crew.Total : 17407
Experience.Flight Crew.Last 90 Days : 83
Experience.Flight Crew.Type : 48
ASRS Report Number.Accession Number : 1826339
Human Factors : Communication Breakdown
Human Factors : Time Pressure
Human Factors : Workload
Human Factors : Distraction
Communication Breakdown.Party1 : Flight Crew
Communication Breakdown.Party2 : ATC

Person : 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
Experience.Flight Crew.Total : 7297
Experience.Flight Crew.Last 90 Days : 53
Experience.Flight Crew.Type : 449
ASRS Report Number.Accession Number : 1826643
Human Factors : Workload
Human Factors : Time Pressure
Human Factors : Situational Awareness
Human Factors : Communication Breakdown
Human Factors : Distraction
Communication Breakdown.Party1 : Flight Crew
Communication Breakdown.Party2 : ATC

Events

Anomaly.ATC Issue : All Types
Anomaly.Conflict : NMAC
Anomaly.Deviation - Altitude : Excursion From Assigned Altitude
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Detector.Automation : Air Traffic Control
Detector.Automation : Aircraft TA
Detector.Automation : Aircraft RA
Detector.Person : Flight Crew
Miss Distance.Vertical : 490
Were Passengers Involved In Event : N
When Detected : In-flight
Result.Flight Crew : Took Evasive Action
Result.Flight Crew : FLC complied w / Automation / Advisory

Assessments

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

Narrative: 1

The Captain was hand flying the aircraft on the ZZZZZ RNAV Departure off of Runway XXR from ZZZ, climbing to FL 190. ATC issued our flight an intermediate level off altitude of 10,000 ft. Approaching 10,000 ft. and about to level off, our flight received a TCAS RA to "Maintain Vertical Speed," due to an aircraft that appeared to be descending towards our aircraft and crossing our flight path. The Captain complied with and performed the TCAS RA maneuver. Then, the ATC Controller and what sounded like an ATC Supervisor intervening, issued instructions to the other aircraft to turn and climb immediately. At this point, our flight's TCAS RA changed from a "Maintain Vertical Speed" to a "Descend Now." The Captain complied with the changing "Descend Now" TCAS RA maneuver. Once the radio communications cleared, the First Officer was able to inform ATC of our TCAS RA. As

a result of our TCAS RA maneuvering and the ATC issued turn and climb instructions to the other aircraft, the other aircraft appeared to pass our aircraft forward, above and to the right at less than 500 ft. Our flight then continued to ZZZ1 without further incidence.

Narrative: 2

Departing ZZZ on the ZZZZZ ZZZZZ1 transition, we were initially cleared to FL190. Passing 8,800 ft., we were told to stop our climb at 10000 ft. The Captain was hand flying. At 9,800 ft., we received a "maintain vertical speed" in a climb RA. ATC gave the conflicting aircraft, a light twin, an immediate climb and turn to the east. The traffic was pointed out to us and I responded, "Roger. Aircraft X TCAS climb." I then spotted the aircraft (conditions were VMC) but was unable to tell ATC due to radio congestion. As the conflicting aircraft began to climb away from us, we received a course reversal to "DESCEND. DESCEND NOW" RA. The Captain followed the guidance. ATC gave us a frequency change and I read back the clearance and added "TCAS descent" and changed frequencies. I estimate we passed within 500 ft. as the aircraft passed above us and to the right, turning away from us. The flight continued without incident to ZZZ1.

Synopsis

777 Flight Crew reported an NMAC during the departure climb

ACN: 1826245 *(37 of 50)*

Time / Day

Date : 202107

Place

Locale Reference.ATC Facility : ZZZ.TRACON
State Reference : US
Relative Position.Angle.Radial : 090
Relative Position.Distance.Nautical Miles : 25
Altitude.MSL.Single Value : 8000

Environment

Flight Conditions : IMC
Weather Elements / Visibility : Rain
Weather Elements / Visibility : Thunderstorm
Weather Elements / Visibility : Turbulence
Weather Elements / Visibility.Visibility : 3
Ceiling.Single Value : 1400

Aircraft

Reference : X
ATC / Advisory.TRACON : ZZZ
Aircraft Operator : Corporate
Make Model Name : Citation V/Ultra/Encore (C560)
Operating Under FAR Part : Part 91
Flight Plan : IFR
Mission : Passenger
Flight Phase : Descent
Route In Use : Vectors
Airspace.Class B : ZZZ

Person

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 : Instrument
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Air Transport Pilot (ATP)
Experience.Flight Crew.Total : 38000
Experience.Flight Crew.Last 90 Days : 250
Experience.Flight Crew.Type : 1800
ASRS Report Number.Accession Number : 1826245
Human Factors : Situational Awareness

Events

Anomaly.Deviation - Altitude : Excursion From Assigned Altitude
Anomaly.Deviation - Speed : All Types

Anomaly.Deviation / Discrepancy - Procedural : Clearance
Anomaly.Inflight Event / Encounter : Weather / Turbulence
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 : Regained Aircraft Control

Assessments

Contributing Factors / Situations : Weather
Primary Problem : Weather

Narrative: 1

Signed on with ZZZ Approach and they cleared me to descend to 8000 ft. and asked to turn to 170 heading. Shortly after I turned I realized they had vectored me right into a cell and we were simultaneously leveling at 8,000 ft. I was on the autopilot and the turbulence was severe enough that it disengaged and we caught a huge downdraft. The airplane was still trimmed nose down in a descent when the autopilot turned off. The aircraft descended several hundred feet below the assigned 8,000 ft. MSL and lost 50 kts. in airspeed in a matter of a few seconds. So as not to impose heavy load factors on the aircraft and passengers I recovered slowly and climbed back to the assigned 8,000 ft.

Synopsis

C560 Pilot reported being vectored by ATC directly into a cloud cell and lost several hundred feet of altitude and 50 knots of airspeed resulting in a subsequent slow climb back to assigned altitude.

ACN: 1826180 *(38 of 50)*

Time / Day

Date : 202107
Local Time Of Day : 0601-1200

Place

Locale Reference.ATC Facility : ZZZ.TRACON
State Reference : US
Relative Position.Distance.Nautical Miles : 0
Altitude.MSL.Single Value : 9000

Environment

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

Aircraft : 1

Reference : X
ATC / Advisory.TRACON : ZZZ
Aircraft Operator : Corporate
Make Model Name : Small Transport, Low Wing, 2 Turbojet Eng
Operating Under FAR Part : Part 135
Flight Plan : IFR
Mission : Passenger
Nav In Use : GPS
Nav In Use : FMS Or FMC
Flight Phase : Initial Climb
Route In Use : Direct
Route In Use.SID : ZZZZZ3
Airspace.Class C : ZZZ

Aircraft : 2

Reference : Y
ATC / Advisory.TRACON : ZZZ
Make Model Name : Small Aircraft, Low Wing, 1 Eng, Fixed Gear
Crew Size.Number Of Crew : 1
Flight Phase : Cruise
Airspace.Class C : ZZZ

Person

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 : Instrument
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Air Transport Pilot (ATP)
Experience.Flight Crew.Total : 5070
Experience.Flight Crew.Last 90 Days : 225

Experience.Flight Crew.Type : 2530
ASRS Report Number.Accession Number : 1826180
Human Factors : Communication Breakdown
Human Factors : Time Pressure
Human Factors : Troubleshooting
Human Factors : Workload
Human Factors : Distraction
Communication Breakdown.Party1 : Flight Crew
Communication Breakdown.Party2 : ATC

Events

Anomaly.Conflict : NMAC
Anomaly.Deviation - Altitude : Crossing Restriction Not Met
Anomaly.Deviation - Altitude : Overshoot
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Detector.Automation : Aircraft TA
Detector.Person : Flight Crew
Miss Distance.Horizontal : 5
Miss Distance.Vertical : 300
Were Passengers Involved In Event : N
When Detected : In-flight
Result.Flight Crew : Took Evasive Action

Assessments

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

Narrative: 1

Departing Runway XX from ZZZ. Issued climb via SID to 20,000 ft. Briefed approach with crew. In the turn near ZZZZZ became aware of visual target approaching left to right. ATC was asking target about altitude which led crew to believe he wasn't where he was expected to be. Target was now 300 ft. above and appeared to have until now been in a descent. Traffic alert sounded in cockpit. Quick review of terrain on departure plate showed rising terrain 13,000 ft. and TAWS showed red to the left. Unable to transmit to ATC due to conversation between target and ATC. Elected to climb to avoid terrain and target. Disconnected autopilot for climb and preparation for potential evasive action. Climbed above published "at or below" crossing restriction. Believe we were within 3 miles of crossing when we topped the altitude. Crossing restriction missed by crew due to distraction with traffic alert and eyes outside for see and avoid operations. Upon review after the fact, target on arrival should have been at 10,000 ft. and our level off at 9,000 ft. would have kept us below target. We did not have that information at the time of the incident which is why we believed the target was descending and our climb would have avoided the conflict.

Synopsis

Captain reported taking evasive action to avoid a NMAC while on a SID resulting in a missed crossing restriction.

ACN: 1826177 *(39 of 50)*

Time / Day

Date : 202107
Local Time Of Day : 0601-1200

Place

Locale Reference.ATC Facility : ZZZ.ARTCC
State Reference : US
Altitude.MSL.Single Value : 23000

Environment

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

Aircraft

Reference : X
ATC / Advisory.Center : ZZZ
Aircraft Operator : Corporate
Make Model Name : PC-12
Crew Size.Number Of Crew : 1
Operating Under FAR Part : Part 91
Flight Plan : IFR
Mission : Passenger
Flight Phase : Climb
Route In Use : Direct
Airspace.Class A : ZZZ

Component

Aircraft Component : Propeller Ice System
Problem : Failed

Person

Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Corporate
Function.Flight Crew : Single Pilot
Function.Flight Crew : Pilot Flying
Function.Flight Crew : Captain
Qualification.Flight Crew : Commercial
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Flight Instructor
Qualification.Flight Crew : Sea
Experience.Flight Crew.Total : 1675
Experience.Flight Crew.Last 90 Days : 35
Experience.Flight Crew.Type : 707
ASRS Report Number.Accession Number : 1826177
Human Factors : Troubleshooting
Human Factors : Workload

Human Factors : Distraction
Human Factors : Human-Machine Interface

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.Deviation - Altitude : Excursion From Assigned Altitude
Anomaly.Deviation - Track / Heading : All Types
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Anomaly.Inflight Event / Encounter : Weather / Turbulence
Anomaly.Inflight Event / Encounter : Loss Of Aircraft Control
Detector.Person : Flight Crew
Miss Distance.Horizontal : 1
Miss Distance.Vertical : 500
When Detected : In-flight
Result.Flight Crew : Requested ATC Assistance / Clarification
Result.Flight Crew : Regained Aircraft Control
Result.Flight Crew : Overcame Equipment Problem
Result.Flight Crew : Returned To Clearance
Result.Air Traffic Control : Provided Assistance

Assessments

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

Narrative: 1

Flying from ZZZ to ZZZ1 the Propeller Heat System Failed. I was still climbing through a layer which appeared to top at about 24000 feet. I was assessing the warning and CAWS (Central Advisory and Warning System) indicating that the Prop Heat failed and following the QRH, when the autopilot began banking the aircraft to the right and nose down. I disconnected the autopilot and hit the trim interrupt switch to ensure to have full control over the aircraft. Once I was back straight and level, ATC inquired why we had descended and if we were okay. I was able to climb out of icing and proceeded back on course.

Synopsis

PC-12 Pilot reported the Propeller Heat System failed while climbing through icing conditions causing a temporary loss of control.

ACN: 1825959 *(40 of 50)*

Time / Day

Date : 202107
Local Time Of Day : 0001-0600

Place

Locale Reference.Airport : EVV.Airport
State Reference : IN

Environment

Flight Conditions : VMC

Aircraft

Reference : X
ATC / Advisory.Tower : EVV
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
Nav In Use.Localizer/Glideslope/ILS : RWY 22
Flight Phase : Landing
Route In Use : Visual Approach
Airspace.Class C : EVV

Person : 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 : Multiengine
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Instrument
ASRS Report Number.Accession Number : 1825959
Human Factors : Situational Awareness
Human Factors : Fatigue

Person : 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 : Instrument
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Air Transport Pilot (ATP)
Experience.Flight Crew.Total : 2600
Experience.Flight Crew.Last 90 Days : 200

Experience.Flight Crew.Type : 1200
ASRS Report Number.Accession Number : 1825960
Human Factors : Situational Awareness
Human Factors : Fatigue

Events

Anomaly.Deviation - Altitude : Undershoot
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Anomaly.Inflight Event / Encounter : CFTT / CFIT
Detector.Automation : Aircraft Terrain Warning
Detector.Person : Flight Crew
Result.Flight Crew : Took Evasive Action

Assessments

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

Narrative: 1

We were doing a late night flight to Evansville on the visual approach for Runway 22 and the FO (First Officer) (Pilot Flying) drifted below the glide slope as he went to full visual not cross referencing a glide slope. I told him he was sinking below it and about that time we received the glide slope warning as he was correcting. Pilot Monitoring stated the Pilot Flying was too low and below the glide slope while shortly after the glide slope GPWS went off. I believe the cause of this was improper scan of the Pilot Flying while transitioning to the visual part of the approach and also it being late at night and being tired on the last leg of the day. The Pilot Flying climbed the airplane back on to glide slope and proceeded with the visual approach and a good landing. Keep a continuous scan in and out of the cockpit while on a visual approach, especially when there are no PAPIs.

Narrative: 2

While hand flying the approach around 500 ft. to Runway 22 in Evansville, I allowed the aircraft to drift below glide slope. The Captain, who was PM (Pilot Monitoring) noticed and informed me I was getting low. I also received a "glide slope" aural warning. I quickly corrected pitch and power to get back on glide slope and landed without any further issues. The Captain informed me I was getting low, and the "glide slope" GPWS aural alert. I believe the cause was my insufficient scan of the flight instruments, as well as transitioning from the glide slope to scan the runway environment. Since it was nighttime, and since Runway 22 in Evansville has no VASI or PAPI, I believe my sight picture was incorrect, and I judged the aircraft to be higher than it was. I corrected pitch and power and returned to the glide slope for a normal landing. I believe I can do a better job of scanning the flight and navigation instruments while on approach; especially to an airport with no VASI or PAPI.

Synopsis

Air carrier flight crew reported the pilot flying drifted below the glideslope on visual approach resulting in a GPWS alert and evasive action.

ACN: 1825928 *(41 of 50)*

Time / Day

Date : 202107
Local Time Of Day : 1801-2400

Place

Locale Reference.ATC Facility : MMFR.ARTCC
State Reference : FO
Altitude.MSL.Single Value : 7600

Environment

Flight Conditions : VMC

Aircraft

Reference : X
ATC / Advisory.Center : MMFR
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
Mission : Passenger
Nav In Use.Localizer/Glideslope/ILS : ILS Z
Flight Phase : Final Approach
Route In Use.STAR : LIVRI 1D

Person : 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 : Instrument
Qualification.Flight Crew : Multiengine
Experience.Flight Crew.Total : 3748
Experience.Flight Crew.Last 90 Days : 141
Experience.Flight Crew.Type : 3748
ASRS Report Number.Accession Number : 1825928
Human Factors : Confusion
Human Factors : Situational Awareness
Human Factors : Communication Breakdown
Communication Breakdown.Party1 : Flight Crew
Communication Breakdown.Party2 : ATC

Person : 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
Experience.Flight Crew.Total : 654
Experience.Flight Crew.Last 90 Days : 80
Experience.Flight Crew.Type : 654
ASRS Report Number.Accession Number : 1825939
Human Factors : Situational Awareness
Human Factors : Confusion
Human Factors : Communication Breakdown
Communication Breakdown.Party1 : Flight Crew
Communication Breakdown.Party2 : ATC

Events

Anomaly.ATC Issue : All Types
Anomaly.Deviation - Altitude : Overshoot
Anomaly.Deviation / Discrepancy - Procedural : Clearance
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

Assessments

Contributing Factors / Situations : Chart Or Publication
Contributing Factors / Situations : Human Factors
Contributing Factors / Situations : Procedure
Primary Problem : Human Factors

Narrative: 1

Landing Runway 28 GDL, night VMC with bright moonlight. Set up to land Runway 28 using the ILS DME 2 with the ILS DME 2 transition from IKBAN. At the last minute, Control told us to descend via the LIVRI 1D Arrival. We quickly put this arrival into the FMC, but did not change the approach. Shortly after starting the arrival, we were given direct to PLADE with continued descent to the mandatory altitude of 9,000 ft at PLADE which is the point leading into the ILS Approach to Runway 28. There was a discontinuity between PLADE and CI28, which I closed up. Once we reached PLADE, I asked my FO (First Officer) to set 7,100 ft. in the mode control panel which is the minimum altitude at CI28 and started a VNAV descent with the intention to arm the ILS just prior to CI28. At approximately 7,600 ft. we received a warning "too low terrain". We could visually see the terrain and started to level off, then, very quickly received "terrain, pull up" with amber showing on the terrain display. I immediately complied by going into the CFIT recovery procedure. We climbed to approximately 8,000 ft. and leveled off seeing that we were well clear of all terrain (no more warning and terrain indicator showed us to be clear). We then reassessed. At that time, we were very close to CI28 and had plenty of light from the city and a very bright moon. We were also in a good position to continue to the airport, so I continued to an uneventful landing.

Narrative: 2

We were landing Runway 28 in Guadalajara. Night VMC conditions with moonlight provided adequate visual references. We were set up to land Runway 28 using the ILS DME2 or

localizer Runway 28 with the transition for the ILS DME 2 with the IKBAN transition. At the last minute, Control told us to descend via the LIVRI 1D arrival. After changing to this arrival in the FMS, we realized that we needed to descend quickly. To complicate matters, Control give us directions to go direct to PLADE. I estimate Control shortened our arrival by 40 to 50 miles in giving us the arrival change and direct PLADE which greatly compounded our decent plan. This caused us to have to execute an expedited decent while having to re-program the FMS and plan for this new routing. I verbalized terrain that was to our right as we were turning direct PLADE and both the CA (Captain) and I correlated this to what we were seeing on our terrain displays. Prior to reaching PLADE, Control cleared us for the ILS Zulu Runway 28. However, we heard cleared for the ILS Two. I attribute this miscommunication to language barriers. CA asked me to set 7,100 ft., which would've been correct for ILS 2 but 7,700 ft would've been correct for ILS Z. We got the "too low, terrain" oral warning followed by the "terrain, pull up". CA commanded auto pilot off, stow speed brake (Even though they weren't in use), pitched up and added full thrust. We had the terrain in sight the whole time, as well as the Runway environment. We climbed approximately 500 ft before determining that we could safely continue the approach without incident. We landed on Runway 28 without incident.

Synopsis

Air Carrier Flight Crew reported a miscommunication with ATC. A change of STAR and instrument approach resulted in a crew communication error and response to GPWS alert.

ACN: 1825294 *(42 of 50)*

Time / Day

Date : 202107
Local Time Of Day : 1201-1800

Place

Locale Reference.Airport : ZZZ.Airport
State Reference : US
Relative Position.Angle.Radial : 120
Relative Position.Distance.Nautical Miles : 15
Altitude.MSL.Single Value : 7000

Environment

Flight Conditions : VMC
Light : Daylight

Aircraft

Reference : X
ATC / Advisory.TRACON : NCT
Aircraft Operator : Personal
Make Model Name : PA-24 Comanche
Crew Size.Number Of Crew : 1
Operating Under FAR Part : Part 91
Flight Plan : IFR
Mission : Passenger
Flight Phase : Cruise
Route In Use : Direct
Airspace.Class E : ZZZ

Component

Aircraft Component : Communication Systems
Aircraft Reference : X
Problem : Improperly Operated

Person

Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Personal
Function.Flight Crew : Single Pilot
Function.Flight Crew : Pilot Flying
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Air Transport Pilot (ATP)
Experience.Flight Crew.Total : 4100
Experience.Flight Crew.Last 90 Days : 25
Experience.Flight Crew.Type : 2800
ASRS Report Number.Accession Number : 1825294
Human Factors : Situational Awareness
Human Factors : Communication Breakdown

Communication Breakdown.Party1 : Flight Crew
Communication Breakdown.Party2 : ATC

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.Deviation - Altitude : Excursion From Assigned Altitude
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Anomaly.Inflight Event / Encounter : CFTT / CFIT
Detector.Person : Flight Crew
Were Passengers Involved In Event : N
When Detected : In-flight
Result.Flight Crew : Became Reoriented
Result.Flight Crew : Took Evasive Action

Assessments

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

Narrative: 1

I was on an IFR flight plan from ZZZ1 to ZZZ2 after having transitioned from [Victor airway] to direct VOR. As I did not hear any hand off from ZZZ Approach to the next sector, I attempted to communicate with the last assigned frequency at ZZZ, but I was unsuccessful as I was most likely out of range. I then called Center on and was advised that they we're looking for me and to immediately climb from 7000 to 8000 ft which I complied with. While on that frequency I was advised to call ATC when I landed which I did. I was informed that I had flown for a period of time at 7000 ft. While the minimum vectoring altitude was 7,200 ft, but had not yet arrived at the point where it was 8,000 ft. During the period of deviation where I was 200 ft. Below the MVA I had visual contact with the terrain below as conditions were VMC with clear weather the entire time. I also advised ATC of that fact after they ordered me to climb to 8,000 ft. I believe that it would have been helpful and possibly avoided the situation had I attempted to check in with ATC sooner after not hearing a hand-off.

Synopsis

PA-24 Pilot reported being out of radio contact with ATC while on an IFR flight plan due to distractions.

ACN: 1825023 *(43 of 50)*

Time / Day

Date : 202107
Local Time Of Day : 1801-2400

Place

Locale Reference.ATC Facility : ZJX.ARTCC
State Reference : FL
Altitude.MSL.Single Value : 37300

Environment

Flight Conditions : IMC
Light : Daylight

Aircraft

Reference : X
ATC / Advisory.Center : ZJX
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 : Cruise
Airspace.Class A : ZJX

Person : 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 : Multiengine
Qualification.Flight Crew : Instrument
ASRS Report Number.Accession Number : 1825023

Person : 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 : Instrument
Qualification.Flight Crew : Multiengine
Experience.Flight Crew.Last 90 Days : 160
Experience.Flight Crew.Type : 19000
ASRS Report Number.Accession Number : 1825649

Events

Anomaly.Deviation - Altitude : Excursion From Assigned Altitude
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Anomaly.Inflight Event / Encounter : Weather / Turbulence
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 : Regained Aircraft Control
Result.Flight Crew : Became Reoriented

Assessments

Contributing Factors / Situations : Weather
Primary Problem : Weather

Narrative: 1

While cruising at FL370, approximately 40 miles south of SAV, we experienced a severe updraft, causing the aircraft to rapidly climb to approximately 37,300 ft and then rapidly descend to approximately 36,500 ft. There was no weather displayed on our weather radar in our area of flight. The fluctuations lasted for about one minute. The rest of the flight continued as normal.

Narrative: 2

In cruise at FL370, encountered clear air turbulence. No radar echoes, must have been convective activity building below our altitude. Updraft produced rain from below, lifted aircraft 300 ft above our cruise altitude. First Officer applied upset recovery controls which required descent 600 ft below our cruise altitude. Reported the event to Jacksonville Center. No other traffic in the area, no evasive action required. Flight continued normally without further incident.

Synopsis

Flight crew reported encountering severe updrafts and downdrafts resulting in deviations from their assigned altitude. The flight crew recovered from the upset condition and continued the flight without issue.

ACN: 1825015 *(44 of 50)*

Time / Day

Date : 202107
Local Time Of Day : 1201-1800

Place

Locale Reference.ATC Facility : ZZZ.ARTCC
State Reference : US
Altitude.MSL.Single Value : 11000

Aircraft

Reference : X
ATC / Advisory.Center : ZZZ
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
Mission : Passenger
Flight Phase : Initial Approach
Airspace.Class E : ZZZ

Person

Location Of Person.Aircraft : X
Location Of Person.Facility : ZZZ.ARTCC
Reporter Organization : Government
Function.Air Traffic Control : Enroute
Qualification.Air Traffic Control : Fully Certified
Experience.Air Traffic Control.Time Certified In Pos 1 (yrs) : 6
ASRS Report Number.Accession Number : 1825015
Human Factors : Situational Awareness
Human Factors : Communication Breakdown
Communication Breakdown.Party1 : ATC
Communication Breakdown.Party2 : Flight Crew

Events

Anomaly.ATC Issue : All Types
Anomaly.Deviation - Altitude : Overshoot
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Anomaly.Inflight Event / Encounter : CFTT / CFIT
Detector.Automation : Air Traffic Control
Detector.Person : Air Traffic Control
When Detected : In-flight
Result.Air Traffic Control : Issued Advisory / Alert

Assessments

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

Narrative: 1

I was working and had just arrived to start my shift. I had been working the sector less than 10 minutes when I cleared Aircraft X to cross ZZZ at or above 14,000 ft. and issued an approach clearance for the ILS approach. The pilot read back a crossing restriction of 11,000 ft., which I did not catch. I was relieved from the position for a break, and after leaving the control room I was told that [the flight] had descended below the MIA (Minimum IFR Altitude) prior to reaching ZZZ and was issued a low altitude alert. I do not have any recommendations.

Synopsis

A Center Controller reported a flight crew descended below the minimum IFR altitude after he missed the crews incorrect read back of the assigned altitude.

ACN: 1824947 *(45 of 50)*

Time / Day

Date : 202107
Local Time Of Day : 0601-1200

Place

Locale Reference.ATC Facility : ZZZ.TRACON
State Reference : US
Altitude.MSL.Single Value : 3500

Environment

Flight Conditions : VMC
Weather Elements / Visibility.Visibility : 15
Light : Daylight

Aircraft : 1

Reference : X
ATC / Advisory.TRACON : ZZZ
Aircraft Operator : FBO
Make Model Name : Skyhawk 172/Cutlass 172
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 91
Flight Plan : None
Mission : Training
Flight Phase : Cruise
Route In Use : None
Airspace.Class E : ZZZ

Aircraft : 2

Reference : Y
ATC / Advisory.TRACON : ZZZ
Make Model Name : Skyhawk 172/Cutlass 172
Flight Phase : Cruise
Airspace.Class E : ZZZ

Person

Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : FBO
Function.Flight Crew : Instructor
Function.Flight Crew : Pilot Not Flying
Qualification.Flight Crew : Flight Instructor
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Commercial
Experience.Flight Crew.Total : 600
Experience.Flight Crew.Last 90 Days : 85
Experience.Flight Crew.Type : 400
ASRS Report Number.Accession Number : 1824947
Human Factors : Situational Awareness

Events

Anomaly.Conflict : NMAC
Anomaly.Deviation - Altitude : Excursion From Assigned Altitude
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Detector.Automation : Aircraft TA
Detector.Person : Flight Crew
Miss Distance.Horizontal : 400
Miss Distance.Vertical : 200
Were Passengers Involved In Event : N
When Detected : In-flight
Result.Flight Crew : Took Evasive Action

Assessments

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

Narrative: 1

My student and I were practicing commercial pilot maneuvers in the South Practice Area of the ZZZ terminal area. We were .5 NM SE of [the lake] doing a steep spiral from 4,500 feet down. We made multiple radio calls and this was our second maneuver. After the first turn and a half, we were alerted to a traffic conflict on my iPad, which was supplied by a Sentry Mini ADS-B receiver. We looked for the traffic and spotted them on a collision course. We immediately terminated the maneuver and I took controls from the student to execute an emergency climb, as our paths were roughly perpendicular and I did not believe a turn would be enough to clear us. The other aircraft (C172) passed directly under us without making a control input or diverting course. We did some more maneuvers, also with thorough radio calls but had no further conflicts.

Synopsis

Flight Instructor reported taking evasive action due to a Near Mid Air Collision.

ACN: 1824766 *(46 of 50)*

Time / Day

Date : 202107
Local Time Of Day : 1801-2400

Place

Locale Reference.ATC Facility : ZME.ARTCC
State Reference : TN

Aircraft

Reference : X
ATC / Advisory.Center : ZME
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
Mission : Passenger
Nav In Use : GPS
Nav In Use : FMS Or FMC
Flight Phase : Cruise
Route In Use : Direct
Airspace.Class B : MEM
Airspace.Class E : ZME

Person

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 : Instrument
Qualification.Flight Crew : Multiengine
ASRS Report Number.Accession Number : 1824766
Human Factors : Troubleshooting
Human Factors : Situational Awareness
Human Factors : Confusion

Events

Anomaly.Deviation - Altitude : Crossing Restriction Not Met
Anomaly.Deviation - Track / Heading : All Types
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Detector.Automation : Air Traffic Control
Detector.Person : Flight Crew
Detector.Person : Air Traffic Control
Were Passengers Involved In Event : N
When Detected : In-flight
Result.Flight Crew : Returned To Clearance

Result.Flight Crew : Requested ATC Assistance / Clarification
Result.Flight Crew : Became Reoriented
Result.Air Traffic Control : Provided Assistance

Assessments

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

Narrative: 1

We [were] on the Vanze 2 Arrival into MEM and I was flying. After reviewing the arrival and expecting a south landing, we got a new ATIS with the airport now landing to the north. This required a change of FASOP Intersection to 10,000 and 230 knots. I put this in the FMS. I also read the North arrival on the RNAV approach to the FO. When we got to the top of descent, we had not been given a descent yet, so we requested lower. The FMS showed us high as we continued to ask for lower altitudes to make the crossing restriction. Eventually the controller gave us direct to FASOP Intersection. I told the FO we were already going there. Then the FO realized that we were not going to FASOP Intersection, but were going to FASON Intersection. We realized that I had put the crossing restriction in the FMS at FASON Intersection, and not FASOP Intersection!! This was the reason the FMS showed us high. This error was because there are two almost identically named intersections on the arrival, With the change of runway from South to North and having already verified the points, the names being so close in spelling make the error one that could easily be repeated by other crews. Once we corrected the crossing restrictions to the correct FASOP Intersection, we were very low and we slowed our rate of descent. Because we had already verified the points on the arrival, when we got the runway change, we verbally reviewed the changes and the need to insert the crossing restriction in the FASOP Intersection. It was night and when I looked at the FMS, the first point that came up was FASON, which I mistook for FASOP. Both the FO and I did not catch it. We did not realize the mistake until we were given direct FASOP because we were requesting a descent because we thought we were high and were not going to make the crossing restriction. I did mention the two intersection name similarities to the Controller, and told him it was a potential problem. He said he agreed, but the fix was above his pay grade. The names of FASOP and FASON need to be changed, especially when there is a crossing restriction that needs to be entered in to the FMS. With both names so similar, it is easily to put the crossing restriction at the wrong point like we did. The runway change was the key here, as we were already set up to land to the South. Then the runway changed to land North, prompting the change to put the crossing restriction in the FMS.

Synopsis

Air carrier Captain reported similar sounding waypoints FASOP and FASON contributed to an altitude and heading deviation while on the VANZE TWO arrival to MEM airport.

ACN: 1824559 *(47 of 50)*

Time / Day

Date : 202107
Local Time Of Day : 1801-2400

Place

Locale Reference.Airport : ZZZ.Airport
State Reference : US
Altitude.MSL.Single Value : 5000

Environment

Flight Conditions : VMC
Light : Night

Aircraft

Reference : X
ATC / Advisory.TRACON : ZZZ
Aircraft Operator : Air Carrier
Make Model Name : MD-11
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Cargo / Freight / Delivery
Nav In Use : FMS Or FMC
Flight Phase : Initial Climb
Route In Use : Vectors
Airspace.Class B : ZZZ

Component

Aircraft Component : Air Data Computer
Aircraft Reference : X
Problem : Malfunctioning

Person : 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 : Multiengine
Qualification.Flight Crew : Instrument
ASRS Report Number.Accession Number : 1824559

Person : 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 : Instrument
Qualification.Flight Crew : Multiengine
ASRS Report Number.Accession Number : 1824561

Events

Anomaly.Aircraft Equipment Problem : Critical
Anomaly.Deviation - Altitude : Excursion From Assigned Altitude
Anomaly.Deviation - Speed : All Types
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Anomaly.Inflight Event / Encounter : Weather / Turbulence
Result.General : Flight Cancelled / Delayed
Result.General : Maintenance Action
Result.Flight Crew : Overcame Equipment Problem
Result.Flight Crew : Requested ATC Assistance / Clarification
Result.Flight Crew : Returned To Departure Airport
Result.Air Traffic Control : Provided Assistance

Assessments

Contributing Factors / Situations : Aircraft
Primary Problem : Aircraft

Narrative: 1

After takeoff, during a turn to a heading of 270 degrees, we received an ALT and IAS cross-side miss-comparison. The autopilot also would not engage when commanded and I hand flew up to 5,000 ft. After leveling off, and receiving instructions to climb, I called for the autopilot again and it connected. During the climb, we kept receiving the IAS and ALT notices and leveled off at 16,000 ft., FL260, and FL320. We also noted a 200 ft. discrepancy between altimeters at one point. We leveled off at these altitudes because of the miss-comparison. After leveling off, for a minute the miss-compare would go away and we would continue the climb. During the climb and at one of the level-offs, we tried using our alternate static sources. This seemed to work on the Captain′s side but the miss-compare came back when we started to climb again. The Captain then ran the airspeed unreliable checklist to see if it would be any help but nothing in the checklist seemed to be a fit for the problem we were encountering. The cause of the problems was not obvious and the checklist did not seem like it was of any help. Also, during the climbs, the FCP was not usable. All of the windows for airspeed, heading, and altitude only showed - - - -. With the problems we were having and not being able to identify the cause combined with the prospect of having to hand-fly and the encounter weather, we felt that continuing to ZZZ1 was not an option should the problems become worse. If we did in fact have an unreliable airspeed, we would be directed to disconnect both AFS and FD switches off which would mean having to leave RVSM, which would lead to higher fuel burns and hand-flying in heavy thunderstorms. [The problem was identified] when the amber IAS and ALT alerts were presented on our PFDs (Primary Flight Display). If I had to guess I would say that the aircraft had some sort of computer issue that was presenting the airspeed and altitude to the displays with differing data and a comparator caught the difference and alerted us. Our first reaction was to fly the plane. I started asking the Captain what his airspeed was as I figured that was more important than altitude. Once we were at a safe altitude and maintaining a safe airspeed, we began to troubleshoot and discuss the problems. There is nothing that we could have done as pilots to prevent this.

Narrative: 2

On the climb out the EIS detected intermittent ALT and IAS miss-comparisons between Captain and FO's (First Officer) PFD (Primary Flight Display). Stopped climb at 16,000 ft., the issue went away. We then decided to continue to climb but had to stop at FL260. I had the FO put his STATIC AIR to ALT. Problem went away for about 1 minute and then came back. I then selected Captain STATIC AIR to ALT. This time, the issues went away for a few minutes. We decided to continue the climb but had to stop at FL320 because the problem came back. I ran the emergency non-alert AIRSPEED UNRELIABLE checklist, but the issue was not resolved. At 27100 ft., Captain's IAS/MACH 336/.830, FO's IAS/MACH 330/.816. At every level change attempt FCP window indicated - - - -. The altitude difference between [the] Captain and FO was over 200 ft. Since AP (Autopilot) #2 was deferred and if we disconnected AP #1 we would not be able to remain in RVSM, we contacted company and returned to ZZZ. No emergency or special handling was required. [The problem was identified by the] amber IAS and ALT on Captain's and FO's upper left-hand corner of the PFD. [The cause was] failure annunciations cross-side miss-comparisons generated when the EIS detected significant differences between the displayed data of the Captain's and First Officer's instruments AIRSPEED and ALTITUDE. [The response was to] climb to [a] safe altitude, maintain speed, and attempt to address the issue at hand. Maintenance issues cannot be forecasted.

Synopsis

MD-11 flight crew reported an airspeed and altimeter cross-side mismatch and elected to perform an air turn back and precautionary landing.

ACN: 1824526 *(48 of 50)*

Time / Day

Date : 202107
Local Time Of Day : 1201-1800

Place

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

Environment

Flight Conditions : VMC
Light : Daylight

Aircraft

Reference : X
ATC / Advisory.TRACON : 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
Flight Phase : Climb
Route In Use.SID : ZZZZZ
Airspace.Class B : ZZZ

Component

Aircraft Component : Autothrottle/Speed Control
Aircraft Reference : X
Problem : Improperly Operated

Person

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 : 1824526
Human Factors : Communication Breakdown
Human Factors : Distraction
Human Factors : Human-Machine Interface
Human Factors : Situational Awareness
Human Factors : Training / Qualification
Human Factors : Troubleshooting
Human Factors : Confusion
Communication Breakdown.Party1 : Flight Crew
Communication Breakdown.Party2 : Flight Crew

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.Deviation - Altitude : Excursion From Assigned Altitude
Anomaly.Deviation - Speed : All Types
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Anomaly.Inflight Event / Encounter : CFTT / CFIT
Detector.Person : Flight Crew
Were Passengers Involved In Event : N
When Detected : In-flight
Result.Flight Crew : Overcame Equipment Problem
Result.Flight Crew : Took Evasive Action
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 : Software and Automation
Contributing Factors / Situations : Weather
Contributing Factors / Situations : Procedure
Primary Problem : Human Factors

Narrative: 1

I knew it was going to be a struggle getting out of ZZZ with all passengers on board when I saw the take-off performance. At 40C the margin between PTOW (Planned Take-off Weight) and MTOW was 1100 lbs. My First Officer (FO) was terrific, but it was his first trip since IOE; he had 18 hours on the airplane at the start of the sequence, and had not flown prior to training for about 8 months. In addition, it was only my second time flying the ZZZZZ departure, which has three at or above altitudes on it, which is a new thing in ZZZ. I live in ZZZ, and consequently fly out of there a great deal. All previous RNAV departures used to have at or below altitudes on them (to keep clear of inbound aircraft), so it never used to be an issue worrying about making altitudes on the SID. At the aircraft, I was already concerned about two things: brake temps and having to bump passengers. I asked my FO to pull us up numbers for 41 and 42C, just in case it got hotter, as it was likely to. In addition, I believe the winds were swinging around - runway XXR had a tailwind component at one point, so I was also looking for numbers for XYL, but due to terrain, the only runway that worked at all was XXR. I noticed that we would be unable to make the restrictions and asked the FO to ask for altitude relief on the SID as soon as he contacted ground. In my experience, asking for altitude relief at other airports was never an issue, so I was not overly concerned. We pushed back, and naturally were over PTOW. I asked the FO to request a new take-off performance for 41 and 42C. We eventually landed on a Flaps 1 take-off performance requiring thrust bump which got us legal for takeoff. All this occurred during the short taxi from the terminal to runway XXR. By the time we reached number 1 holding short of the runway, I realized we had forgotten to ask for the altitude relief on the SID. I asked the FO to do so as we were taking the runway. The controller, upon hearing the request, told us to taxi clear and get a new clearance. By this time there were 6-8 aircraft in a queue for takeoff, and our brake temps were over 150 degrees. My main concern was that if we had to leave the runway, it would get too hot to accommodate the load, and by the time we taxied for another 30 minutes, the brakes would be too hot for takeoff. So, glancing down at the FMS, which showed that we would miss the altitude restrictions by 5-700 feet, I knew that if we delayed cleanup, we could easily make those restrictions. I told the controller that we could manage the departure,

and he again cleared us for takeoff. I told my FO that since we were at the max performance envelope of the airplane, he should rotate very gently. As we were rolling down the runway, my attention was fixed on the EGT, as I had not done a bump takeoff before, and the engines were exactly on the edge of the red. He did as I asked, and as a result, we were very fast on the initial climb segment. As we climbed out, I was fixated on the altitude. Once it became clear that the 5,000 ft altitude (I think around 4,500 feet MSL) I relaxed a bit and told him we could clean up. He set climb power (which was a much greater reduction than normal due to the thrust bump) and I reached for the flap lever and set flaps up. At this time we were still wings level. I was so fixated on the altitude, and our airspeed shortly after takeoff was so much higher than usual that I didn't take a good look at the airspeed indicator. I believe that I retracted the flaps very early. VLS (lowest selectable speed) jumped by perhaps 40 knots, and we ended up about 20 knots below VLS. Naturally, we were now facing rapidly rising terrain, and the SID commanded a right turn. My FO started to turn, and now instead of being below VLS, we were in alpha floor. I instructed my FO to lower the nose, but it wasn't happening quickly enough, so I grabbed the side stick and pushed the nose over, at the same time requesting him to let go. There was a momentary ''DUAL INPUT'' annunciation and a momentary noticeable low speed buffet which lasted perhaps a second. We lost perhaps 300 feet of altitude as I got the airspeed back. We were able to make all of the altitude restrictions and I don't believe there were any deviations from the SID. Once we recovered, the only other item remaining was how to get the auto throttles out of alpha floor. Eventually, we turned them off (match and mash) and back on again and that got the system back to normal. I was using my knowledge of past experience flying the old SIDs. They didn't have airspeed or at or above altitudes, and my experience in the past that asking for altitude relief on a SID was not a big deal. In addition, I was flying with a brand new (very sharp) but inexperienced FO, who was relying entirely on my experience. I was also pushing to accommodate the load without having to remove passengers and/or cargo, and was worried about the brake temp issues, causing me to push to get off the ground as soon as possible. I made several errors. The first one was not notifying clearance delivery early of our inability to make the altitude and/or airspeed restrictions on the SID. In the past, ZZZ used to have a procedure for A321 aircraft to delay climb power/flap retraction to 3,000 AGL. I think if we had used that procedure, we probably would have been able to make the altitude and speed restrictions on the SID. That procedure is gone. Second, when we finally did request relief on the SID (by this time we were on the runway) and the controller told us to clear the runway and get a new clearance, I should have done so, even if it had caused us further problems with brake temp and/or takeoff weight. Third, having taken the decision to take off because I was certain we could delay cleanup, thus making us legal for the SID, I should have taken over flying duties. This would have alleviated my FO's task saturation, as I was far more experienced in the airplane. This would still have been sub-optimal, but I am confident the takeoff would have been uneventful. Fourth, once I retracted the flaps and we were below VLS, I should have put the flaps back to Config 1. So, there were many errors on my part, but an early intervention with clearance delivery would have solved everything. I believe there should be a warning to the A320 Fleet about the new SIDS, and that at high temperatures careful note should be taken of the danger of not being able to make altitude restrictions on any SID with at or above altitudes, especially early in the SID, and that relief should be requested at the gate with clearance delivery. Also to note: green dot speed (min maneuver) was 245 with flaps up, so the only way to maintain 230 knot speed at ZZZZZ waypoint is at config 1. Again, the old requirement to clean up at 3000 AGL would have solved this.

Synopsis

A321 Captain reported confusion during a Bump Thrust takeoff which resulted in the aircraft entering Alpha Floor, requiring the Captain to assume control and descend 300 additional feet to recover airspeed.

ACN: 1824447 *(49 of 50)*

Time / Day

Date : 202107

Place

Locale Reference.ATC Facility : ZZZ.TRACON
State Reference : US
Altitude.MSL.Single Value : 8000

Aircraft : 1

Reference : X
ATC / Advisory.TRACON : ZZZ
Aircraft Operator : Air Carrier
Make Model Name : Commercial Fixed Wing
Operating Under FAR Part : Part 121
Mission : Passenger
Flight Phase : Climb
Airspace.Class C : ZZZ

Aircraft : 2

Reference : Y
Aircraft Operator.Other
Make Model Name : Any Unknown or Unlisted Aircraft Manufacturer
Operating Under FAR Part.Other
Mission.Other
Flight Phase.Other
Airspace.Class C : ZZZ

Person

Location Of Person.Aircraft : X
Location In Aircraft.Other
Reporter Organization : Air Carrier
Function.Dispatch : Dispatcher
Qualification.Dispatch : Dispatcher
ASRS Report Number.Accession Number : 1824447
Human Factors : Distraction
Human Factors : Time Pressure
Human Factors : Workload
Human Factors : Situational Awareness

Events

Anomaly.Conflict : NMAC
Anomaly.Deviation - Altitude : Excursion From Assigned Altitude
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Detector.Automation : Aircraft TA
Detector.Automation : Aircraft RA
Detector.Person : Flight Crew
Were Passengers Involved In Event : N
When Detected : In-flight
Result.Flight Crew : FLC complied w / Automation / Advisory

Assessments

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

Narrative: 1

Flight took off from ZZZ and at 8,000 feet they had GA traffic in sight. The TCAS went off telling them to descend-they complied. It switched to climb and they did. Crew advised me that flight attendants and passengers were not aware. Crew advised me they were filing the necessary reports.

Synopsis

Air carrier Dispatcher reported one of the assigned aircraft reported a NMAC and the pilot crew would submit the necessary reports.

ACN: 1824081 *(50 of 50)*

Time / Day

Date : 202107

Place

Locale Reference.ATC Facility : ZZZ.TRACON
State Reference : US
Altitude.MSL.Single Value : 10000

Environment

Flight Conditions : VMC

Aircraft

Reference : X
ATC / Advisory.TRACON : ZZZ
Aircraft Operator : Air Carrier
Make Model Name : B737 MAX Series Undifferentiated
Crew Size.Number Of Crew : 2
Operating Under FAR Part : Part 121
Flight Plan : IFR
Mission : Passenger
Flight Phase : Descent
Route In Use.STAR : ZZZZZ
Airspace.Class B : ZZZ

Component

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

Person : 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)
Experience.Flight Crew.Last 90 Days : 186
ASRS Report Number.Accession Number : 1824081
Human Factors : Confusion
Human Factors : Situational Awareness
Human Factors : Troubleshooting
Human Factors : Communication Breakdown
Communication Breakdown.Party1 : Flight Crew
Communication Breakdown.Party2 : Flight Crew

Person : 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
Experience.Flight Crew.Last 90 Days : 148
ASRS Report Number.Accession Number : 1824068
Human Factors : Troubleshooting
Human Factors : Situational Awareness
Human Factors : Confusion
Human Factors : Communication Breakdown
Human Factors : Distraction
Communication Breakdown.Party1 : Flight Crew
Communication Breakdown.Party2 : Flight Crew

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.Deviation - Altitude : Excursion From Assigned Altitude
Anomaly.Deviation / Discrepancy - Procedural : Clearance
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 : Became Reoriented
Result.Flight Crew : Overcame Equipment Problem
Result.Flight Crew : Regained Aircraft Control

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : Human Factors
Contributing Factors / Situations : Procedure
Contributing Factors / Situations : Software and Automation
Primary Problem : Software and Automation

Narrative: 1

We were descending on the arrival into ZZZ. We were descending at a high speed programmed into the FMC. I have over 10,000 hours flying the Next Gens and am comfortable with that descent profile. This was my first MAX flight. Somewhere in the descent the FMA changed without warning to MCP SPD (Mode Control Panel Speed). It went unnoticed. I have witnessed many Next Gens revert to VNV SPD (Vnav Speed), but never MCP SPD. There is a significant difference, in that MCP SPD gives no altitude protection. I have never seen anything like this. Somewhere around ZZZZZ/11000, we received a radio call and became distracted as the aircraft descended through 11000. I did not catch the deviation until 10,000 and momentum and recovery took us to about 9,500 feet. I disconnect all automation and hand flew the recovery as I tried to figure out what had just happened. We reported the deviation to ATC and continued to ZZZ without incident. I do not know why this happened. I can only guess that somehow LVL CHG (Level Change) was inadvertently selected. Another theory is that VNV could not keep up

and reverted to MCP SPD. This happens sometimes in the Next Gens, but it always reverts to VNV SPD, which is much safer.

Narrative: 2

On arrival to ZZZ in VFR conditions. Arrival information was checked by both pilots for altitude and speed restrictions prior to descent. Aircraft was cleared by approach to descend via the arrival with a bottom altitude of 8,000 feet. The crossing restriction at ZZZZZ is 11,000 feet. Prior to reaching ZZZZZ the crew saw the aircraft was in Lvl Chg (Level Change) mode instead of VNAV and was descending through 10,000 feet. The Captain (Pilot Flying) took the controls, disconnected the autopilot and returned to altitude. The FO (Pilot Monitoring) notified ATC of the deviation but no conflicts existed and was handed to the next controller. Upon checking the FMS the First Officer determined the altitude restriction was still active at ZZZZZ for 11,000 feet. The crew briefly discussed the incident and possible errors but did not determine how or when the autopilot entered Lvl Chg mode during the descent.

Synopsis

B737 MAX flight crew reported an altitude deviation caused by the aircraft reverting to MCP SPD that has no altitude protection.