Chapter 54 News

Lake Elmo, Minnesota http://www.eaa54.org March 2003

Program

- Monday March 10, 2003
- Social Hour at 7 p.m.
- Meeting at 7:30 p.m. Chapter House, Entrance B, Lake Elmo Airport
- Program: The Jenny Project

Speaker: Tom Wier, a member of our EAA Chapter 54 and when he isn't working on his own plane, is lending his expertise to the Air National Guard Curtis Jenny project. Tom will fill us in on the progress and plans for the project. classic aircraft.

INSIDE THIS ISSUE

Planning a work weekend *by Lite Air*

EAA Chapter 54 members have participated in the work weekend for as long as I can remember. We have always gone to "Big O" the first weekend in May, which is the kickoff of EAA's work weekend project for the year. Sometimes we were there alone, sometimes-another chapter or two, or even a few individuals were there with us. With this background it is easy to assume that ALL members of Chapter 54 are completely aware of just what the work weekend is (and how much fun and satisfaction is derived by the participants). It recently came to mind that Chapter 54 has grown significantly in recent years, and that many of our members have no first hand experience in this area. Therefore, I have decided to write an article describing the whole weekend in the hope that others might be inspired to "give it a shot" this year.

As stated earlier, the Work Weekend (hereafter called simply WW) takes place on the first weekend of May. Car pooling for such an activity cuts travel costs per person, but also provides for fun and camaraderie with others of our chapter. Accordingly, we make every effort to organize car pools. Usually the plan is to leave the St. Paul area at about 9:00 AM on Friday *. Driving east on I 94 we arrive in the vicinity of Osseo, WI about 10:30. Time to leave the freeway and head for the Norski Nook. This is an excellent restaurant that has fabulous pies and pastries, as well as other fine food. This constitutes a breakfast for some, and an early lunch for others.

Soon we are on our way again, and after changing drivers several times we roll into Oshkosh. Leaving the highway we drive past the departure end of runway 27, and we notice the vast acres and acres of open space beside the length of this 6,000 ft + runway. Hard to realize that in three short months this whole area will be simply inundated with an incredible number of factory built aircraft, many of which will have their owners tents set up under a wing. Continuing our drive along the frontage road we soon can see Pioneer Airport and associated buildings off to the far left. Just off the frontage road to the left is the EAA Museum. As we pass the Museum, we take a hard left down Waukau Street and continue to the north entrance to Camp Schoeller. A short time later we arrive at the bunkhouse, our home for the weekend, usually somewhere between 3:00 and 3:30 PM.

The first thing we see upon parking by the bunkhouse are two Portepotties (sorry, no indoor facilities in the bunkhouse ;->). Entering the bunkhouse, we see a lounge area, with TV and VCR, a snack area consisting of a counter and a refrigerator (containing pop and beer).

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Minutes of February Meeting

The meeting was called to order at 7:30 PM by Vice-President Paul Hove. A motion was made and seconded to accept the minutes of the January meeting as published in the Chapter Newsletter. The motion was approved on a voice vote.

Treasurer Paul Liedl gave a financial report and a motion was made and seconded to accept the report as given. This motion was also approved on a voice vote.

Committee Reports were given as follows:

- Art Edhlund reported that the next "Flying Start" program is scheduled for mid-April. More details will follow as the date gets closer.
- Allen Kupferschmidt , Young Eagles' Director, reported that he has about 14 YE's ready to fly as soon as the weather moderates. The next large YE event is scheduled for May 17th. In 2002, Chapter 54 flew a total of 252 young eagles.
- Webmaster, Marlon Gunderson, updated the membership on upcoming fly-in's. Benson has a gathering scheduled for ski planes on Feb. 15th. This is a private airport and prior permission should be obtained from a member. South St. Paul will have a fly-in on Feb. 22nd.
- Membership Director, Scott Olson, reported that the ground school was progressing very nicely. Special thanks were expressed to instructors, Greg St. Claire and Don Carlson. Scott also updated the members on the KidVenture/Young Eagles program scheduled for May 17, 2003.

New Business

Allen Kupferschmidt reported that he knows of a new autopilot that is available free for evaluation. The unit is made specifically for a Glasair but could be modified to work with other home-builds. Anyone interested should contact Al.

Motion was made and seconded to close the business meeting. The meeting was closed on a unanimous voice vote.

Paul Hove introduced Greg Fries, on-site manager of St. Paul downtown airport and manager of Lake Elmo Airport. Greg talked on a variety of subjects related to MAC, the Reliever Airport System, the Norwest Airlines lawsuit against MAC, revenues and expenses at 21D, maintenance at Lake Elmo airport, and the reassessment of reliever airport fees. Greg said that anyone with specific comments or questions regarding Lake Elmo Airport could contact him at 651-224-4306.

Respectfully submitted
Paul Liedl

EAA Chapter 54

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Al Kupferschmidt

Chapter member meet on the second Monday of every month at the Chapter House, Entrance B at Lake Elmo Airport (21D). The House is at the base of the airport beacon.

The newsletter is printed on the first Monday of every month. Parts of the newsletter may be reprinted with appropriate credit.

21D RCO 118.625
21D Unicom: 122.8
TPA: 1932'

TECHNICAL COUNSELOR REPORT

A parade of Champs

by Bill Schanks

In the past couple of months I've been busy working on the Champ project. (The one recently purchased by our flying club.) In a previous article I referred to it as "a diamond in the rough." At the time I didn't realize that meant it was a lump of coal. At first, we assumed that it was a six-day project; patch the belly, clean up a little rust and corrosion, change out a little hardware, fix a couple of minor fuel leaks, change the oil, install a radio and transponder, pack the wheel bearings and do a weight and balance.

It has turned into about a 10-week project, but it is nearing completion and hopefully a flight. Enough time has passed (eons) that through geological phenomenon, due to tremendous pressure and chemical reaction, the lump of coal has actually evolved into an unpolished diamond. Dale Rupp should soon be able to get his RV-6 back into its rightful place in the hangar. I think the old girl (RV-6) is getting pretty cold over in the Hobo hangar. Dale has gone on his winter sojourn to warmer climate and returned, so I think it's time to finish up.

I say I've been busy, I mean to say we've been busy. By we, I mean all the people who have pitched in with parts and labor and support. This is a perfect example of what the EAA means to me. I don't know how such an endeavor could have been possible without such an organization as the EAA and the local chapter system. The organization has brought together people, through the existence of local chapters, of like interests and skills that are eager to offer their assistance and knowledge to fellow aviators in the building and restoration of aircraft. Aviation is the common denominator, but the EAA organization has strengthened that bond well beyond what anyone could have imagined 50 years ago.

I wish to take this opportunity to publicly express my appreciation to all those people who are so willing to give time and energy to make success a reality. No one person can do it by him or her self. Working on the Champ project opened my eyes a little more to what wonderful resources we have among the people of Chapter 54. There aren't very many instrument panels installed in aircraft within the chapter membership that don't have a piece of Dave Fiebiger riding along on every flight. I know of quite of few that were designed and assembled, including the one in my biplane, by Dave.

Speaking of airplanes that have a little piece of someone riding along, anyone know a toolmaker by the name of Jim Olson? Here's a guy that can look at a part for an airplane, (or anything else for that matter) and make it better. He can take a piece of metal and machine it into a work of art. Some of these people who designed and built airplanes back in the 30's 40's and 50's came up with some pretty good ideas on how to do things, considering labor costs and affordability, but Jim usually seems to have a better way to do it. More precise, more logical and more durable. Maybe it's a guy thing, but when I hold a finished piece of Jim's work in my hands, I just marvel at the level of workmanship.

Know what a Tasmanian devil is? Think of Al Kupferschmidt. He just has more energy than anyone I know. He is always willing to pitch in and help no matter how difficult or time consuming a job is. He also has a lot of knowledge about Bellanca aircraft and is more than willing to share that knowledge and any other resource that he has. When he painted the chapter house, I watched him go up and down that ladder and I was just amazed. He was a blur. Dennis Hoffman is also a very energetic and capable mechanic. He's in the process of restoring a Swift airplane and a J3 cub. Even while he was heavily involved with his own projects, he was a source for advice, material and assistance with the Champ project.

There were many other people who stopped by for the cookies and offered advice, encouragement and assistance. So many, in fact, that I can't remember all the names and apologize for not including them in this article. My point is though that it's a people thing. We all have aviation as a common bond and through the EAA organization at the local chapter level; we will overcome adversity, from any level, and be successful in our endeavor. Each of us will contribute through whatever skill level we possess and the end result will be success.

Treasurer's Report *By Paul Liedl*

February Financial Report:

Cash on hand	$ 50.00
Checking Acct.	$2,004.05
Investments	$6,000.00
Total	$8,054.05

Income consisted of $295 in individual dues.

Expenses for the same period were $401.60. They consisted of $157.89 for utilities, $180.74 for education expenses and $62.97 for newsletter publication / distribution.

Ultraviolet Absorbtion of Latex Paints

by Kirk Huizenga

For many years there has been discussions on the Pietenpol mail list as to the suitability of exterior latex paint as a "system" for covering an aircraft. A number of builders have completed their projects and have used latex paint to cover the fabric with claimed success.

One issue that had not been tested is the ability of latex paint to protect Dacron fabric from damaging UV light. In standard systems, there is a "barrier" layer of paint applied prior to color coats. In the Poly-fiber system this is called Poly-spray. In the past, builders that have used latex paint to cover their fabric have sealed the fabric with black latex paint with the idea that black paint would absorb the most visible light and, hopefully, UV light. This, in turn, would protect the fabric from degradation.

I have considered using latex paint on my Pietenpol re-build, but wanted to be certain that it would, in-fact protect the fabric from UV degradation. There are builder that have had latex covered fabric for over 10 years without incident, but better safe than sorry. One should not assume that because visible light is being blocked that UV light is also being blocked.

Methodology:

I contacted a friend of mine, Dr. Tom Varberg, a Professor of Chemistry at Macalester College in St Paul, MN and asked him about testing the paints. Tom agreed to help me in the testing by using a Beckman DU7400 Spectrometer. The spectrometer can record Transmittance, the amount of visible and ultraviolet light lost (or conversely, absorbed) by a material. Transmittance is the ratio of radiant power (P_o) that makes it through the substance (paint) to the radiant power (P) sent into the substance.

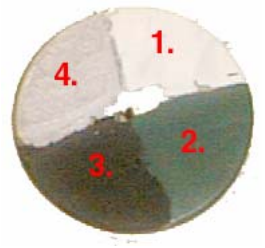
$$T = \frac{P_O}{P}$$

Transmittance can then be converted to Absorption (A) with the formula.

$$A = -\log T$$

Tom also supplied me with a small disk of quartz to use as a base for testing the paint at an appropriate thickness - similar to that expected when covering fabric. Quartz does not absorb or restrict UV light in the wavelengths we were testing (400-200nm) and therefore would not introduce error in the absorption readings.

I applied 4 different paints (1. Kilz Latex White 2. Glidden Exterior Latex-Wooland Green 3. Behr Exterior Flat – Black 4. Poly-Fiber Poly-Brush) to the quartz with a small brush.



After shooting a "blank" to calibrate the spectrometer, one of the painted areas on the disk was placed between the light source and the sensor. The light source flashes on (2 seconds for our test) and the sensor picks-up any energy that makes it through the paint.

The DU7400 gives a graphic representation of Absorbance at each wavelength (in nanometers). In the charts below, I averaged the Absorption of every block of 10 nanometer since there were 600 data points for each sample (from 800 to 200 nanometers).

As a curiosity, I also prepared some lightweight Poly-Fiber® fabric generously given to me by Gil Leiter of St Paul, MN and tested it. I heat shrunk the fabric and tested it with and without paint and Poly-Brush® (generously given by Pietenpoler, Robert Haines). The results are shown in Chart #2.

Limitations:

The Beckman DU7400 Spectrometer is limited to an absorption of 4.5 (but we will consider that to be sufficient at T=.0031%)
The DU7400 is likely to show erroneous data or noise when at either extreme of its measurement (0 or 4.5). Some data for specific wavelengths may not be accurate, but a trend is obvious
The testing we did does not account for reflection. Any light reflected by the paint would show up as being absorbed. This doesn't really change the applicability of the test results, but does raise a question of what color paint is the best to use on sealing and protecting the fabric. This is only a test of the UV blocking ability of latex

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WORK WEEKEND (Continued from page 1)

The counter usually has several bags of pretzels, cheese puffs, etc. (the powers that be know that if we are to efficiently work, we must keep our strength up. No one has EVER fallen into malnutrition on a WW!). Also on the counter is a login book. This is for EAA records, and you will later be mailed a Volunteers Patch, so sign in with name & address.

Beyond the lounge area is the sleeping area, consisting of many bunk beds. Time to go in and stake your claim! Some of us bring sleeping bags, but if you don't have one or forget it, not to worry! There is a small storeroom with lots of blankets, pillows, and every thing you will need to make your bed real cozy. All in all, the bunkhouse is a very pleasant place to spend the weekend. However, if you have a RV (camper, not one of Van's airplanes) there is a volunteers campground just outside the bunkhouse with electricity if you prefer.

Many of our members are retired, or are able to arrange their work schedule to accommodate this departure time. However, there are those who drive up after work, and this works just fine.

Having unloaded your gear on your bed, we still have a couple of hours before dinner. Some go outside and take a short walk around the main campground, looking for changes that have been made since the previous year. Others return to the lounge area and plop down in one of the comfortable sofas, after plugging a tape in the VCR. One of the more popular things to view is the collection of Sky King episodes. One year we were treated to a tour of the gigantic building recently finished that is used for the Academy and other EAA training programs.

Perhaps a few people from another chapter have started to arrive - chance to make new friends! Finally, the clock has ticked its way to dinnertime, and we prepare to pile into vehicles and head for the Delta, a favorite restaurant in Oshkosh. After a great meal, we return to the bunkhouse to spend the rest of the evening. Some play cards at the counter while some pull out a book to read, and some watch Skylar King and Penny thwart the evil efforts of bad guys. As the evening drags on, one by one say their goodnights and drift off to bed. Finally, the lounge is down to two or three diehards who want to see just "one more Sky King episode", the news, or whatever. Finally it is lights out.

Morning comes early, especially for those volunteers who will be working in the kitchen. They must be up and get things ready for the 7:30 opening of the chow hall. Others start to struggle out of bed and get dressed in their work clothes. Some line up early so as to be among the first in line, while others arrive almost simultaneously with the opening of the doors. No problem, there is always plenty for all.

After breakfast we report to the maintenance office for our work assignments. This is anxiety time! What kind of a job will I get? Will I be working with a large group, or will I be working with one or two others? The variety of jobs is very large; some of which require maybe two workers, while others require a large crew.

One year when a new exhibit building had just been built, everybody available was sent over there. The building was up, but the inside walls had to be framed in so drywall could be installed and taped. Giant stacks of 2 x 4s along with boxes of nails, SkilSaws and other tools. Somebody from maintenance briefed us on the job, and then we were on our own. Amazing how a group simply pitches in and gets the job done, without anyone telling each individual which task to do. Everyone just does what needs doing. We worked very hard and by Sunday noon had framed in a large section. Volunteers in later weeks would finish the job.

Other jobs require fewer people. One year two of us spent both days riding a John Deere Gator around in Camp Scholler checking and servicing all the road signs. Since the last year posts had sagged and needed to be straightened, some signs had fallen off the posts and had to be replaced, etc. Our job was to have all posts straight and firmly in place, with the appropriate sign fastened at the top.

There are a variety of other jobs. Campers have an insatiable need for picnic tables, so it is a never ending job in the carpenter shop cutting parts for tables to be assembled later by the shop staff. Last year we cut the parts for some 60 tables.

About 10:00 a.m. Operation Thirst arrives. Other volunteers drive around in a van and deliver hot coffee, cold pop, water, cookies, etc. while we take a short break. Soon back to work, and before we realize it the time has come to head to the chow house for another fine meal. Still lots of work to be done, so it is time to "have at it".

By 5 p.m. everyone is tired and ready for dinner, again provided by the volunteers in the chow hall. After eating there is just time to clean up before the evenings activity. About 6:30 we are taken in a bus or vans over to the EAA museum where we get a "private showing". We are taken into areas not open to the general public, like the restoration shop and get a pre-view of aircraft that will soon be out on the display floor. Then we are turned loose to wander at will among the aircraft. For us the restraining ropes protecting the exhibits do not apply! My wife, Barb, got a real thrill at being able to sit in the Aircar. Nice to be able to get up close and look at details of airplanes that just cannot be seen from behind the ropes. After a while the crew is rounded up and taken back to the bunkhouse. By this time everyone is tired, and many have a can of pop or beer while nibbling on pretzels and then hit the sack. There are still those few who want to do a little hangar flying and or view a bit more videos, but

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WORK WEEKEND (Continued from page 5)

even they 'throw in the towel" and head for bed earlier than on Friday night.

Sunday morning is a repeat of Saturday morning, except one simply takes up the uncompleted job of the day before. If it was completed, one can return to maintenance for another assignment - there is rarely a shortage of things to be done. The WW ends after the noon meal. Many of the volunteers drive over to Pioneer Airport to look things over, particularly if one has never visited this old time airport, complete with hangars of vintage type aircraft. Some years (depending on a variety of circumstances) they have had a drawing at the Saturday noon meal giving out rides in the Ford TriMotor. One year there was enough space available that we all got up. The ride we got was orders of magnitude above that which the normal paying customers get, lasting much longer and involving an aerial tour of all of the city of Oshkosh.

The ride back to the Twin Cities is anti-climatic. Usually a stop for gas somewhere is required, we arrive home about 6:00 PM, very tired but very satisfied that we have both had a great time and that we have made a contribution to Sport Aviation.

What should one bring, other than a willingness to work? Well, it is a good idea to bring a set of old work clothes that you are not concerned about. Good work gloves to protect your hands in case the job requires handling wood, rocks, or anything that is tougher than your hands. Also a pair of safety glasses might come in handy. I always bring a sleeping bag, but as mentioned earlier this is not necessary, since bedding is available in the bunkhouse. An old tattered jacket could come in handy, since sometimes the weather is still a bit cool early in the morning. A flashlight in case a nocturnal trip to the Porta-Potty necessary.

I want to emphasize that this IS NOT just a guy's thing! There are almost always one or more gals present, and they are certainly welcome and needed. When we did the framing in of the commercial building Barb was there banging nails just like the rest of us. On another year she was sent over to Kermit Weeks hangar to clean airplanes and was very excited to tell me how she climbed on the wing of an F-4U polishing it to a fine luster.

Well, that's about it. It truly is a fun experience, and one gets to know other members (as well as airplane people from different chapters). When July comes and one arrives at Oshkosh, it is gratifying to look at some of the things that YOU had a hand in getting ready. If you have any questions, or any concerns that would need to be resolved before the WW would possible for you, do not hesitate to ask some of the older members. If they cannot answer you questions, they can certainly point you to someone who can. Hope to see lots of you there in early May!

LATEXT PAINT (Continued from page 4)

paints. It does not deal with any other issues of using non-certified methods of covering and painting one's experimental aircraft like longevity, ability to seal the weave, adhesion, or flexibility/brittleness of latex paint.

The Poly-Spray was tested with two layers – one on the front of the disk and one on the back. We found that this introduced some errors. Some of the energy that makes it through the first layer of paint gets bounced around between the two layers and gives odd readings.

Conclusions

Latex paint can sufficiently blocks UV radiation and therefore protect Dacron fabric.

Color does not seem to matter as far as level of absorption – differences are extremely minor (in the range of thousands of a percent)

This is a matter open for discussion, but the practice of using black paint as the base/sealing coat on fabric to block UV light may not be the best practice. White, in theory, would be a better paint for that. White paint has a high amount of Titanium Dioxide (TiO2), which is highly reflective. Black paint, on the other hand, gets its "color" from Carbon Black primarily. Black paints have much less reflectivity and more absorption of light. Now, as I mentioned above, color does not seem to matter much in terms of protecting the fabric, but paint that is more reflective should last longer than paint that is more absorbing of light. It is not an issue of black or white being better at protecting the fabric, but rather the longevity and protection of the paint itself from breakdown.

Brand of paint shouldn't make much difference in terms of UV protection, but could make a difference in durability and longevity of your paint job. There is information on the Web about paint quality and there are some links below.

Equations:

$$A = -\log T$$

$$T = 10^{-A}$$

($T = 10\text{^}{-A}$ in Excel)

$$\%T = 100(10^{-A})$$

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Flying Start

Chapter 54 will host a "Flying Start" program on Saturday April 26 at the Chapter house. Its a one hour + program to help those who are on the verge of starting flying lessons but don't know it yet. A series of short presentations on questions like cost, risk, skills, time, and how to take the first step. Instructors will give some of the talks, and stay to chat personally with candidates. The help that EAA membership will provide and some first hand stories by recently licensed pilots will provide encouragement. Door prizes like a free first lesson, a free EAA membership, etc. will be given. Chapter members should review recent conversations with friends and neighbors that need just a little push to start their flying careers, and invite them to attend. (Art could use suggestions for poster locations.)

Young Eagles

I have received the Young Eagle credits from Oshkosh. They are to be used for offsetting the cost of sending a young person to the Air Academy. We have 227 credits at this time. Now we should all be searching for that special candidate who will being going this coming summer. I also have approx. 20 YE's waiting for their rides when we get a good weather window.

Important date to get on your calendar's will be May 17, 2003 for our local YE day. June 10 is International YE Day. I will not be in the state in June so that is why we will have our day in May. A quote from Oshkosh: "The size of the event is not what matters; it is the quality and safety of the event --that always comes first."

REMINDER: IF YOU FLY A YOUNG EAGLE PLEASE! PLEASE! SEND IN THE PAPER WORK SO WE CAN GET THE CREDITS. WE WILL NOT GET THE NUMBERS FOR OUR CLUB IF YOU DON'T SEND IT IN. I WOULD BE HAPPY TO TAKE THE PAPER WORK FROM YOU AND SEND IT IN; IF THAT MAKES LIFE EASIER. THANKS, YE Coordinator Al Kupferschmidt. *You can reach Al Kupferschmidt via e-mail at raeandal@msn.com.*

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Resources and Links

Matronics Pietenpol List (with searchable archives)
http://www.matronics.com/pietenpol-list/index.htm

Data (Excel Spreadsheet)
http://mykitplane.com/Planes/filesList2.cfm?AlbumID=5

Dr. Tom Varberg, Professor of Chemistry, Macalester College
http://www.macalester.edu/chemistry/**varberg@macaleste**

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Member Notes

Ed Thompson - I don't know if any of the following is of interest to anyone but it's all I can offer as it is what my life consists of these days. I am living in a house in Miami Springs just on the north side of MIA. There are four of us here - all "round engine trash". I have been flying for almost a year in the DC-6 and DC-7 out of Opa Locka Airport for Florida Air Transport, but business has slowed to a crawl. FAT has moved its operation to Ft. Pierce, Fla., due to hostility on the part of the Miami-Dade Airport Authority. They seem to be driving everyone out of Opa Locka. No one knows why. I have been hired by Florida Air Cargo, a DC-3 operator to fly out of Opa Locka to the Bahamas and we are still working on the DC-4 that Frank Moss and I ferried to Opa Locka from FLL. When it is ready, the plan is for Sam Knobe and I to fly it to the new owner, Brooks Fuel in Fairbanks AK. Then Sam and I plan to fly it for Roger Brooks to haul fuel to remote Eskimo villages and gold mines in Alaska. Meanwhile I am enjoying the perpetual summer in South Florida' I love the leaves, the beautiful flowers and the green lawns and walking around in T-shirts and jeans in 80 degree weather. I remember the winter I recently spent repairing those two damaged hangers I bought following the big wind storm. I must try to remember not to do that again. At age 73, although I still have a First Class physical, I have to wonder how many fun years I have left. Best wishes to all. *Reach Ed Thompson via e-mail at Stearmanpt@aol.com.*

Richard Wicklund sends along regards to all Chapter 54 members from sunny — and apparently warm (70s) — Arizona. We're trying to rope him into an article about flying and mucking about in the skies of AZ., but he reports he hasn't flown in the airspace there yet. He's on the hunt for a fly-in to cover and we look forward to hearing more. *You can reach him by e-mail at jwwick@juno.com.*

Condition of Eveleth-Virginia VOR questioned in wake of NTSB Report on Wellstone crash

by Bob Collins and Mark Zdechlik

The recent release of hundreds of pages of National Transportation Safety Board documents still leaves many unanswered questions about what happened to the flight that killed Paul Wellstone and seven others last October. It will likely be months before the NTSB issues a final report on the crash. Although no clear cause has yet emerged, several areas stand out as possible factors. They include weather, pilot incompetence and problems with navigational equipment at the Eveleth- Virginia Airport.

What's been made public about the Wellstone plane crash leaves aviation experts not associated with the inquiry hard pressed to understand what went wrong the morning of Oct. 25.

Why, after an otherwise uneventful flight to northeastern Minnesota, did the plane carrying when Sen. Wellstone, his wife, daughter, three campaign aides, and two pilots crash just short of the Eveleth-Virginia Municipal Airport? "It seems almost like one of those unsolved mysteries," says Jeff Johnson, an assistant professor of aviation at St. Cloud State University. He's also a pilot who's logged nearly 3,000 hours, including several hundred flying planes similar to the one in which Paul Wellstone and the others died. "There's things I ask myself like, my goodness, this is a very durable airplane, you have an experienced captain aboard that airplane, it went down suddenly like this at low altitude, no distress call and a call was made to the Eveleth airport reporting that they were "X" miles from the airport and it happened that fast," says Johnson.

Unlike many high profile aviation accident investigations, the struggle to determine what went wrong with the Wellstone flight is handicapped on several fronts. There were no black box pilot voice or data recordings -- they weren't required -- and fire destroyed most of the wreckage.

What is clear from National Transportation Safety Board data is that just miles away from the runway, the plane left its approach course to the Eveleth-Virginia Municipal Airport, and that minutes before plunging into the ground at a steep pitch, the plane was flying dangerously close to the speed at which it could easily lose its ability to remain aloft.

On the scene in Eveleth last fall, trying to make sense of the wreckage immediately following the Oct. 25 crash, then acting NTSB Chairwoman Carol Carmody said investigators wanted to know why the plane turned away from the airport and why it was going so slowly. "All we know is what the data shows about the direction and the speed of the aircraft and we don't understand why that occurred so we need to find that out. We don't know what was going on in the cockpit or with the pilot or with the controls but we're going to try and find out," she said at the time.

With apparently so little hard evidence, accounts from local residents who saw and heard the plane in its last moments of flight, may be of particular importance to the effort to figure out what happened. NTSB investigators interviewed several people about what they saw and heard.

Among them is John Kaukola, who was tending to his horse the morning of Oct. 25. "See how quiet it is? You
don't hear nothing. This is just like it was," he told Minnesota Public Radio recently.

Kaukola lives few miles from the crash site, just south of the Eveleth-Virginia east-west runway, on the approach the NTSB says Wellstone's plane was initially lined up on. Kaukola says he's been watching planes, often from his backyard deer stand, for more than 10 years. Kaukola never actually saw Wellstone's plane but he says he tracked the roar from its twin engines for several miles. He says he's seen numerous planes well off course on the way into to the Eveleth-Virginia airport and that Wellstone's plane seemed to be flying the correct approach.

"I was listening because there was nothing else to listen to and I heard them going, and going," he says. All of the sudden, well before the plane should have been at the airport, Kaukola says the roar from the engines was gone. "The sound really went down; not like they shut it off, not like the engine's quit. He just eased back on the throttle and I thought, 'Boy, he powered back soon," and I turned my back away and then I heard the boom."

Closer to the crash site -- about a mile away -- Megan Williams tells a similar story. She was resting that Friday morning with her bedroom window partially open when she heard the plane. Like Kaukola, an abrupt drop in engine noise right before the crash caught Williams' attention.

"When that split second of silence was there, then

it was a soft kind of boom," she says.

According to recently released NTSB information, the plane's engines were running at the time of the crash, but for some reason they were running at low power.

Early on investigators said they thought the main landing gear had been lowered. The last they said about the plane's deicing equipment is that they couldn't tell whether it had been deployed because fire so badly destroyed the wreckage.

It sounded to Williams like the plane was heading away from the airport, which it was in its final moments of flight. The wreckage lay roughly two miles southeast of the runway. So why was the plane off course and why was it flying so slowly?

The radio beacon at the Eveleth-Virginia airport was not working perfectly. Common at mid-size airports, Very High Frequency Omnidirectional Radio -- VOR -- signals help pilots line up with runways several miles out from airports. The Federal Aviation Administration ordered the Eveleth-Virgina beacon out of service after the accident.

The day after the crash, FAA pilots tested the VOR. The inspection pilots reported to the NTSB that when they flew the approach without their automatic pilot engaged, the VOR repeatedly brought them about a mile south of the airport. In one written statement an FAA pilot told the NTSB that the signal guided him one to two miles left or south of the runway. That's the same direction Wellstone's plane was heading when it crashed.

Still, based on its late October testing, the FAA concluded the VOR was only "slightly out of tolerance" -- just 1.1 degrees off. Nearly two months later, different FAA inspection pilots retested the VOR at the Eveleth-Virginia Airport. The late December tests, according to the FAA, found the VOR signal, over several attempts with and without automatic pilot appropriately positioned them for landing. And yet, the beacon is still not been put back into service.

The director of flight operations at the University of North Dakota's School of Aerospace Sciences, Alan Palmer, says the FAA test discrepancies combined with the fact the VOR is still out of service at the airport indicate to him that officials remain concerned about the signal's accuracy.

"I'm sure the FAA is trying to be as conservative as possible. I'm sure they don't want a repeat of the Wellstone crash," Palmer says.

Palmer says VOR problems, either from the signal itself or from erroneous interpretation of the signal, would not by itself cause a plane crash. But he says if Wellstone's plane was directed well south of the airport moments before landing, it could have been very confusing for the pilots and led them to make a very serious mistake.

"If they were that far off course, then that would have meant that the airport probably wasn't off of the nose of the airplane and having said that, maybe they started to look around for the airport and during that process of looking around, both pilots were looking and perhaps they forgot to fly the aircraft."

The FAA declined to make the inspection pilots available to Minnesota Public Radio. In response to MPR's initial inquiry, the agency discounted the discrepancy in the results of its VOR testing. An FAA spokeswoman says the agency is now reviewing the testing information with the involved inspection pilots.

Other pilots who flew into Eveleth-Virginia Municipal Airport the day of the Wellstone crash reported experiencing no major problems with the VOR signal. Since the crash, much of the speculation has centered on the possibility that ice collected on the plane making it difficult to fly.

There were, before and after the crash, reports of icing conditions in the area. But pilots who flew there that day reported only moderate icing at worst. Still, the pilot in command of the Wellstone flight, Capt. Richard Conry, called off the trip after his first weather briefing.

According to NTSB documents, Conry changed his mind about cancelling the flight after talking to Wellstone staffers. "What we look at is the different weather data that's available for the case," says aviation research meteorologist Ben Bernstein, of the National Center for Atmospheric Research, which analyzed the weather at the time of the crash at the request of the NTSB.

He declined to discuss whether icing could have brought down the plane. But Bernstein told Minnesota Public Radio that his analysis for the NTSB concluded icing was not likely a major problem at the time the plane crashed. "There's no way for us to know for certain how severe the conditions may have been, but looking at the data we did look at, it didn't appear to be a particularly severe situation," according to Bernstein. If heavy ice wasn't a factor, could there have been a mechanical catastrophe?

Although fire destroyed much of the aircraft, the NTSB does know the plane was apparently in good shape just hours before its last flight.

"I'm confident that when I left the aircraft that to the best of my knowledge that airplane was in fine working order," says Jason Rivera, who piloted the same King Air on a round trip to North Dakota which ended at the St. Paul Airport around 7 p.m. the evening before the crash.
At the time Rivera was a captain for Aviation Charter. He now works for Japan Airlines.

Rivera says he doesn't recall whether he used the King Air's deicing equipment on its second to last trip. He does remember though there were no maintenance concerns related to the plane.

"I flew it a couple of times that week and there were no problems with the airplane at all and I know that it had flown quite a bit up to that date and when we check in for a flight we always look in the logbook to look at previous write-ups on the airline just so that we're familiar with anything that may have been occurring repeatedly or something that another pilot had experienced within the last few flights so we can be vigilant and look for that problem again and there was nothing to that effect," Rivera says.
Rivera, who's worked as a commercial pilot instructor, says I t's incomprehensible to him the plane was flying so slowly. The NTSB had reported that the last radar check clocked the plane at 85 knots. Rivera suspects that neither pilot was watching the instruments, in particular the airspeed indicator.

Jeff Johnson

"It's hard for anybody who's flown before to understand that a pilot would let their airplane get that slow -- probably 40 knots too slow -- on an approach because at 85 knots that airplane is probably barely flying really," Rivera says.

The owners of Aviation Charter failed to return repeated phone calls from Minnesota Public Radio. It's the second time in five years the company has had to deal with a deadly accident. The last time a King Air 100 crashed with fatalities, it was an Aviation Charter flight attempting a landing in Colorado. The sole pilot and one of his two passengers were killed. The NTSB blamed that crash on pilot error.

Immediately following the Wellstone crash, the charter company issued a news release saying Capt. Richard Conry, who was believed to be flying at the time of the crash, had more than 5,000 hours of flying time. But recently released NTSB information suggests Conry exaggerated his experience and that he kept multiple logbooks.

Recently released NTSB information raises doubt Conry's competence, revealing numerous incidents of the former pilot's cockpit mistakes.

Just three days before the crash, Conry, who was flying Wellstone to Rochester, accidentally engaged the autopilot on take-off, and later misidentified to air traffic controllers his twin engine plane as a Citation jet.

Sen. Wellstone jokingly told Conry to "get some rest." Wellstone also asked Conry if he would be flying him later that week.

Conry's widow, Johanne, did not respond to an interview request. She told the NTSB that on the day before the fatal flight, her husband flew a middle-of-the-night round trip to North Dakota and then, after resting at home, left for several hours to work at his second job as a nurse.

Mrs. Conry told investigators that her husband got home at about 9:30 the night before his last flight and that he slept for at least eight hours.

"The worry I have there is just the fatigue factor because a tired pilot is going to make mistakes," says Minneapolis attorney Charlie Hvass Jr., who specializes in aviation litigation. Hvass is not investigating the Wellstone crash, but he's following case.

"When there's two pilots and apparently everything working on the airplane... I mean this aircraft will fly very well on one engine. It's got two sets of instruments. There's no explanation for it other than neither of them were flying the airplane. Nobody was looking at what was going on with the airplane. And most likely in a situation like that, they simply get the airspeed too low and by the time they realize it they've stalled and gone in," says Hvass.

"When the NTSB does come to a conclusion, whether it's a final conclusion or whether it's left hanging, there will be several issues that will play into this," says aviation risk expert Todd Curtis, formerly an air safety analyst with the Boeing Company, who now tracks airplane accidents and publishes the Web site (http://www.AirSafe.com).

Unlike many small plane crashes, Curtis says by nature of the fact Wellstone was a U.S. senator, the crash is the subject of an extraordinary investigation. And Curtis is confident the NTSB will identify several potential contributory factors to the accident.

"It will not be just one issue that led to this event. And what those several issues are there are some obvious candidates; icing, landing aid out of tolerance, but it may turn out that those obvious issues have nothing to do with what happened," he says.

Knowing what happened to Wellstone's plane would help provide closure to last fall's tragic deaths. There are also major financial implications. The cause of the crash will become the basis for millions of dollars in wrongful deaths lawsuits which are expected to be filed on behalf of the victims' families.

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WANTED TO BORROW— The 2002 SECOND issue of Van's RViator. There's an instruction change in their regarding trimming the lead counterweights in the elevator and I can't find my copy. Will return, of course. Bob Collins . bcollins@visi.com

WANTED TO KEEP— A single AD-41-ABS pop rivet. Wouldn't you know it? In the rebuild of my right elevator (detailed last month), I came up one rivet short for the leading edge and would rather know pay the massive shipping charges for one little rivet. Bob Collins. bcollins@visi.com.

FREE—One apology for losing an article about Gov. Pawlenty's cuts as relates to aviation. Will include it in next issue.