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# COMMON POINT®

A MONTHLY NEWSLETTER FOR BROADCASTERS

50 cents  
per copy

800-558-0222 Distributed by Electronic Industries Inc., 19 E. Irving, Oshkosh, WI 54901 414-235-8930

## SCORE:

# FM - 1 AM - 0

## By 1986 (?)

On May 27th, the FCC in a long anticipated decision, modified the FM technical rules opening the door to a possible 1500 additional stations. The report related 617 allocations would be available in addition to those presently assigned. It was the general consensus that this would have a three-fold effect on the industry as a whole. The strength of FM in the marketplace would become even more predominant. AM stereo will possibly be "called on a third strike". The first strike being the infighting of manufacturers, each with their own approach to AM stereo. The second strike being the cost of AM stereo receivers compared to FM stereo receivers. And now, a third strike with the additional FM channels available with an accepted and well established method of stereo broadcast.

To provide a "braking" affect and any mad rush for applications, the Commission has held open the actual starting time, however, 1986 has been mentioned giving them time to get their house in order. Every effort is being made to avoid the chaos experienced when the doors were opened for low power TV.

It is interesting to note that just one commissioner voted against the FM "drop in" decision, with the no vote coming from James Quello, one of the two former broadcasters presently serving.

Although the implementation of the new ruling is still better than two years away, already major concern has been expressed in conversations with engineers who currently are Class C, and want to remain Class C. The big problem to be faced under the new ruling is that existing stations will be required to meet minimum facility requirements within three years or be reclassified. For Class C stations, a minimum antenna height requirement of 300 meters (984 feet) will mean expensive additions or complete tower replacement.

\*\*\*\*\*

## COMMON POINT READINGS

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## THE BEST FROM



2100 SERIES

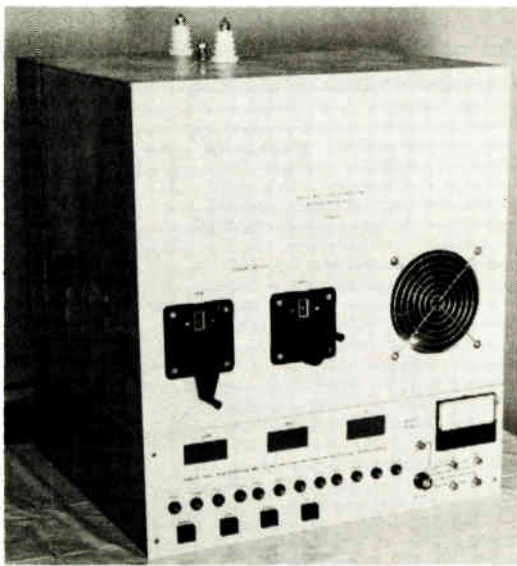
top quality at economical prices; accepts A, B or C size cassettes; two cue tones standard (1 kHz and 150 Hz); exclusive mono/stereo switch; direct drive transport; modular construction; Nortronic heads; low voltage air damped solenoid; heavy 1/2" aluminum deck.



SERIES 3000

machines offer numerous benefits: a wide selection of options and models; an inherently reliable electronic design which makes extensive use of solid-state and integrated circuit technology; the exclusive Phase Lok III head bracket; and a rugged mechanical design which is second to none.

## Present Frequency Daytime Only? Present Rules Preclude Your Obtaining Pre-Sunrise Authority? You Can Operate Now with Power as Low as 1 Watt with **The Eagle Hill PSA Adapter**



- Sign on every morning at 6 a.m.
- Pick up 150 hours prime time each year.
- Operate with powers as low as 1 watt.
- No changes needed inside transmitter—normal transmitter readings.
- Normal monitor readings—plus readings for absolute power.
- Field proven over one year.
- PSA-1 for Stations with Power up to 1000 Watts...\$3995
- No unusual circuits—replacement parts readily available.
- Easily installed by station engineers.
- PSA-5 for Stations with Power up to 5000 Watts...\$4495

## BE READY FOR FALL AND WINTER

### Call Electronic Industries Inc.

19 East Irving; Oshkosh, WI 54901  
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VACATION, and a flying trip east to a family wedding in Nova Scotia. Many hours exploring the old French Fortress at Louisbourg and the Achilles heel to their hold on North America. Nearby, the breathtaking beauty of the Cabot Trail encircling Cape Breton. Beddeck, a small village on Bras d'or Lakes but made famous by Alexander Graham Bell. Since success with the telephone came early, Bell had the money and time to build his "second home...Beinn Bhreagh" amid the rugged beauty of Cape Breton, so much like his Scottish home land. Now, close by, in the Alexander Graham Bell Museum, a complete and graphic display of his research into electricity, sound and speech. A record of his contributions into medicine, aero nautics, marine engineering and genetics. A fantastic collection of photographs donated by the National Geographic. Further down the road, a stop at "Magnetic Hill", the famous optical illusion where you stop your car, place it in neutral and coast up hill. I counted



Ye Olde Editor

license plates from at least eight states. It was a great vacation but good to get home.

**O O P ! !**  
**WRONG BUT-**  
**TON!!** With all the big swing to satellite and

away from Telco lines..the improved quality..the great convenience..it was bound to happen..and NBC gets the ribbon. Someone pushed the wrong button driving the radio satellite out of orbit. I hope they can correct the orbit and get things going again. It could become a very expensive "OOPS!"

**TWO WAY BACK..**with this issue of Common Point and the "Talkback" column on page 14. the old rules apply. Any remarks you want to make are identified by state only. Any question will be answered as best we can. You liked it before..I hope it will again prove useful.

**QUESTION FOR AUGUST..** should The National Association Of Broadcasters be split into The National Association Of Television Broadcasters and The National Association of Radio Broadcasters?

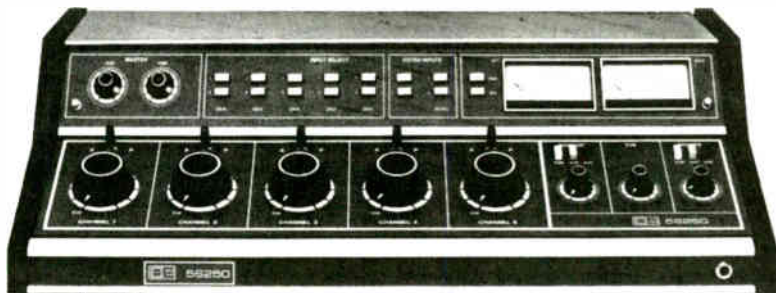
Should this split include all national officers?

Let's hear from you. Your opinion is important.

\*\*\*\*\*

# START THE BUSY SEASON WITH THE BEST . . .

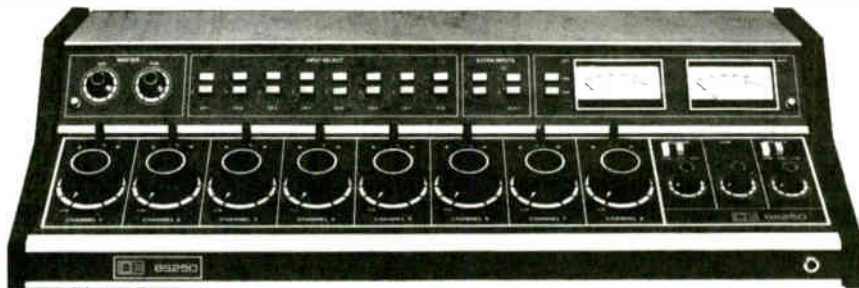
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IDEAL FOR THE SMALL STATION OR PRODUCTION ROOM...THE  
B.E. 5S250 IS PRICED AT JUST \$3395.00. AUGUST ORDERS SAVE  
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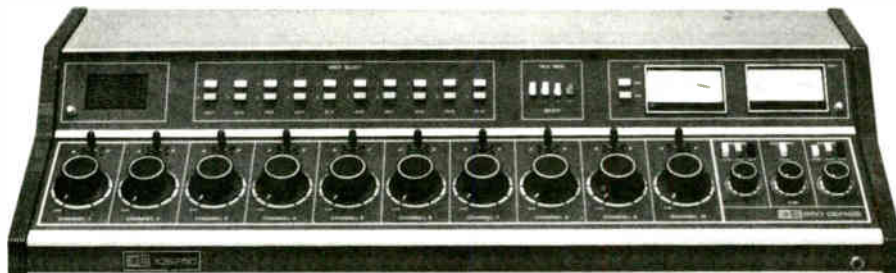
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## WHBY'S BOB LLOYD STILL ALIVE AND WELL

(Courtesy Wisconsin Bdcst. Ass'n.)

WHBY sportscaster Bob Lloyd took the news standing up.

Which is rather unusual, considering the letter his wife, Mary, got from the Social Security Administration Friday. The letter explained that a check received by her represented the final payment on her husband's social security benefits and included \$255 in death benefits for her, the survivor.

"My wife came up the stairs, roaring with laughter, and tossed me the envelope, addressed to 'Mary L. Lloyd, Widow.'"

While Lloyd and his wife found the mix-up rather amusing, they decided to try to clear it up immediately at the nearest Social Security office.

"When I walked in I said, 'You have proclaimed me legally dead!'" Lloyd said. "When I asked them what they could do about declaring me legally alive again, they said it would take some doing." Maybe three or four months, according to Lloyd.

Apparently, records got confused somewhere, but the Social Security Administration won't say just where. Lloyd, 67, speculated that perhaps some digits in the social security number were transposed, but admitted that "we'll really never know why it happened."

Lloyd has dealt with the situation with humor, being both the target and originator of a few appropriate oneliners.

A friend told him at a restaurant to "get home before the formaldehyde wears off!"

And WHBY listeners heard a broadcasting "first" in Lloyd's more than 30 years at the station.

"This morning on WHBY...your announcer was a man who has been legally declared dead by the Social Security Administration."

For WHBY sports, I am the ghost of Bob Lloyd."

\*\*\*\*\*

## Shepler Says.



by John Q. Shepler  
Technical Consultant

### GAS UP YOUR TRANSMISSION LINE

The most terrifying experience an engineer can have is a call that comes in at 2 a.m. on the coldest day of the year. I got such a call once.

The 50 KW FM had been running smoothly for almost a year. Then suddenly it was off the air, and the night crew couldn't get the plates to stay on. I grumped into the station to find the high voltage breaker tripped and the transmission line dehydrator running continuously. What I didn't catch at first was the line pressure meter sitting at zero. I discovered that later, after noticing a jump in the reflected power during that instant when the plate voltage is applied and the breaker trips.

When the tower crew rolled in the next day, they found a large, charred, hole in the matching transformer just below the antenna. Water vapor had seeped into the line and condensed on the conductors. As the build-up became great enough, the inner conductor arced to the shield at the smallest gap. The 20 KW drive vaporized a considerable quantity of copper before the mismatch knocked off the transmitter.

The final result was a quick patch job to the matching section and subsequent replacement of that unit and 200 ft. of 3 inch HELIAX. Replacement of the line was necessary because we suspected that much of the missing copper had been blown into the line.

There is no more helpless feeling than having an entire broadcast operation ground to a halt because of a component failure that you can neither pinpoint nor get at. It was my good fortune to have a terrific antenna consultant (Ralph Evans) and his crew (Tower Erectors) who got us on the next day. Since then I've

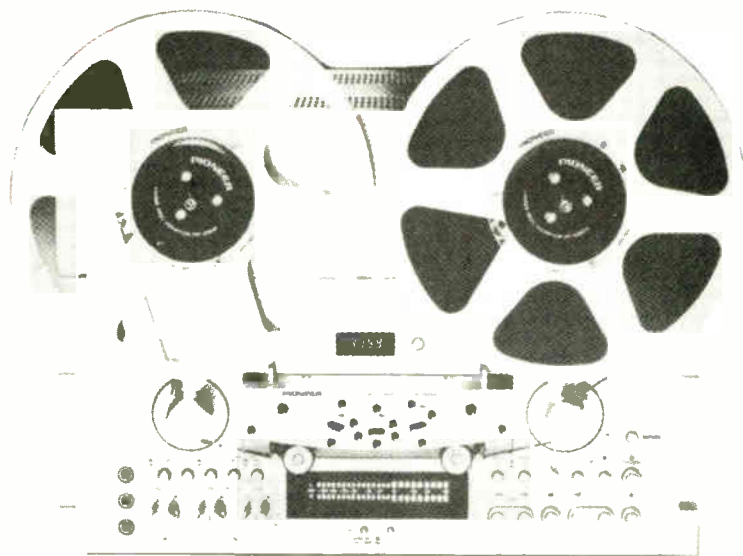
(cont. on page 16)

STILL BEST FOR THE MONEY.....

**AUTOMATION - PRODUCTION ROOM**

**LIVE ASSIST - CONTROL ROOM**

# PIONEER RT-909



- CLOSED LOOP DUAL CAPSTAN TAPE TRANSPORT (3¾ & 7½ IPS)
- FREQUENCY RESPONSE 20 - 30 KHZ AT 7½ IPS
- DISTORTION NO MORE THAN 1%
- FLUORESCENT DISPLAY LEVEL METER WITH PEAK/AVERAGE SWITCH (-30 DB TO -8 DB)
- INDEPENDENT LEFT/RIGHT RECORDING MODE SWITCH
- OUTPUT LEVEL CONTROL
- PITCH CONTROL (±6%) IN PLAYBACK MODE
- "LITE-TOUCH" ELECTRONIC TRANSPORT SWITCHES
- TAPE HEADS—NORMALLY 4 TRACK—EASILY CONVERTIBLE TO 2 TRACK WITH TOUGH NORTRONIC HEADS
- CONVERTED TO 1/2 TRACK RECORD/PLAYBACK SINGLE DIRECTION FOR PRODUCTION ROOM — INCLUDING LONG LASTING NORTRONIC HEADS AND BALANCED OUTPUTS . . . \$1295.00
- FOR 1-7/8 AND 3-3/4 IPS ADD \$65.00
- CONVERTED TO 1/2 TRACK PLAYBACK ONLY FOR AUTOMATION SYSTEM . . . \$875.00

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# LIVE ASSIST...THE BEST OF TWO WORLDS

Manufactured By:  
**M. W. PERSONS AND ASSOCIATES**

**Use reel to reel music tapes in a live radio format with the Programmer 3A Live Assist Controller.**



**\$890<sup>00</sup>**

The Programmer 3A is the latest in a series of highly successful "Live Assist" radio music programming aids. The Programmer 3A allows stations to take advantage of music formats which have been recorded on reel to reel tape for automation systems. Up to four reel to reel tape decks can be controlled by the Programmer 3A.

**Audio:** New conductive plastic stereo level controls resistively sum audio from each source. Optoisolators silently gate audio on and off for each source as it is used. Outputs can be wired mono or stereo directly to program and cue buses of a studio console eliminating the need for additional console inputs.

**Memory:** A memory circuit allows the operator to select the music deck he will play next by touching the "next play" button for that deck. That button and the "common next play" button will light. [See center bottom button in photograph.] The system then stands ready. When the operator has finished running his commercials, weather, etc., he pushes the common play button and the selected deck starts. He does not have to remember which deck is next, the Programmer 3A does it for him.

**Auto:** The auto "One-Step" switch allows the Programmer 3A to segue to the next preset deck automatically.

**Timer:** The minutes/seconds timer resets to zero and starts counting up each time a deck is started. This allows the announcer to talk over an instrumental intro on a song right up to the vocal portion.

**Logic:** White lights tell the operator which deck is playing and amber lights tell the operator when a 25Hz cue tone is coming across during the last second of a song. The operator can start speaking with confidence when he sees the amber light knowing, for certain, that the song is ending.

**THE PROGRAMMER 3A...FOR THE BEST OF TWO WORLDS**

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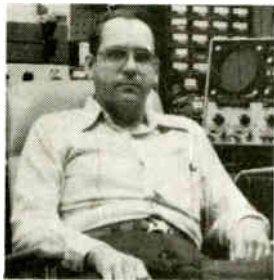
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# MEMO FROM METZ



by  
David L. Metz

## SOME BROADCAST SAFETY CONSIDERATIONS

An unusual accident at a local factory got me thinking about some of the potential personal safety hazards in a broadcast plant. The factory used dry nitrogen gas just as many FM broadcasters do. Instead of pressurizing a coaxial feedline they used it in some other process. Two operators were working with a full cylinder. The cylinder was dropped on its exposed valve, the valve broke off upon impact. The nitrogen gas under a pressure of 2,200 PSI shot the tank through the air like a rocket. The tank went through three walls and a door before stopping. Two employees in the office the tank passed through were injured.

This accident would have been easy



(cont. on page 13)

## FULL COLOR WEATHER RADAR WILL MAKE YOU THE WEATHER CENTER FOR YOUR AREA



THERE WILL BE NO MORE READING THE LOCAL WEATHER FORECAST — WITH SI-TEX WEATHER RADAR YOU CAN GIVE THE FORECAST.

A REAL MONEY MAKER AND AVAILABLE WITH NO MAJOR CASH INVESTMENT — THE SI-TEX WEATHER RADAR IS AVAILABLE FOR AS LITTLE AS \$210.00 PER MONTH ON A LEASE/PURCHASE PLAN WITH ONLY \$420.00 DOWNPAYMENT.

### FEATURES:

- Variable gain controls adjusts receiver sensitivity for maximum discrimination and clarity.
- Push-button range selectors with LED range indicators. Range calibration rings automatically adjust to selected range.
- Main function selector for: radar off, radar standby, radar on with antenna rotating and anti-clutter rain (FTC) on to reduce rain return.
- Variable intensity control adjusts brightness of picture.
- Guard zone proximity alarm on/off.
- Electronic bearing marker (EBM) LED readout.
- Open water is displayed in blue.
- Medium targets displayed in yellow.
- Weaker targets displayed in green.
- Strongest targets displayed in red.

PUT A SI-TEX WEATHER RADAR  
TO WORK FOR YOU...

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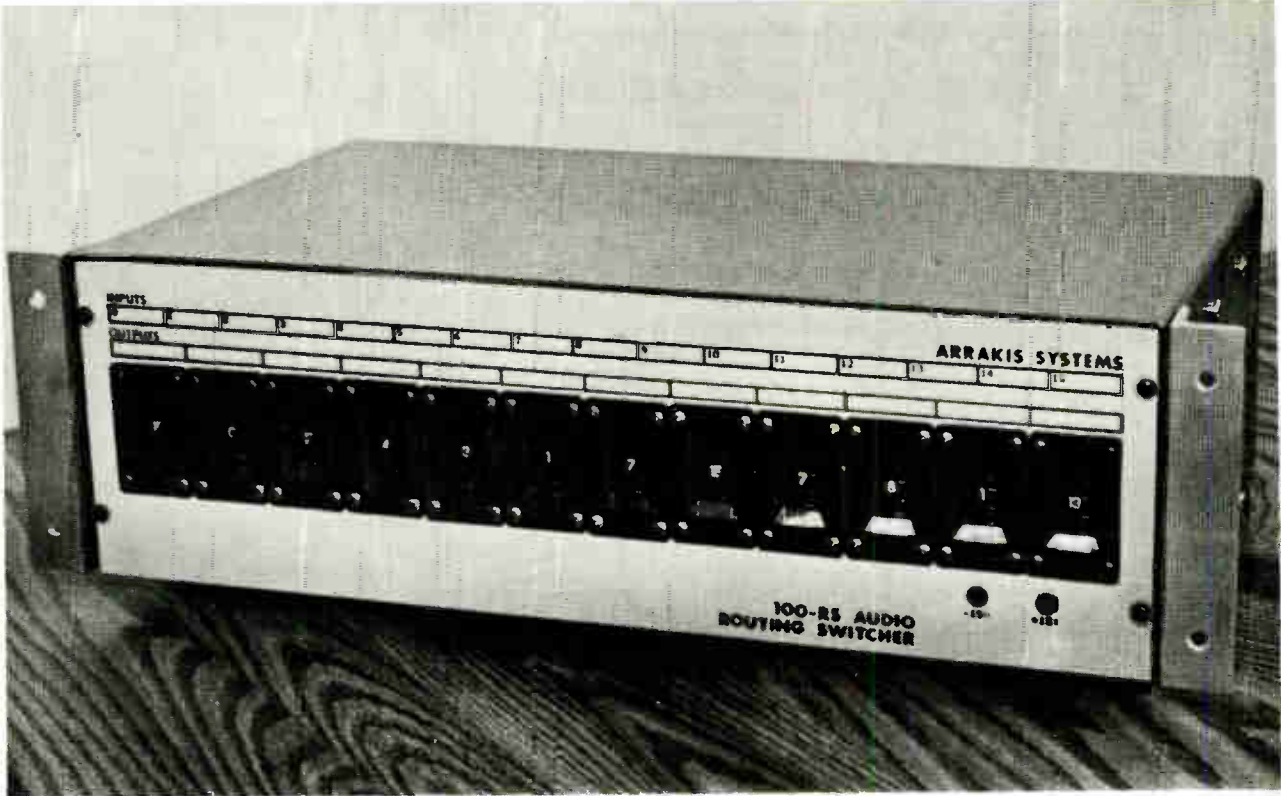
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# THE ROUTING SWITCHER

By **ARRAKIS**  
—systems—  
inc.



## INTRODUCTION

The 100RS represents a major price breakthrough in audio routing switchers. For the first time, electronic switchers are competitive with patch panels and other mechanical switches. Despite this dramatic improvement, the 100RS maintains professional specifications and construction throughout.

Physically, the switcher is exceptionally simple. For each of the 12 outputs there is a single PC board. A mother board busses inputs between output boards and supports the terminal strip inputs and outputs. PC board sockets are of the highest quality and gold plated. PC boards pull from the front while terminal strips are accessed at the back. All IC's are socketed.

Electronically, the switcher is also simple. Every output can access any of the 16 inputs independently or simultaneously. Each input is resistively buffered and will withstand 10,000 V transients without harm. Balanced CMOS transistors perform the switching function. Balanced switching doubles the number of crosspoints and is generally prohibitively expensive. The unique design of the 100RS however, uses balanced crosspoints to decrease price. Balanced crosspoints decrease distortion, switching noise, and reduce RF interference. Signetics NE5532 IC's perform the buffering, amplification and output drive. Switch selection is accomplished by 4 bit binary coding which makes

remote operation easy to accomplish. A regulated power supply reduces hum and noise. Distortion is .1% maximum at +8 dBm with crosstalk less than 65dB at 10 KHZ. S/N is better than 75dB.

The 100RS audio routing switcher obviously has many possible applications in a broadcast or production studio. It replaces unwieldy patch panels, distribution amplifiers, and remote select mechanical switches. It can increase the total number of inputs at the control console and conveniently interconnect studios. It is ideal for switching satellite links to recorders, studios, or on the air. The possibilities are limited only by the imagination.

## FEATURES

- \* 16 in by 12 outputs mono
- \* 8 in by 12 outputs stereo
- \* Expandable
- \* Rack or table mounted
- \* Balanced crosspoints
- \* NE5532 Signetics IC's
- \* 1,000,000 operation thumbwheel select
- \* PC boards front mount
- \* Terminal strip outputs & inputs on back

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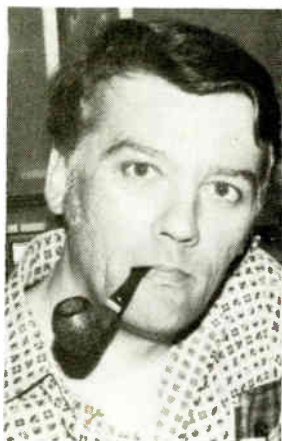
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# Crosstalk...

by ED  
DUELLMAN



Hey!!! How come it is that a person needs ten thousand bucks worth of test gear to get a project going that only cost fifteen to build? Did ya ever open a magazine and see a nice gadget that would come in handy on the bench and then read the end of the article and see words like Hewlett Packard and Tektronix? That has to be one of my biggest gripes. Some of the guys that write this stuff must think that we all work in a research lab. The gizzmo is simple in itself, but what it takes to get it to work properly is a horse of a different color... Good example is a satellite receiver I put together so I could watch all those movies on Satcom Four, the Bunny channel... Say what??? Ever try to align a 70 MHz bandpass filter with a grid dip meter for a sweep generator?

While on the topic of satellite reception and alignment I have included a picture of our dish (no-not the girl), and how Tom and I found the proper direction to point the thing. Mary had the figure and just pointed in the right direction, sure enough there it was... That's how to find Satcom 1R. RCA had to find it again after the neat little trick it pulled. The RCA boys fired the rocket motor to place the bird in the center of its box and when it got there the motor didn't quit. The moral of the story, ABC quit broadcasting on satellite July 6, 1983, at least until RCA gets their lost bird back in the nest. Stay tuned, as we will keep you updated to see if the birdmen of RCA get their pet back in the box.

I see the movie people and the home satellite dish makers are having

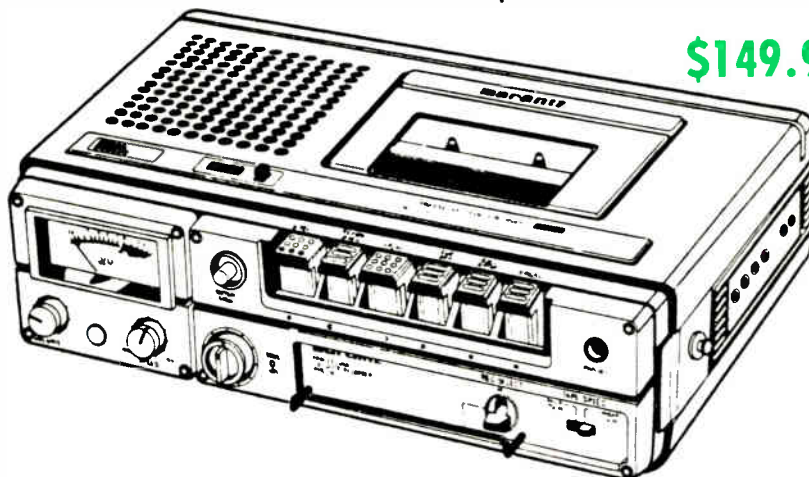
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Two Speeds 1 7/8 and 15/16 IPS

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- PA/Play Mix
- Vari-Speed Pitch Control
- Record Level/Battery Strength Meter
- Auto/Manual/Limiter Record Level
- 4-Way Powering
- Volume and Tone Control
- Dual Flywheel Design
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- External Speaker Output
- Line Out
- External Microphone Input
- Built-in Electret Condenser Microphone
- Total Mechanism Shutoff
- Impact Resistant Lexan™ Case

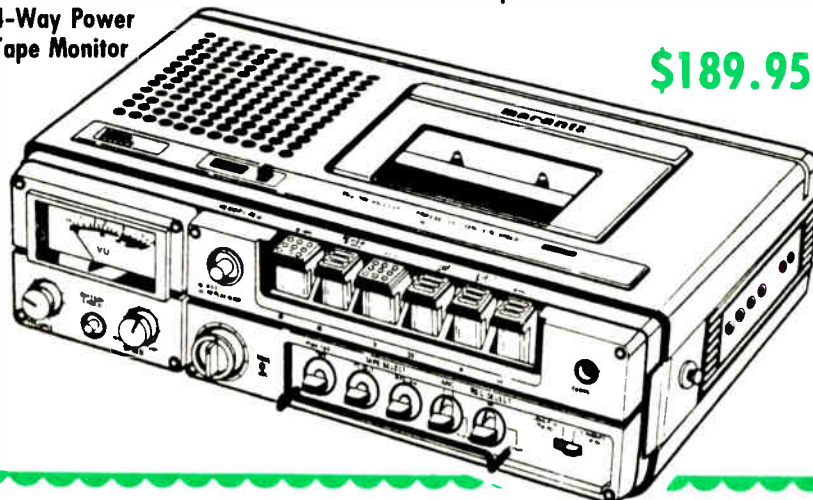


\$149.95

### PMD-220 DELUXE PORTABLE TWO-SPEED CASSETTE RECORDER

Two Speeds 1 7/8 IPS and 15/16 IPS

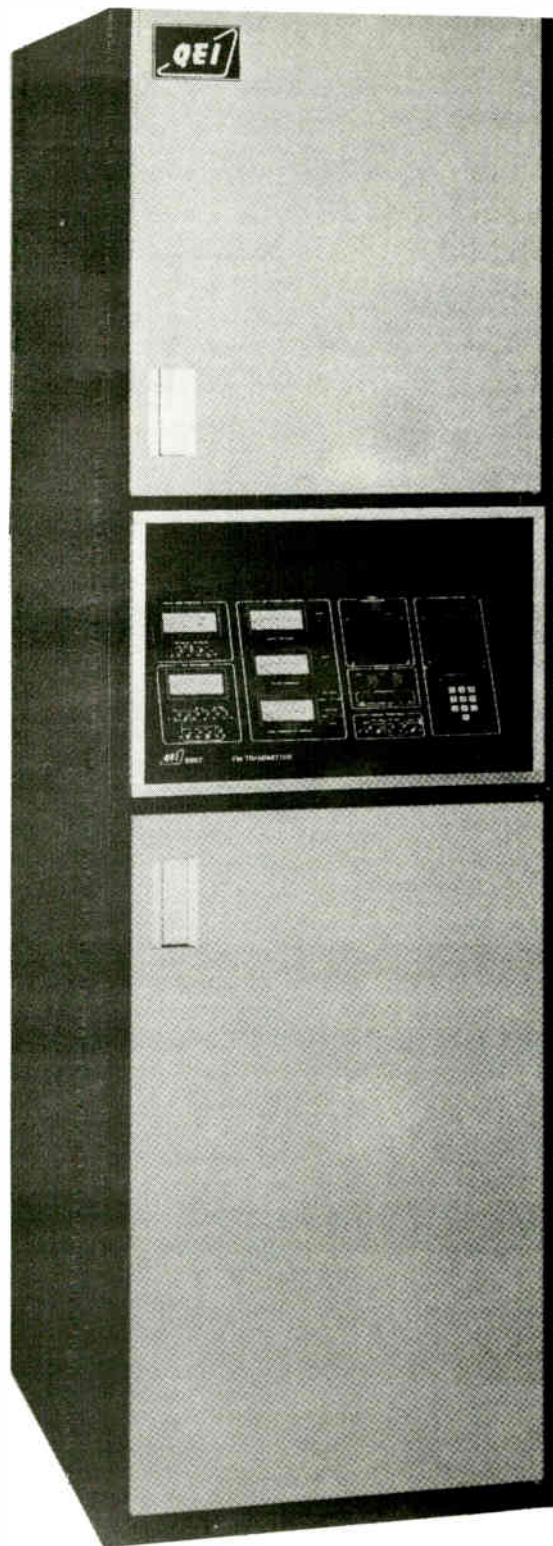
- One Touch Record
- Memory Rewind and Replay
- Cue and Review
- Separate Tape Bias and Equalization Switch
- Vari-Speed Pitch Control
- Ambient Noise Control
- Record Level/Battery Strength Meter
- Auto/Manual/Limiter Record Level
- 4-Way Power
- Tape Monitor
- Dual Flywheel Mechanism
- Total Mechanism Shutoff
- Automatic Mic/Line Switching
- Volume and Tone Control
- Built-in Electret Condenser Microphone
- Tape Counter
- Headphone Jack
- External Speaker Jack
- External Telephone Pickup Jack
- Impact Resistant Lexan™ Case



\$189.95



# 695T3.5KW FM BROADCAST TRANSMITTER



## Features

- ONLY ONE TUBE...A GROUNDED-GRID 3CX3000A, FOR TROUBLE FREE, STABLE OPERATION
- NEW SUPER-LOW DISTORTION EXCITER
- COMPLETE TRANSMITTER STATUS AT A GLANCE
- REMOTE CONTROL UNIT IS INCLUDED
- NEW "AUTOMOD" AUTOMATIC MODULATION CONTROL AND AUTOMATIC POWER CONTROL BUILT-IN
- AUTOMATIC TRANSMISSION SYSTEM (ATS) BUILT-IN
- SOLID-STATE RELAY CONTROL LOGIC WITH MANUAL BACK-UP
- FACTORY COMPUTER FAULT ANALYSIS... BY TELEPHONE
- MICROPROCESSOR BASED DIAGNOSTICS READS OVER 45 PARAMETERS
- ANY NUMBER OF ALARM POINTS CAN BE PRE-SET ON ANY PARAMETER
- FULL REMOTE CONTROL OPERATION WITH 14 RAISE-LOWER POINTS
- PRINTER OPTION PROVIDES AUTOLOG FACILITY MEETING ALL FCC LOGGING REQUIREMENTS
- FIVE EXTERNAL COMMANDS AND SIX STATUS POINTS OPTION
- LOW-PASS FILTER AND DIRECTIONAL COUPLER MOUNTED INSIDE THE CABINET
- AUTOMATIC RE-CYCLE (X3) WITH "MEMORY" FOR MOMENTARY POWER LOSSES

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**DON'T DEplete CASH RESERVES...LEASE YOUR NEW...QEI TRANSMITTER  
...LEASE PAYMENTS COMPLETELY TAX DEUCTABLE..**

## The Control Panel

The control panel presents the station operator with unparalleled test, monitor and control possibilities. Functions and controls are logically grouped and clearly identified for the operators convenience.



### Status and Local Control

Complete operational status of the transmitter can be determined in a single glance. The Local Control section uses 5 self-identifying push-buttons to initiate an operational phase. As the operational condition changes the results is displayed by an illuminated color, status lamp.

### Diagnostic Center

The built-in keypad allows selection of up to 46 internal and external (optional) parameters. These are then displayed in their actual value on a large, backlit LCD. The raise-lower functions are indicated by a directional arrow on the display when the raise-lower switch is activated. In the event that any pre-set alarm points are exceeded, a red LED will light and remain on until the alarm view button is pressed. Once pressed the LCD will display the alarmed parameter and indicate the time of its occurrence. More than one alarm if present, can be viewed sequentially by simply repeated pushing of the alarm button. This procedure cancels the viewed

alarm. The required FCC parameters for 3 hour logging can easily be displayed, on the LCD along with the time, by selecting the right keypad code.

### Metering

Five meters are used for PA and IPA monitoring. The PA plate voltage and plate current meters are dedicated and are used in conjunction with the PA tune and load switches. Grid current and reverse/forward power output are read from a separate meter. The IPA meter monitors nine selectable points and the Multimeter checks four additional parameters. An elapsed-time meter on the lower front panel indicates the length of time the PA tube has been in service.

### Fault Annunicator

Any time the IPA or PA is in an overvoltage or overcurrent condition or if the VSWR limit of the transmitter has been exceeded, the appropriate descriptive block (there

are six) lights up on the Fault Annunicator Panel.

### Remote Point Monitoring and Factory Assistance

By simply attaching a pair of phone wires to the 695T3.5 KW's telephone modem the transmitter will advise a remote CRT, teleprinter or any computer system that will accept an RS-232 plain language format, of an alarm condition and permit parameter interrogation. An accoustical coupler is also available where a hard-wire connection cannot be used.

Factory computer definition of a fault, or a review of the transmitter's operating parameters, can be obtained in the same manner by calling the factory. This service is available at no charge to the transmitter purchaser for the lifetime of the transmitter.

Additionally, a special computer maintenance program (that will provide a detailed fault analysis) is available to consultants.

**800-558-0222**

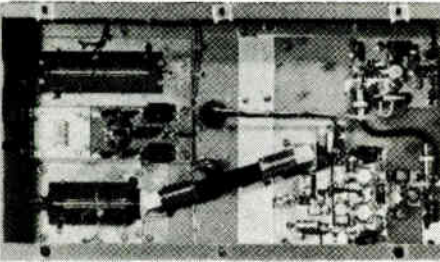
**CALL ELECTRONIC INDUSTRIES  
ELECTRONIC INDUST**

# FOR LESS THAN \$600.00 PER MONTH

## General

The 695T3.5KW is a new, advanced-technology transmitter using a single tube and offering a myriad of features made possible only by introducing recent technological advances to FM transmitter design. The 695T3.5KW's design blends microprocessor technology with QEI's expertise in solid-state transmitters, control systems (ATS), and FM modulation monitors.

Features heretofore not available in FM transmitters are built into the 695T3.5KW. Alarm points on important parameters will warn you before a catastrophic failure occurs. Automatic Power and Modulation Control or ATS are available at the flick of a switch; ideal for station with satellite feed or those that are heavily automated.

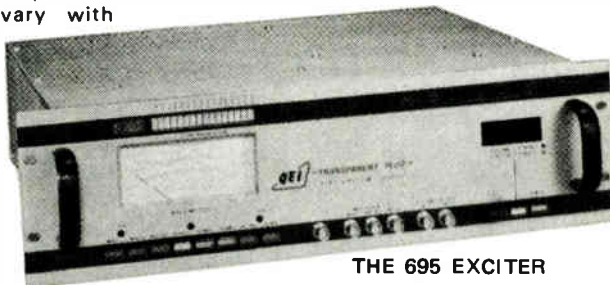


SOLID STATE IPA

## New 695 Exciter

Features and performance are the hallmarks of this new, super-low distortion, exciter. The 695 employs a phase-locked-loop (PLL) oscillator for frequency stability, special varicap circuitry for superlative linearity that does not vary with temperature and broadband amplifiers for ease of tuning and ruggedness. All key operating parameters are tied into the transmitter's diagnostic system and can be read on both the Remote Control Unit and the control panel.

The modulation percentage is visually displayed on the front panel using a three color LED bar-graph presentation. Typical distortion levels are less than .01% and the TIM\* is so low that it is virtually unmeasurable. Even microphonics are an aggravation of the past as QEI's 695 has effectively eliminated them. As an added feature a switchable Automatic Modulation Control ("Automod") is built into the 695 increasing its versatility and value. The 695 also displays (LED) the modulation peaks over 100%.



THE 695 EXCITER

## The Power Amplifier

A conservative approach to the PA's design has caused QEI to select a 3CX3000A triode as the power amplifier. While requiring a higher drive level than a tetrode or pentode it is inherently more stable and less critical as neutralization is not required when used in a grounded-grid configuration.

Ease of access was a prime consideration in component layout. Extremely rugged tuning lines and component mountings are in

All these features with a truly transparent design add up to the 695...An exciter that is transparent-plus.

## PA Adjustment Panel

A rheostat for precise setting of the PA filament voltage and the PA input tuning control are located on this front panel providing ease-of-access to these often inaccessible adjustments.

## Intermediate Power Amplifier (IPA)

The all solid-state IPA supplies up to 300 Watts of drive to the power amplifier. The circuitry is an outgrowth of over six years of QEI expertise in solid-state FM transmitters.

The IPA section contains 3 bipolar transistors, each with its own protective circuitry. Both the input and output power are continuously monitored and the variable attenuator between the exciter and IPA is automatically adjusted to insure the transmitter's RF output remains precisely at its pre-set level.

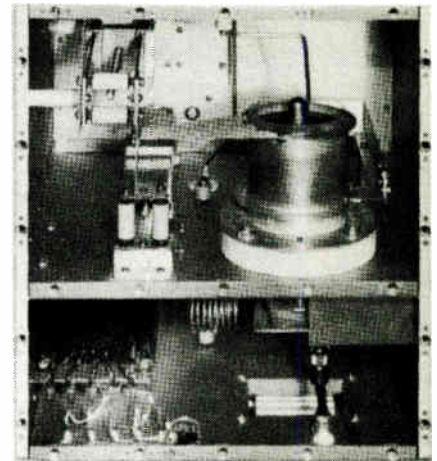
Complete access to the IPA is provided by lowering the IPA front panel (located directly below the PA Adjustment Panel). The IPA may be completely removed from the transmitter by removal of 5 front panel screws and disconnecting two connectors.

keeping with the conservative design philosophy. The PA tuning is done at the control panel by means of two 3-position switches which control their respective motor drive.

Air flow and air temperature are continually monitored as well as all important electrical specifications.

All PA parameters are metered on the control panel including the forward and reflected power.

The output of the power amplifier passes through an internally mounted low pass filter and directional coupler. The 1 5/8 RF output part is on top of the transmitter cabinet.



POWER AMPLIFIER

## Control and Overload Recycling System

A unique, redundant, relay control system is used. It operates on solid-state microprocessor logic but in the event of a system failure the basic control functions can be initiated manually and sequencing reverts to electro-mechanical logic.

Any sustained interruption in primary power, an abnormal VSWR or an IPA/PA overload will cause the transmitter to drop to its low power position or completely shut down. The system will make 3 attempts to re-establish full power output but if the condition has not cleared, the transmitter will remain at low power or completely close down depending on the severity of the problem.

A "memory" feature maintains the transmitter in a power position in the event of momentary loss of AC power. If the power loss continues then the transmitter will revert to a normal restart cycle.

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## The Automatic Transmission System (ATS)

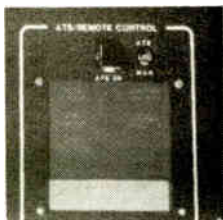
Designed to control modulation level, RF power output and the ON-OFF functions of the transmitter, the ATS is self checking (once every minute) and will operate with the Remote Control Unit over an STL or a voice grade telephone line.

The ATS allows the station to dispense with meter logging every 3 hours and reduce weekly maintenance checks to once a month.

An RF demodulator is built into the system eliminating the need to interface with an external modulation monitor. The modulation level is controlled at the composite output of the STL or stereo generator thus eliminating phase crosstalk and separation degradation.

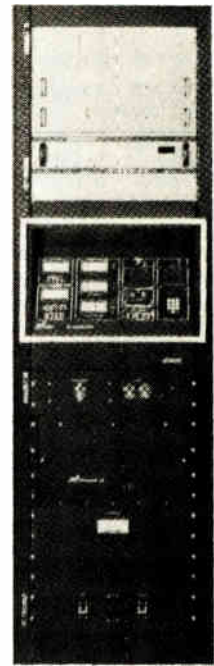
Any ATS recognized alarm will be displayed on the control panel and at the Remote Control Unit. Should the out-of-tolerance condition not be corrected by the ATS within 3 consecutive minutes, an audible alarm will sound.

Although the Remote Control Unit is the prime control point, additional alarm points can be added using only a voice grade line. The ATS complies with all applicable FCC rules and regulations.



## Mechanical

The 695T3.5KW is self-contained in a modern, heavy duty steel cabinet. The base of the cabinet is reinforced # 12 gauge steel on which the heavy power components are mounted. The control panel, mounted across the center of the cabinet, swings down for **complete accessibility**. A rear door allows access to portions of the transmitter not accessible from the front. A rear door mounted blower maintains a positive air pressure inside the cabinet during operation. A separate blower cools the PA compartment. The transmitter is protected from dangerous operating conditions by door, temperature and air-pressure safety interlock switches.



FRONT VIEW WITH DOORS REMOVED

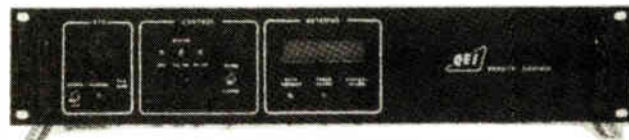
## The Remote Control Unit (RCU)

The RCU is **standard** and supplied with the transmitter. It provides all the operating facilities available at the transmitter's Control Panel in a space efficient manner.

Diagnostics, status, alarms, and raise/lower parameters are displayed and handled in the same manner as on the transmitter's Control Panel. Additionally, the **FCC's required logging parameters are automatically displayed** on the LCD when the keypad door on the RCU is closed.

The ATS is a function of the RCU. The audible ATS alarm and the ATS enable/disable switch are located on the Remote Control Unit's front panel.

The RCU will operate over standard voice grade telephone lines or an STL.



THE REMOTE CONTROL UNIT

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to prevent. Always keep gas cylinders chained to the wall. Even empties! They're heavy and very easy to knock over. Keep the safety cover screwed over the valve stem whenever the tank is not connected to the regulator. NEVER MOVE ANY GAS CYLINDER WITH THE VALVE COVER REMOVED!!

The Marti unit offers another interesting potential hazard. A few weeks ago I was setting up our 40 watt VHF Marti transmitter for a remote at a bar. The DJ was a new man and had never seen the little Marti ring antenna before. The antenna used the common mounting arrangement of screwing it onto a microphone stand. Thus set up, the ring is about 6' above the floor. To keep him from touching the ring I demonstrated the 1/8" are convincing demonstration. After that he had a great deal of respect for what 40 watts of VHF RF can do.

By the way don't repeat this little demonstration...the Marti may not like the high SWR it produces.

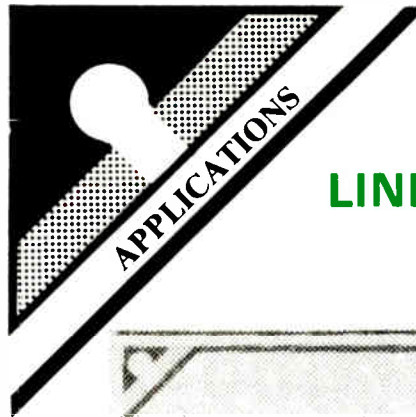
To prevent members of the public from touching the ring antenna, we cover it with a plastic bucket on remotes. It's a rather silly looking radone, but I'd rather have someone laugh than get a nasty RF burn.

I make it a practice to inspect power cords after remotes. Ever notice how some people have a uncontrollable desire to cut the ground pin off of every three wire power plug they come across. And how the same person will then happily stand in a mud puddle holding a microphone. And that microphone case is at chassis ground. And the ungrounded chassis is connected to the hot side of the 120 volt line through a 15 $\mu$  bypass capacitor. I just don't like the idea of having a 15 $\mu$  capacitor between me and death by electrocution.

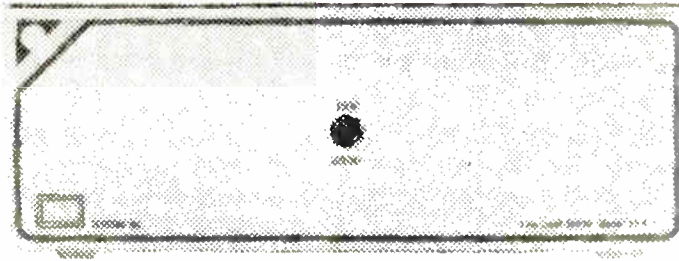
I've banished the two wire extension cord and two wire adaptor from our remote van. I'd rather have problems finding a three wire outlet than have a dead DJ on my hands.

Don't trust other people's wiring either. Purchase a three wire outlet tester; keep it with your remote gear and use it. I've found ungrounded three wire outlets before. There's alot of unsafe wiring in this world.

\*\*\*\*\*



## LINE LEVEL SPLITTER MODEL: LS-1



### SPECIFICATIONS

Input Impedance:	150 $\Omega$ or 600 $\Omega$ balanced
Input Level:	+ 30 dBm max
Input Connectors:	One female "XLR"
Output Impedance:	600 $\Omega$ balanced
Output Connectors:	Four Male "XLR"
Controls:	None
Output Power Level:	+ 30 dBm max
Distortion:	$\leq$ 0.2% 20-20 KHz
Frequency Response:	$\pm$ 1 dB 20-20 KHz
Gain:	+ 6 dB max (150 $\Omega$ Input)
Noise:	N/A
Size:	17.78cm x 6.35 cm x 12.7cm (7"x2 1/2"x5")

Specifications are subject to change without prior notice.

### GENERAL INFORMATION

The Sescom Model LS-1 is designed to provide up to four line-level splits from a single line output. It also provides a convenient way to add a transformer balanced output from mixers, recorders and similar equipment which do not have output transformers.

The LS-1 features:

Four isolated transformer balanced line splits.

150 or 600 ohm transformer balanced input.

Input impedance switch selectable.

+ 30 dBm capability.



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it out. It looks like the battle field will be in the marble halls of Washington D.C. The home satellite business is a fair to midland size money maker nation wide. It did about 500 million worth last year. I understand that HBO is going to scramble their programming some time this year yet. I would suppose that the rest will follow their lead shortly...Bye...Bye Bunny Channel. Oh well, I guess I can watch my wife mow the lawn on Saturday. You can't blame the movie people for protecting their interests, it cost them big bucks to put those movies on the bird and they have to get a return on their investment.

Here is a little thing that may interest some of you. Doctor Owen Garriott, Amateur call W5LFL, is scheduled to operate an amateur radio station onboard the space shuttle flight that is scheduled to lift off September 30, 1983. As far as I know the operation will take place in the two meter amateur band. The frequency used will be between 144 and 146 MHZ. If I can get the exact frequency in time I will try to get it in the September column. This event will be the first time that the general public will have a chance to talk with an astronaut in space. If you are not an amateur radio operator you may know someone who is and be able to get him or her to come to your station and talk with Dr. Garriott as he passes overhead. The news department may have an interest in this. I believe you can broadcast an amateur transmission as long as there is no reference made to or about the broad-

(cont. on page 15)

# TALKBACK

**WISCONSIN..**Glad to have you back..missed the old rag.

**WASHINGTON..**Where do I go to sign up for the engineers pool? (Ed..be more specific Dave).

**KENTUCKY..**If possible expand the Shepler and Persons columns. (Need) someone with troubleshooting tips for transmitters like Symcures feature in electronic service and tech magazine for various brands of TV's. (Ed..can do. Want to subscribe??)

**MONTANA..**Particularly enjoyed Ed Duellman's "Crosstalk" feature about time someone told it like it is....

**COLORADO..**Good to have you back..liked story on severe weather.

**OHIO..**Glad your back! Person has right idea..one group for radio..one for TV.

**MISSOURI..**SCA not in use. FM pulling away (From AM). AM Stereo will help in couple years. Still unhappy over drop of first phone. Glad you're back.

**NORTH DAKOTA..**Wonder how many of C.P. Readers are "Hams"? Maybe you can get a tally from acknowledgement cards and print a list. Glad you're back

(Ed..how about it gentlemen??)

**INDIANA..**Happy to have an old friend (CP) back in the house for the "quiet hours".

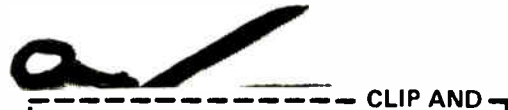
**ARKANSAS..**Welcome back.... ....Great article on PSA. Keep up good work.

**TEXAS..**Glad to see Common Point back. Mark Persons comment on possible NAB/NRBA merge has merit.

**MINNESOTA..**Please keep us updated on AMPRO situation. Nobody else does. In our AM/FM Combo, AM is king by long shot.

(Ed. Note..Our thanks to the hundreds of others who acknowledged Common Point with just a "Welcome Back". There are many things to be done. Many things that could be, that should be discussed and it is our hope Common Point will be the vehicle for that discussion. We even had complaints. One engineer wanted more original items. I think we can buy that but tell us what you want.)

\*\*\*\*\*



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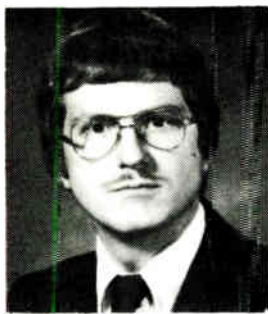
\*like new cart 90-day warrantee with approved replacement of pad

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# PERSONS' POST SCRIPTS



by Mark  
Persons

## EBS ALERT

Is your Emergency Broadcast System encoder/decoder working? If not, the RI will cite the station during an inspection. The reason I mention this is that there have been no less than four EBS units in our shop for repair in the past three months. In all four cases, the station's chief operator did not know the unit was defective until I asked, "When was the last time you received an EBS Test." The answer was, "I don't remember."

The two-tone EBS units replaced the old extremely unreliable single tone EBS system in 1976. That's more than six years ago. Many of the EBS units are now inoperative.

I recommend you check your unit or units by connecting the EBS encoder output to the EBS decoder input. This is very easy to do with the TFT system. Simply flip the generator "test" switch and wait for eight to sixteen seconds. The decoder should unmute the speaker and you should hear the remainder of the twenty to twenty-five second twin-tones. There is a self-test procedure for each EBS unit type.

What do you do if your EBS unit does not pass its self-test? The following troubleshooting guide should help:

1. Use a frequency counter to check the frequencies of each encoder tone individually. They are 853Hz and 960Hz. To do this you'll have to operate a switch on the EBS encoder to run just one tone at a time.

2. Use an oscilloscope or VU meter to check the amplitude of each tone individually. They should be identical. If not, then adjust one to make both the same.

3. Use an oscilloscope to look at the encoder's output. It should look like the display shown in figure No. 1. Note how the two frequencies beat together to add and subtract from each other's amplitude. You'll find it

difficult to stabilize the display on the oscilloscope's screen because the scope's trigger section won't know which tone frequency to look onto.

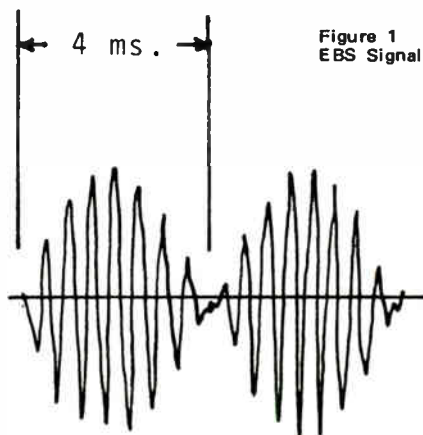


Figure 1  
EBS Signal

4. If the encoder looks good, then check the decoder by connecting the EBS encoder to the decoder. Trace each tone thru its respective filter and detector.

If your EBS unit is a TFT with gray colored aluminum electrolytic capacitors, you might consider replacing all the electrolytic capacitors. There are no less than twelve 1 MFD/16 VDC capacitors on the decoder board. There is apparently a problem with these capacitors as their life is far shorter than expected. All of the TFT units I have seen recently have had this problem. In one unit, eight of the twelve capacitors were bad. Replacing every one, including the gray colored capacitors on the generator board, is a good idea the first time you experience problems.

I remember a Gorman-Redlich EBS decoder that would demute and signal that EBS tones were being received even though there was no input to the decoder. The problem was traced to an open bypass capacitor on the output of the negative five volt regulator. The Gorman-Redlich EBS unit uses the same power supplies for both encoder and decoder. Because the encoder's oscillator runs continuously, its signal was passed along the negative five volt supply rail to the decoder. The decoder thought it was the real thing and signaled an EBS alarm continuously. Replacing the capacitor

solved the problem.

The two-tone EBS system is excellent in that the narrow band with decoders, as required by the FCC, are virtually false-free and yet can successfully decode tones that have been mashed by the worst processing system. However, the system requires that all EBS tones be generated by a crystal oscillator for frequency stability. Recording and playing EBS tones from cartridge is absolutely wrong. Many cartridge decks can't maintain the speed stability required to keep the EBS tones on frequency. If you are using a cartridge for EBS attention tones now, then stop. The FCC requires you use the encoder each time.

I recommend you make an EBS self-test a part of your weekly or monthly maintenance routine. It's easy to do and will insure system reliability.

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CROSSTALK  
(cont. from page 14)

cast by the amateur stations involved. The amateur transmissions would have to be considered incidental to the broadcast.

One other note from the "HAM" department. The amateur radio satellite group known as AMSAT has launched the tenth amateur satellite known as OSCAR 10, OSCAR standing for Orbital Satellite Carrying Amateur Radio. That was for you non Hams that ventured this far down this column. The satellite will allow amateurs to communicate over quite a distance using VHF and UHF frequencies. The amateur satellites are not only used for Hams to yak it up on, they are used for educational purposes in schools to teach satellite operations. Many Hams donate their time to bring their equipment to the schools and demonstrate satellite communication and tracking.

Looks like this column went to the "birds" this month and so am I. The dish is on its way over to Satcom FOUR Transponder SEVEN... ..Helllooo Bunnies!!!

Regards,  
Ed K9FWR

SHEPLER SAYS...  
(cont. from page 4)

kept a keen eye on any FM systems that I've dealt with.

In my opinion, the cheapest insurance you can buy is two tanks of dry nitrogen sitting next to your FM transmitter. One is to use, the other is a spare. Pressurize the line to several PSI and watch the regulator meters religiously.

A tank of nitrogen should last a minimum of several months and maybe as long as a year. If you are losing gas any faster than this, be extremely suspicious and don't drop the matter until you find the leak. Very often, you will have a bad seal on the regulator threads or the connection to the line. Get some kid's soap bubble mix and smear it on every joint. The bubbles will show you the leak. Teflon tape will fix the connection.

Another trouble spot is the line termination at the transmitter. The gas-tight seal may not have been installed correctly. This can also happen at the antenna end.

Whatever you do, don't just forget about the problem and let the pressure drop to zero. Not even for a day. One client of mine kept replacing tanks. I had him send a tower man up to inspect the fittings. What he found was a cracked antenna bay!

With inexpensive electronic pressure sensors available, you may want to rig up an alarm on your nitrogen feed. I know I'd sleep a lot better.

\*\*\*\*\*

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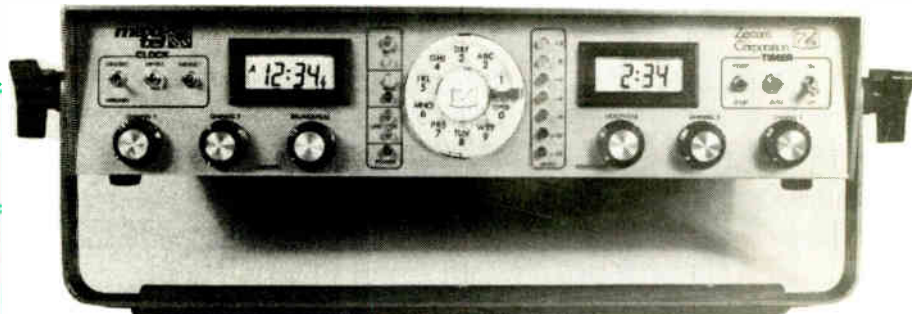
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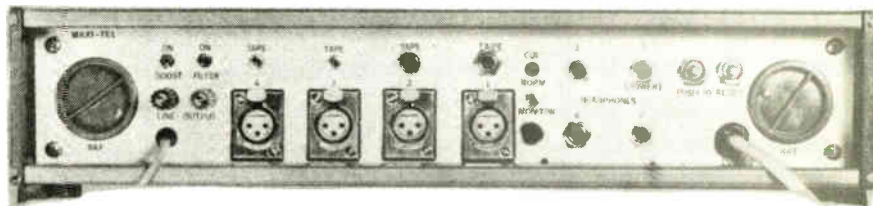
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