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COMMON POINT®

A MONTHLY NEWSLETTER FOR BROADCASTERS

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WENDELL P. "BUD" TEDLIE PASSES ON; HIS INFLUENCE LEAVES LASTING IMPRESSIONS!

by Michael Gerth, President Electronic Industries

Electronic Industries has suffered a great loss with the death of Bud Tedlie on August 13, 1984. Everyone who had the privilege of knowing and having been associated share our grief. He was our good friend as well as a loyal trusted employee. He will not be forgotten.

Bud started his work here at Electronic Industries on October 1, 1973 after having previously been associated with radio stations in Missouri, Michigan and Wisconsin. He was always thinking of ways to improve and enlarge his scope, and in November 1973 he started the "Common Point", which was very well received. He was a member of the Society of Broadcast Engineers and the National Association of Broadcasters.

Bud had been ill for about a year. He was often at his desk servicing his accounts when his health should not have permitted it. His dedication to his work and to the "Common Point" was above and beyond the call of duty. We were fortunate to have worked with a man of this caliber.

Because of his declining health, his work load became too much for him. In March, we hired a young engineer with the highest standards and experience to take over some of his responsibilities. Todd Harrington was chief engineer at KPKE in Denver, Colorado, sales manager of the Rocky Mountain States for the Cetec Broadcast Group, and was associated with WHBY/WAPL in Appleton, Wisconsin. Todd and Bud worked well together, and now Todd has the responsibility of the Broadcast Division at Electronic Industries. He is a very capable young man, and he certainly fits very well in the tradition of broadcasting. Todd will also continue the "Common Point", because we feel this is our way of keeping in contact with all of you.

*****

by John Shepler

We don't spend a lot of time thinking about life. In the midst of today's problems and tomorrow's plans the record of our lives is being written. Seldom do we know how long that record will be or whether it will be judged good or bad. Be assured, though, what you do affects the lives of others just as their actions affect yours.

Bud Tedlie was a man who influenced many who never knew him by name. This COMMON POINT that you enjoy every month exists because Bud Tedlie put together the varied pieces that create each issue. If you find one useful hint, one bit of new information, or one piece of equipment that improves your station, then Bud Tedlie has influenced your life.

Positive influence never stops. The benefits that you derive from COMMON POINT are soon passed on to the programmers who depend on your equipment. The benefits they derive are in turn passed on to the listeners in the form of better shows. Who could ever think of measuring the ripple effect of but one good idea?

The point of this is really that we are all more influential than we think. You don't need position or power to influence the world. You are doing it every time you fix something that was broken, build something that wasn't there before, or share your job experiences with another engineer.

Bud Tedlie's influence will be present every time someone reads a future COMMON POINT or rediscovers an earlier edition lost among equipment manuals. I will miss his personal guidance, but will always remember that it was Bud who gave me the opportunity to be part of the COMMON POINT family.

*****

(cont. on page 4)

Editor's Notebook

OCTOBER . . . This issue of *Common Point* is dedicated to the man who started it all, Wendell P. "Bud" Tedlie. Bud touched so many lives in a positive manner, not only through this publication but in person and over the phone, that his total influence will never be measured.

I happened to be one of the lucky ones. I worked side by side with Bud. Even though it turned out to be a short five months, I feel as though I had known him all my life. That is the type of personality he possessed. I regret that those five short months could not have been years.

Yes, *Common Point* will continue. I can only hope that it lives up to the reputation that Bud had built and for the reasons he had intended . . . to serve his fellow broadcasters. I do know that your help is going to be a necessity as it has been in the past.

As difficult as it seems at times, we must continue on.

Rest well, Wendell P. "BUD" Tedlie.

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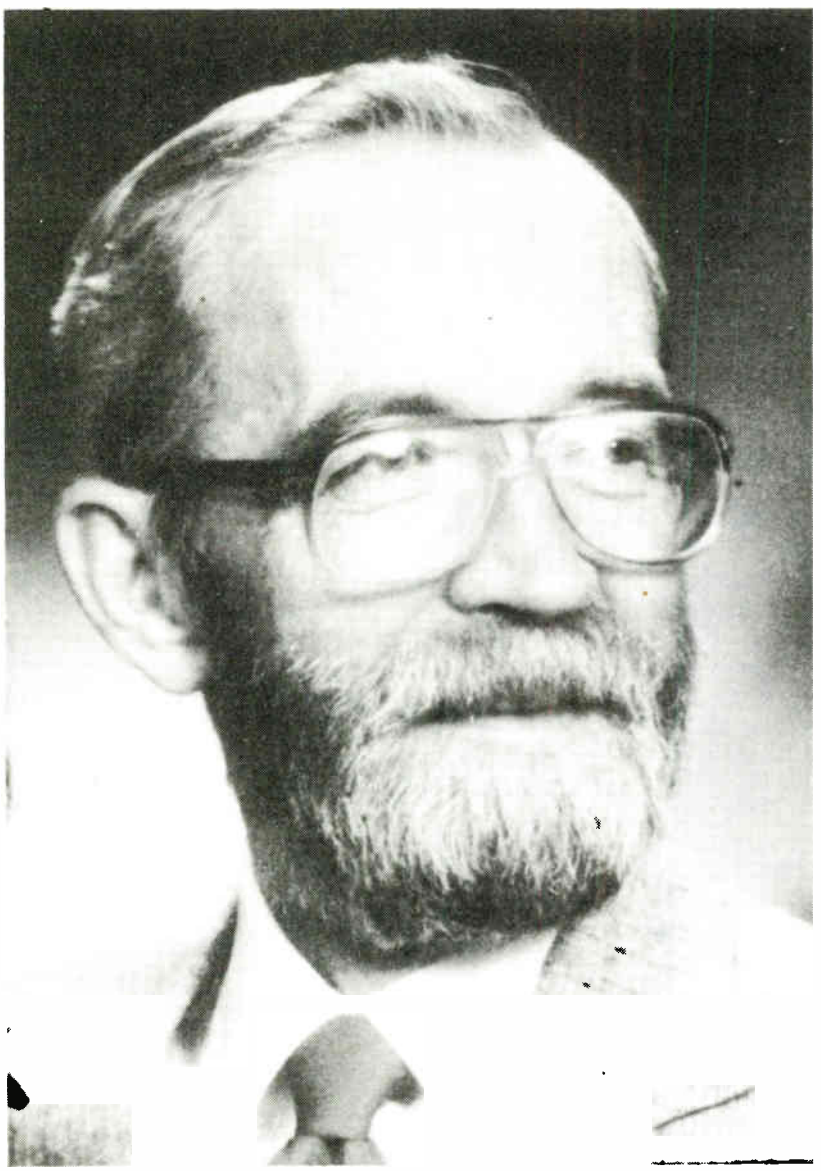
COMMON POINT® READINGS



WENDELL P. "BUD" TEDLIE
September 1930 - August 1984

Bud Tedlie's Influence--We Will Always Remember!

(cont. from page 1)

I've worked as a radio broadcast engineer for about ten years now. I don't recall when I first got to know Bud's voice on the phone, he was just there when I needed help. Whenever I needed something that the local parts suppliers didn't have, I would call Bud, tell him my problem and a few days later I had what I needed.

Some of the parts that I requested were so strange that Bud became curious about what I was using them for. I would tell him about the champagne bottling machine I was building, the PH meters and other odd projects that filled my time.

After awhile I came to notice that he was genuinely interested, not so much in my strange projects, but in me as a person. I soon found myself the recipient of a great deal of encouragement and sound advice.

Bud, more than anyone, encouraged me to write. I now have to give you some personal background. You see, I never considered the possibility of being able to author even something as humble as my *Common Point* column. I had scraped by with D's in every English course I had ever taken, and could barely type.

As Bud and I talked about the work I was doing, he kept building my self esteem. He finally convinced me that I had something valuable to say. I wasn't just another oddball, engineering a small town radio station. At the time I really needed that ego boost, and I think Bud knew it.

It wasn't easy for me. Every one of the first columns had to be written by hand at least three times. As time went on it got easier, my organization of ideas jelled. Bud kept up a steady stream of constructive comments. Within one year I purchased the computer that I am writing this article on and other publications were asking me to write for them. Quite a change.

During this same period I was building an automatic power reduction device for KWPC-AM. It was a very simple RF design, built out of an old WW II U.S. Army antenna tuner. I usually talked to But three or four times a week. When I started to ask him about Potter and Brumfield power relays, Buds curiousity really got the better of him. I told him about the adaptor idea and he encouraged me to draw up some circuit diagrams and think about a commercial version.

In a few weeks Bud had sold the design to Eagle Hill Electronics on terms that were very generous to me. The whole matter was done over the phone, with Bud handling every detail. A few months later the first royalty check appeared. It couldn't have come at a better time. At the time I was having serious doubts about my career. That check made me feel a heck of alot better.

When Bud spoke to me about his illness, he showed the same openess and honesty that he always did. There were times when I could tell by his voice on the phone that he was in great discomfort. When I inquired as to why he was at work, he told me that he worried about letting down the many customers that depended upon him for support. It made him feel better, too. As long as he could work, he was in contact with his customers that had become his friends.

Bud was a good friend to me. He always treated me in an honorable way. Bud Tedlie was a model for me to emulate in relations with others. His advise and encouragement advanced my career more than anything else has done. I will miss him.

Dave Metz

*****

I knew Wendell P. "Bud" Tedlie for eight years. He often called me Sir even though he was the one deserving of that title.

I told Bud I'd call him Wendell if I was ever angry with him. After countless business transactions, with a few snafu's along the way, I never resorted to calling him Wendell.

Bud had a calm way of getting a lot of things done in a hurry. He was very busy with sales, but always had time to talk.

The old saying is true..."Only the good die young". He has probably returned to his old profession of "chief engineer" but this time at the Lord's radio station in the sky.

God speed, Bud, we will miss you.

Mark Persons

*****

I called Electronic Industries this morning. Somehow I expected to hear Bud's voice. The passing of a friend is a hard thing to accept for me. Bud's business card is still on my bulletin board, probably will be in that spot as long as I occupy that office. There is a hollow void in business for me right now, it's just there, something you can't put a finger on. I have a lot of memories of Bud, but find that it is very difficult to put into words.

Bud was my mentor, he encouraged me to write the column in *Common Point*. I remember the day Bud called and said *Common Point* was coming back and would I be interested in writing a column. This magazine held a special place with Bud. I remembered when he was quite ill and he requested that I send my copy to his home so he could put the magazine together. I think that the reason Bud worked so hard on *Common Point* was not because of personal gain, but because he gave the people he so enjoyed working with, useful information and some entertainment.

I suppose some of you knew Bud only as a salesman. That's how I first got to know him. He was unusual as a salesman, he didn't pressure, he listened, then suggested, then listened more. Heck, before you knew it you had what you needed, a short pleasant chat and a good feeling when you hung up the phone.

Bud Tedlie, you will be missed by all of us. To the family Bud left behind, my sympathy and support are with you. I guess the good Lord needed another good man to keep his station on the air. Bud Tedlie, God Bless You.

Ed Duellman

****

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MEMO FROM METZ

by David L. Metz

MORE TOWER MAINTENANCE —GUY WIRES

There is probably no subject in broadcasting duller than guy wires. But on the other hand, they do hold your tower up and keep you on the air!

The most important part of tower maintenance is the proper tensioning of the guy wires. If the tension is not correct, the tower will develop a bend that may be permanent. The tower will vibrate and twist, rivets and bolts can shear and tower members may crack. This type of damage is very hard to detect since it will be covered with paint.

The rule of thumb is the tension should be 10% of the wires breaking strength, that is if your guy wire would break at 10,000 pound pull, the tension should be 1,000 pounds.

It takes about five years for the majority of the stretch to occur in the guy wires. So the tension should be checked regularly on a new tower. Consult with the manufacturer on how often it should be done. The old method of "plucking the guy wire" and checking the period of vibration is not accurate enough. Only a calibrated dynometer should be used. At the same time two transits should be set up and the tension adjusted so there are no bends or twists in the tower.

Leo Deters, owner of Deters tower service in Des Moines, Iowa reports that he still sees turnbuckles without safety wires and ground rods. Without safety wires wind induced vibration of the guy wire can cause the turnbuckle to unwind to the point that parts and the guy wire pulls free!

(cont. on page 11)

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Shepler Says. .

by John Q. Shepler, Technical Consultant

MONITORING AT THE TRANSMITTER SITE

Monitoring yourself and your competition is pretty challenging when you are located within a high power RF field. The normal A/B comparisons on portables and car radios just don't work when signals exceed the range of the receiver's automatic gain control. Even equipment that is specifically designed for broadcast use can have trouble dealing with strong signals.

You need to hear your station the way the listener does. This means using stereo systems and portable radios which may start to misbehave at field strengths of 1 volt/meter or more. Luckily, many stereo receivers now have front ends good enough to let you attach a few inches of hookup wire to the antenna terminals. Even such a small antenna is often sufficient for listening to local stations.

FM receivers have the advantage of being insensitive to signal strenghts as long as they are within fairly wide limits. AM is another matter. Signal strength and loudness are directly related. The AGC in the receiver adjusts for most differences between stations, but it is far from perfect. Near the station the AGC runs out of control range and the first stages of the receiver become overloaded. The result is a false increase in both loudness and distortion.

You might try tuning for an image signal on another part of the dial. The quality of the image is often surprisingly good. Car radios can be desensitized by shorting out the antenna or lowering motorized antennas until the signal clears up. Even so, you'll still have to drive a mile or two from the station to get a fair comparison with your competition.

(cont. on page 12)

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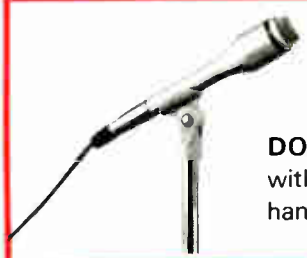

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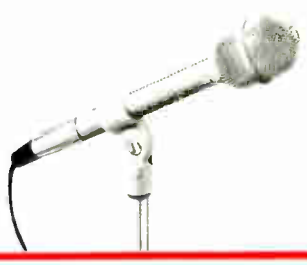

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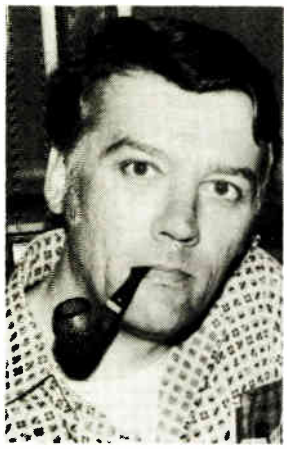
Crosstalk...

by ED DUELLMAN



Maybe I have had my head in a hole a long time or just been doing a Rip VanWinkle number . . . whatever. So, having come to the world and in need of an engineer for one of our stations, I began the search. Now there should be plenty of young people just waiting to move up the ladder a notch. Having spent a few years working with the chief learning the trade, and now ready to move into their own station. Well, I am here to tell ya that ain't the way it is. Oh, there are plenty of eager beavers who want to get in, but few and far between are those that have enough broadcast experience to go into a station on their own. Broadcast experience . . . heck, try to find a person that can do basic troubleshooting in solid state gear let alone handle a 25kw transmitter and keep up with the FCC rules.

The problem has got to be with the system. Don't you station managers pay enough, or do you feel you barely need one engineer much less two? If that's the case, what do think you are going to do when that piece of high tech equipment goes tilt? Oh sure, you can call a guy like Mark Persons, or ol' John Q. himself and get on trucking again. Well, who is going to be there when there are not enough qualified engineers to go around? Where are the new engineers going to come from? If you think it is those college boys with a BSEE, think again, most of them are lucky if they can solder. They get jobs designing a circuit and then turn it over to a technician to build and debug.

(cont. on page 13)

MEMO FROM METZ
(cont. from page 6)

The safety wire can be a scrap piece of guy wire or a piece of 3/16" aircraft cable. It should be installed in a figure "8" pattern through the anchor eye, the turnbuckle center loop and the guy wire shackle. That way not only can the turnbuckle not turn, but if it breaks, the guy wire will still have tension on it.

The guy wire should be connected to a ground rod above the shackles. The shackles, turnbuckles and anchor make a high resistance circuit to a lightning strike. Better to have a ground rod than have a guy wire burn off.

Preform guy grips should always be used instead of cable clamps. A clamp reduces the strength of a guy wire by 30%. Strange but true, ice balls sliding down the guy wire can unravel preforms. This is almost never a problem with AM towers since the insulators break up the ice. Preform makes a metal ring-like device called a preform lock to prevent unraveling. If these are not available, a stainless steel hose clamp will work.

Synthetic resin insulating guy rope is used on many FM towers to protect the radiation pattern. There have been many recent reports of this resin rope failing. When the old KWPC/KFMH tower fell during a freak winter storm the only broken guy found was the resin rope. In an attempt to overcome the problem the replacement tower came with oversized resin rope. Six months later the tower manufacturer advised us to remove the resin rope as soon as possible as numerous tower failures had been traced to it. This spring a 100' extension was placed on the new tower and the resin rope replaced with double fiber glass rods. On inspection one of the cast plastic shackles inserts on the resin rope was found to be cracked. The tower crew felt that it could have parted during a storm causing the tower to fall.

******

TALKBACK

MISSOURI . . .Ed, enjoyed your Aug. article. The dish building project looks great! I've been waiting for a homebrew receiver project for sometime, I'm sure along with thousands more out there. I would think it would go over great in the Ham world too. How about a circuit board for a good LNA? Thanks again for Crosstalk.

WASHINGTON . . . AM Stereo can (almost) be par with FM. At least close enough that metro listeners might not notice, if done right. I'm enjoying the Sony SRF-A100 on better AM Stereo stations.

INDIANA . . . Maybe someone could comment on programs to keep stats on sports in computers or tips on use of RPU for broadcasters. How about getting good signals back to studio? Enjoy Persons, very helpful.

KANSAS . . . Re: Memo Metz. Remember FCC reg. 17.54 requires lamp ratings be no more than 3% higher than voltage of tower light circuit. This is so lights will put out their rated power.

UTAH . . . Ed! If you publish a construction article on your sat. receiver, I promise never to speak badly of you or your opinions again!!!

TEXAS . . . Since "Post Scripts" is my favorite article, was glad to see Mark shaved off mustache. Looks less like FCC inspector and more like good engineer! HA! Really need another column like his only covering studio gear. Maybe an "experience column" from guys in the field.

NORTH DAKOTA . . . Keep the Commodore programs coming.

OKLAHOMA . . . Loved the satellite dish construction article. Hope Ed lets us know how to build that receiver!

WISCONSIN . . . AM Stereo? If we had one decided upon system, it would have made things easier. But, does the public really care? Are they ready to dump their FM receivers for a combo unit? Would you buy one to listen to a daytimer in your area? Not worth it.

IOWA . . . Keep up the good work. What an incredible article on building your own Sat. dish.

NEBRASKA . . . Always enjoy Persons troubleshooting anecdote, one guy reminding the other to use that stick saved me from internment. It doesn't hurt to remind!

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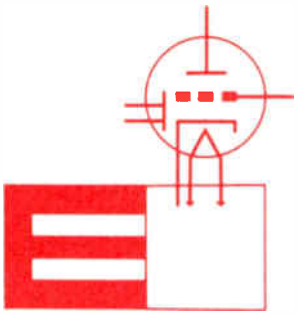

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- AMP
- Hollingsworth (Waldom)
- ICO-Rally
- Panduit

TERMINAL BLOCKS
- AMP
- TRW/Cinch Jones

TOOLS
- AMP
- Luxo Lamps
- Maxon
- PanaVise
- Weller-Xcelite

TRANSFORMERS & POWER SUPPLIES
- Elpac
- Hobart
- Shape Isolation Transformers
- *Sola Transformers
- Stancor-Essex

TUBES
- Amperex
- Eimac
- General Electric
- National
- RCA

TWO-WAY COMMUNICATOR
- Maxon
- R. Columbia

WIRE-CABLE/RIBBON CABLE
- AMP
- AP Products
- Alpha
- Augat
- Belden
- Consolidated

*May be acquired through stocking affiliates

CROSSTALK

(cont. from page 10)

A broadcast engineer not only has to have a broad background in basic electronics, but experience in the trade. You've got to know some of the weird things a piece of equipment can do and correct it fast. Time is money and down time is money lost. When your station is off the air, your engineer is the most valuable person you have on your staff!! Think about it, Mr. Manager, did you hire your engineer cause he does a good job on the air shift?

There has got to be an entry level in this profession, and it has got to be promoted from inside our ranks. Just think what you know how to do and what would it take a school to teach what we learn on the job in five years. We have to get young people in our profession or we are going to be like the Panda bears, a soon to be extinct breed!

73
ED K9FWR

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SHEPLER SAYS...
(cont. from page 8)

One thing to be aware of with all receivers is that strong RF signals can couple directly into the audio circuits and bypass the tuner completely. When this happens, you'll be able to hear your own station faintly when the receiver is switched to the tape or phono inputs. This extra pickup will often be distorted and will give you a false impression of the station's true sound.

Modulation monitors are also subject to RF overload. It is possible for a strong AM signal to couple into an FM mod monitor and change the readings, especially if you have removed one of the covers from the monitor or don't have an excellent ground. RF preamps in some mod monitors must be replaced by cards that directly couple to the transmitter pickup point. Otherwise, they will overload and give you false readings.

Finally, beware of RF sneaking into your test equipment through unshielded cables or multiple grounds. The effect may be additional hum, noise, distortion, or bleedthrough of other signals. If the readings change when you move your hands around the equipment, it's a sure tip that RF is causing you problems.

Common Point of Interest!

Dear John . . .

A better pick-up point for observing FM modulation with an oscilliscope is directly after the discriminator in the FM receiver. This is sometimes labeled "detector out". This point is before the multiplex decoder and contains all of the modulation. Also, be careful you are comparing your signal to a station with no SCA, unless of course you have one. Otherwise you may end up 5% too high. Another trick I've used is to feed baseband to a dual trace scope with one channel phase reversed. You get a display similar to the AM envelope. I enjoy the publication. Good Work.

(Letter to John Shepler, dated Aug. 10, 1984, from David Rickmers, chief engineer KPFT, Houston, Texas.)

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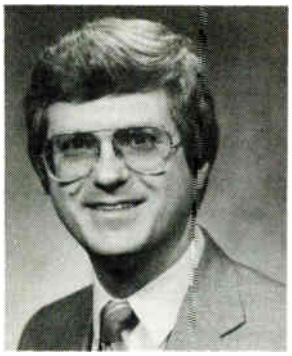

PERSONS' POST SCRIPTS

by Mark Persons

This month's column has helpful tips on caring for Gates/Harris MW-1/1A Transmitters. The MW-1 was the first SUCCESSFUL all solid state one kilowatt AM transmitter. There were only a few design changes in its ten years of production. Even though it was replaced by a PDM design, the MW-1 continues to be a good performer and does very well in AM Stereo.

If you are doing an Audio Proof and find that the MW-1 you are working on has higher than 2% audio distortion, I recommend you first check all fuses. There can be one or more open 160 volt fuses and the only symptom would be high distortion. Also check all the transistors and diodes on the A17 audio driver card. You may find a leaky Q2. Check R7 on the A14 RF intermediate power amplifier card as well. I have found several bad ones before. RF drive controls audio distortion. It's best to look at the original factory checkout sheets for your particular transmitter. Try to bring it as close to original numbers on all parameters as possible first. Then, tweak a little for best performance. RF driver current should be kept between 1.0 and 1.5 amperes.

I repaired one MW-1A that was losing output modules because the PA loading coil had a loose contact roller and was arcing. You can check for this by first turning the transmitter off. Turn the loading about five turns one way. Visually inspect the loading coil and shaft where the contact roller normally sits. Any black spots indicate arcing. If any are spotted, the contact roller should be replaced.

If an RF output module fault light is dimly lit, the first thing to do is exchange the module with another in the transmitter. If the fault indication follows with the module, then you should check RF transistors Q6 and Q7 on the module. Neither should have leakage and their gains should be close to the same. These transistors are specially built for the application and can be had only from Harris at about $26 each. I cannot recommend generic replacement transistors here as performance and reliability will probably be poor.

Once you have a full compliment of operating modules, it's a good idea to balance them. This means you want all twelve to "share the load" equally. To do this, use a DC ammeter in place of fuses F1 thru F12 one at a time on the 70 volt buss at the rear of the transmitter. Carefully compress or expand the corresponding L1 thru L12 module combiner coils so that each module is drawing one-twelfth of the total PA current. You must readjust the transmitter's tuning and loading during the process and you can repeat the balancing to get all modules exactly equal. If everything is balanced, all module lights should be out.

Be sure to adjust the relative VSWR balance controls, behind the front metering panel, for a minimun on the relative VSWR meter. The transmitter's automatic reflected power shutdown uses this indication. If the relative VSWR meter reads 100 watts under normal conditions, then it will shut the transmitter off much quicker during adverse weather where actual antenna reflected power will push the indication ever higher.

Due to an extremely heavy workload, I am forced to change my writing schedule. You'll be seeing this column once every two months instead of once each month as in the past.

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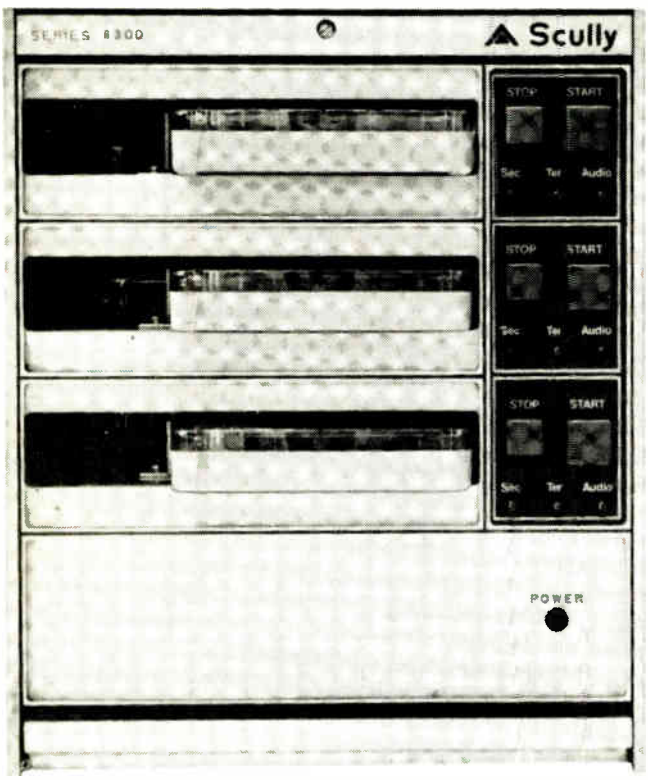

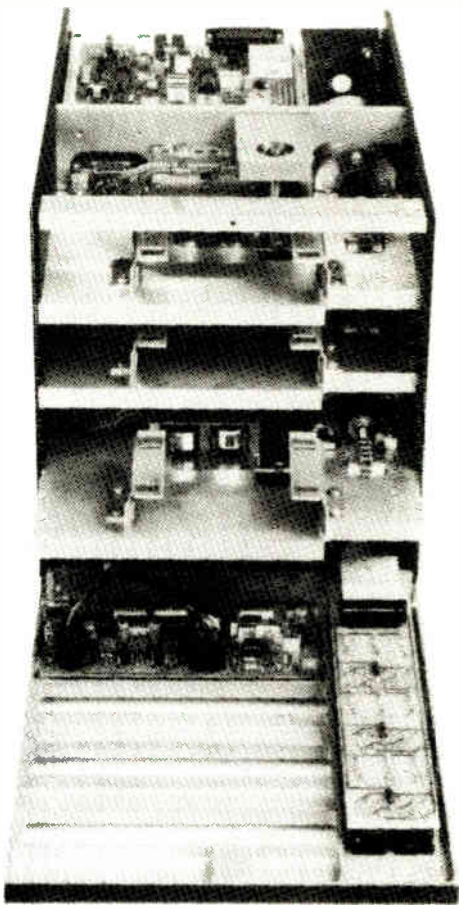

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