Aviation Investigation Final Report

Location:	OMAK, Washington	**Accident Number:**	SEA95LA058
Date & Time:	March 3, 1995, 15:10 Local	**Registration:**	N7836V
Aircraft:	MOONEY M20C	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

THE PILOT, WHILE ON FINAL APPROACH AT 500 FEET AGL, LOST ELEVATOR CONTROL WHEN THE ELEVATOR PUSH ROD SEPARATED DUE TO BENDING FATIGUE. THE MONOBALL BEARING WAS FOUND TO BE FROZEN AND CORRODED. THE AIRCRAFT HAD UNDERGONE AN ANNUAL INSPECTION WHEN PURCHASED 108 HOURS PRIOR TO THE ACCIDENT, AND THE FLIGHT CONTROLS HAD BEEN SIGNED OFF AS LUBRICATED. NO AD LISTING WAS FOUND, HOWEVER, TO VERIFY WHETHER AD 73-21-01 HAD BEEN COMPLIED WITH AT THE ANNUAL INSPECTION. THE AD, WHICH REQUIRED LUBRICATION OF THE FLIGHT CONTROLS EVERY 100 HOURS, WAS 8 HOURS OVERDUE AT THE TIME OF THE ACCIDENT.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: THE ELEVATOR PUSH ROD SEPARATION DUE TO FATIGUE. FACTORS CONTRIBUTING TO THE ACCIDENT WERE THE PILOT IN COMMAND'S FAILURE TO INSURE COMPLIANCE WITH THE AIRWORTHINESS DIRECTIVE AND THE FROZEN PUSH ROD BEARING.

Findings

Occurrence #1: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION
Phase of Operation: APPROACH

Findings
1. (C) FLT CONTROL SYST,ELEVATOR CONTROL CABLE/ROD - FATIGUE

2. (F) MAINTENANCE,COMPLIANCE WITH AD - NOT PERFORMED - PILOT IN COMMAND
3. (F) FLT CONTROL SYST,ELEVATOR CONTROL BEARING - FROZEN

Occurrence #2: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: APPROACH

Findings
4. FLIGHT CONTROL,ELEVATOR - DISCONNECTED

Occurrence #3: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Factual Information

On March 3, 1995, approximately 1510 hours Pacific standard time (pst), a Mooney M20C, N7836V, being flown by a certificated private pilot, was substantially damaged during collision with terrain following a loss of control while on approach to runway 35 at the Omak Airport, Omak, Washington. The pilot was uninjured. Visual meteorological conditions prevailed and no flight plan had been filed. The flight, which was personal, was to have been operated under 14CFR91, and originated from Electric City, Washington, approximately 1450. The pilot reported that while on approach and at an altitude of approximately 500 feet above ground he lost elevator control and the aircraft began a series of pitch up and nose down maneuvers. The aircraft impacted the ground in a flat, wings level attitude and slid to rest (refer to NTSB Form 6120.1/2 and Okanogan County Sheriff's Report). Post crash examination by FAA Inspector Ken Ziemer revealed a fracture and separation of the threaded end of the elevator push rod eye bolt. Metallurgical examination of the push rod separation surfaces by the NTSB's Material Laboratory revealed topography typical of high stress reverse bending fatigue. Additionally, the monoball bearing at the end of the rod was found to be frozen and corroded (refer to attached metallurgical report). The aircraft's airframe log was examined and an annual inspection was signed off on July 27, 1994, (tach time 1141.4 hours) at which time the pilot purchased and took possession of the aircraft. The annual entry reported among other entries "Lubed all flight controls" (refer to ATTACHMENT I). Two additional airframe log entries followed the annual, the first documenting a transponder test, and the second documenting the replacement of a belly strobe. No list of current Airworthiness Directives could be located and the pilot reported that he never received such a listing. The tach time on the aircraft at the time of the accident was 1249.32 hours as reported by the FAA inspector on site. This yielded a total of 108 hours time transpired since the last annual inspection. FAA Airworthiness Directive 73-21-01, which applies to Mooney M20C, serial number 2871, references the prevention of "corrosion and/or misrigging in the flight control and landing gear systems." Specifically, the AD requires that all flight controls should be lubricated every 12 months or 100 hours time in service, whichever comes first (refer to ATTACHMENT II). It was not known whether this AD was complied with at the July 27th annual.

Pilot Information

Certificate:	Private	**Age:**	31,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	August 12, 1994
Occupational Pilot:	UNK	**Last Flight Review or Equivalent:**	
Flight Time:	500 hours (Total, all aircraft), 100 hours (Total, this make and model), 400 hours (Pilot In Command, all aircraft), 20 hours (Last 90 days, all aircraft), 7 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	MOONEY	**Registration:**	N7836V
Model/Series:	M20C M20C	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	2871
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	July 27, 1994 Annual	**Certified Max Gross Wt.:**	2575 lbs
Time Since Last Inspection:	108 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	3402 Hrs	**Engine Manufacturer:**	LYCOMING
ELT:		**Engine Model/Series:**	O-360-A1G6
Registered Owner:	HARTMAN, CALVIN, G.	**Rated Power:**	180 Horsepower
Operator:		**Operating Certificate(s) Held:**	None
Operator Does Business As:		**Operator Designator Code:**	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	EPH ,1301 ft msl	**Distance from Accident Site:**	69 Nautical Miles
Observation Time:	14:50 Local	**Direction from Accident Site:**	160°
Lowest Cloud Condition:	Scattered / 15000 ft AGL	**Visibility**	20 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	3 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	80°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29 inches Hg	**Temperature/Dew Point:**	8°C / -7°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	ELECTRIC CITY , WA (WA21)	**Type of Flight Plan Filed:**	None
Destination:	(OMK)	**Type of Clearance:**	None
Departure Time:	14:50 Local	**Type of Airspace:**	Class G

Airport Information

Airport:	OMAK OMK	**Runway Surface Type:**	
Airport Elevation:	1301 ft msl	**Runway Surface Condition:**	
Runway Used:	35	**IFR Approach:**	None
Runway Length/Width:	4654 ft / 150 ft	**VFR Approach/Landing:**	Straight-in

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 None	**Latitude, Longitude:**	48.359916,-119.270027(est)

Administrative Information

Investigator In Charge (IIC):	Mccreary, Steven
Additional Participating Persons:	KENNETH ZIEMER; RENTON , WA
Original Publish Date:	October 13, 1995
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=42116