EAA MILE HIGH CHAPTER 43

EXPERIMENTAL AIRCRAFT ASSOCIATION DENVER

PRESIDENT	VICE PRESIDENT	SECRETARY	TREASURER	NEWSLETTER
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VOLUME 12, ISSUE 1, JANUARY, 1989

THIS MONTH: This month's meeting will be held on Saturday, January 14, 1989 at 7:30 P.M. in the Club Room of the Denver Air Center, which is at the junction of the two main roads leading into Jefferson County Airport. The program will be a choice of several different videotapes which the membership can vote on for the one they would prefer to watch.

LAST MONTH: With 83 members and guests in attendance, Chapter 43's annual Christmas Banquet began around 7:00 P.M. at Bernard's Restaurant in Arvada on Sunday, December 11, 1988. After most all had finished eating, President Kirby White called everyone to order for a short business meeting, at which time the minutes of the November meeting were approved as published in the Newsletter.

Guests: There were many, many guests present, in the form of relatives and friends, and Kirby welcomed all of them to the Banquet.

Treasurer's Report: There was none given.

Old Business: Kirby let everyone know that Treasurer Cathy Sheeon still had a good supply of calendars to sell at $5.00 each.

New Business: Kirby felt that some thanks were in order. First, he thanked all present for the excellent turnout. Then he thanked Cathy Sheeon and Daphne Davenport for setting up the Banquet and contacting everyone about it and for making the cookies that were at every place setting. Everyone gave Cathy and Daphne a very nice round of applause for their hard work.

Gene's Corner: Gene Horsman read the following humorous items from "I'd Rather Be Flying" by Donna Vasko:
A few words from the airlines: First Officer: "Okay boss, you proved we could land in zero-zero conditions. Now how do we taxi?" Senior Stewardess: "There are two places you can stick that baggage, and one is under the seat." Passenger: On a 747, the Captain reported the loss of first one, then two, then three engines, saying after each loss that their arrival would be slightly delayed. After the third, one passenger said to his neighbor: "If we lose one more, we'll be up here all night."

Flying is hours of boredom alleviated by moments of sheer terror.

Flight instructing is hours of terror alleviated by moments of boredom.

With my luck, when my ship comes in I'll probably be at the airport.

Gene also read the poem on the next page about aviation mechanics.

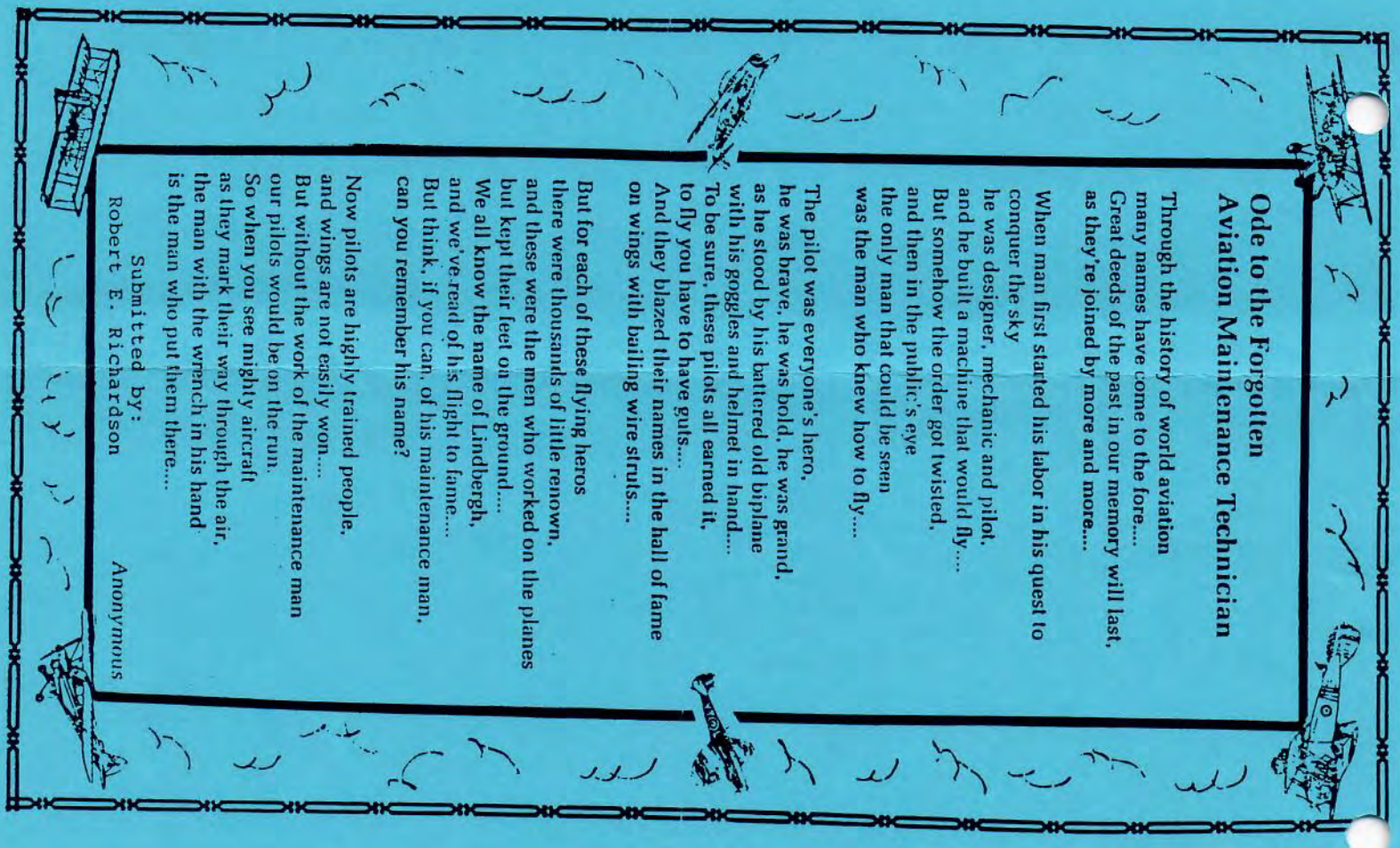
Progress Reports: There were none given.

A&P: The business portion of the Banquet adjourned before many had to leave, because it was a Sunday night with Monday being a work day. Kirby invited all present to stay as long as they liked, however. He said that there would not be an actual program, because it gave everyone a chance to talk to one another.

DUES: That's right, it's dues time again. There will be no increase in amount again this year. Dues are still $10.00. Please take a few minutes and fill out the 1989 Membership Renewal Form which is included in this Newsletter.

CALENDARS: We still have 1989 EAA calendars to sell for $5.00 each.

MARKETPLACE: For Sale: Narco Mark 12A, 360 channel, includes VOR and GS head, with power supply; Genave Alpha 200 B NavCom, 90 channel, with wiring harness; Hunter True Airspeed Indicator; All working when recently removed. Make offer. Phil Young 665-5773



Ode to the Forgotten
Aviation Maintenance Technician

Through the history of world aviation
many names have come to the fore....
Great deeds of the past in our memory will last,
as they're joined by more and more...

When man first started his labor in his quest to
conquer the sky
he was designer, mechanic and pilot,
and he built a machine that would fly....
But somehow the order got twisted,
and then in the public's eye
the only man that could be seen
was the man who knew how to fly....

The pilot was everyone's hero,
he was brave, he was bold, he was grand,
as he stood by his battered old biplane
with his goggles and helmet in hand....
To be sure, these pilots all earned it,
to fly you have to have guts...
And they blazed their names in the hall of fame
on wings with bailing wire struts....

But for each of these flying heros
there were thousands of little renown,
and these were the men who worked on the planes
but kept their feet on the ground....
We all know the name of Lindbergh,
and we've read of his flight to fame....
But think, if you can, of his maintenance man,
can you remember his name?

Now pilots are highly trained people,
and wings are not easily won....
But without the work of the maintenance man
our pilots would be on the run.
So when you see mighty aircraft
as they mark their way through the air,
the man with the wrench in his hand
is the man who put them there....

Submitted by:
Robert E. Richardson

Anonymous

A RESOURCE PROVIDED AS A SERVICE TO EAA CHAPTER NEWSLETTER EDITORS

Volume IV, Number X

December 1988

DRUG ENFORCEMENT ASSISTANCE ACT OF 1988

The Congress has developed a sweeping bill (HR5210) to help curb drug use in the United States. Subtitle E of this bill entitled "Federal Aviation Administration - Drug Enforcement Assistance Act of 1988" will greatly change the system for registering aircraft, recording the certification of airmen and processing of repair and alteration forms for fuel system changes. The purpose of these changes is to more readily identify aircraft and airmen engaged in drug smuggling. The changes recommended are airmen certificates with positive identification features including pictures and aircraft registration changes which positively tie the aircraft to an accountable and identifiable registered owner. These changes will cause some inconvenience and expense to owners and certificate holders but FAA is trying to institute these changes keeping this aspect to a minimum. If FAA does not accomplish the task outlined by Congress then they will prescribe the rules, much the same as the ELT law, and FAA will have to enforce it. The FAA is currently developing the necessary changes in procedures and rules in consort with the user organizations. This is the best route to take and we are trying to help them in obtaining a result which will accomplish the prescribed task with a minimum of inconvenience and expense to the aviation public. EAA will be an active member of this team.

DRUG TESTING RULE

DOT Secretary Jim Burnley unveiled final rules for employee drug testing in all modes of transportation which includes regulations covering about 538,000 aviation industry employees. Air Line Pilots Association President Henry Duffy promises to challenge the rules in court and seek changes in Congress and at FAA, citing constitutional objections to random testing, failure to require an opportunity for rehabilitation and lack of employee protection from false test results. The final rule covers Part 121 and 135 operators, airport security personnel, non-government air traffic controllers and most individuals and companies providing air transportation for compensation or hire. Non-commercial general aviation and corporate pilots are not covered by the regulation. Coverage for such pilots was considered but eventually rejected, not only because of the complexities and logistical problems involved but also because the larger goal was to reach operators engaged in commercial transport. Post-accident and periodic testing for general aviation pilots remains a possibility for the future. Burnley said he preferred to leave the question of rehabilitation to the collective bargaining process but added that many of those who returned to work after testing positive would be subject to additional scrutiny. Mandatory rehabilitation would bring up other concerns, including liability and the fact that it potentially could put some small operators out of business. Mandatory rehabilitation also would reduce incentives for employees to seek assistance with their problems since they would know their jobs would be secure in any case.

Under the rules, operators would be required to conduct five types of testing -- pre-employment, periodic, random, reasonable cause and post-accident -- for marijuana, cocaine, opiates, amphetamines and phencyclidine (PCP). Employees covered include pilots, flight navigators, aircraft dispatchers, mechanics, repairmen, flight engineers, ground instructors, flight attendants, non-government controllers, security screening personnel and ground security coordinators. Large airlines, regionals and air taxi operators with more than 50 employees subject to testing must submit anti-drug plans within 120 days of the effective date and have testing in place by December 1989. Small operators will be given up to another year to comply. After about a year, the employer must test 50% of its covered work force annually on a demonstrably random basis. Burnley said DOT was sensitive to employee rights in drafting the rule, adopting Health and Human Services guidelines to ensure accuracy, confirmation tests, if needed and procedures to ensure samples are not tampered with. Duffy indicated that ALPA is committed to a drug- and alcohol-free cockpit but that the constitutional problems and risk of false-positives make this "the wrong program." Not providing for mandatory rehabilitation also is counterproductive because it might discourage personnel from openly seeking help. Duffy also cited President-elect George Bush's statement that a drug-testing program must fully protect the rights of the individual. Susan Bianchi-Sand, president, Association of Flight Attendants, said in a separate statement that the union believes that drug testing is not needed for flight attendants because there is no evidence of any on-the-job impairment. AFA does support testing in certain limited situations, such as a post-crash, pre-employment and probable cause situations when presented by a qualified law enforcement officer. (Courtesy of the AVIATION DAILY)

RESEARCH BILL

President Reagan has signed into law, legislation (HR4686) to strengthen FAA's research in several areas, including human factors, aircraft structures, cabin flammability and computer simulation of the airspace system. Legislation requires 15% of R&D funding for long-term projects. FAA is required to issue an advance notice of proposed rulemaking to determine the feasibility of installing crash-resistant fuel tanks and breakaway fuel lines in airliners. The Agency is also directed to research the consequences of automation on the air traffic control system and controller performance. (Courtesy of the AVIATION DAILY)

ATA SAYS FAA RULE ON CIVIL PENALTIES "FATALLY FLAWED"

A final rule issued by FAA on September 7, without prior notice or opportunity for comment, was described by the Air Transport Association as "essentially a ticket for warrantless searches" by the agency. ATA said the final rule, which sets new rules of practice for certain FAA civil penalty actions abrogates the Administrative Procedures Act and DOT rules of conduct in hearing cases. "From beginning to end, this final rule is fatally flawed," ATA said. It asked that the rule be "immediately vacated" and that a new rule "which takes full cognizance" of the APA be issued for the notice and comment "required to comply with the law." In the final rule, FAA has an "elaborate and broad discovery program to be conducted without the consent or approval" of an administrative law judge. These and other provisions are "essentially a ticket for warrantless searches," and a "fishing expedition of the grandest proportions." It said that "even subpoenas are divorced from the judge, who is required to sign them 'in blank.'" The new rules also "eliminate the right" to a trial on issues of liability or amount of civil penalty in

US district courts for cases adjudicated under the rules, ATA said. Congress added a provision, while the legislation was being written, that a civil penalty could be assessed only after opportunity for a full hearing. "The rules adopted do not provide for such a hearing," ATA said. It accused FAA of adopting the rule hastily to meet a June 30 requirement to report to Congress on its effectiveness. ATA said the agency was "nine months into the two-year term" of the enabling legislation, which terminates December 30, 1989, "without a demonstration program of any kind." ATA also said that the "nature and effects of these rules on potential respondents go to the very essence of due process rights in enforcement cases and require an opportunity for notice and comment prior to adoption of any final rules. As such, the final rules should be immediately vacated and the proper and required notice and comment procedure begun anew without taint of this attempt to circumvent the APA." EAA's own "Legal Council" has also written to the FAA on this issue in concurrence with much as outlined above by ATA. The EAA legal group voiced an opinion that the rule is a violation of rights and must be overturned.

COLLISION AVOIDANCE SYSTEMS

American has contracted with Bendix/King to equip its entire fleet, now numbering 465 aircraft, with traffic alert and collision avoidance systems (TCAS) by the end of 1991. Bendix said the sale will be worth in excess of $100 million to equip the carrier's anticipated fleet of 700 aircraft. Installation is to begin late next year. American is the first major airliner "to respond to the government mandate" for installing the equipment by the end of 1991. Bendix/King earlier sold its system to Piedmont and to Southwest. (Courtesy of the AVIATION DAILY)

PETITION FOR "BUFFER" AIRSPACE AROUND AIRPORTS

An EAA petition filed with FAA proposes to revise final rules, now scheduled to take effect July 1, to authorize aircraft without Mode C transponders to "gain safe access on a non-conflict basis" to specified public-use airports by flying under the floors of Terminal Control Areas (TCA) and outside a one-mile lateral and 500-foot "buffer" area from the TCA boundaries. The joint petition was filed by the Aircraft Owners and Pilots Association, the Helicopter Association International and the Experimental Aircraft Association. Groups say that without the revision, 24% of public-use airports -- 1,191 facilities -- will be restricted by equipment requirements when all 32 TCAs are in place. We believe that FAA's Mode C 'veil' rule unjustifiably denies legitimate safe access to non-conflicting aircraft in airspace at low altitudes where air traffic control separation services frequently cannot be provided due to inherent radar limitations and where airline aircraft do not operate. By establishing an adequate altitude reporting 'buffer' area around the nation's TCAs, the public traveling on air carrier aircraft will be protected, without restricting general aviation access to 24% of US public-use airports. The petition says that, despite a 30-nautical-mile veil rule for Mode C transponders in terminal airspace, vertical ATC radar service close to the surface at that range is not available in most areas and that airline aircraft do not operate at or near the surface out to such a distance. The petition does say that useful radar coverage often does extend well beyond the lateral boundaries of TCAs so aircraft operating under TCA floors are detectable on both primary and secondary radar. "Therefore, with the application of our proposals for a one-mile lateral and the 500-foot vertical 'buffer' area around TCAs, there will be sufficient monitoring by air traffic controllers to ensure separation between controlled and uncontrolled aircraft," the petition said. The petition also states that because the termination date for manufacture of Mode A transponders is so far ahead of the availability of Mode S services

due to delays in the National Airspace System Plan, "unnecessary pressure is exerted on owners to cease installation of Mode A transponders and to purchase Mode S transponders. The dates now established for manufacture of both Mode S and Mode A transponders should be adjusted to more closely reflect real-world ATC service and technological availability and to allow the owners of the potential 90,000 non-equipped aircraft to make a realistic transition between Mode A and Mode S." The petition requests that the date for ceasing Mode A transponder production be set back from December 1989 to January 1, 1994, and that installation be permitted until the Mode A transponder shelf stock is exhausted. The three groups also asked FAA to raise the 10,000-foot mean sea level Mode C requirement adopted in the final rule to 10,500 feet because the new rule eliminates two westbound visual flight rule altitudes -- 10,500 feet and 12,500 feet, and one eastbound VFR altitude, 11,500 feet -- for non-Mode C equipped aircraft. "Because of this severe reduction and limitation on cruising altitude, we believe that the final rule should be amended to 10,500 feet, which would provide an appropriate altitude for westbound VFR traffic which matches the utility and capability of the aircraft."

'TWAS THE NIGHT BEFORE CHRISTMAS...

We would like to thank Sharron Travis, President, EAA Chapter 597 in Chesaning, Michigan for having some fun with a special poem originally written by Clement Moore.

'Twas the night before Christmas, and all through the shop. Nothing was stirring, not even the prop. The wings were all hung, with care on the wall. All wired up tight, so they wouldn't fall. The pilots were cuddled, all snug in their beds, while visions of blue skies danced in their heads. With Ted in his PJ's, and me in my gown, we just started to dream of an engine so round; When out in the yard there arose such a clatter, we sprang from the bed to see what was the matter.

Out to the back door, we flew like a rocket, unlocked the garage to look at our project. On with the lights, which had a soft glow. That shone on the wings, and the fuselage below. When to our wondering eyes should we see, but a beautiful sleigh, How could this be? With a little old pilot, so clam and quick, we knew in a moment--It must be St. Nick. More rapid than eagles his coursers they came. With calm in his voice he called them by name. Now Mooney, now Piper, now Beechcraft and Christen, on Cessna, on Luscombe, on Aeronca, and Stinson.

To the top of the rafters, to the top of the roof, we couldn't hear the sound of a hoof. So up to the shop roof the coursers they flew. With a sleigh full of tools, and St. Nicholas, too. And in a minute, we heard a loud noise. It was indicative of toys for the boys. As we hid by the work bench, we made not a sound. Huddled in the back, close to the ground. This pilot was dressed in rich brown leather. It was lined with fur for the cold, cold weather.

A big brown bag he had flung on his back. He looked like a mechanic when he opened his pack. Out fell a drill with all of its bits. Then came the sander, and paper with grits. We had to sit down for a few minutes. Then he remembered the gun with all the rivets. When he reached in, he pulled out a grinder. He was a nice little man. No one could be kinder.

Once again, he was into his sack. Pulled out a nightie. "Oops, put that back!" The tools were quite heavy without a doubt. The sheet metal brake was the last thing out. He said not a word, just heaved a big sigh. This delivery was over. He'd head for the sky. He looked around and gave out a chuckle. He rubbed his big belly and Pratt Whitney belt buckle. He sprang to his sleigh and set the transponder. Then he disappeared into the wild blue yonder. But we heard him exclaim as he flew out of sight, "MERRY CHRISTMAS EAAer's AND HAVE A GOOD FLIGHT!"

*** HAPPY HOLIDAYS FROM YOUR EAA HEADQUARTERS STAFF ***

RADIO SYSTEMS TECHNOLOGY

10985 GRASS VALLEY AVENUE
GRASS VALLEY, CA. 95945
(916) 272-2203

GENERAL PLASTIC-PLANE ANTENNA INSTALLATION (P/N 82709)

1. This sheet describes in general terms the installation of so-called "hidden" antenna systems on foam-fiberglas ("plastic") airplanes. We do NOT have, nor will we answer questions on ADF, loran, CB, HF antennas, or antennas for part wood, part metal, part carbon cloth, part ? aircraft.

2. VHF NAV, VHF COM, MKR BCN, and other VHF-UHF aircraft antennas are made of copper foil elements, fed with RG-58 coaxial cable, with 3 small ferrite toroids ("doughnuts") around the coax at the dipole end as shown in Figure 1 (reverse). This figure also shows that the only difference between NAV, COM, MKR, etc. is the length of the copper foil elements. Normally, we try to make all COM antennas vertical to the earth's surface and all navigation antennas (VHF NAV, MKR, etc.) horizontal to the surface of the earth. A little thought will show that NAV antennas can be placed in a large number of places in most plastic airplanes (i.e. canard, main wing, etc.), but vertical surfaces are a little harder to come by. In the E-Z class of aircraft, the winglets are used, and in the Quickie, the vertical fin is used. If the whole antenna will not fit inside of one surface, then the copper foil may be "bent" to conform with the airframe shape.

3. The copper foil and "balun" (toroids) may be placed anywhere in or on the foam or fibreglas; the surface, inside the glass but on the foam, or buried within the foam are all valid locations for the antenna. However, no matter the location of the antenna it ABSOLUTELY MUST have the balun - foil/coax attach area firmly "potted" (using microballoons & resin or flox) to prevent the solder joints from breaking under load and flex. Please be sure that placement of the antenna does not degrade the aerodynamic performance of the aircraft.

4. Some general comments: The coax should run at right angles to the foil elements as far as reasonably possible before making any bends. Keep the foil TIPS away from large metal surfaces or other wires, even if it means sacrificing perfect positioning or bending the elements around. If you have the choice, connect the coax center conductor to the highest or furthest outboard of the two foil elements.

5. Transponder and DME antennas are made of a flat aluminum plate called a "ground plane" and a pencil-thick rod threaded on one end called a "radiating rod", assembled with insulating washers as shown in Figure 2. The antenna should be installed with the ground plane horizontal with respect to the earth's surface, and the tip of the radiating rod pointing down. The tip of the rod may be as close to the fibreglas "skin" as you please, but there should be no metal for 25 cm or so away from the rod. Remember, if the airplane were made out of clear glass, and if a person at the radar site couldn't "see" the radiating rod (and that includes looking through engines, fuel tanks, people, etc.), then the radar (or DME) will NOT be able to respond to the aircraft radio. Finally, put an aluminum foil shield between the antenna and the pilot's/copilot's body.

6. You may wish to avail yourself of articles written by our staff about plastic-plane antennas. Send $1 for each copy you want and a self-addressed stamped envelope.

PART NUMBER	ARTICLE	MAGAZINE	MONTH/YEAR
82703	Plastic Plane $5 Antenna System	Sport Aviation	May 79
82704	Antennalets...	Sport Aviation	Jan 81
82705	Understanding Aircraft Antennas	Private Pilot	Oct 78
82706	Economy Antennas	Sport Aviation	Oct 76

17 MAY 1982

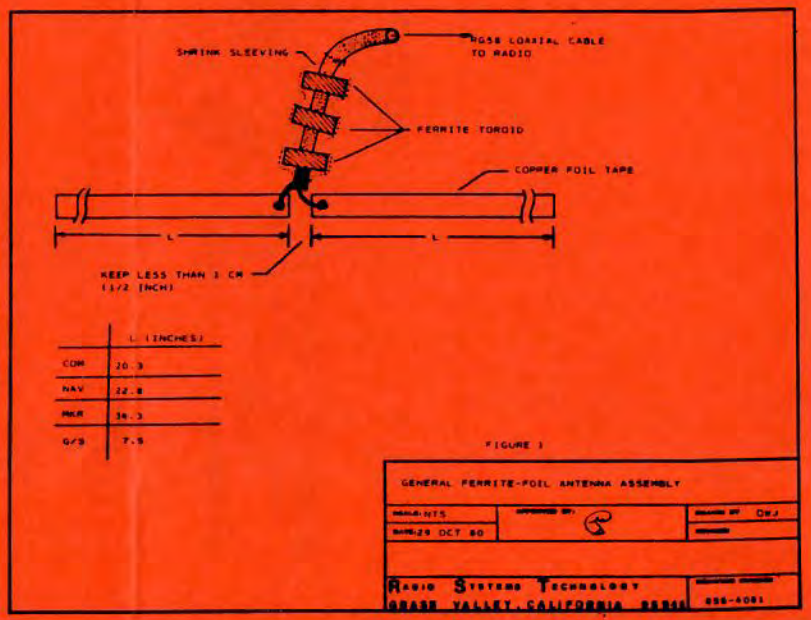


FIGURE 1

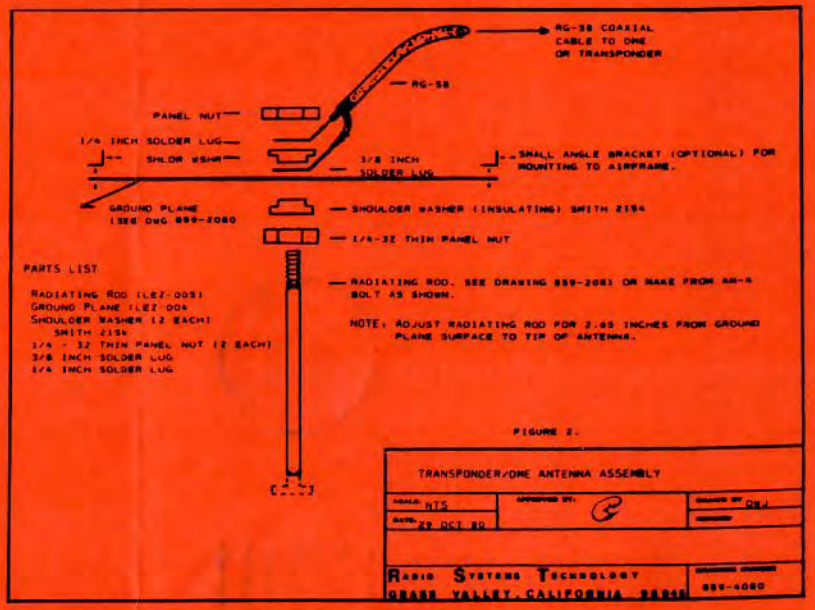


FIGURE 2.

RADIO SYSTEMS TECHNOLOGY

AIRPORT INDUSTRIAL PARK
GRASS VALLEY, CA 95945-RR5
(916) 272-2203 123.3 MHz

14 September 1982

COPPER FOIL TAPE FLEX

The past few years have witnessed several thousand antennas on plastic airplanes made from small strips of copper tape foil and ferrite toroids. In a few isolated cases, the copper has failed in tension, and the antenna was thus detuned, rendering it useless.

An analysis of the circumstances surrounding these failures leads to the conclusion that antennas installed on fibreglass surfaces subject to flex are the most likely to break. Although the tape is really quite strong, it cannot survive the strain imposed by a half-ton airplane bouncing along the runway. All of the reported failures have been on gear leg antennas or canard-gear antennas, especially after hard landings.

The problem is that the gear leg or the canard-gear surface may be your best electrical location for the antenna. With this problem in mind, here are some tips to keep the foil from breaking:

1. If you are installing the antenna in foam, you might sandwich the foil between wax paper, thus allowing the foil to "float" between the plies of wax paper.

2. If the tape is going onto a semi-rigid surface, solder a small brass brazing rod or copper tube the full length of each element. Then, should a microscopic crack occur in the foil, the metal rod will keep the foil (electrically) in one piece.

3. "Pot" the coax-ferrite-copper strip junction area in a small amount of flexible rubber sealant (RTV). This will provide a "cushion" for the solder joint area from sharp jolts, vibration, etc.

4. If possible, install the foil so that any stress will cause compression instead of tension.

In conclusion, the best thing to remember is that copper foil tape is not structural, and that the foil tape is much more likely to fail in tension than any other mode. Comments, as usual, are always appreciated.

Regards,

Jim Weir
VP Engineering

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1989

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