

Issue Number Fifty

Second Quarter 2008

**Special Dayton
Edition**

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- Tuesday 3805 kHz at 8pm CST
- Thursday 3805 kHz at 8pm CST
- Friday (West Coast) 3895 kHz at 10pm CST
- Sunday 10m AM 29.050 mHz at Noon CST
- 1st Wednesday AM 3880 kHz at 8pm CST

Sunday for Technical, Buy, Sell & Swap
Tues., Thurs., Fri., & Sunday for Ragchew

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OFFICIAL JOURNAL OF THE COLLINS COLLECTOR ASSOCIATION

Converting the 20V Broadcast Transmitters to 75 Meters

by Bill Carns, N7OTQ



This is the first in a series of three articles that will guide you through the process of bringing a 20V, 20V-2 or 20V-3 broadcast transmitter up into operation on the 160, 75 or 40 meter phone bands. The focus here is on 75 meters because this is the most common band for amateur operation of these broadcast transmitters, but data is available for 160 and 40 meters by contacting the author. The first part of the series will focus on getting it running and the general conversion process. The remaining parts will contain more detailed instructions and data on the 75 meter conversion.

By way of a brief introduction, my fascination with the Collins broadcast transmitters originated late in 1995, just as I was moving to my new retirement home in the mountains East of Phoenix. My association with Elliott Klein, K7ER, had peaked my interest. Elliott was then, and still is, a consultant in the broadcast and telecommunications industry. See the Q1, 2008 Signal "In the Shack of K7ER".

A "Free if you take it out" 20V-2 and a "Gone Dark AM Station" 20V-3 were quickly located thanks to some leads from Elliott. The first was in Portland, Oregon and then on to Albuquerque, New Mexico for the 20V-3. (If you are still looking for your "economical" 20V-X, you should be developing a good network of broadcast

Paul Kluwe Elected CCA President



In early May of 2008, Paul Kluwe, W8ZO, was appointed to the CCA Board of Directors and elected President. He comes well qualified both by his professional career spanning 30 years and by his previous CCA and Collins collecting activity. Paul has a diverse background including a BS degree in Electrical Engineering, a MBS in Applied Mathematics and a PHD in Physics. He graduated from the University of Michigan.

Paul's work career has ranged from the technical (electronics design in the automotive, communications and medical fields) to the entrepreneurial (started and managed his own successful company) to the managerial (consultant for 25 years in business management) and he now is the City Manager in the Michigan town where he lives.

From the Editor's Desk

by Bill Carns, N7OTQ {Co-Editor Joe Nyberg, W1LJN}

This quarter, since the last issue went to press, has been an exciting one to be sure. Another successful Dayton Hamvention 2008 is behind us, the **Signal** is continuing to grow, the CCA Board of Directors has appointed a new and exciting president and the 20 meter net revival is a marked success, returning to a significant number of check-ins and great NCO participation. More on the nets will appear in the **Net News** column in the Q3 issue. The website under Brian Sokol continues to grow and improve its functionality.

The move to include more military and commercial cross over equipment, along with the increased emphasis on the people of Collins Radio and the Collins Collectors Association, has also been very well received - with many compliments from around the US and the globe. This issue will continue the expansion of the Signal to 16 or more pages plus an insert, usually a technical data sheet, but this month a wonderful S-Line historical picture, suitable for framing. This photo was arranged and crafted at Collins by Rod Blocksom and company in Cedar Rapids. Our thanks go to Rod and the people at Collins, as well as the ex Collins employees, that took their time and effort to put together this memorable piece of history.

Personal thanks go to Rod from this editor, not only for his time putting together the article appearing in this issue, but for his significant contribution to the collection of data and the historical facts that support some

of the writings here. My thanks also to Dennis Day, Arlo Meyer and Ed Hogue for their time and the historical perspective that they have provided so freely.

We are privileged this month to have the **Service Line** written by Dale Svetanoff, WA9ENA, of Rockwell Collins. Dale has often helped with technical issues on the reflector and is responsible for many significant contributions that cleared up questions that have arisen. I have asked him to translate some of those threads into articles for the **Service Line** from time to time, and he has agreed. I know that we will enjoy them. Welcome Dale.

Another reminder here to all of you readers. There is a continuing need for material for the **Signal**. Maintaining 16 pages of content is a challenge. It is a challenge that I know we are up to though. Please consider writing about your restoration work, your special treasures, some historical perspective that is of general interest, etc. There are many of you out there that have a story to tell, or a rare piece of equipment. Please share.

Also please consider volunteering your shack for **Shack of the Quarter**. I have seen many great examples of Collins shacks over the years - wish I had listed them - and now we need to run them down. All that is required on your part is to answer a few brief questions, send a few pictures (one with you at the mic), and this editor will do the rest. If you are proud of it, and who isn't, hang it out there guys.

Finally, and most important this

quarter, the CCA Board of Directors has elected a new President. Before going on to this, we want to personally thank Jack Mory, KE3WV, for his service and the significant impact that he had on the progress of the CCA during his tenure. It is with personal regret that I heard of Jack's desire to step down. Thank you Jack for all that you did for the group and for your help here with the **Signal**.

It is with great pleasure however, that I heard of the election of Paul Kluwe, W8ZO, to the position of President of the CCA. Paul is uniquely qualified for this position, a significant collector of Collins and a past proven contributor of his capabilities as a manager and organizer. More about Paul is in the article on him in this issue.

A word about my co-editor, Joe Nyberg, W1LJN. Joe and I have been friends via email and phone conversations for many years. It was a pleasure to take on the tasks associated with editing and producing the Signal with him. Joe and his wife Dawn came for a visit last month. They were scheduled to stay a week. Now, a week can be a long time to have company in your home. This can be particularly true when you have not met them personally before. Well, it was a short and very pleasant week. Joe and Dawn are super cooks. I got spoiled and I look forward to their next visit and working with Joe here.

That's it for now and best 73s,
Bill (N7OTQ)

.....CCA.....

Gene Senti, W0ROW, Collins Radio Employee of the Quarter

by Bill Carns, N7OTQ



Personal Forward: This is one of the few articles that this editor found somewhat intimidating to write. Most of you know of Gene Senti and his work at Collins. His work was prolific and significant. This writing is intended to give you some insight into Gene Senti, the man.

We met a number of years ago when the article in the CCA Signal quarterly magazine on *The Care and Feeding of Your KWS-1* was written. Fortunately Gene agreed to several interviews and we met personally on a number of occasions. He was a man that was easy to grow to care for, but not easy to know. It is from these impressions and a number of current interviews, including his son Sam and Dennis Day, Gene's successor as Group Head of the Amateur Radio Products at Collins, that there emerges a consistent picture of what motivated Gene, and what he was like as a person.

In a few words, he was humble,

inquisitive and committed to excellence. I hope you will see a loving, caring human being behind these impressions. I know I do. I would like to thank Sam Senti, for his time and his writings about his Dad. Included are some comments written by Sam and Bruce, Gene's other son, for Gene's memorial service. I would also like to thank Dennis Day for his time and impressions and for reviewing this article.

Gene Senti, The Man

Gene was a somewhat shy and very humble man. In spite of his accomplishments, he never viewed his efforts and results as anything other than what was expected of him. He just did not see what all the fuss was about later in his life when approached about his inventiveness and the development of the KWS-1, KWM-1 and the 30L-1. It is nice to know though, as time passed and as his peers and the members of the CCA talked with him at various times about his work, that he grew to enjoy a little notoriety. It was well deserved.

Gene was born Eugene C. Senti on August 17, 1917, in Burlington, Iowa, to Jacob and Hazel Meyer Senti. His parents were farmers in the old sense. They raised both crops and livestock, as well as making raspberry and boysenberry wine, to sell. After Gene's Father's early death, his Mother worked at the lunch counter for the local department store. There was a lot of work to do on the farm and Gene did his share. As was often the case in the depression days, there was not a lot of money. He was, ap-

parently, along with the work, also a typical boy. His son Sam relates that one day Gene tried to play Tarzan and swung out of the loft on a handy rope - target hay stack. But, he missed the hay mound, only to hit the wood floor of the barn with his foot and break his ankle.

Like Art Collins, somewhere - out of nowhere - Gene became interested in electronics at an early age. Sam believes it was about in the 6th grade. He built crystal sets and primitive receivers using parts at hand and old oatmeal boxes as coil forms. By high school he was working on his ham license and he was first licensed in about 1933, first as W9ROW and then, with the change in zone definition, W0ROW. He held this call sign and an advanced ticket until his death.

At age 17, his Father Jacob passed away. When it came time to go to college, Gene was highly motivated, but there was little money. He attended a local Junior College in Burlington for a year and then transferred to Iowa State University where he worked his way through school bussing tables in a local fraternity house. In 1939 he graduated from Iowa State with an Electrical Engineering degree. It is interesting to note that due to available curriculum, he received his degree in Electrical (Power) Engineering and not Electronics. He was entirely self-taught in Electronics. Applying at Collins Radio, he was turned down and went to work for the Dubuque Power Company. Not particularly lik-

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CCA Has a Great Dayton 2008



The CCA Booth (Left to Right) Ira Miller, W7GM - visiting from Arizona, Tony Sokol, W9JXN - Banquet Manager & Floyd Soo, W8RO - Past CCA President

Dayton 2008 was a resounding success for the CCA group. The banquet was well attended with 80 meals served and a wonderful program. The presentation on the Canadian Hammond Museum by Floyd Soo, W8RO, and Rod Blocksom, K0DAS, was a real eye opener and all agreed that a CCA trip to the museum somewhere in the future was well justified. Fred Hammond, VE3HC - now a SK, put together a very historically significant collection of equipment related to amateur radio dating back to the turn of the 20th century. The quantity, quality and completeness of his collection are astonishing. Floyd Soo has spoken with Nori Irwin, VE3AQZ, since the banquet, and she is ready to put out the red carpet for a CCA group visit. We should all look forward to that. Take a

look at their website at www.hammondmuseumofradio.org. You will be impressed.



Fred Hammond, VE3HC

Paul Kluwe, the new President of the CCA was introduced and gave some welcoming and opening comments. Paul's excitement about the future of the CCA was evident. He focused his remarks

on the bright future of the CCA and the common bond that we all have. Paul then played host for the awards presentations.

Awards were plentiful and well deserved. The following awards were given in the form of beautiful framed plaques: Lloyd Rafalsky (K4HWB) for Net Manager and NCO contributions, Rich Sperling (WB3JLK) for organizing the 2007 banquet, Brian Sokol (new call W9SRK) for his work as Web Master, Glen Zook (K9STH) for his contribution as CCA Technical Advisor *, Bill Carns (N7OTQ) for **Signal** editorship and former BoD activity, Abe Levy (W3DA) for his serious contribution to keeping the 20 meter net alive during the period when the net was struggling * and finally to Paul Kluwe (W8ZO) for his work on restructuring the CCA reflector. (* Not in attendance)

A special "Thank You" should be put forward here to Tony Sokol, W9JXN, for his herculean effort getting prepared for, and hosting the banquet and the awards presentation. This went off without a hitch and there were some behind the scenes challenges that we, as members, never saw due to Tony's persistence and extra effort. Many "Thanks" Tony from all of us. We are already planning for 2009 and a larger group.

The booth in the arena was well attended as usual and a rallying point for all during the swap meet. There was a great deal of interest in the CCA in general and the new format **Signal**. Thanks to Floyd Soo and Tony Sokol for a very nice presenta-

CCA Has a Great Dayton 2008 (Cont'd)



Above - Well Deserved Awards, Presented by Paul Kluwe, W8ZO



The S-Line Promo Ford Econoline Van Was a Big Hit - Jim, WA3CEX at the mic

Dayton 2008 (Cont'd)



Butch, K0BS and Jim, W8MAQ with some flea market Collins



L to R - Gordon (N1CKG), Ken (N8COQ), Paul (W8ZO), Rui (JA6VSP)



Floyd (W8RO) doin' his Hammond thing

tion and for their effort there. Also well attended was Jim Stizinger's Collins S-Line Promotion Van display with the operating S-Line line-up. We added to the old original log from the '60s and operation of the van was enjoyed by a number of visiting operators getting a chance to use the W0CXX call sign (Art Collins Call). W0CXX now belongs to, and was available thanks to, the Collins Amateur Radio Club of Cedar Rapids.

Tony Sokol has already put these thanks out on the reflector, but a special "Thanks" goes here to Jim for his effort in, not only doing the restoration, but trailering the van from California to Dayton so we could all enjoy a moment in it.



Fred (VE3HC) doin' his S-Line thing!

Dayton attendance seemed to be a bit lighter than I had remembered it in the past, but it was still very active with many members and non-members having some very nice Collins gear for sale in the outside swap area. In spite of a worrisome weather forecast, there was very little rain. We have all worried about what eBay was going to do to Dayton, and it is obviously alive and well. We are looking forward already to 2009 ... Let the pictures tell the rest of the story! See you there.

Special Thanks to the ARRL, Heil Sound, Peet Bros., K1TLI, CQ Magazine, Electric Radio, Hi Res Comm., K9LQZ, Rockwell and Mike March Paddles for this years wonderful selection of prizes.



Watts Up ? - On the Test Bench -

by Dale Svetanoff
WA9ENA



Fig. 1: Nonlinear scale on Collins
for Collins 312B-4/5



Measuring RF power out of transmitters is one of the basic measurements in amateur radio. Judging by the number of postings to the CCA Reflector over the past several years that start with the words "What is wrong with my wattmeter?", it would seem that a little discussion of this topic is in order.

The most common form of the instrument uses a directional coupler bridge, which involves a toroid coil through which the main RF transmission line passes and which contains (usually) a pair of equal windings that form two circuits, one to provide forward power readings and the other to provide reflected power readings. The meter and bridge circuits are calibrated against RF power standards. It is important to note that the coupler will provide a sum reading of all RF power flowing in either direction (within frequency response limits), so the output will be the sum of the fundamental and as many harmonics and spurs as may be present throughout a wide range.

Most modern RF systems in amateur radio employ 50 (or 52) ohm transmission line and accessories, such as connectors, antennas, and tuners. The power in a transmission line is: a) The product of applied voltage and current, $P = E \times I$; b) Applied voltage, squared, divided by the system impedance, $P = E^2/Z$ (in ohms); or the product of the current squared and the system impedance, $P = I^2 \times Z$ (in ohms). ("Z" denotes impedance, an AC value.) A typical coupler bridge samples line current and is calibrated to provide a reading in watts based upon a specific system impedance (usually 50 ohms).

Questions on the reflector usually arise from some misinterpretation of wattmeter readings. Just read the numbers, right? Well, yes, but the issue comes from how the meters are calibrated and how those calibrations are applied. First, look *very carefully* at the meter scale of any RF wattmeter in the shack. Notice that the calibrations are not linear (meaning that divisions of power, such as 10 watt increments, are not equally spaced on the meter scale). This

Author Information

You all may remember Dale from one of the many threads on the CCA reflector that he has contributed to. He is often there to provide good technical insight, particularly when the question involves RF measurement issues. His answers are thorough and to the point. It is with pleasure that we look forward to having him as a guest author on the *Service Line* from time to time.

Dale currently works for Rockwell Collins in Cedar Rapids in the EMC area doing work on RF shielding and electronic system design and integration. We can look forward to some great tutorials in the area of measurements, RF interference and repair.

He has been a ham for 46 years, first being licensed in 1962. His first station was a Hammarlund HQ-110C, a DX-40 and a High Gain vertical. He still has this station and gets on the air with it regularly on AM. In 1968 or '69, he met Tony Sokol, W9JXN, at a Hamfest and bought his Collins 75S-1 receiver. This led

Watts Up ? - On the Test Bench - (Cont'd)

scale nonlinearity is due to the knee region of the diodes used to rectify the AC voltage on the line and provide current to drive the meter. Diodes characteristics vary for numerous reasons, but in the end, they all “ramp up” and then “flatten out” as the current through them increases; hence, the reason for the nonlinear scale. Due to the nonlinear scale, it is also normal practice for wattmeter makers to rate their meter reading accuracy as percent of full scale. See Figure 1 for an example.

I ran six (6) different RF power measuring devices through a simple battery of tests in order to illustrate the point I am trying to make: when you are using an RF wattmeter, you are working with an instrument that provides a window of accuracy, as stated by the manufacturer. The results indicated are then somewhere in that window of accuracy and not a specific value with two or three decimal place accuracy. My tests used 5 wattmeters and an RF voltmeter. I also used two different test “dummy” loads. Table 1 lists the meters used for the tests:

Table 1: Meters Tested

Device	Rated Accuracy % of Full Scale	Max. Forward Power (Watts)	Accuracy Window Low Power	Accuracy Window High Power
Bird Model 43 w/100W & 1000W slugs	+/- 5%	100/1000	+/- 5 watts Window = 10 W	+/- 50 watts Window = 100 W
Collins 543-8118-004 Note 1	+/- 5%	200/2000	+/- 10 watts Window = 20 W	+/- 100 watts Window = 200 W
Diamond SX20C Note 2	+/- 10%	30/300	+/- 3 watts Window = 6 W	+/- 30 watts Window = 60 W
Drake W-4	+/- 5% Estimated	200/2000	+/- 10 watts Window = 20 W	+/- 100 watts Window = 200 W
Heath HM-102	+/- 10%	200/2000	+/- 20 watts Window = 40 W	+/- 200 watts Window = 400 W
H-P 410C w/AC Probe & 11042A Coaxial “T” Adapter Note 3	+/- 2% @ 100 MHz	5000 W (500 V max @ 50 ohms)	For 150V AC scale, 2% voltage = +/- 1.6 watts	For 500V AC scale, 2% voltage = +/- 200 watts

Notes:

- 1 This is the Collins Part number for the directional coupler assembly used in the 312B-4/5 consoles and the 302C-3 wattmeter. This drives the meter movement. The 312B-4 & 5 have a 458-0467-00 meter and the 302C-3 uses a 458-0566-00 meter.
- 2 The Diamond SX20C is a modern cross-needle meter that reads forward and reflected power simultaneously. The maximum power rating is 300 watts. It was tested at 100 watts only.
- 3 The H-P 410C VTVM includes an AC probe with quoted accuracy up to 700 MHz. The listed coaxial “T” adapter directly couples the AC probe to a 50 ohm transmission line. Readings obtained are in volts, so the power has to be calculated from $P = E^2/Z$. This meter and probe combination was included because some military tech manuals, at least those in use during the late 1960's and early 1970's for servicing S-Line equipment, specified use of this method of measuring RF output power.

Watts Up ? - On the Test Bench - (Cont'd)

Two test loads were used: Rockwell Collins DL-1 and Gentec 510U. The DL-1 uses multiple air-cooled non-inductive resistors, and includes a compensating capacitor to offset internal inductance of the unit; the 510U is an oil-cooled load using a non-inductive resistor. Three separate meters (2 digital, 1 analog) were used to read the DC resistance of the loads. The averaged values were: DL-1: **47.1 ohms**; 510U: **54 ohms**. While the variation in resistance may not seem great, it is enough difference to indicate that readings with any given wattmeter may, in fact, vary with load as the line termination varies. The actual tests were run using my S-Line and 30L-1 as the RF source. All cables and interconnections were used as I use them in operation. The wattmeter under test was substituted in between the 30L-1 and the dummy load being used. I did not “daisy chain” the meters, as that can produce errors.

With the exception of the results from the 410C and probe/adaptor combo, the readings from the five wattmeters are in remarkably good agreement. (See Note 4, beneath Table 2, for an explanation of the 410C readings.) At the nominal 100W output level, the readings ranged from 102 watts to a high of 130 watts. Taking the average of the 5 wattmeters for operation at 3.940 MHz, the result is 112 watts for the 510U load, and 114 watts with the DL-1 load. All readings are within the respective tolerance windows. For the higher power, the averaged power for 4 meters is 605 watts for the 510U load, and 583 watts with the DL-1 load. Again, all readings are within the allowable windows.

Clearly, these readings show that the output power measurements are dependant upon actual working impedance of the load. A dummy load may or may not be “50 ohms”, but it will probably be about the same impedance across its rated frequency range. We can’t always say that for antennas, and we also know that the actual impedance presented to the radio by the antenna or tuner/antenna combination is often not “exactly” 50 ohms, but something close enough “to keep the finals happy”. Thus, readings on your wattmeter will vary as the load impedance changes for any of a variety of reasons. When looking at the output of your rig on the wattmeter, the question on your mind really should be: “Is the output at about the right level?”, as opposed to “Why do I have 10 watts more on 20 meters than on 40?”

Table 2. Test Results

Load	Test Freq. (MHz)	312B-4 200W Range (Watts)	312B-4 2.0 kW Range (Watts)	Bird Model 43 w/100W Element	Bird Model 43 w/ 1000W element	W-4 200W Range	W-4 2000W Range	HM-102 200W Range (Watts)	HM-102 2000W Range (Watts)	CS20X 300W Range (Watts)
DL-1	3.940	110	530	100+	600	111	600	130	600	105
510U	3.940	105	580	100+	520	115	650	123	670	105
DL-1	7.230	122	650	100+	632	102	700	115	710	100
510U	7.230	125	640	100+	650	105	720	120	710	107
DL-1	14.260	121	710	100+	620	106	750	120	750	108
510U	14.260	120	720	100+	610	109	760	112	770	110

Notes:

4. The H-P 11042A probe adapter provides a section of air dielectric transmission line onto which can be placed the AC probe of the 410-series meter. This adapter does NOT provide any directionality with regard to the flow of RF energy on the transmission line. Thus, the probe measures the vector sum total of ALL voltages present at that point on the line. Since any VSWR other than 1.0:1 will produce reflected standing waves on the transmission line, the voltages measured are an indication of both relative output power and the degree of load mismatch. The directional couplers in the regular wattmeters provided only the forward power to the meters; the reflected power was still present, but was not included in the forward power readings.

Rockwell Collins Amateur Radio Clubs

Have Cause for Celebration

by Rod Blocksome, KØDAS

75 years ago a small radio communications company, operating from the owner's basement, officially incorporated in the state of Delaware. From these humble beginnings arose one of the nation's foremost communications and avionics companies - The Collins Radio Company. Arthur Collins, WØCXX, started building high quality amateur radio equipment which, from the very beginning, was to make the Collins brand legendary among ham radio operators worldwide. The Collins Radio Company was incorporated with \$29,000 in capital and 8 employees during the depth of the great depression. In 1973, Collins was acquired by Rockwell International. In 2001 the company was spun-off into what is today Rockwell Collins Inc. with over 17,000 employees worldwide and sales of \$4.4 B.

50 years ago, and 25 years after incorporation, in September 1958, Collins Radio introduced a completely new line of amateur communications equipment - the S/Line. The 75S-1 receiver, 32S-1 transmitter, and 30S-1 power amplifier set a new standard of excellence in areas of styling, reliability, frequency accuracy, stability, signal quality, and linear amplification. The S/Line enjoyed a long production history and today still commands premium prices among classic radio enthusiasts and collectors.

25 years ago, in preparation for celebrating the 50th anniversary of Rockwell Collins, the Collins Amateur Radio Club was formed in Cedar Rapids, Iowa. Later, under the vanity call sign process, we were assigned WØCXX, the callsign of Arthur A. Collins. Later additional employee Amateur Radio Clubs were founded at other Rockwell Collins facilities. Today there are six club stations located in five cities:

WØCXX	Main Plant, Cedar Rapids, Iowa
NØCXX	No. Campus, Cedar Rapids, Iowa
W5ROK	Richardson, Texas
W4CRC	Melbourne, Florida
W6CXX	Tustin, California
F6KNZ	Toulouse, France

These six Rockwell Collins ARC stations have organized two special operating events - one in celebration of the 75th anniversary of the company and the other commemorating the 50th anniversary of the S/Line. Special QSL cards will be available for those working each Rockwell Collins Club station during these events. Stations confirming contacts with four or more of the above Collins stations are eligible to receive a special certificate. Operators should QSL to the individual Collins stations. Applicants for the certificates must submit QSL's from 4 or more of the club stations to WØCXX for processing.

Operating periods for each event are:

50th S/Line Anniversary: 0001 UTC July 12 through 2359 UTC July 20, 2008

75th Collins Anniversary: 0001 UTC Sept. 20 through 2359 UTC Sept. 26, 2008

Frequencies for both events are as follows:

CW: 3550, 7050, 10115, 14050, 18085, 21050, 24900, & 28050

SSB: 3885, 7285, 14285, 18155, 21385, 24955, & 28455

Not all stations will be operational at any given time and club membership will also affect the amount of air time from each station. Watch the DX spotting clusters and these web sites for actual on-the-air times/frequencies of each station: <http://w0cxx.us/> and <http://w5rok.us/>. Working four or more Collins Club stations will be a real challenge.



WØCXX, Main Plant, Cedar Rapids, Iowa

In the Shack of Cliff Crane, W4NJ

This quarter we are featuring the shack of Cliff Crane. Cliff is a relatively new collector, having started his Collins collection in 2005 with the acquisition of a Japanese manufactured KWM-2A. Nothing like starting high on the food chain.

Cliff was first licensed in 1990 and started out with an Icom 735, an R-5 and a TL-922A. After finding his KWM-2A several years ago, Cliff became enamored with the rare and hard to find and now has a wonderful collection of the more exotic modern pieces of Collins and Rockwell equipment, as well as a very nice collection of S-Line.

His favorite pieces of Collins/

Rockwell gear include his 851S-1, the rare variable VFO version of the HF-80 receiver, his KWM-2A from Japan, a HF-282 1 KW Amplifier (also very rare) and the Rockwell 95S-1 SDR receiver.

Due to a recent move, Cliff is not on the air now, but listens in on the 20 meter net and expects to have his antennas up as soon as the summer heat lets up.

He is particularly looking forward to getting back on the air with that HF-282 Amp. Bob Hardie, W5UQ, who we met at Dayton, is restoring Cliff's HF-282s and Cliff passes along his thanks for undertaking this job. Cliff is also in the process of getting his HF-80 equipment on the

air. This includes a rare HF-8070 transceiver and the HF-8061 Line Flatteners. Awesome stuff.

Cliff has a BS in Biology/Organic Chemistry but he currently owns two of his own businesses, which keep him real busy. He is married and relates that his wife Henrice, helps at times with repairs. She is also a ham. They have one son, Joshua.

When asked about other hobbies, he replied, "Other hobbies? I wish I had the time. It's either work, sleep or my wife and 11 year old Joshua. They are my hobby.... plus you guys of course!.....CCA....."



Converting the 20V-X (Cont'd)

engineers who can lead you to the ones that are begging for a new home.) I got real good at recovering and moving those 1200 pound monsters. These skills are particularly well developed now that I changed my mind about where I wanted to retire, sold that home and shack and moved 1000 miles into a rental, while I found my home, and then moved them again into my garage while I am building my shack at my new home. They have one more move to go from the garage to the shack.

After setting the 20V-2 and 20V-3 up in at the mountain shack, it was not very long before converting the 20V-3 to 75 meters became a priority - led on by the paragraph in the 20V-X manuals which states that the transmitter can be used in the shortwave bands up to 12 MHz.

Now, in the broadcast manuals, there are no component values for operation at frequencies higher than the upper end of the AM broadcast band. This led to a treasure hunt for a manual for the shortwave version. No luck. All of the Collins resources were transferred to Continental when Collins sold their broadcast business and the Continental documentation (They never made a shortwave version and pitched all the unrelated to broadcast material) was nonexistent. Not only was there no documentation at Collins or Continental, but no one had ever seen a shortwave manual - ever. Even worse, nobody had ever seen a shortwave version of the 20V - period. There was at least one 6 MHz 20V-2 made in Dallas (on a cus-



**AM Desk at N7OTQ - Arizona - With the Collins 212F-1 Mixer
and 160 Meter 20V-2 in the background**

tom order basis), but there sure were not many. Observation: Given the lead lengths of the bypass capacitors, and the long RF leads and component placement, Collins never just took a 20V off the line and plugged in 12 MHz coils and said "Go".

Conversion Process Observations

There have been people "converting" the 20V-2 or -3 to 75 meters by just tweaking Ls and Cs until they got it running. Several transmitters converted this way strayed far from the original design parameters and wound up with unstable and or very narrow high Q tank circuits that were real AM unfriendly.

It needed to be done right and the process was challenging to me. Being an RF engineer by background was a help as were several long conversations with a good friend, Stu Bonney, K5PB, who is a retired Collins engineer. You will perhaps recognize him

as the Editor of the Collins SSB Book. Stu became intrigued with the project. The reverse engineering of the 20V series commenced and proceeded until we understood, and had models of, the stage gains and dynamic impedances, Qs, Unloaded Qs, etc. of the networks involved. Then the design was forward engineered to 75 and then 40 meters with the objective of maintaining the same design parameters used by Collins. The results were gratifying. Not only did the transmitter come up smooth as silk, but the data and component values and choke/coil designs have been used by numerous (more than 20 estimated) other station to get their 20V-X on 75 and 40 meters.

What follows is a summary of the results of that work.

Some Guidance

The following material is meant to be a general guideline for the

Converting the 20V-X (Cont'd)

conversion of the 20V series of Collins broadcast transmitters for operation in the 160, 75 or 40 meter amateur bands. This includes the 20V, the 20V-2 and the 20V-3. Due to their similarities, this work will also apply, and has been used, to convert the lower power derivatives of this series. This includes the Collins 300J and the 550.

The discussion here focuses on the 20V-2 and 20V-3, both of which are 1 kW carrier (4 kW peak) AM transmitters. This information will allow the reader to set the resulting conversion up for approximately 375 watts carrier operation in order to limit the PEP to the legal limit of 1500 watts.

It should be pointed out at this point that responsible operation here is paramount. AM broadcast transmitters can be very unpopular on the ham bands. They inherently have audio (modulation) bandwidths that far exceed the FCC guidelines for amateur transmissions. They easily go out beyond 8 KHz on either side of the carrier if driven with aggressive audio. In addition, obviously with these units, operation at full power exceeds the allowable PEP in the ham bands. We do not want to lose the privilege of operating these transmitters so use that cut back switch and limit the audio (You are going to be doing audio processing anyway) bandwidth with your processing so that you are not wider than you should be. You will be amazed how good you can get one of these to sound with good audio tailoring even with the limited bandwidth.

There are several guidelines that I would recommend as you think about starting such a project. First, it is not for the faint of heart or the person without a lot of patience and resources. In all likelihood, you will hit technical problems. The equipment is very heavy and there are very high voltages involved. There is a tendency to say "Oh, this is just a big 32V-3." but this is far from the truth. The iron is much larger, the source impedances of the power supplies much lower and you can enjoy some very spectacular High Voltage "Events" including fires. Second, if you have not worked on large high voltage equipment, or do not have the technical background to do so, you should get some qualified help.

Be safe and I can not say this strongly enough. Do not defeat the interlocks and if they are already gone --Put Them Back!

Getting Started on the Broadcast Band

It will be well worth the effort to run the transmitter for some "proofing" period of time on the broadcast band in order to locate and fix basic problems that exist before launching into the conversion. If you try and convert and bring up the transmitter in one phase, you will find that, in some cases, you don't know whether you are dealing with a problem you caused or one that was there to start with.

There were two types of broadcast engineers. Those that knew what they were doing, and those that didn't. In addition, in many cases, the transmitter was located far from repair parts and resources and when the unit was off the air, it had to be brought up ASAP and the station owner

did not care how you did it. You will find some pretty off beat "fixes" sometimes. Often, really creative "top of the mountain" repairs stayed in the transmitter for years since it required downing the transmitter once again to bring the repair back to something that Collins would approve of. Don't be too harsh on the old station engineer. It is pretty interesting to see how creative they could get.

The reason I bring this up is to provide you with some motivation for a really thorough inspection, assessment of problems (Physical and Electrical) and plan for initial repairs. You can then bring the unit up into a dummy load on the broadcast band. This will allow you to make a good initial plan - more will come along - and do the initial restoration work.

By the way, the last two Collins big boxes that this author has worked on turned out to have factory wiring errors (one swapped component and one unsoldered terminal point). One of these had caused popcorn carrier noise that the previous owner had looked for, on and off, for 30 plus years. Check carefully against the schematic and then check the schematic. All of this will allow you to make a plan for the entire repair, restoration and then conversion.

Cleaning is particularly important. Be very careful to thoroughly clean all RF and high voltage areas. The high voltage areas will reveal themselves to you by a trail of oily buildup of electro-statically attracted dirt. The RF tuning compartment, the RF and Modulator decks and the Power Supply deck, in-

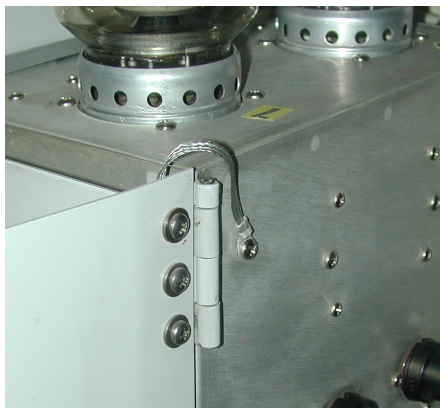
Converting the 20V-X (Cont'd)

cluding all tube sockets, should be thoroughly cleaned. Note particularly that the inside of the plug-in coils is important. Transmitters from dirty environments will have dirt built up in between the plates of the tuning caps and have been notorious for causing arcing and carrier noise.

Cleaning well should be followed by rinsing and drying well. Many of the cleaners that are very effective will cause corrosion in the long run. Paint should be, and can be, saved where possible. It is great paint and even charred paint that has been exposed to fire will often polish out.

This is a good time to also loosen and clean all ground point connections and then retighten them. They have probably not moved in 50 years and inter-metallic corrosion between the various metals involved can make them a non-ground. If you are working on a 20V-3, it is recommended here that you add a modulator deck ground fix at this time. From existing hardware on the deck itself, at the front by the hinge, run a short length of silvered half inch ground braid from the swing out chassis to the main box. This can be very short because it just has to move with the hinge. If you look at the grounding paths from this modulator chassis to the main ground return area, you will see why this is necessary. The ground paths out of that modulator chassis either involve very long (lots of mutual coupling) harness runs or ground paths through the hinge itself or the closure for the chassis. These

are all prone to generating problems as the frequency of operation goes up.



Modulator Deck Ground

In general, you will be rewarded for returning the unit to Collins stock configuration. It is a great and simple design.

In summary, the 75 meter conversion itself will involve: Modifying the plug-in coils, Bringing up the Grid Drive, Changing the Plate Choke (Plate choke design is in part 2), Converting the RF tuning network and adding the PTT circuitry, and off you go! The only new parts required will be the reworked plug-in coils and a new home-brew plate choke. This assumes you got it real healthy on the BC band. Right? In addition, there was a 4-400 screen voltage improvement made by Collins after serial number 119 of the 20V-3 and it is recommended that you make this change if you have a 20V, 20V-2 or a 20V-3 less than # 119. This change provides more protection for the screens of the 4-400s which are somewhat fragile. Also, as you get started on the broadcast band, it is recommended that you upgrade the cutback resistors and the bleeders to 225 watt dissipation rating. These were marginal at their original rating and it is

common to find these resistors burned and in very bad shape.

This first part of the article will allow you to get started and running on the broadcast band and prepare for the conversion. Part 2 & 3 will cover the detailed instructions for completing the conversion and upgrading the screen and cutback resistors. So, be safe and squeaky clean, enjoy the glow of those 4-400s after you are up and running, have an 807 for us both, and we will continue next quarter.

73s,
Bill, N7OTQ

.....CCA.....

Website Update by Brian Sokol, W9SRK

It has been a year since a major rework of our website was undertaken. Improvements and additions have now been made in the areas of: Modern forums, members only area, BoD only area, NCO only area, Auto Net Alerts, News with archives, on-line membership and renewal with PayPal and a Google driven site search engine.

At last year's banquet, a request was made for a place to showcase ham shacks with pictures. By integrating with MyHamShack.com we now have the ability to display member's ham shacks. While this feature is still in its beta phase, it will most likely be fully operational by the time you read this edition of the Signal. Look for more information in the Forums, such as how to set up and configure your own set of ham shack pictures.

As always, any suggestions or comments are welcome....73s,
Brian Sokol, W9SRK

Gene Senti, WOROW (Cont'd)

ing this kind of work, and with the upturn in opportunities at Collins, Gene reapplied there in 1941 and was accepted. Little is known of what projects he worked on during the war, but he did have one major accomplishment, meeting and marrying his wife Mary on September 24, 1943. It was a love to last a lifetime - some 60 years. On August 30, 1944, Mary gave birth to a daughter, Linda, who was to live only until age 48, dying of a series of brain aneurisms. On February 1, 1947, Gene and Mary had their second child, a son Sam and then on April 23, 1950, their last son Bruce was born. Sam has recently retired after a successful Dental career and Bruce is a Manufacturers' Representative for HVAC products. Gene had 8 Grandchildren at the time of his death. All are successful in their own right and Gene was very proud of that.

While we will focus here on the personal side of Gene, it is appropriate to summarize his accomplishments in his life. These accomplishments were, in fact, an integral part of him and a result of who he was personally. He was a wonderful combination of his inquisitiveness, inventive nature and his farm and depression ethic. When his son Sam was asked to pick one word that best described his Dad, he quickly responded, "Inquisitive" and then he added "Humble".

When first hired at Collins, Gene went to work in the test group, a common job entry point at Collins for fresh-out engineers. This was during the



Collins Promotional Picture - Gene, His KWM-1 and pipe in 1957

war. At some point, there are indications he went into engineering and did some work on the TCS equipment. Following the war, in late 1945, there is one organization reference that shows he was an engineer in the Quality Group. This was a time when all existing government contracts were cancelled, civilian market production was just starting again, and there was severe downsizing going on. Collins employment dropped almost a factor of two, from around 5500 peak to less than 3000 just following the war. One can only surmise that Art was trying to find places to shelter his talented engineers until commercial production could resume.

Arlo Meyer is a long time, and now retired, Collins mechanical engineer and friend of Gene's. He remembers that in the early '50s, Gene was the project lead on the R-392 receiver, while Arlo was the Mechanical Engineer on the T-195 GRC-19 companion transmitter. To quote Arlo about

Gene, "Great guy and a great engineer".

In 1953, Gene took over the KWS-1 as Project Lead when the previous project leader, Walt Zarris, left the company. Gene finished getting the KWS-1 ready for its introduction in 1955. Not long after the introduction of the KWS-1 and 75A-4, Gene was playing with a new idea in the basement workshop at his home. Playing with ideas, be it mechanical or electrical, was to be his forte. By 1956, Gene had called Art to his basement one evening to see his new "transceiver". Art loved it, wanted it for a mobile rig, and the KWM-1 was born. Sam, his son, remembers Art coming over that night and the excitement that ensued.

By the mid 50s, Gene was working on components of the S-Line, eventually becoming the Project Lead on the 32S-1 which he carried through design before turning it over to Joe Vanous when Gene was pro-

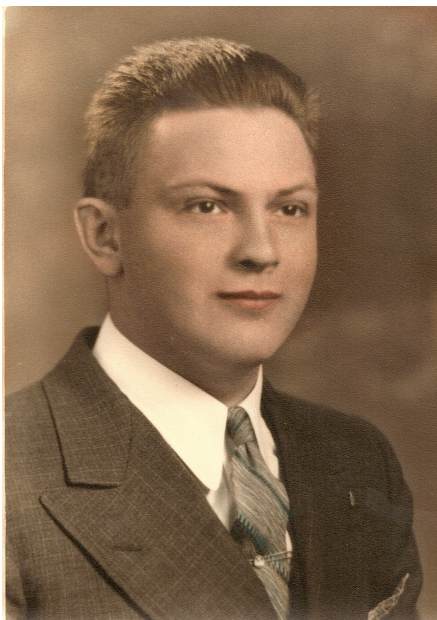
Gene Senti, WOROW Cont'd)

moted to Group Head, Amateur Radio Products, in February, 1959 (See the previous issue of the Signal for an article on Joe).

During development of the first components of the S-Line, in early 1957, Gene became frustrated by the lack of an economical amplifier (even at employee prices, a 30S-1 was pretty costly), and he set out, again in his basement, to build a table top amplifier. Gene came up with a design that he built on an old TV chassis and showed it to Arlo. Arlo's immediate reaction was that he thought he could fit it in a S-Line cabinet. They proceeded to design and develop two prototypes from S-Line parts they purchased in the Collins surplus store. When they had completed the two units, they showed them to Ernie Pappenfus, the Division Director (HF ham and military products) and it went up to Art. Immediately a "Green Room" was set up, and in less than 6 months, the 30L-1 went to production, but in a KWM-2 size cabinet. It had grown a bit, but Gene had done it again.....another basement wonder.

Although Gene was often described as aloof and hard to get to know, those that knew him well attributed this to his creativity and his constantly working mind. Their last comment is always that he was a wonderful friend and often did get-away trips with peers and their families. Arlo remembers one joint family trip down to Mississippi to stay with, and visit, 2 hams that Gene had met on the air. They both were KWM-2 owners. Both Gene and Arlo, and their

families, were treated to some good old southern hospitality. Arlo also relates that he and Gene once took their families to Chicago to see the Museums and big city sights, and that despite being totally worn out by the kids and the day's activities, Gene hung in there in good spirits and thoroughly enjoyed the day.



Gene is remembered fondly and with respect by those that worked for him. He was, as a manager, prone to allow his engineers to use their own initiative to improve on products, or come up with new ideas. Dennis Day relates that he most often would go to his peers and those with the required expertise of the moment, to work through a new engineering problem. The organization at Collins appears to have been very un-siloed, with a lot of cross sharing of expertise, and Gene encouraged this. He would often spend his time in his office, always with an open door, working on new ideas for tuning and operational features using the always pre-

sent pile of alarm clock parts and gears - etc. - on his desk. He would also always work on the "Birdie" analysis for new products, most often contributing the new frequency conversion schemes. This was another one of his loves.

Speaking of Gene's attention to details, and efficiency, Sam related a story that shows just how much he loved to do things efficiently. Gene most often wore work pants when he was at home. They came in two colors, blue and brown, and they always had to have the pant legs shortened. After Mary became ill and could no longer sew, Gene did the sewing and, in order to save time, he loaded brown thread in the spindle on top of the machine and blue in the bobbin. If he was shortening brown pants, he sewed them right side out. If he was sewing the blue ones, he turned the cuffs inside out and sewed them with the bobbin thread showing on the soon to be revealed outside. Gene was always thinking!

Those that worked under him viewed him as critical and a hard performance grader, but very fair. He expected of others what he expected of himself. It is testimony to his management style that almost everyone that worked for him remained his close friend (and their families friends) until his death. That fact, and the obvious excellent performance of his group, says much about his management style.

During the '60s, Gene managed his group through the hay days at Collins - producing the later 75S receivers, the 32S-3, 51S-1 and 55G-1. He guided the ma-

Gene Senti, WOROW Cont'd)

turity of the S-Line tube products.

Dennis Day remembers the birth of the 51S-1. It was, he says, a typical product "definition" that occurred when Chuck Carney (Amateur Product Line Manager on the 30S-2 - the auto-tune 30S-1) came to Gene one day and said, "You know, the 51J series is getting pretty old, we can do better." They spoke some more and kicked ideas around, and the 51S-1 was born. Ed Andrade was assigned the Project Engineering role. This was a major project for Gene's group at the time. These were good days for Gene.

In the late '60s, things started to turn down. The recession hit - and hit hard - at Collins, with severe cutbacks due to the general slowdown of business and the very bad turndown in the aviation industry. Gene was offered an early out package at that time, and he took it, retiring at the age of 54. Gene briefly went back to work as a DCAS source inspector assigned to Collins, but that next year he retired for good to spend time with his family. He was well prepared for this, his son commented, due to his consistent frugal ways. The years following his retirement were difficult for Gene. His nest was emptying fast and his career was at a turning point. He struggled to refocus his life and spent increasing time with his family, a period that they remember with warm memories.

Gene's inquisitive nature continued even after his retirement. Late in his life he pur-



Gene and Mary with Sam's family - Christmas 2002

chased one of those new energy saving florescent light bulbs. When it failed, he took it apart to see why it failed and if he could fix it. On one of the author's trips to visit him, he had a leaf blower and a riding lawn mower all disassembled in his driveway and he was reconstructing them into a riding leaf vacuum and blower that he could ride and clean his lawn with and then dump it all at the back of the property.

Gene also was a giver and a good neighbor. He commonly helped the older people in his neighborhood by repairing their lawn mowers or other appliances. Dennis Day recounts several stories about Gene during the early '60s. He mentioned to Gene one day at work that they were going to paint their first home that weekend. Saturday morning about 9 o'clock, as Dennis and Pat (wife) were getting ready to paint, Gene showed up with his whole family and announced, "Fill our buckets and show us where to paint." By the end of the day, they all had painted al-

most the entire house. Dennis also recounts that when his old Plymouth needed a paint job, Gene said one day, "Bring that car over this weekend and I will paint it for you." He did. Later when Dennis was restoring an old Mustang, Gene again volunteered his help, but this time told Dennis he would show him how to do it. This was his method with his kids also. The first time Dad and the kids did a fix-it job, Gene would do it and explain what he was doing. The next time, the kids got to do some of it, until they were doing the job themselves. Both sons got their first cars this way, buying older fixer uppers and going through them with Dad.

As the years passed into the 21st century, Mary, Gene's wife, fell ill and Gene was her full time caregiver. On August 22nd of 2003, Mary passed away after spending some time in an assisted living facility. Gene went to see her every day. Mary's passing brought another deep change to Gene's life and

Gene Senti, W0ROW Cont'd)

he spent the remaining years at home and visiting with family. He would take care of his home a bit at a time due to a bad heart valve and sit in his easy chair and watch over his neighborhood - making sure everything was OK.

When Gene passed away suddenly on October 20, 2005, he was 88 years old and had enjoyed a wonderfully productive life, 60 years of a wonderful marriage and raised a family he was very proud of, and close to. He had life long friends that he cared for and who cared for him. This was, and is, Gene Senti.

On his passing, his sons Bruce and Sam wrote the following memorial to their Dad:

*In Memory of Dad
By
Sam and Bruce Senti*

In many ways, Dad was the typical 50's and 60's type dad. He was the head of the household and Mom was the typical "Stay-at-home" mom. However, it wasn't quite like the "Ozzie and Harriet Show" and we boys were not quite like Rickie and David Nelson, as our sister Linda would surely have agreed!

Dad was also an engineer, which meant a definite "order" to things. For instance, supper was always ready to go on the table at 5:00 when he got home from work. Also, every day when Dad came home from work, he would shut off his Volkswagen Beetle at the top of our hill and coast for two blocks into his garage stall. "Just think how much gas I can save over the years," he would say. We learned very quickly not to leave our bikes in the way of his trip home from work! Dad was also a "tell it like it is" kind of guy with a unique sense of humor. An example of his sense of fun

was his use of fertilizer while taking care of Grandma Senti's lawn in Burlington. Much to her chagrin, his initials ECS appeared 3 or 4 feet high and VERY bright green in her backyard one summer. We can still remember Dad chuckling about his successful lawn care prank.

His engineering talents were used in many other ways as well. Because he was an electrical engineer, we had one of the first black and white TV's built from a Heath Kit. Our stereos and many of the AM/FM radios in our house were also built from kits (and they still work today). He even built speaker cabinets for our stereo that were acoustically designed for maximum sound performance.

There was never anything that Dad couldn't fix or build. Our first driving experience came from a go-cart we helped Dad build from scratch. It's hard to say how many hundreds of laps that go-cart made around the house and we were always in trouble for not varying our path enough and killing the grass. Perhaps the neighbors wouldn't remember the Senti boys' go-cart quite so fondly. Dad never paid more than \$50 for cars for us to drive. But, they all needed fixing. We helped Dad rebuild the engines, transmissions, and differentials. We also did body work and painted the cars in our garage. How do you stay warm working in a cold garage in the winter? You take apart an electric clothes dryer and use the heating element and blower of course! Warm as toast and another lesson learned. This experience gave us a great deal of respect for the cars we drove as teenagers. He certainly taught us a lot about mechanical and electrical devices. We both built our first stereos that we took with us to college.

Since Mom and Dad grew up during the depression, they were very frugal. We had a huge garden with beans and corn planted in two-week intervals to provide a steady flow of vegetables through harvest time. Then the canning would begin. They would put away 100's of quarts of tomatoes, beans, pickles and fruits of various

kinds for us to enjoy all year.

Dad was a good provider. He worked hard at his job to make our lives comfortable and fun without being extravagant. He was always willing to help with our education and with financial needs we encountered in our professional careers.

We also appreciate the traveling that we did as a family. With all of our summer vacations, we were able to explore well over 40 states. We camped on most of our vacations which gave us a real appreciation for the outdoors and the beauty of nature. We did a lot as a family which meant a great deal to us and it provided us with terrific memories we could carry over to our families as well.

It wasn't until the past few years that we really got to know our Dad from a different perspective. We didn't realize that he was such a shy, humble and caring person. We didn't realize what an impact he had in the field of amateur radio. His invention of the first transceiver revolutionized wireless communication. He was among the first 50 inductees to the Amateur Radio Hall of Fame with such famous people as Marconi, inventor of the radio, Morse, inventor of Morse code and the inventors of the transistor. Even in recent years, he has been contacted by authors writing books and publications about the history of amateur radio. He was also pictured and mentioned in several publications. He didn't seem to enjoy the celebrity (role), but we are very proud of his accomplishments.

It wasn't until later in life that we realized Dad was also a talented musician. He loved music, had a great ear and was very gifted on the harmonica. Our folks enjoyed getting together with friends for dinner and a jam session. He also taught himself to play the organ and piano. He and Mom enjoyed going to the local city concerts and an occasional dance.

We have recently been gratified to realize the relationships he had developed with his neighbors. He was always willing to lend a tool, a helping hand and especially to offer advice to

Gene Senti, W0ROW (Cont'd)

anyone needing help. There was very little that went on in his neighborhood that he didn't know about. He was a fixture sitting in his chair on the front porch or keeping a careful eye on the neighborhood from his favorite chair in the living room. Next to his chair, a carefully placed rearview mirror allowed him to keep track of activities up the street as well as down. We have been especially grateful to all of the neighbors who have shown Dad such kindness and concern in the past few years.

If we could say one last word to Dad, it would be "thank-you". Thank-you for all that you have taught us, from how to use a wrench to how to love our families. A special thank you for caring for Mom with such tenderness as her health declined and for being there for her each day as she spent her last years at Northbrook Care Center. That was a wonderful example of your love and meant a great deal to us. Thank-you for your work in amateur radio which helped to develop the world of communication. And finally, thank-you for giving each one of us something we can carry with us for the rest of our lives and pass on to our children and grandchildren.

We love you and will miss you Dad. We know you are in a better place now. Give Mom and Linda a hug for us.

*Love,
Sam and Bruce*

So, the next time you use your KWM-1, 30L-1 or your KWS-1, you will not have to ask where that quality came from. It came from Gene and he was a gentleman and a loving, inquisitive, productive man. Art thought a lot of him. His friends do also, and I know we will all look at our equipment a bit differently from this day on - and remember a fine man.

Thank you Gene.

.....CCA.....

Dale Svetanoff, WA9ENA (Cont'd)

to acquiring the rest of the S-1 line - including a nice 30L-1. Dale considers himself a "user", not a "collector" and also is trying to stock a critical parts supply for the S-Line for future needs. He commented that when he obtained his 32S-1, it had a damaged PA and that he got into the S-Line repair business real fast.

Tony and Dale have remained close friends even with the stress of Tony constantly (still) trying to buy back the 75S-1 (lots of whining Dale says). They even wound up working together for about 2 years at Western Electric in the 70s. Unfortunately for Tony, the 75S-1 remains Dale's favorite piece of Collins gear..... Sorry Tony.

Dale has a number of other hobbies ranging from photography, to vintage electronics in general, other boat anchors, and an extensive music library involving nearly all formats of analog tape recording.

He is a member of the IEEE, IEEE-SA, Chair IEEE P299 Working Group ('95-'06), Author Mil-STD-188-184 and 185, a N.A.R.T.E Certified EMC Engineer since 1992 and holds 3 patents in the area of applied of RF technology. From 1970 to 1976 he served in the USAF Reserves in the 928th Ground Radio Repair Comm Squadron. He attended the Univ. of Illinois (1967) and the USAF Tech School, Keesler AFB - 1971. His experience includes micro-wave and broadband comm systems, high voltage x-ray systems for inspection and CAT scanning, and EMC engineering as applied to RF Shielding.

A Personal Glimpse Ernie Pappenfus

From the pages of Issue VII of the **Collins Columns** (a in-house News Letter published during WW II to keep active duty Collins employees in touch with their company and friends). Dated October 11, 1943. We quote:

"Engineering

Ernie Pappenfus was soliciting for bean sales a couple of weeks ago - may be yet for all I know.

He was so hungry for baked beans, so, having that housewife instinct, put a couple pounds to soak. The last I heard, he had two crocks full and ready to bake, and had beans literally running all over the floor. He had even resorted to begging people to come and take beans home with them."



Did You Know?

Over the span of the S-Line's manufacturing history, various units of the S-Line were manufactured in at least 7 different factories in 7 cities spanning the globe. Core model manufacturing sites included: Anamosa Iowa, Building 108 Cedar Rapids Iowa, Main Plant Cedar Rapids, Richardson Texas, El Paso Texas, Toronto Canada, Salt Lake City Utah and Collins Radio Ltd Japan (Tokyo, Japan). Future **Signal** issues will feature an article on S-Line serialization and site of manufacture by model.

From the President

By Paul Kluwe, W8ZO

Different people have different ideas about that quality called Leadership. Many equate leadership with a top-down command structure, or the imperious execution of a seemingly clever strategic plan. While these concepts may have merit in certain instances, it has been my experience that true leadership is more about service to others than barking out commands. The success of the CCA is not due to a lack of challenges: it is due to dealing with these challenges with teamwork and the constructive use of individual member's talents. It is by honoring this traditional CCA value that we will continue to grow and succeed in a manner that has made the CCA the largest (and best) radio collector's group.

The CCA is a very special society, and my admittedly simple model for organization can be summarized in just three basic principles.

1. *The main function of the CCA is to enhance member's enjoyment of the equipment and lore of the Collins Radio Company and Rockwell Collins.* Operating, collecting, and gaining knowledge of Collins Radios is a hobby, and as such, is primarily an avenue to have fun! Members join and stay in the CCA for many different reasons, but uniformly as a means of gaining greater enjoyment of their hobby.

2. *The main function of the CCA board is to serve and assist members in their participation in and enjoyment of their CCA membership in a harmonious and collegial atmosphere.* The CCA board is charged with organizing and rationalizing the many different activities of the association. Understanding there are issues of finance, practicality, and personal preference, the board is in a position of service to allow and encourage individual members to participate and contribute as their personal talents and interests allow within the framework of the organization.

3. *Likewise, the main function of the CCA president is to serve and assist the board in carrying out their mission of service to the CCA membership.* Far from being a sort of cigar-chomping "head honcho," the president in an organization like the CCA has a special duty to serve those who serve the membership!

With all this talk about service, the main point of a hobbyist organization like the CCA is to have fun! Think of what *your* interests are and what *you* would have fun doing with respect to CCA activities. Participating in CCA activities can enhance the value of your membership and the enjoyment of your hobby.

With the excellent history of the CCA's successes, and the prospect of continuing growth in membership and participation, our future looks very bright indeed!

73s for now.....Paul

Kluwe New CCA President (Cont'd)

Paul has been collecting Collins since 1963, has been very active in the CCA in his own quiet way, and was recently responsible for managing the CCA reflector through the conversion from a moderated to an open reflector. He is well respected for his accomplishments and his quiet but effective leadership style.

His first Collins station was a 75A-1 and 32V-1. He now collects a wide range of gear (He has a complete working FRT-6 Collins transmitter.) but he is most often heard on his 75S-3C and 32S-3A station.

Truth be known, he has a little Rohde and Schwartz too, but we will not hold that against him.

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