		NTSB ID: LAX04IA133		Aircraft Registration Number: N358NT	
		Occurrence Date: 02/19/2004		Most Critical Injury: None	
		Occurrence Type: Incident		Investigated By: NTSB	
Location/Time					
Nearest City/Place Las Vegas	State NV	Zip Code 89119	Local Time 1759	Time Zone PST	
Airport Proximity: On Airport/Airstrip		Distance From Landing Facility:			
Aircraft Information Summary					
Aircraft Manufacturer Eurocopter		Model/Series AS 350B		Type of Aircraft Helicopter	
Revenue Sightseeing Flight: Yes			Air Medical Transport Flight: No		
Narrative					
<p>Brief narrative statement of facts, conditions and circumstances pertinent to the accident/incident:</p> <p>On February 19, 2004, at 1759 Pacific standard time, a Eurocopter AS 350B, N358NT, experienced an in-flight loss of tail rotor control about 15 miles from the McCarran International Airport, Las Vegas, Nevada. Heli USA Airways, Inc., also the registered owner, was operating the helicopter under the provisions of 14 CFR Part 135. The commercial pilot and five passengers were not injured; the helicopter sustained minor damage. The flight departed the Grand Canyon Airport, Grand Canyon, Arizona, at 1715, for the on-demand air tour flight. Visual meteorological conditions prevailed, and a company flight plan was in effect.</p> <p>Federal Aviation Administration (FAA) inspectors responded to the operator's facility to examine the helicopter. Prior to their arrival, the tail rotor pitch change lever had been removed from the helicopter so its condition as installed could not be determined by the inspectors.</p> <p>Post accident examination revealed that the tail rotor pitch change lever (SN MA 3671) fractured. The purpose of this part is to translate forward and aft movement from the tail rotor controls to change the pitch of the tail rotor. Following the accident, the operator discovered a crack on an additional lever (SN MA 3010). Both the incident lever and the lever discovered following the incident were submitted to the National Transportation Safety Board Materials Laboratory for examination.</p> <p>According to the metallurgist, the incident lever was fractured at the transition between the short arm clevis and the I-beam section. The origin area for the primary fatigue crack was located on the lower inboard portion of the arm. Two additional origins were observed on both upper corners of the arm. No evidence of material defects or mechanical damage was observed on the exterior surface in the vicinity of the origin area for the primary fatigue crack, and the primary origin area itself contained multiple initiation sites on the surface. Energy dispersive spectroscopy (EDS) analysis of the fracture surface revealed a composition consistent with aluminum alloy 2618, with the addition of sulfur, carbon, and oxygen. The hardness of the material was consistent with specified requirements. On the short arm clevis significant wear was observed on internal surfaces of both of the lugs. On the long arm clevis significant wear was observed on the inside surfaces of the lugs, preferentially on the left side of the lower lug, and to a much less degree on the right side of the upper lug.</p> <p>The cracked lever was cracked in the lower inboard corner to an approximate depth of 0.2 inch. This was in a similar location and orientation to the origin area portion of the primary crack on the fractured lever. The crack contained features similar to the origin area portion of the primary crack on the other lever, with flat features in a plane perpendicular to the surface with a thumbnail shape indicative of fatigue. Scanning electron microscope (SEM) analysis of the fracture surface showed that the crack initiated from the surface with multiple individual origin sites where no material or mechanical defects were observed. The EDS analysis revealed a spectrum consistent with 2618 aluminum with the addition of sulfur, carbon, oxygen, potassium, and calcium.</p>					
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National Transportation Safety Board

FACTUAL REPORT

AVIATION

NTSB ID: LAX04IA133

Occurrence Date: 02/19/2004

Occurrence Type: Incident

Narrative (Continued)

The hardness of the material was consistent with specified requirements. On the short arm clevis minor wear was observed on the internal surfaces of both of the lugs. On the long arm clevis significant wear was observed on the inside surfaces of both of the lugs, with preferential wear on the left side of the lower lug and on the right side of the upper lug.

According to the manufacturer, the total time on the helicopter was 9,915.6 hours. The tail rotor gearbox assembly had 3,148.5 hours. The lever is an on-condition part, which calls for inspection during the overhaul. The overhauls are completed at a normal interval of 3,000 hours; the manufacturer allows a tolerance of 10 percent over the recommended overhaul schedule.


The lever is a component of the tail rotor gear box assembly. Although it does not have an hourly life-limit, the part is to be inspected at the overhaul of the tail rotor gear box assembly. If the lever passes the inspection, it remains with the assembly. If the lever does not pass the inspection, it is replaced. There is currently no hourly tracking requirement for the lever, nor is there guidance from Eurocopter regarding interchanging the lever.


The tail rotor gearbox assembly was overhauled by Acro Aerospace, Inc., on July 19, 2001. A tail rotor pitch change lever (SN MA 1901) was submitted for overhaul with the assembly. This lever was not the lever involved in the incident.

On October 7, 2003, Eurocopter issued Service Bulletin (SB) No. 65.00.42. The SB was issued as a result of two cases of cracked pitch control bellcranks having been discovered in service with the same operator. The cracks were formed due to improper installation of the tail rotor gear box pitch control lever bolt. Compliance with the SB was to be noted on the tail rotor gear box equipment log card. The record of compliance with the SB was not recorded on the tail rotor gear box equipment log card.

In Eurocopter literature reviewed by the Safety Board investigator-in-charge, the lever was identified by three different names. In the Illustrated Parts Catalog, it is called a lever. In the Airworthiness Limitations, it is called a blade horn. In SB 65.00.42 it is called a bellcrank.

In the Illustrated Parts Catalog, the lever is listed directly below the tail rotor gear box and is specified as a sub-assembly through the use of a marking to the left of the word "lever." In the Master Servicing Recommendations, it states that the tail rotor gearbox is to be overhauled every 3,000 hours. On the airworthiness limitations, page it states "INF" for the blade horn, which indicates that the part has an infinite life.

 National Transportation Safety Board FACTUAL REPORT AVIATION		NTSB ID: LAX04IA133			
		Occurrence Date: 02/19/2004			
		Occurrence Type: Incident			
Landing Facility/Approach Information					
Airport Name	Airport ID:	Airport Elevation	Runway Used	Runway Length	Runway Width
McCarran International Airport	LAS	2181 Ft. MSL	1L	9765	150
Runway Surface Type: Asphalt					
Runway Surface Condition: Dry					
Approach/Arrival Flown: NONE					
VFR Approach/Landing: Precautionary Landing					
Aircraft Information					
Aircraft Manufacturer		Model/Series		Serial Number	
Eurocopter		AS 350B		1016	
Airworthiness Certificate(s): Normal					
Landing Gear Type: Skid					
Amateur Built Acft? No	Number of Seats: 7	Certified Max Gross Wt.	4630 LBS	Number of Engines: 1	
Engine Type:	Engine Manufacturer:	Model/Series:	Rated Power:		
Turbo Shaft	Turbomeca	Ariel 1B	650 HP		
- Aircraft Inspection Information					
Type of Last Inspection	Date of Last Inspection	Time Since Last Inspection	Airframe Total Time		
100 Hour	02/2004	8.8 Hours	4426.6 Hours		
- Emergency Locator Transmitter (ELT) Information					
ELT Installed?/Type Yes /	ELT Operated? No	ELT Aided in Locating Accident Site? No			
Owner/Operator Information					
Registered Aircraft Owner Heli USA Airways, Inc.		Street Address 275 E. Tropicana Ave STE 200			
		City Las Vegas	State NV	Zip Code 89109	
Operator of Aircraft Heli USA Airways, Inc.		Street Address 275 E. Tropicana Ave STE 200			
		City Las Vegas	State NV	Zip Code 89109	
Operator Does Business As:			Operator Designator Code: H6UA		
- Type of U.S. Certificate(s) Held:					
Air Carrier Operating Certificate(s): On-demand Air Taxi					
Operating Certificate:			Operator Certificate:		
Regulation Flight Conducted Under: Part 135: Air Taxi & Commuter					
Type of Flight Operation Conducted: Non-scheduled; Domestic; Passenger Only					

 <p>National Transportation Safety Board FACTUAL REPORT AVIATION</p>	NTSB ID: LAX04IA133
	Occurrence Date: 02/19/2004
	Occurrence Type: Incident

First Pilot Information

Name On File	City On File	State On File	Date of Birth On File	Age 34
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Sex: M	Seat Occupied: Right	Occupational Pilot?	Certificate Number: On File
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Certificate(s): Flight Instructor; Commercial

Airplane Rating(s): None

Rotorcraft/Glider/LTA: Helicopter

Instrument Rating(s): Helicopter

Instructor Rating(s): Helicopter; Instrument Helicopter

Current Biennial Flight Review? 12/2003

Medical Cert.: Class 1	Medical Cert. Status: Valid Medical--no waivers/lim.	Date of Last Medical Exam: 11/2003
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- Flight Time Matrix	All A/C	This Make and Model	Airplane Single Engine	Airplane Multi-Engine	Night	Instrument		Rotorcraft	Glider	Lighter Than Air
						Actual	Simulated			
Total Time	1932	475			112		31	1932		
Pilot In Command(PIC)	1852				109			1852		
Instructor	1122				89			1122		
Instruction Received										
Last 90 Days	206				10			206		
Last 30 Days	71				6			71		
Last 24 Hours	6							6		

Seatbelt Used? Yes	Shoulder Harness Used? Yes	Toxicology Performed? No	Second Pilot? No
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Flight Plan/Itinerary

Type of Flight Plan Filed: Company VFR

Departure Point Grand Canyon	State AZ	Airport Identifier KGCN	Departure Time 1715	Time Zone PST
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Destination Las Vegas	State NV	Airport Identifier LAS	
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Type of Clearance: VFR

Type of Airspace: Class B

Weather Information

Source of Wx Information:

Flight Service Station

 <p>National Transportation Safety Board FACTUAL REPORT AVIATION</p>	NTSB ID: LAX04IA133
	Occurrence Date: 02/19/2004
	Occurrence Type: Incident

Weather Information

WOF ID	Observation Time	Time Zone	WOF Elevation	WOF Distance From Accident Site	Direction From Accident Site
LAS	1756	PST	2181 Ft. MSL	NM	Deg. Mag.
Sky/Lowest Cloud Condition: Scattered			10000 Ft. AGL	Condition of Light: Night	
Lowest Ceiling: Broken		25000 Ft. AGL	Visibility: 10	SM	Altimeter: 29.97 "Hg
Temperature: 17 °C	Dew Point: -2 °C	Weather Conditions at Accident Site: Visual Conditions			
Wind Direction: 290	Wind Speed: 7	Wind Gusts:			
Visibility (RVR): Ft.	Visibility (RVV): SM				
Precip and/or Obscuration: No Obscuration; No Precipitation					

Accident Information

Aircraft Damage: Minor	Aircraft Fire: None	Aircraft Explosion: None
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- Injury Summary Matrix	Fatal	Serious	Minor	None	TOTAL
First Pilot				1	1
Second Pilot					
Student Pilot					
Flight Instructor					
Check Pilot					
Flight Engineer					
Cabin Attendants					
Other Crew					
Passengers				5	5
- TOTAL ABOARD -				6	6
Other Ground					
- GRAND TOTAL -				6	6

National Transportation Safety Board

FACTUAL REPORT

AVIATION



NTSB ID: LAX04IA133

Occurrence Date: 02/19/2004

Occurrence Type: Incident

Administrative Information

Investigator-In-Charge (IIC)

George Petterson

Additional Persons Participating in This Accident/Incident Investigation:

Carlos Flores
Federal Aviation Administration
Las Vegas, NV

Joe Syslo
American Eurocopter
Grand Prairie, TX