



Aviation Investigation Factual Report

Location:	PORT HEIDEN, Alaska	Incident Number:	ANC011A022
Date & Time:	December 12, 2000, 16:21 Local	Registration:	N119UA
Aircraft:	Boeing 747-422	Aircraft Damage:	Minor
Defining Event:		Injuries:	4 Minor, 386 None
Flight Conducted Under:	Part 121: Air carrier - Scheduled		

Factual Information

HISTORY OF FLIGHT

On December 12, 2000, about 1621 Alaska standard time, a Boeing 747-422 airplane, N119UA, sustained minor damage, about 75 miles south-southwest of Port Heiden, Alaska, about latitude 56 degrees, 00 minutes north, and longitude 160 degrees, 00 minutes west. While in cruise flight at 31,000 feet, the airplane encountered turbulence. The airplane was being operated as an instrument flight rules (IFR) scheduled international flight under Title 14, CFR Part 121, when the incident occurred. The airplane was operated as Flight 805 by United Airlines Inc., Elk Grove, Illinois. The captain, the first officer, and two reserve crew members were not injured. Three cabin attendants received minor injuries. Fifteen cabin attendants were not injured. One passenger received minor injuries, and 367 passengers were not injured. The flight originated at the San Francisco International Airport, San Francisco, California, about 1237 AST, with a destination of Hong Kong, China, but diverted to Anchorage, Alaska.

In the narrative portion of the NTSB Pilot/Operator Report, the company reported the crew reviewed the company's weather briefing message provided with each flight plan. The message showed no SIGMETS or forecast turbulence along the route of flight. A chance of light to occasional moderate turbulence was reported from San Francisco to 130 degrees west longitude, within the first hour of the flight. One pilot report (PIREP) was noted over PUGGY intersection (about 50 miles north of St. Paul Island, at 57 degrees, 57.1 minute north and 170 degrees, 45.7 minutes west) at 32,000 feet, but the report was nine hours before the airplane's estimated time of arrival (ETA) into the incident area. The Pilot/Operator Report narrative noted that turbulence along the route of flight was typical, and the flight crews rely heavily on PIREPS for the most accurate and timely information.

After departure from San Francisco, the Federal Aviation Administration (FAA) reported the incident flight crew was in radio contact with the Oakland Air Route Traffic Control Center (ARTCC). The flight was handed off to a San Francisco Aeronautical Radio Incorporated (ARINC) oceanic controller, who then had the flight crew contact Anchorage ARTCC controllers as the flight progressed over Alaska.

When the airplane diverted to Anchorage, the National Transportation Safety Board (NTSB), investigator-in-charge (IIC), talked with the flight and cabin crew when the airplane arrived at the terminal. The captain reported that after departure from San Francisco, the flight progressed normally and they had switched to the Anchorage ARTCC radio frequency as the airplane entered the Anchorage ARTCC airspace. The captain said there was a delay in making radio contact with the Anchorage ARTCC, and when communication was established, the Anchorage center controller advised that there were reports of moderate to severe turbulence ahead of the airplane's flight path.

A copy of the FAA's transcripts of radio communications with the incident airplane begins at 1603. A review of the transcripts revealed that at 1611:54, the Anchorage ARTCC sector R12 controller attempted to make radio contact with the incident airplane by stating, "and United 805, if you read center, you're probably out of range of my receivers, however this will be in the blind; United 805, moderate to severe turbulence reported crossing 56 (degrees) north, 160 (degrees) west, two minutes ago, and that was ah (flight level) 320 to 340, no reports lower."

At 1618:54, the incident airplane checked on the ARTCC radio frequency, and the center controller said, "United 805, Anchorage center, how to you read." The crew of the airplane replied, "Loud and clear now sir, we're just ah about twenty miles east of ah 160 (degrees) west." The center controller confirmed the airplane was in radar contact and inquired if the crew heard the earlier report of turbulence. The crew responded that they did not. At 1619:14, the center controller stated, "Alright, an aircraft about thirty minutes ago now, crossing 56 (degrees) north, 160 (degrees) west, reported ah, moderate to severe turbulence at flight level ah 320 through flight level 340." The crew acknowledged the information.

The captain said he observed rolling clouds ahead of the airplane's flight path. He slowed the aircraft, turned the "fasten seat belt" sign on, and advised the cabin crew of the reported turbulence. This was accomplished by contacting the flight attendant at door number 2 left (the L2 position), via the airplane intercom, advising the cabin crew to sit down. About 3 to 5 minutes after receiving the turbulence advisory, the airplane encountered the turbulence. The captain said the airplane shuddered, rolled about 15 degrees, and accelerated for about 10 to 15 seconds. He said the airplane did not encounter any pronounced vertical acceleration.

At 1621:56, the incident airplane crew contacted the Anchorage ARTCC controller and stated, "Yes sir, we'll concur with that earlier report, it was ah moderate to severe turbulence over 160 (degrees) west, and ah smoothed out now, I don't know how long it'll last."

Over the next several minutes, the crew requested altitude changes to reach smoother air, and they were given several radio frequency changes. At 1648:43, the crew contacted the Anchorage ARTCC Sector 11 controller and stated, "ah we'll tell you we've had ah an injury on board sir, and ah what we'd like to do is get a clearance back to ah Anchorage." The captain diverted the flight to the Ted Stevens Anchorage International Airport, Anchorage, Alaska, dumping fuel before arrival. During the flight to Anchorage, the crew of the airplane commented to the ARTCC controller that the turbulence encounter was severe, and was as bad as they had ever gone through. The crew also stated the turbulence encounter "...last(ed) about twenty seconds, twenty five seconds, ah Anchorage center had actually told as about it and I ah turn(ed) the seat belt sign on, had the people down, and told the flight attendants, but a couple of them didn't make it to the seat in time."

INJURIES TO PERSONS

One passenger received minor injuries, but did not require treatment. The injured cabin

attendants were transported to a hospital in Anchorage.

In interviews between the NTSB IIC and the cabin crew at the hospital, one cabin attendant said that she heard an "All CALL" from the L2 position to have flight attendants take their seats. She was attempting to sit in a jump seat at the rear of the airplane, next to door number 5R. About 5 seconds later, she reported being thrown to the floor, lost her right shoe, and injured her left ankle.

Two cabin attendants were also moving toward seats next to door number 5L. One of the two cabin attendants reported hearing the "ALL CALL" to sit down. She said she tried to grab onto a passenger seat back, but ended up on the floor with back pain. She did not remember what she collided with.

A duty-free cart, unsecured in the aisle, and the second cabin attendant near door 5L, were thrown into the door 5L emergency slide cover. The second flight attendant was reported as having experienced severe back pain, but was unavailable for interview at the hospital. After a medical examination, United Airlines personnel at Anchorage reported that the cabin attendants received muscle strains, and bumps and bruises. They were released from the hospital without being admitted.

DAMAGE TO AIRCRAFT

After landing at the Ted Stevens Anchorage International Airport, the airplane was inspected for any damage. A portion of panel 192ER, part of a ram air exhaust panel, was missing. The honeycomb fuselage panel, about 36 inches by 65 inches, normally installed to enclose the number three air conditioning unit on the underside of the fuselage, was torn off the airplane. The forward edge of the panel is normally attached to the fuselage by a row of screws. The screws were missing. An inspection of the remaining portion of the panel revealed that the aft latching mechanism was not engaged on its latching tab. The missing panel was not a structural part of the fuselage, but continued flight without the panel was not possible.

COMMUNICATIONS

In the narrative of the Pilot/Operator Report, the company noted that the Anchorage Air Traffic Control (ATC) is currently the only Flight Information Region (FIR) in the Pacific Theater not utilizing Controller/Pilot Data Link Communications (CPDLC). The company noted that if CPDLC was active, the crew may have possibly received the preceding turbulence PIREP earlier, giving the crew more time to react to the report. The company noted that the Anchorage ATC is attempting to transition to full time use of CPDLC, but upgraded software, training, and procedures are some obstacles in the way of implementation.

The FAA's CPDLC is used primarily for transmittal of clearances and weather data to oceanic flights. The data is received in the cockpit of airliners with Aircraft Communications Addressing and Reporting System (ACARS) capabilities.

In a telephone conversation with personnel from the Anchorage ARTCC, they reported that currently, the Anchorage Center's use of CPDLC has been curtailed because the software is not user friendly, requires substantial controller input for free text messaging, and is not as fast as voice communications. They said the Anchorage ARTCC CPDLC will increase substantially in November, 2001, when new flight data processing software is installed.

In a telephone conversation with personnel from the Oakland ARTCC, they indicated that CPDLC routinely provides clearances and weather data to oceanic flights. Repeated PIREPs, within Oakland ARTCC's airspace, of moderate turbulence or greater, are provided to flight crews via CPDLC. In addition, more than one moderate turbulence report along a route would require the ARTCC to increase vertical separation between aircraft. PIREPs from other ARTCC areas are routed to the National Weather Service, and are not shared directly between centers. If and when weather conditions warrant, the National Weather Service would issue severe weather advisories, system wide.

According to personnel statements from Anchorage ARTCC controllers, SIGMET India 1, a meteorological advisory to alert all aircraft of possible severe weather conditions, was transmitted on center radio frequencies after it was issued by the National Weather Service. This would have occurred after the incident airplane's turbulence encounter. Transcripts of radio communications included in this report only reflect conversations between the incident airplane crew and center personnel, and do not reflect any other radio transmissions concerning the SIGMET broadcast.

METEOROLOGICAL INFORMATION

In the narrative of the Pilot/Operator Report, the company reported, "The incident flight was traversing an area of moderate horizontal wind shear, and upper level influence, with a rapidly approaching TROF line and TROP level conditions. The intense upper air vorticity maximum approaching the same area, clearly played some role in destabilizing the TROP intercept resulting in CAT (clear air turbulence)."

An area forecast, issued by the National Weather Service, Anchorage Forecast Office, on December 12, 2000, at 0557, was reporting, in part: Synopsis, valid until 2400: Strong high pressure, southwestern Canada to the eastern Gulf of Alaska, persisting. Strong 946 millibar low near Shemya, Alaska, moving to 200 nautical miles northeast of Shemya by 2400. An associated occluded front lies in an arc from a low in the central Bering sea to Nikolski, Alaska, southeastward, moving to a Shemya, northern Bering sea, Cold Bay, Alaska, southeastward line by 1500, then slowly northeastward to a Gamble, Alaska, Bethel, Alaska, Kodiak, Alaska, line by 2400.

The area forecast for the Alaska peninsula, valid until 1800, was reporting, in part: AIRMET for mountain obscuration; mountains occasionally obscured in clouds and precipitation. No change. AIRMET for strong surface wind; sustained surface winds 30 knots or greater. No

change. Clouds and weather: 1,500 feet scattered, 3,000 feet broken, 6,000 feet broken; separated layers above, tops at 30,000 feet; light rain. Occasionally, 1,500 feet broken, visibility 3 statute miles in rain. Pacific side of the peninsula, isolated ceilings below 1,000 feet, visibility below 3 statute miles in rain. Surface winds from the southeast at 30 knots, gusts to 50 knots. Outlook, valid from 1800 to 1200 on December 13, 2000; marginal VFR with ceilings due to rain showers and wind. AIRMET for turbulence; occasional moderate turbulence below 8,000 feet. Isolated severe turbulence within 2,000 feet of the ground. No change. AIRMET for icing; light occasionally moderate rime icing in the clouds between 1,500 to 14,000 feet. Freezing level, 1,500 feet. No change.

A 1635 automated weather observation system (AWOS) weather report from Port Heiden, located at sea level, was indicating, in part: Wind, 120 degrees at 28 knots, gusts to 36 knots; visibility, 10 statute miles; temperature 39 degrees F, dew point temperature, 32 degrees F; altimeter, 29.39 inHg.

A winds aloft forecast for 30,000 feet, issued on December 12, 2000, at 0520, valid from 1300 to 2100, included: Cold Bay, Alaska, 150 degrees at 75 knots, temperature, -49 degrees C; Cape Newenham, Alaska, 150 degrees at 62 knots, temperature, -51 degrees C; St. Paul, Alaska, 140 degrees at 80 knots, temperature, -48 degrees C.

PIREPs, provided to Anchorage ARTCC included: At 1432 in the area of 56 degrees north and 160 degrees west, the crew of a Boeing B-747 at 34,000 feet reported moderate turbulence. At 1600, in the same area, an Urgent PIREP was provided by the crew of a Boeing B-777 between 32,000 to 34,000 feet who reported moderate turbulence, and described the event as an 8 second rodeo ride needing cleanup. Other airliners transiting the area after the incident continued to report moderate to severe turbulence.

SIGMET India 1, was issued by the National Weather Service at 1619 AST. The SIGMET stated: SIGMET, valid from 1620 to 2020; Occasional severe turbulence from 29,000 to 36,000 feet within an area 120 nautical miles either side of a line from 70 nautical miles south of Cape Newenham, to 170 nautical miles south of Port Heiden, stationary, weakening, area of Cold Bay east.

The area of the SIGMET included an area of Pacific ocean on the south side of the Alaska peninsula, the land area of the peninsula from False Pass, Alaska, to Port Heiden, and an area of Bristol Bay/Bering Sea on the north side of the peninsula.

ADDITIONAL INFORMATION

A SIGMET is weather advisory for weather conditions potentially hazardous to all aircraft, other than convective activity. An Urgent PIREP is a pilot report of weather conditions including tornadoes, severe or extreme turbulence, severe icing, hail, low level wind shear, volcanic ash, and any other weather phenomena which are considered by the FAA as being hazardous, or potentially hazardous to flight operations. PIREPs not meeting the urgent definition are

considered routine. A Center Weather Advisory (CWA) is an unscheduled weather advisory issued for the guidance of ARTCC personnel, center meteorologists and air crews inflight, to anticipate or avoid adverse weather conditions in terminal, and en route environments.

According to FAA personnel, significant weather information PIREPs received in one ARTCC sector, are reviewed by the ARTCC weather coordinator, or the center weather service unit coordinator. Both solicited and unsolicited PIREPs that meet the urgent PIREP criteria, are disseminated to terminal air traffic control facilities via the FAA's Service A network. The FAA reported that emphasis is placed on screening and selective dissemination of SIGMET and CWA information to air traffic facilities, and in accordance with FAA's Hazardous Inflight Weather Advisory Service (HIWAS) requirements, information is disseminated on a need-to-know basis.

According to the FAA's Air Traffic Control manual, Chapter 2-6-2, Hazardous Inflight Weather Advisory Service: "Controllers shall advise pilots of hazardous weather that may impact operations within 150 NM of their sector or area of jurisdiction. Hazardous weather information contained in HIWAS broadcasts includes Airmen's Meteorological Information (AIRMET), Significant Meteorological Information (SIGMET), Convective SIGMET (WST), Urgent Pilot Weather Reports (UUA), and Center Weather Advisories (CWA). Facilities shall review alert messages to determine the geographical area and operational impact for hazardous weather information broadcasts. The broadcast is not required if aircraft on your frequency(s) will not be affected."

At the present time, the FAA does not have a mechanism of using CPDLC to alert airplane crews in one ATC sector, of significant weather in a different sector. Additionally, the FAA does not have procedures to coordinate the flow of CPDLC information for aircraft transitioning between ARTCC and ARINC.

Pilot Information

Certificate:	Airline transport; Flight engineer	Age:	58, Male
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 1 Valid Medical--no waivers/lim.	Last FAA Medical Exam:	June 14, 2000
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	
Flight Time:	18453 hours (Total, all aircraft), 1350 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	Boeing	Registration:	N119UA
Model/Series:	747-422 747-422	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Transport	Serial Number:	28812
Landing Gear Type:	Retractable - Tricycle	Seats:	368
Date/Type of Last Inspection:	November 20, 2000 Continuous airworthiness	Certified Max Gross Wt.:	878000 lbs
Time Since Last Inspection:	3 Hrs	Engines:	4 Turbo fan
Airframe Total Time:	7949 Hrs	Engine Manufacturer:	P&W
ELT:	Installed, not activated	Engine Model/Series:	PW4066
Registered Owner:	UNITED AIRLINES INC.	Rated Power:	56000 Lbs thrust
Operator:		Operating Certificate(s) Held:	Flag carrier (121)
Operator Does Business As:		Operator Designator Code:	UALA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Dusk
Observation Facility, Elevation:		Distance from Accident Site:	
Observation Time:		Direction from Accident Site:	
Lowest Cloud Condition:	Unknown	Visibility	
Lowest Ceiling:	Unknown	Visibility (RVR):	
Wind Speed/Gusts:	60 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	145°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29 inches Hg	Temperature/Dew Point:	-54°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	SAN FRANCISCO (KSFO)	Type of Flight Plan Filed:	IFR
Destination:	HONG KONG (VHHH)	Type of Clearance:	IFR
Departure Time:	12:37 Local	Type of Airspace:	Class A

Airport Information

Airport:		Runway Surface Type:	
Airport Elevation:		Runway Surface Condition:	
Runway Used:	0	IFR Approach:	None
Runway Length/Width:		VFR Approach/Landing:	None

Wreckage and Impact Information

Crew Injuries:	3 Minor, 19 None	Aircraft Damage:	Minor
Passenger Injuries:	1 Minor, 367 None	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	4 Minor, 386 None	Latitude, Longitude:	56.960353,-158.579147(est)

Administrative Information

Investigator In Charge (IIC):

Additional Participating Persons: JAMES HEIRSTON (FAA); ANCHORAGE , AK

Report Date: September 24, 2001

Last Revision Date:

Investigation Class: [Class](#)

Note:

Investigation Docket: <https://data.ntsb.gov/Docket?ProjectID=51011>

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, “accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person” (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB’s statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available [here](#).