

# The Signal

OFFICIAL MAGAZINE OF THE COLLINS COLLECTORS  
ASSOCIATION \* Q4 2012 \*

*Superlatives May  
Sell Soap . . .*

☆  
**30-FXB**  
☆ ☆

. . . 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



**E**very 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 4<sup>th</sup> 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 !**

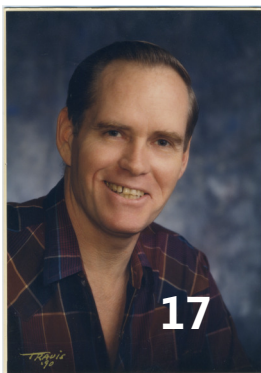
Bill Carns

President - Collins Collectors Association





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**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

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# OUR CONTRIBUTORS



## **DON JACKSON**

**“32S-3 ALC Meter Instability”** *page 9*

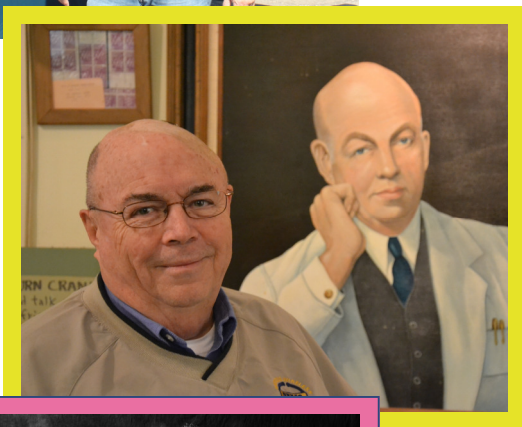
A frequent technical writer for the Signal, Don now is also the Assistant Editor starting with this issue. Don is an experienced electronics engineer with over 40 years in industry as a HF and Microwave receiver designer. He enjoys his Collins collecting and currently has a very nice S-Line and a 30L-1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



# 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

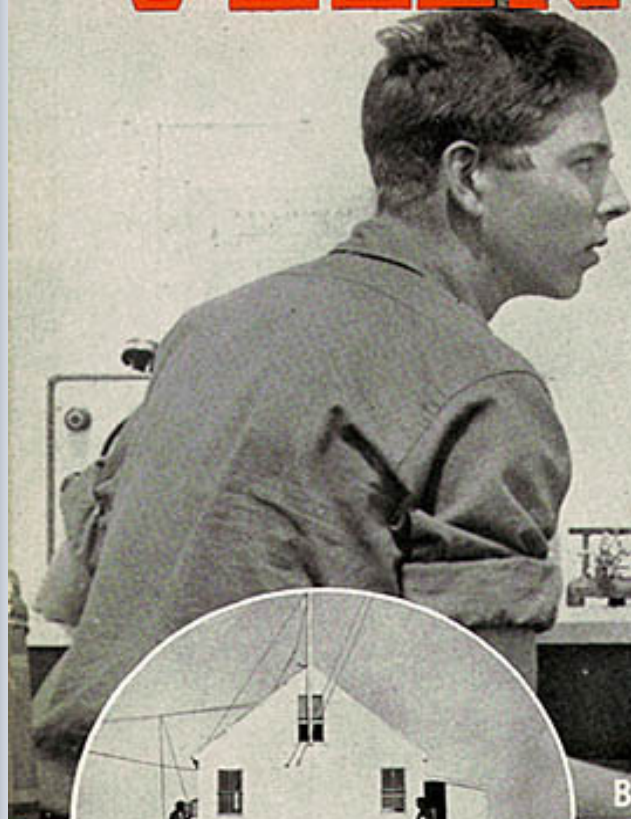
In my case, I had already tried these three solutions, but the remaining ALC meter drift over time, temperature and line voltage was still greater than desired.

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.



# VE1IN



BOWDOIN  
EXPEDITION  
KENT'S ISLAND  
BAY OF FUNDY

..... One of the first radio equipped Biological Stations in the world, VE1IN made remarkable use of a COLLINS 30FXB transmitter during its 1935 expedition.

In less than 3 months (June, July and August) approximately one thousand contacts were made with stations in every United States district and in Spain, Hungary, Russia, England, Holland, Switzerland, France, Germany, Cuba, Mexico and Jamaica.

Daily reports of the expedition's work were sent to the college at Brunswick, Maine and schedules were maintained with W 3 S N, the Army Signal corps at Baltimore, Maryland; and W 1 J L, West Acton, Massachusetts. VE1IN operates on frequencies of 1783, 3515, 3860, 3996.5, 7083, 14060, 14288 and 14392 kilocycles.

The record of VE1IN illustrates the consistent performance which is being obtained every day with Collins transmitters.



## Collins Radio Company

CEDAR RAPIDS  
New York  
11 West 42nd St.



IOWA, U. S. A.  
Mexico City  
Edificio "La Nacional"

THE NEW COLLINS  
**30FXC** TRANSMITTER  
with excitation band switching  
200 WATTS OUTPUT