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Improve Reliability-Interchange Service Experience

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U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
WASHINGTON, DC 20590

AVIATION MAINTENANCE ALERTS

The Aviation Maintenance Alerts provide a common communication channel through which the aviation community can economically interchange service experience and thereby cooperate in the improvement of aeronautical product durability, reliability, and safety. This publication is prepared from information submitted by those who operate and maintain civil aeronautical products. The contents include items that have been reported as significant, but which have not been evaluated fully by the time the material went to press. As additional facts such as cause and corrective action are identified, the data will be published in subsequent issues of the Alerts. This procedure gives Alerts' readers prompt notice of conditions reported via Malfunction or Defect Reports. Your comments and suggestions for improvement are always welcome. Send to: FAA; ATTN: Designee Standardization Branch (AFS-640); P.O. Box 25082; Oklahoma City, OK 73125-5029.

AIRPLANES

BEECH

Beech; Model F33A; Bonanza; Flap Track Wear; ATA 5744

During a scheduled inspection, the submitter removed the left and right wing flaps. He discovered that both inboard flap tracks (P/N's 35-115247 left and 35-115242 right) were severely worn.

The flap rollers had worn into the side of each flap track and caused irreparable damage. The submitter reported he conducted five inspections within the last 3 months, and this is the fourth pair of damaged flap tracks he found. Two of the four damaged pairs had repairable damage; however, he had to replace the other two pairs of flap track.

The submitter did not offer a cause for this damage. However, it is wise to check the flap tracks closely for damage during scheduled inspections and wing flap maintenance.

Part total time-1,995 hours.

Beech; Model T-34A; Mentor; Structural Integrity During Aerobatic Maneuvers; ATA's 5300, 5500, and 5700

The FAA, Small Aircraft Certification Directorate, ACE-100, located in Kansas City, Missouri submitted the following article. This information appears with only minor editorial changes.

In April 1999, the right wing of a Raytheon T-34A Mentor separated in flight while the aircraft was engaged in simulated air combat. A metallurgic examination of the right wing found structural fatigue cracks at several of the fracture surfaces. An examination of the left wing, which did not separate from the airplane, also displayed fatigue cracks at several locations. The accident aircraft had accumulated about 8,200 flight hours, the last 4,000 of which were in simulated air combat operations.

The FAA is unaware of any previous examples of wing structural fatigue cracking in the history of the T-34 series. The lack of previous instances of wing structural fatigue in the T-34, and the unique usage history of this aircraft, suggest that simulated air combat flights accelerate the development of structural fatigue. The FAA believes that fatigue damage accumulates at a high rate during simulated air combat due to frequent high wing loading events. The types of

maneuvers flown in air combat, the excitement of the air combat situation, and the participant's experience level are factors that may contribute to frequent high wing loading events.

The FAA recommends that operators develop and use a structural inspection program to maintain the airworthiness of each aircraft used in simulated air combat flights. The inspection program should prescribe the structural components to inspect, the inspection procedures, and the frequency of the inspections. The inspection program should include:

- Structural components listed in paragraphs (b)(1), (f), and (g) of 14 CFR Appendix D to Part 43, Scope and Detail of Items (As Applicable to the Particular Aircraft) to be Included in Annual and 100-Hour Inspections.

- Structural components included in the Instructions for Continued Airworthiness or otherwise recommended for inspection in the airplane's maintenance manual.

- Any structural component that is the subject of a corrosion or fatigue-related Airworthiness Directive, manufacturer's service bulletin, or service letter.

- Any structural component that has been repaired or modified.

Additional guidance on structural inspection programs is available in Advisory Circular AC 91-60, The Continued Airworthiness of Older Airplanes.

The FAA also recommends that operators review their pre-flight training curriculum and operating rules of engagement. Operators should consider measures to reduce the severity of structural fatigue loads, including placing limits on maximum load factor or maximum air combat speed. Air combat participants should understand the relationship between speed and maximum maneuvering load factor and the importance of the structural design maneuvering speed, V_A. This information is available in AC 61-23C, Pilot's Handbook of Aeronautical Knowledge. Air combat participants should be made aware that repeated high loads may adversely impact the structural integrity of the aircraft.

These recommendations apply to all aircraft used in simulated air combat flights. In addition to the T-34, common simulated air combat aircraft include the EXTRA Flugzeugbau 300, the SIAI-Marchetti SF-260, and the North American T-6/SNJ.

If you have any questions or would like additional information, please contact Mr. Michael Reyer, Federal Aviation Administration, Small Airplane Directorate, at 816-329-4131.

Beech; Model T-34B (D-45); Mentor; Landing Gear Failure; ATA 3230

When the pilot extended the landing gear for a touch-and-go landing, he heard an abnormal sound. After the touch-and-go landing, the right main landing gear still indicated down when the gear was retracted. He extended the gear, and a ground observer reported that all three landing gears appeared to be in the "down-and-locked" position.

During a landing attempt, the pilot tentatively allowed the aircraft weight to be applied to the right main gear and noticed that it did not support the weight. He applied full engine power and executed a "go-around." After gaining stable flight, he extended the landing gear using the emergency system and flight maneuvers to force the gear down. After these procedures, he landed the aircraft safely.

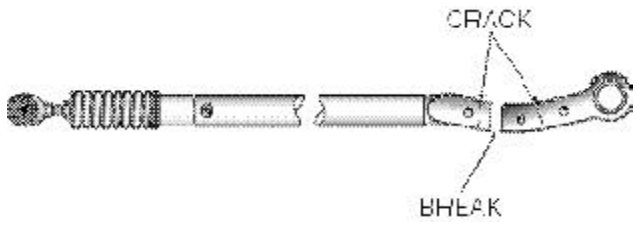
An inspection by maintenance technicians disclosed a broken right main gear retraction rod assembly (P/N 35-815125-14). The retraction rod laminated bracket failed approximately 5 inches from the gearbox attachment. (Refer to the following illustration.) In addition to the broken

retraction rod, the technician found two cracks in the upper part of the laminated bracket. One crack began at the forward edge of the upper bracket laminate 3.5 inches outboard of the gearbox attachment, and traveled approximately three-fourths of the way across the upper bracket laminate. The other crack was 5.5 inches outboard of the gearbox attachment and traveled approximately half way across the lower bracket laminate beginning at the aft edge. The damaged area between the cracks was twisted to a 45-degree angle prior to failure. It appeared that both cracks began sometime prior to this event.

The retraction rod assembly is subjected to both compression and tension stress during normal operation. If the limit switch fails to stop the gearbox, it places ever-increasing pressure on the retraction rods resulting in ultimate failure.

Several other Beech aircraft models use the same or similar main landing gear activation system and may be subject to the defects reported here. We recommended giving critical scrutiny at every opportunity to the gear retraction system, especially the inboard laminated section of the retraction rod.

Part total time not reported.



Beech; Model A36; Bonanza; Alternator Failure; ATA 2434

The aircraft owner reported a strong electrical burning odor in the area of the engine cowling.

A repair station technician discovered that the alternator (P/N 649304) failed internally. The alternator was seized and the drive was sheared. The aircraft maintenance records indicated the alternator was installed a short time prior to this occurrence. Approximately 2 weeks prior, the technician found a similar defect on another like aircraft with 120 operating hours since installation of the alternator.

The submitter could not determine a cause for these failures. Since both alternators were under warranty, they were returned to the manufacturer without disassembly. The FAA Service Difficulty Reporting Program data base contains seven additional reports of alternator drive failure. These additional failures occurred on three Beech A36 and four Cessna 421C aircraft.

Part total time-10 hours.

Beech; Model 58; Baron; Defect Landing Gear Up-Lock Cable; ATA 3230

During maintenance, the submitter discovered the left main landing gear up-lock cable severely frayed. One cable strand held the up-lock cable (P/N 106-810011-1) and failure was imminent.

The defective area of the cable was approximately .125 inch from the inboard swaged fitting attachment. The submitter did not give a cause for this defect; however, age and a high number of cycles are possible contributing factors.

Part total time-2,764 hours.

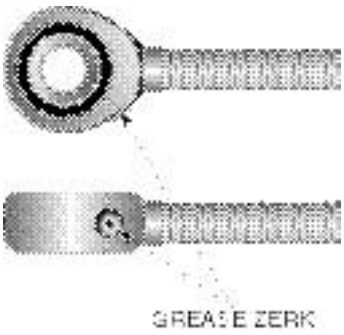
Beech; Model 58; Baron; Nose Landing Gear Defect; ATA 3230

After takeoff, the pilot retracted the landing gear, the “transit” light remained illuminated, and he heard a loud “pop.” He extended the landing gear and made a safe landing.

A technician discovered that the rod-end broke on the drag brace end of the nose gear retraction rod. The rod-end (P/N ADNE5-323) outer case failed and distorted into an “egg” shape at the grease zerk. This allowed the rod-end bearing to separate from the outer case. (Refer to the following illustration.)

The submitter recommended giving special attention to the grease zerk area and all rod-ends during scheduled inspections.

Part total time-6,000 hours.



Beech; Model C-90; King Air; Main Landing Gear Defect; ATA 3210

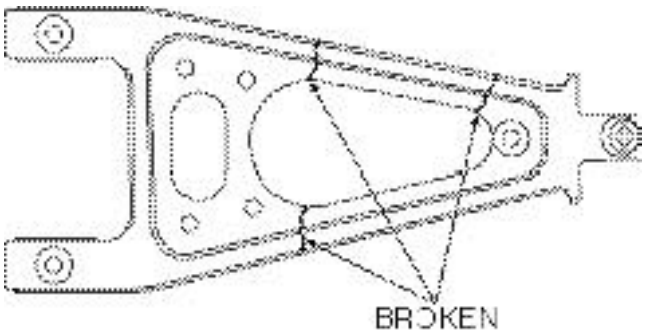
During landing, the aircraft pulled to the right and traveled off the runway before coming to a stop.

An investigation disclosed the right main landing gear torque knee broke. The upper half of the torque knee assembly (P/N 50-810032-4) had cracked/broken at three locations. (Refer to the following illustration.)

This failure allowed the main gear wheel assembly to rotate on the lower section of the strut causing loss of directional control.

The torque knee assembly is constructed of aluminum. Beech issued Service Bulletin (SB) 32-3134 giving an inspection procedure and stating that replacement torque knee parts will be constructed of a steel alloy. For specific aircraft applicability consult SB 32-3134.

Part total time-170 hours.



Beech; Model B99; Airliner; Main Landing Gear Down-Lock Wear; ATA 3230

During a test flight following a scheduled inspection, the pilot could not get the left main landing gear to indicate “down-and-locked.” After a safe landing, the pilot stopped the aircraft on the runway and summoned maintenance personnel.

The technician found the left main gear down-lock assembly broken. The down-lock hook displayed evidence of extreme wear on the inside surface. The submitter stated it appeared that the down-lock engagement was very tight. The down-lock assembly tightness caused excessive wear of the assembly and prevented the landing gear from fully engaging in the “down” position. The down-lock assembly should not be loose; however, there should be a small amount of play when properly rigged. Maintenance

personnel should always consult the appropriate manufacturer's maintenance manual for proper rigging instructions.

The aircraft owner operates a fleet of 14 like aircraft and has experienced similar defects on several other aircraft. He attributed two landing gear collapse incidents to improper rigging of the down-lock assembly. The down-lock assembly has an established "life limit" of 5,000 cycles. The submitter suggested inspecting the down-lock assembly frequently for proper rigging and condition.

Part total time not reported.

Beech; Model 99A; Airliner; Directional Gyro Failure; ATA 3422

The flightcrew reported the directional gyro was inoperative.

The maintenance technician discovered a broken pitot static system connection on the back of the instrument. After removing the unit, he found all three connecting lines broken. The submitter believes using an improper procedure during the previous installation caused this damage. A bit of extra care during installation may prevent this problem.

Part total time not reported.

Beech; Model B99; Airliner; Defective Deice System; ATA 3010

During an operational test of the surface deicing system, the technician noticed water spraying from holes in the horizontal stabilizer deice system boots. The remainder of the aircraft deice system boots operated normally.

The technician discovered that the deice boots were "weather checked" and deteriorated allowing water to enter the deice boots. Water accumulation inside the deice system can render the system inoperative if the water freezes and blocks the airflow through the boot internal chambers. This condition could lead to a catastrophic compromise of flight safety if the aircraft is operated when icing conditions are prevalent.

Part total time not reported.

BELLANCA

Bellanca; Model 7GCAA; Citabria; Ground Loop Damage; ATA 5711

The following narrative was related by a maintenance technician and provides an excellent example of good and bad maintenance practices. The details of defect discovery and repair following a ground loop incident are printed as they were received with only minor editorial corrections.

> I received a call from an operator/customer informing me that one of their customers had ground looped one of their aircraft. The wingtip was scraped and they wanted to fly it over to me to fix.
>
> I told their mechanic to look the spars over closely for compression failures. The company mechanic is someone that I know. I know that he has had experience rebuilding wood gliders. I told him about the critical places to look for failures. After checking the aircraft, the mechanic called back saying there were no compression failures and the aircraft was flown to my shop for repair of the wingtip.
>
> During my examination, I found compression failures on each end of the plywood plates at the strut attachment on the rear spar. After we stripped the wing of its fabric, we found a total of five compression failures in the rear spar. There was a compression failure at each of the next three ribs going inboard from the strut attachment. These failures were from the top of the spar extending down to the top nail hole at each rib.
>
> This example shows that it takes experience and knowing where to look to find these failures. Finding them is further

complicated because they often occur under the rib flanges. These wings usually do not have inspection holes located in the most advantageous positions to facilitate inspection. Therefore, if you are less than "lead pipe" certain of you experience and ability in some areas, at least get someone else, who is, to verify your findings.

The satisfaction of getting a job done can be wiped far from our memory by a wing failure accident! Although we should not approach our profession with undue fear of making a mistake, asking someone to check our work should not be considered a sign of weakness, indeed, it is more a demonstration of your strength of conviction and character.

Aircraft total time not reported.

Bellanca; Model 17-30A; Super Viking; Exhaust Gases in the Cockpit; ATA 7810

The aircraft owner reported a strong exhaust smell in the cockpit.

The technician removed the cowling and discovered the right engine exhaust pipe was broken at the collector (P/N 191484-10R) outlet. It appeared the exhaust collector was partially cracked for some time before separation occurred. He attempted a weld repair; however, it was not successful due to excessive deterioration of the base metal.

Part total time not reported.

CESSNA

Cessna; Model 172R; Skyhawk; Brake Fluid Leakage; ATA 3240

After a flight, the pilot noticed fluid leakage at both main landing gear brake assemblies.

An inspection revealed both brake lines (P/N's 0500118-126 and -127) were leaking at the lowest point just inboard of the brake calipers. Pin holes were found in each line which appeared to be the product of corrosion. The brake lines are encased in a "factory-installed" plastic sleeve. The submitter speculated that corrosive materials were held in contact with the lines by the plastic sleeves.

The submitter suggested placing small drain holes at the lowest point of the plastic sleeve may alleviate this problem.

Part total time-452 hours.

Cessna; Model 172R; Skyhawk; Electrical System Failure; ATA 2434

The pilot reported that during flight, the alternator "out" light illuminated, and the amp meter indicated zero. He cycled the alternator switch, and the "out" light stayed off. However, the amp meter went to full charge. He made an uneventful precautionary landing.

An investigation revealed heat damage to the alternator control unit (P/N AC2101) and a partially melted case. The wiring attached to the alternator control unit was burned and displayed evidence of arcing. Additionally, the electrical power junction box displayed evidence of extreme heat and smoke damage. The technician discovered that the alternator control unit shorted in the "maximum output" position.

Part total time-686 hours.

Cessna; Model 172R; Skyhawk; Emergency Locator Transmitter Malfunction; ATA 2562

As part of a scheduled inspection, a technician performed a functional test of the emergency locator transmitter (ELT) system. He found that the ELT could not be activated using the remote switch. After troubleshooting the entire system, he found the remote switch was defective and replaced it with a new unit.

So many times, emergency equipment of all types is neglected or overlooked during scheduled inspections. Consequently, the only way a defect is detected is when that equipment is required. Unfortunately, when

use of the equipment is needed, someone's life may depend on its proper operation!

Part total time-691 hours.

Cessna; Model 180A; Skywagon; Hose Deterioration; ATA 3243

During an annual inspection, the technician discovered severely deteriorated brake hoses.

Both of the brake master cylinder's flexible hoses were stiff, brittle, and seeping fluid. The submitter stated it was evident these hoses were overlooked and neglected for a long period of time, and total failure of one or both brake hoses was imminent. All flexible hoses deserve close attention during inspections and maintenance.

Part total time-7,675 hours.

Cessna; Model 401A; Defective Engine Exhaust System; ATA 7810

The owner delivered the aircraft to maintenance and reported the left engine produced an unusual sound during the last flight.

A maintenance technician discovered a severely cracked left engine exhaust system tailpipe (P/N 0850711-23) and a section approximately 2 inches by 2.5 inches broken and missing. He speculated normal operational vibrations caused this defect. Exhaust system leakage at the point of failure could cause heat and corrosion damage to the wing spar!

Part total time not reported.

Cessna; Model 441; Conquest; Bleed Air Leak, Electrical Short; ATA 7500

While investigating the cause of an "automatic direction finding" (ADF) problem, the technician discovered that arcing of electrical wires burned a hole in a bleed air tube.

The power wires for the right electrical buss were routed over a bulkhead at fuselage station 130 and under a bleed air tube (P/N 5715306-4). Four wires (wire numbers P106A6-left feeder, P105A6-right feeder, P96F6-left avionics, and P95G6-right avionics) were welded to the bleed air tube and burned a hole in the bleed air tube. The covering on an adjacent antenna "coax" wire melted due to excessive heat caused by escaping bleed air. This area deserves special attention at every opportunity.

Part total time-16,447 hours.

Cessna; Model 550; Citation; Thrust Reverser Defect; ATA 7830

During a preflight inspection, the flightcrew found one of the left lower thrust reverser doors hanging down.

A maintenance technician discovered that the lugs were broken off the blocker door "birdcage" assembly. He speculated the lugs failed due to improper installation of the bolt antirotation devices. The thrust reverser door was in imminent danger of separating from the aircraft.

The submitter suggested maintenance technicians adhere strictly to the manufacturer's technical data for repairs and installation of the thrust reverser system.

Part total time-2,927 hours.

Cessna; Model 550; Citation; Antiskid Transducer Damage; ATA 3241

While installing the right main landing gear wheel assembly, the technician found it necessary to reposition the brake antiskid transducer (P/N 9912305-2) to align the holes for the axle nut locking screws.

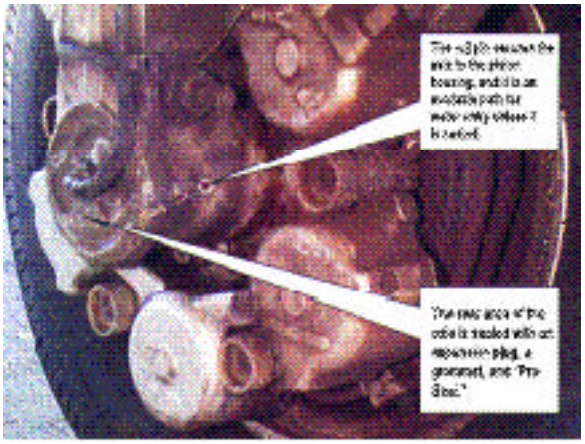
Normally, the technician can align the antiskid transducer by hand with light finger pressure. In this case, the antiskid transducer became jammed inside the axle, and he had to use a large pair of pliers. After removing the transducer, he discovered severe corrosion on the body of the unit, wiring harness, plug

assembly, and expansion plug. The interior lower surface of the inboard end of the axle also displayed severe corrosion damage.

After further investigation, the technician determined water, and possibly other contaminates, entered the axle interior through the roll pin (P/N NAS561P8-8). The roll pin was safety wired but not sealed. (Refer to the following illustration.)

The submitter recommended that technicians inspect the antiskid transducer and the axle interior at every opportunity. He also suggested that technicians make sure the axle interior is properly sealed, inspected, and repaired.

Part total time not reported.



Cessna; Model 550; Citation; Air-conditioning System Fire; ATA 2140

When the pilot activated the heat function of the air-conditioning system to supply heated air to the cabin, he saw fire and smoke coming from under the aft cabin floor. He extinguished the fire with a portable fire bottle and made a safe landing.

A maintenance technician discovered that the air-conditioning system's aft evaporator scroll (P/N 1250208-1) ruptured due to severe overheat. After further investigation, he found a "salt" package, evidently from a condiment pack, wedged against a resistor installation inside the scroll assembly. He speculated the "salt" package caused a "hot" spot on the scroll which resulted in penetration of the scroll.

The submitter suggested placing a screen over the scroll exit port to preclude foreign material from inadvertently entering the system.

Part total time-2,190 hours.

Cessna; Model 560; Citation; Oxygen System Leak; ATA 3520

During the first scheduled inspection since the aircraft was manufactured, the technician discovered a leak in the oxygen system.

While conducting a functional check of the passenger oxygen masks, the technician noticed that oxygen was flowing before removing any of the "pintle pins." After an investigation, he found a very loose aft oxygen "drop-out" box assembly fitting leaking and the sealing "O-ring" visible. He found no other system defects and after tightening the fitting, the system functioned properly. The magnitude of this leak would have seriously compromised the designed operational endurance time of the oxygen system. Close attention to detail at the factory and during receiving inspections should eliminate this type of discrepancy.

Part total time-573 hours.

GRUMMAN AMERICAN

Grumman American; Models AA-1B, AA-1C, AA-5, and AA-5B; Safety Belt AD; ATA 2510

While conducting an annual inspection, the technician discovered safety belts installed which were not in compliance with Airworthiness Directive (AD) 79-16-02.

The submitter stated this was the third set of noncompliant safety belts he has found in the past year. The safety belts (Models 111040-1, -2, -3, -4, and -8) covered by AD 79-16-02 were

distributed by Indiana Mills And Manufacturing, Inc. These safety belts may be found installed in certificated aircraft other than those previously mentioned and experimental-built aircraft. AD 79-16-02 was effective August 2, 1979; therefore, it is apparent these safety belts were overlooked during many past inspections.

Owners, operators, and maintenance personnel should conduct a one-time inspection of their aircraft for the presence of these safety belts and comply with AD 79-16-02 immediately.

Part total time-1,132 hours.

MOONEY

Mooney; Model M20E; Chaparral; Wing Spar Damage; ATA 5711

During an annual inspection, a maintenance technician discovered damage on the left outboard wing. While replacing the outboard wing assembly, the technician found severe wing spar corrosion.

Intergranular corrosion attacked the lower spar cap on the stub spar from wing station 33 outboard. The spar cap damage was well beyond repairable limits and the part was replaced. The structural integrity of the left wing was seriously compromised by this defect and could have allowed in-flight separation of the outer wing section. The submitter did not give the source or cause for the corrosion.

Part total time-3,503 hours.

Mooney; Model M20K; Engine Mount Damage; ATA 7120

During an annual inspection, the maintenance technician discovered the left forward engine lord mount was severely corroded.

Residue from the engine exhaust system covered the lord mount and was blamed for the corrosion damage. The exhaust system was leaking at a slip joint. The submitter did not give the condition of the slip joint or the cause of this defect.

Part total time-2,222 hours.

PIPER

Piper; Model J3-C65; Cub; Wing Strut Defects; ATA 3211

During an annual inspection, the technician discovered a crack on the base of the mounting lug on the aft right wing strut/main landing gear attachment fitting (P/N20401-01). After peeling off the remaining dope finish from the fitting, he found another crack. This prompted a closer inspection of the left wing strut where he found two additional cracks.

The submitter stated that previous aircraft damage caused these cracks. He recommended painting the strut fittings instead of covering them with the dope finish.

Part total time-3,879 hours.

Piper; Model PA23-250; Aztec “E”; Landing Gear Failure; ATA 3230

When the pilot selected the landing gear to the “down” position, he lost primary hydraulic system pressure and the gear remained in the “up” position. He used the emergency CO^2 gear extension system and the auxiliary hand pump; however, they failed to produce the desired result. The flight culminated in a “gear-up” landing accident.

An inspection by maintenance personnel revealed that a hydraulic line attached to the left landing gear sequence valve had been penetrated by chafing action. The line is located behind a panel on the left side and chafed hard against the left rudder cable which passes below the line. The line was chafed over approximately a 2-inch area. When the hydraulic line was penetrated, all the primary hydraulic system fluid escaped, depleting the system. When the emergency CO^2 system was activated, the cable housing to

the priority valve slipped causing insufficient pressure to pull the pin on the priority valve. The CO^2 pressure took the path of least resistance, escaping through the penetrated hydraulic line. The use of the auxiliary hand pump depleted any remaining hydraulic fluid.

The location of this defect makes proper inspection difficult; however, the submitter suggested that removal of the seats, side upholstery panel, and trim to facilitate inspection is necessary and should be accomplished during scheduled inspections. Due to the seriousness of this defect, we recommend that all operators conduct a "one-time" inspection on both the right and left sides to determine adequate clearance is maintained between the primary hydraulic line and the rudder cables, electrical wires, and other plumbing.

Part total time-9,516 hours.

Piper; Model PA23-250; Aztec "B"; Fuel Pump Failure; ATA 7314

The engine fuel pump (P/N 41271) failed, and the technician replaced it with a new part. During a subsequent engine run, the new fuel pump failed after 2 minutes of operation.

The technician removed the pump, and discovered that the pump arm was broken. The pump arm failed at the pivot hole and fell into the engine accessory case. An examination of the pump arm indicated it failed because of improper installation. He based this conclusion on the severity of the fracture and marks on the broken pump arm. It appeared the pump arm was beside the plunger when the pump body was secured.

Part total time-0 hours.

Piper; Model PA28-140; Cherokee; Fuselage Structural Defects; ATA 5310

The submitter of this report conducted an annual inspection on two like aircraft, finding similar fuselage structural defects on each.

The technician found the aft fuselage entry step doubler (P/N 63452-004) corroded and cracked. He speculated a plugged drain hole caused this damage. The plugged drain hole allowed the accumulation of water, dirt, and other debris.

The submitter stated this condition seriously degrades the structural integrity of the fuselage and deserves close attention during inspections and maintenance.

Part total time not reported.

Piper; Model PA28-180; Cherokee; Electrical System Failure; ATA 2434

The pilot/owner experienced a total electrical system failure during a ground runup.

A maintenance technician investigated, finding that the electrical wire, (P/N MT275916G) coming from the alternator (battery) terminal to the main buss at the circuit breaker panel, chafed and shorted to a metal line. The electrical short welded the wire to the number 1 cylinder primer line. Although the primer line was not penetrated, a serious fire/explosion hazard could occur.

The submitter stated this condition deserves close attention for proper routing and chafing damage during scheduled inspections.

Part total time not reported.

Piper; Model PA28-235; Pathfinder; Rudder Control System Cracks; ATA 2720

During an annual inspection, the technician discovered cracks in the rudder control system.

Both of the lower front corners of the rudder pedal support (P/N 63451-000) were cracked. The cracks ran from the edge of the support to the front mount bolt holes. The submitter speculated the cracks resulted from the front two mount bolts not being properly torqued when they were installed. This should be an area of concern during scheduled inspections.

Part total time-2,268 hours.

Piper; Model PA31P; Navajo; Defective Engine Exhaust System; ATA 7810

The pilot reported the right engine manifold pressure was lower than normal.

A maintenance technician investigated and discovered the left exhaust system adapter (P/N LW10798) had cracked at the mounting flange. While installing a new exhaust adapter, the technician found the interconnecting exhaust pipe (P/N 78008) would not fit properly. He compared a new interconnecting exhaust pipe to the one removed. The comparison made it obvious that the original pipe was not correct for this installation. The pipe had been flattened in the bends, the bend radii were different, and the overall length was shorter.

The submitter stated the exhaust system adapter failed due to excessive preloaded stress that occurred when it was attached to the interconnect pipe. The origin of the incorrect interconnect pipe is unknown; however, the submitter referred to it as a "bogus" part.

Part total time unknown.

Piper; Model PA32-300; Cherokee Six; Engine Exhaust System Defect; ATA 7820

The pilot reported a reduction of engine power at 6,500 feet altitude and 75 percent power.

The technician could not duplicate this discrepancy during a ground operational test. While investigating further, he discovered an engine exhaust system muffler (P/N 68796-00) baffle was missing. He speculated the muffler baffle broke loose, restricted the expulsion of exhaust gases, and finally separated from the exhaust pipe.

Part total time not reported.

Piper; Model PA32R-301T; Turbo Saratoga; Reduced Engine Performance; ATA 7160

After a flight, the pilot related that the manifold pressure (MAP) suddenly dropped.

During an inspection, the technician discovered that the engine air intake tube (P/N 41A21926) was broken where an adapter elbow was attached. The adapter elbow was welded to the air inlet tube, and the crack developed adjacent to the weld. The reduction in MAP was attributed to a 1-inch diameter hole in the air inlet tube that resulted from the separation of the adapter. One should give this area close attention during inspections, and any anomaly should be corrected before further flight.

Part total time-19 hours.

Piper; Model PA34-200; Seneca; Engine Oil Leak; ATA 7921

After a landing for refueling during a cross-country flight, the pilot noticed engine oil dripping from the right engine cowling.

A technician discovered the right engine oil cooler (P/N 10557) was chafing against an exhaust system pipe. The chafing action produced a hole in the oil cooler and allowed engine oil to escape. During further investigation, he found the oil cooler supports and structure had multiple cracks. The weakened structure allowed the oil cooler to drop down against the exhaust pipe. This defect produced loss of engine oil; however, it also created the potential for engine failure and fire. The submitter suggested maintenance personnel conduct thorough inspections and maintenance.

Part total time not reported.

HELICOPTERS

BELL

Bell; Model 206 Series; Structural Defects; ATA 5312

Information for the following article was taken from a Service Difficulty Advisory (SDA) (AV-1999-03R1) issued by Transport Canada.

An SDA reported the discovery of cracks under the nut plates on the passenger seat bulkhead frame (P/N 206-033-107-10SC).

Further investigation revealed the correct attachment hardware (P/N 120-079-10-12, screw, and P/N 140-017-10SC, washer) was replaced with unauthorized hardware (P/N AN3, bolts, and P/N AN970, washers). The unauthorized bolts were long enough to cause an indentation in the bulkhead frame resulting in fatigue cracking. Also, cracks were found on the inner skin adjacent to the frame. This use of unauthorized hardware caused a serious degradation of the helicopter's structural integrity.

This type of defect can only be found by removing the interior. It is highly advisable that all operators of like helicopters conduct a one-time inspection for the presence of unauthorized hardware. If any nonstandard hardware is found, the technician should inspect the bulkhead frame for distortion and/or cracking.

Part total time not applicable.

Bell; Model 206B; Jet Ranger; Main Rotor Blade Damage; ATA 6210

During operation, the weight installed in a main rotor blade dislodged causing extreme damage to the blade.

The weight struck the main rotor blade tip cap bending the trailing edge outboard approximately 30 degrees. Approximately 1 inch of the weight protruded through the outboard end of the spar and the upper and lower blade skins "ballooned" out from the impact force of the weight. The technician removed the main rotor blade assembly and sent it to the manufacturer for a complete analysis and determination for the cause of this incident. At the time of this report the results of the manufacturer's evaluation were not complete. If further information is obtained it will appear is a future edition of this publication.

Part total time-2,769 hours.

Bell; Model 206BIII; Jet Ranger; Governor Failure; ATA 7323

A repair shop received a helicopter with a report that during cruise flight, the power turbine rotor speed dropped to 90 percent and would not recover. To recover rotor speed, the pilot lowered the collective and executed a power-on recovery landing.

An inspection by the repair shop revealed the governor (P/N 23065121) spool bearing, in the flyweight assembly, failed. The inside of the drive body was covered with metal shavings and pieces of the bearing, and the Teflon tube was contaminated and scored. The cam follower was severely worn and the four lever bearings and flyweight bearings were dented and very rough. The submitter did not offer a cause for this damage.

Part total time since overhaul-1,266 hours.

Bell; Model 407; Defective Mast Bearing Nut; ATA 6230

While replacing a leaking mast seal (P/N 28905-3499), the technician discovered a groove was worn in the mast bearing nut (P/N 406-040-090-103).

When the technician removed the mast bearing nut, he found it was only hand tight. The manufacturer's technical data requires a torque of 450 foot-pounds on the nut. The submitter stated this is the second occurrence he has experienced involving a mast seal leak and nut damage.

Part total time-1,460 hours.

Bell; Model 407; Oil Cooler Blower Failure; ATA 6510

Approximately 3 minutes prior to landing, the pilot experienced a severe vibration and heard a loud abnormal noise. After completing a safe landing, the pilot summoned maintenance personnel.

A maintenance technician discovered that the oil cooler blower shaft aft bearing (P/N 407-340-339-101) had failed. The inner and outer bearing races, as well as the ball bearings, had separated damaging the impeller and the blower assembly shaft. It is the submitter's opinion that the bearing failed because of an overheat condition. The overheat may have been caused by lack of lubrication. This bearing was the "new" type (blue seal).

Part total time-475 hours.

MCDONNELL DOUGLAS

McDonnell Douglas; Model 500N; Antitorque Control System Failure; ATA 6220

While examining the wreckage following an accident, the evidence led the investigator to suspect the main rotor antitorque system failed.

The main rotor antitorque system push-pull thruster control cables (P/N's 500N7201-5 and -37) broke at the swivel ball joint. Input on the right control pedal caused bowing of the internal cable wire and did not produce a change in the thruster direction. The pedal input allowed the outer-cable housing to separate approximately 2.95 inches. This might be an area for special attention during scheduled inspections.

Part total time-4,002 hours.

POWERPLANTS AND PROPELLERS

PRATT & WHITNEY

Pratt & Whitney; Model JT8D-9A; Turbine Failure; ATA 7240

This engine was repaired and returned to service a short time before it was removed and sent to an FAA-certified repair station due to turbine failure.

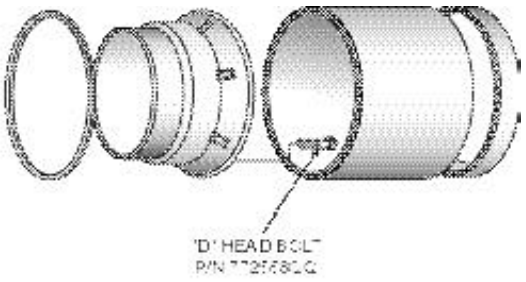
During an investigation, the technician discovered that the head of a "D-head" bolt (P/N 772568QQ) was ingested causing failure of the turbine section of the engine. The bolt, which is used to attach the combustion chamber outer case to the diffuser case, failed at the junction of the bolthead and the shank. (Refer to the following illustration.) Authorities determined that bolt failures are caused by liquid metal embrittlement of the base metal. The embrittlement occurs during the nickel cadmium plating process when the bolt is manufactured.

The FAA issued Flight Standards Information Bulletin (FSIB) 99-07 for airworthiness (FSAW) which deals with this subject and identifies the origin, lot numbers, and quantity of the suspect bolts delivered. A total of 79,690 bolts are included in the suspect lot numbers. FSIB 99-07 is available on the internet at <http://www.faa.gov.avr/afs/fsaw/fsaw9907.doc> and should be consulted for specific information. The FAA Service Difficulty Reporting Program data base lists a total of six reported engine failures resulting from defective bolts. These bolts may be installed on Pratt & Whitney Models JT8D-1 through -17AR and JT8D-200 series engines

which are primarily used on Boeing B727 and B737, and McDonnell Douglas DC-9 and MD-80 aircraft.

We urge all concerned operators to take immediate action to purge suspect bolts from their stock in accordance with FSIB 99-07.

Part total time-156 hours.



TELEDYNE CONTINENTAL

Teledyne Continental; Model TSIO-360-KB; Engine Oil Leak; ATA 8520

During a cross-country flight, a Piper Model PA34-220T aircraft developed an oil leak on the left engine. The pilot landed safely at a nearby airport and summoned maintenance personnel.

After cleaning the engine, the technician ran the engine and found oil coming from the propeller shaft area. The propeller "O-ring" seal was checked and found serviceable. After further investigation, the technician discovered what appeared to be a crack on the crankshaft (P/N 643627) just aft of the propeller flange. A small metal chip was found inside the crankshaft which prompted a dye-penetrant inspection. The dye check confirmed the suspected crack which ran approximately 90 degrees around the crankshaft diameter.

A review of the engine maintenance records revealed that 27.7 hours prior the engine was in a repair shop for a propeller strike. The submitter speculated the crack occurred during the previous propeller strike and was not found during the inspection.

Part total time-864 hours.

TEXTRON LYCOMING

Textron Lycoming; Model O-360-A3A; Spun Bearing; ATA 8520

This engine was installed in a Piper Model PA28-180 aircraft. The pilot reported that during flight, the engine lost oil pressure and he made a safe emergency landing.

While disassembling the engine, the technician found that number 4 rod bearing turned (spun) in the rod journal. The spinning bearing created excessive heat which culminated in the rod penetrating the side of the engine case. From the available evidence, it was impossible to determine the exact cause of this defect. It could have been caused by insufficient rod cap torque, a defective bearing, lack of lubrication, a defective rod or cap, or a combination of these and other defects.

Part total time-3,450 hours. Time since overhaul-1,924 hours.

Textron Lycoming; Model O-540; Excessive Metal in the Engine Oil; ATA 8520

This engine was installed in a Robinson Model R-44 helicopter. During routine maintenance, the technician discovered excessive metal in the engine oil screen and filter.

The engine was removed and during disassembly, the flange of a shaft (P/N 71668) which holds a gear (P/N 71652) was found broken. The shaft flange had sheared off at the bolt and stud locations. The broken flange material caused major damage to all the crankcase and accessory section housing gears. The submitter did not determine a cause for

this defect; however, he stated the engine would have suffered a catastrophic failure soon after the next start.

Part total time-1,500 hours.

ACCESSORIES

EASTERN AERO MARINE LIFERAFT

During an inspection of an Eastern Aero Marine, T12 liferaft, the technician discovered that the temporary web ties were still in place.

The temporary web ties are used to aid in the packing process and should be removed prior to approving the unit for return to service. Installation of the temporary web ties will seriously impair the serviceability of the unit. The temporary web ties may also cause damage to the liferaft during activation, and make the liferaft unusable. Evidently, this liferaft was in service for some time and had undergone previous periodic inspections which failed to reveal and resolve this defect.

All users of emergency equipment are cautioned to use the proper inspection and repair data given by the manufacturer during inspections and maintenance. When emergency equipment is used, life may depend on its proper operation!

Part total time not reported.

AIR NOTES

UNSAFE MAINTENANCE PRACTICE

Recently, we received a letter from a reader who brought to light an age-old safety issue concerning an unsafe maintenance practice.

Even from the early days of aviation, mechanics, pilots, attendants, and others, when presented with cleaning up a mess resorted to the aircraft fuel tank for a supply of “cleaning solvent.” Av-Gas works quite well for cleaning oil spots, dirt, excess adhesive, and grime in general from aircraft surfaces as well as the hangar floor. Some of the factors leading to the use of AV-Gas for a cleaning solvent were that it was very effective, cheap, and readily available.

Is there one among us who is not guilty? Hold your hands high — what, no one! In the days of old, I once had a friend who used 115/145 grade Av-Gas to refill his “Zippo,”® and I’m sure there have been many other innovative uses contrived by other people!

The bit of “tongue-in-check” levity above is not intended to lessen the importance and seriousness of this subject which has been responsible for the loss of many lives and the destruction of aircraft and facilities. Even though this is the way we have always done things, it does not reduce the enormous safety hazard involved with the improper use of Av-Gas. Aviation fuel is manufactured for the purpose of causing an explosion, hopefully within the confines of an engine cylinder. Therefore, the fire and explosive nature of Av-Gas should be given its due respect and used only for the purpose for which it was manufactured. When misused, any source of ignition can, and probably will, result in disastrous events. Ignition sources may not be obvious, and they may disguise themselves. Static electrical discharges are one example which is prevalent during cold, dry conditions. The value of a human life, not to mention valuable property, should never be placed in peril by complacency.

In recent times, the concerns for the environment in which we, and generations to come, are required to live have become common knowledge. Misuse of Av-Gas can produce noxious fumes, contaminate the earth, water, and air; and present a slipping hazard on a hangar floor.

Using the proper cleaning solvent correlates to the use of properly-approved aviation parts for replacement. For every application, a procedure or product has been developed which should be accepted and adhered to without arbitrary deviation. Therefore, I implore you to resist the practices of the past, obtain the proper cleaning solvent for the task at hand, and use it in accordance with the instructions provided by the manufacturer.

To the anonymous reader who thoughtfully brought this subject to our attention, we offer our sincere appreciation.

SERVICE DIFFICULTY PROGRAM DATA AVAILABLE ON THE INTERNET

The FAA, Service Difficulty Reporting (SDR) Program is managed by the Aviation Data Systems Branch, AFS-620, located in Oklahoma City, Oklahoma. The information supplied to the FAA in the form of Malfunction or Defect Reports, Service Difficulty Reports, or by other means, is entered into the SDR data base. This information has been available to the public through individual written request. This method has provided the aviation public with an invaluable source of data for research or finding specific problems and trends.

The Service Difficulty Reporting Program relies on the support of the aviation public to maintain the high quality of data. AFS-620 has included the SDR data on an Internet web site, which is now available to the public. Using the web site will expedite the availability of information. The Internet web site address is:

http://av-info.faa.gov

On this web site, select "Aircraft" along the top of the page, next select "Service Difficulty Reporting," and then select "Query SDR Data." This web site is now active; however, it is still under development and improvements are being made. We ask for your patience, ideas, and suggestions. If you find the web site useful, let us know. Also, spread the word about the availability of information on the web site. To offer comments or suggestions, you may contact the web master or call Tom Marcotte at (405) 954-4391.

Please remember that the information contained in the SDR data base is only as good as the input we receive from the aviation public. Also, the data used in production of this publication is derived from the SDR data base. In that regard, we solicit and encourage your participation and input of information.

This publication, as well as many other publications, was previously included on the "FedWorld" internet site. The FedWorld site is scheduled for termination on April 15, 2000. The data previously listed there is presently being transferred to the "av-info" web site.

ELECTRONIC AIRWORTHINESS DIRECTIVES

In the past, we have published the Airworthiness Directives (AD's) that were issued during the preceding month. Now, the AD's have been included in the ever-growing volumes of electronic media information systems.

The internet site for AD's is:
<http://av-info.faa.gov>

This site opens the FAA Flight Standards Service, Aviation Information web site home page. There are six selections across the top of the page, and the "Aircraft" selection will take you to the page where the AD's are located.

ADDRESS CHANGES

In the past, the Designee Standardization Branch (AFS-640) maintained the mailing list for this publication. Now, the Government Printing Office (GPO) sells this publication and maintains the mailing list; therefore, please send your address change to:

U.S. Government Printing Office
ATTN: SSOM, ALERT-2G
710 N. Capital Street N. W.
Washington, DC 20402

You may also send your address change to GPO via FAX at: (202) 512-2168. If you FAX your address change, please address it to the attention of: **SSOM, ALERT-2G**.

Whether you mail or FAX your address change, please include a copy of your old address label, and write your new address clearly.

SUBSCRIPTION FORM

Many of our readers voiced their concern when, due to a budget reduction, it was necessary to stop printing and distributing paper copies free of charge.

The Government Printing Office (GPO) agreed to print and distribute the Alerts. However, there will be a 1-year subscription charge for this service. The charge will be $25 per year for domestic mailings and $31.25 per year for foreign mailings. For your convenience, a subscription form is included in this publication.

IF YOU WANT TO CONTACT US

We welcome your comments, suggestions, and questions. You may use any of the following means of communication to submit reports concerning aviation-related occurrences.

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You can access current and back issues of this publication from the internet at:
http://www.mmac.jccbi.gov/alerts

This web site also has view, search, E-Mail, and M or D submit functions.

AVIATION SERVICE DIFFICULTY REPORTS

The following are abbreviated reports submitted between January 25, 2000, and February 28, 2000, which have been entered into the FAA Service Difficulty Reporting (SDR) System data base. This is not an all inclusive listing of Service Difficulty Reports. The full SDR reports can be found on the internet at: <http:// www.fedworld.gov/pub/faa-asi/faa-asi.htm>. This internet address takes you to the FAA ASI Library and the SDR reports are listed by weekly entries. This data base is maintained by the FAA, Regulatory Support Division, Aviation Data Systems Branch, AFS-620 located in Oklahoma City, Oklahoma. The mailing address is:

FAA
Aviation Data Systems Branch, AFS-620
PO Box 25082
Oklahoma City, OK 73125

These reports contain raw data that has not been edited. If you require further detail please contact AFS-620 at the address above.

FEDERAL AVIATION ADMINISTRATION

Service Difficulty Report Data

Sorted by Aircraft Make and Model then Engine Make and Model

This Report Derives from Unverified Information Submitted By the Aviation Community without FAA review for Accuracy

ACFT MAKE	ENG MAKE	COMP MAKE	PART NAME	PART CONDITION	DIFF-DATE	T TIME
ACFT MODEL	ENG MODEL	COMP MODEL	PART NUMBER	PART LOCATION	FAA REPORT NO.	TSO
REMARKS						
BELL	ALLSN	ALLSN	LINE	DECAYED	01/25/2000	
206B	250C20	250C20	70010V000V142	FUEL SYSTEM	2000021900550	
(AU) FUEL LINES HAD DECAYED TO THE POINT THAT RUBBER WAS COMING THROUGHTHE BRAID. THESE SMALL PIECES OF RUBBER CAUSEDFUEL CHECK VALVES TO STICK OPEN AND CAUSED LOW PRESSURE FUEL PRESSURE READINGS. NEW FUEL HOSES INSTALLED.						
BELL			TRANSCEIVER	DAMAGED	01/28/2000	
206B3			064101900	COCKPIT	2000021200045	
RADIO IS BROKEN, DAMAGED ANTENNA JACK.						
BELL			INDICATOR	INOPERATIVE	01/28/2000	
206B3			206075681003	DUAL TACH	2000021200046	
DUAL TACHOMETER INDICATOR IS INOPERABLE, TURBINE SIDE LOW, INSTALLED AND GROUND RUN.						
BELL			GEAR	FLAKING	01/28/2000	
206B3			2060401461	M/R GEARBOX	2000021200056	
GEAR IS FLAKING.						
BELL			HOSE	LEAKING	02/04/2000	
206B3			700096000T302A	ENGINE OIL SYS	2000021200591	
HOSE IS LEAKING.						
BELL			INDICATOR	STICKING	02/15/2000	
206B3			206075681003	DUAL TACH	2000021900623	
DUAL TACHOMETER INDICATOR HAD STICKING NEEDLES.						
BELL	ALLSN		COUPLING	CORRODED	02/03/2000	
206L3	250C30P	23035128	23032345	N1	2000021900012	
RECEIVING INSPECTION REVEALED PART NOT PRESERVED AT MANUFACTURER CAUSING RUST. CLEANED, INSPECTED AND PRESERVED PART.						
BELL			BEVEL GEAR	CRACKED	02/01/2000	3185
206L4		206040004115	406040021101	TRANSMISSION	2000021900001	
TRANSMISSION LOWER CHIP LIGHT ILLUMINATED IN-FLIGHT. AFTER LANDING, INSPECTION REVEALED FAIRLY LARGE FERROUS CHIP THAT APPEARED LIKE PIECE OF GEAR TOOTH. TEAR DOWN INSPECTION REVEALED INPUT SPIRAL BEVEL GEAR CRACKED 360 DEGREES THROUGH THE RING. THE CRACK PATH EXTENDED THROUGH ONE BOLT HOLE.						

BELL	ALLSN		BEARING	FAILED	02/03/2000	6149
206L4	250C30P	23035178	23031219	NR 3 & 4	2000021900010	

ENGINE REMOVED DUE TO CYCLED OUT. GEARBOX REPAIRED DUE TO CEBA72-3217R-2. SERIAL NUMBERS REMOVED ARE MP04281 AND MP04370. REPLACED WITH SERIAL NUMBERS JJ02784 AND JJ02743.

BELL		BEARING	SCRATCHED	01/28/2000
212		212311009101	T/R DRIVE	2000021200048

INNER RACE IS SCRATCHED.

BELL		BEARING	SCORED	01/28/2000
212		212311010101	T/R DRIVE	2000021200051

INNER RACE IS SCORED.

BELL		BEARING	WORN	02/04/2000	1152
407	407012101111		T/R BLADE	2000021900016	

WORN FEATHERING BEARINGS. SERIAL NUMBERS REMOVED ARE A-2248 AND A-2252. REPLACED WITH SERIAL NUMBERS A-2099 (DMR NR 6861800) AND A-2098 (DMR NR 6861801).

BELL		BEARING	WORN	02/04/2000	2149
407		407001524105	M/R BELLCRANK	2000021900017	

BELLCRANK HAD WORN BEARINGS.

BELL		BEARING	DAMAGED	02/04/2000
407	406040320101	407340339103	MAIN ROTOR	2000021900018

UNABLE TO BALANCE. SERIAL NUMBERS REMOVED ARE H99-1801 AND H99-1785.

BELL	SHAFT	DAMAGED	02/04/2000
407	406040320101	COOLER BLOWER	2000021900019

UNABLE TO BALANCE SHAFT ASSY.

BELL	INDICATOR	FAILED	02/04/2000
407	407375006101	COCKPIT	2000021900020

LCD DISPLAY WENT BLANK IN CRUISE FLIGHT.

BELL	INDICATOR	ERRATIC	02/04/2000
407	407375006101	COCKPIT	2000021900021

ERRATIC ON GROUND AND FAILS IN-FLIGHT.

BELL	BEARING	DAMAGED	02/04/2000
407	407340339103	MAIN ROTOR	2000021900023

UNABLE TO BALANCE DUE TO BEARING VIBRATION. SERIAL NUMBERS REMOVED ARE J98-1872 AND J98-1857.

BELL	SHAFT	WORN	02/04/2000
407	406040320101	COOLER BLOWER	2000021900024

SHAFT ASSY HAD WORN SPLINES.

BELL	BEARING	ROUGH	02/04/2000
407	407340339103	MAIN ROTOR	2000021900025

ROUGH BEARINGS. SERIAL NUMBERS REMOVED ARE H98-2216 AND H98-2303.

BELL	SHAFT	WORN	02/04/2000
407	406040320101	COOLER BLOWER	2000021900026

SPLINES WORN ON SHAFT ASSY.

BELL	BEARING	ROUGH	02/04/2000
407	407340339103	MAIN ROTOR	2000021900030

ROUGH BEARINGS. SERIAL NUMBERS REMOVED ARE H98-2243 AND H98-2317.

BELL		BEARING	WORN	02/04/2000
407	407012101111	406312100101	TAIL ROTOR	2000021900031

BEARINGS WORN.

BELL	HOUSING	CRACKED	02/04/2000
407	206061432116	BLOWER	2000021900033

BLOWER HOUSING CRACKED.

BELL	SWITCH	FAILED	02/04/2000
407	407362005103	COCKPIT	2000021900034

LOW LEVEL LIGHT CAME ON WITH 800 POUNDS FUEL.

BELL	FITTING	GALLED	02/04/2000
407	206061249001	ENGINE COWL	2000021900035

FITTING HAD GALLED THREADS.

BELL	COVER	WORN	02/04/2000
407	206050247131	MLG	2000021900036

FLOAT COVER ASSY WORN.

BELL		BEARING	WORN	02/04/2000	1152
407	407012101111	406312100101	TAIL ROTOR	2000021900037	

WORN BEARINGS.

BELL	CARBON SEAL	LEAKING	02/04/2000
407	406340102101	FREE WHEEL	2000021900038

CARBON SEAL LEAKING.

BELL	BEARING	WORN	02/04/2000	1325
407	407010206103	MAIN ROTOR	2000021900041	

WORN BEARINGS.

BELL	DUCT	CRACKED	02/04/2000	
407	407062021101	EXHAUST	2000021900042	

DUCT CRACKED.

BELL	RELAY	FAILED	02/04/2000	
407	SM20ACD300A21	COCKPIT	2000021900043	

FAILED TO START THREE TIMES WITH NO START OR IGNITION LIGHT.

BELL	WINDOW	CRACKED	02/04/2000	73
407	407030607101	CABIN	2000021900044	

WINDOW CRACKED DUE TO SCREWS TIGHTENED TOO TIGHT.

BELL	COVER	WORN	02/04/2000	
407	206050247131	MLG	2000021900045	

FLOAT COVER ASSY WORN.

BELL	HOSE	CHAFED	02/04/2000	
407	70079H100F210	MLG	2000021900046	

HOSE ASSY CHAFED AT END.

BELL	HOSE	TWISTED	02/04/2000	
407	70079H100F210	MLG	2000021900047	

HOSE ASSY TWISTED.

BELL	LINK	WORN	02/04/2000	
407	406312103101	TAIL ROTOR	2000021900049	

BEARINGS WORN.

BELL	HOSE	BROKEN	02/04/2000	
407	70079H100F210	MLG	2000021900050	

NIPPLE BROKEN OFF IN B-NUT ON HOSE ASSY.

BELL	BIPOD MOUNT	WORN	02/04/2000	
407	407060111101	ENGINE	2000021900051	

BIPOD MOUNT HAD BEARINGS WORN.

BELL	HOUSING	DAMAGED	02/04/2000	
407	206061432121	BLOWER	2000021900052	

BLOWER HOUSING HAD WORKING AND MISSING RIVETS.

BELL	LATCH	BROKEN	02/04/2000	
407	20898422	CREW DOOR	2000021900053	

LATCH ASSY HAD SPRING BROKEN.

BELL	IDLER ASSY	WORN	02/04/2000	
407	407001523101	M/R CONTROL	2000021900054	

IDLER ASSY HAD BEARING WORN.

BELL	HOSE	KINKED	02/04/2000	
407	70079H100F210	MLG	2000021900055	

HOSE ASSY BENT AND KINKED.

BELL	SKID TUBE	WORN	02/04/2000	
407	206053184121	MLG	2000021900056	

SKID TUBE ASSY WORN.

BELL	SKID TUBE	WORN	02/04/2000	
407	206053184122	MLG	2000021900057	

SKID TUBE ASSY WORN.

BELL	HOSE	LEAKING	02/04/2000	
407	70079F045Z083	MLG	2000021900058	

HOSE ASSY LEAKS AT FITTING.

BELL	LINK	WORN	02/04/2000	
407	406312103101	TAIL ROTOR	2000021900059	

LINK HAD WORN BEARING.

BELL	SWITCH	FAILED	02/04/2000	
407	407362013101	ENGINE	2000021900060	

LIGHT WILL NOT ILLUMINATE IN OFF POSITION.

BELL	SPACER	WORN	02/04/2000	
407	406010421103	CYCLIC	2000021900061	

SPACER HAD WORN BUSHING ON DRIVE LINK.

BELL	BEARING	WORN	02/04/2000	

407		407310101101	MAIN ROTOR	2000021900064	

BEARING WORN AND SHEARED RUBBER. SERIAL NUMBERS REMOVED ARE LK5157 AND LK5154. REPLACED WITH SERIAL NUMBERS LP7115 (DMR NR 65607101) AND LP5718 (DMR NR 65607102).

BELL		INDICATOR	INTERMITTENT	02/04/2000	
407		407375005101	TRANS OIL TEMP	2000021900069	

PRESSURE SIDE GOES INTO TEST MODE INTERMITTENTLY.

BELL	ALLSN	HMU	MALFUNCTIONED	02/03/2000	1217
407	250C47B	23069551	ENGINE	2000021900013	

HMU REMOVED DUE TO FADEC DEGRADE LIGHT AND FOUND ROLL PIN BROKEN UPON 300 HOUR BACKLASH

BELL	ALLSN	HMU	DAMAGED	02/03/2000	870
407	250C47B	23069551	ENGINE	2000021900014	

SHEARED DRIVE SHAFT PIN.

BELL	CAP	WORN	02/15/2000	
OH58A	206010455103	SWASHPLATE	2000021900626	

CAP IS WORN EXCESSIVELY.

BELL	COUPLING	CHIPPED	01/28/2000	
UH1H	2040406045	GEARBOX	2000021200047	

COUPLING HAS CHIPPED TOOTH.

BELL	SUPPORT	CRACKED	01/28/2000	
UH1H	2040300611	FUSELAGE	2000021200057	

SUPPORT IS CRACKED.

BELL	BEARING	LEAKING	01/28/2000	
UH1H	2040406235	M/R GEARBOX	2000021200058	

BEARING IS LEAKING.

BELL	VOLT	INOPERATIVE	02/11/2000	
UH1H	CSV115212A	DC SYSTEM	2000021900076	

VOLTAGE REGULATOR INOPERABLE, WILL NOT REGULATE.

BELL	VOLT	SHORTED	02/11/2000	
UH1H	CSV115212A	DC SYSTEM	2000021900077	

VOLTAGE REGULATOR SHORTED OUT.

BELL	LINEAR	INOP	02/15/2000	
UH1H	DYLM735011	ENGINE CONTROLS	2000021900622	

LINEAR ACTUATOR IS INOPERATIVE.

BOLKMS		HUB	MISMANUFACTURE	01/31/2000	2406
BO105S		10531729	TAIL ROTOR	2000021900618	

BEARING JOURNALS SLIGHTLY OVERSIZED FROM LAST REPAIR.

BOLKMS		BLADE	CHIPPING	01/31/2000	3719
BO105S		10531980	TAIL ROTOR	2000021900620	

TAILROTOR BLADES REPAIRED POG143564 4/99. PAINT CRACKED BEYOND LIMITS AND PAINT CHIPPING OFF.

CESSNA	LYC	SOLENOID	FAILED	01/25/2000
172M	O320E2D	S1579A2	BATTERY	2000021900536

(AU) THE AIRCRAFT LOST ALL ELECTRICAL POWER DURING CRUISE FLIGHT. THE AIRCRAFT LANDED SAFELY. MAINTENANCE PERSONNEL REPLACED THE BATTERY SOLENOID AND THE MASTER SWITCH.

CESSNA	STRATOFLEX	HOSE	MISMANUFACTURE	02/04/2000
207A		1118	FUEL SYSTEM	2000021900503

(AU) WHILE ASSEMBLING HOSE, FOUND THE END FITTING WOULD NOT INSTALL WITHOUT DAMAGING THE INNER HOSE LINER. THE HOSE WAS MEASURED AND FOUND TO BE AT THE BOTTOM RANGE OF THE MIL-H-8974 HOSE

DHAV	PWA	CABLE	WORN	02/02/2000
DHC3	PT6A27	C3CF5803	TE FLAP	2000021900554

(AU) DURING ROUTINE 100 HOUR INSPECTION, FOUND A CABLE THAT WAS SHOWING SIGNS OF WEAR. CABLE WAS REMOVED AND INSPECTED. SEVERAL BROKEN STRANDS WERE FOUND. IT SHOULD BE NOTED THE WEAR CAN ONLY BE SEEN WITH THE FLAPS IN THE FULL DOWN POSITION. WHEN FLAPS WERE UP, THE WEAR WAS COVERED BY A FAIRLEAD. CABLE WAS REPLACED.

HUGHES	DIMMER	INOPERATIVE	01/28/2000	
369D	369H64255	COCKPIT LIGHTS	2000021200044	

DIMMER CONTROL IS INOPERABLE, LIGHTS WILL NOT DIM.

HUGHES	DAMPER	DISCHARGED	02/04/2000	
369D	369D26301231	MLG	2000021200594	

MAIN LANDING GEAR DAMPER IS LOW.

HUGHES	PIPE	CRACKED	02/08/2000	
369D	369A8230503	EXHUAST	2000021900074	

EXHAUST PIPE IS CRACKED APPROXIMATELY 4 INCHES, AFT, INBOARD CENTER.

HUGHES DIMMER INOPERATIVE 02/11/2000
369D 369H64255 COCKPIT 2000021900621
DIMMER CONTROL IS INOPERATIVE, PANEL LIGHTS INOPERATIVE.

HUGHES EXHAUST PIPE CRACKED 02/15/2000
369D 369A8230503 ENGINE 2000021900624
EXHAUST PIPE CRACKED.

HUGHES EXHAUST CRACKED 02/15/2000
369D 369A8230504 ENGINE 2000021900627
RIGHT EXHAUST STACK IS CRACKED.

HUGHES EXHAUST CRACKED 02/15/2000
369D 369A8230504 ENGINE 2000021900628
RIGHT EXHAUST STACK IIS CRACKED.

HUGHES ALLSN BLADE DAMAGED 01/27/2000
369D 250C20B 369021100 MAIN ROTOR 2000021900535
(AU) M/R BLADES WERE FOUND TO HAVE DENTS THAT EXCEEDED THE .010 INCH LIMIT AND WERE LOCATED APPROXIMATELY 23-33INCHESFROM THE TIP. M/R BLADES SENT TO AN APPROVED REPAIR FACILITY FOR FURTHER INSPECTION. THE DENTS EXCEEDED THE ALLOWABLELIMTS. HOWEVER, THE LEADING AND TRAILING EDGES WERE NOT DAMAGED. M/R BLADES WERE SCRAPPED BECAUSE OF THE QUANTITY OF DENTS AND THE DISTANCE OF THE DENTS. IT IS NOT KNOWN HOW THIS DAMAGE OCCURRED.

HUGHES ALLSN EXCITER FAILED 01/28/2000 66
369D 250C20B 106149501 IGNITION SYS 2000021200042
EXCITER IS POWERLESS, WILL NOT EXCITE IGNITER.

HUGHES SWASHPLATE WORN 02/07/2000
369E 369D21800501 TAIL ROTOR 2000021200595
TAIL ROTOR PITCH CONTROL'S INNER BUSHING WORN BEYOND LIMITS.

RAYTHN PWA BEECH SWITCH FAILED 01/28/2000
200BEECH PT6A41 1003810061 NLG ACTUATOR 2000021900512
(AU) PILOTS REPORTED THAT THE NOSE LANDING GEAR DOWN AND LOCKED LIGHT DID NOT ILLUMINATE WHEN THE GEAR WAS SELECTED DOWN ON 2 OCCASSIONS. NOSE GEAR DOWNLOCK MICROSWITCH WAS REPLACED.

RAYTHN PWA AMSAFTYEQUIP BUCKLE FAILED 01/31/2000
99 PT6A28 1579510014 10153060497 SEAT BELT 2000021900540
(AU) LAP BELT BUCKLE WOULD NOT LATCH. MECHANISM INSIDE BUCKLE WAS JAMMED OPEN.

RAYTHN ALTERNATOR FAILED 01/25/2000 10
A36 649304 ENGINE 2000012900244
ELECTRICAL FAILURE DUE TO INTERNAL ALTERNATOR FAILURE WITH STRONG SMELL OF ELECTRICAL.

RAYTHN LYC LAMBELECTRIC ACTUATOR FAILED 02/03/2000
D95A IO360B1B 963800225 MLG 2000021900553 532
(AU) AFTER TAKEOFF, THE LANDING GEAR FAILED TO RETRACT. THE AIRCRAFT RETURNED AND A SUBSEQUENT INSPECTION REVEALED THAT THE LANDING GEAR MOTOR HAD FAILED THE MOTOR WAS REPLACED. THE SUBMITTER STATES THAT THE AIRCRAFT IS PRIMARILY USED FOR FLIGHT TRAINING SO IT OFTEN WOULD HAVE NUMEROUS

SKRSKY ALLSN BEARING FAILED 02/03/2000 6866
S76A 250C30S 23035179 230312081 NR 3 & 4 2000021900004
ENGINE REMOVED DUE TO CYCLED OUT. GEARBOX REPAIRED DUE TO CEBA72-3217R-2.

SKRSKY ALLSN BEARING FAILED 02/03/2000 6866
S76A 250C30S 23035179 23031458 NR 3 PINION 2000021900005
ENGINE REMOVED DUE TO CYCLED OUT. GEARBOX REPAIRED DUE TO CEBA72-3217R-2. SERIAL NUMBERS REMOVED ARE CG0230 AND CG0222. REPLACED WITH SERIAL NUMBERS JJ02757 AND JJ02739.

SNIAS SPIDER CRACKED 02/03/2000 41
AS350B 350A33200406 TAIL ROTOR 2000021900071
SPIDER ASSY CRACKED.

SNIAS COUPLING CRACKED 02/03/2000
AS350B2 350A35105901 ENG TO G/B 2000021900070
COUPLING-BUSHES CRACKED.

SNIAS BLOWER FAILED 02/03/2000
AS350B2 420800001 OIL COOLER 2000021900072
BLOWER NOT WORKING.

SNIAS TRANSMISSION WORN 02/03/2000 3016
AS350B2 350A37000402 MAIN ROTOR 2000021900073
COATING ON MAST WORN. P/N 704A33-651-158, S/N NR-1176; P/N 350A37-1290-03, S/N M4661 INCLUDED. (BUILT-UP UPPER TRANS.S/ PLATE).

ZINAIR	SLIP JOINT	LEAKING	01/28/2000	375
CH2000		EXHAUST	2000021900124	

PILOT REPORTED EXHAUST SMELL IN THE COCKPIT. UPON INVEST, FOUND A SLIP JOINT ABOVE AND FWD OF HEATER MUFF ALLOWING EXHAUST TO ENTER HEAT MUFF. AREA HAD EXCESSIVE EXHAUST STAINS AND SCAT HOSE ON INTAKE SIDE OF THE MUFF WAS BRITTLE AND HEAT DAMAGED. FACTORY INFORMED THERE IS A LOWER PRESSURE IN THE COWLING THAN IN THE HEAT MUFF AND EXHAUST SHOULD NOT ENTER THE MUFF. THIS THEORY DOES NOT HOLD UP IN THE FIELD. THE OPERATION OF CABIN VENTS, SLOW FLIGHT, FAST FLIGHT, AND CRUISE MAY CHANGE THESE PRESSURES. FACTORY STATED THEY HAVE A NEW DESIGN EXHAUST SYSTEM WITH DIFFERENT STYLE JOINTS AND CLAMPS. SUBMITTER SUGGESTED FACTORY MAKE ALL OWNERS AWARE OF POTENTIAL PROBLEM AND OFFER

OMB No. 2120-0003

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

MALFUNCTION OR DEFECT REPORT

OPER. Certificate No.
ATA Code
1. A/C Reg. No. N-

Enter pertinent data:	MANUFACTURER	MODEL/SERIES	SERIAL NUMBER
2. AIRCRAFT			
3. POWERPLANT			
4. PROPELLER			

5. SPECIFIC PART (of component) CAUSING TROUBLE

Part Name	MFG. Model or Part No.	Serial No.	Part/Defect Location

6. APPLIANCE/COMPONENT (*Item installed on the part*)

Comp/Appl Name	Manufacturer	Model or Part No.	Serial Number

Part TT	Part TSO	Part Condition	7. Date Sub.

8. Comments (*Describe the malfunction or defect and the circumstances under which it occurred. State probable cause and recommended actions to prevent recurrence.*)

Optional Information:

Check a box below, if this report is related to an aircraft:

☐ Accident; Date _____ ☐ Incident; Date _____

INSPECTOR OFFICE	OPERATOR DESIGNATOR
OTHER	SUBMITTED BY:
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FAR	
AIR TAXI	TELEPHONE NUMBER: ( ) —
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