

The Signal

OFFICIAL MAGAZINE OF THE COLLINS COLLECTORS
ASSOCIATION * Q4 2012 *

*Superlatives May
Sell Soap . . .*

... An antenna matching network which makes for maximum transfer of energy and proper attenuation of harmonics . . . A neutralizing system that's fixed at the factory (changes from one band to another can be made without tinkering with a ticklish neutralizing condenser) . . .

A power supply with decent regulation and the same kind of sound construction and painstaking care which went into those COLLINS transmitters which are perking along on the tough communication jobs the world over. That's what sells COLLINS transmitters . . . not superlatives . . . and that's why more and more amateurs are ordering Type 30-FXB Transmitters. Mail COLLINS RADIO a card and complete data on this moderately priced transmitter will be sent to you.



Here is shown a typical Type 30-FXB Installation in the home of a well-known amateur — note its pleasing lines and the ease with which it fits into the well-appointed home.

COLLINS RADIO COMPANY



CEDAR RAPIDS IOWA, U.S.A.

New York Office: 11 West 42nd Street



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Every day finds me getting more and more excited about my hobby. I hope that you feel that too. I cannot help but think about all of the people in our general hobby of Ham Radio that are basically operating very complex computer driven, computer assisted, and digitally controlled radios. These folks have, in most cases, no idea of what is inside them. And, worse yet, if something goes wrong, it is off to the repair man - or if it is old enough - often it is off to the garbage dump.

We, on the other hand, get to appreciate the simplicity, the engineering elegance and the repairability of our equipment while we use a receiver or transmitter that shows us its heart and soul every day. It's a bonus, that when it quits, we often can haul it off to the bench and have it back in operation in a day or two.

As I work here on our website with Scott, or work on the *Signal* with the excellent staff and writers that participate, and as I look at all of the wealth of knowledge and material that we all partake of, in one way or another, I cannot help but feel sorry for those that are not sharing in this wonderful aspect of the hobby - Collins collecting.

Speaking of the website, I hope that all of you are keeping up with, and are aware of, all of the changes that have been occurring there. Unbelievably, there are now over a thousand pages on our website. Scott Kerr, KE1RR and Larry Saletzki, WA9VRH, have been just going above and beyond in adding scanned material to the site, and from what I hear, they are just getting rolling. In addition to all of the material that has been added, there have been more format improvements, audio streaming added, news updated and now an entire new member awards program added. We also installed, behind the scenes, some Google activity tracking capability so we can see what you like and what you don't use. The results are gratifying. The use rate has soared and it has gotten so good that we have been approached by Silicon Valley dot-coms to run their imbedded software and features. That, all thanks to Scott Kerr.

I think you know that we, at the *Signal Magazine* here, like to do some kind of Holiday version of the magazine or include some kind of special "gift" insert so that you all get a present around the holidays. This year is no exception, but the gift is a bit different. It comes in two doses.

The first dose is the format and content change work that has been done, and the special issue that will come to you in this 4th quarter. Both 2012 and 2013 combine to be an important 80th anniversary period celebrating, first 80 years of Collins Radio Company operation this year, and then 80 years since incorporation next year.

The second dose of your Holiday Greeting gift comes in the form of what we hope will be four very special issues during the 2013 anniversary year. These issues will be celebrating four of the very significant periods and equipment evolution stages at Collins Radio. Actually there is even more if you count the website work yet to come.

This issue will also include the election instructions and update that is appropriate. For those of you that are enjoying what we are doing, or have ideas about what you would like to see happen in the organization, we invite you to participate. Regardless of whether it is just by voting, expressing an opinion, or by coming and offering to join us in our labor-of-love here, you are invited. So, to all of you, **Come join the fun and Have a Happy and Safe Holiday !**

Bill Carns

President - Collins Collectors Association

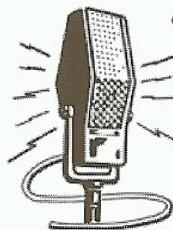


The Signal Magazine

OFFICIAL JOURNAL OF THE COLLINS COLLECTORSASSOCIATION

Issue Number Sixty Eight - Forth Quarter 2012

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- Sunday 14.263 mHz at 2000Z
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Sunday for Technical, Buy, Sell & Swap
Tues., Thurs., Fri., & Sunday for Ragchew

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CHANGE IS IN THE AIR - It's Fall After All

There is excitement in the air here in the offices of the Collins Collectors Association. Change can be a trying thing, or it can be wonderful - depending on how you look at it, and how it is implemented.

There is change everywhere within the CCA right now. First it is election time, with all that implies. Second, we are - every day - seeing more and more change and improvements in the CCA website and to member benefits. Finally now, after 7 years of basically the same format for the "new" version of *the Signal Magazine*, we are changing the format of the magazine again.

When the format last changed, the magazine (ne - newsletter) was a 4 page, single sheet of paper printed in mostly black and white. Clearly we could do better. Almost immediately, after the format change, it became an 8 page, full color, staple bound magazine and it has continued to grow from there.

Slowly the *Signal* - now a magazine - grew from an average of 8 pages, first to 12, then to 16, and then to 20 pages at times. And, of course the inserts started coming. The reaction has been tremendous. Clearly you all are enjoying the changes and the increased content. Happily, there are many compliments received for each issue that goes to press.

Now it is, apparently, time for another change. The front and back covers, in the recent past containing title blocks and part of an article, have increasingly moved toward a more formal looking jacket. The size has continued to increase, and the Magazine has been "growing up".

With this issue, we move to another level, with a new look, a formal cover magazine format and a back cover. Interestingly with the new look, the new edging, or lack of it internally, and the loss of the cover and back pages for text, we did not lose total text volume. In this day of necessary cost control, this is a good thing.

We hope that you enjoy the new Signal Magazine format, and that the compliments on the content continue to roll in. You, the reader, are the driving force for maintaining the momentum that we have achieved. It is your feedback, and your enjoyment, that motivates what we do. Please continue to make comments on your reaction. We need the feedback.

In addition, obviously, we continue to need content - and your offers of articles are important to the future of the magazine.. Keep 'em coming folks and enjoy! - - - CCA - - -

Quick Look in This Issue

- Joint AWA Work Progresses - New Advisory Committee
- CCA Election News
- *The Signal Magazine* is Getting Better
- CCA Website Statistics Continue to Climb
- **Don't Forget to Renew—It's that time again and you do not want to miss an issue! Use our new streamlined process on the "Membership" link @ collinsradio.org**



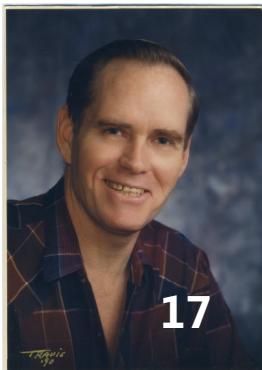
CONTENTS



8



9



17



18

ON THE COVER March 1935 QST Ad for the Beautiful 30-FXB

Artwork Restored by Gary Halverson

Opposite *The Signal* is pleased to run a current Rockwell Collins advertisement

FEATURES

3 NEW *Signal* FORMAT

The *Signal Magazine* gets a face lift and grows to serve the membership.

8 AWA GUEST LETTER

The AWA Deputy Director would like to introduce us to their organization.

9 32S-3 ALC Instability

Serendipity strikes and Don's previous work on the S-Meter solves another problem. This time in your transmitter.

16 NEW CCA AWARDS

Take a look and earn new awards while you use your Collins gear.

17 WB7DYW—SK

Dutch Maurer, 20 meter Net Control and service support regular, leaves us.

Regulars

2 PRESIDENT'S LETTER

The President's letter focuses on new member benefits and the exciting dynamics of a growing organization.

7 FROM THE EDITORS

The *Signal Magazine* gets a face lift and grows to serve the membership.

18 IN THE SHACK - N6YW

We visit Billy as he demonstrates a great love of nostalgic Collins.

24 PRESERVING HISTORY

Re-mastered by Gary Halverson, this back cover ad by Collins Radio captures the excitement of foreign Communication in the 30s.

Interoperability prevails here.



Use of military imagery does not imply or constitute Department of Defense endorsement.

Information is a powerful weapon. At Rockwell Collins, we deliver secure, networked communication that military forces around the world rely on for greater situational awareness. In the face of rapid technological advancements, limited bandwidths and tightening budgets, our affordable, advanced and integrated solutions deliver data, imagery, voice and video to any platform, in any domain. Give your forces the power to connect.

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OUR CONTRIBUTORS



DON JACKSON

"32S-3 ALC Meter Instability" *page 9*

A frequent technical writer for the Signal, Don now is also the Assistant Editor starting with this issue. Don is an experienced electronics engineer with over 40 years in industry as a HF and Microwave receiver designer. He enjoys his Collins collecting and currently has a very nice S-Line and a 30L-1 amplifier. Don, W5QN, lives in Garland, Texas and is a long time member of the CCA.

SCOTT KERR, KE1RR

"NEW CCA AWARDS" *page 16*

Here we see Scott in a rare moment where he is not working. Retired from a career in Real Estate Development, Scott has now started, and is running, a growing IT company in the Dallas, Texas area. He is an avid Collins collector and, I might add, a bachelor so he can have a magnificent A-Line display and operating position in his living room. Scott has been doing yeoman's service as our webmaster and he now brings us this new CCA Awards Program.

Robert (Bob) Hobday, N2EVG

"AWA Guest Letter" *page 8*

Bob Hobday is currently the Deputy Director of the Antique Wireless Association located in Rochester, NY. He lives with his wife in nearby Honeoye Falls. He retired from a career in Power Company Management and brings many unique qualifications to supporting an organization the size of the AWA.

Danielle Toynette

"Creative Graphics"

Danielle (Dani) is a producer and art director living in the Dallas area. She holds a BS in International Business from North Texas State University and has been working in the media/technology field for 18 years.

She also travels internationally as a freelance photographer.

FROM THE EDITORS' DESKS

by Bill Carns, N7OTQ & Don Jackson, W5QN



From the Desk of N7OTQ

This past Q3 issue was a great source of both pride and embarrassment. There were many compliments. There was also, however, that dreaded call...."You have made a serious mistake - actually several - in your Q3 issue". I want to thank John Dilks for catching the error very early and letting me know about it. The article that I wrote on the AWA Convention - The Antique Wireless Association World Convention - was, as far as I know, accurate. But the article headers on every page were wrong. Please read those also as the *Antique Wireless Association* in place of the "American (sic) Wireless Association" name that crept into the headers. All three of them. Ugh! I have no clue how that happened, but I missed it and two proof readers missed it. To the entire AWA staff and to its members, I apologize.

I want to take this opportunity to welcome Don Jackson, W5QN to the Staff of the **Signal Magazine**. I am most sure that all of you are very familiar with Don, since he has written many times for the magazine, and he is always well received. He is an excellent writer and proof reader. I have never had to correct one single thing in his articles. This bodes well for Don in his new Assistant Editor role. As a first assignment, Don will be gathering up volunteers for, and writing, the "In the Shack of W9xxx" content. Coincidentally, we have announced our new awards program and one of the awards is a Certificate for **Shack of the Quarter** that will be awarded to all stations who are chosen to appear in the magazine. This is, I hope, a little extra incentive to step up, clean up if necessary, take some good photos of your pride and joy, and share them and your story with our readers. Please contact Don if you are interested. He is "on the hunt".

Many of you know that I spent most of September and the first part of October in China. It was quite an adventure, but the jet lag that resulted from being 13 hours out of sync for over a month was a killer. I am finally feeling great again and have managed to complete my 204F-1 2.5 kW Collins amplifier project, get it moved into the SSB studio and connected to the 671U-4A/718U-12C/514A-7 Rockwell Collins 90s Comm boxes which I also got running this past summer. It is quite a set up. Now, I can finish the 204F-1 article that appeared this past year, and actually show it in operation. Big boxes will always teach you some lessons, and I sure learned some on this box. Eventually we will also do an article on the 671U-4A based system. It is really spectacular and the quality and signal reports that I am getting are unbelievable on one hand, and totally understandable on the other.

Enjoy this issue, and I hope that you like the changes. Give us your feedback. It is always helpful, and we can not fix things that we do not know about, Best 73s - Bill, K0CXX/N7OTQ

From the Desk of W5QN

Hello to everyone out there in Collins-land. Many of you know of me from my previous technical writings here in the **Signal Magazine**. When Bill asked me if I would help him with some of the editing and writing work involved with publishing the magazine, I was more than pleased to accept what turned out to be an Assistant Editor's position.

I'm happy to begin supporting Bill, as he certainly has his hands full. The first "assignment" that he asked me to help with was the locating and writing work associated with the *In the Shack* feature. Right away, I need to build up my network of leads. I'm definitely a "small-time" Collins collector, but I've seen a few impressive collections - as well as some very nice shacks.

The ones that have already been featured in the **Signal** really make me green with envy! So, I know there are more spectacular shacks and shack photos out there that everyone would like to see.

Please contact me if you would be willing to have your setup featured in the **Signal**. I'm in the Dallas area and you can contact me at w5qn@verizon.net or 972-675-2798. Also, after seeing the new Awards Program that is now offered on the CCA website, I wish you all good luck with the new CCA contests..... Sounds like fun!

Finally, I want to wish everyone a safe and happy holiday season.

Best 73s, Don - W5QN

ANTIQUE WIRELESS ASSOCIATION GUEST LETTER

Introductory President's Comments:

During the recent meeting of the AWA in Rochester, NY, various members of the AWA and CCA staff discussed ways that the CCA and the AWA could collaborate - in order to capitalize on the synergy between the missions and goals of these two organizations.

Out of this discussion was born an Advisory Committee that includes two members of the AWA, members of the Rockwell Collins Museum staff and two CCA representatives. I am happy to say that this effort is underway.

It was also agreed that the CCA and the AWA would exchange letters to be published in the other's magazines introducing the two memberships and organizations to each other. This is AWA Deputy Director Robert Hobday's letter.

Welcome to the CCA Signal Magazine Bob.

ANTIQUE WIRELESS ASSOCIATION



For 4 ½ days from August 21 to 25, 2012 the Antique Wireless Association (the AWA) hosted its 51st Annual Convention in Rochester, New York. This year, the dual themes of the convention celebrated the 100th anniversary of the sinking of the Titanic and the amazing legacy of Art Collins and Collins Radio. The AWA was pleased to welcome many attending members of CCA including your President Bill Carns, N7OTQ.

As part of a 30 plus program convention agenda, CCA members presented several excellent, informative programs on the history and legendary technology of Collins. To the amazement of all, John Dilks, K2TQN, even brought a Collins Desk - only 1 of 3 known to exist. Thanks to an antenna installed by the hotel on the roof, the Collins Desk was on the air and made many contacts. It is very obvious that Art Collin's passion and commitment to quality continues to fuel CCA members' passion and commitment to collecting, restoring, and preserving Collins equipment and history. In addition to the many great programs, informal conversations on Collins could also be heard in the halls and the flea market.

For those of you not familiar with the AWA, the AWA has about 2,000 international members. Begun in 1952, we are celebrating our 60th year in 2012. Our Vision is **to preserve and share the history of technology used to communicate and entertain from the first telegram to today's wireless text messaging**. The AWA accomplishes this Vision with a variety of initiatives including operating the Antique Wireless Museum in Bloomfield, New York, maintaining the AWA Research Library, publishing the AWA Journal quarterly, the AWA Review annually, publishing electronically the AWA Gateway quarterly, and sponsoring the AWA Convention and AWA Spring Meet annually, and on-the-air ham radio events. These activities are headquartered in a three-building, two acre AWA Museum and Research campus under further development.

The current AWA Museum, the third generation museum, will close this fall, and the new Antique Wireless Museum, the fourth generation, is scheduled to open in May of 2013. The AWA has an amazing, world-class collection of artifacts and ephemeral - many of them rare, or one of a kind. The new, larger Museum will allow the AWA to display a significantly larger portion of its huge collection through permanent and rotating displays. The grand opening celebration of the first phase of the new Museum will be held in conjunction with the 52nd AWA Convention August 20, 2013. When fully developed, the new museum will be 10,000 square feet. For more information about the AWA campus development, please go www.antiquewirelessmuseum.com.

For more information on AWA including samples from the AWA Journal and downloadable copies of our free Gateway journals, please go to www.antiquewireless.org.

The AWA encourages CCA members to consider membership in AWA. The annual dues are only \$25 (for US). Please consider joining us at next year's Convention August 20 to 24, 2013 as well. If you are in the Rochester, New York area, plan a visit to the Antique Wireless Museum. I know you will enjoy your visit.

Bob Hobday N2EVG
Deputy Director AWA



for YOUR 32S-3 ALC METER INSTABILITY



I've always been annoyed by the drifting "zero" of the ALC meter in my 32S-3. It's not a huge deal, but it sure would be nice if it was more stable. My meter wandered around about +/- 1.5dB. There are multiple things that can cause the meter zero to drift. Here is a list, in no particular order:

1. Resistor values
2. Tube (V3) cathode and screen current
3. Heater voltage
4. Temperature variation
5. Bias drift or adjustment from the 516F-2
6. Leaky capacitors
7. ALC diodes (CR5/CR6) forward voltage
8. Grid current leakage (V3 and V6)

A Little ALC Background

The 32S-3 ALC circuitry is designed to prevent the PA from being overdriven by voice peaks. The ALC is very similar to the S-Line receiver AGC circuitry in that it is an analog feedback loop that samples the output signal, and converts it to a DC voltage used to lower the gain of the transmitter. However, the ALC is conceptually different from AGC in that it uses the grid current of the PA as an indication of over-drive, rather than the RF carrier itself. Another difference is that the grid current signal is AC coupled into the ALC circuit (through capacitors C83 and C142), rather than DC coupled as in a typical AGC circuit. The theoretical result is that the ALC should not activate on a "CW" signal, such as that created by a single audio tone input to the 32S-3. Therefore, testing of the ALC should be done with a 2-tone audio input, which creates an amplitude modulated ("beat note") RF output signal that will couple into the ALC detector. That being said, the 32S-3 doesn't quite behave in this theoretical manner, as a single audio tone will activate the ALC meter under some conditions. This happens primarily because the balanced modulator isn't ideal, and it creates some AM modulation at the audio frequency. But, that is a topic for another day!

Potential Solutions

As an initial approach to most ALC zero drift problems, I would suggest following Steve Berman's (N6HK, "Precision Collins Services") method. Try these steps first and you may improve the meter zero problem enough to satisfy you. Steve says that his approach to solving most ALC drift problems is to address the following, in this order:

First . . . Replace CR5 and CR6 (Steve uses 1N4148 diodes)
Then . . . Try a different V3 (6CB6)
Finally . . . Replace the ALC zero pot, R20

In my case, I had already tried these three solutions, but the remaining ALC meter drift over time, temperature and line voltage was still greater than desired.

In order to get an idea of which resistors are the most important contributors to meter stability, I constructed a Spice model of the ALC circuit. With the model, it was easy to perform "what if" scenarios. The chart of Figure 1 shows the ALC meter movement in the Spice model when various parameters are changed. In all cases, the resistor or voltage value was raised by 5%, and the resulting meter variation recorded. For consistency, all meter readings in this article are referenced to the meter "dB" scale. Therefore, a full scale reading would be 16dB.

Looking at Figure 1 on the next page, the blue bars mean the meter deflects in a positive direction, while the maroon indicates a negative deflection. The BIAS bar is the -70V supply, "B+" is the 275V supply, and "AC IN" is the line voltage. Note that the BIAS and B+ deflections are in opposite directions, so they tend to cancel somewhat when the AC IN is varied. The "big hitters" among the resistors are R20 (zero pot), R23, and R22. But, a 5% resistor change due to temperature is pretty big, and I did not see the resistors as being a major part of the problem in my own 32S-3. I had a couple of resistors that had aged well out of tolerance, but I wound up changing all the listed resistors to modern carbon film units. My zero adjustment pot, R20, turned out to be a bit flakey, so I replaced it as well.

UNDERSTANDING & CORRECTING ALC METER INSTABILITY

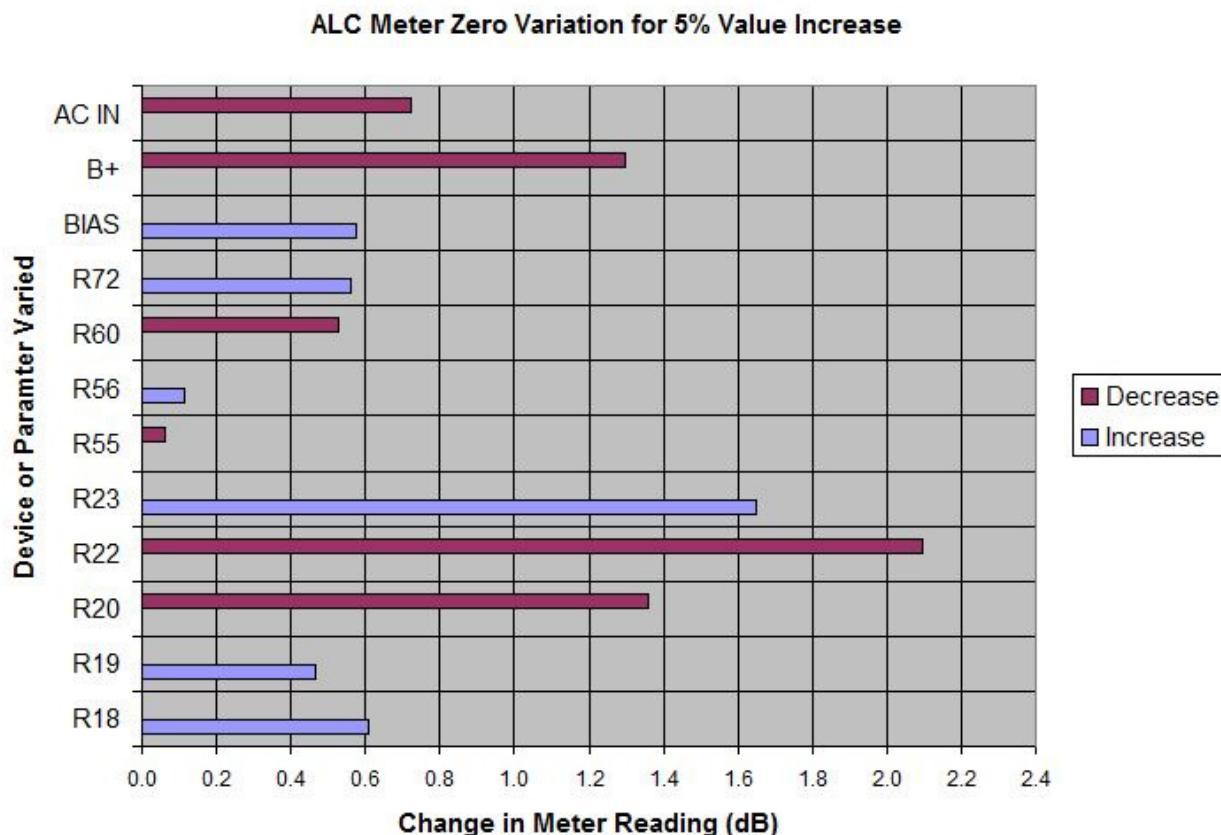


Figure 1 – ALC Meter Variation Sensitivity

At this point, I began to experiment with various voltage regulation schemes to improve the meter stability. The only article I found on the subject of 32S-3 ALC stability was by Marv Gonsior, W6FR (now SK). In his article (November 1977 issue of Ham Radio Magazine) Marv suggested regulating the V3 screen voltage with a Zener diode. I tried this basic concept as well as regulating the bias supply. Both approaches made the drift somewhat better behaved, but no combination resulted in a complete solution to the drift problem. I still had around +/- 0.5dB or more over time and AC line voltage variations. Line voltage was the biggest problem, and quite a bit of that turned out to be due to V3 heater voltage variation, which could not be cured by any of the methods I tried.

Ultimate Solution

It occurred to me that the only way to solve the drift problem entirely is to get rid of the 32S-3 ALC meter driver circuit, which is a bridge arrangement using V3 cathode and screen currents. Those of you who may have read my previous article in *The Signal* (Q1 of 2012) on linearization of the 75S-3B S-Meter may be experiencing a déjà-vu moment about now! The ALC meter driver is very similar to the 75S-3B S-Meter driver, so why not use the same approach? At the beginning of my ALC drift investigation, I had considered this approach, but didn't give it much thought because the meter in the 32S-3 is multi-functional and I thought it would be too difficult to adapt and install my 75S-3B meter driver PCB into the 32S-3. After more consideration, however, I found an installation method that was pretty easy.

With this approach, we disconnect and “park” the original ALC meter driver circuit and use an op-amp to drive the meter directly from the V3 grid bias voltage appearing at R56 (3.3Meg). This grid voltage is primarily an attenuated version of the PA ALC voltage that appears at the rear panel, but is a better choice because amplitude ripple at R56 is reduced by ALC time constant capacitor C88. Using this method, the list of ALC meter drift sources is reduced to:

1. Bias voltage change
2. CR5 and CR6 forward voltage change with temperature
3. Grid leakage current change (V3 and V6)

Items 1 and 2 on the above list are addressed by a single modification. Resistor R72 (1.5k) is replaced by three 1N4148 diodes in series. As well, CR5 and CR6 are replaced by 1N4148 units. The three series 1N4148 diodes perform double duty. The first function is that of a “poor man’s” Zener diode, regulating changes in the bias supply. This reduces the affect of bias voltage changes to less than 10% of that occurring with R72 installed. The second function is to temperature compensate the affect of forward voltage changes in CR5 and CR6 with temperature.

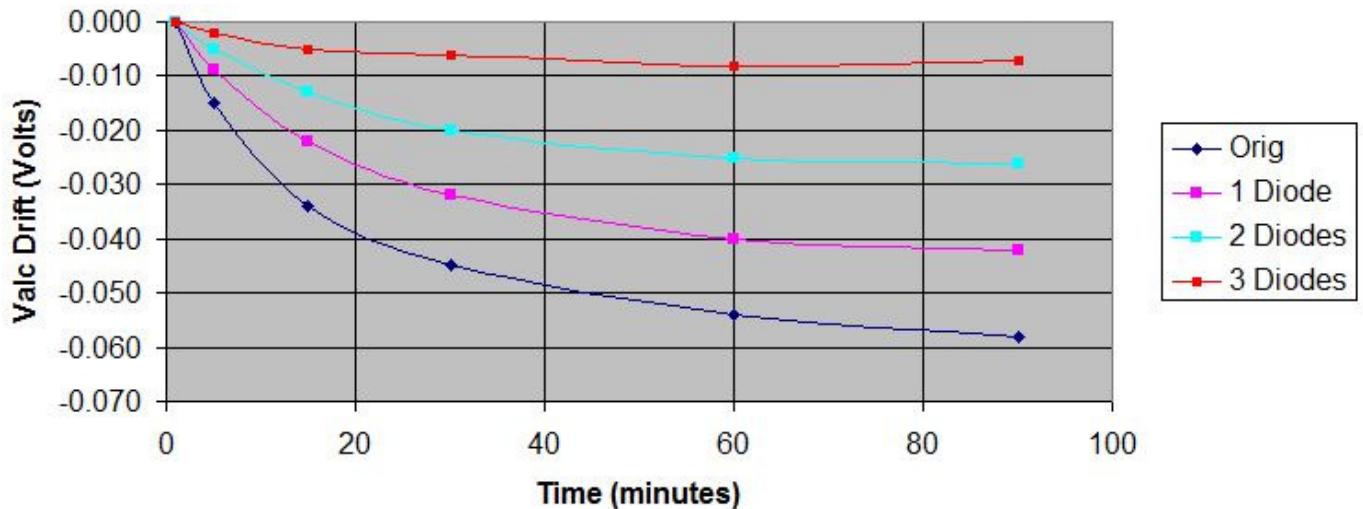


Figure 2 – ALC Voltage Temperature Compensation

You might think only two series diodes would be required to compensate CR5 and CR6, but because the current flowing through CR5/CR6 (0.25uA) is so different from that flowing through the new series diodes (1 mA), three diodes are required. For more information on how and why this works, I highly recommend reading “Diode Characteristics” by Kenneth A. Kuhn, which can be found online. I certainly learned some new diode stuff in this article. A result of using the 3-diode mod is that the quiescent DC ALC voltage is more negative by about .25V than in the original circuit. However, this change makes no discernible difference in the function of the ALC. Figure 2 is a graph comparing the resulting ALC voltage variation as my 32S-3 warmed up. The graph shows the original circuit with R72, compared with different series diode combinations.

The third item on the list is grid current leakage in tubes V3 and V6. The detector circuitry feeding the grids of these tubes is very high impedance, and if these tubes have significant grid current, it can cause meter drift. It's pretty easy to check your tubes for this without even removing the chassis from its cabinet. Plug an RCA cable into the ALC jack on the rear panel and monitor the voltage with a good VTVM like the HP410B. Monitor the ALC voltage with V3 and V6 removed. Plug each tube in, one at a time, and note the voltage reading. No voltage change means no grid current is being drawn. Ideally, you would like tubes that have no measurable grid current, but you can also live with tubes that have some grid current, as long as the current does not change much over time and temperature.

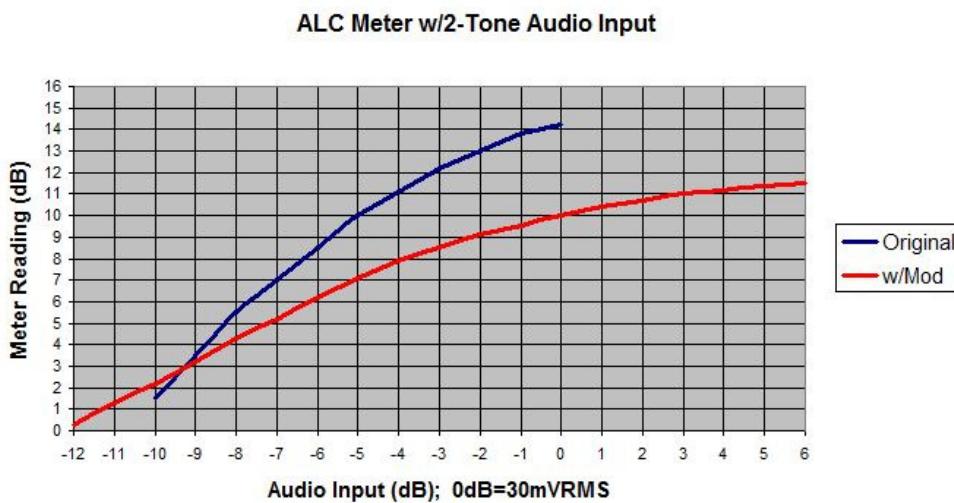


Figure 3 -
ALC Meter Linearity
with
2-Tone Audio Input &
Comparing Before and
After Modification

Continued Page 14

The Ultimate Banks of 40 kW FRT-22 Transmitters



The 80th YEAR AT COLLINS RADIO - A TRIBUTE

As our 2012 CCA Membership Certificate commemorates, this is the 80th year of operation for the Collins Radio Company - now Rockwell Collins. Lest there be no confusion, after Rockwell first invested in a struggling Collins Radio in 1972, and then eventually bought the company outright, they have now divested the surviving company which exists today as an independent successful entity (they again hold the NYSE call COL) based in Cedar Rapids, Iowa.

This then is their 80th year of operation, and in 2013 we will be celebrating the 80th anniversary of their incorporation. It should be an eventful year for both Rockwell Collins and for the CCA.

Collins Station

in France during the Cold War Period



Photo Credit W5VYY.com

Few people realize in how many ways the Collins Radio, and now Rockwell Collins, Company has touched our lives. From the early days of Polar Exploration with MacMillen and Byrd, to the strategic impact on our victory in World War Two, to the dramatic enabling of communication in space and our successes in the Mercury, Gemini and Apollo programs, and with the everyday touch of their contributions to Aviation and our Military strength - Collins has always been there.

This *Signal* issue serves as a tribute to Collins, its founder, Art Collins, and its many dedicated employees. The format changes that you are witnessing, and the content of this coming year's *Signal Magazines*, are motivated by this underlying theme.

Congratulations to the people at Rockwell Collins.

UNDERSTANDING AND CORRECTING 32S-3 ALC METER INSTABILITY

In addition, the linearity of the meter is noticeably better, although this is really of little concern. However, considering that the sole reason for the dB scale on the meter is to produce an indication of ALC compression, it should have reasonable meaning. Figure 3 (page 11) compares the ALC meter reading of my original 32S-3 with its "bridge" meter driver circuitry, to the results with the modification. The PCB has a "Sensitivity" adjustment, so the slope of the curve can be set to provide an accurate 1dB meter change for 1dB of ALC compression. This data was generated with a 2-Tone audio input signal.

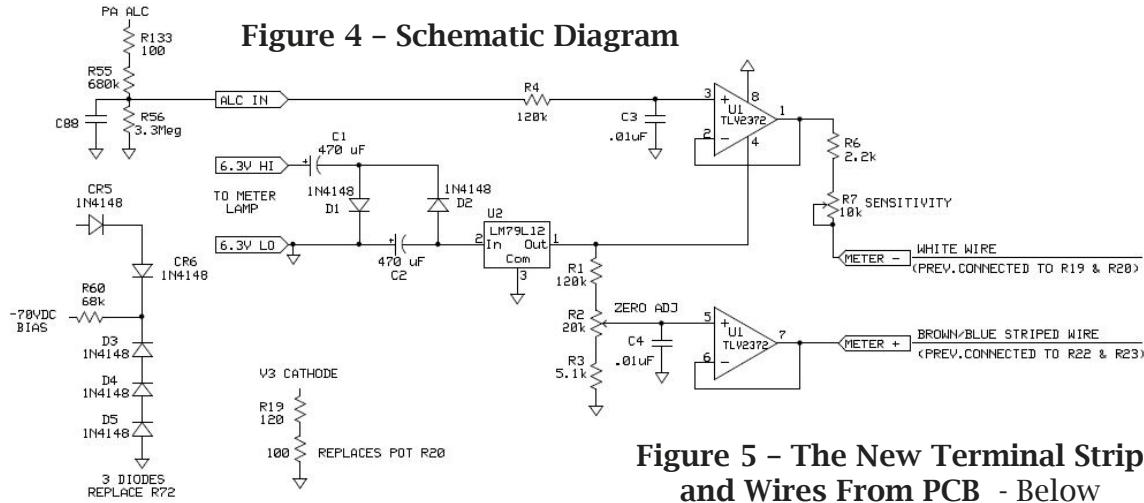
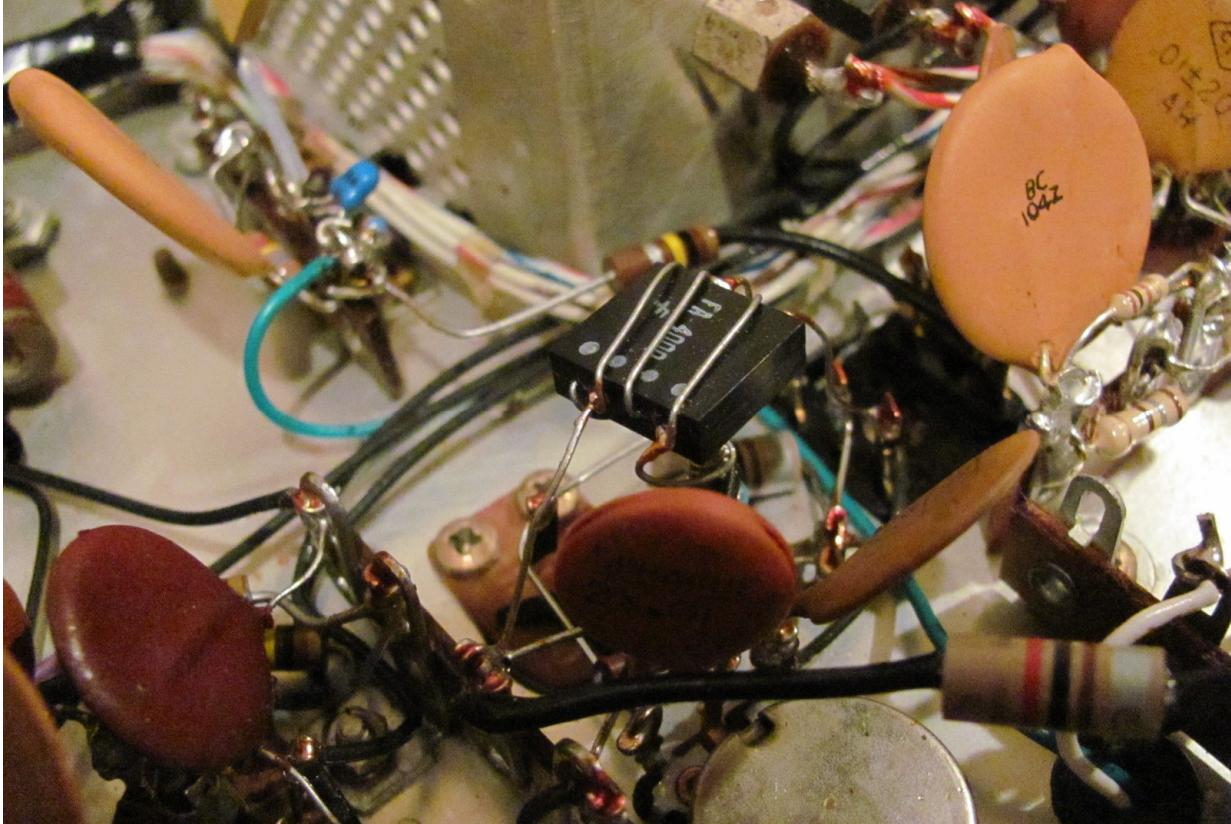


Figure 5 – The New Terminal Strip and Wires From PCB - Below



I modified one of my 75S-3B AGC PCBs and installed it on the back of the 32S-3 meter. The primary PCB mod is to remove the voltage clamp function, and add two more wires that connect the op-amp output to the wires coming from the 32S-3 meter switch. The results were fantastic! I've been operating my 32S-3 daily for several weeks now, and the ALC meter zero drift is virtually imperceptible after just a few seconds warm-up. By "imperceptible", I mean that the drift is less than the width of a single black meter increment mark.

Figure 4 is a schematic of the PCB showing its connections to the 32S-3. Also shown are the other mods, including the 100 Ohm fixed resistor added to replace R20, which is removed to provide a path for new wires.

Installation of the PCB is fairly easy, although a bit more invasive than the 75S-3B installation. Nevertheless, the modifications can easily be removed to return the unit to its original state. The first thing to do is remove R72 and replace it with 3 1N4148 diodes in series. Secondly, remove potentiometer R20. It is no longer used, and removing it (and installing a rubber grommet in the resulting chassis hole) provides a convenient path for the three wires from the PCB to pass through the chassis. The next thing to do is install a 3-terminal strip, using the same mounting screw as used to mount the original terminal strip. The ground terminal of the new strip is not used. Figure 5 shows the new terminal strip mounted perpendicular to the original terminal strip. This picture also shows a new green wire connecting R56 to the PCB ALC input. Next, move the ALC meter wires (Brown-Blue and White) from the original terminal strip to the two terminals on the new strip. Lastly, add a 100 Ohm resistor to ground, which substitutes for R20. You are now ready to install the wires from the new PCB. Figure 6 (below) is a view from above the chassis.

Final Thoughts

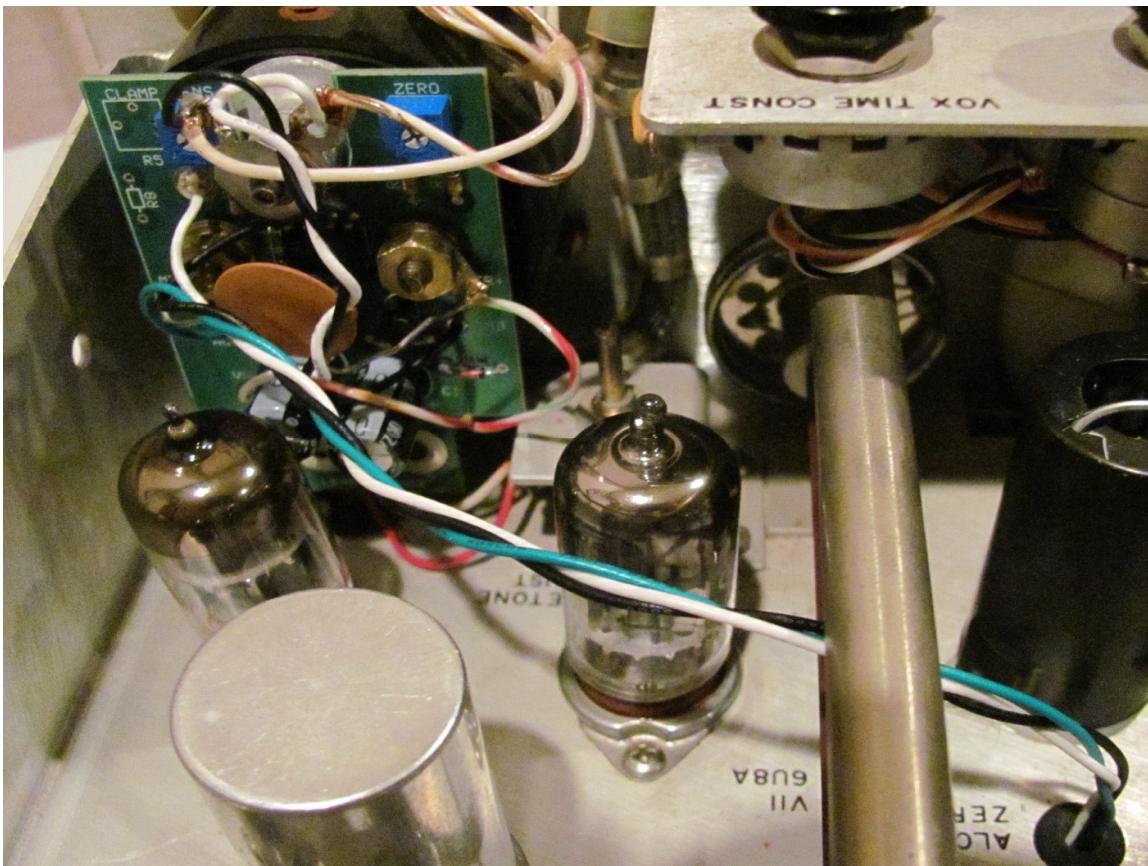
Unfortunately, I do not have a PCB specifically designed for this application, but if enough folks were interested, I could easily modify the layout of my 75S-3B S-Meter driver PCB and have some boards fabricated. However, I suspect there are few operators who would consider installing this mod, a viewpoint I fully understand. If nothing else, I hope this article will provide some insight into how the S-Line ALC works. In addition, the suggestions from Steve Berman for improving the ALC meter zero drift should be quite useful. Thank you Steve for the knowledge gleaned from years of your experience with the ALC meter. His approach will likely reduce most drift problems to an acceptable level. Also, very special thanks go to Bob Jefferis (KF6BC) for his help with this article. Bob's assistance in corroborating experimental observations was invaluable. If you have any questions about this article, please don't hesitate to drop me an email at w5qn@verizon.net.

Cheers and 73s, Don, W5QN ----- CCA -----

Editor's Note:

Don has related to me that the typical turn on & stabilize time is less than 3 seconds and that the zero has not shifted in a couple of months of operation. Very Impressive!

Figure 6 – Installed PCB



Technical Disclaimer

The information contained in this publication is believed to be reliable. However, no responsibility is assumed for inaccuracies or omissions. The CCA, anyone who is a member, and the authors of said material shall not be liable to anyone with respect to liability, loss, or damage caused, or alleged to have been caused, directly or indirectly by this publication or the contents herein.

COLLINS COLLECTORS ASSOCIATION ANNOUNCES NEW AWARDS PROGRAM

Before we talk about the new awards program, and speaking of the website, I hope that all of you have spent some time on the site recently at collinsradio.org. Larry Saletzki, WA9VRH, and Gary Halverson, K6GLH, have been doing an incredible job of uploading more manuals, literature and historical information to the website - over the last several months particularly. Take a look and I think you will be impressed. There are new developments literally almost every day, so check back often.

Now, for the new CCA awards program. Everyone likes wallpaper, and everyone likes a good contest. This is especially true if you get to use and display your Collins equipment during the acquisition of said wallpaper.

At the end of October, the Collins Collectors Association added an awards section to our growing site and there is something there for just about everyone.

There are awards for longevity of membership in the group. There are really fun awards for participation in both the Net Control functions and the nets themselves.

And, there are some spectacular awards for the CCA equivalent of WAS and working Collins gear to Collins gear. This is particularly true when you work other stations using the same era of equipment.

So, take a good look, go down the list (there are 11 different awards possible) and then size up what you want to try for. Some of the awards will bend to persistence and some of the more exotic ones will take some real dedication over an extended period of time and effort. But, then the effort will be worth it both in terms of the prizes and awards involved - and the recognition. Go to: <http://www.collinsradio.org/information/awards-home> de KE1RR

CCA ELECTION PROCESS UPDATE

by Bill Carns, President

As most of you are aware, the CCA must periodically hold elections to replace Board of Directors who have served to their term limit. I reported last issue that both my board position, and that of Ron Freeman our CCA Treasurer, are up for election. In the last issue of the Signal Magazine, and on our website, we requested that anyone interested in running for either of these positions should have their name placed in nomination by the time this issue went to press at the end of November.

In these difficult economic times, many clubs are seeing a pretty dramatic reduction in member participation in the management of the clubs. This is understandable, and somewhat anticipated. We are no different. While the membership numbers went through a low period a couple of years ago, they are on the increase now. I am happy to say that we have recovered most of the membership that we lost in the downturn.

However, we are still enjoying - if you could call it that - the reduction in participation in the management. Everyone is just kind of defending their fort at home.



Continued Next Page

SCOTT KERR. KE1RR

NOMINATED FOR ELECTED CCA BOARD OF DIRECTORS POSITION

I must say, that I am not unhappy with the fact that no one has decided to run for my slot, and since I can have one more term under our bylaws, I intend to run and will, apparently, be unopposed. You know that I will enthusiastically serve you and we - as your board - will continue to work for constant improvements in our services to you.



Scott Kerr, KE1RR

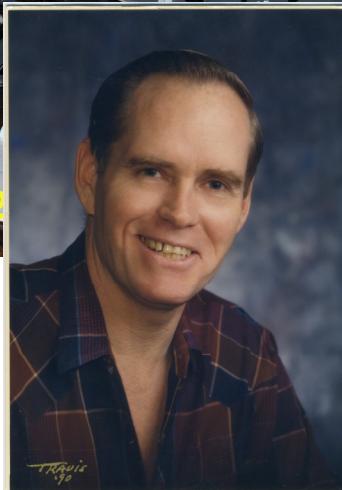
Scott Kerr, KE1RR and our incredible website manager, is now an appointed member of the board - at large - and so he has decided to run for a permanent position as an elected Board of Director of the CCA. At this time, there has only been the one nomination for Ron Freeman's slot, so Scott Kerr will be running unopposed.

And, to quote Bill Scurlock, K5GCW (the gentleman nominating Scott); "Scott has demonstrated a sincere interest in assisting the CCA, and he would bring important technical, organizational, and personal integrity contributions to our board."

Finally, since there are no other nominations for my board position, I will also be running unopposed. While it pleases me to again serve as your President (I am asking that the BoD again vote for me for President), I am disappointed that we still do not have options to vote for the two positions. I hope that in the coming years that this situation will change.

We will be announcing the official election results, and the results of the CCA Board of Director's selection of a President and Treasurer, in the next issue of the Signal.

Dutch Maurer, WB7DYW - Net Control & Friend - Now SK



Dutch Maurer, WB7DYW, was a good friend to all and a man always willing to take his time to help you. His voice was often heard as the pre-net host of the Sunday afternoon 20 Meter net, as one of our CCA Net Controls, or just checking in to answer a technical question or two.

Dutch was a fighter. Following his service in Vietnam, he struggled constantly with the damage incurred from Agent Orange. In spite of this, he built a successful career as an electronic repairman and operated both radio and computer repair facilities in the Houston, Texas area.

After his retirement, he serviced, restored and reconditioned Collins equipment for many of our members.

Dutch had just recently gotten his new beam and his 30S-1 back on the air after a hurricane damaged his old one. Unfortunately, he did not get to enjoy them very long.

He is survived by his children, Bonnie, Matt, Louie and Mark. And, he is missed by all. Dutch was given a military funeral in the Veterans Memorial Cemetery north of Houston.

Dutch was born May 12, 1945 and passed away on the 18th of October this year.

Best 73s Dutch—From all of us.

IN THE SHACK of



In interviewing Billy for this story, he did not bring up what, I have discovered from his reflector activity, is a wonderful soft spot in his heart for nostalgia. One only need read his recent ardent statements about enjoying a local AM radio broadcaster call a World Series game through his beloved R-390 and custom amplifier and you knew a lot about Billy Yates.

Billy is many things - including a successful guitarist of 44 years, a recording studio owner, a builder of custom tube guitar amps and restorer of vintage Collins equipment. All of these skills, including his electronics work, are self-taught.



He became a ham in 1992 (KD6WEQ) and immediately "went for the gusto" by selecting a complete S-Line as his first station. Along the way he held AC6FS and then N6YW. In addition to his S-Line, he also enjoys his KWS-1/75A-4 Gold Dust Twins and is looking forward to bringing on line his KWM-380/30S-1 which he plans on making his main rig.

BILLY YATES, N6YW

In addition to these noble warriors, he also enjoys his 51J-4, his R-390 and is really looking forward to bringing up (motivated by a Fifi B-29 sighting) his ART-13 and BC-348-Q station. His goal is to work Fifi ART-13 to ART-13. We wish him good luck with that. In the near future he has promised to share an article on construction of a ART-13 P.S.

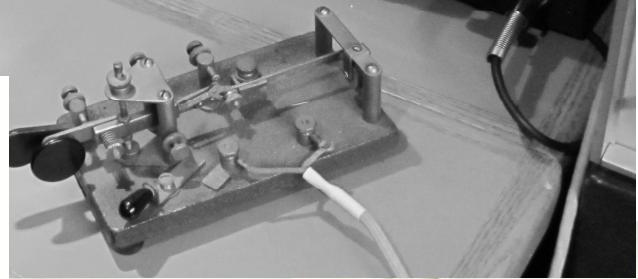
In addition to his equipment collection, Billy also enjoys building Condenser Microphones (really ?) and collecting other HF receivers and guitar amplifiers.

His wife Amanda, KF6QOG, his Brother-in-Law Josh, KI6DNN, and his dog, XE2DOG (*found in Mexico, I suspect*) are all hams. Billy is surrounded with great support. This is a smart move for any shrewd collector.

Thanks Billy for sharing your hobby, your collection and your creativity with our readers.



IN THE SHACK of BILLY YATES N6YW



Dreaming during a visit to Wayne's place -
Wayne Spring, W6IRD—Left



FIFI STRUGGLES

The Superfortress, which is based in Addison, Texas, has become a staple at the annual EAA Airventure and has been on display at shows and taken aviation enthusiasts for rides all over the country. But keeping the Superfortress in the air is becoming extremely expensive. According to the CAF, a staggering \$10,000 and 100 volunteer hours are required for each flight hour to keep the historic airplane up to par.

"We need your help, each one doing a little bit, to continue to spread the message," said Neils Agather, commander of the B29 squadron.

Editor's Note: I know that many of our readers have contacted the CCA asking how they can help. Please see the attached press release from the Fifi organization. And know that the CCA supports this effort to keep Fifi flying and providing those exciting viewing and operating opportunities. Let's help keep that ART-13 radio room flying.

You may have been fortunate enough to see *Fifi*, the only B-29 that is still in flying condition, circling the skies at an airshow in the past few years. What a thrill it is to see her in the air.

During *Fifi*'s last show of the year in Midland, Texas, about a month ago, the number two engine developed a problem and had to be shut down. The crew then landed on the remaining three engines. The B-29 Squadron of the Commemorative Air Force (CAF), which has been caring for the historic bomber since the 1970s, is hoping the Midland show was not *Fifi*'s last.



Fifi shows off for the crowd at one of her many stops across the country



Excerpted from the FIFI Website:

This iconic B-29 is a traveling piece of military history. FIFI flies to air shows and tour stops all over the country giving children of all ages the sight, smells and sounds of history. These personal experiences perpetuate the spirit in which these aircraft were flown in defense of our nation - honoring the courage, sacrifice and legacy of the greatest generation. FIFI represents that generation and the best of America.

Our goal is to raise \$250,000 to repair the damaged engine and to purchase a spare engine ensuring continuous operation and flight. Please help us!

Your tax deductible donation will keep FIFI flying!

To learn more and help keep Fifi flying, go to: <http://www.keepfififlying.org/>

Summary of Suppliers Transformers, Tubes and Crystals

Caveat: The CCA provides this information as a service to members. This is a compilation of comments and recommendations from our various website and reflector sources. The user should qualify suppliers based upon their needs. Be sure and tell the supplier what your equipment is. In most cases they will have the specified crystal load capacitance on file. If not, you should supply this based upon the unit specifications.

Transformers/ Transformer rewinding:

Heyboar Transformers - Michigan
<http://heyboertransformers.com/>
17382 Hayes St.
Grand Haven, Michigan 49417
616 - 842-5830

Quality Transformer and Electronics - Northern California
www.gte.com/
963 Ames Avenue
Milpitas, CA 95035
408 - 263-8444

Peter Dahl Transformer (Listed for Reference Only
Out of Business)
Purchased & Replaced by Heyboar Transformer

Transformer Rewind Service (Gary) - Maine
xfrmrs@roadrunner.com
478 Forest Ave.
Orono, ME 04473
http://members.tripod.com/tubes_tubes_tubes/transformerrewindingservice/index.html
207 - 942-5745

Tubes:

Jonathon Edwards - Austin, Texas
937 Reinli, Suite 15
Austin, TX 78705
512 - 423-9643

Frank Krize - Mississippi
1373 Chapel Rd
Church Hill, MS 39120
601- 442-0973

KE7NTD - Roger Gould - Washington
VACUUMTUBES.BIZ
<http://www.vacuumtubes.biz/index.html>
16953 Tyee Drive
Entiat, WA 98822

ESRC1 Tubes - Florida (Stan)
CustomerService@ESRCVacuumTubes.com
6424 Pinecastle Blvd. Suite B
Orlando, FL 32809
407 - 826-5808

Continued Next Page



Did You Know?

You all know by now that Collins Radio was far from just an Amateur Radio manufacturer. And, you know that ham radio sales never were more than about 1 % of the Collins Radio gross income.

That is not to say that Amateur Radio products were not a very important part of the Collins portfolio. These "ham" products were, in fact, a valuable platform to display the Collins technologies, and a door opener for many other businesses.

Collins was historically a leader in many fields. These ranged from Government Communication to Commercial Communications, on to Broadcast Equipment, Microwave Transmission and Multiplexing gear, Aerospace and one of their real fortés, Commercial, and eventually General Aviation, avionics.

What you may not know is that Collins made an incredible impact in the fields of Navigation and Control related to Commercial Aviation.

Collins Radio was the inventor and developer of the TVOR system (Very High Frequency Omni-directional Radio Range) which is still in use today. They also developed the first true Flight Director Auto Pilot system for commercial aircraft and went on to do some of the leading edge work in zero-zero blind landing systems.

All are still in use today. Art Collins personally contributed several of the key patents and ideas related to the TVOR and the Flight Director systems.

Antique Electronics Supply
Tubesandmore.com/
6221 South Maple
Tempe, AZ 85283
480 - 820-5411 (Free Call)
(800) 706-6789 (fax)

RF Parts - San Marcos, California
[Terry@rfparts.com/](mailto:Terry@rfparts.com)
435 South Pacific Street
San Marcos, California 92078
(800) 737-2787
760 - 744-0700

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**Standard and (NOS) S-Line Collins
(HC-6U and FT-243):**

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117 Sterling Pine Street
Sanford, FL 32773
bcarling@cfl.rr.com
af4k@hotmail.com
321-262-5471

Surplus Sales of Nebraska
<http://www.surplussales.com/>
402 - 346-4750

K8VFV, Bob Crawford - Crystals
8373 Eagle Road
Davisburg, Michigan 48350-2807
248 - 634-9045
K8VFV@arrl.net

Custom Crystals

International Crystal Manufacturing
10 North Lee Avenue
Oklahoma City, OK 73102
1 (800) 725-1486
Website: [http://www.icmfg.com/crystals.html/](http://www.icmfg.com/crystals.html)

INRAD - International Radio (BFO Crystals)
<http://www.inrad.net/home.php>
PO Box 2110
Aptos, CA 95001
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JAN Crystals - Appear to have gone out of business

Electric Radio Magazine

Serving the dedicated Collector



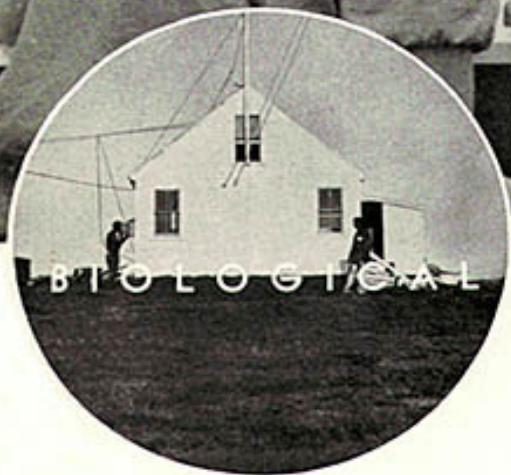
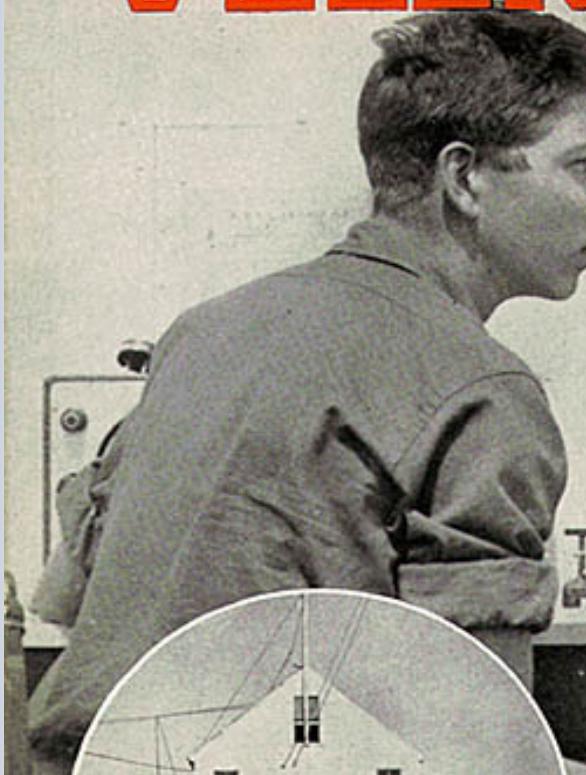
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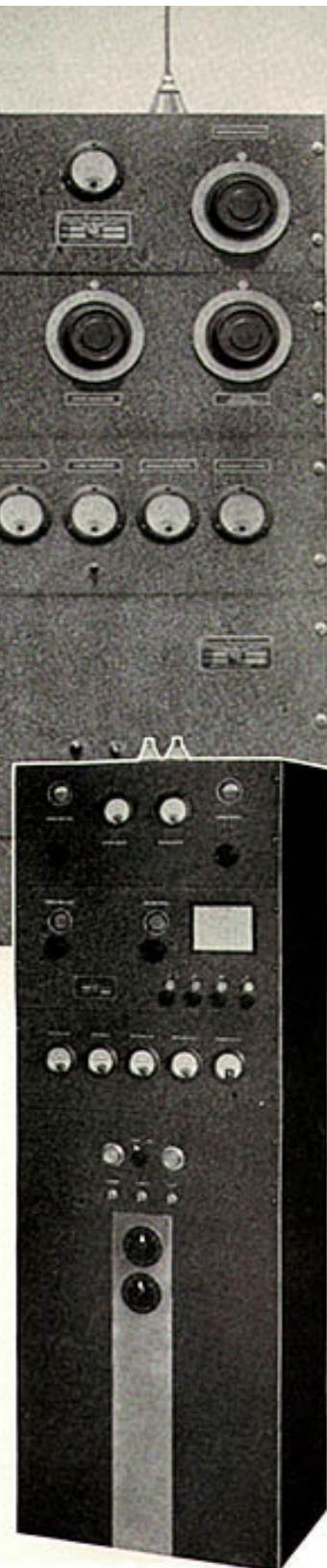
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