

FY08 Forest Service Aviation Accident Review



Introduction

Information Sharing

- NTSB regulation 831.13 Flow and dissemination of accident or incident information generally states that "Parties to the investigation may relay to their respective organizations information necessary for purposes of prevention or remedial action. However, no information concerning the accident or incident may be released to any person not a party representative to the investigation before initial release by the Safety Board without prior consultation and approval of the IIC.

Introduction

The NTSB has not finalized all or determined probable cause for all of the accidents at this time.

This is preliminary information, subject to change, and may contain errors. Any errors in this report will be corrected when the final report has been completed

For accident prevention purposes only



Mission

Fire Reconnaissance following period of lightning activity.

Pilot and Aerial Observer on board.

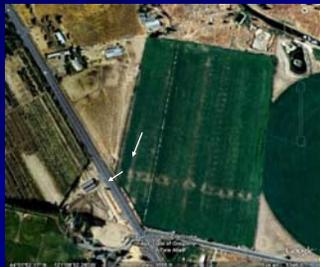
Flight was operating under a Region 6 CWN light fixed wing contract.

1650 Pacific daylight time, N7XZ had completed its fire recon and was returning to Redmond airport at about 7,500 ft. The crew noticed vibrations as the pilot began her descent, and the pilot started to divert toward Bend airport, 7 miles away.



- Shortly after the vibrations, the pilot noticed prop rpm was in the red, with increasing oil temperature followed by oil streaks on the windscreen.
- Concerned about possible fire, the pilot initiated an engine shut down, and divert to a nearby grassy field.

When the pilot began the approach to the landing area, she told the observer to tighten his harness and open the door and prepare for a forced landing.



The observer radioed the problem to dispatch and followed the pilots instruction.



As the aircraft neared the landing area, the pilot noticed they were high and fast and running out of field.

The pilot maneuvered the aircraft to the ground, shearing the nose gear and sliding through a barbed wire fence, coming to rest on Highway 20.

Injuries

- The pilot sustained fractured ribs and facial lacerations as a result of forces received from the aircraft impact during the forced landing.
- The observer received minor bruising, from the restraint system.

Survivability

- A thorough preflight brief and instructions by the pilot during the emergency contributed to lack of injury for the observer.
- The pilot was using a pillow to raise her seating position, possibly altering the effectiveness of her restraint.
- The use of a 4 point restraint system helped limit injuries.

Human Factors

- Pilots approach affected by oil on windscreen and engine still producing some power.
- Crew communication and coordination contributed to reduced injury and rapid emergency response.
- The injuries sustained by the pilot were as a result of impact with a yoke mounted GPS.

“We need to look into the amount of technology that is creeping into the cockpit. Laptops, GPS units, handheld radios, etc need to be secured and in an area that will not injure an occupant in the event of an unscheduled landing.”

Local Aviation Unit Manager



GPS mount



Handheld radio wires

Contributing Factors

- Cracked propeller crankshaft
- Blown prop seal
- Loss of power due to intentional engine shutdown
- Distractions during approach from obstacles, residual power and oil on windscreen





Lessons Learned

- 4 point restraint systems, when properly worn, are extremely effective.
- After market technology modifications in the cockpit could contribute to injury and/or impede egress.
- Ergonomic design of seats and cockpit is an important part of mitigating risks in crash survivability.
- Increasing trends in single engine forced landings dictate a need for more training and evaluation in this area.

NTSB Identification: **LAX08PA259**

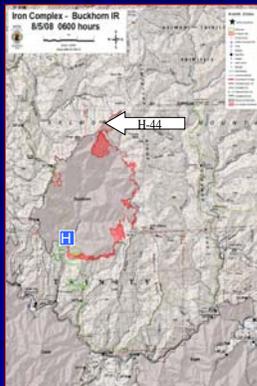
Tuesday, August 05, 2008, Weaverville, CA
Shasta-Trinity National Forest

Aircraft: Sikorsky S-61N, Registration: N612A

Injuries: 9 Fatal, 4 Serious



- N612AZ was transporting 10 contract firefighters from Helispot 44 (H-44, elevation 5,935 feet) en route to Helispot 36 (H-36, elevation 2,516 feet) when the accident occurred.



Rotor Strike

■ The helicopter impacted trees and terrain near Weaverville, California in the Trinity Alps Wilderness while supporting the Buckhorn fire.



The helicopter was being operated under exclusive use contract to the United States Forest Service.

Visual meteorological conditions prevailed, and company visual flight rules (VFR) flight plan had been filed.

Post-impact fire destroyed the helicopter. The airline transport pilot and 8 passengers were fatally injured, and the commercial copilot and 3 passengers were seriously injured.

A Forest Service Pilot Inspector was on board, conducting a pilot evaluation and acting as safety attendant during the passenger transport operation involving planned movement of 50 firefighters.

This accident is still under investigation and the NTSB has not issued a "Probable Cause".

NTSB Identification: **SEA08TA188**
Monday, August 18, 2008, near Bonners Ferry, ID
Aircraft: Hughes 369D, registration: N622PB
Injuries: 4 Uninjured.



Mission

- Aircraft was moving 3 firefighters from the Fisher Peak helispot to the Bonners Ferry Ranger station after initial attack on Parker canyon fire.
- Pilot was on 17th day of work with one day off during that period.

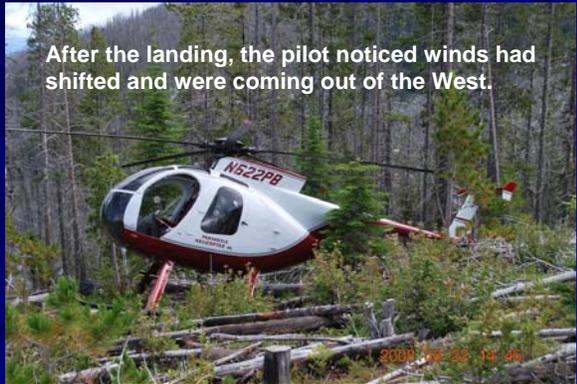
Departure

- The helicopter crewmember trainee loaded the gear and crew onto the aircraft. The pilot began a slow departure in a southerly direction with a gradual climb to clear trees situated approximately 150 feet away from and downhill from the departure point.

“It just quit flying”

- Just prior to entering translational lift the pilot noticed that the aircraft was settling at a rate that would not allow him to clear the tree line. At this time he immediately maneuvered the aircraft to a landing in the timber slash approximately 100 feet downhill from the helispot in a cross-slope attitude.

After the landing, the pilot noticed winds had shifted and were coming out of the West.



Damage

- The pilot cushioned the landing with collective "to the stops", and reduced power to flight idle as the aircraft simultaneously rocked backward making contact against timber debris with the tail rotor.



Additional Rotor Strikes Minor damage to main rotor blade tips







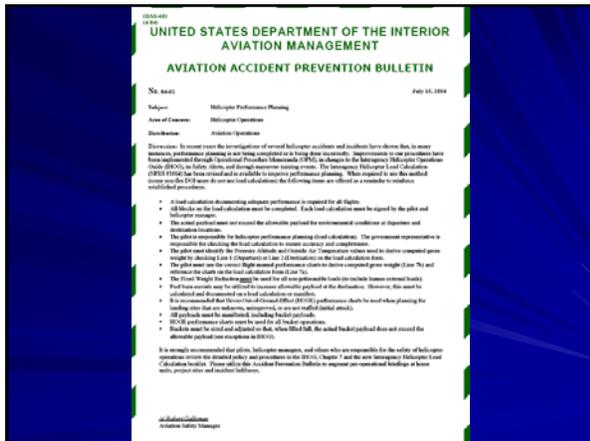
View of Departure Path

- Landing site was on a ridge bordering a large Cirque.
- Site had adequate landing space
- Trees obstructed departure route.
- Area was comprised of brush with old slash.



Findings

- Staffing of the helicopter did not meet IHOG type 3 staffing requirements.
- Firefighters were wearing hardhats w/ chinstraps.
- Pilot had 182 hours duty in last 17 days with one day off (and it was spent driving to an assignment).
- There is not a system for checking crew rest on CWN contract employees.
- Fuel monitoring was inaccurate, it was difficult to get an correct estimate of fuel on board due to the inconsistent documentation in the fuel log.



Lessons Learned

- The actual payload must not exceed the allowable payload for environmental conditions at departure and destination locations.
- The pilot is responsible for helicopter performance planning (load calculation). The government representative is responsible for checking the load calculation to ensure accuracy and completeness.
- It is recommended that Hover out of Ground Effect (HOGE) performance charts be used when planning for landing sites that are unknown, unimproved, or are not staffed (initial attack).

Lessons Learned

- Pilots on CWN contracts showing up for a one day job may be in excess of crew duty limits.
- Fuel gauges may be unreliable and too much fuel can also be a danger. We should monitor and document fuel consumed and replaced when operating close to weight limits.

Lessons Learned

- Boundary level winds, affected by terrain features may be different from prevailing wind.
- An understanding of mountain winds is critical to operating at maximum performance limits in such environments.
- Documented Helispot Risk Assessments would be useful for first time pilots.

NTSB Identification: **SEA08GA194**
Accident occurred September 01, 2008 in Reno, NV
Aircraft: Lockheed SP-2H, registration: N4235T
Injuries: 3 Fatal.



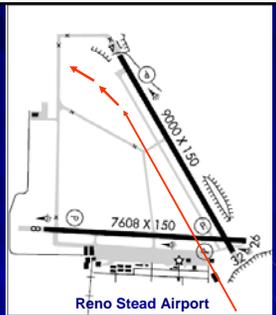
Mission

- This mission was under the jurisdictional authority of the California Department of Forestry and Fire Protection.
- On September 1, 2008, the crew was on its first day of assignment to Stead Air Attack Base located at Reno/Stead airport to support Humboldt-Toiyabe National Forest operations on the Burnside fire. They had completed one retardant mission on the Burnside Fire. At 5:35 pm, Stead Air Attack Base received a dispatch to fly retardant on the Smitty fire.

An air tanker base employee who witnessed the accident reported observing the airplane taxi to Runway 32 "...and everything appeared normal."

The witness reported watching the airplane takeoff, and at an elevation estimated to be between 100

to 300 feet above the ground, he observed the left jet engine emitting flames, followed by the left wing being engulfed in flames.



- The witness further reported that about 2 seconds later the airplane entered a left wing down attitude before impacting terrain and bursting into flames.

■ The initial onsite examination revealed that about 500 feet from the departure end of Runway 32, several identifiable pieces of the airplane's left jet engine were located.





It was also revealed that prior to impacting terrain the airplane had collided with a set of power-lines, estimated to be about 50 feet high. The damage assessment also revealed that the airplane had sustained significant fragmentation and thermal damage throughout the debris path.

■ Visual meteorological conditions prevailed for the Public Use air drop flight, which was being operated in accordance with 14 Code of Federal Regulations Part 137, and a company flight plan was filed and activated. The flight was originating at the time of the accident.

Incident With Potential

Blade Strike

On Thursday July 3rd, an exclusive use Bell 205++ helicopter, N58HJ, departed Blue Canyon Airport (helibase) on a long-line cargo mission to provide supplies to wrap a remote cabin on the American Fork District of the Tahoe National Forest.





■ On final approach the aircraft's main rotor blades contacted an approximately 170' conifer on the pilot's 4:00 position. The pilot heard the blades contacting the tree and arrested the descent of the helicopter.

The pilot repositioned the aircraft and lowered the load, releasing the load once it was in contact with the ground.



The pilot returned to the helibase and upon shut-down, the pilot and ground crew noticed the damaged rotor blades.

Incident With Potential

July 5, 2008 Los Padres NF

At 1840 ship returned from 3rd cycle of the day with a damaged bucket. Pilot said visibility was poor and he was focused on the drop, and allowed the bucket to hit the top of a ridge.



This mission was assigned by Air Attack. They indicated there were visibility issues .

There had not been any visibility issues earlier in the day while dipping out of the Los Padres Reservoir, so the pilot assumed that would be the best route for getting to the fire.

On arrival at the operations area, the pilot established visual and radio contact with a second helicopter working that fire and proceeded into the area. There was a lot of smoke, but the pilot assumed the visibility was workable since the other helicopter was in the area.

He followed the other helicopter down the ridge noting his dip point (which was a pond) and then he continued to an ocean dip.

After the dip, he located the second helicopter (again) going up the ridge. He followed behind toward his drop at the top of the ridge and then lined up for the drop. As he came up on the drop, he opened the gate, lowered the collective slightly, and commenced the downhill run.

During the downhill run, the bucket contacted the ridge.

The pilot immediately pulled up.

Having damaged the bucket, he reported the incident to Air Attack and returned to the helibase.

Incident With Potential

August 13, 2008, the mishap occurred while assigned on an Air Tactical mission for the Yolla Bolly Complex on the Mendocino National Forest. The aircraft was based at Redding Municipal Airport in Redding, CA where the nose-gear-up landing occurred.



Sequence of Events

Sequence of events- Upon take off, the pilot noticed the nose gear did not fully retract. There was an audible noise from the nose wheel area and the red gear unsafe light was illuminated. The pilot cycled the gear several times to no avail.

Shortly thereafter, something began banging against the bottom of the fuselage in the nose wheel area. The pilot was concerned about something dislodging from the aircraft and damaging someone or something on the ground. He informed the ATGS to prepare for landing by securing the cockpit area.



(Damage to left rear door)

The pilot gained approval for landing and performed a "soft field" landing. He kept the nose up as long as possible reducing speed and while on roll, closed the mixtures and shut off the emergency fuel shut offs. The nose dropped and the aircraft skidded about 100-150 yards.



(Looking rearward beyond gear doors)

Fortunately, there were no injuries. Damage to the aircraft consisted of damage to the nose gear doors, to several stringers and skin under the fuselage. The nose gear centering mechanism consists of a pin that slides into a cam. The centering pin had two flat spots on it, but when or how the pin became damaged could not be determined.

Findings

- The pilot displayed outstanding airmanship to safely land the aircraft without the benefit of nose gear steering after a malfunction.
- Human Factors were not a factor as the cause of this incident, although they were in the successful outcome of the event.
- Failure of the gear centering mechanism caused the gear to retract into a cocked position. Failure can be caused by towing that exceeds turn limitations or a steering valve leak. Neither cause could be confirmed.

Incident With Potential



On Friday, August 22nd at 11:18am, a Boeing 234, N239CH, was maneuvering into the fueling area at the Burns airport when the rear main rotor blades struck the upper portion of a nearby hangar. The aircraft was ferrying to do a bridge project on a forest in Utah.

The three rear rotor blades heavily damaged the metal framed hangar structure resulting in a large debris field stretching out to 100 feet. There were no injuries! The aircraft was shut down in place and contacts were made.



Onboard the aircraft was the pilot, co-pilot and four crewmembers. As the aircraft maneuvered into the fueling area the pilot announced to the crew that the maneuver area is tight and he wanted to be advised if the aircraft was getting too close to the hangar. With no comment from the crew, the pilot continued forward but once the aircraft tail was turned the rear blades contacted the hangar and then a crewmember announced that they were too close.

Most of the Single Engine Air Tanker (SEAT) base employees witnessed the incident. When contact was made with the hangar most of the witness fell to the ground in fear of being struck by the flying debris.



Due to the rotational direction of the rotor, most of the debris was flung toward the runway with only minor deposits in the area of the witnesses.

At the time of the incident the pilot had 19,000 hours of flight time with 9,000 hours in the incident aircraft. The co-pilot had a total of 1500 hours. This was the first incident for both pilots.