# FLYERS ASSOCIATION NEWS

Number 97-2 August 1997

Beech aircraft Serial No. 1. Completely restored and on display at Staggerwing Museum, site of Duke 1997 fly-in, September 25 - 27, Tullahoma, Tennessee

## Getting down toward the end of our supply

Three original Duke commercials from 1960 - 1980. 30 minutes - VCR copies are $11.95 postpaid in US or Canada. Contact Jim Gorman.

## Spare parts on hand for your Duke

1 - Generator
1 - Starter
1 - Pilot Hydraulic Seat Control
1 - 5 x 6.0 Nose Wheel Tire
4 - Prop Brush 3E1206-2
2 - Oil Coolers
1 - Magneto
1 - Lycoming Exhaust Pipe Part No. 77429
1 - 19 x 6.75-8 Main Gear Tire
1 - 19 x 6.75-8 Main Gear Tube

The arrangement we have with Aircraft Systems, 5187 Falcon Road, Rockford, IL 61109, is they will ship an O/H generator, starter, or magneto to you by UPS or Federal Express. You return to them (same day) your part to them. They will overhaul, charging for work done and the item becomes association emergency part. Phone number 815/399-0225.

For oil cooler contact Bill Passey, 602/969-2291 (office).

For other items contact Jim Gorman 419/755-1223 (office).

**Remember** overhaul of generator at 900 hours will cost you about 85% more than O/H at 500 hours.

## Propellers

Recently Marge and I represented the World Beechcraft Society at a meeting with Hartzell Propeller, FAA, and other interested parties regarding a proposed AD on their early propellers manufactured in the 1950's and 60's. (This does not apply to the Duke.)

Of interest to us Duke owners were the comments on "fly-by-night" propeller shops who were giving paper overhauls.

Also, the startling revelation some of the 40 year old props had never been overhauled. Seems people overhaul their engine and stick the same old prop back on.

Attached is a list of Hartzell distributors and overhaul facilities. It may be much less expensive in the long run to use a factory authorized O/H facility.

## Turbochargers

While on the subject of overhaul shops, *Aviation Safety,* July 1997 brings up a subject which should concern us all. This issue relates how improper repairs to a Duke turbocharger caused a single engine approach which resulted in a fatal crash. In February 1995 another Duke made a forced landing due to power loss.

Had a chance to speak with Mr. Don Winters of Allied Signal (Garrett) manufacturers of the Duke turbocharger. They hold the only PMA for turbo parts and maintain overhaul facilities in Torrance, California. As important as this item is to safe operation having anyone else do the overhaul may be short-sighted. Go back and read Issue 96-1, Page 3.

Have also included in this issue, their distributor list.

Moral of both stories is have your overhauls done by organizations who will stand behind their work and are authorized by the manufacturer.

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According to published reports 12 turbo twin Cessna's (i.e. 340, 414, 421) have crashed during the past three years resulting in 24 fatalities.

As noted in *Aviation Consumer* poor design (turbo mounted on airframe instead of engine) is the root of the problem along with questionable maintenance. Failure of the exhaust system causing subsequent failure of cross feed fuel lines aft of firewall is believed to be the cause of fires.

We should be thankful our aircraft was designed by Beech and not Cessna.

However, Alan Caddey, a metallurgical engineer believes operation of TIT in excess of 1600 degrees F. (871 degrees C) will cause corrosion of stainless steel. "The Twin Cessna Flyer" of New Haven, IN has given us permission to reprint his thoughts. Discussing this with Ron Gross of Raytheon, it appears it would be wise to keep the TIT at 850 degrees C. (1562 degrees F.) to insure long life on exhaust components. A new exhaust stack for the B60 is $1700.00. That will buy a lot of fuel.

## WELCOME NEW MEMBERS

Bill Nedell P-427
Boulder, Co

Deason Dunagan
Huntsville, Al

David E. Trant P-451
Baytown, TX

Martin Hagensieker
Bad Essen, Germany

Don Douglas P-363
Calgary, Alberta

Ron Comeavlt P-382
Sault St. Marie, Ontario

Barry Schwartz P-339
Cincinnati, OH

Mark Hurt P-60
Milledgeville, GA

Kenneth Bryson P-262
Sommerville, TX

Jack Hurula P-444
Jackson, MI

Quentin Ence P-188
St. George, UT

Bob Stan P-404
Dayton, OH

Capt. Peter Edwards
Hong Kong

Dr. Keith Mullenger
St. Louis, MO

William Metz
Sioux City, IA

Don Winters
Torrance, CA

# Aircraft Exhaust System Ducting

**By: Alan Caddey, Metallurgical Engineer**

*Alan Caddey joined Renton Coil Spring in June, 1995 after working for Boeing since 1978. Alan has spent his career working with different metals used in critical parts in the aircraft industry. He worked on such projects as the B-2 bomber and most recently has specialized in the titanium technology for the 777, the new High Speed Commercial Transport. Renton Coil Spring Company supplies titanium springs to the aircraft industry.*

Low carbon austenitic stainless steels are often used for small aircraft exhaust systems. One caveat used in this application is a recommended upper temperature limit of 1600 degrees F. Above this temperature, several metallurgical mechanisms deteriorate the service life of the component at a **much** higher rate, hence the need to limit the time of the exposure to temperatures above 1600 F. A managed exposure to engine exhaust temperatures, by incorporation of appropriate temperature gauges, can be successfully used to deter exhaust system corrosion, and improve component life expectancy.

Aircraft engines incorporating the use of turbos are more susceptible to high temperature exhaust system exposure that other aircraft. Turbos typically have a maximum recommended temperature of around 1650 F, but experience has shown that depending on the fuel flow settings, the actual temperature can rise to as high as 1730 F. By properly managing the power settings and subsequent exhaust temperatures, the exposure to temperatures above 1600 F can be limited or avoided.

Metallurgically, between 1600 F and about 1770 F, chromium carbide precipitation is very active at the stainless steel grain boundaries. This leads to depletion of chromium at the boundaries and a **markedly** increased susceptibility to preferential grain boundary (intergranular) attack. This phenomenon is commonly known as sensitization, which leaves the metal susceptible to attack by any corroding (oxidizing) medium, such as hot exhaust gases, (the corrosion rate increases in the presence of water vapor).

In addition, chromium, which protects against corrosion, is selectively oxidized on the surface at elevated temperatures leading to further chromium depletion of the metal. As the overall chromium content falls, so does the corrosion resistance of the metal.

Coupled with these high temperature reactions is the stainless steel reaction with hydrocarbon (carbon containing) exhaust gases at elevated temperature. Carbon is absorbed, and subsequently diffuses into the alloy interior. Carbides of the reactive alloying elements, including chromium, are then precipitated in the steel matrix and grain boundaries, (known as carburization), adding to the overall depletion of chromium, and thereby completing a circle of increasing sensitization and high temperature corrosion. As carburization continues, ductility and impact properties of the metal substrate fall, depending on the degree and distribution of the absorbed carbon.

All of these processes continue over time at temperatures above 1600 F, leading to spalling of heavily carburized surfaces (metal loss) and finally to failure of the stainless steel component. By limiting or eliminating exposure to temperatures above 1600 F, the advantages of using austenitic stainless steels can br fully utilized.

## HARTZELL PROPELLER INC.

Distributors and Recommended Repair Facilities

June 1, 1997

### *DOMESTIC DISTRIBUTORS*

**Aircraft Propeller Service, Inc.**
290 Larkin Drive
Wheeling, Illinois 60090-6456

Attn: John DeJoris
Phone: 847-541-1133
800-323-4130
Fax: 847-541-0176

**Aviation Propellers, Inc.**
12970 Port Said Road
Opa Locka, Florida 33054

Attn: Tim Gaither
Phone: 305-688-9439
305-688-6030
Fax: 305-681-4236

SUBSIDIARIES:

**Aviation Propellers, Inc.**
112 Azalea Avenue
Hueytown, Alabama 35020

Attn: Paul Gaither
Phone: 205-491-9133

**Aviation Propellers, Inc.**
4120 Roush Avenue
Orlando, Florida 32803

Attn: Geoffrey W. Gubbins
Phone: 407-894-2412
Fax: 407-894-0069

**Hartzell Service Center**
Piqua Airport
5465 West State Route 185
Piqua, Ohio 45356

Attn: Jeff Slattery
Phone: 513-778-4201
Fax: 513-778-4202

**Jordan Propeller Service, Inc.**
103 East Rhapsody
San Antonio, Texas 78216

Attn: Gary Jordan
Phone: 210-344-3064
Fax: 210-344-9433

SUBSIDIARY:

**Jordan Propeller Service, Inc.**
6820 Piccadilly
Houston, Texas 77061

Attn: Ben L. Swartz
Phone: 713-643-7464
800-580-7767 (National)
Fax: 713-643-7491

**Maxwell Aircraft Service**
Crystal Airport
Minneapolis, Minnesota 55429

Attn: Conrad Maxwell
Phone: 612-533-8611
Fax: 612-533-3219

**Memphis Propeller Service, Inc.**
8500 Summitt Cove
Olive Branch, Mississippi 38654

Attn: Ken Mathews
Phone: 601-895-5282
800-844-7767
Fax: 601-895-6061

**Ottosen Propeller & Accessories, Inc.**
105 South 28th Street
Phoenix, Arizona 85034

Attn: Don Ottosen
Phone: 602-275-8514
800-528-7551
Fax: 602-275-8594

**Piedmont Aviation Services**
P. O. Box 525
3817 N. Liberty Street
Winston Salem, North Carolina 27102

Attn: Vestle Widener
Phone: 910-661-5306
Fax: 910-661-5346
Telex: 806438 Piedmontal

**HARTZELL PROPELLER INC.**
Distributors and Recommended Repair Facilities
June 1, 1997

## *CANADIAN DISTRIBUTORS*

**Leavens Aviation Inc.**
2555 Derry Road East
Mississauga, Ontario
Canada L4T 1A1

| | |
|---|---|
| Attn: | J. T. Leavens |
| Phone: | 905-678-1234 |
| Fax: | 905-678-7028 |
| Telex: | 069-68582 Leavens Tor |

**Hope Aero Propeller & Components, Inc.**
2283 Anson Drive
Mississauga, Ontario
Canada L5S 1G6

| | |
|---|---|
| Attn: | Harry Hope |
| Phone: | 905-677-8747 |
| | 800-268-9900 |
| Fax: | 905-677-5935 |

**Western Propeller Co., Ltd.**
7940 Yellowhead Trail
Edmonton, Alberta
Canada T5B 1G3

| | |
|---|---|
| Attn: | Bob Spak |
| Phone: | 403-477-3501 |
| | 800-661-9948 |
| Fax: | 403-477-0131 |

SUBSIDIARIES:

**Western Propeller (Pacific) Ltd.**
#231, 7080 River Road
Richmond, B.C.
Canada V6X 1X5

| | |
|---|---|
| Attn: | Dave Pallot |
| Phone: | 604-273-4561 |
| | 800-663-7964 |
| Fax: | 604-273-4812 |

**Western Propeller Co., Ltd.**
**(Corporate Office)**
#231, 7080 River Road
Richmond, B.C.
Canada V6X 1X5

| | |
|---|---|
| Attn: | Don Tarnowski |
| Phone: | 604-273-4561 |
| Fax: | 604-273-0215 |

**Western Propeller Co., Ltd.**
206 Salteaux Crescent
Winnipeg, Manitoba R3J 3W3

| | |
|---|---|
| Attn: | Dan Rogers |
| Phone: | 204-831-8368 |
| | 800-665-1336 |
| Fax: | 204-831-8401 |

**HARTZELL PROPELLER INC.**
Distributors and Recommended Repair Facilities
June 1, 1997

## *INTERNATIONAL DISTRIBUTORS*

**Aircraft Accessory Services Pty. Ltd.**
P. O. Box 745
Salisbury, South Australia
Australia 5108

| | |
|---|---|
| Attn: | Tony Brennand |
| Phone: | 61-8-8258-3033 |
| Fax: | 61-8-8258-5083 |
| After Hours No.: | 61-8-8395-0915 |

**Aircraft Propeller & Spares (Aust.) Pty. Ltd.**
P. O. Box 200
Mentone, Victoria
Australia 3194

| | |
|---|---|
| Attn: | Linton Hayres |
| Phone: | 61-3-9580-2034 |
| Fax: | 61-3-9580-0765 |
| Telex: | 31251 Apands |

**CSE Aviation Ltd.**
Oxford Airport
Kidlington, OX5 1RA
England

| | |
|---|---|
| Attn: | Trevor Trivett |
| Phone: | 44-1865-844211 |
| Fax: | 44-1865-841207 |
| Telex: | 83204 AZTEC G |

**Itochu Aviation Co., Ltd.**
Defense and Aerospace
Equipment Department
Defense Systems Division
Tokyo Head Office
5-8, Kita-Aoyama, 2 Chome Minato-Ku
Tokyo 107
Japan

| | |
|---|---|
| Attn: | Nobu Takahashi |
| Phone: | 81-3-3497-8297 |
| Fax: | 81-3-5414-8700 |

**C & A Aviation (Pte) Ltd.**
Buildings 110/143
East Camp, Seletar Airfield
Singapore 2879
*Postal Address:*
Jalan Kayu Post Office Box 59
Singapore 9180

| | |
|---|---|
| Attn: | K. H. Chui |
| Phone: | 65-4812233 |
| Fax: | 65-4810827 |
| Telex: | RS55984 CAAVIA |

**H & S Aviation Ltd.**
Airport Service Road
Portsmouth
Hampshire P03 5PJ
England

| | |
|---|---|
| Attn: | Lee Holloway |
| Phone: | 44-1705-304062 |
| Fax: | 44-1705-304060 |
| Telex: | 86403 HxS G |

**Helices Clerici**
Santa Maria De Oro 3061
1712 Castelar
Buenos Aires
Argentina

| | |
|---|---|
| Attn: | Hugo Clerici |
| Phone: | 54-1-6235754 |
| Fax: | 54-1-7992682 |
| Telex: | 21624 ANJOY AR |

**Hoffmann GmbH & Co., KG.**
Kupferlingstr. 9
D-83022 Rosenheim
Germany

| | |
|---|---|
| Attn: | Alexander Vogl,<br>Sales & Service Dept. |
| Phone: | 49-8031-187828 |
| Fax: | 49-8031-187878 |
| Telex: | 525811 Hoco D |

**HARTZELL PROPELLER INC.**
Distributors and Recommended Repair Facilities
June 1, 1997

## *INTERNATIONAL DISTRIBUTORS*

**MT Propeller Gerd Mühlbauer GmbH**
Flugplatz Straubing-Wallmühle
D-94348 Atting
Germany
*Postal Address:*
Postfach 0720
94307 Straubing
Germany

| | |
|---|---|
| Attn: | Gerd Mühlbauer |
| Phone: | 49-9429-94090 |
| Fax: | 49-9429-8432 |

**Norronafly PW+AP A/S**
P. O. Box 64
N-1330 Oslo Airport
Norway

| | |
|---|---|
| Attn: | Roar Mikalsen |
| Phone: | 47-67539066 |
| Fax: | 47-67590320 |
| Telex: | 19339 Rafly N |

**Placo (PTY) Ltd.**
P. O. Box 18017
Rand Airport 1419
Gauteng, South Africa

| | |
|---|---|
| Attn: | B. C. Warren |
| Phone: | 27-11-827-9301 |
| Fax: | 27-11-827-3801 |
| Telex: | 429656 SA |

**Technic Aviation**
Z. I. Saint Maurice
04100 Manosque
France

| | |
|---|---|
| Attn: | Marc Dubois |
| Phone: | 33-492726648 |
| Fax: | 33-492878724 |
| Telex: | TECAVIA 405963F |

**Diamond Aviaco Ltda.**
Av. Santos Dumont
s/n Setor Santa Genoveva
Goiânia - Goiâs
74672-420 Brazil

| | |
|---|---|
| Attn: | Abner Wilding |
| Phone: | 55-62-207-1600 |
| Fax: | 55-62-207-1073 |
| Telex: | 622358 UTAL BR |

## HARTZELL PROPELLER INC.

Distributors and Recommended Repair Facilities
June 1, 1997

### *RECOMMENDED REPAIR FACILITIES*

*DOMESTIC*

**Byam Propeller Service Inc.**
4001 North Main Street
Hangar 7 South
Fort Worth, TX 76106

Attn: Karl Byam
Phone: 817-625-0161
Fax: 817-626-0009

*CANADIAN*

**Canadian Propeller Ltd.**
462 Brooklyn Street
Winnipeg, Manitoba R3J 1M7
Canada

Attn: Maurice Wills
Phone: 204-832-8679
Fax: 204-888-4696

*INTERNATIONAL*

**Aircraft Accessories & Components Co. Ltd.**
P. O. Box 13532
Jeddah 21414
Saudi Arabia

Attn: Mr. Hamad H. Al-Rowais
Phone: 966-2-693-73-47
Fax: 966-2-693-33-96
Telex: 60-15-58 UTSESC SJ

**East Coast Propellers Pty. Ltd.**
Building 641, Klemm Street
Bankstown Airport
Sydney, New South Wales 2200
Australia

Attn: John Marks
Phone: 61-2-9791-0246
Fax: 61-2-9791-0057

**JAMCO Corporation**
HEAD OFFICE:
Yukio Kobayashi, General Manager
Marketing Department V
6-11-25, Osawa, Mitaka City
Tokyo, 181 Japan

Attn: Norihiko Miyairi, Exec. V. P.
Phone: 81-422-33-1321
Fax: 81-422-32-6998
Telex: 2822553 (JAMTOK)

SHOP LOCATION:
Sendai Aircraft Maintenance
Division 60
Sintaku, Shimonogo Iwanuma
Miyagi, Japan

Phone: 81-223-22-2126
Fax: 81-223-22-6009

**Zimex Aviation Maintenance Ltd.**
Zimex Business Aviation Center
PO Box
8058 Zurich-Airport
Switzerland
Attn: Karlheinz Lenzke

Maintenance - Phone: 41 1 815 53 30
Fax: 41 1 815 53 31

Spare Parts - Phone: 41 1 815 53 40
Fax: 41 1 815 53 41

**Safe Air Limited**
P. O. Box 244, Blenheim Airport
Blenheim, New Zealand

Attn: D. M. Webster
Phone: 64-3-572-8416
Fax: 64-3-572-8846

**West Coast Propellers P/L**
Unit 6/10 Whyalla Street
Willeton, Western Australia 6155
*Postal Address:*
P. O. Box 3111
Jandakot, Western Australia 6164

Attn: Stephen Ashley
Phone: 61-9-354-4171
Fax: 61-9-354-4113

## AlliedSignal Turbochargers

# Aircraft Distributor List

20326
**Aviall Services, Inc.**
P.O.Box 7086 B-Bldg.
Dallas, TX 75209
**972-406-2026**
**972-406-2071 fax**

21175
**AMR Combs/A P I**
3778 Distriplex Drive N.
Memphis, TN 38181
**800-950-0111**
**901-345-1832**
**800-950-1411 fax**

20098
**Arizona Aircraft Access.**
5103 E. Roadrunner
Mesa, AZ 58205
**800-678-9912**
**602-833-5812**
**602-396-3727 fax**

20333
**AVSCO**
5125 BlaLock Industrial Blvd
Atlanta, GA 30320
**404-765-1826**
**404-765-1896 fax**
**800-241-6850**

21123
**AAR Cooper Aviation**
2149 E. Pratt Blvd.
Elk Grove Village, IL 60007
**847-364-2600**
**800-654-4944**
**847-364-0357 fax**

21180
**Flightcraft, Inc.**
7505 N.E. Airport Way
Portland, OR 97218
**503-331-4281**
**503-282-1200 fax**

20394
**Garrett GMBH**
Frankfurter-Strasse 51
6096 Raunheim/Main
West Germany
**011-496-1422-4051**

20479
**Mattituck Aviation**
Airway Drive
Mattituck, NY 11952
**516-298-8330**
**800-624-6680**
**516-298-8412 fax**

20355
**Normalair-Garrett**
14 Riverside Road
Chipping Norton NSW 2170
Sydney, Australia
**011-612-9755-3311**
**011-612-9724-7909 fax**

20341
**Omaha Airplane Supply**
Eppley Field/P.O. Box 19084
Omaha, NB 68119
**402-422-6666**
**800-228-9400**
**402-341-7895 fax**

25767
**Pacific Continental Engines**
160410 Arminta Street
Van Nuys, CA 91406
**818-781-4947**
**818-781-0860 fax**

21134
**The Parts Exchange, Inc.**
3545 G Centre Circle Dr.
Ft. Mill, SC 29715
**803-548-2665**
**800-528-0390**
**803-548-6360 fax**

20840
**Superior Air Parts, Inc.**
14280 Gills Road
Addison, TX 75001
**972-663-2614**
**800-487-4884**
**972-702-8723 fax**

# A 414 Fatal Accident in Ohio

Hillsboro, Ohio, April 8, 1997.

According to witnesses, a Cessna 414 having mechanical problems burst into flames just before crashing into a mobile home about 60 miles southwest of Columbus.

According to the *Columbus Dispatch*, there were seven people inside the mobile home and all of them escaped without injury. The pilot and passenger of the 414 were killed instantly and the aircraft was a total loss.

NTSB investigators pointed to a failed exhaust system, that had been patched several times, leading to failure of the cross-feed fuel lines aft of the firewall at the rear of the engine compartment as a preliminary cause.

In the last 24 months, we have been told that there have been 12 turbo twin Cessna accidents resulting in 24 plus fatalities. This is causing the NTSB to pressure the issuance of a new Airworthiness Directive by the FAA. We are told that AOPA, The Cessna Pilots Association and The Twin Cessna Flyer will be included in the meetings leading to this AD.

There are two ways an AD can be issued. The first allows a period of comment form owners, mechanics and others in the field as a result of a Notice of Proposed Rules Making. The second is the issuance of an emergency AD. This does not allow for the comment period.

There are a lot of ideas as of this writing on how this subject will be handled. If you own a turbo Twin Cessna, you have probably received the letter from Mike Busch of the CPA informing you of the problem/s at hand. We share in his view that the best action by any turbo twin Cessna owner at this time would be a thorough inspection of the complete exhaust system including removal of any suspected parts for a more thorough inspection. Also pay strict attention to the aircraft structure close to the exhaust such as engine mounting rails, fire walls and canted bulkheads inside the nacelle. Any defective part/s should be replaced or repaired by a Certified Repair Station that specializes in weld repair before further flight.

The worse case would be for the FAA to ground the entire fleet of turbo twin Cessna aircraft until an inspection, such as the one above, is completed. While this has not gone to the point of grounding the fleet yet, some sort of action is inevitable. No one can second guess the FAA, but it would be a safe bet that the above inspection, by qualified people, along with a well-written log book entry could save you a lot of hassle when the action finally is printed and every owner has to take action at the same time.

Parts, such as engine mounting rails are not available at this time and we find about 20% of the turbo twins need either new rails or rail sections. There is no authorized repair of any kind allowed on the engine mounting rails except through an engineering order from Cessna.

Shoddy maintenance and sub-standard repairs have led to exhaust failures. Exhaust failures can lead to accidents. Accidents lead to loss of lives.

The NTSB has a long list of accidents where they can definitely pin down the cause as exhaust failure leading to on-board fires in flight due to cross-feed fuel line/s failure.

We will keep you posted as we get information.