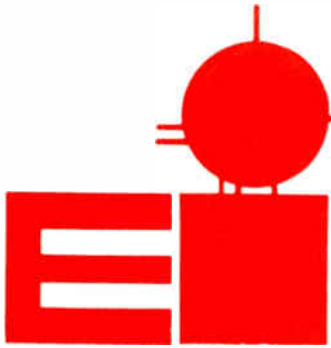


June 1984

KXFW Radio  
889 West El Puente Lane  
Tucson, AZ 85713

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# COMMON POINT®

A MONTHLY NEWSLETTER FOR BROADCASTERS

50 cents  
per copy

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## **FIDELIPAC PULLS OUT ALL THE STOPS — INTRODUCES NEW CARTS - NEW CART MACHINES AND NEW TAPE AT NAB**

Fidelipac Corporation, Moorestown, NJ, demonstrated two major new product lines at the NAB Convention signaling its intention of becoming a dominant supplier to the broadcast industry.

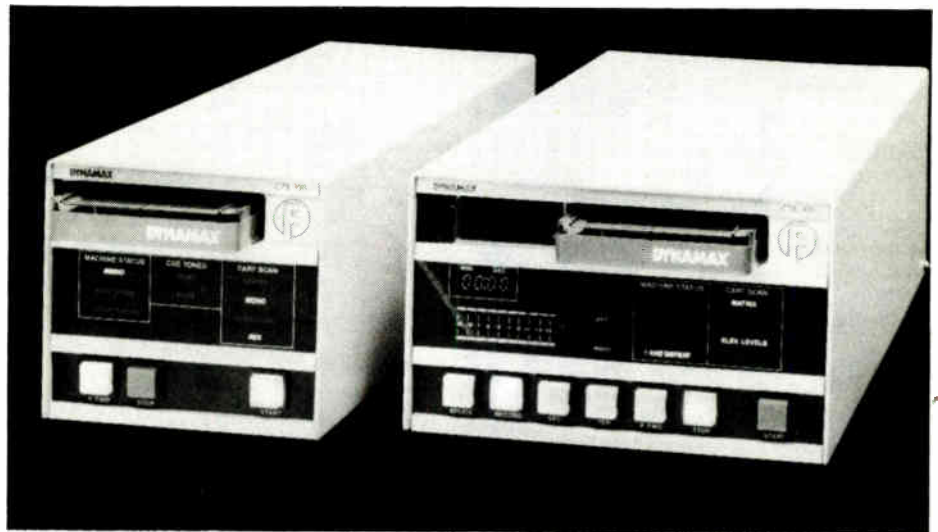
Fidelipac, inventor of the first endless loop tape cartridge in 1956, and a leading manufacturer of tape cartridges since then, has in one move expanded into audio tape manufacturing and audio tape cartridge machine manufacturing. The company introduced Dynamax™ tape, a brand of new high performance, long lasting audio tape and the Dynamax tape cartridge machine line.

The company also demonstrated a new tape cart, The Master Cart DX, and a cartridge tape reload kit.

### **DYNAMAX CTR 100 SERIES TAPE CARTRIDGE MACHINE**

Fidelipac's entry into the audio tape cartridge machine field is a series of revolutionary new machines designed by a team of engineers who are well known and well respected in the field. The CTR 100 Series offers a number of unique features not available in any other machine on the market today.

The Cart Scan™ Systems, unique to the Dynamax CTR machines, automatically eliminates phase shift problems when mono carts are used in stereo formats, automatically performs stereo matrix recording and decoding and simplifies a stepped conversion of an entire cart library to the newest formulations in broadcast tape.



Vary Speed, a second feature unique to Fidelipac's new tape cartridge machines, allows the operator to continuously vary motor speed while the machine automatically maintains cue tone tracking and clock synchronization. The vary speed feature enables Fidelipac to incorporate a real time digital tape counter in the system. Slaved to the motor tachometer vs. the fixed reference used in other machines, this clock always displays total elapsed time regardless of cart tape speed. The Vary Speed feature also provides for cue tone recognition at any tape speed. Utilizing this feature, the entire range of motor speeds can be harnessed to adjust the length of messages, synchronize tape with

video or create special effects.

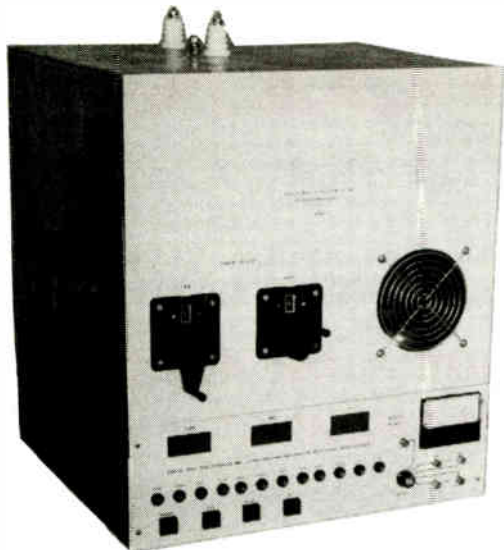
Another unique feature of the Dynamax tape cartridge machine is a cleaning switch which permits the pinch roller solenoid to be activated and allows cleaning of the pinch roller as well as additional diagnostics.

### **DYNAMAX BROADCAST TAPE**

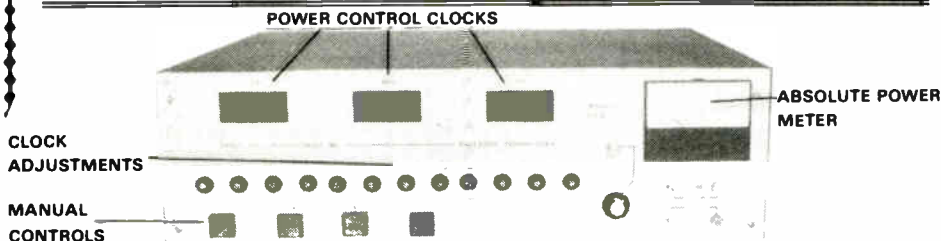
Dynamax, Fidelipac's new high performance audio tape is the product of a four year research and development program. Dynamax broadcast tape features dramatically extended life, 10 times or more longer than that of existing tapes, with enhanced quality and uniformity.

(cont. on page 5)

# Get Ready Now for Shorter Fall & Winter Broadcast Hours with the Eagle Hill PSA Adaptor



- Normal Transmitter Readings  
- No Internal Changes Needed
- Normal Monitor Readings  
Plus FCC Required Readings  
for Absolute Power
- Operate With Authorized  
Power As Low As One Watt
- FCC Authorized And Field  
Proven For Over A Year
- Adds Up To 150 Hours  
"Prime" Time Each Year



PSA-1	Capable of three level power control with completely automatic clock control. Clocks have to be adjusted monthly for local sunrise - local sunset per station. License Power Control up to 1,000 watts . . . . .	\$3,995.
PSA-2	Same as PSA-1 except controls are set up to work push button or through station Remote Control System . . . . .	\$2,995.
PSA-3	Single manual cutback to power levels below that available on transmitter. Can be set up to work through Remote Control System . . . . .	\$1,695.
PSA-5	For stations with power up to 5 KW . . . . .	\$4,495.

**June and July Orders  
SAVE 5%**

**EAGLE HILL ELECTRONICS, INC.**

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## Editor's Notebook

Sitting here in my office it's hard to believe this month marks the half way point for 1984 with the days soon to start getting shorter.

**Master distributor . . .** for Electro-voice microphones . . . and best prices are yours now at Electronic Industries. Be sure to check page 3 of this month and last issue in Common Point.

**Shelper says . . .** thanks for feedback on headphones column. Circuit is not an April fool joke. Headphones were wired out of phase deliberately to increase their impedance to the circuit under test . . . resulting in reduced load to circuit. John went on



Ye Olde Editor

to say there are other interesting effects that occur when you wire headphones and speakers out of phase. He's working on a column on this for a future issue of C.P.

**New at the NAB . . .** this year TTC/Wilkinson were really busy at the NAB and one reason was the new 3.5kw FM transmitter.

**PSA . . . PSSA . . .** Be sure to play by the rules. A couple of months ago Radio World reported a story of a station operating with too much power and being warned to cut back by the FCC. They didn't do it and they were hit with a heavy fine. Don't take chances . . . follow the rules.






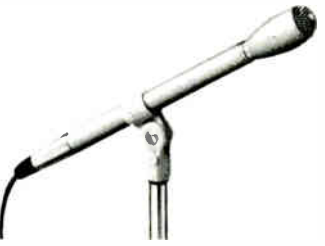







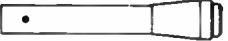
\*\*\*\*\*

## COMMON POINT. READINGS

- Page 6 Memo From Metz
- Page 8 Shelper Says
- Page 10 Crosstalk by Ed Duellman
- Page 12 Talkback
- Page 15 Persons' Post Scripts



# YOUR HEADQUARTERS FOR ELECTRO-VOICE PROFESSIONAL MICROPHONES

DYNAMIC MICROPHONES			
	<p><b>RE18</b> Shock-mounted Variable-D® Cardioid <b>\$192.00</b></p>	<p><b>RE20</b> Variable-D® Cardioid <b>\$339.00</b></p>	
	<p><b>RE30</b> Omnidirectional Line/Mike Level Condenser <b>\$276.00</b></p>	<p><b>RE34</b> Omnidirectional Line/Mike Level Condenser <b>\$276.00</b></p>	
	<p><b>RE50</b> Omnidirectional Noiseless, Hand-held <b>\$108.00</b></p>	<p><b>RE55</b> Omnidirectional <b>\$179.00</b></p>	
	<p><b>RE85</b> Noiseless Lavalier <b>\$109.00</b></p>	<p><b>ELECTRET CONDENSER MICROPHONE</b></p> <p><b>PL77AA*</b> Cardioid electret condenser vocal microphone <b>\$127.00</b></p>	
PROFESSIONAL CONDENSER MICROPHONE SYSTEMS			
	<p><b>CO15P</b> Omnidirectional System <b>\$195.00</b></p>	<p><b>CS15P</b> Single-D Cardioid System <b>\$185.00</b></p>	
<p><b>C090</b> Tie Clasp Omnidirectional Lavalier <b>\$114.00</b></p> <p><b>C090E</b> Tie Clasp Omnidirectional micro capsule and cable <b>\$69.00</b></p> <p><b>C090P</b> Tie Clasp Omnidirectional Lavalier <b>\$126.00</b></p>		<p><b>PROFESSIONAL CONDENSER MICROPHONE COMPONENTS</b></p> <p><b>CO15E</b> Omnidirectional mike capsule w/315A windscreen <b>\$83.00</b></p> <p><b>CS15E</b> Single-D cardioid mike capsule w/315A windscreen <b>\$65.00</b></p>	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  CO15E         </div> <div style="text-align: center;">  CS15E         </div> </div> <div style="text-align: center; margin-top: 10px;">  PE15A         </div> <p><b>PE15A</b> Electronic preamp for use with CO15E and CS15E mike capsules <b>\$128.00</b></p>

## ELECTRONIC INDUSTRIES INC.

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Common Point/June 1984  
Page 3

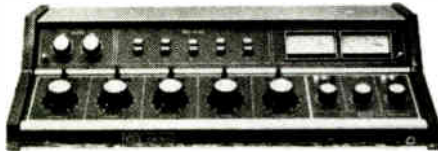
# Special 15% Discount Console Sale

## Until August 31, 1984 From Electronic Industries

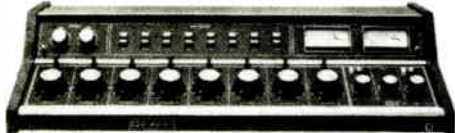
### 150 Series . . . Rotary Sealed Potentiometers, 5, 8 & 10-Mixers

Two inputs per mixer . . . FET bus selection . . . Modular electronics . . .  
Headphone and cue amplifiers . . . Cue switching . . . Hi/Lo input selection

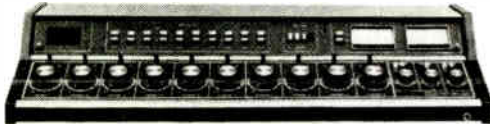
#### STEREO MODELS



Model 5S150, 5-MIXER STEREO



Model 8S150, 8-MIXER STEREO



Model 10S150, 10-MIXER STEREO

15% Discounted Price  
UNTIL Aug. 31, 1984

**NOW \$2422**  
◆ reg. \$2850

**NOW \$1950**  
reg. \$2295 ◆

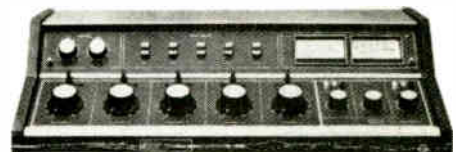
**NOW \$3017**  
◆ reg. \$3550

**NOW \$2375**  
reg. \$2795 ◆

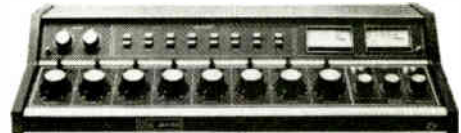
**NOW \$4377**  
◆ reg. \$5150

**NOW \$3565**  
reg. \$4195 ◆

#### MONO MODELS



Model 5M150, 5-MIXER MONO



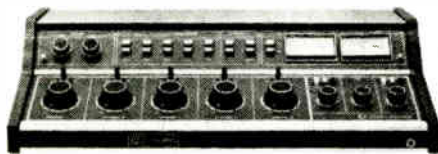
Model 8M150, 8-MIXER MONO



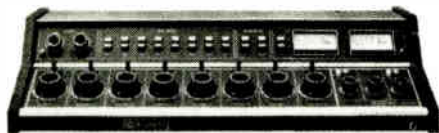
Model 10M150, 10-MIXER MONO

### 250 Series . . . Rotary Step Attenuators, Dual-Channel, 5, 8 & 10-Mixers

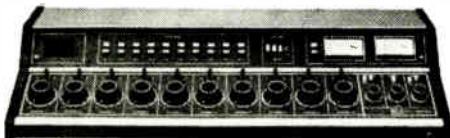
Telephone type channel keys... Two inputs per mixer... Cue switching on each mixer



Model 5S250, 5-MIXER, DUAL-CHANNEL STEREO



Model 8S250, 8-MIXER, DUAL-CHANNEL STEREO



Model 10S250, 10-MIXER, DUAL-CHANNEL STEREO

**NOW \$3017**  
◆ reg. \$3550

**NOW \$2290**  
reg. \$2695 ◆

**NOW \$3952**  
◆ reg. \$4650

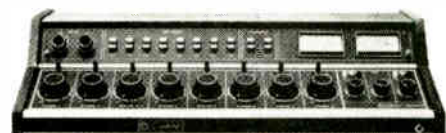
**NOW \$3055**  
reg. \$3595 ◆

**NOW \$4925**  
◆ reg. \$5795

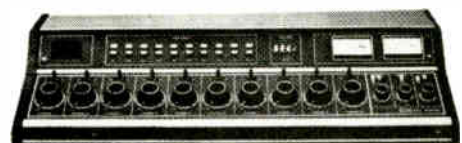
**NOW \$3952**  
reg. \$4650 ◆



Model 5M250, 5-MIXER, DUAL-CHANNEL MONO



Model 8M250, 8-MIXER, DUAL-CHANNEL MONO



Model 10M250, 10-MIXER, DUAL-CHANNEL MONO

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# FIDELIPAC

(cont. from page 1)

Roger Thanhauser, president of Fidelipac, in announcing the Dynamax brand commented, "Our decision to manufacture our own tape was based on the increasing difficulty we had in obtaining tape from other manufacturers that met our quality standards. In addition, the increasing sophistication of radio stations has created demand for a level of quality in lube tape that simply was not going to be available unless we manufactured our own."

The base film used for Fidelipac's Dynamax tape is 1 mil Mylar<sup>(R)</sup>, almost twice the thickness and weight of some cartridge tape on the market. The cross-linked urethane resin binder system used in manufacturing Dynamax tape guarantees the best possible bonding of the oxide.

## Over 10,000 Plays

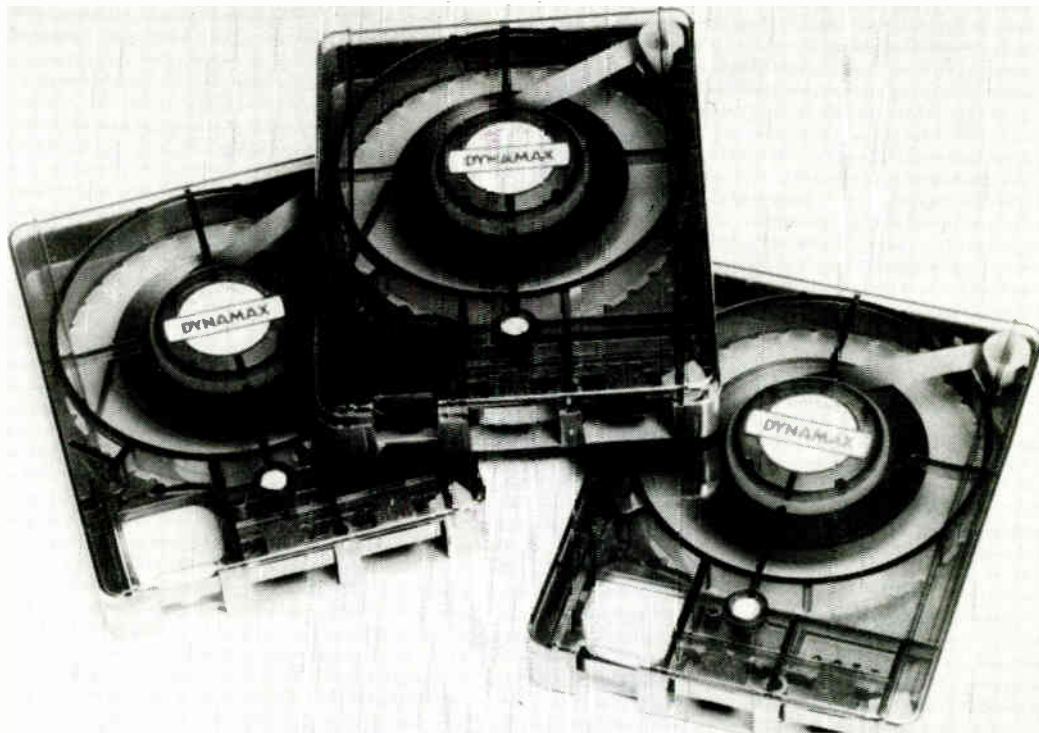
This combination of materials produces a tape that exhibits virtually no oxide shedding. Its strength plus cross-linked bond means that 10,000 plays or more can be expected from Fidelipac cartridges loaded with Dynamax tape. (See note)

Specially designed slitting equipment provides exceptionally clean edges and allows for control of tape width to within 1/1000 of an inch. This aspect of the manufacturing process assures that the stereo phase performance of Fidelipac Master Cart cartridges loaded with Dynamax tape will be the best available today.

*(Note: As of this writing, Fidelipac has life tested cartridges loaded with Dynamax tape that show no significant wear after 30,000 plays under laboratory conditions that simulate actual broadcast use. Similar tests conducted with competitive cartridges typically demonstrate severe oxide shedding and cartridge failure at an average of less than 1000 plays.)*

## Three Tape Formulations

Dynamax tape will be available initially in three formulations: standard (series 400), HOLN (series 500) and a never before available formula designed HOLN-DX (series 700) a high-output low-noise -- high overload tape exclusive to Fidelipac. The Dynamax DX tape has a coercivity of 372 Oersts, higher than any tape on the market, with squareness measured at 87.7 and above.



MASTER CART DX

## NEW MASTER CART DX

In conjunction with the introduction of their new Dynamax brand tapes, Fidelipac will be offering a new tape cartridge, the Master Cart DX, loaded with Dynamax HOLN-DX tape. The Master Cart DX substantially out-performs any cart or mastering tape on the market today. It delivers the widest dynamic range and frequency response ever measured in a tape cart. It also handles a record level of 400 nWb/m, the highest level ever attained without overload.

Mechanically identical with Fidelipac's Master Cart and Master Cart II, the Master Cart DX is phase compatible with these widely used carts. Master Cart DX is also bias compatible with Fidelipac H.O.T.<sup>(TM)</sup> tape and most other HOLN tapes.

The Master Cart DX and any Fidelipac cart factory loaded with Dynamax brand tape will give up to 10,000 plays without signal degradation.

## DYNAMAX RELOAD KIT

Rounding out their new product offerings, Fidelipac introduced a do-it-yourself reload kit designed to provide a fast, reliable method for upgrading existing Fidelipac carts. The Dynamax Reload Kit contains factory spliced and precision measured Dynamax tape ready to drop into a Fidelipac cartridge shell. New pressure pads are also included.

The Dynamax Reload Kit is available in all standard cart times from 20 seconds to 10.5 minutes at 7.5 i.p.s. It also is available in three Dynamax tape formulas: standard, HOLN, and HOLN-DX.

\*\*\*\*\*

## MEMO FROM METZ



by  
David L. Metz

### HOMEBREWING IN THE STATION

Sometimes you just can't buy what you want. I'm forever needing some little electronic gadget for the station that just isn't available, so I have to build it. In ham radio this is called home-brewing. The trick is to not only build something that will last for YEARS, but you'll be able to repair years later as well.

The most helpful item I've found is Vector 106P1061 perf board. The important difference is that each hole has an isolated square pad on each side of it. There are no buses or anything else on it to limit your layout. A sheet measures 10.5" x 10.5" and cost about \$27.00. I get mine from Electronic Industries (where else?). Don't let the cost deter you. You can build a lot of little projects on one sheet.

To keep the waste down, go to a graphic arts supply house and get some graph paper with .1" grid spacing. Then sit down and lay out the project on paper full size. I use colored pencils to indicate different components and to keep track what side of the board the trace I'm drawing is on. Remember it's a lot easier to use an eraser than to unsolder something off the board.

Another advantage to this method is that you can easily translate your perf board layout to a professional printed circuit board if you wish.

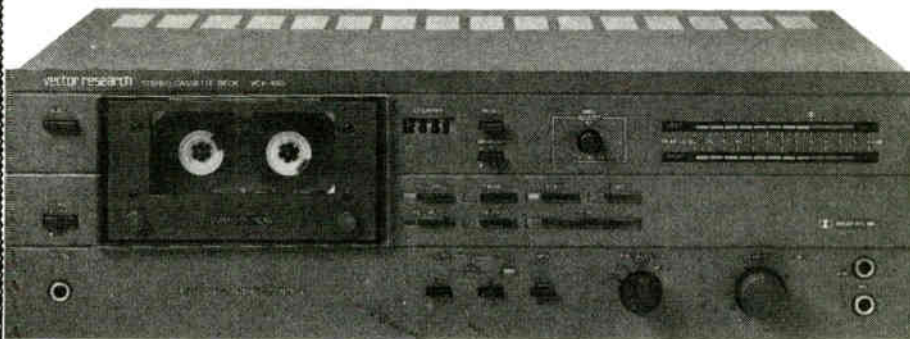
For pad to pad connections on the perf board I use No. 22 bare tinned copper wire. You can bend it into neat runs and right angle turns with your long nose pliers. Even hop the trace from one side of the board to another! Tack solder the "trace" to

(cont. on page 13)

# vector research

**THE CASSETTE DECK  
YOU'VE BEEN WAITING FOR!**

- **SOLENOID-CONTROLLED  
TRANSPORT**
- **RACK MOUNT**
- **REMOTE CONTROL**



STANDARD UNIT \$350.00

RACK MOUNT \$35.00

REMOTE CONTROL \$85.00

It's great news from Vector Research — the VCX-400. More than just a basic performer, this cassette deck offers outstanding reproduction quality with a host of convenience and control features that just aren't supposed to be on a deck with this kind of price tag. State-of-the-art technology, quality construction and human-engineering make the VCX-400 a standout performer.

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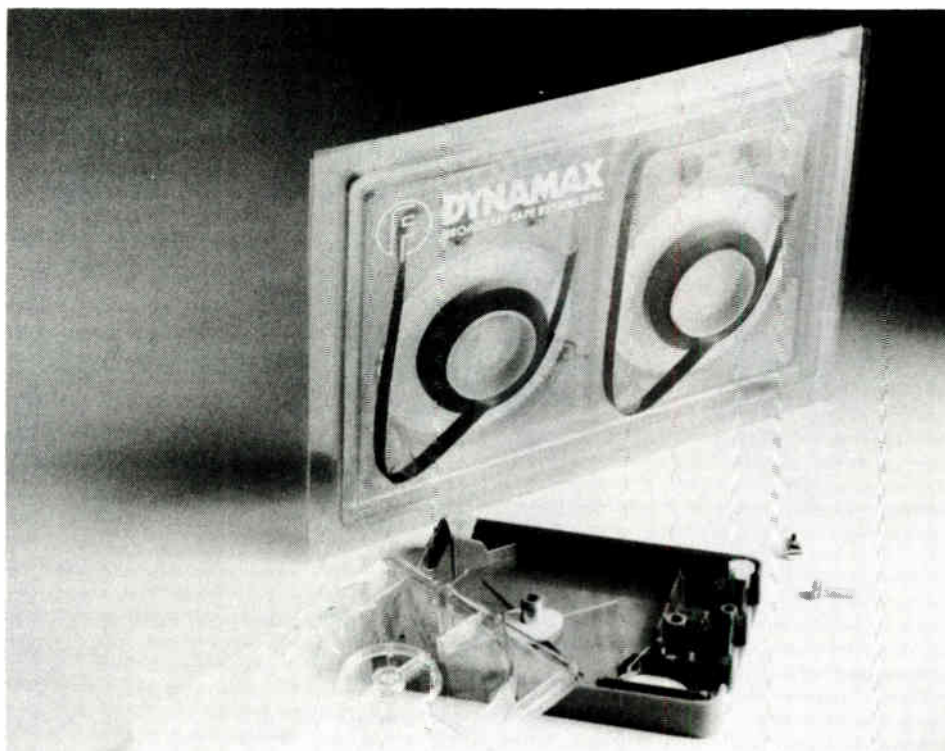
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*New From Fidelipac . . .*  
**DYNAMAX RELOAD KIT**



**DYNAMAX RELOAD KIT**

**DYNAMAX RELOAD KITS FOR FIDELIPAC TAPE CARTRIDGES**

<b>TIME AT 7½ IPS</b>	<b>UNIT PRICE</b>
<b>Series 400 Standard Tape (For use in Model 300, Model 350 and Master Cart)</b>	
20 Seconds - 100 Seconds	\$1.20
2 Minutes - 4½ Minutes	1.50
5 Minutes - 10½ Minutes	1.80
<b>Series 500 H.O.T. Tape (For use in Master Cart II)</b>	
20 Seconds - 100 Seconds	\$1.40
2 Minutes - 4½ Minutes	1.70
5 Minutes - 10½ Minutes	2.00
<b>Series 700 HOLN-DX Tape (For use in Master Cart DX)</b>	
20 Seconds - 100 Seconds	\$1.60
2 Minutes - 4½ Minutes	2.00
5 Minutes - 10½ Minutes	2.40

**CALL TODAY . . . CALL**

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## Shepler Says.



by John Q. Shepler  
Technical Consultant

### Life Without Licensing

My heart sank the day I opened that FCC envelope and pulled out my new General Class license. There, behind it, was the old First Phone with the word "CANCELLED" smudged across its face. Deregulation had finally hit home.

Now it looks like the General is also living on borrowed time. With the present mood of the Commission, operator tests are destined to become a thing of the past. With them will go the pride of everyone who studied hard and proudly displayed those blue certificates above their transmitter.

Regardless of what happens in Washington, there will still be options for anyone who wants to prove his ability or try for a better situation. Here are some of the better ones:

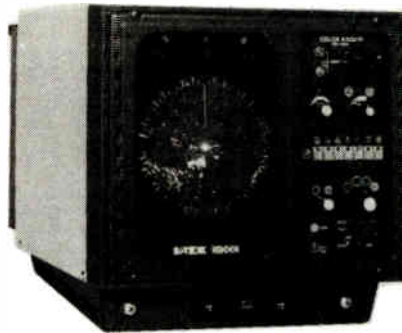
1. **EXPERIENCE** - High praises from respected managers, station owners, consultants, and other engineers mean more than mere paper ever will. Don't forget to cultivate good feelings with the air staff. Announcers are always on the move and will find opportunities for you that you'll never hear of otherwise.

2. **SIGNED LICENSES** - Your First or General may become a museum piece some day, but right now it still tells the world that you qualified. In years to come, the most valuable aspect of the license may be the signatures on the back that show your work history. The service record section was eliminated on the General, but you can still ask for signature or letter of recommendation.

3. **SBE CERTIFICATION** - The SBE is rapidly moving to fill the gap of technical licensing. They will probably wind up doing a better job than the Commission. SBE certification is being requested in more and more job ads, so it will pay you to start thinking in this direction. Without FCC licensing, a SBE certificate is bound to carry a lot of weight in the future.

(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 -- 1/2 mile to 64 miles 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.
- Warns when severe weather approaches.
- Electronic bearing marker (EBM) LED readout showing direction of storm center in relation to station.
- General coverage area displayed in blue.
- Distant and local light rain show on display in green color.
- As storm area intensifies, color changes from blue to yellow.
- Major storm cells on SI-TEX radar indicated in red.

\$7,995.00\*

\*Subject to change

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

# SI-TEX

## WEATHER RADAR

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FIDELIPAC  
BROADCAST TAPE CARTRIDGES

# PROFESSIONAL TAPE CARTRIDGES

## MODEL 300 (NAB TYPE A)

140-13	20 Second	2.79	140-132	3 ½ Minute	3.35
140-25	40 Second	2.85	140-150	4 Minute	3.42
140-44	70 Second	2.91	140-169	4 ½ Minute	3.49
140-57	90 Second	2.97	140-188	5 Minute	3.56
140-63	100 Second	3.02	140-207	5 ½ Minute	3.63
140-75	2 Minute	3.14	140-282	7 ½ Minute	3.91
140-94	2 ½ Minute	3.21	140-300	8 Minute	3.98
140-113	3 Minute	3.27	140-375	10 Minute	4.24
			140-394	10 ½ Minute	4.31

## MASTER CART (NAB TYPE AA - RED BASE)

380-13	20 Second	3.40	380-132	3 ½ Minute	3.98
380-25	40 Second	3.46	380-150	4 Minute	4.06
380-44	70 Second	3.54	380-169	4 ½ Minute	4.14
380-57	90 Second	3.60	380-188	5 Minute	4.22
380-63	100 Second	3.67	380-207	5 ½ Minute	4.30
380-75	2 Minute	3.74	380-282	7 ½ Minute	4.57
380-94	2 ½ Minute	3.81	380-300	8 Minute	4.65
380-113	3 Minute	3.90	380-375	10 Minute	4.93
			380-394	10 ½ Minute	5.01

## MASTER CART II (NAB TYPE AA - GOLD BASE)

550-13	20 Second	3.40	550-132	3 ½ Minute	3.98
550-25	40 Second	3.46	550-150	4 Minute	4.06
550-44	70 Second	3.54	550-169	4 ½ Minute	4.14
550-57	90 Second	3.60	550-188	5 Minute	4.22
550-63	100 Second	3.67	550-207	5 ½ Minute	4.30
550-75	2 Minute	3.74	550-282	7 ½ Minute	4.57
550-94	2 ½ Minute	3.81	550-300	8 Minute	4.65
550-113	3 Minute	3.90	550-375	10 Minute	4.93
			550-394	10 ½ Minute	5.01

## MASTER CART DX (NAB TYPE AA-Charcoal Base-Smoked Cover) Loaded with DYNAMAX Series 700 HOLN-DX Tape

750-13	20 Second	4.22	750-132	3 ½ Minute	4.94
750-25	40 Second	4.29	750-150	4 Minute	5.03
750-44	70 Second	4.39	750-169	4 ½ Minute	5.13
750-57	90 Second	4.46	750-188	5 Minute	5.23
750-63	100 Second	4.55	750-207	5 ½ Minute	5.33
750-75	2 Minute	4.64	750-282	7 ½ Minute	5.67
750-94	2 ½ Minute	4.72	750-300	8 Minute	5.77
750-113	3 Minute	4.84	750-373	10 Minute	6.11
			750-394	10 ½ Minute	6.21

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# Crosstalk...

by ED  
DUELLMAN



## PROGRAM FOR COMMODORE

As promised; here is a computer program to help take the guess work out of setting up an STL. Now that Ma Bell has gone nuts with rate increases, an STL looks better all the time.

This program was written by Robert L. Chamberlin and published in Broadcast Engineering Magazine. I have converted this program to run on the Commodore 64. It should also run on the VIC-20 with some changes in screen formatting. This program is intended to be used with an 80 column printer using the commodore printer commands. If you are using a printer connected to the user port you will have to make the proper command changes in lines 195-381. Line 5 can be eliminated if you want, as all it does is give a black screen with green lettering. Lines 500-730 calculate the mileage and bearing by the Great Circle method. This part of the program could be used by itself if you were looking only to measure distance between two points. After you run the program it asks for the information and is quite self explanatory. The coordinates are entered by putting commas after degrees and minutes.

With limited space, a line by line explanation is not possible, so if you have any questions send them with your talkback cards and I will be glad to answer them. One note: when typing in the program be careful not to mix up the oh's and zeros.

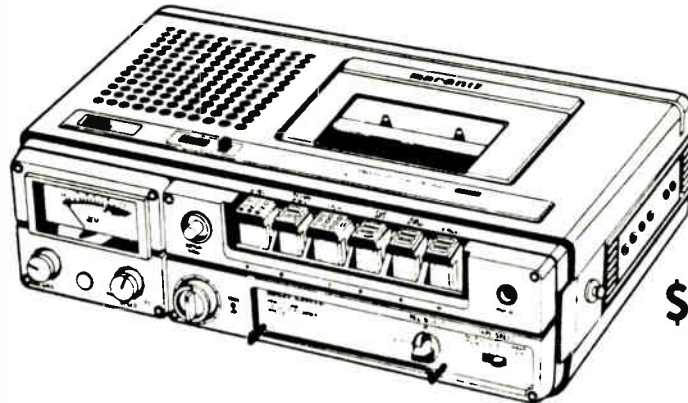
(cont. on page 11)

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- External Speaker Jack
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PROGRAM LISTING FOR JUNE

```
5 POKE53280,0:POKE53281,0:PRINT "{GRN}"
6 PRINT "{CLR}";K=57.2958
10 INPUT "TITLE OF STUDY";A$
20 GOSUB500
30 INPUT "TRANSMITTER COAX CABLE LOSS (DB)";C1
35 INPUT "RECEIVER COAX CABLE LOSS (DB)";C2
40 INPUT "FADE MARGIN (DB)";FM
50 INPUT "RECEIVING ANTENNA GAIN (DB)";RA
60 INPUT "TRANSMITTING ANTENNA GAIN (DB)";TA
70 INPUT "REC. SENS. FOR DESIRED SNR (DBM)";SN
80 INPUT "TRANSMITTER POWER OUTPUT (WATTS)";TP
90 INPUT "TRANSMITTER FREQUENCY (MHZ)";F
120 PL=36.6+20*(LOG(F)/2.30259)+20*(LOG(SM)/2.30259)
150 PDB=10*(LOG(TP/.001)/2.30259)
170 RS=ABS(PDB)-ABS(C1)-ABS(C2)-ABS(PL)+ABS(RA)+ABS(TA)-ABS(FM)
180 PA=TP/EXP(C1*2.30259/10)
190 ERP=PA*EXP(TA*2.30259/10)
195 OPEN3,4
196 PRINT#3,TAB(27)"FREE SPACE STL PATH STUDY":PRINT#3,;
200 PRINT#3,TAB(35)A$
201 PRINT#3,;
210 PRINT#3,"LENGTH OF PATH: ";SM;" MILES"
220 PRINT#3,"FREQUENCY OF TRANSMITTER: ";F;" MHZ"
230 PRINT#3,"TRANSMISSION LINE LOSS: ";-ABS(C1);" DB"
235 PRINT#3,"RECEIVER COAX LINE LOSS: ";-ABS(C2);" DB"
240 PRINT#3,"RECEIVING ANTENNA GAIN: +";ABS(RA);" DB"
250 PRINT#3,"TRANSMITTING ANTENNA GAIN: +";ABS(TA);" DB"
260 PRINT#3,"FADE MARGIN: ";-ABS(FM);" DB"
270 PRINT#3,"PATH LOSS: ";-ABS(PL);"DB"
279 PRINT#3,;
280 PRINT#3,"NET SIGNAL TO RECEIVER ANTENNA TERMINAL: ";RS;" DBM"
290 PRINT#3,"NET SIGNAL REQUIRED FOR ADEQUATE SN/SNR: ";-ABS(SN);" DBM"
300 IF-ABS(SN)>RSTHENPRINT#3,"***CAUTION INADEQUATE SIGNAL***":END
310 PRINT#3,"LICENSE APPLICATION DATA:"
315 PRINT#3,"TRANSMITTER POWER OUTPUT";TP;"WATTS"
320 PRINT#3,"ANTENNA POWER INPUT: ";PA;"WATTS"
330 PRINT#3,"EFFECTIVE RADIATED POWER: ";ERP;"WATTS"
339 PRINT#3,;
340 PRINT#3,"TRANSMITTER NORTH LATITUDE: ";D(1);M(1);S(1)
350 PRINT#3," WEST LONGITUDE: ";D(2);M(2);S(2)
360 PRINT#3,"RECEIVE SITE NORTH LATITUDE: ";D(3);M(3);S(3)
370 PRINT#3," WEST LONGITUDE: ";D(4);M(4);S(4)
380 PRINT#3,"RADIATION LOBE BEARING: ";BRG;"DEG TRUE"
381 PRINT#3,;CLOSE3
400 END
500 PRINT "COORDINATES OF STL TRANSMITTER ANTENNA"
510 INPUT "LATITUDE (D,M,S) N: ";D(1),M(1),S(1)
520 LA(1)=D(1)+M(1)/60+S(1)/3600
530 INPUT "LONGITUDE (D,M,S) W: ";D(2),M(2),S(2)
540 LO(1)=D(2)+M(2)/60+S(2)/3600
550 PRINT "COORDINATES OF RECEIVE ANTENNA (D,M,S)"
560 INPUT "LATITUDE (D,M,S) N: ";D(3),M(3),S(3)
570 LA(2)=D(3)+M(3)/60+S(3)/3600
580 INPUT "LONGITUDE (D,M,S) W: ";D(4),M(4),S(4)
590 LO(2)=D(4)+M(4)/60+S(4)/3600
610 A=LO(1)-LO(2):B=LA(1)-LA(2)
620 C=COS(LA(1)/K)*COS(LA(2)/K)
630 D=C*COS(ABS(A/K))+COS(ABS(B/K))-C
640 E=ATN(SQR(1-D^2))/D
650 SM=E*K*60*1.1508
660 F=SIN(ABS(A/2)/K)*COS(((LA(1)+LA(2))/2)/K)/SIN(E/2)
670 IF INT(F)=1 THEN F=90:GOTO690
680 F=ATN(F/SQR(1-F^2))*K
690 IFA>0ANDB<=0 THEN BRG=F:GOTO730
700 IFA>0ANDB>0 THEN BRG=180-F:GOTO730
710 IFA<0ANDB>0 THEN BRG=180+F:GOTO730
720 BRG=360-F
730 RETURN
```

READY.

**OTARI**

Model 5050 B-II

1/4" Two Channel Recorder



Each 5050 B-II incorporates these standard features:

- Transformerless balanced inputs and outputs with XL type connectors.
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- Mic input has switch selectable 20 dB pad and mute.
- Mic/Line mixing on each channel.
- Headphone monitor output.
- Lighted VU meters with L.E.D. peak indication.
- 3 speeds switch selectable in 15/7.5 ips or 7.5/3.75 ips speed pairs.
- Record reference level switch selectable (185, 250, 320 nWb/m.)
- Equalization switch selectable (NAB, IEC).
- Reel Size switch selectable (5"-7", 10.5") EIA or NAB.
- Low frequency reproduce eq. adjustable.
- Fourth head switch selectable for 1/4 track stereo playback.
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- Front panel record setup adjustments.
- Integral splicing block.
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- Microprocessor-controlled HRS/MINS/SECS real-time counter with L.E.D. display.
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- Memory stop switch selectable to stop tape when rewinding past 0:00:00.

The 5050 B-II Recorders are covered by a one year parts and six months labor limited warranty. Heads, pinch-roller, fuses and lamps have a 90 day parts warranty.

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## TALKBACK

**Kansas** . . . the feeling you get when dealing with the phone company on even the smallest matter is akin to being raped. I'd like to thank the US Justice Department for screwing up the finest communications system the world has ever known, not to mention screwing over the American public. Agree with Ed Duellman . . . glad I don't even speak two languages.

**Mississippi** . . . Looks like AM stereo going to Motorola by default . . . just saw new literature touting "Hi-Fi" Motorola receive chip with response all the way to 10 KHz . . . wow!! How about a real improvement . . . (if possible) . . . a system using synchronous detection would be nice.

**Nebraska** . . . More good positive words from Metz and Persons . . . Persons . . . how about illustrated article on phase shift and a sample of a correction circuit? Fascinated by the matter you bring up but have no plans to go AM stereo. How to test for it . . . How to solve it?

**Iowa** . . . Liked comments of RFI (April) we copper screened floor . . . walls . . . ceiling and doors of control room newsroom and production rooms. Cost a mint but sure helps as we sit under two sticks.

**New Mexico** . . . Re: John Shepler headphone testing notes . . . thank you . . . it works, have been using it for some time now. Re: Ed Duellman, Crosstalk . . . you left out the best part Ed . . . "Ma Bell" wants \$600 to install those lines . . . even if they're in place, to "stick it to you".

**Missouri** . . . A tip of the hat to Shepler for a common sense trouble shooting suggestion . . . how about somebody working up a battery powered/low distortion/balanced bridging input amp to drive a set of sealed ear phones (Pro-4AA's for example) to use in noisy places like xmitter rooms?

**Wisconsin** . . . Would like to see a little in Common Point on STL and SCA with increased price on phone lines we are thinking of going this route. Enjoy Common Point very much and it's extremely helpful.

\*\*\*\*\*

unused pads every .5" along the run to keep it in place.

While your building your little project, add a few extras to make your life easier. Remember, if you built it you got to fix it! Add a few LEDs as self test indicators. I always connect one to the plus and minus power supply bus. By adding a hex buffer like a CD4050B you can drive logic status LEDs without loading down the logic buses.

I try to remember to put test points in, too. Just a stiff wire pin about 3/8" long sticking out of the board will do. A little loop bent into the end will help the oscilloscope probe hold on. It sure makes trouble shooting easier.

This brings us to the part where it's really easy to screw up a homebrew project, documentation. It takes self discipline to sit down and draw up a good clear circuit diagram of how you built the thing, not how you planned to build it. Many times I've been really slowed down trying to repair something I'd built years before because the circuit was not quite what I had in my notes. It's a good idea to fold up a circuit diagram and stick it in the projects case before you put the lid on. That way you won't have to go looking for it at 3:00 in the morning!

Parts are another touchy area. Trying to save money by buying junk parts is no bargain. It's wise to bread-board any circuit before you solder it up. It's much easier to just plug the part into the breadboard than to unsolder it to your nice piece of perf board. Then build the project out of the parts off the breadboard, you know those work!

After you're done, deflux the board with alcohol. This is really important if you're using CMOS devices in your design. "Q" tips and a tinner's acid brush work fine. Then glue some neat little paper labels to the board to indicate important connections (the "goesinta and goesoutas") and the IC part numbers.

I'm not saying I do all of these things with every project I build. But as I get older I'm getting more careful. Some of these tricks of the trade do make life easier.

\*\*\*\*\*



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A: With a Marti Dual System NO. With any composite YES.
- Q: Are other pieces of expensive equipment needed to transmit and receive AM Stereo?  
A: With a Marti Dual System NO. With any composite YES.
- Q: Does a higher price indicate better quality and performance?  
A: No. A higher price could indicate higher manufacturing costs.
- Q: Can I really buy a Dual STL System for less than a "Composite" STL?  
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STL-10 Transmitter

### . . . . BEATS the HIGH-PRICED competition

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Distortion	0.25% or less	0.20% or less*	0.30% or less*
Response	+0.25 db	+0.10 db	+0.10 db
Noise	75 db	75 db	72 db
Stereo Separation	-72 db	-50 db	48 db
Receiver sensitivity for 60 db of Quieting	14 uV	60 uV	150 uV
Last Stereo System	\$5,795	\$7,375	\$8,995
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All prices listed may be subject to change without notice.

\*Base bend

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4. COLLEGE DEGREE - Class work is seldom fun, but a 2 or 4 year degree can open a lot of doors. Community Colleges are less expensive than you think. You can learn about microprocessors and design techniques that will make your everyday work more interesting.

5. HOME STUDY COURSES - These offer flexible hours but require a lot of self-discipline to complete. Most of the hobby electronics magazines have cards that let you send for free literature. The better courses have you bread-board practical analog and digital circuits for hands-on experience.

6. HAM RADIO - Still the very best way to learn transmitters if you can resist the urge to start out with store-bought equipment. A great way to experiment with data transmission, satellites, and TV. A lot of us got the radio bug along with our Novice ticket.

Regardless of whether you're an old hand or just starting out in the business, there is always something new to learn and another way to brighten up a resume. The demise of the FCC licensing is not the end of the world, but it is a good reason to look at where your career is going and what you can do about it.

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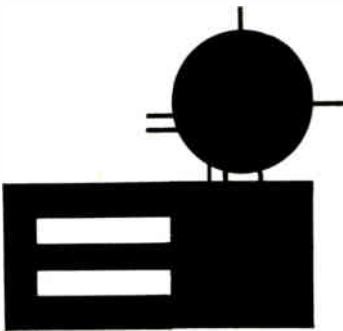


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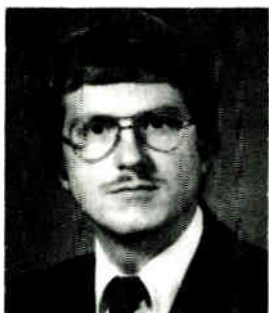
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# PERSONS' POST SCRIPTS

by Mark Persons

## NAB Convention

This year's annual National Association of Broadcasters' (NAB) Convention in Las Vegas was a success. A few broadcasters stayed home because of union worker strikes in Las Vegas, but it appears attendance was excellent.

There were probably twice as many technical sessions for radio engineers as in past years. The first round of sessions started on Saturday. They were unprecedented as were the evening workshops lasting until after 10 p.m. Tuesday night. The technology explosion will, I am sure, require this kind of large scale technology information dissemination. Gone are the days when a broadcast engineer could ignore all or most of the technical sessions because they were a rehash of what he already knew. Those who attend technical seminars today find it difficult at best to keep up with what is going on. Those who don't attend are lost.

AM Stereo was a big topic of conversation at this year's convention. Delta, TFT, and Broadcast Electronics showed their new AM Stereo exciters and monitors. All are licensed by Motorola and use the C-QUAM modulation scheme.

Harris announced it had changed its pilot frequency to 25Hz and that the Harris system could now be heard on Delco car radios. They demonstrated this to convention goers on the floor. However, the Harris AM Stereo system is not fully compatible with the Motorola C-QUAM AM Stereo decoder in the Delco radio. There are some compromises. Pioneer announced they are building both auto and home AM Stereo radios using the Motorola C-QUAM chip. Those receivers will be available soon. Continental demonstrated their PMX AM Stereo system simultaneously with slow speed data transmission. The Kahn AM Stereo system was shown as well. Two radio stations in Las Vegas are now broadcasting in AM Stereo. One uses

the Motorola system and the other uses Kahn. This gave show goers with AM Stereo radios a chance to listen and compare under actual broadcast conditions.

Many meetings and hospitality suites, for the NAB Convention, were at the Las Vegas Hilton located next to the convention center. The Hilton was the largest hotel in the World with over two thousand rooms until recently when the Russians reported they built a hotel that is a few rooms larger. However, observers say the Russian hotel has only two bathrooms.

The NAB Radio/Television Convention is a very large affair. I personally hope that it can be split into Radio only and TV only conventions in the future. Hopefully the NAB could be split into two organizations so that radio could be represented by one and television by the other. This makes a lot of sense to me as the NAB is now faced with representing opposing views from Radio and Television broadcasters. How can it effectively lobby for both sides of one issue? Radio and TV are large enough to have their own organizations representing their own interests. How about it guys?

On an unrelated subject, I'd like to expand on John Q. Shepler's fine article entitled "Troubleshooting With Headphones" which appeared in the April 84 edition of Common Point. John suggested using headphones for testing audio circuits. Headphones are an excellent tool for following audio thru a circuit and analyzing noise, hum, and other problems.

As a slightly different approach, I use a Trimline® or Trendline® telephone handset with built-in dial to do audio tracing. The unit also can be used for placing telephone calls from telephone termination bays. This is especially handy when equalizing audio lines that terminate in equipment areas where telephones are seldom found, but lines are in abundance. In essence, the "Test

Telephone" is the same as the one every telephone repairman carries on his belt. It has a cord with clipleads at the end for easy temporary connections.

If you make one, it is a good idea to put a .47MFD/200VDC N.P. or larger capacitor in series with one of the telephones input wires. Also put a switch across the capacitor to short it. With the switch in the open position, the telephone handset acts as a monitor to listen to audio lines and circuits without providing a DC patch across the points being measured. With the switch shorting the capacitor, the telephone can be clipped onto a telephone line and used as it was intended.

The one drawback of using a telephone handset rather than headphones is the frequency response on the headphones is probably much better. Hum and hiss are more easily detected by good headsets.

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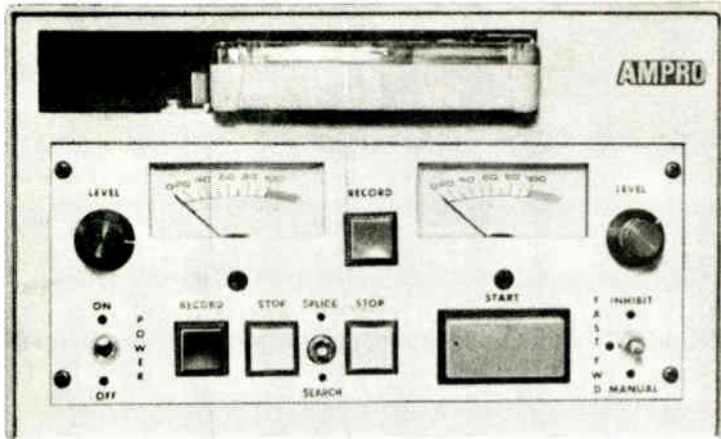
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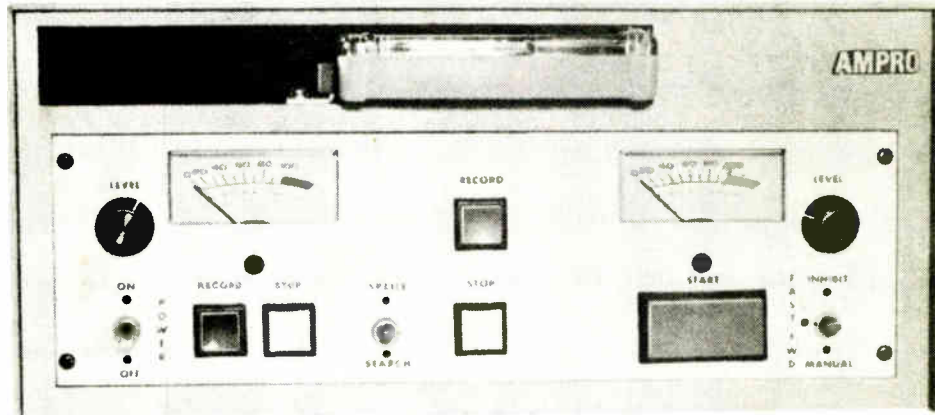
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