Aviation Investigation Final Report

Location:	Aniak, Alaska	**Incident Number:**	ANC08IA026
Date & Time:	December 17, 2007, 19:40 Local	**Registration:**	N111AX
Aircraft:	Beech 1900	**Aircraft Damage:**	None
Defining Event:		**Injuries:**	1 Minor, 1 None
Flight Conducted Under:	Part 135: Air taxi & commuter - Non-scheduled		

Analysis

The flight crew of a cargo airplane had previously loaded a cargo of carbon dioxide cylinders, and then flew to an intermediate airport for fuel. The cylinders had a screw type valve, and a threaded metal safety cap to protect the valve. During the takeoff run after refueling, the crew aborted the takeoff, and taxied back to the airport ramp after hearing a "hissing" sound from the cargo area. Once on the ramp, the captain shut off the engines, but the flight crew lost consciousness before they could exit the airplane. Since the crew filed an IFR flight plan that was not activated, air traffic control personnel contacted the freight office to inquire about the status of the airplane. A freight agent noticed the airplane sitting on the ramp. He opened the door of the airplane, and found the first officer unconscious, inside the door. The captain was unconscious at the controls. He pulled both crewmembers out of the airplane, and ran for help. The flight crew regained consciousness while lying on the ramp, and walked to the freight building. The flight crew were treated at a hospital and released the following day. The first officer reported that as the captain was taxiing back to the airport ramp, he felt the effects of the gas release, and he and the captain opened the cockpit windows. Once stopped, he got up to open the forward door, but collapsed at the door. An FAA inspector examined the airplane, and discovered that the cargo compartment had two tank racks containing five bottles each, standing vertically along each side of the airplane. Two of the cylinders in the left side rack did not have any safety caps installed. Three of the cylinders in the right side rack also did not have any safety caps installed. The caps were found on the floor of the airplane. The inspector found that the middle tank of the three in the right side rack, had a partially open valve. The open tank valve was about 1/2 turn open, and was positioned against the interior side-wall of the cargo compartment. The FAA inspector also indicated that nine carbon dioxide tanks were lying on the floor of the cargo area. They were braced by chocks, but were not strapped down. The crew oxygen masks were not utilized, and the crew oxygen supply tank was full. An FAA Hazardous Materials Division inspector reported that cylinders of carbon dioxide are considered hazardous material because they are pressurized in excess of 40 psi. The inspector noted that the shipper had a responsibility to properly identify and declare hazardous

materials that they were shipping, the carrier had a responsibility to properly train airplane crewmembers to identify and accept hazardous materials, and the flight crew had a responsibility to properly secure hazardous materials during transport.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this incident to be: A hazardous leak from carbon dioxide cylinders due to the failure of the flight crew to properly load and secure the cylinders, resulting in crew incapacitation. Factors contributing to the incident were improper hazardous materials procedures used by the shipper, and a failure of the operator to properly train the flight crew in hazardous materials procedures.

Findings

Occurrence #1: HAZARDOUS MATERIALS LEAK/SPILL
Phase of Operation: TAKEOFF - ROLL/RUN

Findings
1. (C) LOADING OF CARGO - IMPROPER - FLIGHTCREW
2. (F) PROCEDURE INADEQUATE - OTHER PERSON
3. (F) INADEQUATE TRAINING - COMPANY/OPERATOR MANAGEMENT

Occurrence #2: MISCELLANEOUS/OTHER
Phase of Operation: STANDING - ENGINE(S) NOT OPERATING

Findings
4. OXYGEN SYSTEM,CREW - NOT ACTIVATED
5. INCAPACITATION(LOSS OF CONSCIOUSNESS) - FLIGHTCREW

Factual Information

On December 17, 2007, about 1940 Alaska Standard time, the crewmembers of a Beech 1900 airplane, N111AX, aborted their takeoff from Aniak, Alaska, and taxied back to the airport ramp, when they heard a "hissing" sound from the cargo area. Once on the ramp, the captain shut off the engines. The captain and first officer lost consciousness before they could exit the airplane. The airplane was being operated as an instrument flight rules (IFR) cross-country nonscheduled cargo flight under Title 14, CFR Part 135, when the incident occurred. The airplane was operated as Flight 81, by Alaska Central Express, Anchorage, Alaska, and was not damaged. The airline transport certificated pilot was not injured. The airline transport certificated first officer received minor injuries. Visual meteorological conditions prevailed, and an IFR flight plan was filed from Aniak, to Anchorage, but was not activated.

During a telephone conversation with the National Transportation Safety Board (NTSB) investigator-in-charge (IIC) on December 17, the director of operations for the operator reported that he received a call from a ramp agent at Inland Aviation, Aniak. Inland Aviation personnel provided ground handling and fueling for the flight. The agent reported that after the airplane left the ramp, he paid no further attention to it until he received a telephone call from Anchorage Air Traffic Control Center (ARTCC) personnel. ARTCC was inquiring about the airplane, as the crew had not radioed that they were airborne. The agent looked out of the freight building and noticed the airplane sitting on the ramp. The engines were stopped, and the airplane lights were "on" but dim. He opened the door of the airplane, and found the first officer unconscious, inside the door. The captain was unconscious at the controls. He pulled both crewmembers out of the airplane, onto the ramp, and then ran to call for help.

The flight crew regained consciousness while lying on the ramp, and then walked to the freight building. Medical personnel provided care, to include 100 percent oxygen. The flight crew were flown to a hospital in Anchorage where they were released the following day. The crewmembers had no memory of events from the time they stopped the airplane on the ramp, until they woke-up on the airport ramp. The first officer reported that as the captain was taxiing back to the airport ramp, he felt the effects of the gas release, and both crewmembers opened the cockpit windows. Once stopped, he got up to open the forward door, but collapsed at the door.

The director of operations indicated that the airplane initially departed Sheldon Point, Alaska, with an intermediate stop in Aniak for fuel and cargo, before continuing to Anchorage. At Sheldon Point, the crew loaded several large metal cylinders designed to hold compressed gas. Several of the cylinders were empty, but several were full of carbon dioxide. The cylinders have a screw type valve, and a threaded metal safety cap, which is used to protect the valve. Several cylinders were placed in metal racks along the left and right sides of the airplane's cargo compartment. Several others were placed on the floor.

On December 18, a Federal Aviation Administration (FAA) inspector, Anchorage Flight Standards District Office (FSDO), inspected the airplane in Aniak. He reported that the cargo compartment had two tank racks containing five bottles each, standing vertically along each side of the airplane. Two of the cylinders in the left side rack did not have any safety caps installed. Three of the cylinders in the right side rack also did not have any safety caps installed. The caps were found on the floor of the airplane. The inspector found that the middle tank of the three in the right side rack, had a partially open valve. The interior of the airplane had a large amount of frost. The open tank valve was about 1/2 turn open, and was positioned against the interior side-wall of the cargo compartment.

The FAA inspector also indicated that nine carbon dioxide tanks were lying on the floor of the cargo area. They were braced by chocks, but were not strapped down. The crew oxygen masks were not utilized, and the crew oxygen supply tank was full.

An FAA Hazardous Materials Division inspector reported that the cylinders of carbon dioxide are considered hazardous material because they are a pressurized gas in excess of 40 psi. The inspector also indicated that the shipper has a responsibility to properly identify and declare hazardous materials that they are shipping, the carrier has a responsibility to properly train airplane crewmembers to identify and accept hazardous materials, and the flight crew has a responsibility to properly secure hazardous materials during transport.

Pilot Information

Certificate:	Airline transport; Commercial; Flight instructor	**Age:**	41,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):	Airplane single-engine; Instrument airplane	**Toxicology Performed:**	No
Medical Certification:	Class 1 Without waivers/limitations	**Last FAA Medical Exam:**	April 1, 2007
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	September 1, 2007
Flight Time:	19100 hours (Total, all aircraft), 8000 hours (Total, this make and model)		

Co-pilot Information

Certificate:	Airline transport; Commercial; Flight instructor	**Age:**	30,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Rear
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	Airplane single-engine; Instrument airplane	**Toxicology Performed:**	No
Medical Certification:	Class 1 Without waivers/limitations	**Last FAA Medical Exam:**	March 1, 2007
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	July 1, 2007
Flight Time:	4700 hours (Total, all aircraft), 600 hours (Total, this make and model), 280 hours (Pilot In Command, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	N111AX
Model/Series:	1900	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	UC-81
Landing Gear Type:	Retractable - Tricycle	**Seats:**	3
Date/Type of Last Inspection:	December 1, 2007 Continuous airworthiness	**Certified Max Gross Wt.:**	17600 lbs
Time Since Last Inspection:	96 Hrs	**Engines:**	2 Turbo prop
Airframe Total Time:	48506 Hrs at time of accident	**Engine Manufacturer:**	Pratt & Whitney Canada
ELT:	Installed, not activated	**Engine Model/Series:**	PT6A-65B
Registered Owner:	Alaska Central Express	**Rated Power:**	1100 Horsepower
Operator:		**Operating Certificate(s) Held:**	On-demand air taxi (135)
Operator Does Business As:		**Operator Designator Code:**	YADA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Night/dark
Observation Facility, Elevation:		**Distance from Accident Site:**	
Observation Time:		**Direction from Accident Site:**	
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:		**Temperature/Dew Point:**	-21°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Aniak, AK (PANI)	**Type of Flight Plan Filed:**	IFR
Destination:	Anchorage, AK (PANC)	**Type of Clearance:**	IFR
Departure Time:	19:40 Local	**Type of Airspace:**	

Airport Information

Airport:	Aniak PANI	**Runway Surface Type:**	
Airport Elevation:	88 ft msl	**Runway Surface Condition:**	
Runway Used:		**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 Minor, 1 None	**Aircraft Damage:**	None
Passenger Injuries:		**Aircraft Fire:**	
Ground Injuries:	N/A	**Aircraft Explosion:**	
Total Injuries:	1 Minor, 1 None	**Latitude, Longitude:**	

Administrative Information

Investigator In Charge (IIC):	Erickson, Scott
Additional Participating Persons:	Sidney Villines; FAA-AL-ANC FSDO 03; Anchorage, AK
Original Publish Date:	July 30, 2008
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=67272