It's That Time Of Year Again

Each year the changing colors of the leaves remind homeowners to do the pre-winter patching around the house and car owner's to change the anti-freeze and check the heater hoses.

And each year around the same time pilots and mechanics are reminded to readjust their approach to flying and maintaining aircraft. The season is here when fluids flow slower, breakable things get brittle, metal corrodes — and cold hands fumble worse.

One good early start to good wintertime preparation might be to stop and reflect. Reflect upon last winter. What were those things we were not going to forget this winter? Things suppliers were out of by the time we ordered them. Things that needed a lot of work because we didn't nip them in the bud. How about those things that could have been prevented had the pilots been more careful with the machinery — and we said we were darn sure going to clue them in on next time.

Well, it's next time right now. We need to adjust our mentality from one season to another. There's still time to check over the equipment and supplies situation, and to get to those little discrepancies on aircraft that earlier could "last the summer."

And what about those tips you put off giving to their lordships, the pilots? Remember, even though some seem less than approachable, most pilots think they are technical experts, so a little one-expert-to-another discussion can reap safety and operational rewards for all. Pilots don't like to hear engines miss or have landing gear stick any more than mechanics like to get dragged out on a windy, icy flight line to catch up on postponed maintenance work or to fix a problem a pilot could have prevented if he had had your advice earlier.

While you are reflecting, here is another aspect of aviation safety that, unfortunately, is all too frequently overlooked. When flights are completed, especially in spite of the efforts of the terrible winter weather monster, the pilots get most of the credit. Right now is a good time to look in the mirror and tell yourself that you realize you are just as responsible for the airplane safely getting from point A to point B, and as a professional you are able to pat yourself on the back for a job well done when the more "visible" people in the front office get the glory. The aviation mechanic is like the professional public relations man who just smiles to himself when the company executive gets all the credit for delivering the great speech written for him by you-know-who.

Back to winter. Perennial reminders start off with the heating system — especially for general aviation aircraft that are always threatened by exhaust gas leakage because of cracked or

loose heater muffs. Combine a thorough visual inspection with a carbon monoxide test.

Confined pockets of water anywhere can turn into miniature hydraulic jacks when the water freezes and expands. This can cause internal damage to wings and control surfaces, where even small accumulations of hidden ice can affect the balance of control surfaces and result in in-flight problems. Or how about the weight-and-balance effect of a big glob of ice in the tailcone of a lightplane that resulted from an enthusiastic wash job or a short thaw following a big storm? Drain holes, then, are another important winter consideration.

The workings of landing gear, even the down-and-welded kind, seem to suffer badly during the winter. Check the integrity of shields and boots that protect switches and actuating mechanisms so mud and slush — especially when frozen — don't interfere with the raising or lowering of these important aids to aircraft taxiing. Proper lubrication throughout the winter is another biggie here. With fixed gear, make sure any wheel fairings are removed until the spring thaw. If the owner complains about mud splattering on his clear airframe, remind him how dirty it will get when he lands with the wheels locked tight in a frozen block of ice inside the wheel covers and he skids into a snowbank.

The engine deserves its share of attention by both the mechanic and the pilot. Winter warmup and good operational practices all the way through to a careful cool down by the pilot can help the mechanic keep the engine in top shape. A good pre-winter consultation between maintenance and flying personnel can give each the chance to suggest preventive tips to the other. For instance, a pilot may mention that he plans to add an ice-preventative to the fuel which the technician may recognize as having a great appetite for eating through fuel cells and gaskets.

High aircraft utilization and safety are the aim of both pilots and mechanics. To what degree winter impairs normal operations is up to the implied contract of mutual responsibility between them.

NEW PRODUCTS

High-Resolution TV Borescope Aid

A highly accurate method of measuring the exact size of specific details or abnormalities from borescope images on a video monitor is claimed for the Video Caliper from Olympus Corporation (cover photograph, beneath TV monitor).

Used in conjunction with borescope images on a TV monitor, the new system superimposes a pair of horizontal and vertical caliper lines on the screen to define the edges of the part that is to be measured. The Video Caliper is said to measure close tolerance details with high-resolution (1,000-line) reti-

cules, a factor especially helpful for analysis of wear and corrosion progression, according to the manufacturer.

Graphic unavailable

Solid, dotted or dashed caliper lines measure for horizontal, vertical or diagonal distances with a digital readout convertible between english and metric units. There is provision for connection to an optional printer for recording measurement readings.

More information on the Video Caliper, Model Cue Micro 300, is available from Olympus Corp., Industrial Fiberoptics Div., 4 Nevada Drive, Lake Success, NY 10042 U.S. Telephone: 516-488-5888, or 714-670-8500.

Erosion Protection For Aircraft Components

The Industrial Coatings Division of Lord Corporation claims that its Chemglaze M-Line coatings protect aircraft components from the erosion caused by airborne dust, particulates, rain and sleet.

The polyurethane coatings are said to resist impact, abrasion, erosion, petrochemicals and solvents, and are not affected by ethylene glycol deicing solutions.

Lord Corp., Industrial Coatings Div., 2000 West Grandview Blvd., P.O. Box 10038, Erie, PA 16514-0038 U.S. Telephone: 814-868-3611.

No-Frills Pressure Washer Available

The Model 800 series of hot water pressure washers from The Hotsy Corporation is intended as a rugged, sturdy design that offers simplicity with full safety controls.

Graphic unavailable

The burner system is available with natural gas, LPG or diesel fuel and the washer incorporates polyethylene water and fuel tanks to prevent contamination. Included are an adjustable water temperature control and a ceramic plunger, positive displacement pump that develops four gpm at 1,200 psi.

The Hotsy Corp., 21 Inverness Way East, Englewood, CO 80112-5796

U.S. Telephone: 800-525-1976.

Vented Batteries For DC-9s and DC-10s

A complete line of vented nickel cadmium batteries for McDonnell Douglas DC-9 and DC-10 aircraft is now available from Saft America, Inc.

Graphic unavailable

The new nicad battery line joins previous models offered for the same two aircraft models. For both the DC-9 and DC-10, two 11-cell nicad batteries operate as a set, providing power for the auxiliary power unit to start the aircraft's jet engine. The batteries also have self-starting capabilities that allow the aircraft to start without the assistance of a ground crew or in emergency situations.

Saft America, Inc., 711 Industrial Blvd., Valdosta, GA 31601 U.S. Telephone: 912-247-2331.

Bolt Tester Uses Eddy Currents

The Verimet M1900 bolt hardness tester uses eddy currents — electrical currents induced in metal parts by magnetic fields — to check whether aircraft bolts meet the required strength standards.

Graphic unavailable

The portable, nondestructive testing system includes an eddy current generator/meter unit and either a spot probe or an encircling coil. Besides bolts, the unit can test gears, roller bearings, shafts, sprockets and other parts.

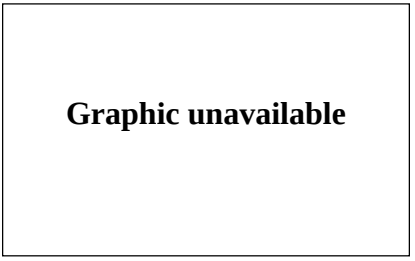
K. J. Law Engineers, Inc., 23660 Research Drive, Farmington Hills, MI 48024-1089 U.S. Telephone: 313-478-3150, 800-521-5245.

No-Countersink Flush Fasteners

A new sheet metal fastener is claimed to eliminate costly preparation of countersunk holes, yet provide a strong and efficient bond for even the thinnest materials.

The Thinhead Ribbed Rivnut fastener is produced by BF Goodrich for use with metal, fiberglass, plastics and composites. It has a straight-ribbed

shank that insures antirotation, a feature Goodrich says cannot be found in knurled- or smooth-shank fasteners.



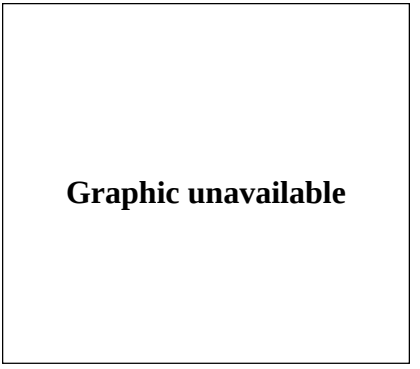
The fastener is available with or without the thread-locking design in sizes from 4-40 through 1/2-inch thread, open or closed end. It is made of steel, including 4037, and stainless steel, including nonmagnetic. It can be installed with standard BF Goodrich fastener tooling.

The BF Goodrich Co., 250 N. Cleveland-Massilon R., Akron, OH 44313-0501 U.S. Telephone: 216-374-2941.

Floor Coatings Meet Ecological Standards

The Tennant Company has announced a line of nonsolvent, water-based urethane industrial floor coatings that are claimed to meet high ecological standards.

Formulation of the Eco-Coatings line was designed to eliminate the hazardous waste potential and odors of solvent-based floor coatings. Available in four strengths, the coatings are said to provide abrasion resistance and gloss retention in a water-based finish



that will result in surfaces as bright and dirt-repellent as those prepared with other urethane coatings.

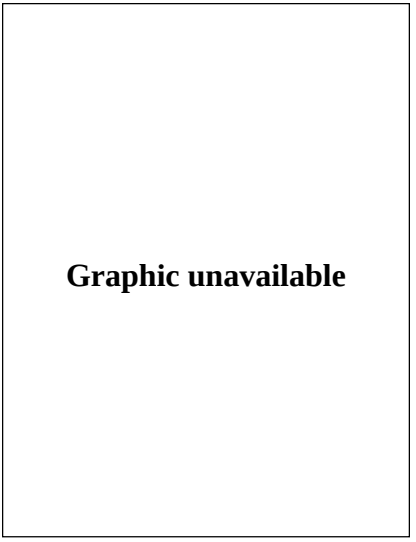
Tennant Co., P.O. Box 1452, Minneapolis, MN 55440 U.S. Telephone: 612-540-1638.

Emergency Battery Has 20-Year Life

The “Code:Red” general-purpose battery from Energetics is guaranteed to have a 20-year storage life.

Designed to produce 100 percent power when needed, the battery has a unique twist top that activates its energy producing chemicals.

The manufacturer claims that until energized, the Code:Red battery remains at peak potency and that, after activation, produces more power over a longer period than even a newly manufactured heavy-duty zinc-carbon battery, because the latter’s charge gradually deteriorates during shipping and storage.



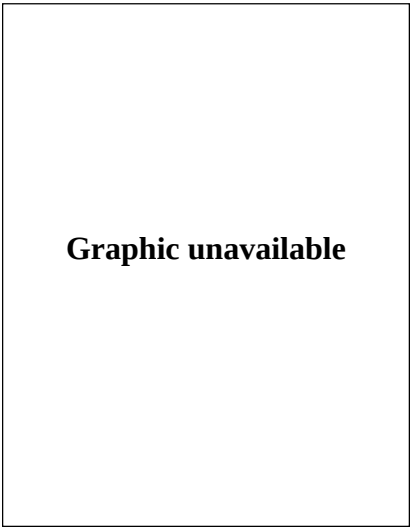
The waterproof battery contains no mercury and is unaffected by extreme temperatures during storage. It weighs 30 percent less than comparable heavy-duty batteries. Presently, it is available only in the "D" cell size, packaged in pairs for price of $6.95.

Energetics, 11959 Northrup Way, Bellevue, WA 98005 U.S. Telepone: 206-455-8410.

Catalog Lists Adhesives and Sealants

The Loctite Corporation offers a catalog of more than 25 adhesives, sealants and coatings. Products include four bonding materials, three pipe sealants, four threadlockers, two retaining compounds, two gasketing materials, four cleaners and primers, and four general maintenance products. Each description includes applications and use instructions.

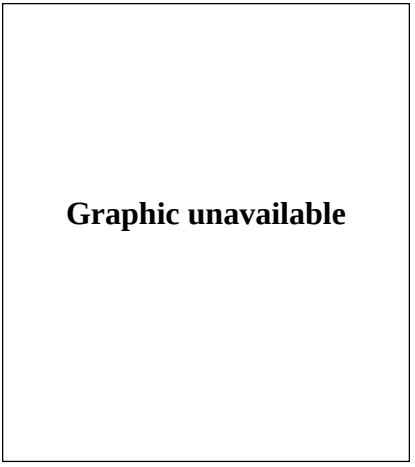
An 800-LOCTITE telephone number is offered for maintenance questions, and in-plant seminars are available.



The catalog may be obtained from Loctite distributors or from Loctite Corporation Marketing Services, 705 North Mountain Road, Newington, CT 06111 U.S. Telephone: 800-562-0560.

Fire-Retardant Aircraft Fabric

A noncorrosive and fire-retardant fabric for aircraft interiors has been introduced by Tapis Corporation. A new version of the original Ultrasuede, the new Ultrasuede HP (High Performance) is designed for seating as well as headliner applications.



For headliner use, the new material is treated with a noncorrosive flame retardant. It meets FAR 25.853 A and B requirements. For new seating upholstery use, it includes a flame retardant backing; the face requires no treatment. It meets Part 135 requirements.

Tapis corp., 893 McLean Avenue, Yonkers, NY 10704 U.S. Telephone: 914-237-5698.

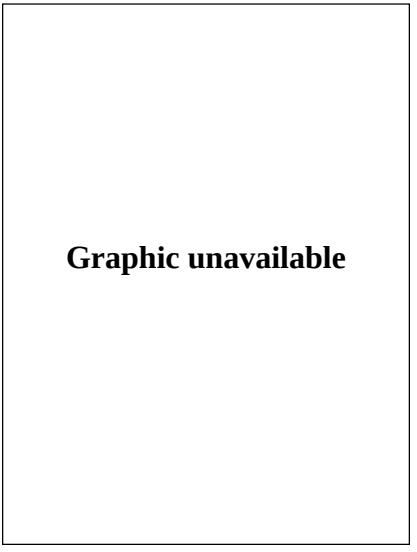
Aluminum Extrusion Catalog Offered

A 1,200-page comprehensive catalog lists cross references, and provides technical information and drawings on virtually all aircraft-quality aluminum extrusions.

Used extensively throughout the industry, the engineering and specifying catalog is claimed to be the single most complete source for in-depth technical information on existing extrusion shapes and alloys. Designed for ease of use, the catalog can be utilized to find additional technical information on a known extrusion, or it can be used to locate a particular extrusion if only the basic shape requirement is known.

In the front portion, the catalog lists all extrusions by customer or mill (over 50 different mills and airframe manufacturers are listed). In the back portion, the publication divides the extrusion shapes into six basic categories, and then provides dimensional information on all known variations. It allows instant cross-reference of shapes, airframe manufacturers' part numbers, and mill part numbers.

The catalog also provides a complete Army-Navy index, as well as numerous other tables commonly used by specifiers of aluminum extrusions.



For a free copy of this design, engineering, and purchasing catalog, contact: Tiernay Metals. 2600 Compton Blvd., Redondo Beach, CA 90278 U.S. Telephone: 800-421-1133.

MAINTENANCE ALERTS

An Epidemic of Landing Gear Problems

Recent accident reports from around the world reflect a rash of landings without all or part of the landing gear — aside from those instances where the gear selector failed to get itself activated.

With the coming of winter with its brittling cold, slush and ice, sand and chemicals, the potential for landing gear mechanical problems soars. Here are some examples of what happens when things go wrong:

Lockheed L-382-30. The aircraft suffered complete separation of the nose gear during landing. Inspection of the nose gear assembly revealed a complete circumferential fracture through the steering collar area of the shock strut assembly. Metallurgical analysis showed it was caused by progression of a preexisting crack that emanated from small corrosion pits on the outer surface of the strut.

The preexisting crack, in turn, was the result of the sequential progression of small fatigue cracks and stress corrosion cracking.

Socata Trinidad. Right landing gear collapsed on runway due to electrical failure.

Beech Baron. The left main gear remained in the locked up position. On landing, the aircraft sustained damage to the propeller, left flap and gear door.

Piper Aztec. The nose gear collapsed during landing. The airplane sustained damage to the nose, and both propellers were twisted.

Cessna 310R. The left main gear collapsed during landing. The aircraft sustained damage to the gear and possily also to the propeller.

Boeing 727. The right-hand landing gear of the airliner broke during touchdown. The plane skidded off the runway.

Cessna 310G. The aircraft landed wheels-up because the landing gear extended only half way. Aircraft sustained damage to propeller, fuselage and engine.

Rockwell Commander 114. The right-hand gear collapsed on landing and the aircraft swerved to the right. The airplane sustained damage to the wheel and the right-hand main frame was punctured.

Maule M4 (fixed gear). After a good three-point landing, the airplane was rolling at about 25 mph when the left wing dropped and directional control was lost. After the pilot applied

brakes, the aircraft swerved to the right and stopped. Inspection revealed that both tubes making up the A frame had separated at the weld near the axle. There was obvious corrosion on the fractured surfaces of both tubes. The left oleo strut had failed in bending in two places and the right oleo strut and A frame were bent. The airplane had a total of 4,800 hours.

Piper PA-32. During landing approach, the right main gear down light failed to illuminate when the gear was selected down. The pilot checked that the bulb was working by substitution and tried several maneuvers to get the gear down.

During two flybys, control tower observers said the gear appeared to be down, and the pilot chose to land. He made a gentle touchdown alongside an emergency vehicle; however, after rolling a little more than 150 feet the right main gear slowly retracted. The aircraft veered off the runway.

Later examination of the right gear mechanism showed corrosion and stiffness in some of the sidestay and down lock mechanism joints.

The airplane had stood in the open and been flown very little for nearly two years since its last annual inspection, and was being flown on a ferry permit.

Boeing 727. The jet made a gear-up landing when its landing gear failed. At least seven passengers were injured while evacuating the aircraft using the escape chutes.

Piper PA-23-250 Aztec. When the gear was selected in the down position, the nose gear indicator light failed to illuminate. The pilot returned the gear lever to the up position while he lowered the flaps, and then put the gear selector down again. Still, the nose gear light remained off, but the gear leg appeared to be extended when it was observed in the inspection mirror attached to the left engine cowling. The pilot recycled the gear through the neutral and down positions but the light stayed out.

The pilot elected to land. The nose wheel collapsed during the landing roll and caused damage to the propellers and the aircraft nose.

Later inspection found no mechanical problems but the downlock pivot was slightly stiff. This pivot has no grease attachment and is greased during assembly; later lubrication must be done by oiling.

Piper PA-30 Twin Comanche. The right main gear leg folded up after the aircraft landed. Later inspection showed that the side stay of the gear mechanism could not move overcenter to lock the gear in the down position. The pilot had stated that he had a normal green light, gear-down indication prior to the landing.

The down microswitch should not have allowed a down indication for an unlocked gear, but the mechanic who inspected the mechanism could not be certain whether it had been adjusted properly before the accident.

Beech B-58 Baron. After lowering the landing gear for landing, the pilot failed to get a down light for the right main gear. The control tower confirmed that the right gear appeared to be in the full up position. After several gear-lowering attempts, including manual extension, failed, the pilot made a successful gear-up landing on a grass runway.

Later examination of the electrically actuated gear mechanism showed that the main operating rod for the right gear had sustained compression instability failures in two places, the worst one at the gearbox attachment end. This had caused the self-aligning bearing housing to detach from that end of the operating rod.

According to the area distributor for the aircraft, the design of the gear mechanism can allow high loads to be induced in the operating rod during gear selection if mechanical stiffness occurs because of inadequate lubrication, misrigging or excessive wear.

A failure of the gear to unlock from the up position could result in compression damage to the operating rod.

Oil Leak Diversion

An A310 Airbus crew shut down one engine over the Atlantic Ocean while en route from London to Detroit. The pilot diverted to Iceland and landed safely at Keflavik after flying some 200 miles on one engine. Cause for the inflight shutdown was a suspected engine oil leak.

Caution On Brakes, Lights

After a McDonnell Douglas DC-10 takeoff abort and overrun accident that injured eight people, the U.S. National Transportation Safety Board called for "more conservative" standards for brake overhaul on this model aircraft.

Eight of the 10 brakes on the DC-10 had failed because they were too worn to take the heat and pressure when a takeoff abort was initiated at 178 kts.

The board also said the cockpit warning light that indicated the wing slats were not in the proper takeoff position and caused the pilot to abort the takeoff illuminated when it should not have. It said only one of the slats was out of line and did not threaten the airworthiness of the aircraft. A redesign of the warning system was called for to prevent such warnings from putting aircraft at risk unnecessarily.

The FAA responded to the NTSB recommendation with an Airworthiness Directive (AD) that limits the allowable brake wear on DC-10s.

Hydraulic Loss Causes Abort

A Concord suffered hydraulic failure during takeoff and swerved off the runway. The left landing gear came to rest in soft ground adjacent to the runway and the aircraft sustained damage to the brakes and hydraulics.

For Want Of A Nail

The cause for the loss of two Beech King Air aircraft and their crews was traced to a rupture in a rubber-fabric diaphragm within an engine compressor bleed valve.

One King Air had just initiated a go-around during an IFR instrument approach when the ceiling dropped below minimums. Ten seconds after transmitting his intentions to do a missed approach the pilot reported he was crashing. The airplane shortly impacted the ground at a 45-degree nose-down angle and was destroyed.

The second aircraft also was in a high-powered, climb-out situation. It had taken off on a nonscheduled cargo flight shortly after 2 a.m. and was about three miles out, climbing according to ATC instructions, when the radar plot showed it to turn sharply to the left and disappear from the screen. It crashed into buildings and was destroyed.

In each case, close inspection revealed that there was a rupture in the low-pressure compressor bleed valve of one engine. The purpose of this valve is to dump inter-stage compressor air at low engine speed, thus providing surge protection. It closes gradually as engine speed increases, becoming completely closed by the time the gas generator reaches 80 percent rpm.

The purpose of the rolling diaphragm is to hold the bleed valve closed at high power settings and to allow smooth opening of the valve when rpms are reduced. When the integrity of the diaphragm is lost, as it would be with a leak, the bleed valve would act as it does when lower rpm is selected and bleed away otherwise excess compressor air. In the case of the two King Airs above, this would be like having an invisible hand retard one of the throttles just when the pilot wanted the most power from both engines. The ruptured diaphragm from one of the crashed airplanes was installed on an engine of another airplane and ground-tested; when both throttles were advanced, the torque of the engine with the leaking diaphragm lagged 200 to 300 foot-pounds behind that of the other engine and there was a corresponding increase in the inter-turbine temperature (ITT).

Other reported instances of ruptured bleed valve diaphragms in PT6A turboprop engines during takeoff and climb phases of flight have produced dramatic fluctuations or reductions in torque and rapid increases in ITT that resulted in engine shutdowns by the pilots.

One Thing Leads To Another

After landing, the pilot of a Boeing 747 with 494 passengers and crew was unable to bring the thrust reverser of Number 1 engine back out of reverse.

Later, after the engine had been worked on it was tested. During the ground run-up test, a forward pylon

access panel was ingested, causing engine failure.

No Spark, No Joy

The Robinson R22 helicopter experienced ignition failure during an approach to landing. The resulting hard landing extensively damaged the aircraft. There were no injuries to the two occupants.

Field Fix No Help

Both occupants of a Piper PA-28-161 were killed during a forced landing attempt after an engine stoppage. The airplane hit power lines at night and flipped inverted onto a highway.

Investigation revealed that the engine stoppage was caused by the failure of the crankshaft gear assembly, which normally transmits power to several engine components, including the magnetos and camshaft that control the ignition system and valve train. It failed because the gear attaching bolt had loosened, allowing relative movement between the gear and the crankshaft, causing the gear alignment dowel pin to break. The accompanying loss of synchronization of the valves and ignition timing caused immediate engine stoppage.

The National Transportation Safety Board (NTSB) found that the gear attaching bolt loosened because an incorrectly sized heli-coil was believed to have been installed in the retaining bolt hole during a field overhaul of the engine approximately two years previously or during a field repair of the crankshaft gear five years earlier than the accident, possibly as the result of a propeller strike. The heli-coil that had been installed had a pitch diameter greater than the engine manufacturer's specifications and a thread length only half that specified.

According to Avco Lycoming, which builds the affected O-320-D3G engine, it is not permissible for field service personnel to install heli-coils at this critical location. The company states that, if the gear attaching bolt threads are damaged, the crankshaft must be either replaced or returned to Lycoming for repair, which will consist of installation of a heli-coil or a plug (for retapping). A similar crankshaft gear assembly is installed in all of the company's direct-drive piston aircraft engines except O-320-H and -E, LO-360-E, LTO-360-E, and TIO-541 series engines.

Because of other instances of damage or failure of similar crankshaft gear assemblies, Lycoming had earlier issued a service instruction (No. 1179D) which was later superceded by a service bulletin (No. 475) that is to be complied with during overhaul, after a propeller strike or whenever gear train repair is required.

The NTSB recommended that the FAA issue an Airworthiness Directive (AD) that mandates compliance with the service bulletin, and that crankshafts with damaged threads in the gear retaining bolt hole be replaced or returned to Lycoming for repair.

Fuel System Problems Elusive

In a recent Safety Recommendation, the National Transportation Safety Board (NTSB) asked the FAA to conduct a safety investigation of the Bell 206L helicopter fuel system as a result of 22 accidents caused by power loss.

The cause of the power loss could not be determined in 11 of the accidents, and in the majority of the cases, post-accident operational tests of the Allison 250-C28B engine, fuel control and governor revealed no discrepancies.

The NTSB described two Bell 206L-1 accidents that reflect the type of fuel system problems that have been identified with this helicopter. Each helicopter had crashed after engine power loss; both had less than about 30 gallons of fuel aboard and the power losses occurred shortly after the aircraft had reached cruising altitude. Neither pilot had been injured but one helicopter was substantially damaged and the fuel tanks ruptured, forestalling functional fuel system tests.

The other rotorcraft was not badly damaged and its fuel system remained intact and free of obstructions. Functional tests were made with varied combinations of fuel transfer between tanks using the left and right boost pumps, singly and together. It was noticed near the end of the transfer cycle of fuel from the forward tanks to the aft one, that the fuel color turned milky white; further, the fuel level in the aft tank was always below the level of the discharge end of the transfer pipe, increasing the possibility of aerated fuel reaching the engine fuel control. Another test gave a similar result.

Investigators also noted that, with fuel boost pumps off, there was some migration of fuel from the aft tank to the left forward one. This abnormality led them to remove the transfer pump between the two forward tanks and examine it. A piece of masking tape was found in the left intake port that effectively blocked the fuel transfer from the left side (backing up an earlier test when simulated right-hand boost pump failure decreased flow to the aft tank more than when the left pump "failed"). It also was discovered that the standpipe for the fuel interconnect tube and its O-ring were seated improperly, allowing fuel to migrate from the aft tank to the forward ones.

The Board concluded that aerated fuel can be supplied to the engine during a flight following normal engine shutdown, with less than 40 gallons in the system and when intercell migration of fuel occurs under static conditions. Since the 250 model Allison engine has a single fuel nozzle, it could be susceptible to fuel flow instability or interruption of fuel flow, with consequent engine failure. The Board suggested that a continuous ignition system be offered as a customer option for this reason.

The NTSB also recently commented favorably on a proposal that would require a more reliable fuel system flow

switch and relocation of in-line filters, that would make the system less susceptible to clogging by contaminants. It further recommended that the FAA undertake a safety investigation of the Bell 206L fuel system to: determine problems that allow intertank fuel migration; evaluate minimum fuel requirements for takeoff, considering the possibilities of aerated fuel getting to the engine; and, determine whether a continuous ignition system with automatic relight capability should be required.

Persistent Glitch

The crew of the DC-8 had to cycle the gear three times after takeoff to get the "doors not latched" light to extinguish. The discrepancy was noted and signed off by maintenance at the next stop.

After the next departure the same thing happened; this time the crew had to cycle the gear four times to get the warning light to go out. Maintenance personnel found broken wires in the right gear door uplatch switch and repaired them.

On a subsequent flight, the same aircraft experienced identical indications. This time the entire door light switch was replaced.

An Unbalanced Feeling

The crew of the Boeing 747 experienced excessive vibration that came and went in progressively worse cycles according to speed during the takeoff roll. Instrument panels were unreadable and the aircraft stopped accelerating during the periods of vibration.

The captain aborted the departure at 100 kts. and, with brakes and reverse thrust, used the full length of the remaining runway to stop the jumbo jet. Maintenance personnel replaced both nose tire/wheel units.

Strange Things Were Happening

The pilot of the Boeing 747 returned the aircraft to the ramp after he experienced the following abnormalities during the pretakeoff flight control check:

• When the column was moved laterally, the speed brake lever was seen to be sliding up out of the down detent for 2-3 inches, then returning to the detent with a momentary illumination of the "Auto Spoilers" light. The speed brake lever had been confirmed in the down detent during the preflight cockpit check.

• An auto spoiler extension check showed the speed brake lever extending only up to 2-3 inches short of the flight detent. After another try, it extended fully. The auto retract function was normal.

• A lateral control check indicated a discrepancy in the spoiler position indicator, showing 35-degree extension for the left and 40-degrees for the right.

A checkout by maintenance personnel uncovered a high lock fastener that had become caught between the spoiler output quadrant (which drives numbers 3, 4 and 5 spoilers) and the support structure. The fastener, whose source could not be found, was removed and the system was rerigged.

What's That Humming?

As the Boeing 727 was accelerating beyond 250 kt. passing through 10,000 feet, the crew noticed a loud hum and a vibration. The noise was located on the right, lower side of the fuselage, aft of the first officer's station and forward of the lavatory. The lavatory pump and the cargo blower were disabled, but this did not stop the noise. The aircraft turned back.

When the airplane taxied back to the ramp, the external power receptacle door was found open and hanging from loose hinges. The door was replaced and the flight continued.

Brake Travel Beans Steward

While the aircraft was taxiing out for takeoff, the pilot went to apply brakes to slow the aircraft, and found that more-than-normal pedal travel was needed. By the time his feet took up the lack, the brake came on sharply. The resulting quick deceleration threw a steward who was working in a galley against the unit, resulting in a slight head cut.

A Thump In The Flight

As the aircraft was descending through 500 feet on a landing approach, the sound of a thump was heard and felt through the airframe, followed by the illumination of the "Fwd Entry" door warning light. The landing was completed without incident, and the warning light went out.

The aircraft had a history of door defects. An inspection of the forward door revealed that it was secure when closed but the overcenter locking action of the door handle was considered not positive enough. Upon inspection, it was found that both body and door torque tubes and their bearings, attachment bolts and end fittings were severely corroded. The attachment bolts were all necked with corrosion that allowed movement between parts of the assemblies.

As a result, door overhaul requirements by the carrier were revised to provide more frequent checks. Fleet aircraft are being modified to incorporate self-lubricating, corrosion-resistant steel bearings in the door system.

NEWS NOTES

U.S. Maintenance Technician Receives Recognition

An awards program annually recognizes the outstanding United States

aviation maintenance technician of the year. The 25th awards ceremony was recently held in Washington, D.C.

The program, originated by the U.S. Federal Aviation Administration and co-sponsored by The Aircraft Owners and Pilots Association (AOPA) Air Safety Foundation, General Aviation Manufacturers Association, Helicopter Association International, National Air Transportation Association and FAA. Flight Safety Foundation was one of 32 other aviation organizations that contributed additional support to this program.

Robert Kenneth Love Jr., of Clovis, New Mexico, was named the 1988 Maintenance Technician of the Year after the industry committee of judges studied all entries. Love has held his FAA Airframe & Powerplant Mechanic's Certificate for 33 years (plus 4 years in the U.S. Air Force). He is also a designated Authorized Inspector (AI) and is presently part owner of a tool company which markets tools he develops for aviation safety.

Among maintenance improvements that Love has developed is a device that prevents engines from being inadvertently started while being worked on. Love had an experience with an unwanted engine start and developed a preventive device to cope with this hazard. He also designed shielding to prevent overheating problems caused by the exhaust system of the Bellanca Viking; improved cooling for the Lycoming IO-720 engine; and designed a device to mount tires on the Cleveland wheel to prevent tube damage for the Cessna 310, 320, 340, 401, 402 and 411 airplanes.

The awards program is open to all aviation technicians in any aviation employment category; it is not limited to airframe and powerplant technicians. Details may be obtained from local FAA district or regional offices. If you are aware of an aviation technician who deserves recognition in his field of endeavor, then this is an excellent program through which that person may be rewarded.

Judging from the valuable prizes that were awarded to the winner at this year's ceremonies, together with peer recognition, this annual program deserves a worthwhile effort. ♦