

JIM KOEPNICK

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An Introduction

David Pilkington IAC 6184

“Things are more like they are now than they ever were before.”

Dwight D. Eisenhower

That quote sprang to mind as I recently read the very first *IAC Technical Tips Manual* published back in 1981. The aircraft types that dominated aerobatics back then are still the most common types, and many of the technical problems that we experience these days were well known 20 years ago. By the time the fourth manual was published, more advanced materials were being commonly used. So, along with the old problems, we are starting to see some totally different types of service difficulties. The thing about being the first to find one of these new problem areas is that you don't know where to look. It's important at annual inspection time to trust your aircraft to a mechanic who is familiar with that type of aircraft and, even better, to the same mechanic who does your annual every year. Every year your mechanic certifies that your aircraft is good for another year, but things do go wrong between annuals. The pilot is in the front line—if something is going to fail on the next flight, your preflight or daily in-

spection is the last opportunity to find it. Some types are easier to check than others. The airplane I didn't fly today is a good example.

Let's just run through some elements from the checklist recommended by Bob Davis back in 1973:

Engine compartment—I could peer through the small oil filler access panel or through the air intakes, but if I took the cowl off to do a proper inspection, I'd miss my flight by the time I undid all the screws, removed the cowl, then replaced it. Should I maybe take the cowl off for a good look once a week? But I only hire this one every month or so!

Right wing fairing—The fuel tank has recently been removed for repair, and it looks like the fabric was tightened so much that the fairing is distorted. At least that's better than the one I read about recently in an NTSB report where the fuel tank distorted in flight so much that the wing camber was altered enough to create a tendency to roll.

Lift strut security—If the optional fairing

wasn't fitted it would be a lot easier to inspect. Am I doing an annual or a preflight?

After the recent fuel contamination crisis in Australia I'm even more intent on doing a proper check of the fuel. A teaspoonful of metal swarf in the bottom of the bottle after the 10th attempt to drain a clean sample from the fuel tank convinced me that I wouldn't fly today.

I think I do quite a thorough preflight inspection, but I have missed things in the past. Typically these are the sorts of things that are found during the technical inspection at IAC contests. There's a lesson there somewhere. My advice is to invite your mechanic to do such an inspection at times throughout the year.

Technical safety considerations apply just as much to the pilot as to the machine and are even more important in maintaining a safe sport. It's essential to also have a preflight inspection of yourself, as pilot. Just to mention a few items from one such checklist that I'm familiar with:

Physical condition—

Sleep, illness, medication, stressful events, fit, and rested?

Experience/recency—

Time in type, familiar with terrain and airspace?

Clothing—Suitable for flight?

The simple rule is to be wary if you have one item that is marginal with respect to your own personal standards. If you have more than one item that is marginal, it's time to stop and think about life. Don't do anything stupid.

The series of four *IAC Technical Tips Manuals* is essential reading for every aerobatic aircraft owner. Contributions are not limited to the various members of the Technical Safety Committee of the time. We recognize that there's an enormous resource available amongst all the IAC members in offering technical advice to other members. The current members of the Technical Safety Committee have specifically volunteered to be the focus of these activities for the time being. The committee's role, as I see it, is to ensure that IAC members are made fully aware of technical safety concerns specifically related to the operation of aerobatic aircraft throughout the world.

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Between us we'll stay abreast of all the issues and review reported service difficulties—those service difficulties on the FAA database, at EAA's Aviation Safety Data Exchange at www.safetydata.com, or any advised to us privately. Often, the big issues take care of themselves, and there's no action required on our part. Sometimes the other players don't really consider the private operators adequately, so we'll represent your broad interests with them if required. I know that some aspects of this role are going to be difficult from Australia, but on the plus side, from 10,000 miles away I can be quite objective about many things and make my views known without fear or favour, sorry favor. The other plus is that my colleagues on the committee are

very active IAC members. The good thing about our group is that we like to bounce ideas off one another and sound things out before going public on things.

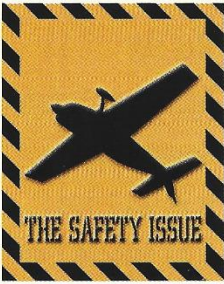
Sport Aerobatics remains the primary means of communication to members, but stop by the IAC website from time to time and check the technical pages. Of course, if there are any really hot issues, those of you who

subscribe to *The Exploder* will already know about them. We are all readily accessible by e-mail and telephone. (If you hear a squeaky Aussie accent on the phone, that's probably me using the Internet to get a hold of you.) Don't expect us to offer views on every subject, as I'd rather we put our effort into some in-depth analysis of essential issues.

INTRODUCING THE TECHNICAL SAFETY COMMITTEE

Doug Partl became interested in airplanes at an early age, say four years old, but had to wait until he was fifteen before starting to fly. He graduated from Lewis University in Joliet, Illinois, in 1978 with a degree in aviation maintenance and an airframe and powerplant certificate. By

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the time he finished college, he was a CFI and soon bought his first Pitts, an S-1C, which he rebuilt from the ground up but eventually sold in the mid-80s as times were tough. "It was kind of like losing a kidney—I really missed it." He bought his next Pitts, an S-2A, in 1990 and became involved in competitions, aerobatic instruction, and a few air shows. Getting his fair share of trophies and needing more horsepower, he then bought a new S-2B, which is his 14th airplane overall and the one he considers the best. "My scoring has been real good, and I have accumulated even more wood." Doug is heavily into corporate aviation—from Learjet captain to director of maintenance at The Marmon Group, where he is in charge of a large fleet of corporate jets, including Falcons, Challengers, Lears, Hawkers, and Astras.

Doug commented on his new role with the Technical Safety Committee:

"Due to my technical experience, I got drafted into doing the tech work at the contests early on, which I really liked, and have found dozens of problems—some even severe. And I feel that I have even saved a life or two. I have noticed a real lack of owner/competitor awareness (for lack of a better term) in the areas of owner responsibility and maintenance, which is why I accepted this committee position. And I have been diligently working to inform and teach the flying public as an Aviation Safety Counselor for the FAA's Dupage FSDO—a position that the FAA recruited myself and several other Chicago-area technicians to start and test before the program went national. In 1995, they awarded me a "National Safety Award" for my efforts during a seminar that I gave at the EAA Oshkosh convention. I was flattered to say the least. I actively use my inspection authorization outside of my day job, as I have several small aircraft clients, most with aerobatic aircraft. I have been an IAC member for many years and started to actively judge the competitions a few years ago as a regional judge, as in my opinion the judging needed some new blood. Judging and doing the tech work at contests has proven to be quite the voluntary

workload, but I have enjoyed it. It has allowed me to meet and become friends with many wonderful folks. As a whole, the aerobatic community is a cut above in professionalism and flying skill, and I enjoy the camaraderie that they have shown me. I hope never to be without an acro mount—but even if I am—I will probably still be active as a volunteer in the IAC."

Herman Dierks has a computer science degree (Kansas State), having started out in mechanical engineering, but that's a long story. He has about 1,900 hours flying time with a commercial certificate. His first plane was a 1946 Luscombe 8A, followed by a 1950 Cessna 170A, which he has owned and maintained for the last 28 years. Herman also built an RV-4 (a 2,500-hour project), which he first flew in 1995 and still enjoys flying today. He joined IAC about 10 years ago, and his first acro mount was a Super Acro Sport I that he flew in the Sportsman category for one year. He currently owns and maintains

a 1984 Pitts S-1T and a 1967 160-hp S-1S (with Ultimate wings) and flies both in Advanced level competition. His first engine overhaul was on his mother's kitchen table when he was about 21 years old. Needless to say, his mother was glad when found his own house, however his wife

is not crazy about all the airplane projects in the garage.

Dan Clark, at age 44, has been competing in aerobatics for 17 years and currently competes in the Unlimited category. As a designer of modifications to Pitts-type aircraft, he's built three aircraft himself and helped modify others. He's been the chief technical monitor at nationals and Fond du Lac. Dan's expertise covers a wide range of activities. As a professional mechanical engineer, he uses ANSIS and CAD systems on a daily basis and conducts shock and vibration testing on the equipment he designs.

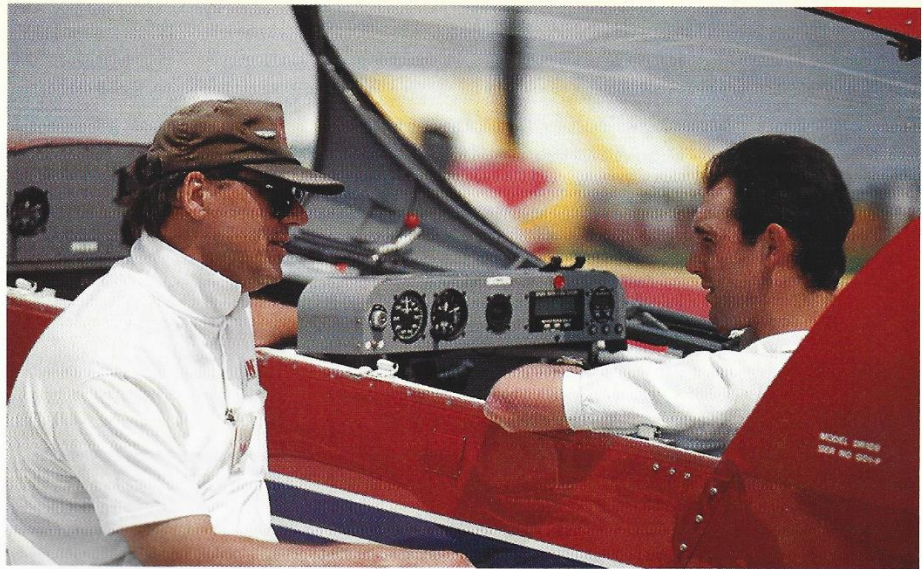
At the other extreme, he is a certificated aircraft and engine mechanic and holds a commercial pilot's certificate.

David Pilkington is the chairman of the IAC Technical Safety Committee. Born in Werribee, Australia, his birthplace—the old bush hospital—has since suffered the

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ultimate indignity of being converted into a McDonald's restaurant. David is a two-time Australian Advanced Aerobatic Champion, former Unlimited category competitor, and former leader of a Pittsformation aerobatic team. He's been heavily involved in technical aspects of aerobatic aircraft for many years—including preparation of aircraft for the Australian assault on the 1980 World Championships

and joint construction and development of the Akro series of monoplanes. In the mid-nineties, he was vice president—engineering and a test pilot at Aviat Aircraft, Inc. He is now back in Australia as engineering services manager for BAE



Systems. He is currently a part-time flight instructor, specializing in aerobatics. He holds U.S. and Australian commercial pilot tickets with a flight instructor's rating and has a low-level test authority.

