Aviation Investigation Final Report

Location:	Unalaska, Alaska	**Accident Number:**	ANC08FA050
Date & Time:	April 9, 2008, 16:30 Local	**Registration:**	N741
Aircraft:	Grumman G-21A	**Aircraft Damage:**	Substantial
Defining Event:	Collision with terr/obj (non-CFIT)	**Injuries:**	1 Serious, 8 Minor
Flight Conducted Under:	Part 135: Air taxi & commuter - Scheduled		

Analysis

The airline transport pilot was on an approach to land on Runway 30 at the conclusion of a visual flight rules (VFR)scheduled commuter flight. Through a series of radio microphone clicks, he activated threshold warning lights for vehicle traffic on a roadway that passes in front of the threshold of Runway 30. Gates that were supposed to work in concert with the lights and block the runway from vehicle traffic were not operative. On final approach, the pilot, who was aware that the gates were not working, noticed a large truck and trailer stopped adjacent to the landing threshold. As he neared the runway, he realized that the truck was moving in front of the threshold area. The pilot attempted to go around, but the airplane's belly struck the top of the trailer and the airplane descended out of control to the runway, sustaining structural damage. The truck driver reported that, as he approached the runway threshold, he saw the flashing red warning lights, but that the gates were not closed. He waited for about 45 seconds and looked for any landing traffic and, seeing none, drove onto the road in front of the threshold. As he did so, he felt the airplane impact the trailer, and saw it hit the runway. The accident truck's trailer is about 45 feet long and 13 feet tall. The Federal Aviation Administration (FAA) Facility Directory/Alaska Supplement recommends that pilots maintain a 25-foot minimum threshold crossing height. The NTSB's investigation revealed that the gate system had been out of service for more than a year due to budgetary constraints, and that there was no Notice to Airman (NOTAM) issued concerning the inoperative gate system. The FAA certificated airport is owned and operated by the State of Alaska. According to the Airport Certification Manual, the airport manager is responsible to inspect, maintain, and repair airport facilities to ensure safe operations. Additionally, the airport manager is responsible for publishing NOTAM's concerning hazardous conditions. A 10-year review of annual FAA certification and compliance inspection forms revealed no discrepancy listed for the inoperative gates until 16 days after the accident.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's failure to maintain clearance from a truck while landing, and the vehicle operator's decision to ignore runway warning signals. Contributing to the accident was an inoperative vehicle gate system and the failure of airport management to adequately maintain the gate system and issue a NOTAM.

Findings

Environmental issues	Ground vehicle - Contributed to outcome
Personnel issues	Decision making/judgment - Other
Personnel issues	Scheduled/routine maintenance - Airport personnel
Environmental issues	Wall/barricade - Not specified
Aircraft	Descent/approach/glide path - Not attained/maintained
Personnel issues	Aircraft control - Pilot

Factual Information

History of Flight

Landing	Collision with terr/obj (non-CFIT) (Defining event)

HISTORY OF FLIGHT

On April 9, 2008, about 1630 Alaska daylight time, an amphibious Grumman G-21A airplane, N741, received substantial damage when it collided with a trailer van while on approach to Runway 30 at the Unalaska Airport, Unalaska, Alaska. The airplane was operated by Peninsula Airways, Inc., Anchorage, Alaska. The flight was conducted under Title 14, CFR Part 135, as scheduled commuter Flight 325, when the accident occurred. Of the nine people on board, the airline transport pilot and seven passengers sustained minor injuries, and one passenger sustained serious injuries. The flight originated at the Akutan Sea Plane Base, Akutan, Alaska, about 1615, and was en route to Unalaska. Company flight following procedures were in effect.

Airplanes landing at the Unalaska Airport on Runway 30 pass low over Ballyhoo Road before reaching the approach threshold of the runway. Ballyhoo Road provides the only access between the city of Unalaska and the city dock facility, north of the Unalaska Airport. Trucks transporting large container vans between the trailer yard and the city dock facility routinely use the road. There are two remotely controlled gates with warning lights on each side the runway threshold designed to block vehicle traffic while airplanes are landing on Runway 30. When the gate and warning light system is activated, the runway end identifier lights (REIL) are also supposed to be activated. Prior to landing, pilots are instructed to activate the remotely controlled gate and warning light system.

During a telephone interview with the National Transportation Safety Board (NTSB) investigator-in-charge (IIC) on April 10, the truck driver reported that he was transporting a 45-foot long by 13-foot tall trailer van from the Horizon Lines trailer yard to the city dock facility. He said that as he approached the part of the road where it crossed under the approach path of Runway 30, he saw that the warning lights were flashing, but the gates were not closed, so he stopped the truck to wait for the warning lights to go out. After waiting for about 45 seconds, the driver looked to see if he could see any landing traffic, but he did not see any. He reported that with the red lights still flashing, he drove onto the road in front of the threshold.

Shortly after passing the flashing warning lights, he heard a loud bang and the truck rocked to the left. He then saw the airplane collide with the runway on the left side of his truck.

The truck driver noted that he had worked in Unalaska for only 4 months, but during that time, the traffic gates at that intersection had never worked. Additionally, he said that the flashing warning lights would routinely activate with no arriving traffic, and remain activated, which

would block traffic for long periods of time.

According to the Unalaska police officer assigned to the accident case, the accident truck driver did not have a valid driver's license. Also, his commercial driver's license (CDL) was suspended.

During an interview with the NTSB IIC on April 11, the accident pilot said that as he started his initial approach to Runway 30, he activated the remotely controlled traffic warning devices as required. He said that as he flew towards Runway 30, he could see the REIL strobe lights, which are simultaneously activated when the gate and warning light system on the road is activated. Concurrently, he said he could see a large truck and trailer rig stopped at the intersection, adjacent to the southern traffic gate. During the approach, the pilot continued to watch the truck to be sure that it did not start moving. He then configured the airplane for landing by lowering the airplane's landing gear and flaps, and then completed his final prelanding checklist. The pilot said that as the airplane approached the runway threshold, he realized that the truck was now moving, and it was well onto the road in front of the threshold area. He applied full engine power in an attempt to go-around, but as the airplane began to climb, the nose of the airplane pitched up slightly, and the aft section of the airplane's belly and empennage struck the top of the trailer van.

The pilot said that immediately after the initial collision, he had no elevator control, and the airplane descended uncontrollably, nose down. It collided with the surface of the runway, and slid for several hundred feet.

The NTSB IIC asked the accident pilot if he used the visual approach slope indicator systems (VASI) while landing on runway 30. The pilot explained that at the time of the accident he was not using the VASI because he was attempting to shorten his ground roll after landing in order to avoid an unfavorable crosswind condition further down Runway 30.

The NTSB IIC asked the accident pilot if he was aware that the gates were out of service. The pilot said that he was aware that the gates had not been working for a long time.

The pilot reported that there were no preaccident mechanical anomalies with the airplane.

PERSONNEL INFORMATION

Pilot Information

The pilot held an airline transport pilot certificate with airplane multiengine land and sea ratings. He also held commercial pilot privileges with airplane single-engine land and sea ratings. His most recent first-class medical certificate was issued November 28, 2008, and contained the limitation that he must wear correcting lenses.

According to the NTSB Pilot/Operator Aircraft Accident Report (NTSB Form 6120.1) submitted

by Peninsula Airways, dated April 15, 2008, the pilot's total flight time was 7,040 hours, of which 320 were in the accident airplane make and model, and 2,532 in multiengine airplanes. In the preceding 90 and 30 days prior to the accident, the report noted that in the 30 days before the accident, the pilot flew about 9 hours. His flight time in the previous 90 days was about 22 hours. His most recent airman competency/proficiency check (CFR Part 135.293) check ride was on May 30, 2007, and a company check airman administered the check ride in the same make and model as the accident airplane.

AIRCRAFT INFORMATION

The airplane was equipped with two Pratt & Whitney R985-AN-14B radial engines, each rated at 450 horsepower.

The airplane's maximum gross weight was 9,200 pounds, and the estimated gross weight at the time of the accident was 8,833 pounds, or 367 pounds below its maximum gross weight.

The airplane was not equipped with a cockpit voice recorder, or a flight data recorder.

The airplane was maintained under the operator's Approved Aircraft Inspection Program (AAIP), which requires inspections to be performed approximately every 50 and 100 flight hours. The airplane had accumulated 12,228 hours in service at the time of the accident, and 10.2 flight hours had elapsed since the most recent "A" check inspection.

METEOROLOGICAL INFORMATION

The closest official weather observation station is located at the Unalaska Airport. At 1616, an Aviation Routine Weather Report (METAR) was reporting, in part: Wind, 30 degrees (true) at 9 knots with gusts to 15 knots; visibility, 10 statute miles; clouds and sky condition, 2,200 feet overcast; temperature, 30 degrees F; dew point, 21 degrees F; altimeter, 29.98 inHg.

COMMUNICATIONS

Review of the air-ground radio communications tapes maintained by the FAA at the Kenai Automated Flight Service Station (AFSS), revealed that as the accident flight neared the Unalaska Airport, about 3 minutes before the accident, the pilot announced his intentions to land on Runway 30 over the airport's Common Traffic Advisory Frequency (CTAF) on 122.6. The pilot then keyed his radio microphone 7-times, to activate the remotely controlled vehicle gate and warning light system.

No further radio communications were recorded from the accident airplane.

AERODROME AND GROUND FACILITIES

The Unalaska Airport is owned and operated by the State of Alaska, and certificated in

accordance with Title 14, CFR Part 139. CFR Part 139 contains rules governing the certification and operation of airports in the United States with scheduled passenger carrying operations.

The airport has a single hard-surfaced runway, on a 120/300 degree magnetic orientation on Amaknak Island. Both runway ends have a 100-foot displaced threshold. Runway 30 is 3,900 feet long by 100 feet wide, and is positioned along the edge of Mount Ballyhoo that rises to 1,650 feet north of the airport. The airport is served by two nonprecision instrument approach procedures, an NDB and a GPS approach, with high intensity runway lights, runway end identifier lights (REIL), and a VASI.

As noted, near the threshold of Runway 30, there are two remotely controlled gates with warning lights on each side the runway threshold designed to block vehicle traffic while airplanes are landing on Runway 30. Procedures for landing on Runway 30 are outlined in the Airport Facility Directory (AFD), Alaska Supplement, which states, in part: "Stop light for vehicle traffic crossing Runway 30 threshold must be activated and deactivated for each aircraft operation over the threshold" and "...stop light for vehicle traffic crossing Runway 30 threshold, key 122.6 7 times for on, 3 times for stop light and REIL off." The AFD also recommends that aircraft cross the threshold at a minimum height of 25 feet.

According to documentation provided by the State of Alaska, the remotely controlled gate system was originally installed in 1994. During a telephone conversation with the NTSB IIC on April 10, the State of Alaska's Regional Safety and Security Officer reported that the gates have been out of service for more than a year due to budgetary constraints, as well as pending equipment upgrades, which will entail moving both gates to different sites on Ballyhoo Road.

An NTSB airports specialist reviewed current and historical inspection data provided by the State of Alaska, and the Alaska Region FAA Airports Division, which revealed the following:

State of Alaska

According to the State of Alaska's Regional Safety and Security Officer, airport personnel conduct daily inspections of the airport environment prior to the airport's first flight of the day. Any discrepancy or corrective actions are noted on the "Airport Condition Report" form. If outside agencies need to be notified of the discrepancy, notification is made and the date is noted on the form. If corrective action is made, it is noted on the form when the discrepancy was corrected. The State of Alaska's Regional Safety and Security Officer reported that her review of the airport's archived condition reports revealed no mention of the inoperative gates system, or any attempted corrective action within the last 10 years.

According to the Unalaska Airport Certification Manual (ACM), the Airport Manager is responsible for the "development of operational procedures for inspection, maintenance, and repair of airport facilities to ensure safe aircraft operations." The ACM specified the airport safety areas would be "inspected during each scheduled periodic inspection and any non-complying condition noted during the inspection would be corrected as soon as possible if

resources are available at the airport."

The ACM further states that the Airport Manager is responsible for "publishing through a Notice to Airmen (NOTAM) or other publications, all hazardous conditions or the potential of hazardous conditions of airport management is aware." At the time of the accident there were no NOTAMs or advisories in effect warning pilots that the gate system was inoperative.

FAA Airports Division

A 10-year review of annual, FAA, CFR 139 certification and compliance inspection forms revealed no mention of any discrepancy for the inoperative gates system at the Unalaska Airport.

On April 25, 2008, 16 days after the accident, the FAA noted two discrepancies concerning the inoperable roadway gate system citing public protection 139.335(a)(1); safeguards to prevent inadvertent entry to the movement area by unauthorized persons or vehicles. That entry states, in part: "Gates are inoperative and fencing is inadequate to prevent inadvertent access to the aircraft movement and safety areas for runway 12-30. Also, no formal procedures exist in the ACM for operating, securing, and maintaining gates when authorization is delegated by the airport authority to other designated representatives."

"Failure of the airport authority to take appropriate action to notify the FAA of reported incidents by the public of pilot deviations such as aircraft buzzing pedestrian/vehicle traffic on the perimeter road to the approach end of Runway 30; cargo aircraft landing without activating the red flashing traffic lights while on final approach to runway 30; and aircraft flying below the recommended threshold crossing height of 25 feet for runway 30; thus jeopardizing the safety of the public and airport personnel on the ground at DUT."

The FAA inspection record states that the above discrepancies would be corrected by September 2008.

The NTSB airport specialist's report is included in the public docket for this accident.

WRECKAGE AND IMPACT INFORMATION

The NTSB IIC arrived in Unalaska on April 23, 2008, after the airplane wreckage had been recovered to the operator's maintenance facility, and the trailer van had been removed.

According to photographs and on scene documentation provided by the Unalaska Police Department, all of the airplane's major components were found at the accident site.

After the initial collision with the trailer van, the airplane descended uncontrollably, nose down, and collided with the runway about 322 feet from the trailer van. The airplane's main landing gear collapsed, and the wreckage continued to slide for an additional 560 feet on the paved,

dry runway. The airplane's wreckage came to rest on the right side of the runway, with the main fuselage oriented on a 70 degree heading. All headings/bearings noted in this report are magnetic.

Debris consisting of small pieces of plexiglas, aluminum, a door frame assembly, and various landing gear components, were noted in the debris path between the trailer van and the main wreckage site.

Both wings remained attached to the main fuselage attach points. The right wing sustained damage to the outboard portion, and the left wing sustained minor damage.

The main cockpit/cabin area of the fuselage was extensively crushed and distorted. The primary crush zone encompassed the cockpit and front seat passenger area, extending aft into the passenger cabin area. The fuselage was buckled and folded, and the empennage was buckled upward.

The underside portion of the airplane's amphibious hull was crushed upward and inward, and the nose was distorted upward. The aft and underside portion of the airplane's amphibious hull was crushed and torn open, which exposed the crushed elevator control push-pull tubes.

No preaccident mechanical anomalies were discovered during the IIC's wreckage exam.

ADDITIONAL INFORMATION

During a telephone conversation with the NTSB IIC on April 9, 2009, the State of Alaska, Department of Transportation, Southwest District Superintendent reported that construction of the new gate system was completed on November 9, 2008, and the new gate system is fully operational.

Additionally, effective March 12, 2009, the FAA published updated arrival and departure procedures for the Unalaska Airport in the AFD, Alaska Supplement, which states, in part: "*****DANGER***** There is a road crossing the approach of RWY 30. Warning System and Gates must be activated. The gates are controlled by Pilot Controlled Lighting (PCL) on frequency 122.6 (CTAF). This frequency controls the REILS, MIRLS, and the gates."

A complete copy of the updated procedures published in March 12, 2009 AFD is included in the public docket of this accident.

WRECKAGE RELEASE

The Safety Board released the wreckage to the owner's representatives, at the accident airport, on April 23, 2008. The Safety Board retained no parts or components.

Pilot Information

Certificate:	Airline transport	**Age:**	37,Male
Airplane Rating(s):	Single-engine land; Single-engine sea; Multi-engine land; Multi-engine sea	**Seat Occupied:**	Left
Other Aircraft Rating(s):		**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	Airplane single-engine	**Toxicology Performed:**	No
Medical Certification:	Class 1 Without waivers/limitations	**Last FAA Medical Exam:**	November 28, 2008
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	May 30, 2007
Flight Time:	7040 hours (Total, all aircraft), 320 hours (Total, this make and model), 6500 hours (Pilot In Command, all aircraft), 22 hours (Last 90 days, all aircraft), 9 hours (Last 30 days, all aircraft), 5 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Grumman	**Registration:**	N741
Model/Series:	G-21A	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	B-97
Landing Gear Type:	Tailwheel	**Seats:**	10
Date/Type of Last Inspection:	March 25, 2008 AAIP	**Certified Max Gross Wt.:**	9200 lbs
Time Since Last Inspection:	10 Hrs	**Engines:**	2 Reciprocating
Airframe Total Time:	12228 Hrs at time of accident	**Engine Manufacturer:**	Pratt & Whitney
ELT:	C91 installed, activated, did not aid in locating accident	**Engine Model/Series:**	R985
Registered Owner:	Peninsula Airways, Inc.	**Rated Power:**	450 Horsepower
Operator:	Peninsula Airways, Inc.	**Operating Certificate(s) Held:**	Commuter air carrier (135), On-demand air taxi (135)

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	PADU,22 ft msl	**Distance from Accident Site:**	
Observation Time:	16:16 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:		**Visibility**	10 miles
Lowest Ceiling:	Overcast / 2200 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	9 knots / 15 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	300°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.88 inches Hg	**Temperature/Dew Point:**	-1°C / -6°C
Precipitation and Obscuration:			
Departure Point:	Akutan, AK (KQA)	**Type of Flight Plan Filed:**	VFR
Destination:	Unalaska, AK (DUT)	**Type of Clearance:**	None
Departure Time:	16:15 Local	**Type of Airspace:**	

Airport Information

Airport:	Unalaska Airport PADU	**Runway Surface Type:**	Asphalt
Airport Elevation:	22 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	30	**IFR Approach:**	Visual
Runway Length/Width:	3900 ft / 100 ft	**VFR Approach/Landing:**	Full stop

Wreckage and Impact Information

Crew Injuries:	1 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Serious, 7 Minor	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Serious, 8 Minor	**Latitude, Longitude:**	53.900276,-166.53334(est)

Administrative Information

Investigator In Charge (IIC):	Johnson, Clinton
Additional Participating Persons:	Donald W Duncan; Federal Aviation Administration (Operations); Anchorage, AK Bryan Carricaburu; Peninsula Airways, Inc. ; Anchorage , AK
Original Publish Date:	July 28, 2009
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=67801