

## ASRS Database Report Set

# Wake Turbulence Encounters

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Report Set Description.....A sampling of reports from flight crews encountering,  
or affected by, turbojet wake turbulence.

Update Number.....22

Date of Update .....March 30, 2022

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

Records within this Report Set have been screened to assure their relevance to the topic.



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.

A handwritten signature in blue ink, appearing to read "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: 1861896 *(1 of 50)*

### Synopsis

CRJ-900 flight crew reported encountering wake turbulence departing ATL in trail of an A321.

ACN: 1861615 *(2 of 50)*

### Synopsis

C152 pilot reported an NMAC and a wake turbulence encounter departing VNC.

ACN: 1861291 *(3 of 50)*

### Synopsis

B737NG Captain reported encountering wake turbulence on descent into DEN in trail of an A320.

ACN: 1860853 *(4 of 50)*

### Synopsis

B737NG Captain reported encountering wake turbulence on approach to LAX in trail of a B787.

ACN: 1859777 *(5 of 50)*

### Synopsis

Beechcraft 33 pilot reported encountering wake turbulence just before landing at AVQ.

ACN: 1858740 *(6 of 50)*

### Synopsis

First Officer reported executing a go-around from 50 feet AGL after encountering wake turbulence from preceding aircraft.

ACN: 1858031 *(7 of 50)*

## Synopsis

B737-700 flight crew reported encountering wake turbulence on arrival into PHX in trail of an A320 that resulted in the temporary loss of LNAV.

ACN: 1857895 *(8 of 50)*

## Synopsis

PA-34 pilot reported encountering wake turbulence on final approach to SJC in trail of an A320.

ACN: 1857879 *(9 of 50)*

## Synopsis

Light aircraft Student Pilot reported executing a go-around after encountering wake turbulence on final approach at AFW airport.

ACN: 1856022 *(10 of 50)*

## Synopsis

B737 flight crew reported overshooting an altitude restriction after being distracted by a wake turbulence encounter departing LAS in trail of a B737.

ACN: 1855780 *(11 of 50)*

## Synopsis

B737-800 flight crew reported a wake turbulence encounter at FL320 in trail of a Widebody Transport that resulted in a steep bank and a 1,000 foot altitude deviation.

ACN: 1855060 *(12 of 50)*

## Synopsis

B737-900 flight crew reported overshooting an altitude restriction departing DEN when they were distracted by a wake turbulence encounter.

ACN: 1854226 *(13 of 50)*

## Synopsis

CL601 Captain reported encountering wake turbulence on approach to SJC in trail of a B767.

ACN: 1853573 *(14 of 50)*

## Synopsis

B737 Captain reported encountering wake turbulence on descent into PHX in trail of a B737-800.

ACN: 1853327 *(15 of 50)*

## Synopsis

B737 First Officer reported the aircraft encountered moderate wake and/or jet blast turbulence on short final at LAX from a departing B747.

ACN: 1852896 *(16 of 50)*

## Synopsis

B737-800 flight crew member reported a track deviation occurred departing DFW in trail of an Airbus when the pilot flying was distracted by a wake turbulence encounter.

ACN: 1852539 *(17 of 50)*

## Synopsis

B737-800 Captain reported a track deviation occurred on departure from DFW during a wake turbulence avoidance maneuver.

ACN: 1852199 *(18 of 50)*

## Synopsis

B737 flight crew reported a track deviation occurred following a misunderstood ATC clearance.

ACN: 1852035 *(19 of 50)*

## Synopsis

CRJ flight crew reported experiencing a brief stick shaker during a wake turbulence encounter on final approach to DEN.

ACN: 1851649 *(20 of 50)*

## Synopsis

Air Carrier First Officer reported an altitude excursion from published altitude during approach in gusty wind conditions that also included a wake turbulence encounter. Pilot corrected back to published altitude and completed a safe landing without incident.

ACN: 1850535 *(21 of 50)*

## Synopsis

B747 Captain reported receiving a TCAS RA on an oceanic flight when his aircraft experienced altitude deviations due to turbulence, possibly wake-induced in RJJJ airspace.

ACN: 1850019 *(22 of 50)*

## Synopsis

CRJ Captain reported encountering wake turbulence departing ATL in trail of an A321 that resulted in a stick shaker.

ACN: 1849672 *(23 of 50)*

## Synopsis

C172 Instructor Pilot reported encountering wake turbulence from a military transport aircraft on approach to MYR airport.

ACN: 1849521 *(24 of 50)*

## Synopsis

CRJ First Officer reported encountering wake turbulence departing ATL in trail of an A321, and questioned current ATL spacing procedures.

ACN: 1848629 *(25 of 50)*



## Synopsis

B767 flight crew reported a minor injury to a Flight Attendant occurred during a wake turbulence event at FL350.

ACN: 1846449 *(26 of 50)*

## Synopsis

B787 flight crew reported a flap overspeed occurred when they encountered wake turbulence departing LAX in trail of another B787.

ACN: 1845250 *(27 of 50)*

## Synopsis

B737-800 Captain reported executing a go-around after encountering wake turbulence in trail of an Airbus just before landing at PHX.

ACN: 1844338 *(28 of 50)*

## Synopsis

B737-900 Captain reported encountering wake turbulence on approach to ANC in trail of a B747.

ACN: 1843669 *(29 of 50)*

## Synopsis

B737-700 Captain reported encountering wake turbulence departing ATL in trail of a B757.

ACN: 1843108 *(30 of 50)*

## Synopsis

B737-700 First Officer reported a track deviation occurred on departure from ATL when the flight crew was distracted by a wake turbulence encounter.

ACN: 1842479 *(31 of 50)*

## Synopsis

CRJ-200 First Officer, reported encountering wake turbulence departing ATL in trail of an A321.

ACN: 1841989 *(32 of 50)*

## Synopsis

B737-800 Captain reported encountering wake turbulence departing PHX in trail of an A320.

ACN: 1841835 *(33 of 50)*

## Synopsis

Cessna 182 pilot reported encountering wake turbulence from another aircraft in the vicinity of COS airport.

ACN: 1841738 *(34 of 50)*

## Synopsis

E145 Captain reported executing a go-around after encountering wake turbulence on short final.

ACN: 1841020 *(35 of 50)*

## Synopsis

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

ACN: 1840551 *(36 of 50)*

## Synopsis

B737-800 Captain reported encountering wake turbulence departing SEA in trail of an A321, commenting that spacing appeared insufficient.

ACN: 1839764 *(37 of 50)*

## Synopsis

A321 Captain reported encountering wake turbulence departing SLC in trail of a B757. Captain suggested that increased separation should be used behind the B757 type aircraft.

ACN: 1837165 *(38 of 50)*

## Synopsis

ERJ-175 Captain reported executing a go-around on short final at SFO after experiencing wake turbulence from a heavy jet on the parallel runway, and during the go-around received an RA from a light aircraft transiting the airspace.

ACN: 1837027 *(39 of 50)*

## Synopsis

B737 Captain reported an upset climbing through FL364 after encountering wake turbulence from a B777 at FL370.

ACN: 1834739 *(40 of 50)*

## Synopsis

Air Carrier First Officer of Medium Transport reported encountering wake turbulence shortly before touchdown at DFW airport.

ACN: 1834648 *(41 of 50)*

## Synopsis

B737 NG flight crew reported momentary loss of control during a wake turbulence encounter on approach to MIA in trail of a B747.

ACN: 1833887 *(42 of 50)*

## Synopsis

B737-700 flight crew reported encountering wake turbulence departing ATL in trail of a B757.

ACN: 1831731 *(43 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: 1831420 *(44 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: 1831203 *(45 of 50)*

## Synopsis

General Aviation pilot reported encountering wake turbulence from a military transport in the vicinity of SUU airport.

ACN: 1830049 *(46 of 50)*

## Synopsis

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

ACN: 1829809 *(47 of 50)*

## Synopsis

Small Turboprop pilot reported encountering wake turbulence departing PHX in trail of an A320 NEO.

ACN: 1829527 *(48 of 50)*

## Synopsis

B737NG Captain reported encountering wake turbulence on descent into LAX in trail of a B767.

ACN: 1829219 *(49 of 50)*

## Synopsis

CRJ-700 First Officer reported encountering severe wake turbulence on arrival into CLT in trail of an A320.

ACN: 1829035 *(50 of 50)*

## Synopsis

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

# **Report Narratives**

## Time / Day

Date : 202112

Local Time Of Day : 1801-2400

## Place

Locale Reference.ATC Facility : ATL.Tower

State Reference : GA

Altitude.MSL.Single Value : 1000

## Aircraft : 1

Reference : X

ATC / Advisory.Tower : ATL

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 Climb

Airspace.Class B : ATL

## Aircraft : 2

Reference : Y

ATC / Advisory.Tower : ATL

Aircraft Operator : Air Carrier

Make Model Name : A321

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 121

Flight Plan : IFR

Mission : Passenger

Flight Phase : Initial Climb

Airspace.Class B : ATL

## 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 : Air Transport Pilot (ATP)

Qualification.Flight Crew : Multiengine

Qualification.Flight Crew : Instrument

ASRS Report Number.Accession Number : 1861896

Analyst Callback : Attempted

## 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 : Air Transport Pilot (ATP)  
ASRS Report Number.Accession Number : 1861897

## Events

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

## Assessments

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

## Narrative: 1

We departed behind an A321 from RWY 8R in ATL. There was an evening rush of planes to depart. With minimum spacing the Controller gave us a take-off clearance without a "caution wake turbulence" after the departing A321. The autopilot was engaged around 600 feet AGL and [we had] begun the acceleration phase at 1,000 ft AGL when the encounter occurred. As we were passing through 180 knots, we experienced an uncommanded rolling motion. I disconnected the autopilot and begun to hand fly the departure and acceleration. During the encounter I had to use full right aileron deflection to maintain wings level. I commanded the autopilot to be reengaged after recovery. About 20-30 seconds after the autopilot was reengaged, the aircraft began to roll violently again and I disconnected the autopilot once more to hand fly out of the wake turbulence with adequate aileron input. Autopilot was reengaged again around 3500 feet after the second recovery. Flight path on the CUTTN2 RNAV departure was maintained all while encountering the wake turbulence. After the event, the First Officer checked in with the flight attendants to make sure there were no injuries in the cabin. The flight attendants had nothing to report. We continued with no further issues. Lack of separation behind an A321 and awareness of wake turbulence encounters of similar sized aircraft during an RNAV departure. A review of A321 and similar sized aircraft wake turbulence specifications and separation minima. Training of encountering wake turbulence during the takeoff during recurrent simulators.

## Narrative: 2

We experienced two occurrences of wake turbulence taking off from [Runway] 8R at ATL departing on the CUTTN 2 departure. The proceeding aircraft was an A321. ATC didn't issue any wake turbulence advisories. The Captain was pilot flying. We completed the standard takeoff profile. At 1,000 feet AGL during the flaps retraction and acceleration point, we experienced the first encounter of wake turbulence. This encounter came with a rolling motion and a 20-degree roll to the left. The Captain disconnected the autopilot and applied appropriate inputs. This includes a full right deflection of the aileron to keep the aircraft wings level. After recovery, the autopilot was engaged again. The second encounter occurred 30 seconds later, which resulted in the CA disconnecting the autopilot and applying appropriate aileron deflection to keep the wings level. This second encounter occurred around 3,000 feet MSL. Once reaching 10,000ft and workload permitted, I checked in with the flight attendants to ensure no injuries had occurred. They reported



none. The lack of spacing behind the A321 aircraft and awareness of wake turbulence encounters behind such aircraft in close proximity RNAV departure procedures. A review of A321 and similar sized aircraft wake turbulence. Training on encountering wake turbulence during takeoff in the simulator, not just arrivals, and landing.

## Synopsis

CRJ-900 flight crew reported encountering wake turbulence departing ATL in trail of an A321.

## Time / Day

Date : 202112

Local Time Of Day : 0001-0600

## Place

Locale Reference.Airport : VNC.Airport

State Reference : FL

Relative Position.Distance.Nautical Miles : 1

Altitude.MSL.Single Value : 1000

## Environment

Flight Conditions : VMC

Weather Elements / Visibility.Visibility : 15

Light : Daylight

## Aircraft : 1

Reference : X

ATC / Advisory.UNICOM : VNC

Make Model Name : Cessna 152

Crew Size.Number Of Crew : 1

Operating Under FAR Part : Part 91

Flight Plan : VFR

Flight Phase : Cruise

Airspace.Class E : ZMA

## Aircraft : 2

Reference : Y

ATC / Advisory.UNICOM : VNC

Make Model Name : Skylane 182/RG Turbo Skylane/RG

Crew Size.Number Of Crew : 1

Operating Under FAR Part : Part 91

Flight Phase : Cruise

Airspace.Class E : ZMA

## Person

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Function.Flight Crew : Instructor

Qualification.Flight Crew : Flight Instructor

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Commercial

Experience.Flight Crew.Total : 750

Experience.Flight Crew.Last 90 Days : 50

Experience.Flight Crew.Type : 350

ASRS Report Number.Accession Number : 1861615

Human Factors : Communication Breakdown

Human Factors : Situational Awareness

Communication Breakdown.Party1 : Flight Crew

Communication Breakdown.Party2 : Flight Crew

## Events

Anomaly.Conflict : NMAC

Anomaly.Inflight Event / Encounter : Wake Vortex Encounter

Detector.Person : Flight Crew

Miss Distance.Vertical : 30

When Detected : In-flight

Result.Flight Crew : Took Evasive Action

Result.Flight Crew : Landed As Precaution

## Assessments

Contributing Factors / Situations : Human Factors

Primary Problem : Human Factors

## Narrative: 1

We were on downwind Runway 23 at VNC and an airplane departed after we departed that was a C182. He came under us 20-30 ft in downwind, and then made a turn to the south without giving any call. I don't think he even noticed us. Since he was behind and under us we noticed him very late as well. I even felt his wake when he came too close and thinking of that wake as a damage to my aircraft, immediately decided to land. He never replied to me when I called him on radio.

## Synopsis

C152 pilot reported an NMAC and a wake turbulence encounter departing VNC.

## Time / Day

Date : 202112

Local Time Of Day : 1201-1800

## Place

Locale Reference.ATC Facility : ZDV.ARTCC

State Reference : CO

Altitude.MSL.Single Value : 26000

## Environment

Flight Conditions : VMC

## Aircraft : 1

Reference : X

ATC / Advisory.Center : ZDV

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 : Descent

Airspace.Class A : ZDV

## Aircraft : 2

Reference : Y

ATC / Advisory.Center : ZDV

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 : Descent

Airspace.Class A : ZDV

## 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

Experience.Flight Crew.Total : 11000

Experience.Flight Crew.Last 90 Days : 174.28

Experience.Flight Crew.Type : 4000

ASRS Report Number.Accession Number : 1861291

## Events

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

## Assessments

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

## Narrative: 1

I was the CA/LCA on the flight. First leg of trip with new CA student. I was PF in the right seat, acting as F/O. On descent into DEN on LAWGR arrival. Turbulence was forecast for descent to DEN below FL200. Fasten seat belt sign was on and F/A were briefed about turbulence and completing their duties early. We were about 1 min from making PA for the FAs to take their jump seats. DEN Center had cleared us to descend via. Appropriate altitude set in MCP. Aircraft on autopilot, in LNAV and VNAV Path, 280KTS. In VMC and at approximately FL260, we experienced what we determined to be a wake turbulence event. The aircraft rolled left and then hard to the right. Amber caution on PFD and verbal caution "Roll Authority". I disengaged the autopilot, verbalized "my aircraft" and hand flew roll recovery to stabilize the aircraft. Whole event lasted less than 5 sec (my estimate). With aircraft stabilized and continuing on lateral/vertical path, I re-engaged autopilot B. Other than the hard rolls, turbulence was nothing more than light, if even that. I asked the CA student to make PA announcement for F/A to take jump seats, which he did. Less than 5 sec after engaging Autopilot B, we had a 2nd wake turbulence event. Again, with hard rolls left and right, with "Roll Authority" cautions. I disengaged autopilot, verbalized "my aircraft", and hand flew the aircraft until stabilized. Event lasted no more than 5 sec (my estimate). CA student notified ATC of wake event. ATC said we were following an A320. ATC then cleared us to slow to 250kts. With aircraft stable again, I re-engaged autopilot and then set 250kts in FMC descent page. A normal descent and landing were then accomplished with no further issues.

## Synopsis

B737NG Captain reported encountering wake turbulence on descent into DEN in trail of an A320.

## Time / Day

Date : 202112

Local Time Of Day : 1201-1800

## Place

Locale Reference.ATC Facility : SCT.TRACON

State Reference : CA

Altitude.MSL.Single Value : 12000

## Environment

Flight Conditions : VMC

## Aircraft : 1

Reference : X

ATC / Advisory.TRACON : SCT

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

Airspace.Class B : LAX

## Aircraft : 2

Reference : Y

ATC / Advisory.TRACON : SCT

Aircraft Operator : Air Carrier

Make Model Name : B787-900

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 121

Flight Plan : IFR

Mission : Passenger

Flight Phase : Final Approach

Airspace.Class B : LAX

## 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

Experience.Flight Crew.Total : 1242.88

Experience.Flight Crew.Last 90 Days : 198.08

Experience.Flight Crew.Type : 1242.88

ASRS Report Number.Accession Number : 1860853

Human Factors : Distraction  
Analyst Callback : Completed

## Events

Anomaly.Inflight Event / Encounter : Loss Of Aircraft Control  
Anomaly.Inflight Event / Encounter : Wake Vortex Encounter  
Detector.Person : Flight Crew  
Were Passengers Involved In Event : N  
When Detected : In-flight  
Result.Flight Crew : Regained Aircraft Control

## Assessments

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

## Narrative: 1

SOCAL Approach Control cleared our flight for the ILS 24R via the CRCUS transition. We were following a B787-9. To help increase the space between our airplanes the Los Angeles Center Controller instructed us to slow to 250 KIAS while on the ANJLL4 arrival which we complied with. Looking at our TCAS display, I estimated the 787 was approximately 5 miles ahead of us. SOCAL approach appropriately cautioned us for wake turbulence since we were following the heavy 787. Our flight was normal until we reached CRCUS waypoint where we encountered the 787's wake. The wake encounter was significant and the airplane rapidly rolled and yawed to approximately 25 degrees of right bank even with my approximately 3/4 deflection aileron correction. The wake encounter concerned me enough to where I verbalized and initiated the upset recovery (push, roll, thrust, etc.) procedure. The airplane continued to bank rapidly and dutch-roll to the right for several more moments before we flew out of the wake and control returned to normal. During the recovery procedure we momentarily deviated from the lateral and vertical path for the approach. Due to frequency congestion we did not make a report to SOCAL ATC. We flew in and out of the 787's wake for a several minutes although we did not experience any rapid bank movements like we did at CRCUS. Our flight landed normally behind the 787.

## Callback: 1

Reporter stated the wake from the 787 was quite significant.

## Synopsis

B737NG Captain reported encountering wake turbulence on approach to LAX in trail of a B787.

## Time / Day

Date : 202112

Local Time Of Day : 0601-1200

## Place

Locale Reference.Airport : AVQ.Airport

State Reference : AZ

Altitude.AGL.Single Value : 100

## Environment

Flight Conditions : VMC

Light : Daylight

## Aircraft : 1

Reference : X

ATC / Advisory.CTAF : AVQ

Aircraft Operator : Personal

Make Model Name : Bonanza 33

Crew Size.Number Of Crew : 1

Operating Under FAR Part : Part 91

Flight Plan : IFR

Mission : Personal

Flight Phase : Final Approach

## Aircraft : 2

Reference : Y

ATC / Advisory.CTAF : AVQ

Aircraft Operator : FBO

Make Model Name : Cessna Single Piston Undifferentiated or Other Model

Crew Size.Number Of Crew : 1

Operating Under FAR Part : Part 91

Flight Plan : VFR

Mission : Training

Flight Phase : Final Approach

## 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 : Glider

Qualification.Flight Crew : Private

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Multiengine

Qualification.Other

Experience.Flight Crew.Total : 1200

Experience.Flight Crew.Last 90 Days : 30

Experience.Flight Crew.Type : 300



ASRS Report Number.Accession Number : 1859777  
Human Factors : Situational Awareness  
Analyst Callback : Attempted

## Events

Anomaly.Conflict : Airborne Conflict  
Anomaly.Inflight Event / Encounter : Unstabilized Approach  
Anomaly.Inflight Event / Encounter : Wake Vortex Encounter  
Detector.Person : Flight Crew  
When Detected : In-flight  
Result.General : None Reported / Taken

## Assessments

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

## Narrative: 1

I entered left downwind to Runway 12 at AVQ for landing. A Cessna was ahead of me on downwind for a touch and go, and I announced over CTAF that I was number 2 behind it. To adjust for my greater airspeed than the aircraft I was following, I extended my downwind considerably, and turned base after the aircraft ahead was already on short final. As I turned final, I realized that the distance to the aircraft ahead, which was nearing touchdown, was less than I had planned for. I considered going around, but determined that the aircraft ahead would already be airborne when I touched down, and therefore continued. As I descended through about 100 feet AGL I encountered wake turbulence from the aircraft ahead, which was noticeable in the otherwise calm air, but not difficult to control. I touched down just prior to the aircraft ahead lifting off. In retrospect, I should have gone around early and avoided the situation, which would have been a real hazard had the aircraft ahead decided to stop on the runway. AVQ is a \*very\* busy airport, with aircraft of widely varying performance. On my approach this day, a Phenom departed, several light aircraft were in closed traffic doing touch and goes, a Cessna 421 was waiting to depart, and another aircraft was inbound on the RNAV 12 approach. This airport needs a Tower!

## Synopsis

Beechcraft 33 pilot reported encountering wake turbulence just before landing at AVQ.

## Time / Day

Date : 202112

Local Time Of Day : 0001-0600

## Place

Locale Reference.Airport : ZZZ.Airport

State Reference : US

Altitude.AGL.Single Value : 50

## Aircraft : 1

Reference : X

ATC / Advisory.Tower : ZZZ

Aircraft Operator : Air Carrier

Make Model Name : Embraer Jet Undifferentiated or Other Model

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 121

Flight Plan : IFR

Mission : Passenger

Flight Phase : Final Approach

Airspace.Class B : ZZZ

## Aircraft : 2

Reference : Y

ATC / Advisory.Tower : ZZZ

Make Model Name : Commercial Fixed Wing

Operating Under FAR Part : Part 121

Flight Plan : IFR

Flight Phase : Landing

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 Not Flying

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Air Transport Pilot (ATP)

Qualification.Flight Crew : Multiengine

ASRS Report Number.Accession Number : 1858740

Analyst Callback : Completed

## Events

Anomaly.Inflight Event / Encounter : Unstabilized Approach

Anomaly.Inflight Event / Encounter : Wake Vortex Encounter

Detector.Person : Flight Crew

When Detected : In-flight

Result.Flight Crew : Took Evasive Action

Result.Flight Crew : Executed Go Around / Missed Approach

## Assessments

Contributing Factors / Situations : Environment - Non Weather Related

Contributing Factors / Situations : Procedure

Primary Problem : Ambiguous

## Narrative: 1

At around 50 feet AGL over XXR in ZZZ, we encountered wake turbulence from the previous landing and went around. Calm winds, tight arrival spacing, longer landing by the previous aircraft all added up to good conditions for wake turbulence. Went around and landed on the next approach without issue.

## Callback: 1

Reporter stated the low altitude go-around was the safest option.

## Synopsis

First Officer reported executing a go-around from 50 feet AGL after encountering wake turbulence from preceding aircraft.

## Time / Day

Date : 202111

Local Time Of Day : 1201-1800

## Place

Locale Reference.Airport : PHX.Airport

State Reference : AZ

Relative Position.Distance.Nautical Miles : 30

Altitude.MSL.Single Value : 10000

## Environment

Light : Daylight

## Aircraft : 1

Reference : X

ATC / Advisory.TRACON : P50

Aircraft Operator : Air Carrier

Make Model Name : B737-700

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 121

Flight Plan : IFR

Mission : Passenger

Flight Phase : Descent

Airspace.Class B : PHX

## Aircraft : 2

Reference : Y

ATC / Advisory.TRACON : P50

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 : Descent

Airspace.Class B : PHX

## 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 : 180

Experience.Flight Crew.Type : 16000

ASRS Report Number.Accession Number : 1858031

Human Factors : Situational Awareness  
Human Factors : Distraction  
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 : Instrument  
Qualification.Flight Crew : Multiengine  
Qualification.Flight Crew : Air Transport Pilot (ATP)  
Experience.Flight Crew.Last 90 Days : 69  
Experience.Flight Crew.Type : 3000  
ASRS Report Number.Accession Number : 1858053  
Human Factors : Distraction  
Human Factors : Situational Awareness

## Events

Anomaly.Deviation - Track / Heading : All Types  
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 : Environment - Non Weather Related  
Contributing Factors / Situations : Human Factors  
Contributing Factors / Situations : Procedure  
Primary Problem : Environment - Non Weather Related

## Narrative: 1

We were descending on the BRUSR 1 arrival. We had an Airbus A320 approximately seven miles ahead of us. We encountered some wake turbulence from the A320 a few times while following him on the arrival. During the last encounter, our aircraft started to roll a bit quicker left and right due to the wake turbulence. I guarded the controls in case our aircraft rolled too far. We continued on the arrival, and I noticed we were slightly off course. I looked at the FMA and noticed the amber control wheel steering roll mode annunciated. Somehow the LNAV disengaged so I re-engaged it. I'm sure it happened as a result of the wake turbulence. The aircraft intercepted the course, and we continued on the arrival. I did not think we were off course by much or very long. We had multiple speed reductions assigned to us due to compression during this event. I think I lost some situational awareness while trying to get the aircraft slowed up while staying on path. One last thing is that we did have a decent tailwind on the arrival. That can increase the chance of this kind of hazard.

## Narrative: 2

Encountered wake turbulence on arrival. Due to wake turbulence, automation changed from LNAV/VNAV to VNAV/control wheel steering roll. Pilot flying controlled the aircraft.

We discussed mode switch and reset desired mode once out of wake turbulence. Approach asked if we were off arrival, which we were not.

## Synopsis

B737-700 flight crew reported encountering wake turbulence on arrival into PHX in trail of an A320 that resulted in the temporary loss of LNAV.

## Time / Day

Date : 202111

Local Time Of Day : 1201-1800

## Place

Locale Reference.Airport : SJC.Airport

State Reference : CA

Altitude.AGL.Single Value : 60

## Environment

Flight Conditions : VMC

Light : Daylight

## Aircraft : 1

Reference : X

ATC / Advisory.Tower : SJC

Aircraft Operator : Personal

Make Model Name : PA-34-200 Seneca I

Crew Size.Number Of Crew : 1

Operating Under FAR Part : Part 91

Flight Plan : VFR

Mission : Personal

Flight Phase : Final Approach

Airspace.Class C : SJC

## Aircraft : 2

Reference : Y

ATC / Advisory.Tower : SJC

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 : Landing

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 : 3200

Experience.Flight Crew.Last 90 Days : 50

Experience.Flight Crew.Type : 900

ASRS Report Number.Accession Number : 1857895  
Analyst Callback : Completed

## Events

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

## Assessments

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

## Narrative: 1

I was landing behind Aircraft Y. They had landed about 3 minutes before me. At 60 feet AGL I hit their wake vortex. My aircraft rolled hard to the left, maxing out at about a 25 degree bank which required a significant aileron deflection to correct. I would estimate aileron deflection was approximately 80-90% of what was available. I quickly stabilized the aircraft and continued to a normal landing.

## Callback: 1

Reporter stated they were surprised at the intensity of the wake with 3 miles separation.

## Synopsis

PA-34 pilot reported encountering wake turbulence on final approach to SJC in trail of an A320.



## Time / Day

Date : 202111

## Place

Locale Reference.Airport : AFW.Airport

State Reference : TX

Altitude.AGL.Single Value : 200

## Aircraft : 1

Reference : X

ATC / Advisory.Tower : AFW

Aircraft Operator : FBO

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 : VFR

Mission : Training

Flight Phase : Final Approach

Route In Use : Visual Approach

Route In Use : Direct

Airspace.Class D : AFW

## Aircraft : 2

Reference : Y

ATC / Advisory.Tower : AFW

Make Model Name : Any Unknown or Unlisted Aircraft Manufacturer

Flight Phase : Landing

Airspace.Class D : AFW

## Person

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : FBO

Function.Flight Crew : Single Pilot

Function.Flight Crew : Trainee

Function.Flight Crew : Pilot Flying

Qualification.Flight Crew : Student

ASRS Report Number.Accession Number : 1857879

Human Factors : Training / Qualification

## Events

Anomaly.Deviation - Track / Heading : All Types

Anomaly.Deviation / Discrepancy - Procedural : Clearance

Anomaly.Inflight Event / Encounter : Wake Vortex Encounter

Detector.Person : Flight Crew

When Detected : In-flight

Result.Flight Crew : Executed Go Around / Missed Approach

Result.Flight Crew : Took Evasive Action

## Assessments

Contributing Factors / Situations : Environment - Non Weather Related

Contributing Factors / Situations : Human Factors

Contributing Factors / Situations : Procedure

Primary Problem : Environment - Non Weather Related

## Narrative: 1

Routine solo flight, after a couple laps in the pattern I trusted Tower to separate me from wake turbulence because this was my second solo and I was focused on learning how to fly solo. I encountered wake turbulence on final approach and performed a go around, but I was off course due to the wake and it felt like if I tried to come back to runway heading it would cause an unstable scenario. Lesson learned, always caution wake turbulence.

## Synopsis

Light aircraft Student Pilot reported executing a go-around after encountering wake turbulence on final approach at AFW airport.

## Time / Day

Date : 202111

Local Time Of Day : 1801-2400

## Place

Locale Reference.Airport : LAS.Airport

State Reference : NV

Altitude.MSL.Single Value : 8400

## Environment

Light : Night

## Aircraft : 1

Reference : X

ATC / Advisory.TRACON : L30

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 : LAS

## Aircraft : 2

Reference : Y

ATC / Advisory.TRACON : L30

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 : LAS

## 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.Last 90 Days : 100

ASRS Report Number.Accession Number : 1856022

Human Factors : Situational Awareness

Human Factors : Distraction  
Analyst Callback : Attempted

## 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 : Instrument  
Qualification.Flight Crew : Multiengine  
Qualification.Flight Crew : Air Transport Pilot (ATP)  
Experience.Flight Crew.Last 90 Days : 150  
Experience.Flight Crew.Type : 9000  
ASRS Report Number.Accession Number : 1856023  
Human Factors : Distraction  
Human Factors : Situational Awareness

## Events

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

## Assessments

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

## Narrative: 1

We crossed the hold-down fix SELLZ 400 ft. high while climbing expediently to avoid wake turbulence from a B737 we were departing behind, and had been in its wake since 500 ft. after rotating. Focused on climbing out of their wake, I called for max power and was maintaining max climb rate when we realized we were to level at 8,000 ft. As I was hand flying, I initiated a descent and topped out at 8,400 ft. before beginning our return to 8,000 ft. Passing back through 8,300 ft., ATC said "I see you are returning to 8,000" and handed us off.

## Narrative: 2

The First Officer was hand flying the aircraft and flew 400 ft. above the 8,000 ft. max altitude at SELLZ. We flew through the [wake] of the aircraft ahead of us numerous times and the F/O was trying to climb above the preceding aircraft's flight path. I said that we needed to level off at 8,000 ft., but he didn't recognize the error and didn't level off until we had climbed to 8,400 ft. I stated that we needed to descend back down to 8,000 ft.

immediately when ATC told us that we missed the hold-down at SELLZ. Then ATC saw us quickly descending back to 8,000 ft. and verbally acknowledged our correction.

## Synopsis

B737 flight crew reported overshooting an altitude restriction after being distracted by a wake turbulence encounter departing LAS in trail of a B737.

## Time / Day

Date : 202111

Local Time Of Day : 1201-1800

## Place

Locale Reference.ATC Facility : ZDV.ARTCC

State Reference : CO

Altitude.MSL.Single Value : 32000

## Environment

Flight Conditions : VMC

## Aircraft : 1

Reference : X

ATC / Advisory.Center : ZDV

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

Route In Use.SID : BAYLR SIX

Airspace.Class A : ZDV

## Aircraft : 2

Reference : Y

ATC / Advisory.Center : ZDV

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 : Passenger

Flight Phase : Cruise

Route In Use.SID : BAYLR6

Airspace.Class A : ZDV

## 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

Experience.Flight Crew.Last 90 Days : 229

Experience.Flight Crew.Type : 644

ASRS Report Number.Accession Number : 1855780  
Analyst Callback : Attempted

## 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)  
Experience.Flight Crew.Last 90 Days : 138  
Experience.Flight Crew.Type : 597  
ASRS Report Number.Accession Number : 1855767  
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.General : Physical Injury / Incapacitation  
Result.Flight Crew : Returned To Clearance  
Result.Flight Crew : Requested ATC Assistance / Clarification  
Result.Flight Crew : Regained Aircraft Control  
Result.Air Traffic Control : Issued New Clearance

## Assessments

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

## Narrative: 1

Leaving Denver, weather forecast indicated light to moderate turbulence during the climb surface to 15,500 ft. During the crew brief Captain advised the cabin crew to stay in their seats until we get out of turbulence. We were sequenced to take off after the Aircraft Y. The takeoff was uneventful. The light to moderate turbulence lasted until we reached 17,500 ft, after which the ride smoothed out and cabin crew were advised that they can get up and start their service. After reaching our final cruising altitude, FL320, approximately 20 min after the takeoff, between points BOBBA and TEHRU on BAYLR6 departure we encountered wake turbulence. Aircraft rolled to the left, autopilot disengaged, and aircraft lost approximately 1,000 ft. Pilot flying recovered, brought the aircraft back on the route and altitude, after which he reengaged the autopilot. Pilot Monitoring, meanwhile reported the event to the ATC and inquired if there is a heavy aircraft ahead. Controller confirmed that we were following the Aircraft Y. Less than 1 min later, the aircraft rolled to the right, again autopilot disengaged and we lost 1,000 ft. Pilot Monitoring called over PA: "Flight Attendants, take your jump seats," and reported the event to the ATC, with a request for a vector off the route to avoid any other encounters with the wake. Pilot Flying recovered the aircraft back on course and altitude and engaged the autopilot. ATC assigned a heading 20 degrees right of course to get away from the path of Aircraft Y. After stabilizing, Pilot Monitoring called over PA for Flight Attendants to check in. When checking in, Lead Flight Attendant advised Captain that a Flight Attendant

hurt his elbow while he was in the forward lavatory during the wake turbulence event. Two passengers medical professionals helped him put his arm into a splint and stabilized it with a sling. Remainder of the flight was uneventful.

## Narrative: 2

After leveling off at FL320, we encountered wake from the airplane in front of us without significant effect on our aircraft. We checked with ATC to check who was in front of us, and we were advised that it was company B777 15 miles in front. Few seconds later we encountered a large wake, autopilot disconnected, left wing went down about 45 degrees, and nose went down at the same time. I initiated the recovery maneuver, recovered controlled flight after losing about 1,000 feet. We advised the ATC, and requested vectors away from the B777, and we were provided a right vector. We climbed back to assigned altitude, and after a few minutes on the vector, we proceeded on course, without any further incidents. Flight Attendant injured his arm during the incident.

## Callback: 2

Reporter stated he was surprised at the intensity of the wake, given the spacing.

## Synopsis

B737-800 flight crew reported a wake turbulence encounter at FL320 in trail of a Widebody Transport that resulted in a steep bank and a 1,000 foot altitude deviation.



## Time / Day

Date : 202111

Local Time Of Day : 1801-2400

## Place

Locale Reference.ATC Facility : D01.TRACON

State Reference : CO

## Aircraft : 1

Reference : X

ATC / Advisory.TRACON : D01

Aircraft Operator : Air Carrier

Make Model Name : B737-900

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 : Commercial Fixed Wing

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 : First Officer

Qualification.Flight Crew : Multiengine

Qualification.Flight Crew : Air Transport Pilot (ATP)

Qualification.Flight Crew : Instrument

ASRS Report Number.Accession Number : 1855060

Human Factors : Situational Awareness

Human Factors : Distraction

Analyst Callback : Attempted

## Person : 2

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Air Carrier

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 : 1855055  
Human Factors : Distraction  
Human Factors : Situational Awareness

## Events

Anomaly.Deviation - Altitude : Crossing Restriction Not Met  
Anomaly.Deviation - Altitude : Overshoot  
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 : Environment - Non Weather Related  
Contributing Factors / Situations : Human Factors  
Contributing Factors / Situations : Procedure  
Primary Problem : Human Factors

## Narrative: 1

Upon climb out from DEN on the DDRT11 departure we experienced wake turbulence approaching NKATA. While controlling the aircraft we flew through the 10,000 or below restriction, and subsequently the 11,000 or below restriction at KAYOO by approximately 600 feet. By the time we decided to correct for this KAYOO was passed and we continued to climb via the departure. As the pilot flying I should always brief any level offs. Especially level offs that occurs quickly on departure. I should have adjusted my speed with VNAV speed to increase my rate of climb to try to mitigate re encountering the wake turbulence. As a crew pay better attention to my path and the immediate crossing restrictions.

## Narrative: 2

Upon climb out from DEN on DDRT11 departure we experienced wake turbulence approaching point NKATA. While controlling the aircraft we flew through the 10,000 or below restriction and, subsequently, the 11,000 or below restriction at KAYOO by approximately 600 feet. By the time a correction was attempted, KAYOO was passed (it is 3.1 NM from NKATA) and we continued to climb to cruise on schedule without incident. As the Pilot Monitoring, I should have noted the restrictions sooner and called them out when the wake turbulence was encountered and the Pilot Flying began the recovery.

## Synopsis

B737-900 flight crew reported overshooting an altitude restriction departing DEN when they were distracted by a wake turbulence encounter.

## Time / Day

Date : 202111

Local Time Of Day : 1201-1800

## Place

Locale Reference.Airport : SJC.Airport

State Reference : CA

Relative Position.Angle.Radial : 126

Relative Position.Distance.Nautical Miles : 16.7

Altitude.MSL.Single Value : 4000

## Environment

Flight Conditions : VMC

Weather Elements / Visibility.Visibility : 10

Light : Daylight

Ceiling.Single Value : 25000

## Aircraft : 1

Reference : X

ATC / Advisory.Tower : SJC

Aircraft Operator : Air Carrier

Make Model Name : Challenger CL601

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 135

Flight Plan : IFR

Mission : Passenger

Flight Phase : Final Approach

Route In Use : Vectors

Route In Use.STAR : Brixx3

Airspace.Class C : SJC

## Aircraft : 2

Reference : Y

Aircraft Operator : Air Carrier

Make Model Name : B767 Undifferentiated or Other Model

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 121

Flight Plan : IFR

Flight Phase : Final Approach

Airspace.Class C : SJC

## Person

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Air Carrier

Function.Flight Crew : Captain

Function.Flight Crew : Check 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 : 11700  
Experience.Flight Crew.Last 90 Days : 165  
Experience.Flight Crew.Type : 5000  
ASRS Report Number.Accession Number : 1854226  
Analyst Callback : Completed

## Events

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 : Executed Go Around / Missed Approach  
Result.Air Traffic Control : Issued New Clearance

## Assessments

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

## Narrative: 1

Approach was ILS X30L. Aircraft was being vectored and was flying assigned speed of 170 Kts. ATC advised we were following a heavy 767. ATC issued a "Go-Around" clearance due to loss of separation. At that moment, our aircraft experienced a wake turbulence event that rolled the airplane to the right at approximately 45 degrees of bank. The aircraft returned to straight and level flight on its own, within a few seconds. The aircraft flew the go-around procedure as cleared and returned for an uneventful and normal landing.

## Callback: 1

Reporter stated he would like more separation from widebody aircraft.

## Synopsis

CL601 Captain reported encountering wake turbulence on approach to SJC in trail of a B767.

## Time / Day

Date : 202111

Local Time Of Day : 0601-1200

## Place

Locale Reference.Airport : PHX.Airport

State Reference : AZ

Altitude.MSL.Single Value : 13500

## Environment

Light : Daylight

## Aircraft : 1

Reference : X

ATC / Advisory.TRACON : P50

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 : Descent

Airspace.Class B : PHX

## Aircraft : 2

Reference : Y

ATC / Advisory.TRACON : P50

Aircraft Operator : Air Carrier

Make Model Name : B737-800

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 121

Flight Plan : IFR

Mission : Passenger

Flight Phase : Descent

Airspace.Class B : PHX

## 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 : Instrument

Qualification.Flight Crew : Air Transport Pilot (ATP)

Qualification.Flight Crew : Multiengine

Experience.Flight Crew.Type : 9740

ASRS Report Number.Accession Number : 1853573

Analyst Callback : Attempted

## Events

Anomaly.Deviation - Altitude : Crossing Restriction Not Met  
Anomaly.Deviation - Altitude : Overshoot  
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 : Regained Aircraft Control

## Assessments

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

## Narrative: 1

I was the Pilot Flying while descending on the EAGUL 6 Runway 8 transition into PHX. Autopilot was engaged in LNAV/VNAV and speed window was open set to 210 KIAS. We were following a -800 aircraft about five miles in front of us. Prior to HOMRR, ATC slowed both of us to 210 KIAS which put us both high on the profile. We both notified ATC that we would be high for HOMRR at that speed, which ATC acknowledged. Just prior to BOHTX around 13,500 feet MSL, we encountered light turbulence and the aircraft rolled left to about 18-20 degrees. I grasped the control and the autopilot disconnected. I rolled the aircraft back and may have over corrected and it rolled about 5 degrees back to the right and felt like it was wallowing around a bit in response to the wake. As I corrected the pitch back to the flight director, I noticed we were below the 13,000 feet restriction. I was not sure if we had just passed or were still over BOHTX, so we may have busted the 13,000 feet restriction. I think I saw 12,700 feet. I engaged the autopilot back into LNAV/VNAV and we continued without further events. The First Officer reported light turbulence over the fix. That is when I asked ATC what we were following and reported the wake encounter. He replied with -800 was the preceding aircraft.

## Synopsis

B737 Captain reported encountering wake turbulence on descent into PHX in trail of a B737-800.

## Time / Day

Date : 202111

Local Time Of Day : 0601-1200

## Place

Locale Reference.Airport : LAX.Airport

State Reference : CA

Altitude.AGL.Single Value : 200

## Aircraft : 1

Reference : X

ATC / Advisory.Tower : LAX

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 : Final Approach

Airspace.Class B : LAX

## Aircraft : 2

Reference : Y

ATC / Advisory.Tower : LAX

Aircraft Operator : Air Carrier

Make Model Name : B747 Undifferentiated or Other Model

Operating Under FAR Part : Part 121

Flight Plan : IFR

Flight Phase : Takeoff / Launch

Airspace.Class B : LAX

## Person

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 : 773

Experience.Flight Crew.Last 90 Days : 194

Experience.Flight Crew.Type : 773

ASRS Report Number.Accession Number : 1853327

## Events

Anomaly.ATC Issue : All Types

Anomaly.Ground Event / Encounter : Jet Blast

Anomaly.Inflight Event / Encounter : Unstabilized Approach

Anomaly.Inflight Event / Encounter : Wake Vortex Encounter  
Result.General : None Reported / Taken

## Assessments

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

## Narrative: 1

While on ILS final to LAX Runway 25L at approximately 7 miles from Runway 25L and 2,000 feet AGL, LAX Tower cleared a B747 to take off in front of us on 25L. Both the Captain and I remarked that we were unhappy with the spacing and while it looked like the runway would be clear in time, we both remarked that we should be prepared to go-around. The Captain elected to fly slightly above the glide path to avoid turbulence, but at around 200 feet AGL we encountered moderate turbulence from the departing B747 lasting around 1-2 seconds. After exiting the turbulence I estimated we would touch down 2,000-2,500 feet down, and I said, "We're going to be long." The Captain made a smooth correction to glide path and a smooth touchdown probably around the 2,000 foot point. There were no GPWS warnings or "long landing" warnings at any point. I don't know whether the Tower spacing between us and the B747 met standards, but I thought it was a poor decision to clear a B747 for takeoff in front of us with that spacing on the same runway.

## Synopsis

B737 First Officer reported the aircraft encountered moderate wake and/or jet blast turbulence on short final at LAX from a departing B747.



## Time / Day

Date : 202111

Local Time Of Day : 1201-1800

## Place

Locale Reference.Airport : DFW.Airport

State Reference : TX

## Aircraft : 1

Reference : X

ATC / Advisory.TRACON : D10

Aircraft Operator : Air Carrier

Make Model Name : B737-800

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 121

Flight Plan : IFR

Mission : Passenger

Flight Phase : Initial Climb

Flight Phase : Climb

Airspace.Class B : DFW

## Aircraft : 2

Reference : Y

ATC / Advisory.TRACON : D10

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

Flight Phase : Initial Climb

Airspace.Class B : DFW

## Person

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Air Carrier

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 : 1852896

Human Factors : Situational Awareness

Human Factors : Distraction

Analyst Callback : Attempted

## Events

Anomaly.Deviation - Track / Heading : All Types

Anomaly.Deviation / Discrepancy - Procedural : Clearance

Anomaly.Inflight Event / Encounter : Wake Vortex Encounter

Detector.Person : Flight Crew  
Detector.Person : Air Traffic Control  
When Detected : In-flight  
Result.Flight Crew : Returned To Clearance  
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 : Human Factors

## Narrative: 1

On our initial climbout on AKUNA9 it felt like we were hitting the wake from the Airbus in front of us. We both mentioned it and continued the climbout. After I put the flaps up I did the After Takeoff flow and followed up by verifying it with the After Take Off check list. During that time it felt like we were still in the Airbus wake. As soon as I completed the After Takeoff checklist, I looked at my display and saw we weren't turning and it was at that point DFW departure gave us a heading of 090 followed by another heading of 070. ATC inquired if we were given a SID and told us we were close to traffic to our right. The Captain communicated that we were trying to avoid the wake of the aircraft in front of us. The remainder of the flight was uneventful.

## Synopsis

B737-800 flight crew member reported a track deviation occurred departing DFW in trail of an Airbus when the pilot flying was distracted by a wake turbulence encounter.

## Time / Day

Date : 202111

Local Time Of Day : 1201-1800

## Place

Locale Reference.Airport : DFW.Airport

State Reference : TX

## Aircraft : 1

Reference : X

ATC / Advisory.Tower : DFW

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 : Climb

Airspace.Class B : DFW

## Aircraft : 2

Reference : Y

ATC / Advisory.Tower : DFW

Aircraft Operator : Air Carrier

Make Model Name : Commercial Fixed Wing

Operating Under FAR Part : Part 121

Flight Plan : IFR

Mission : Passenger

Flight Phase : Initial Climb

Airspace.Class B : DFW

## 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)

ASRS Report Number.Accession Number : 1852539

Human Factors : Communication Breakdown

Human Factors : Situational Awareness

Communication Breakdown.Party1 : Flight Crew

Communication Breakdown.Party2 : ATC

Analyst Callback : Attempted

## Events

Anomaly.Conflict : Airborne Conflict

Anomaly.Deviation - Track / Heading : All Types

Anomaly.Deviation / Discrepancy - Procedural : Clearance

Anomaly.Inflight Event / Encounter : Wake Vortex Encounter

Detector.Person : Flight Crew

Detector.Person : Air Traffic Control

When Detected : In-flight

Result.Flight Crew : Returned To Clearance

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 : Human Factors

## Narrative: 1

After takeoff encountered wake turbulence from the previous departure. To avoid further wake turbulence I climbed on runway heading. I tried, after climbing to what I thought was an altitude above the wake of previous plane, to get back on track but encountered wake turbulence again. At this time we finished the clean up and noticed we were off track to the right of the RNAV track. As we started to return to the track received a call from ATC to come left to a heading of 090. After further vectors we were informed to give ATC a call. After calling was informed we had a loss of separation with a departure from the west side. We did not receive any RA or TA advisories or indications. Loss of situational awareness with relation to the RNAV departure track as we were trying to avoid the wake turbulence. Lack of communication with ATC as to what we were experiencing. Greater separation on takeoff, however communication with ATC could have prevented this situation and maybe an early turn to be on the left side of the wake turbulence.

## Synopsis

B737-800 Captain reported a track deviation occurred on departure from DFW during a wake turbulence avoidance maneuver.

## Time / Day

Date : 202111

Local Time Of Day : 1801-2400

## Place

Locale Reference.Airport : MDW.Airport

State Reference : IL

Altitude.AGL.Single Value : 0

## Environment

Light : Night

## Aircraft : 1

Reference : X

ATC / Advisory.TRACON : C90

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 : Takeoff / Launch

Airspace.Class B : ORD

## Aircraft : 2

Reference : Y

ATC / Advisory.TRACON : C90

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 B : ORD

## 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 : Instrument

Qualification.Flight Crew : Air Transport Pilot (ATP)

Qualification.Flight Crew : Multiengine

Experience.Flight Crew.Last 90 Days : 150

Experience.Flight Crew.Type : 15000

ASRS Report Number.Accession Number : 1852199

Human Factors : Communication Breakdown

Communication Breakdown.Party1 : Flight Crew  
Communication Breakdown.Party2 : ATC  
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 Flying  
Qualification.Flight Crew : Air Transport Pilot (ATP)  
Qualification.Flight Crew : Instrument  
Qualification.Flight Crew : Multiengine  
Experience.Flight Crew.Last 90 Days : 150  
Experience.Flight Crew.Type : 7000  
ASRS Report Number.Accession Number : 1852207

## Events

Anomaly.ATC Issue : All Types  
Anomaly.Deviation - Track / Heading : All Types  
Anomaly.Deviation / Discrepancy - Procedural : Clearance  
Anomaly.Inflight Event / Encounter : Wake Vortex Encounter  
Result.Flight Crew : Returned To Clearance  
Result.Flight Crew : Became Reoriented  
Result.Air Traffic Control : Issued New Clearance  
Result.Air Traffic Control : Issued Advisory / Alert

## Assessments

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

## Narrative: 1

An aircraft was on a three-mile final for our Runway 31C. Aircraft Y was cleared for takeoff on 31C. Immediately after that, while Aircraft Y was barely moving, we were cleared for takeoff with a heading of 010 degrees that we both heard and confirmed with each other. The heading seemed odd at the time, but we were both distracted by checking to see if Aircraft Y was wheels up yet on 31C. He was not by the time we were in position for takeoff and we delayed a few seconds until he lifted off. Once airborne, the First Officer (FO) turned to 010 heading and I contacted Departure. We did hit prior aircraft's wake turbulence that was an additive. When I contacted Departure, the FO stated my comment panel was still on intercoms. Once I changed over, Departure asked what heading we were assigned. I told him 010, which again felt weird. Departure told us to turn to 110 and we complied.

## Narrative: 2

We were cleared into position 31C with an aircraft on 2.5 to 3 mile final. Aircraft Y had just taken off, and we were cleared for takeoff with Aircraft Y still on takeoff roll; this surprised us. We were given a heading of 010 as we lined up on runway and exchanged controls. Shortly after starting the turn, we hit wake off of Aircraft Y close ahead of us. It was a flaps 25 takeoff so we were also busy with cleaning the configuration, turning, leveling off

and contacting Departure. In the turn we contacted Departure. As we rolled out I realized something was wrong. In my head I heard 010, and 010 was set and confirmed, but mentally I was thinking we were turning to 110 per normal operations. I was surprised when we reached the heading bug so quickly, and knew something was off. Departure gave us the 110 heading and we complied.

## Synopsis

B737 flight crew reported a track deviation occurred following a misunderstood ATC clearance.

## Time / Day

Date : 202111

Local Time Of Day : 0601-1200

## Place

Locale Reference.ATC Facility : D01.TRACON

State Reference : CO

## Environment

Flight Conditions : VMC

Light : Dawn

## Aircraft : 1

Reference : X

ATC / Advisory.TRACON : D01

Aircraft Operator : Air Carrier

Make Model Name : Regional Jet CL65, Undifferentiated or Other Model

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 121

Flight Plan : IFR

Mission : Passenger

Flight Phase : Final Approach

Airspace.Class B : DEN

## Aircraft : 2

Reference : Y

ATC / Advisory.TRACON : D01

Aircraft Operator : Air Carrier

Make Model Name : Commercial Fixed Wing

Operating Under FAR Part : Part 121

Flight Plan : IFR

Flight Phase : Final Approach

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

ASRS Report Number.Accession Number : 1852035

Human Factors : Situational Awareness

Human Factors : Fatigue

Analyst Callback : Attempted

## 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 : Air Transport Pilot (ATP)  
Qualification.Flight Crew : Instrument  
Qualification.Flight Crew : Multiengine  
ASRS Report Number.Accession Number : 1852031  
Human Factors : Situational Awareness

## Events

Anomaly.Deviation - Speed : All Types  
Anomaly.Inflight Event / Encounter : Wake Vortex Encounter  
Detector.Person : Flight Crew  
When Detected : In-flight  
Result.General : None Reported / Taken

## Assessments

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

## Narrative: 1

During approach to landing on 35L DEN prior to FAF we encountered brief wake turbulence which resulted in a momentary [stick] shaker activation although speed and attitude remained constant within parameters. During the wake encounter no pitching movement was observed, just roll change. My assumption was that the wake triggered the [stick] shaker. The activation was so brief that I had to ask my First Officer (FO) if the sound heard was the stick shaker. I didn't even notice a vibration. We were above the stabilized approach targets and prior to the FAF. I elected to continue the approach. Although I know we should have executed an upset recovery procedure and go-around, I was task saturated and mostly caught off guard because of how brief the event was. We ended up following the visual path down to a landing. I think it's worth mentioning, I am relatively new to this airplane and overall this was an eventful flight. Early wake-up [and] show time. We had a passenger issue, my first experience de-icing and a short flight (approx.15 minutes). We did our best to mitigate the short flight by briefing the full route on the ground. I think discussing what happens in momentary [stick] shaker events and contributing factors would be helpful. I discussed with my FO how the flight played out vs. what should have happened. I think in the future I will not hesitate [to] go around for a similar event.

## Narrative: 2

While getting vectored onto a visual approach backed up by an ILS at approximately 1,800 ft AFE and prior to the final approach fix, the aircraft encountered a low level turbulence episode that resulted in a momentary, abrupt roll. This was likely due to wake turbulence from nearby aircraft. The encounter abruptly rolled the aircraft to the right, resulting in a bank angle of approximately 20 degrees and a brief, audible sound that resembled an electric motor that lasted approximately 0.5 second. Upon this, the Pilot Flying (PF) reversed the roll to return to the previous, normal aircraft attitude. No deviations in airspeed or pitch were observed. The rest of the approach and landing were uneventful.

Upon debrief, the PF suggested that the electric motor was likely evidence of stick shaker activation, but stated that the activation was so brief that he felt no shake from the control column. Although I did not immediately know what the source of the electric motor noise was, upon his suggestion I agreed that the stick shaker was the likely source of the noise. Upon suspected stick shaker activation, no matter how brief, terminate approach and perform a go-around/missed approach.

## Synopsis

CRJ flight crew reported experiencing a brief stick shaker during a wake turbulence encounter on final approach to DEN.

## Time / Day

Date : 202110

Local Time Of Day : 0601-1200

## Place

Locale Reference.ATC Facility : ZZZ1.TRACON

State Reference : US

Relative Position.Distance.Nautical Miles : 18

Altitude.MSL.Single Value : 2500

## Environment

Light : Daylight

## Aircraft : 1

Reference : X

ATC / Advisory.Tower : ZZZ

Aircraft Operator : Air Carrier

Make Model Name : B737-700

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 121

Flight Plan : IFR

Mission : Passenger

Flight Phase : Final Approach

Airspace.Class B : ZZZ2

## Aircraft : 2

Reference : Y

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

Flight Phase : Final Approach

Airspace.Class B : ZZZ2

## 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 : 220

Experience.Flight Crew.Type : 220

ASRS Report Number.Accession Number : 1851649

Human Factors : Situational Awareness  
Analyst Callback : Attempted

## Events

Anomaly.Deviation - Altitude : Excursion From Assigned Altitude  
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy  
Anomaly.Inflight Event / Encounter : Wake Vortex Encounter  
Anomaly.Inflight Event / Encounter : Weather / Turbulence  
Anomaly.Inflight Event / Encounter : CFTT / CFIT  
Detector.Person : Flight Crew  
Detector.Person : Air Traffic Control  
When Detected : In-flight  
Result.Flight Crew : Regained Aircraft Control

## Assessments

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

## Narrative: 1

While on a visual approach to ZZZ XXR, with high gusty winds and wake turbulence experienced, aircraft dipped below published altitude while on automation. We began correcting as ATC called out an Altitude Alert on us. We climbed back to published altitude and flew the rest of the approach without incident.

## Synopsis

Air Carrier First Officer reported an altitude excursion from published altitude during approach in gusty wind conditions that also included a wake turbulence encounter. Pilot corrected back to published altitude and completed a safe landing without incident.

## Time / Day

Date : 202110

Local Time Of Day : 0601-1200

## Place

Locale Reference.ATC Facility : RJJJ.ARTCC

State Reference : FO

Altitude.MSL.Single Value : 41000

## Aircraft : 1

Reference : X

ATC / Advisory.Center : RJJJ

Aircraft Operator : Air Carrier

Make Model Name : B747 Undifferentiated or Other Model

Crew Size.Number Of Crew : 3

Operating Under FAR Part : Part 121

Flight Plan : IFR

Mission : Cargo / Freight / Delivery

Flight Phase : Cruise

## Aircraft : 2

Reference : Y

ATC / Advisory.Center : RJJJ

Make Model Name : Commercial Fixed Wing

Flight Plan : IFR

## 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 : 1850535

Analyst Callback : Attempted

## Events

Anomaly.Conflict : Airborne Conflict

Anomaly.Deviation - Altitude : Excursion From Assigned Altitude

Anomaly.Inflight Event / Encounter : Weather / Turbulence

Anomaly.Inflight Event / Encounter : Wake Vortex Encounter

Detector.Person : Flight Crew

When Detected : In-flight

Result.Flight Crew : Took Evasive Action

## Assessments

Contributing Factors / Situations : Environment - Non Weather Related

Primary Problem : Environment - Non Weather Related

## Narrative: 1

I signed in as PIC to relieve [the] Captain. We were cruising at FL410 southbound on R220 with strong quartering headwinds (~220/184) and occasional chop. There was an aircraft at FL400 approximately 20 NM ahead on R220 southbound. When it became apparent that we would be overtaking the aircraft ahead, we discussed offsetting to the right to prevent wake turbulence encounter for the aircraft below us but considering that the winds were from the right, we concluded it would be best to maintain centerline. Approximately 3NM from the aircraft below, we noticed the aircraft was experiencing altitude oscillations of 200-300 feet due to turbulence. We also began to experience some turbulence with slightly lower oscillations. I requested 2NM offset to the right and the First Officer executed the offset. While overtaking the aircraft past position NOGAL, we received a TCAS "Traffic, Traffic" alert followed by an RA "Maintain Level". I disconnected the autopilot and complied with the RA. Once cleared of conflict, I requested for left autopilot and continued to complete the offset. In hindsight, one option I neglected was an attempt to coordinate on 123.45 with the aircraft ahead to see if he would be willing to offset to the right so as to avoid our wake and prevent a possible TCAS event due to turbulence. Another option could have been to perhaps attempt to coordinate with RJJJ via CPDLC. Although, the decision to maintain centerline was made based on safety concerns for the other aircraft, I now see that it would have been much safer to offset 2 miles and avoid the RA and possibly a worse case of altitude separation loss due to worse turbulence than we encountered.

## Synopsis

B747 Captain reported receiving a TCAS RA on an oceanic flight when his aircraft experienced altitude deviations due to turbulence, possibly wake-induced in RJJJ airspace.

## Time / Day

Date : 202110

Local Time Of Day : 1801-2400

## Place

Locale Reference.Airport : ATL.Airport

State Reference : GA

## Aircraft : 1

Reference : X

ATC / Advisory.Tower : ATL

Aircraft Operator : Air Carrier

Make Model Name : Regional Jet CL65, Undifferentiated or Other Model

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 121

Flight Plan : IFR

Mission : Passenger

Flight Phase : Initial Climb

Airspace.Class B : ATL

## Aircraft : 2

Reference : Y

ATC / Advisory.Tower : ATL

Aircraft Operator : Air Carrier

Make Model Name : A321

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 121

Flight Plan : IFR

Mission : Passenger

Flight Phase : Initial Climb

Airspace.Class B : ATL

## 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 : 1850019

Analyst Callback : Completed

## Events

Anomaly.Deviation - Speed : All Types

Anomaly.Inflight Event / Encounter : Wake Vortex Encounter

Detector.Person : Flight Crew

When Detected : In-flight

Result.Flight Crew : Took Evasive Action

## Assessments

Contributing Factors / Situations : Environment - Non Weather Related

Contributing Factors / Situations : Procedure

Primary Problem : Ambiguous

## Narrative: 1

Flight departed Runway 26L from ATL behind an Airbus A321. Airbus had just rotated when we were cleared for takeoff. On rotation just as Captain called for gear up aircraft encountered wake turbulence causing stick shaker to activate. Captain slightly lowered nose and shaker immediately went away. Regained airspeed and continued departure with no further incidents.

## Callback: 1

Reporter suggested increased separation from A321 type aircraft.

## Synopsis

CRJ Captain reported encountering wake turbulence departing ATL in trail of an A321 that resulted in a stick shaker.



## Time / Day

Date : 202110

Local Time Of Day : 1201-1800

## Place

Locale Reference.Airport : MYR.Airport

State Reference : SC

Relative Position.Distance.Nautical Miles : 1

Altitude.AGL.Single Value : 300

## Environment

Flight Conditions : VMC

Light : Daylight

## Aircraft : 1

Reference : X

ATC / Advisory.Tower : MYR

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 : Final Approach

Route In Use : Visual Approach

Airspace.Class C : MYR

## Aircraft : 2

Reference : Y

ATC / Advisory.Tower : MYR

Aircraft Operator : Military

Make Model Name : Military Transport

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 91

Mission : Training

Flight Phase : Final Approach

Airspace.Class C : MYR

## 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 : Multiengine

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Commercial

Qualification.Flight Crew : Flight Instructor

Experience.Flight Crew.Total : 1080

Experience.Flight Crew.Last 90 Days : 187  
ASRS Report Number.Accession Number : 1849672  
Human Factors : Training / Qualification  
Human Factors : Distraction  
Human Factors : Confusion  
Analyst Callback : Attempted

## Events

Anomaly.ATC Issue : All Types  
Anomaly.Inflight Event / Encounter : Wake Vortex Encounter  
Detector.Person : Flight Crew  
When Detected : In-flight  
Result.General : None Reported / Taken

## Assessments

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

## Narrative: 1

In short, the Tower Controller created a situation in which I felt I was out of options, and ultimately led to a wake turbulence / jet blast encounter for my student and me. I was providing flight instruction in a Cessna 172 while my student was flying the RNAV 36 at MYR (the student was wearing a view limiting device and I was responsible for looking outside, see & avoid, etc). As we were approximately 3-4 nautical miles out from Runway 36, a Navy Aircraft Y was in the tower pattern for touch-and-goes, and the Tower Controller cleared the Aircraft Y for a short approach in front of us. This was a day with winds aloft from approximately 270, so the Aircraft Y had a tail wind on the base leg. The Aircraft Y's short approach was still a rather wide base, and it appeared to be in a steady descending turn straight toward us at approximately the same altitude as us. I asked Tower if the Aircraft Y was turning towards us; Tower acknowledged they were making a short approach ahead of us; I responded that the angle looked a little close; Tower issued the Aircraft Y a traffic advisory to look for us on a 3-mile final, to which the Aircraft Y responded they had us in sight. My student continued his approach under the hood. Once the Aircraft Y turned final (I would estimate approximately 1.5 miles ahead of us, at approximately 300 ft AGL), Tower instructed the Aircraft Y to go around. I am unsure of why the go-around was given to the Aircraft Y. I was worried about wake turbulence and began to cycle through options in my head: -I determined I couldn't go around upwind, because I would have to outclimb the short approach of an Aircraft Y to avoid wake turbulence -I determined I couldn't go around straight ahead, because the Aircraft Y had applied takeoff thrust and I cannot out-climb a Aircraft Y in a C172 -I determined I couldn't go around downwind, because the wake turbulence would be blown downwind; additionally, there's a busy tour helicopter helipad just east of the runway 36 threshold so I didn't want to conflict with any helicopter traffic. In the short amount of time this took to unfold, I determined none of the above alternatives were acceptable, which left me having my student continue the approach and just hoping the wake turbulence and jet blast had blown downwind. It is the first time I've ever felt helpless in an airplane, and it really rattled me when I got on the ground and reflected on it. We continued the approach and at approximately 300ft AGL we experienced sharp, jolting turbulence for approximately one second. I believe we were lucky and did not hit the epicenter of the wake turbulence / jet blast, as I know it can flip a light GA aircraft or cause catastrophic damage. After the encounter, my student continued the approach and made a normal landing. In my state of

disbelief, I failed to inform Tower of the wake turbulence encounter. After reflecting on the incident, I think both Tower and I could have made better decisions to avoid the encounter, and maybe even the Aircraft Y as well: -I may have had a case of "get-there-itis," as the only scenarios that ran through my head involved continuing forward in some capacity. I believe my best course of action would have been to take controls from my student and execute a go around with a 90-degree left turn, or a left 180 degree turn. It never crossed my mind to turn around, and I will always consider that as an option going forward. -If Tower had been more cognizant of wake turbulence, they likely would not have given a Aircraft Y a short approach in front of a Cessna on final approach - Additionally, if Tower had instructed us to go around, rather than the Aircraft Y, I believe this would have been a non-event. -It is hard for me to tell, but the Aircraft Y performed a pretty wide short approach so maybe they should have kept it a little tighter or declined the short approach. -I don't believe Tower ever gave us a wake turbulence warning after giving the Aircraft Y a short approach. I have been instructing out of MYR in Cessnas for XX years so I am very cognizant of wake turbulence even without "Caution Wake Turbulence" warnings from controllers, but I would be worried if a student pilot solo was in that same situation got overwhelmed or couldn't properly visualize the wake turbulence.

## Synopsis

C172 Instructor Pilot reported encountering wake turbulence from a military transport aircraft on approach to MYR airport.

## Time / Day

Date : 202110

Local Time Of Day : 0601-1200

## Place

Locale Reference.Airport : ATL.Airport

State Reference : GA

## Aircraft : 1

Reference : X

ATC / Advisory.Tower : ATL

Aircraft Operator : Air Carrier

Make Model Name : Regional Jet CL65, Undifferentiated or Other Model

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 121

Flight Plan : IFR

Mission : Passenger

Flight Phase : Initial Climb

Airspace.Class B : ATL

## Aircraft : 2

Reference : Y

ATC / Advisory.Tower : ATL

Aircraft Operator : Air Carrier

Make Model Name : A321

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 121

Flight Plan : IFR

Mission : Passenger

Flight Phase : Initial Climb

Airspace.Class B : ATL

## Person

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Air Carrier

Function.Flight Crew : First Officer

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Air Transport Pilot (ATP)

Qualification.Flight Crew : Multiengine

ASRS Report Number.Accession Number : 1849521

Analyst Callback : Completed

## Events

Anomaly.ATC Issue : All Types

Anomaly.Inflight Event / Encounter : Wake Vortex Encounter

Detector.Person : Flight Crew

When Detected : In-flight

Result.General : None Reported / Taken

## Assessments

Contributing Factors / Situations : Environment - Non Weather Related

Contributing Factors / Situations : Procedure

Primary Problem : Procedure

## Narrative: 1

On departure out of ATL, we encountered moderate wake from an A321. Autopilot remained engaged during the encounter. We had requested additional time for increased separation between us and the preceding aircraft prior to departure, which was granted. Departing behind an A321, despite leaving increased room for separation for anticipated wake turbulence. ATL Tower has increased the rate at which they launch aircraft, regardless of the size. While it would slightly slow the rate at which aircraft are able to depart ATL, giving more room between departing aircraft of such disparate size (CRJ behind an A321 for example) will decrease these types of adverse wake encounters. Had we not asked for the additional time, it was likely that Tower would've cleared us to depart prior to the A321 rotating off the runway. That type of lack of separation significantly increases the chances of a severe wake encounter extremely close to the ground.

## Callback: 1

Reporter stated hopefully ATL in-trail procedures will be adjusted to minimize risk.

## Synopsis

CRJ First Officer reported encountering wake turbulence departing ATL in trail of an A321, and questioned current ATL spacing procedures.

## Time / Day

Date : 202110

Local Time Of Day : 0601-1200

## Place

Locale Reference.ATC Facility : ZZZ.ARTCC

State Reference : US

Altitude.MSL.Single Value : 35000

## Environment

Flight Conditions : VMC

## Aircraft : 1

Reference : X

ATC / Advisory.Center : ZZZ

Aircraft Operator : Air Carrier

Make Model Name : B767 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 A : ZZZ

## Aircraft : 2

Reference : Y

ATC / Advisory.Center : ZZZ

Make Model Name : Any Unknown or Unlisted Aircraft Manufacturer

Operating Under FAR Part : Part 121

Flight Plan : IFR

Flight Phase : Cruise

Airspace.Class A : 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 Not Flying

Qualification.Flight Crew : Air Transport Pilot (ATP)

Qualification.Flight Crew : Multiengine

Qualification.Flight Crew : Instrument

Experience.Flight Crew.Last 90 Days : 106

ASRS Report Number.Accession Number : 1848629

Analyst Callback : Attempted

## 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 : Air Transport Pilot (ATP)  
Qualification.Flight Crew : Instrument  
Qualification.Flight Crew : Multiengine  
Experience.Flight Crew.Total : 17400  
Experience.Flight Crew.Last 90 Days : 190  
Experience.Flight Crew.Type : 2092  
ASRS Report Number.Accession Number : 1848687

## Events

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

## Assessments

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

## Narrative: 1

Passing FL350, smooth air, had a moderate jolt from wake turbulence from another aircraft. Airplane rolled about 25 degrees right then back to the left. Autopilot was on. First Officer turned autopilot off to expedite climb toward FL370. Event lasted 2-3 seconds. Flight Attendant in the back reported that she fell and hit her upper arm on the seat. She said she was OK, but would ice it when she got a chance. She continued her duties to ZZZ1. No medical response required or asked for. Dispatch notified and maintenance report sent. Nearest aircraft about 20 miles away.

## Narrative: 2

On climb out the ride was smooth. Climbing through approximately FL350 up to FL370 several rolling moments occurred both left and right. The autopilot was immediately disengaged and an increased climb rate was initiated. The ride immediately smoothed out and a normal level off occurred. A Flight Attendant in the rear of the aircraft notified us that she made contact with the plane. No other weather events occurred. After discussions with the Captain she noted she was okay to continue the flight. Reports were filed according to the FOM. The nearest known aircraft was approximately 20 miles ahead and slightly higher.

## Synopsis

B767 flight crew reported a minor injury to a Flight Attendant occurred during a wake turbulence event at FL350.

## Time / Day

Date : 202110

Local Time Of Day : 0601-1200

## Place

Locale Reference.Airport : LAX.Airport

State Reference : CA

Altitude.MSL.Single Value : 2000

## Environment

Flight Conditions : VMC

## Aircraft : 1

Reference : X

ATC / Advisory.Tower : LAX

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 : Climb

Airspace.Class B : LAX

## Aircraft : 2

Reference : Y

ATC / Advisory.Tower : LAX

Aircraft Operator : Air Carrier

Make Model Name : B787-1000

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 121

Flight Plan : IFR

Mission : Passenger

Flight Phase : Initial Climb

Airspace.Class B : LAX

## 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 : Air Transport Pilot (ATP)

Experience.Flight Crew.Total : 5511

Experience.Flight Crew.Last 90 Days : 240

Experience.Flight Crew.Type : 729

ASRS Report Number.Accession Number : 1846449

## 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)  
Experience.Flight Crew.Total : 15701  
Experience.Flight Crew.Last 90 Days : 130  
Experience.Flight Crew.Type : 4491  
ASRS Report Number.Accession Number : 1846423

## Events

Anomaly.Deviation - Speed : All Types  
Anomaly.Inflight Event / Encounter : Wake Vortex Encounter  
Detector.Person : Flight Crew  
When Detected : In-flight  
Result.General : None Reported / Taken

## Assessments

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

## Narrative: 1

We took off right behind a B787-10 and encountered some wake turbulence right before retracting the flaps from 1 to 0. As a result we exceeded flap 1 speed by 3-5 IAS for approximately 5 secs as the flaps where being retracted to 0. Soon after we entered the occurrence in the logbook, all operations were normal for the remainder of the flight.

## Narrative: 2

[Report narrative contained no additional information]

## Synopsis

B787 flight crew reported a flap overspeed occurred when they encountered wake turbulence departing LAX in trail of another B787.

## Time / Day

Date : 202110

Local Time Of Day : 1801-2400

## Place

Locale Reference.Airport : PHX.Airport

State Reference : AZ

## Aircraft : 1

Reference : X

ATC / Advisory.Tower : PHX

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 : Landing

Airspace.Class B : PHX

## Aircraft : 2

Reference : Y

ATC / Advisory.Tower : PHX

Make Model Name : Airbus Industrie Undifferentiated or Other Model

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 121

Flight Plan : IFR

Flight Phase : Landing

Airspace.Class B : PHX

## 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)

ASRS Report Number.Accession Number : 1845250

## Events

Anomaly.Inflight Event / Encounter : Unstabilized Approach

Anomaly.Inflight Event / Encounter : Wake Vortex Encounter

Detector.Person : Flight Crew

When Detected : In-flight

Result.Flight Crew : Took Evasive Action

Result.Flight Crew : Executed Go Around / Missed Approach

## Assessments

Contributing Factors / Situations : Environment - Non Weather Related

Contributing Factors / Situations : Procedure

Primary Problem : Procedure

## Narrative: 1

Landing behind an Airbus aircraft on runway 26 in Phoenix with a 6 knot wind from the north we encountered wing tip vortex turbulence and induced roll. The copilot made an excellent choice and performed an aborted landing/go-around. We re-entered the pattern on downwind and received vectors for an uneventful landing. Approach Control apologized for vectoring us too close behind the Airbus and Tower had asked them to expedite off the runway. We were at least 2 minutes behind the preceding aircraft. If the wind hadn't been from the north, I don't think we would have had any problem, but the copilot did a great job! Many passengers thanked [us] for being safe. Thought that the copilot made an excellent early decision to go around instead of trying to "save" it.

## Synopsis

B737-800 Captain reported executing a go-around after encountering wake turbulence in trail of an Airbus just before landing at PHX.

## Time / Day

Date : 202109

Local Time Of Day : 1201-1800

## Place

Locale Reference.ATC Facility : A11.TRACON

State Reference : AK

## Aircraft : 1

Reference : X

ATC / Advisory.TRACON : A11

Aircraft Operator : Air Carrier

Make Model Name : B737-900

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 121

Flight Plan : IFR

Mission : Passenger

Flight Phase : Initial Approach

Airspace.Class B : ANC

## Aircraft : 2

Reference : Y

ATC / Advisory.TRACON : A11

Aircraft Operator : Air Carrier

Make Model Name : B747 Undifferentiated or Other Model

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 121

Flight Plan : IFR

Flight Phase : Final Approach

Airspace.Class B : ANC

## 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 : Multiengine

Qualification.Flight Crew : Air Transport Pilot (ATP)

ASRS Report Number.Accession Number : 1844338

Human Factors : Situational Awareness

## Events

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 : Took Evasive Action  
Result.Flight Crew : Regained Aircraft Control

## Assessments

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

## Narrative: 1

Wake turbulence encounter following a Boeing 747 on final approach. On radar downwind in VFR conditions we were cleared a visual approach following a 747 that was already established on final. On the dog leg to final I was descending to arrive at the FAF at what would be a normal intercept for glideslope to runway 07R. Autopilot and autothrottles were connected at this time. I noted on TCAS that we were 6 miles behind the heavy as we were about to be aligned on final. Suddenly we encountered the wake turbulence from the preceding aircraft and the aircraft rolled quickly to the left. I took over controls manually and disconnected the autopilot and autothrottles while simultaneously recovering the airplane from the sharp bank to the left. The event happened very quickly, so I am unsure as to what bank angle we reached but estimating more than 30 and less than 45deg. We received a roll authority alert as the auto pilot had been unable to maintain level flight with the quick onset from the wake turbulence. The aircraft recovered and we re-established ourselves on final. I mentioned to the First Officer that I was going to climb and maintain above the preceding aircraft flight path and also stay above glide slope for the remainder of the approach, planning to touchdown at 2,000 feet. The rest of the flight was uneventful and we landed normally in Anchorage. Looking back on this event I could have easily avoided encountering the wake turbulence. When cleared for the visual approach behind the 747 I should've maintained my altitude instead of starting a gradual descent. I had plenty of time to descend later and descending at that time only increased the chances of encountering the wake. At the time, I was considering the fact that our distance was adequate and that we wouldn't have any issues following the 747 using normal visual cues /angle approaching the runway. I was wrong. Even 6 miles behind the heavy the turbulence was strong and the rolling tendency abrupt. Not worth the risk, not to mention the discomfort to the passengers and crew. In the future I will certainly keep this in mind for a visual behind a preceding heavy aircraft to avoid this type of encounter.

## Synopsis

B737-900 Captain reported encountering wake turbulence on approach to ANC in trail of a B747.

## Time / Day

Date : 202110

Local Time Of Day : 1201-1800

## Place

Locale Reference.ATC Facility : ATL.Tower

State Reference : GA

Altitude.AGL.Single Value : 200

## Environment

Light : Daylight

## Aircraft : 1

Reference : X

ATC / Advisory.Tower : ATL

Aircraft Operator : Air Carrier

Make Model Name : B737-700

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 121

Flight Plan : IFR

Mission : Passenger

Flight Phase : Takeoff / Launch

Airspace.Class B : ATL

## Aircraft : 2

Reference : Y

ATC / Advisory.Tower : ATL

Aircraft Operator : Air Carrier

Make Model Name : B757 Undifferentiated or Other Model

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 121

Flight Plan : IFR

Flight Phase : Initial Climb

Airspace.Class B : ATL

## 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 : Instrument

Qualification.Flight Crew : Air Transport Pilot (ATP)

Qualification.Flight Crew : Multiengine

ASRS Report Number.Accession Number : 1843669

Analyst Callback : Completed

## Events

Anomaly.Deviation - Track / Heading : All Types  
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 : Took Evasive Action  
Result.Air Traffic Control : Issued Advisory / Alert  
Result.Air Traffic Control : Issued New Clearance

## Assessments

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

## Narrative: 1

During takeoff/climbout (200') we entered wake turbulence from a 757 in front of us. The aircraft rolled to the right and we continued to climb just to the right of course. (0.18 was shown on the MFD). Winds were 150/07 and we were LNAV to RONII. Before getting back on LNAV track, ATC assigned us to a left turn to 070 and stated we were south of our track. In the next transmission, we stated what had happened (wake turbulence) and the Controller cleared us to continue the departure.

## Callback: 1

Reporter stated he has noticed ATC departing aircraft with reduced spacing to B757 aircraft, resulting in more wake encounters.

## Synopsis

B737-700 Captain reported encountering wake turbulence departing ATL in trail of a B757.

## Time / Day

Date : 202110

Local Time Of Day : 0601-1200

## Place

Locale Reference.ATC Facility : ATL.Tower

State Reference : GA

Altitude.AGL.Single Value : 200

## Environment

Light : Daylight

## Aircraft : 1

Reference : X

ATC / Advisory.Tower : ATL

Aircraft Operator : Air Carrier

Make Model Name : B737-700

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 121

Flight Plan : IFR

Mission : Passenger

Flight Phase : Takeoff / Launch

Airspace.Class B : ATL

## Aircraft : 2

Reference : Y

ATC / Advisory.Tower : ATL

Aircraft Operator : Air Carrier

Make Model Name : B757 Undifferentiated or Other Model

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 121

Flight Plan : IFR

Flight Phase : Initial Climb

Airspace.Class B : ATL

## 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 : 220

Experience.Flight Crew.Type : 4500

ASRS Report Number.Accession Number : 1843108

Human Factors : Situational Awareness



Human Factors : Distraction  
Analyst Callback : Attempted

## Events

Anomaly.Deviation - Track / Heading : All Types  
Anomaly.Deviation / Discrepancy - Procedural : Clearance  
Anomaly.Inflight Event / Encounter : Wake Vortex Encounter  
Detector.Person : Flight Crew  
Detector.Person : Air Traffic Control  
Result.Flight Crew : Returned To Clearance  
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 : Human Factors

## Narrative: 1

At 200 ft. AGL on climbout we entered wake turbulence from the 757 in front of us. The aircraft rolled to the right and we continued to climb just right of course. 0.18 was shown on the MFD. Winds were 150 at 07 and we were LNAV to RONII. Before we could get back on the track, ATC assigned us to heading 070 and stated we were south of our track. In our next radio call we stated what happened and the Controller cleared us to continue the departure. I feel increased separation from 757's would mitigate these occurrences from happening.

## Synopsis

B737-700 First Officer reported a track deviation occurred on departure from ATL when the flight crew was distracted by a wake turbulence encounter.

## Time / Day

Date : 202109

Local Time Of Day : 1801-2400

## Place

Locale Reference.ATC Facility : ATL.Tower

State Reference : GA

Altitude.MSL.Single Value : 1500

## Aircraft : 1

Reference : X

ATC / Advisory.Tower : ATL

Aircraft Operator : Air Carrier

Make Model Name : Regional Jet 200 ER/LR (CRJ200)

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 121

Flight Plan : IFR

Mission : Passenger

Flight Phase : Initial Climb

Airspace.Class B : ATL

## Aircraft : 2

Reference : Y

ATC / Advisory.Tower : ATL

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

Airspace.Class B : ATL

## 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.Last 90 Days : 53

ASRS Report Number.Accession Number : 1842479

Analyst Callback : Completed

## Events

Anomaly.Deviation - Speed : All Types

Anomaly.Inflight Event / Encounter : Wake Vortex Encounter

Detector.Person : Flight Crew

When Detected : In-flight

Result.Flight Crew : Took Evasive Action

Result.Flight Crew : Requested ATC Assistance / Clarification

Result.Air Traffic Control : Issued New Clearance

## Assessments

Contributing Factors / Situations : Environment - Non Weather Related

Contributing Factors / Situations : Procedure

Primary Problem : Environment - Non Weather Related

## Narrative: 1

I was the First Officer and Pilot Flying on Aircraft X from ATL to ZZZ. After reaching our flap retraction altitude of 1,000 feet we began accelerating to 200 knots and the flaps were retracted to zero. At approximately 1,500 feet AGL we encountered the wake from an Airbus 321 which rolled us in both directions. I turned off the autopilot and countered both rolling moments with approximately 3/4 aileron deflection. We received the stick shaker momentarily at approximately 190 knots. The Captain requested an offset track from the Airbus. We were given a right turn towards a different fix a few minutes later. The flight continued with no further incidents. Calm winds and close proximity to the Airbus 321 during takeoff. [Suspected cause.]

## Callback: 1

Reporter stated he was surprised at the intensity of the Airbus wake.

## Synopsis

CRJ-200 First Officer, reported encountering wake turbulence departing ATL in trail of an A321.

## Time / Day

Date : 202109

Local Time Of Day : 0601-1200

## Place

Locale Reference.ATC Facility : PHX.Tower

State Reference : AZ

Relative Position.Angle.Radial : 270

Relative Position.Distance.Nautical Miles : 3

Altitude.AGL.Single Value : 900

## Environment

Light : Daylight

## Aircraft : 1

Reference : X

ATC / Advisory.Tower : PHX

Aircraft Operator : Air Carrier

Make Model Name : B737-800

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 121

Flight Plan : IFR

Mission : Passenger

Flight Phase : Initial Climb

Airspace.Class B : PHX

## Aircraft : 2

Reference : Y

ATC / Advisory.Tower : PHX

Aircraft Operator : Air Carrier

Make Model Name : A320

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 121

Flight Plan : IFR

Mission : Passenger

Flight Phase : Climb

Airspace.Class B : PHX

## 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)

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Multiengine

Experience.Flight Crew.Last 90 Days : 87

Experience.Flight Crew.Type : 9600

ASRS Report Number.Accession Number : 1841989

Analyst Callback : Completed

## Events

Anomaly.Deviation - Speed : All Types

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

## Assessments

Contributing Factors / Situations : Environment - Non Weather Related

Contributing Factors / Situations : Procedure

Primary Problem : Procedure

## Narrative: 1

I was the Pilot Monitoring on the flight. The F/O (First Officer) was the Pilot Flying during the event. It was day VMC with no adverse weather and light easterly winds. Autothrottle with LNAV/VNAV modes were engaged on the flight director, but the PF was hand flying throughout the event. Thrust was reduced to Level 2 for take off. We were departing PHX 7L on the FYRBD 1 RNAV Departure. ATC cleared us for takeoff to visually follow an A320. When we rotated off, the A320 was about 3-4 miles ahead of us climbing out on a different departure that departed to the southeast, but had a similar track initially. We experienced the first wake roll encounter just before selecting flaps up, about 900'-1,000' AGL, the aircraft rolled about 20-30 degrees and the PF was able to counter and stop the roll with full aileron deflection but it stayed in the bank about three seconds before returning to wings level. I could feel light air frame buffeting from roll spoilers being fully deployed. He called for flaps up. I selected flaps up and the aircraft encountered the wake again and rolled the opposite direction, again the PF corrected with full aileron deflection and I could feel the spoilers deploy, the aircraft had a more noticeable buffet, speed stagnated and began to decrease towards flaps up V min maneuver speed (yellow speed tape band). The flaps were retracting as this happened and the min maneuver speed (yellow band) was increasing. I immediately saw the pitch limit indicators appear and quickly descend to almost touch the flight path indicators, indicating we were approaching a high AOA (Angle Of Attack) and close to stall. I said to the PF to lower the nose and increase speed, which he was doing as I said it. I deleted the reduced climb setting in the FMC and the engines went to climb power, I am not sure why neither of us didn't just push the thrust levers up. (Distraction? surprise factor?) The speed stabilized just above V min and began to increase as the aircraft rolled to wings level. We gained about 10 knots in speed when we again encountered the wake, the aircraft rolled again to about 30 degrees despite the PF applying full aileron to counter it. Again with full roll spoiler out, the speed stagnated, we could feel buffet and the aircraft stayed in the banked condition for 2-5 seconds before responding to the control inputs. Again wings level the speed began to increase and we continued on the departure path. The preceding aircraft diverged from our course and we then continued with no further events. While ATC may have provided the minimum separation, we clearly needed more than what was provided. I have not experienced this type of encounter following an A320 ever. Usually it is a 757-767 type or larger. In hindsight, we should have performed the nose high upset recover maneuver and manually applied full thrust. I think the fact we routinely experience some wake events with only minor attitude changes led us to not react as we should have. The reduced climb thrust

setting placed us in the A320 wake longer and hampered our recovery. Higher initial climb thrust would have allowed us to out climb or at least experience less airspeed stagnation.

Callback: 1

Reporter stated he was surprised at the intensity of the A320 wake.

## Synopsis

B737-800 Captain reported encountering wake turbulence departing PHX in trail of an A320.

## Time / Day

Date : 202109

Local Time Of Day : 0601-1200

## Place

Locale Reference.ATC Facility : ZDV.ARTCC

State Reference : CO

Altitude.MSL.Single Value : 9000

## Environment

Flight Conditions : VMC

Light : Daylight

## Aircraft : 1

Reference : X

Aircraft Operator : Personal

Make Model Name : Skylane 182/RG Turbo Skylane/RG

Crew Size.Number Of Crew : 1

Operating Under FAR Part : Part 91

Flight Plan : VFR

Mission : Personal

Flight Phase : Cruise

Airspace.Class E : ZDV

## Aircraft : 2

Reference : Y

Aircraft Operator : Military

Make Model Name : Military Transport

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 91

Flight Plan : IFR

Flight Phase : Cruise

Airspace.Class E : ZDV

## 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 : Private

Experience.Flight Crew.Total : 385

ASRS Report Number.Accession Number : 1841835

Analyst Callback : Completed

## Events

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

## Assessments

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

## Narrative: 1

Aircraft Y was flying south in front of us quite a distance (approx 10-15 miles). ADS-B in data from my Garmin GDL50 and Foreflight stated he was -200ft below us. It appeared he was at our elevation or maybe slightly higher, but was hard to tell for sure due to the distance and size of the aircraft. I flew along north of PUB as Aircraft Y made a right hand turn to line up with a runway at COS. I was thinking about wake turbulence from their aircraft, but with the data I had, we were above them and should be no factor. A few minutes later we hit severe wake turbulence causing the airplane to violently roll to the left while losing altitude. I reacted quickly and kept the airplane level and under control. There were no injuries or damage, but there certainly could have been as my passenger hit their head on the interior. As Aircraft Y approached COS, their ADS-B still said they were level with us but COS would have been a couple thousand feet below. So something is amiss with either [their] ADSB or the radar rebroadcast.

## Callback: 1

Reporter stated the other aircraft was a large four-engine transport.

## Synopsis

Cessna 182 pilot reported encountering wake turbulence from another aircraft in the vicinity of COS airport.



## Time / Day

Date : 202109

Local Time Of Day : 1201-1800

## Place

Locale Reference.Airport : PHL.Airport

State Reference : PA

## Aircraft : 1

Reference : X

ATC / Advisory.Tower : PHL

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 : Final Approach

Airspace.Class B : PHL

## Aircraft : 2

Reference : Y

ATC / Advisory.Tower : PHL

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 : Landing

Airspace.Class B : PHL

## 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 : 1841738

Analyst Callback : Completed

## Events

Anomaly.Inflight Event / Encounter : Wake Vortex Encounter

Detector.Person : Flight Crew

When Detected : In-flight

Result.Flight Crew : Executed Go Around / Missed Approach

Result.Flight Crew : Took Evasive Action

## Assessments

Contributing Factors / Situations : Environment - Non Weather Related

Contributing Factors / Situations : Procedure

Primary Problem : Environment - Non Weather Related

## Narrative: 1

Short final encountered wake turbulence. Performed go around. Landed safely on second attempt.

## Callback: 1

Reporter stated incident occurred at PHL, in trail of an A321, about 50 feet AGL.

## Synopsis

E145 Captain reported executing a go-around after encountering wake turbulence on short final.

## 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 KIDZZ 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.

## Time / Day

Date : 202109

Local Time Of Day : 1801-2400

## Place

Locale Reference.ATC Facility : SEA.Tower

State Reference : WA

## Aircraft : 1

Reference : X

ATC / Advisory.Tower : SEA

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 : Takeoff / Launch

Flight Phase : Initial Climb

Airspace.Class B : SEA

## Aircraft : 2

Reference : Y

ATC / Advisory.Tower : SEA

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

Flight Phase : Initial Climb

Airspace.Class B : SEA

## Person

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Air Carrier

Function.Flight Crew : Captain

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Multiengine

Qualification.Flight Crew : Air Transport Pilot (ATP)

ASRS Report Number.Accession Number : 1840551

## Events

Anomaly.ATC Issue : All Types

Anomaly.Inflight Event / Encounter : Wake Vortex Encounter

Detector.Person : Flight Crew

When Detected : In-flight

Result.Flight Crew : Took Evasive Action  
Result.Flight Crew : Requested ATC Assistance / Clarification  
Result.Air Traffic Control : Issued New Clearance

## Assessments

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

## Narrative: 1

Encountered significant wake turbulence immediately after rotation behind A321. Wake turbulence was constant so we informed Tower we would require offset from departure course (34R.Bangor9). Reported A321 in sight and offset appx. 0.2mi left of course. We were cleared for takeoff while the A321 was rotating and my first thought was to delay a bit. I wish I had as I have never encountered wake turbulence so close to the ground nor do I wish to try it again. It is worth noting this is the second time recently I have encountered wake turbulence behind an Airbus 321 in Seattle and my First Officer was recently cleared for takeoff behind a Boeing 757 without standard separation in Seattle. In the future, I will not accept a clearance to takeoff so close to another aircraft and I believe it would be wise to follow up with Seattle Tower to ensure standard departure separation is being used and they are not getting rushed with the high amount of departures they work these days. The Seattle Controllers do a remarkable job handling the heavy traffic load we have seen this summer but perhaps there is a trend here and they are getting a bit rushed. As a pilot, I will ask for a bit of time before taking off behind another aircraft next time.

## Synopsis

B737-800 Captain reported encountering wake turbulence departing SEA in trail of an A321, commenting that spacing appeared insufficient.

## Time / Day

Date : 202109

Local Time Of Day : 0601-1200

## Place

Locale Reference.Airport : SLC.Airport

State Reference : UT

## Aircraft : 1

Reference : X

ATC / Advisory.Tower : SLC

Aircraft Operator : Air Carrier

Make Model Name : A321

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 121

Flight Plan : IFR

Mission : Passenger

Flight Phase : Initial Climb

Flight Phase : Climb

Route In Use.SID : RUGGD 2 RNAV

Airspace.Class B : SLC

## Aircraft : 2

Reference : Y

ATC / Advisory.Tower : SLC

Aircraft Operator : Air Carrier

Make Model Name : B757 Undifferentiated or Other Model

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 121

Flight Plan : IFR

Flight Phase : Initial Climb

Flight Phase : Climb

Airspace.Class B : SLC

## 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 : 1839764

Analyst Callback : Completed

## Events

Anomaly.ATC Issue : All Types

Anomaly.Inflight Event / Encounter : Wake Vortex Encounter

Detector.Person : Flight Crew  
When Detected : In-flight  
Result.Flight Crew : Took Evasive Action  
Result.Flight Crew : Requested ATC Assistance / Clarification  
Result.Air Traffic Control : Issued New Clearance

## Assessments

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

## Narrative: 1

Cleared via the RUGGD 2 RNAV SID. Maintain 230 KTS. Cleared to takeoff almost immediately behind a B757. Calm winds. We were heavy enough that 230 KTS was barely above green dot speed (min safe speed for an Airbus). Encountered up to moderate wake turbulence. Significant enough that I couldn't maintain altitude let alone climb and slightly descend at times to maintain a safe speed. No way to climb above it based the slow climb speed and being a heavy A321. Continued off and on until almost BUBBY waypoint. Eventually asked for a slight left upwind heading but it helped only a little. ATC clearing us to takeoff too close behind a B757. 230 KT demanded climb speed. We didn't demand a takeoff delay behind the B757 even though both aircraft are "large". We also didn't demand a higher climb speed. A B757 is still a hazardous aircraft to take off behind. Even our ADS-B system labels them as a "high vortex" wake as opposed to simply "large". The FAA needs to re institute heavy wake separation behind B757s instead of cramming in more departures by deciding a large behind a 757 doesn't need any wake separation. I will be asking for at least 30 sec after liftoff or at least 1 minute after brake release when taking off behind a B757 from here on. The FAA should also be aware that an A321 is not the best performing aircraft.

## Callback: 1

Reporter stated action is needed to increase separation behind B757 aircraft.

## Synopsis

A321 Captain reported encountering wake turbulence departing SLC in trail of a B757.  
Captain suggested that increased separation should be used behind the B757 type aircraft.



## Time / Day

Date : 202109

Local Time Of Day : 1201-1800

## Place

Locale Reference.Airport : SFO.Airport

State Reference : CA

Altitude.MSL.Single Value : 3000

## Environment

Flight Conditions : VMC

Light : Daylight

## Aircraft : 1

Reference : X

ATC / Advisory.Tower : SFO

Aircraft Operator : Air Carrier

Make Model Name : EMB ERJ 170/175 ER/LR

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 121

Flight Plan : IFR

Mission : Passenger

Flight Phase : Final Approach

Airspace.Class B : SFO

## Aircraft : 2

Reference : Y

ATC / Advisory.Tower : SFO

Aircraft Operator : Air Carrier

Make Model Name : Widebody, Low Wing, 2 Turbojet Eng

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 121

Flight Plan : IFR

Flight Phase : Final Approach

Airspace.Class B : SFO

## Aircraft : 3

Reference : Z

ATC / Advisory.Tower : SFO

Aircraft Operator : Personal

Make Model Name : Cirrus Aircraft Undifferentiated

Crew Size.Number Of Crew : 1

Operating Under FAR Part : Part 91

Flight Phase : Cruise

Airspace.Class B : SFO

## 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 : 1837165  
Analyst Callback : Attempted

## Events

Anomaly.Conflict : Airborne Conflict  
Anomaly.Inflight Event / Encounter : Wake Vortex Encounter  
Detector.Automation : Aircraft RA  
Detector.Person : Flight Crew  
When Detected : In-flight  
Result.Flight Crew : Executed Go Around / Missed Approach  
Result.Flight Crew : Took Evasive Action

## Assessments

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

## Narrative: 1

On short final we encountered wake turbulence from a heavy that had landed on the parallel 28R and I executed a go around. The controller told us to fly runway heading and maintain 3,000 ft. As we were climbing we received an RA for traffic that was in the departure corridor at 2,000 ft (a Cirrus). I followed the direction of the RA to descend, the controller gave us a heading of 265 and had the other aircraft do a 360, we then received another RA from the same aircraft when they turned back towards us and we started our climb. I had to descend further and once clear of the conflict we continued the climb as instructed. We were vectored for another visual approach and landed safely. The First Officer had the Cirrus in sight. Wake turbulence dictated a go around and a Cirrus in the departure corridor were the cause of this event. I always anticipate a missed/go around, however I don't believe ATC anticipated us going around and allowed the conflicting traffic to fly through the airspace. I am in no way blaming ATC because that may be standard practice for them.

## Synopsis

ERJ-175 Captain reported executing a go-around on short final at SFO after experiencing wake turbulence from a heavy jet on the parallel runway, and during the go-around received an RA from a light aircraft transiting the airspace.

## Time / Day

Date : 202109

Local Time Of Day : 0601-1200

## Place

Locale Reference.ATC Facility : ZOA.ARTCC

State Reference : CA

Relative Position.Distance.Nautical Miles : 60

Altitude.MSL.Single Value : 36400

## Environment

Light : Daylight

## Aircraft : 1

Reference : X

ATC / Advisory.Center : ZOA

Aircraft Operator : Air Carrier

Make Model Name : B737-700

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 121

Flight Plan : IFR

Mission : Passenger

Flight Phase : Climb

Airspace.Class A : ZOA

## Aircraft : 2

Reference : Y

ATC / Advisory.Center : ZOA

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 : Cruise

Airspace.Class A : ZOA

## 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

Experience.Flight Crew.Last 90 Days : 100

Experience.Flight Crew.Type : 15000

ASRS Report Number.Accession Number : 1837027

Analyst Callback : Completed

## Events

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

## Assessments

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

## Narrative: 1

Departed SJC for ZZZ, encountered aircraft upset at FL 364 due to close proximity and below Boeing 777 at FL 370. No injuries or aircraft damage were apparent.

## Callback: 1

Reporter stated he was surprised at the intensity of the wake turbulence.

## Synopsis

B737 Captain reported an upset climbing through FL364 after encountering wake turbulence from a B777 at FL370.

## Time / Day

Date : 202108

Local Time Of Day : 0601-1200

## Place

Locale Reference.Airport : DFW.Airport

State Reference : TX

## Environment

Flight Conditions : VMC

Light : Daylight

## Aircraft : 1

Reference : X

ATC / Advisory.Tower : DFW

Aircraft Operator : Air Carrier

Make Model Name : Medium Transport

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 121

Flight Plan : IFR

Mission : Passenger

Flight Phase : Final Approach

Airspace.Class B : DFW

## Aircraft : 2

Reference : Y

ATC / Advisory.Tower : DFW

Make Model Name : Any Unknown or Unlisted Aircraft Manufacturer

Flight Phase : Landing

Airspace.Class B : DFW

## 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 : Air Transport Pilot (ATP)

Qualification.Flight Crew : Multiengine

ASRS Report Number.Accession Number : 1834739

Analyst Callback : Attempted

## Events

Anomaly.Inflight Event / Encounter : Wake Vortex Encounter

Detector.Person : Flight Crew

When Detected : In-flight

Result.Flight Crew : Regained Aircraft Control

## Assessments

Contributing Factors / Situations : Environment - Non Weather Related

Contributing Factors / Situations : Procedure

Primary Problem : Ambiguous

## Narrative: 1

While crossing the threshold at Vref, a loss of speed and slight roll was encountered, similar to that of mild wake turbulence. Power was added in a timely fashion to arrest descent and neither horizontal, vertical, or speed stability was lost. The GPWS called "don't sink, don't sink." The approach remained stable so the landing was continued. We uneventfully touched down safely in the touchdown zone and exited on a high-speed taxiway short of B intersection.

## Synopsis

Air Carrier First Officer of Medium Transport reported encountering wake turbulence shortly before touchdown at DFW airport.

## Time / Day

Date : 202108

Local Time Of Day : 1801-2400

## Place

Locale Reference.Airport : MIA.Airport

State Reference : FL

Altitude.MSL.Single Value : 5000

## Environment

Light : Night

## Aircraft : 1

Reference : X

ATC / Advisory.TRACON : MIA

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 : Initial Approach

Airspace.Class B : MIA

## Aircraft : 2

Reference : Y

ATC / Advisory.Tower : MIA

Aircraft Operator : Air Carrier

Make Model Name : B747 Undifferentiated or Other Model

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 121

Flight Plan : IFR

Flight Phase : Final Approach

Airspace.Class B : MIA

## 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 : 200

Experience.Flight Crew.Type : 16000

ASRS Report Number.Accession Number : 1834648

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 : Air Transport Pilot (ATP)  
Qualification.Flight Crew : Instrument  
Qualification.Flight Crew : Multiengine  
Experience.Flight Crew.Last 90 Days : 270  
ASRS Report Number.Accession Number : 1834643

## Events

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

## Assessments

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

## Narrative: 1

We were seven miles behind a 747 on approach to Runway 9 in Miami, flaps 5, 170 knots on glidepath, when the aircraft abruptly went into 30 degrees left bank. We commanded full right aileron and there was no response for an unknown amount of time (possibly three seconds). We regained wings level flight only to encounter another abrupt 30 degree roll to the left with lack of aircraft control. After much discussion, my First Officer and I were worried that after such a "minor incident" (seven miles behind a 747) that the event should cause such a severe loss of aircraft control. We both agree that the incident should be investigated.

## Narrative: 2

We were 15 miles out on the localizer to Runway 9 at 5000 feet. We were seven miles in trail of a B747. We encountered wake turbulence and the aircraft yawed to the left 30+ degrees for 3-5 seconds. We inputted right aileron with no results. The aircraft returned to level flight on its own and immediately went into a 30+ degree left bank turn for 3-5 seconds.

## Synopsis

B737 NG flight crew reported momentary loss of control during a wake turbulence encounter on approach to MIA in trail of a B747.



## Time / Day

Date : 202108

Local Time Of Day : 1801-2400

## Place

Locale Reference.Airport : ATL.Airport

State Reference : GA

Relative Position.Angle.Radial : 090

Relative Position.Distance.Nautical Miles : 2

Altitude.AGL.Single Value : 1000

## Environment

Light : Night

## Aircraft : 1

Reference : X

ATC / Advisory.TRACON : A80

Aircraft Operator : Air Carrier

Make Model Name : B737-700

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 121

Flight Plan : IFR

Mission : Passenger

Flight Phase : Initial Climb

Airspace.Class B : ATL

## Aircraft : 2

Reference : Y

ATC / Advisory.TRACON : A80

Aircraft Operator : Air Carrier

Make Model Name : B757 Undifferentiated or Other Model

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 121

Flight Plan : IFR

Flight Phase : Initial Climb

Airspace.Class B : ATL

## 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 : Air Transport Pilot (ATP)

Qualification.Flight Crew : Multiengine

Qualification.Flight Crew : Instrument

ASRS Report Number.Accession Number : 1833887

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 : Air Transport Pilot (ATP)  
Qualification.Flight Crew : Instrument  
Qualification.Flight Crew : Multiengine  
Experience.Flight Crew.Last 90 Days : 136  
Experience.Flight Crew.Type : 1635  
ASRS Report Number.Accession Number : 1834143

## Events

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

## Assessments

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

## Narrative: 1

We were cleared for takeoff by ATL Tower immediately behind a 757. As the 757 was not calling himself a heavy, I guess no wake turbulence separation was required. After takeoff, at about 1,000 feet AGL, we encountered a rolling motion to the left due to the 757 wake turbulence. I applied right aileron and the aircraft rolled wings level. I followed the magenta line on the NAV display, and we hit the 757 turbulence again. The aircraft rolled left, I applied right aileron but this time the aircraft continued to roll left. With full aileron input, the aircraft slowly came back to level flight. The 757 was climbing above us to our left. I checked the wind display on the NAV display (ND) and the winds were calm, so no help to move the wake turbulence out of the departure ground track. For safety of flight reasons, I decided to offset slightly to the right of track to get into clean air. At this point we were flying the 082 heading away from the south runway complex. It was a clear night and no aircraft were south of us. Once in clean air, I turned direct to RONII, but my ground track was slightly right of the magenta line on the NAV display. Now that we were safely flying, I was asking the First Officer (F/O) to let Departure Control know we were off track when Departure Control called us and asked if we knew we were south of course. We told him we had offset our track to avoid the wake turbulence we encountered, he replied that no deviation was allowed on the departure and gave us a phone number to call about a potential pilot deviation. If indeed the 757 was not a heavy, then no procedures were violated in having us take off immediately behind him. Had there been some wind in the climb out we probably never would have encountered the wake turbulence. As it was, I had the choice of fighting the wake turbulence and staying on the ground track or offsetting. Since I had one encounter that required full aileron input, and then was slow to recover, staying in the turbulence was not an option. The 757 was left of us. Had I

attempted to offset to his left (north of track) I would have had to cross both turbulence vortices. Moving slightly to the right was the only option I could safely make.

## Narrative: 2

Climbing on the VARNM Departure off [Runway] 8R, we experienced moderate wake turbulence from the (other carrier) 757 ahead. Captain was Pilot Flying and decided it would be the safest course of action to deviate right of course, without notifying Departure. He deviated around two degrees right and we were immediately questioned by Departure. I responded to Departure, "Yes, we are deviating right for wake turbulence." He said we could not do that and to contact this phone number.

## Synopsis

B737-700 flight crew reported encountering wake turbulence departing ATL in trail of a B757.

## 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.

## 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.

## Time / Day

Date : 202108

Local Time Of Day : 1201-1800

## Place

Locale Reference.ATC Facility : SUU.TRACON

State Reference : CA

Relative Position.Angle.Radial : 0

Relative Position.Distance.Nautical Miles : 8

Altitude.MSL.Single Value : 5500

## Environment

Flight Conditions : VMC

Light : Daylight

## Aircraft : 1

Reference : X

ATC / Advisory.TRACON : SUU

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 : None

Mission : Personal

Flight Phase : Cruise

Route In Use : Direct

Airspace.Class E : ZOA

## Aircraft : 2

Reference : Y

ATC / Advisory.TRACON : SUU

Aircraft Operator : Military

Make Model Name : Military Transport

Crew Size.Number Of Crew : 4

Operating Under FAR Part : Part 91

Flight Plan : IFR

Flight Phase : Descent

Airspace.Class E : ZOA

## 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 : Commercial

Qualification.Flight Crew : Instrument

Experience.Flight Crew.Total : 1320

Experience.Flight Crew.Last 90 Days : 40



Experience.Flight Crew.Type : 709  
ASRS Report Number.Accession Number : 1831203  
Human Factors : Situational Awareness  
Analyst Callback : Attempted

## Events

Anomaly.Inflight Event / Encounter : Wake Vortex Encounter  
Detector.Person : Flight Crew  
When Detected : In-flight  
Result.General : None Reported / Taken

## Assessments

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

## Narrative: 1

In cruise heading north on flight following with Travis Air Force Base RAPCON at 5,500 feet at 167 KTAS. Travis called out a descending C17 on approach into Travis with a caution for wake turbulence. Assumed I was above their trailing wake but flew into the turbulence and experience rough turbulence as we crossed the wake. Hit my head on the ceiling and the contents of the cockpit got tossed up in the air. Lesson learned: Don't try to gauge the altitude of wake turbulence. It's too hard to pinpoint where the risk is. Either climb well above it or turn around go the other way. I could have easily turned away and climbed to avoid it completely. I misjudged the location of the wake turbulence. Appreciate Travis RAPCON calling it out. I just didn't adjust enough.

## Synopsis

General Aviation pilot reported encountering wake turbulence from a military transport in the vicinity of SUU airport.

## 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.

## Time / Day

Date : 202108

Local Time Of Day : 1801-2400

## Place

Locale Reference.Airport : PHX.Airport

State Reference : AZ

Relative Position.Angle.Radial : 251

Relative Position.Distance.Nautical Miles : 2

Altitude.AGL.Single Value : 500

## Environment

Flight Conditions : VMC

Weather Elements / Visibility.Visibility : 10

Light : Dusk

Ceiling.Single Value : 10000

## Aircraft : 1

Reference : X

ATC / Advisory.Tower : PHX

Aircraft Operator : Personal

Make Model Name : Super King Air 200

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 : BROAK1.MAXXO

Airspace.Class B : PHX

## Aircraft : 2

Reference : Y

ATC / Advisory.Tower : PHX

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 Climb

Airspace.Class B : PHX

## 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 : Flight Instructor

Qualification.Flight Crew : Instrument  
Qualification.Flight Crew : Multiengine  
Qualification.Flight Crew : Air Transport Pilot (ATP)  
Experience.Flight Crew.Total : 3800  
Experience.Flight Crew.Last 90 Days : 15  
Experience.Flight Crew.Type : 376  
ASRS Report Number.Accession Number : 1829809  
Analyst Callback : Completed

## Events

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

## Assessments

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

## Narrative: 1

I was operating a flight from PHX. I was issued a taxi clearance to Runway 25L. I started the taxi to the runway and advised Ground Control that I would need a few minutes at the end of a run-up, the controller said no problem and advised the tower when you're ready. Tower issued me a takeoff clearance, runway heading. [An A320 NEO] had started the takeoff roll but stayed on the [runway] for about 10 seconds after I started my takeoff roll, and I was about 1000 feet down the runway before [he] took off. After we rotated I was aware of the wake turbulence but was not expecting the Controller to turn me left into his wake turbulence. I was given a left turn into the wake turbulence. It was more than I expected and the passengers were thrown around in the back and both complained about their necks being sore and they seemed to be upset. The Controller gave me a hand off to Departure and I advised him that I hit the wake turbulence. The flight continued as normal and once we landed I was advised that the back of the aircraft took a hard hit and threw open a set of cabin doors and tossed all the secured baggage around. I spoke with the passengers the next morning and they complained of some soreness and mostly shook up from the experience. After a lot of thought, as the PIC, I should have declined the take off clearance and waited a few more minutes. I believe that more separation should be given to the Airbus NEO aircraft.

## Callback: 1

Reporter stated the A320 NEO appears to have a stronger wake than other similar size aircraft.

## Synopsis

Small Turboprop pilot reported encountering wake turbulence departing PHX in trail of an A320 NEO.

## Time / Day

Date : 202108

Local Time Of Day : 1801-2400

## Place

Locale Reference.Airport : LAX.Airport

State Reference : CA

Altitude.MSL.Single Value : 10000

## Environment

Flight Conditions : VMC

## Aircraft : 1

Reference : X

ATC / Advisory.TRACON : SCT

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 : Descent

Airspace.Class B : LAX

## Aircraft : 2

Reference : Y

ATC / Advisory.TRACON : SCT

Aircraft Operator : Air Carrier

Make Model Name : B767 Undifferentiated or Other Model

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 121

Flight Plan : IFR

Flight Phase : Descent

Airspace.Class B : LAX

## 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)

Experience.Flight Crew.Total : 18000

Experience.Flight Crew.Last 90 Days : 250

Experience.Flight Crew.Type : 12000

ASRS Report Number.Accession Number : 1829527

Analyst Callback : Completed

## Events

Anomaly.Inflight Event / Encounter : Wake Vortex Encounter  
Detector.Person : Flight Crew  
When Detected : In-flight  
Result.Flight Crew : Requested ATC Assistance / Clarification  
Result.Flight Crew : Took Evasive Action  
Result.Air Traffic Control : Issued New Clearance  
Result.Air Traffic Control : Provided Assistance

## Assessments

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

## Narrative: 1

During IRNMN arrival descent into LAX we encountered a small amount of turbulence I would classify as light above FL190 that felt like wake turbulence so we asked ATC who we were following. Oakland Center responded that it was a B767. We were surprised that we got the wake off them with 10 miles separation but it was minor. Winds were light aloft. After we got on to Approach Control frequency and were still descending via the arrival we received a little more that was stronger and I had the First Officer seat the flight attendants over the PA. Just as we were in the LNAV turn over BAYST to JUUSE at approximately 10,000 feet we encountered moderate wake turbulence from the B767 that was still 9 miles ahead of us and we encountered significant roll rates with the wake turbulence and banked about 25 degrees Left. I was holding the controls to stabilize the aircraft and the autopilot kicked into Control Wheel Steering Pitch and Roll because I was countering the significant left roll. The First Officer was still off seating the flight attendants so I told Approach Control we were encountering wake turbulence and we needed an immediate turn away from the B767. When countering the wake roll we ended up slightly south of the magenta line, maybe .1 or .2 Actual Navigation Performance due to arrival turn when the wake was encountered so I manually flew the aircraft back on the LNAV track. ATC then gave us a 070 heading and to maintain 9,000 feet while in the process of flying the magenta line. We were vectored north of the B767 and then we preformed the RNAV Y 24R and the B767 was sent to the south Runway 25L. We encountered no further wake turbulence. We checked on the status of the flight attendants and they were OK and they did their final checks from their jumpseats. Upon arrival at the gate, I personally checked with all the flight attendants to explain what happened and to verify one more time that they were OK, which they were.

## Callback: 1

Reporter stated he was surprised at the strength of the rolling motion when they had 9 miles separation.

## Synopsis

B737NG Captain reported encountering wake turbulence on descent into LAX in trail of a B767.



## Time / Day

Date : 202108

Local Time Of Day : 1801-2400

## Place

Locale Reference.Airport : CLT.Airport

State Reference : NC

Altitude.MSL.Single Value : 6000

## Aircraft : 1

Reference : X

ATC / Advisory.TRACON : CLT

Aircraft Operator : Air Carrier

Make Model Name : Regional Jet 700 ER/LR (CRJ700)

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 121

Flight Plan : IFR

Mission : Passenger

Flight Phase : Descent

Route In Use : Vectors

Airspace.Class B : CLT

## Aircraft : 2

Reference : Y

ATC / Advisory.TRACON : CLT

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 : Descent

Airspace.Class B : CLT

## Person

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Function.Flight Crew : Pilot Not Flying

Function.Flight Crew : First Officer

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Air Transport Pilot (ATP)

Qualification.Flight Crew : Multiengine

ASRS Report Number.Accession Number : 1829219

Analyst Callback : Completed

## Events

Anomaly.Inflight Event / Encounter : Wake Vortex Encounter

Detector.Person : Flight Crew

When Detected : In-flight

Result.Flight Crew : Took Evasive Action  
Result.Flight Crew : Requested ATC Assistance / Clarification  
Result.Air Traffic Control : Provided Assistance

## Assessments

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

## Narrative: 1

While being vectored into 36L in Charlotte at around 6,000 feet we encountered severe wake turbulence. The Captain disconnected the auto pilot and initiated the escape maneuver and I set max thrust and retracted the spoilers. I advised ATC of our condition and we climbed to 9,000 feet and leveled off. When I questioned ATC what was in front of us they said it was an A320 5 miles ahead. I called back to the Flight Attendants to ensure no injuries and they said everyone was ok. On the ground the Captain documented the encounter in the logbook and contacted Maintenance.

## Callback: 1

Reporter stated the aircraft they were following appeared to be an A321 but the Controller said it was an A320.

## Synopsis

CRJ-700 First Officer reported encountering severe wake turbulence on arrival into CLT in trail of an A320.

## 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.