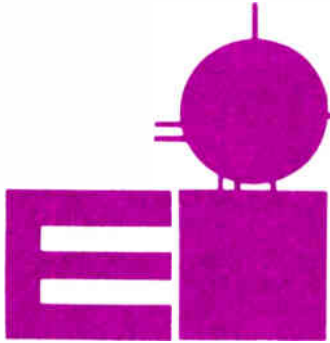


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NAB Solicits Proposals For AM Psychoacoustical Study

Washington, Feb. 5 -- The National Association of Broadcasters has issued a Request for Proposals (RFP) for research studies which deal with the degree to which various categories of interference with AM radio signals (i.e., atmospheric noise, man-made noise and interference from other transmitters) affect the acceptability of these signals to the listening public.

The research will be used to respond to questions being raised by the Federal Communications Commission in its "Review of Technical Assignment Criteria for the AM Broadcast Service" (Notice of Inquiry, MM Docket No. 87-267).

In the RFP, NAB pointed out that dramatic changes in the listening habits of the public have occurred since the Commission's AM allocation policies and protection ratio specifications were first established. The two landmark studies which have been useful to the Commission in its technical assignment decisions for the AM band were conducted over 40 years ago. Presumably, the public's expectations of signal quality have changed over time with the greater availability of high quality audio programming from a number of sources.

Among other things, the FCC's Notice of Inquiry seeks "to establish those field strength contours upon which the public depends today, which presumably are of economic value to the broadcast stations."

The Association noted that both industry and government desire to

understand the significance of public acceptance of various levels of field strength and protection ratios as a criterion in making AM spectrum management decisions. This public acceptance is affected by the changes that have taken place in the radio industry and in the quality of audio reproduction equipment in recent years. It is this public acceptance criterion that the RFP addresses.

Interested parties should contact Rick Ducey, senior vice president, NAB Research and Planning Department, (202) 429-5382, or Michael Rau, vice president, NAB Science and Technology Department, (202) 429-5339.

The McLaughlin Group To Open NAB Convention

Washington, Feb. 5 -- The McLaughlin Group will appear live at the National Association of Broadcasters annual convention in a discussion of the electronic media's role in political campaigns, and featuring videotaped comments by the presidential candidates of both parties. The group's nationally acclaimed journalists also will offer their insights on the major campaign issues and the presidential candidates.

The panel is scheduled during the opening session of the convention, which will be held April 9-12 at the Las Vegas Convention Center.

The McLaughlin Group's weekly news analysis program, syndicated to

television stations throughout the United States, is moderated by John McLaughlin, Washington editor of The National Review. Regular participants Fred Barnes (The New Republic), Jack Germond (The Baltimore Sun), Morton Kondracke (The New Republic) and Robert Novak ("Evans & Novak: The Inside Report") will join McLaughlin at the NAB session. The panel is exclusively for convention attendees and will not be aired.

NAB serves a membership of more than 5,000 radio and 640 television stations, including all the major networks.

President Reagan Scheduled to Address NAB National Convention

President Reagan has tentatively scheduled an appearance before NAB's national convention in Las Vegas on Sunday, April 10. Word of President's plans came from White House Military Office Dir. (and former FCC Mass Media Bureau Chief) Jim McKinney before last week's NAB State Leadership Conference in Washington. NAB invited President to speak and receive special award for his lifetime of broadcast communications leadership. Reagan's appearance would be his first NAB convention visit as President; every President since Ike has appeared at NAB conventions. (Details of his appearance will appear in NAB TODAY -- and NAB Daily News publication, to be distributed daily throughout convention sites starting on April 9.)

WALTER MAY TO BE HONORED AT NAB ANNUAL CONVENTION

WASHINGTON, Mar. 29 -- Walter E. May, president, WPKE, Pikeville, KY was honored during the National Association of Broadcasters' annual convention in Las Vegas April 9-12 for his pioneering work in helping to establish NAB's engineering laboratory. He was presented with a plaque by NAB President and CEO Edward O. Fritts during the Tuesday, April 12, joint radio and television luncheon.

NAB Joint Board Chairman Wallace Jorgenson said, "During Walter's term as Radio Board Chairman he was keenly aware that the broadcast industry, to remain competitive in the marketplace, must be on the cutting edge of technology. He believed NAB should take a leadership position in technology development, thus he advocated constructing an engineering lab at NAB headquarters. That lab exists today and its ongoing work to research and access the industry's technical standards is a lasting tribute to Walter's foresight."

May was chairman from 1978 to 1979.

Jorgenson is president of Jefferson-Pilot Communications Co., Charlotte, NC.

Since the lab's inception in 1981, it has been the principle factor in the development of FMX, which enhances an FM signal beyond its normal range without increasing transmitter power; the National Radio Systems Committee standard, which improves AM reception; and the preservation of the UHF spectrum for an advanced television system which will provide wide screen pictures with sharper resolution and compact disc-quality stereo sound.

Gentner Acquires Microprobe Electronics Inc.

March 28, 1988 -- Gentner Electronics Corporation announced today the acquisition of Microprobe Electronics Inc. (MEI) of Lake Forest, Illinois. MEI is a manufacturer of broadcast automation equipment and digital audio storage products. MEI's product line will be integrated into Gentner's Salt Lake City facility and all MEI products will be sold under the Gentner name.

According to President Russell Gentner, "The MEI product line is a perfect fit for our expanding audio product line. Our immediate emphasis will be in the digital storage area for both the broadcast and sound

areas." Gentner plans to introduce a digital storage device using large capacity hard disks at the National Association of Broadcasters' convention held in Las Vegas, Nevada April 9-12, 1988. Gentner further stated that the company intends to be the leader in digital audio storage. "MEI has made affordable digital audio storage a reality. With the cost of disk storage dropping and with the demand for alternatives to tape storage, it is our intention to continue developing higher-capacity, lower-cost digital storage products," Mr. Gentner said.

Gentner Electronics Corporation is a publicly held corporation traded "over-the-counter" and is listed in "pink sheets."

NAB ASKS FCC TO CONTINUE CONSIDERATION OF STATIONS' ECONOMIC INJURY CLAIMS

Washington, Mar. 29. -- The National Association of Broadcasters has asked the Federal Communications Commission either to revise or clarify its position that it will no longer consider economic injury claims to full service broadcast stations in any of its proceedings.

In its filing, NAB said it does not oppose the elimination of the Carroll doctrine and UHF impact policy issues, but it does object to the language in the FCC's Report and Order that suggests there will be no consideration of economic injury at any time. NAB noted that this policy determination was beyond the scope of the proceeding.

NAB Joint Board Chairman Wallace Jorgenson said, "The Commission must consider the economic impact of its actions on existing stations and their ability to serve their communities. It cannot walk away from its responsibility to assure that new outlets would not present ruinous competition to broadcasters now on the air." Jorgenson is president of Jefferson-Pilot Communications Co., Charlotte, NC.

The Carroll doctrine allows an existing broadcaster to file against assignment of a new station if the existing station can demonstrate that the new signal will create economic hardship and result in a net loss in public service programming. The UHF impact policy permits applications to initiate or improve VHF TV service to be considered contrary to the public interest if the proposals pose an adverse economic impact on existing or potential UHF stations.

NAB said it "objects vehemently"

to the Commission's suggestions that competition should be the sole goal of the Commission and expressed its concern over the "potential deleterious effects caused by the introduction of more and more new AM, FM and TV stations."

The Association said that the Commission, in rulemaking proceedings, must consider:

-- The current state of AM radio which has fallen from its former prominence;

-- Nonbroadcast electronic competitors, including cable TV, multiple channel multipoint distribution services, satellite master antenna systems, video cassette recorders, etc.'

-- The economic health of stations has an important bearing on the provision of service in the public interest. In 1986, for example, the average UHF independent TV station lost \$1.4 million which flatly contradicts the agency's contentions about the competitive health of the UHF service.

TALKBACK

RAPID CITY, SD--I really love the construction articles--keep them coming.

ST. PAUL, MN--Good info, keep us on your list.

AMORY, MS--How about a tally of how many stations (AM) have gone N.R.S.C. and which systems they chose.

MINOT, ND--Keep up notes from Metz.

MINOT, ND--I enjoy tech articles, memo from Metz, etc.

SIOUX FALLS, SD--Why didn't you evaluate shures BC90 series of phono cartridges? They beat the earlier cartridges, hands down, in our tests. You seem to have missed the boat this time around.

COMMON POINT READINGS

Metz14



42nd Annual Broadcast Engineering Conference

The NAB Broadcast Engineering Conference will again begin on Friday, April 8, the day before the Convention and Exhibits open. This arrangement has proved to be highly successful resulting in increased attendance each year. Attendance for last year's Friday opening technical sessions totalled 400 for AM Improvement and 450 for Television Cameras and Recorders.

A major emphasis this year will be placed on the technical aspects of production of all kinds; radio, television, field, studio and HDTV. On Friday and Saturday a third session on production will be held concurrently with the radio and television sessions. Saturday afternoon, special post-production sessions will be held featuring presentations of interest to teleproduction specialists. Exhibitor guests as well as regular registrants will be welcomed.

Of special note: an informal lunch will be served on Friday to provide continuity between the morning and afternoon sessions.

1988 is clearly the year of HDTV. In addition to technical sessions on HDTV Production and Advanced Television Transmission Systems, NAB expects to provide an HDTV Theater using an Eidophor projector and to organize a major display of HDTV production and transmission system proponents in the display area nearby the television management sessions. This display will be similar in nature to the one sponsored by Sony in 1986 in Dallas. Curious as to the goings-on on FCC's Industry Advisory Committee on Advanced Television? A special session on Tuesday morning will be devoted to the activities and reports from the FCC's Industry Advisory Committee on ATV.

Saturday, prior to the Convention Opening Ceremonies, the Engineering Luncheon will take place. Richard C. Kirby, Director of the International Radio Consultative Committee (CCIR), the featured speaker, will address the importance of international standards for broadcasting. The Engineering Luncheon will also feature the presentation of the Engineering Achievement Award. This year, the industry's foremost engineering consultant, Jules Cohen, who retires this year after over 50 years in broadcasting, will receive the award.

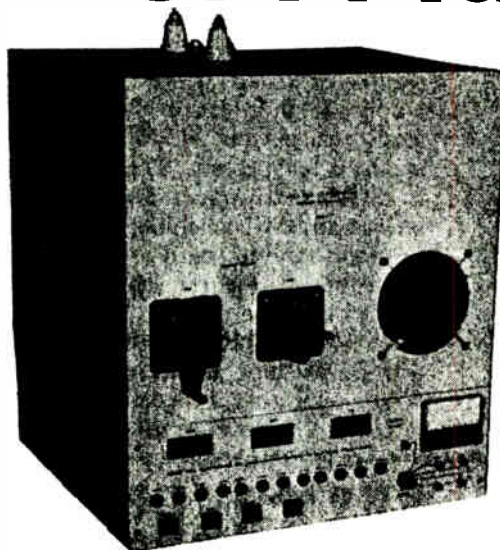
Virtually every aspect of broadcast engineering will be covered this year, from digital television systems to solar powered radio stations. Increased

emphasis will be placed on fiber optics, TV automation, graphics and animation, computers for engineers, digital radio studios and environmental concerns. Eight sessions will be devoted to radio, 10 to television and 9 will be of interest to both radio and television engineers for a total of 28 technical sessions featuring about 150 papers and 5 panels. The Conference Proceedings will contain over 80 technical papers. Sunday evening there be 4 engineering workshops and Monday evening the Ham Radio Reception will be held. Once again, the Science & Technology Department will sponsor a special exhibit of the NRSC, AM Improvement developments, and FMX in the area between the engineering meeting rooms in the South Hall of the Convention Center.

'In Many Ways, the Medium is the Best Buy'

Quote Worth Noting... "With radio advertising, retailers have not only a captive audience, but also a mobile one, who can, upon hearing the ad, be coaxed to visit the store. But the most persuasive argument in favor of radio advertising is the grand scale of the medium's exposure. One survey showed that over 50% of car radios are in use 7 a.m. to 10 p.m., 7 days a week. TV reaches this level of saturation only once a year: Super Bowl Sunday. For the smart political advertiser in this election year, it is obvious that radio should not be overlooked. In many ways, the medium is the best buy."

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**AM Interference...
If You've Got it,
NAB Wants Details**

NAB has issued a Request for Proposals (RFP) for research studies which deal with interference to AM signals. Research will be used to respond to questions raised by FCC in its current review of technical assignment criteria for AM service (NOI, MM Docket 87-276). NAB has asked Commission to adopt new rules to eliminate interference and enhance AM technical quality, and temporarily freeze new AM licensing and major AM change applications (NAB TODAY, Feb. 8).

In RFP, NAB said dramatic changes in listening habits have occurred since FCC's AM allocation policies and protection ratio specs were first established; two landmark studies which have been used by FCC in tech assignment decisions for AM were conducted over 40 years ago. Interested parties should contact NAB Senior VP/Research & Planning Rick Ducey (202) 429-5382, or NAB VP/Science & Technology Michael Rau (202) 429-5339.

Kansas Association of Broadcasters

Kansas Association of Broadcasters is urging KAB members to contact their state legislative House members to encourage support for bill which exempts advertising services from state sales tax. Exemption itself followed action of KAB and Kansas Advertising Coalition. Main Kansas House number: (913) 296-7500.

South Dakota Broadcasters Association

South Dakota Broadcasters Association reports that its first attempt at a statewide PSA campaign against drunk driving over the holidays was a success. SDBA TV members aired two :30 spots targeted to keeping drivers who had "one too many" off South Dakota highways. Next venture will be joint radio/TV effort. Incidentally, SDBA is looking for efficient, inexpensive way to get PSA materials into stations' hands. Any ideas out there? Give Joe Cooper a call at (605) 334-2682.

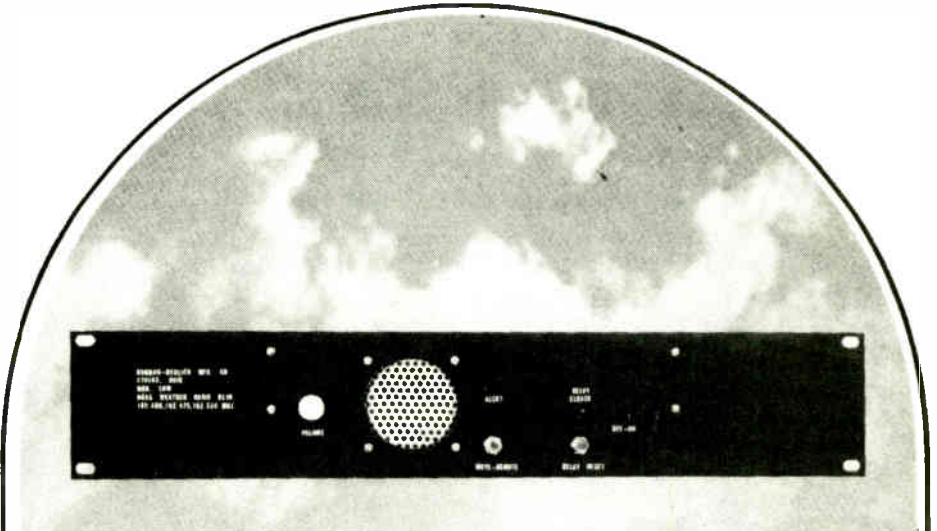
Industry Leaders Look Ahead at NAB Futures Retreat

Future technologies and marketplace dynamics dominated discussions at two-day NAB Exec Committee Futures Retreat in Washington last week. Forty broadcasters and broadcast organization execs met to consider media developments expected in next decade. Meeting's specific purpose: to explore and examine trends that will affect industry strategies in coming years. Resource speakers provided updates on competing media and competitive opportunities for broadcasters.

At retreat luncheon, this observation from John Parikh, CEO of Joint Communications Corp., Toronto: The successful radio manager uses "two-by-four" marketing and promotion on year-round basis. Two-by-four marketing is "hitting the consumer between the eyes. You don't cut through with subtleties." Parikh, a successful com-

munications entrepreneur, said promotion and marketing directors should be given greater status and importance in station hierarchies. He told NAB Exec Committee and other industry leaders that listener recall will increasingly be based on a radio station's format and predictability. But he urged radio promoters to focus less on content and more on benefits of their stations' overall programming to listeners. Public is looking for "perceived status," based on respect for the listener, and "radio really needs to work on this."

In programming, Parikh said research will be an increasingly important tool, but "off-the-wall creativity will continue to confound research" findings, at times. He called for continued experimentation with new formats and said ethnic, Spanish and even Oriental formats have room to grow, along with new wave and other formats directed at Baby Boomers -- which he said has now become the 34+ "Big Generation."



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Gentner Restructures for Projected Growth

Salt Lake City, Utah -- Russell D. Gentner, President of Gentner Electronics Corporation, has announced a major restructuring of the corporation's management. The company, which formerly utilized a centralized marketing and sales department, has appointed Directors of Marketing and Sales for the three major market areas served by Gentner.

According to Mr. Gentner, "Our company is approaching its product marketing in a new way. Instead of a single sales manager and a single marketing manager attempting to cover all of our markets, we are concentrating specific people on specific markets."

Mr. Gentner states that the appointment of Product Managers is impractical at Gentner Electronics. "Our products span multiple markets," Mr. Gentner adds. "Product managers would be overburdened learning all of the markets appropriate for their product lines. Our new approach gives our managers the opportunity to become very specialized in one market area and to develop that market's potential to its fullest."

Personnel changes at Gentner include:

Flaine Jones, Director of Marketing and Sales, Sound and Teleconferencing. Mrs. Jones has been employed at Gentner for more than four years in the sales and marketing departments; she was more recently Marketing Manager. As the director of the Sound and Teleconferencing market, Mrs. Jones will oversee the development of a relatively new market area for Gentner. "Our company's products are well suited to the professional sound marketplace," says Mrs. Jones. "We are now positioned to concentrate on this challenging new market, and to develop its potential."

Gary W. Crowder, Director of Marketing and Sales, Broadcast Audio. Mr. Crowder has served as Sales Manager at Gentner for the past year; his previous experience in the broadcast market includes on-air, engineering, station management and station ownership. According to Mr. Crowder, "This new appointment allows me to concentrate on my specialty - audio equipment for broadcasters. With this narrowed focus, we can do the necessary research to bring even more exciting new products to this marketplace."

John E. Leonard, Jr., President of Gentner RF Products Division, will continue management of Marketing and Sales to the Broadcast RF mar-

ket. Mr. Leonard plans development of several RF-related products in the near future. "Our VRC-1000 Remote Control Unit has been very successful," he says. "Our new RF products will follow the trend of the VRC-1000, combining digital and analog circuitry to provide innovative solutions for this marketplace."

Kelli Maag, formerly Marketing Assistant, has been appointed Marketing Coordinator. Mrs. Maag will oversee the development and release of the company's marketing programs, including trade advertising, direct mail campaigns, investor relations, co-op and convention exhibits.

Jennifer Jones, formerly Secretary/Receptionist, has been named Marketing Assistant.

Gentner is also in the process of hiring a Director of Operations to oversee the daily operations of the company including administration, office and engineering management. Mr. Gentner says, "This appointment will help to reduce my operational workload, allowing me to work more closely with our three market managers and marketing coordinator."

Gentner Electronics Corporation is a publicly held company; it is traded over-the-counter and is listed in "pink sheets."

Acuff, Williams to be Inducted Into Broadcasting Hall of Fame

KOHALA COAST, Hawaii, Jan. 22. -- Roy Acuff and William B. Williams have been named radio recipients for the National Association of Broadcasters' Broadcasting Hall of Fame Award. Television recipients, which were announced earlier, are Lucille Ball and Milton Berle.

NAB Radio Board Vice Chairman and Convention Committee Co-chairman Robert L. Fox, chairman and CEO, KVEN Broadcasting Corp., Ventura, CA, said, "Roy Acuff and William B. Williams have provided a range of entertainment to generations of Americans and richly deserve to be included among radio's greats in the Hall of Fame. It is an honor befitting Williams' memory and Acuff's continuing contribution to the nation's music heritage."

Country Music Hall of Famers Acuff joined a medicine show touring the mountains of Virginia and Tennessee in the early 1930's as a fiddler and a singer. That led to his first recording in 1934, about the time he began singing on WNOX and WROL in Knoxville. Three years later, he moved to Nashville to join WSM's

Grand Ole Opry, where he has been a regular ever since.


In 1942 he teamed with Fred Rose, a featured singer on WSM, to form Acuff-Rose Publications, one of the first and most successful country music publishing firms.

Williams, who died in August 1986, was a veteran radio announcer who for more than 30 years was host of "Make Believe Ballroom," a popular daily program on WNEW-AM, New York, NY. With the exception of three weeks at a New Jersey radio station that gave him his first job in broadcasting, he spent his entire 42-year career at WNEW. He was an advocate of melodic tunes of performers such as Frank Sinatra, Perry Como and Lena Horne. He counted these performers among his close friends, and gave Sinatra the nickname "Chairman of the Board."

The award was established in 1976 to recognize those individuals who have made significant contributions to the radio industry. It was expanded to include television at the August 1987 meeting of NAB's Executive Committee. The recipients will be inducted at the April 11 radio luncheon during the Association's annual convention April 9-12 at the Las Vegas Convention Center.

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The OPTIMOD AM is an integrated audio processing system for AM radio including compression, program equalizer. It supplies very high average modulation, exceptional fidelity and freedom from processing artifacts to yield FM like sound from typical radios.

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Model 9100A/2 (Cahn) 5,499.00
Model 9100A/2-C (C-Quam) 4,999.00

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NEW

AM PROTECTOR— ENHANCER



Features

- Meets NRSC recommendations
- Can be used with existing station's limiter
- Front panel, switchable audio pre-emphasis circuit
Built in 10 khz filter with attenuation consistent
- with NRSC specs
- 10 dbm head room
- Audio distortion less than 0.1%
- Switchable monitor de-emphasis circuit

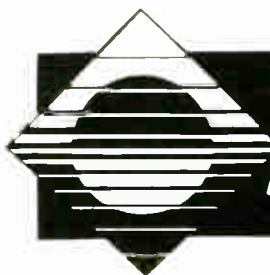
Uses

The "AM Protector-Enhancer" permits the AM broadcaster to conform with the voluntary recommendations of the National Radio Systems Committee (NRSC).

The connection of this device in the program line of the station will enhance the quality of the audio by introducing pre-emphasis to the transmitting system. The built in low pass filter will substantially reduce the interference to adjacent channels.

This unit, with the pre-emphasis switched in, can be used with the station's existing limiter. If stations prefer to have pre-emphasis in their processing equipment, the AM Protector can still be used, but the pre-emphasis can be turned off.

The equipment also contains a switchable de-emphasis circuit which can be utilized with the station's monitor for analyzing station performance.


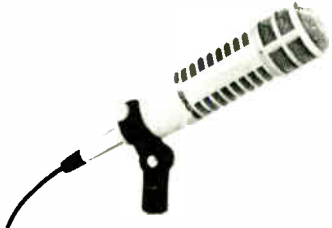



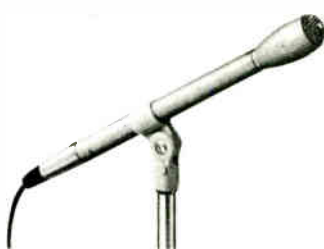





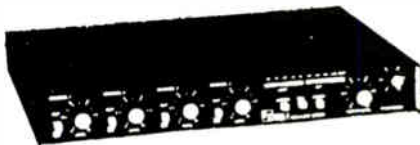


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 <p>CO15P Omnidirectional System</p> <p style="text-align: right;">\$219.00</p>	<p>CS15P Single-D Cardioid System</p> <p style="text-align: right;">\$190.00</p> 
 <p>658L CARDIOD DYNAMIC WITH SWITCH</p> <p style="text-align: right;">\$47.69</p>	<p>PROFESSIONAL MICROPHONE MIXER</p> <p style="text-align: right;">\$374.00</p>  <ul style="list-style-type: none"> <li style="display: inline-block; width: 45%;">• Features <li style="display: inline-block; width: 45%;">• AC/DC power <li style="display: inline-block; width: 45%;">• 4 mic or line inputs <li style="display: inline-block; width: 45%;">• Headphone amplifier <li style="display: inline-block; width: 45%;">• Phantom power <li style="display: inline-block; width: 45%;">• 1 khz tone oscillator <li style="display: inline-block; width: 45%;">• Peak Limiter <li style="display: inline-block; width: 45%;">• balanced inputs/outputs

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A short list of standard features includes... carrying case, built in rechargeable batteries and charger, clock, stopwatch/timer, V.U. meter, wide range audio inputs (will match almost anything), cue channel, phone line alarms, memory dialing (tone or pulse), low battery indicator, ring indicator, line loss indicator, headset level, null, cue buttons, notch filter, high low boost, frequency response: 20 to 20,000 hz ± 0.5 db, signal to noise: 86 db (line level input) 70 db (mic level input), distortion: 0.15% typical.

Radio Execs, Exec Committee... Fairness, New AM Band, Class A FMs

NAB Radio Executive Committee and full Executive Committee met in Washington last week to coincide with State Leadership Conference. Here are radio highlights of full committee...

--Instructed NAB staff to do all it can to urge FCC to speed up actions to correct abuses in comparative renewals and petitions-to-deny.

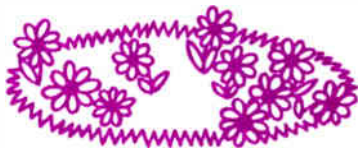
--Authorized spending about \$6,000 (already budgeted) to support FCC's position through NAB filings against court challenge to FCC's repeal of fairness doctrine.

--Approved \$10,000 in professional fees for Wallace Johnson of Moffett, Larson & Johnson (consulting engineers) to represent American broadcasters at spring meeting on new 1605-1705 kHz AM band, in Rio de Janeiro.

--Authorized spending \$75,000 (to be matched by RAB) for ad agency prep work on Radio Futures Committee's radio industry promotion campaign, for presentation to NAB and RAB Boards in June. (Remaining NAB share of \$225,000 is contingent on NAB/RAB Boards' approval of full project. Radio and Joint Boards will be asked to approve full NAB funding at June meeting.)

--NAB AM Improvement Committee met at call of Radio Exec Committee to discuss AM "enhancement," including technical and other factors, according to NAB Radio Board chairman Jerry R. Lyman, RKO Radio, NYC. Committee targeted elements of AM's challenge, including programming, promotion, marketing, owner/staff vision and dedication. Group's report to Radio Exec Committee will be used to help NAB Board focus Association's continued attention to reviving strength of AM band.

--Radio Execs met with New Jersey broadcasters and a rep of Class B broadcasters (Milford Smith of Greater Media) Tuesday to discuss proposal to double power of Class A FMs. Following later discussion, Radio Execs made no change in their previously announced industry compromise position in support of Class A power increases.



Hi-Tech Comes to 18 Wheelers, VIA AM Radio Nighttime Skywave

On March 1, 1988, WWL 870 and KRVN 880 joined forces to create the nation's first Super Station covering the entire Continental USA with the Dave Memo "Road Gang Show", from midnight to 5:00 am CST 7 days a week. Program material is fed through a C band SCPC audio channel to KRVN, Lexington, NE, from WWL's studios in the French Quarter of New Orleans, LA, via Galaxie II Satellite in synchronous orbit over the earth's equator at 74 degrees longitude. The audio signal, after its 45,000 mile trip, is digitally synchronized so it modulates each station's 50,000 watt transmitter in unison. Truckers traversing the Rocky or Sierra Nevada Mountains are able to pick-up either station's signal with minimum splatter and in-band interference from the other. If the receiver is turned between the two stations, normal sky-wave fading and selective fading is minimized with each station complementing the other. This "Super Station Effect" makes interstate road and weather conditions available to drivers in the Western Continental USA and Canada for best road and route planning. WWL has been providing this service to the Eastern and Central USA for the past 17 years.

FCC Considering Closer Look at Comparative Renewal

FCC Chairman Dennis Patrick told NAB State Leadership Conference attendees last week that Commission may be more inclined than in the past to closely examine and perhaps remedy current comparative renewal problems. FCC cannot substantially change or repeal current rules. However, it does have authority to alter process if it finds abuses and other problems arising from present system. FCC Mass Media Bureau Chief Alex Felker, appearing with Patrick, said maybe the time has come to look into comparative renewal questions, which broadcasters strongly oppose in its current guise. FCC was recently asked to fine-tune and correct comparative renewal process, through letter from Reps. Tom Tauke (R-IA) and Billy Tauzin (D-LA).

Freeze AM Grants While Devising New Policies to Reduce Interference on Band, NAB asks FCC

WASHINGTON, Feb. 2 -- The Federal Communications Commission should change its policies and technical standards for AM radio to reduce interference on the band, the National Association of Broadcasters said in comments filed with the Commission on Monday.

While those changes are being considered, the FCC should freeze all grants of new station and major change applications, NAB urged -- both in its filing and in a separate letter from NAB President and CEO Edward O. Fritts to FCC Chairman Dennis Patrick.

The Association said "The Commission's blind adherence to the goal of 'creating additional opportunities for new and improved service to the public' is based on fictional 'public benefits' where such 'opportunities' merely contribute to an interference environment to egregious that no new listeners and fewer pre-existent listeners are attracted to the band."

"The AM band as a whole has been degraded as the inevitable result of previous FCC allocations policies and decisions," the filing said. "We think that new policies are now appropriate."

Fritts wrote Patrick, "While we are on the path toward genuine AM improvement there seems to be no communications policy sense in putting new AM stations on the air, or making major changes to existing AM stations, under the same rules and policies that clearly have led to the current problems on the band."

NAB's filing asked the FCC "to decide, at every available opportunity, that the most important public benefit, at the present time, is reducing interference on the AM band as a whole and improving the quality of existing AM service."

The Association reiterated its proposal that the Commission incorporate in its rules the transmission portions of the National Radio Systems Committee Standard for AM broadcasting.

NAB serves a membership of more than 5,000 radio and 940 television stations, including all the major networks.

Gentner Restructures For Projected Growth

Salt Lake City, Utah -- Russell D. Gentner, President of Gentner Electronics Corporation, has announced a major restructuring of the corporation's management. The company, which formerly utilized a centralized marketing and sales department, has appointed Directors of Marketing and Sales for the three major market areas served by Gentner.

According to Mr. Gentner, "Our company is approaching its product marketing in a new way. Instead of a single sales manager and a single marketing manager attempting to cover all of our markets, we are concentrating specific people on specific markets."

Mr. Gentner states that the appointment of Product Managers is impractical at Gentner Electronics. "Our products span multiple markets," Mr. Gentner adds. "Product managers would be overburdened learning all of the markets appropriate for their product lines. Our new approach gives our managers the opportunity to become very specialized in one market area and to develop that market's potential to its fullest."

Personnel changes at Gentner include:

Elaine Jones, Director of Marketing and Sales, Sound and Teleconferencing. Mrs. Jones has been employed at Gentner for more than four years in the sales and marketing departments; she was most recently Marketing Manager. As the director of the Sound and Teleconferencing market, Mrs. Jones will oversee the development of a relatively new market area for Gentner. "Our company's products are well suited to the professional sound marketplace," says Mrs. Jones. "We are now positioned to concentrate on this challenging new market, and to develop its potential."

Gary W. Crowder, Director of Marketing and Sales, Broadcast Audio. Mr. Crowder has served as Sales Manager at Gentner for the past year; his previous experience in the broadcast market includes on-air, engineering, station management and station ownership. According to Mr. Crowder, "This new appointment allows me to concentrate on my specialty - audio equipment for broadcasters. With this narrowed focus, we can do the necessary research to bring even more exciting new products to this marketplace."

John E. Leonard, Jr., President of Gentner RF Products Division, will continue management of Marketing and Sales to the Broadcast RF market. Mr. Leonard plans development of several RF-related products in the near future. "Our VRC-1000 Remote Control Unit has been very successful," he says. "Our new RF products will follow the trend of the VRC-1000, combining digital and analog circuitry to provide innovative solutions for this marketplace."

Kelli Maag, formerly Marketing Assistant, has been appointed *Marketing Coordinator.* Mrs. Maag will oversee the development and release of the company's marketing programs, including trade advertising, direct mail campaigns, investor relations, co-op and convention exhibits.

Jennifer Jones, formerly Secretary/Receptionist, has been named *Marketing Assistant.*

Gentner is also in the process of hiring a Director of Operations to oversee the daily operations of the company including administration, office and engineering management. Mr. Gentner says, "This appointment will help to reduce my operational workload, allowing me to work more closely with our three market managers and marketing coordinator."

Gentner Electronics Corporation is a publicly held company; it is traded over-the-counter and is listed in "pink sheets."

Electronic Industries has been a Gentner dealer since Bud Tedley set-up the Broadcast Div. in 19??.

US/USSR Radio Call-In Available on Nationwide Basis in April

US/USSR Radio Call-In program --WORLD TALK --which premiered on 3 Stoner Broadcasting System stations in NY State last fall, is being made available to markets nationwide for two-hour live, uncensored feed on April 24, 10 a.m. to noon (EDT). Market-exclusive program is available on cash-free, barter basis with four :60 local sales positions, by The Broadcast Group, a radio production/syndication company based in Washington. Feed is to be transmitted via Satcom 1R. Call-in between citizens of both nations also will be aired in Soviet Union. At least two more call-ins are scheduled this year. For more info, call The Broadcast Group collect (202) 328-7111.

Soviet Radio Deputy Head to Participate in Las Vegas Convention

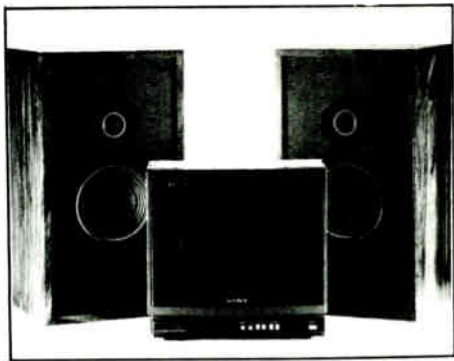
Soviet Gosteleradio Deputy Chairman Ivars Kezbers will join in special international session at NAB national convention in Las Vegas on Sunday, April 10 (2:45-4 pm). Gosteleradio encompasses internal Soviet radio operations and Radio Moscow. Fellow panelists include VOA's Richard Carlson, BBC's John Tusa and Christian Science Monitor Syndicate's David Morse. Panel moderator, NAB International Consultant Bill Haratunian, said session will focus on responsibilities of international broadcasting in pursuit of world peace and vital role global radio plays in promoting understanding among people of various nations.

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NAB Asks FCC to Prohibit Non-Licensed Radio Frequency Signals

NAB asked FCC last week to amend its rule to prohibit non-licensed radio frequency signals -- computers, home security systems, garage door openers, etc. -- from using broadcast bands allocated to radio and TV stations. Interference to signals by such household devices occurs frequently and NAB Regulatory Review Committee Chairman Ray Lockhart, KOGA-AM/FM, Ogallala, NE, said FCC's proposed remedies are not adequate: "What is needed is an outright prohibition in order to assure these devices do not cause interference." (FCC wants to provide more flexibility in design, manufacture and use of such devices, rather than simply banning their use in broadcast bands.) NAB favors 5-year grandfathering clause for manufacturers; FCC suggests 10 years.

Over 50% Of New TVs Will Have MTS In 1988!



MTS TV sales are skyrocketing.

Multichannel Television South (MTS), has opened the door to movie theater quality entertainment in the living room.

The consumer response? It's exploding! MTS made its market debut in 1984 with 750,000 unit sales. Last year 5,000,000 MTS televisions were sold—an increase of over 500% in three years. Brian Fenton, Editor of Radio-Electronics magazine, said, "MTS is the hottest thing to happen in television since color. Over 50% of the new televisions coming out in 1988 have MTS."

Broadcasters have quickly responded. All three commercial TV networks, the Public Broadcasting System and many local TV stations now feature stereo audio. EIA research estimates that: "more than 75% of American TV homes are within reach of a broadcast stereo audio signal, and the number of stations equipped to transmit in stereo is growing steadily."

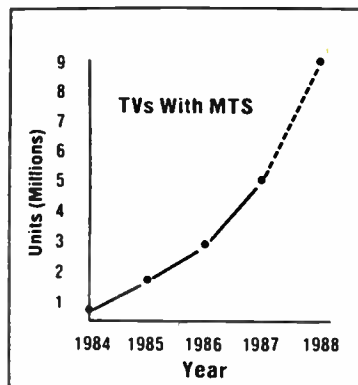
Another new channel being broadcasted in many areas is the Separate Audio Program or SAP. SAP is used for bilingual programming in areas with large ethnic populations. It is also used for broadcasting foreign films with both the original language and the dubbed in English version.

How does consumer demand for stereo sound and extra audio channels benefit the video service technician? Fenton says, "The opportunities are great as quality audio becomes more and more important to customers. But without a stereo analyzer I can't see how MTS

can be tested or how you can tell if the SAP program is present."

Proper test equipment and knowledge will enable the video technician to capitalize on this expanding market. Read on to find out about an MTS analyzer that not only generates MTS compatible RF, but also allows you to performance test, align and troubleshoot every circuit on the MTS board.

Remember: 50% of the television sets will have MTS capability in 1988. At the current growth rate, this number will approach 100% by 1990. Are you ready?



Why Pay
\$29.95
for RG 213
Jumper Cables?
Electronic
Industries Inc.
APRIL SPECIAL:
10 foot long jumpers
with male N connectors
on each end....
\$9.95 each
you can cut them up to
any other length

NRSC Standard Proves 'Poplar' in Bluff, Takes 'BOW in Terra Haute

NAB salutes these AM stations which have recently adopted the new NRSC Standard: KRSA, KCAM, Petersburg, AK; KINS, Eureka, CA; KSHO, Los Angeles; KJAY, Sacramento, CA; WTRE, Greensburg, IN; WORX, Madison, IN; WBOW, Terre Haute, IN; WVJS, WOMI, Owensboro, KY; WFPR, Hammond, LA; KJEF, Jennings, LA; KWOC, Poplar Bluff, MO; KWPN, West Point, NE; KROW, Reno, NV; WKIX, Raleigh, NC; WDXN, Clarksville, TN; KLTA, Corpus Christi, TX; KGBT, Harlingen, TX; WHIS, Bluefield, WV; WENG, Engelwood, FL; WTAX, Springfield, IL; WQHK, Ft. Wayne, IN; WEBB, Baltimore; WHYN, Springfield, MA; WCPC, Houston, MS; WGET, Gettysburg, PA; WSBA, York, PA; WUPR, Utuado, PR; WGH, Norfolk, VA; WYTI, Rocky Mounts, VA; KORD, Tricities, WA.

FM Boosters: NAB Says Apply RF Radiation Guidelines, Too

NAB fully supports FCC's proposals to apply RF radiation program to FM booster facilities. However, in FCC Comments filed last week, NAB asked Commission to allow FM broadcasters "several months notice" prior to any revised rule's effective date. While supporting RF radiation exposure standards for boosters, NAB does not believe FM translator stations should be treated similarly. (Boosters can achieve higher powers than before, while translators are still restricted to power outputs of either 1 watt or 10 watts.)

BUY 5 CARTS GET 2 FREE

Purchase any number of Fidelipac Mastercart II's in multiples of 10
For every five carts ordered, we will include two carts of the same length at no additional cost.

This special offer on in-stock cartridges only.

Ferrite Beads

A Ferrite Bead is a dowel-like device which has a center hole and is composed of ferromagnetic material. Ferrite beads are available in many sizes and several different ferrite materials. When a ferrite bead is placed on to a current carrying conductor it will act as an RF choke. It offers a simple, convenient, inexpensive but yet a very effective means of RF shielding, parasitic suppression and RF decoupling.

The most common noise generating suspects in high frequency circuits are power supply leads, ground leads and connections, and interstage connections. Adjacent leads and unshielded conductors can also provide a convenient path for the transfer of energy from one circuit to another. A few ferrite beads of the appropriate material placed onto these leads can greatly reduce or completely eliminate the problem. Best of all, they can be added to most any existing electronic circuit.

The amount of impedance is a function of both the material and the frequency, as well as the size of the bead. As the frequency increases, the permeability will decline causing the losses to rise to a peak. With a rise in frequency the bead will present a series resistance with very little reactance. Since reactance is low there is little chance of resonance which could destroy the attenuation effect. Impedance is directly proportional to the length of the bead, therefore impedance will be additive as each similar bead is slipped onto the conductor. Since the magnetic field is totally contained within, it does not matter if the beads are touching or separated. Ferrite beads do not have to be grounded and they cannot be detuned by external magnetic fields.

We recommend the #73 or the #77 ferrite bead material for the attenuation of RFI resulting from transmissions in the amateur band. The #43 material will provide best RFI attenuation from 30 to 400 MHz, and the #64 material is most effective above 400 MHz. The #75 material is recommended for RFI from 1 to 20 MHz, but can also be very effective at AM broadcast frequencies and even below.

Ferrite toroidal cores are also widely used for RFI and frequency attenuation. Not all bead materials are found in the toroidal core line. Whenever possible use the recommended bead material. If not available, substitute with a toroidal

core material having the closest permeability. The lower permeability materials will have the greatest effect on the higher frequencies and likewise, the higher permeability materials will have the greatest effect on the lower frequencies. Ferrite cores are usually much larger than ferrite beads and because of this they will accept many more wire turns. In many cases, where space will permit, this is an advantage since the impedance increases as to the number of turns squared.

The number of turns on a single hole Ferrite bead or a toroidal core is identified by the number of times the conductor passes through the center hole. To physically complete one turn it would be necessary to cause the wires to meet on the outside of the device, however the bead or core does not care about the termination of each end of the wire and considers each pass through the center hole as on turn. (This does not apply to multihole beads)

When winding a six-hole bead, the impedance depends upon the exact winding pattern. For instance, it can be wound clock-wise or counter clock-wise progressively from hole to hole, or criss-crossed from side to side, or each turn can be completed around the outside of the bead. Each type of winding will produce very different results. The impedance for the six-hole bead in our chart is based

on current industry standard, which is two and one half turns, going from one side to the other.

Fairly high currents can be tolerated before saturation begins to occur. If saturation does occur, impedance will drop to a very low level causing the bead to be ineffective as an RF attenuator. Once the cause of saturation has been removed, the bead will return to normal with no ill effects.

Temperature rise above the Curie point will also cause the bead to become non-magnetic, rendering it useless as a noise attenuating device. As soon as the cause of the temperature rise has been corrected, and the bead has been allowed to cool, normal operation will be regained and no damage will result. Depending on the material, Curie temperature can run anywhere from 120°C to 500°C. See 'Magnetic Properties' chart for specifics.

The #73 and #75 materials, as well as other very high permeability materials are semi-conductive and care should be taken not to position the cores or beads in such a manner that they would be able to short uninsulated leads together, or to ground. Other lower permeability materials with higher resistivity are non-conductive and this precaution is not necessary.

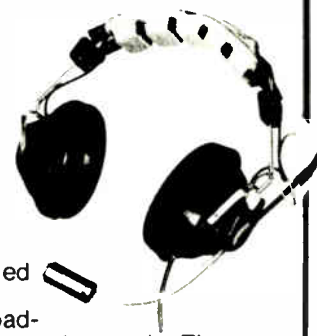
E.I. presents

TELEX
Headsets

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CS-91

This is a professional headset designed specifically for live remote broadcasting such as sports events. The dynamic boom microphone allows full freedom of head movement while the circumaural ear cushions screen out unwanted background noise. The omnidirectional pattern of the microphone enhances the "live" flavor of the broadcast. Audiometric type receivers resist shock and are stable in all kinds of weather. Complete with push-to-cough switch and clothing clip.



The Most Advanced Technology In FM Broadcast Transmitters

SOLID STATE CONTROL SYSTEM

"HUMAN ENGINEERED" Front panel LED lamps located on a graphically displayed "control ladder," permit the station engineer to understand, at a glance, the status of all major components of the system.

MANUAL OR AUTOMATIC CONTROL—The system permits independent manual selection of the controls (blower, filament, plate, driver). In the "automatic" mode, the simple application of the "start" switch will automatically trigger the sequential application of all switches.

CONTROLS NOT AFFECTED BY POWER OUTAGES OF SHORT DURATION—In the event that power is removed for thirty seconds or less and then restored, the transmitter control system will automatically and instantaneously restore itself to its "pre-over outage" condition. Thus, Energy-Onix transmitters do not have the field problem associated with older designs in which a momentary power outage will require physical reactivation of circuits and off air time while the filament time delays function.

FOUR CYCLE OVERLOAD RECYCLING WITH LOW POWER CUT-BACK—Energy-Onix transmitters provide its control system with d.c. levels from its plate supply, PA plate current, VSWR circuitry, and auxiliary sources. In the event that these levels exceed preset conditions, (a fault occurs), the system will remove plate voltage and RF drive from the transmitter. One second later, the voltage and drive will be restored. If the fault persists, the voltage will be removed and the process will be repeated for a total of four times. If, after four times the fault still exists, the system will "cut back" automatically to "low power" and will attempt four more times to keep the transmitter "on the air."

This system, in addition to protecting the transmitter and transmission

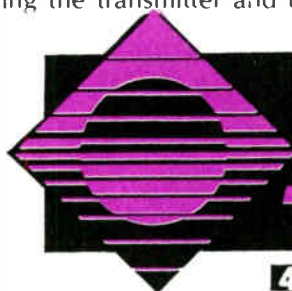
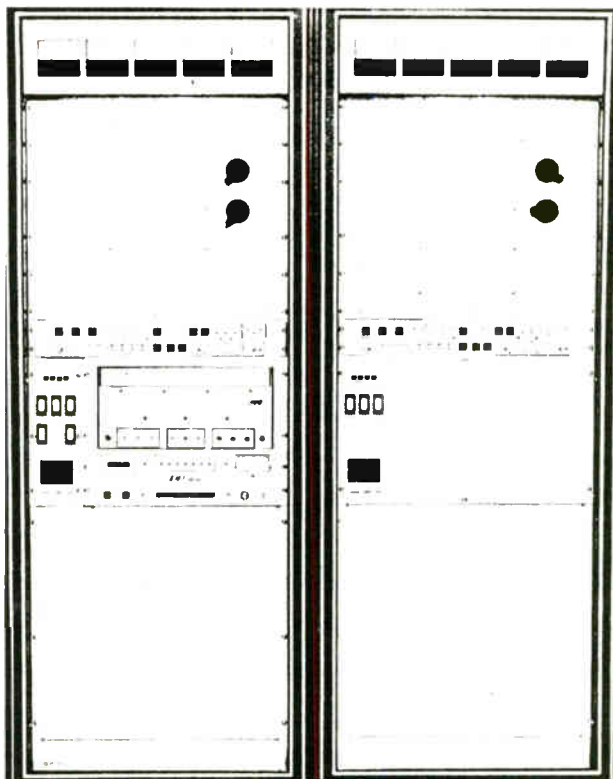
line, permits radio stations to automatically cut back their power, but maintain their "on air" status under unusual conditions such as antenna ice formation.

BUILT IN MATTERY & SET BACK FRONT PANEL CONTROLS FOR OVERLOAD & METER CALIBRATION—Older transmission designs require adjustments of overload circuitry under actual operating conditions—a condition in which it may be very difficult to simulate an overload condition. The Energy-Onix overload circuits and meters may be calibrated without the necessity of turning on the transmitter.

"OPTO" CIRCUITS ISOLATE REMOTE LINES—Energy-Onix transmitters are designed for both "local" and "remote" operation. Every con-

trol function of the control panel can be duplicated at the remote point. Opto isolators are used to interconnect the remote system to the transmitter. This optical approach assures isolation between the cabinet and the remote control system which, in many instances, may be connected to lightning sensitive telephone and/or power lines.

AUTOMATIC POWER OUTPUT CONTROL—The control system monitors the output power of the transmitter. If the power exceeds preset maximum or minimum limits, the system will automatically change the RF drive to achieve a 100% level.



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MEMO FROM METZ



by
David L. Metz

“Building A Cart Machine” Part III

This month we'll tie the whole thing together with the control circuits. I recall the original cart machine needed five relays to operate. Its present configuration uses only one!

This circuit is easy to remote control and interfaces directly with most anything. At present this cart machine plays 24 times a day as a unattended I.D. er on a VHF communications link. To date it has run for six months without a shut down.

I left the solenoid DC supply as it existed. All I needed to do its switch the 120 VAC going into it. Switching is done with a common 24 volt DC

four pole double throw relay. It seems every station has boxes of these things laying around. The transistors are general purpose NPN types.

As you can see in the circuit diagram, the controls are another classic Metz gutless wonder. Transistor Q1 does all the work. Pressing the start button puts a momentary 24 volts on its base.

This biases Q1 on allowing K1 the solenoid relay to close. The contact set “*” shuts off the STOP lamp, turns on the RUN lamp and provides bias to Q1's base via diode D1.

The current through D1 keeps Q1 biased on after your finger leaves the start button. Resistor R1 limits the base current. Shorting Q1's base to ground stops its conduction. K1 opens and the solenoid is released stopping the cart machine. Simple uh? Sort of a poor man's D flip flop.

Q2 is the stop inverter. A positive voltage from last months cue detector (point A') or from pressing the STOP button allows it to short Q1's base to ground.

Note that you have to add a lead from the RUN lamp (point B) to the

cue delay circuit of last month. And one from “A” in the cue detector to the base of Q2.

Power for the cart machine comes from the original unregulated 28 volt supply via two I.M340 three legged regulators. One I.M340 provides 24 volts for the lamps and relay. On 24 volts, 324 lamps last a long time. The other I.M340 supplies 12 volts for the audio and cue section.

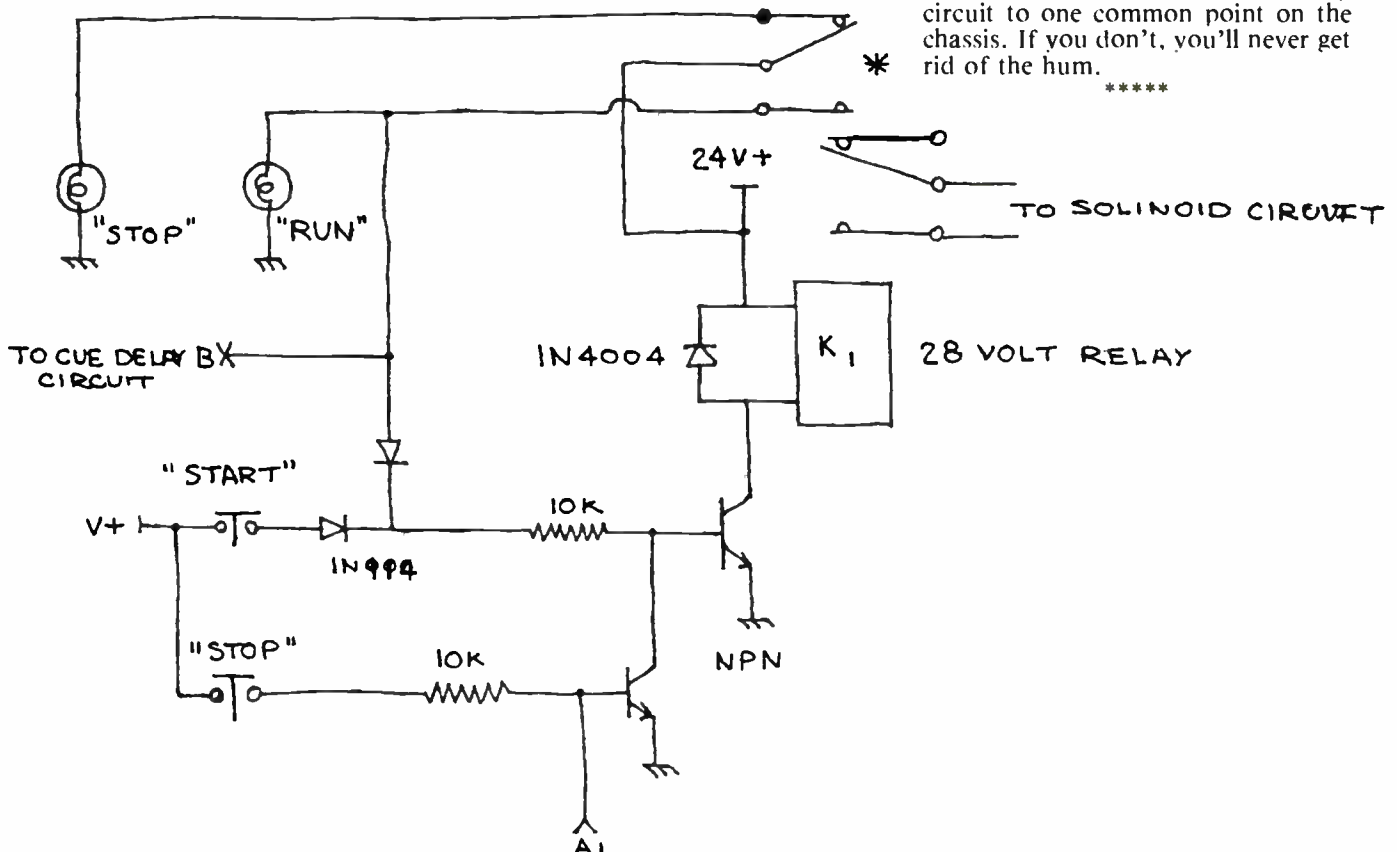
Liberal use of filter and bypass caps eliminate the possibility of any power supply problems. In my machine, I had to replace the original 1,000 MF filter cap with a 10,000 to get rid of all the glitches on the supply bus.

Don't forget to put a 1N4004 or better diode across the capstan solenoid winding to clip the back EMF generated when the magnetic field collapses. I had problems with my machine till I added this diode.

Another good idea is to use a solid state relay to switch the 120 VAC for the capstan motor. Operate the original cart sensor microswitch with 24 volt DC. This gets some more AC away from the heads, and keeps your fingers away from the high voltage when working on the machine.

And last, use single point grounding. Don't individually chassis ground anything in this machine! Run each and every ground for every circuit to one common point on the chassis. If you don't, you'll never get rid of the hum.

METZMEMO.32 CART MACHINE PART III



EI Classifieds

EI Classifieds are free to the readers of Common Point Magazine. To place an ad, simply write it on the Acknowledgement Card that comes with each issue and mail card.
WANTED TO SELL

FOR SALE: Collins 1 KW FM transmitter, stereo, \$4000. Perfect condition. 601-563-4664

FOR SALE: Harris model 6550 satellite receiver, excellent condition, programmable card. 319-754-6698, ask for Chip.

FOR SALE: Rohn 90' self-supporting three leg galvanized steel tower on the ground. All hardware included. 913-628-8451 after 2 pm CST.

FOR SALE: Sonomag automation system (list) unit was bought new and used for only 3 months. No problems, it was discontinued because of programming change. In great shape. 3 SMC-452 Sonomag stereo Bi-Dir carousel. Contact Dave Herring at 214-455-1400.

FOR SALE: SMC DP-1 AUTOMATION w/ or w/o carousels & R to R 4-250 Carousels, in service until Feb. 88, 6-8 Metrotech Reel Playbacks, 2-3 Otari ARS 1000 Playbacks, Various DP-1 bells and whistles, time announcer, etc. (one-owner system, 1979, maintained by f.t. engineer). CFTEC CENTURIAN II Studio Console, 12 channel board, 11 installed Stereo, 36 input, Pgm & Aud Stereo, Utility Mono Outs, 2 turntables --Ruscco, good shape, 2 Ampex 350's, one in service, other working when removed, 4 Matching Equipment Racks, 6 ft high, 2 older Equipment racks, various consumer cassette decks, r-r, etc., carts for re-loading, some good as is, inquire. SCIENTIFIC ATLANTA SATELLITE DISH & mounting hardware frame mount on concrete pad, various 2-year old Two-way and Marti antennas, inquire. 616-925-1111.

FOR SALE: 2-12C ORK TT's very good condition \$100.00 each, 1 Bel Air Remote Model Meter Panel, make offer, 1 Shure Mic, 1 level loc, new \$100.00, 1 4450A CBS Audimax, very good stereo \$350.00, 1 4110 CBS Volumax, very good stereo, \$400.00, 1 SI -P300 Technics C.D. needs work, make offer.

KMMJ IS LOOKING FOR A SUPPLIER FOR THE RCA MI 11865 Cartridges...Needle No. is MI 11866-7 Probably other stations are also looking. 308-382-2800.

LOOKING FOR ANYONE caught with a surplus of CBS 75 or 85 fideupac, or ampex lube' tape for loading carts at the perfect price. Any good leads?? Contact Common Point next issue.

FOR SALE: TFT remote control 7610, 7615 & 7630, tip-top shape, 30 channel capability. Tom Toenjes, St. Mary's, Kansas 913-437-6549.

WANTED TO BUY: Watt-Meter, prefer bird model 43; heath kit - model JM 4180 Fm deviation meter. B&K solid state 3050 audio signal generator 502-298-3268.

FOR SALE: 1-Harris model 6550, satellite receiver like new with programmable card (analogue) \$3500 OBO 319-754-6698 for info or write P.O. Box 946, Burlington, IA 52601.

EQUIPMENT FOR SALE: Two complete, well maintained, working, Shafer 902 1/2 automation systems. Two Schafer Audiofile 1, one Schafer Audiofile IIA, Numerous Revox A77 and JTC interface cards. One Schafer 902 remote control panel. Complete technical manuals and lots of spare parts. 1-CBS Audimax 4440A automatic limiter; 1-CBS Audimax 4450A automatic limiter; 1-CBS Volumax 4000A automatic peak limiter; 1-CBS Volumax 4110 automatic peak limiter; 1-Moseley SCG-3T Stereo Generator; 1-Moseley SCS-2 Status Control System 1-Teac AN-80 Dolby Encoder; 1-Fxtel AF11R Printer. All equipment is in good working condition, good physical condition and complete with technical manuals. Contact: Rob Yaw, North Montana Broadcasters, Inc., P.O. Box 7000, Havre, MT 59501. 406-265-7841.

FOR SALE: Moseley TRC-15AR Remote control system, excellent condition. Jampro 2 bay ISI P-2 on 92.1 MHz, excellent condition 602-748-1450.

FOR SALE: "Optimod - AM model 9000A -like new condition. Call Don Bybee, KDI X, (801) 673-1450 \$2200"

WANTED TO SELL: RCA Model 43 printer with 1571 weather writer board. Three years old & like new. \$750. call Lee at 314-785-9637.

FOR SALE: BC70 Cartridge w/3 styli brand new in box will sell for 1/2 sug. ret. call 318-375-3279.

E.I. Spotlights On NEW PRODUCT



SCA generator and demodulator

Marti Electronics has introduced the Model SCG-10 subcarrier generator and Model SCD-10 subcarrier demodulator.

Audio processing options allow selection of preemphasis of 0, 75, 150 or 225 μ s. Optional encode and decode boards can be plugged into the units for audio companding of the system.

The SCG-10 and SCD-10 have illuminated panel meters for use in initial setup and troubleshooting. Other features include automatic muting with adjustable level and delay on the generator.

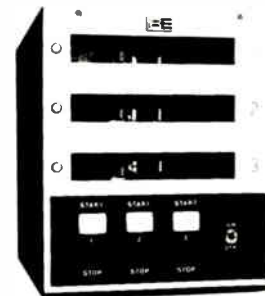
Signal operated squelch relay with auxiliary contacts on the demodulator is also featured.

Electronic Industries Inc.
19 E. Irving Street
Oshkosh, Wis. 54901

In Wisconsin Out-of-State
800-445-0222 800-558-0222

Model 5300B Three Deck

Looking for a heavy duty, three deck machine for A and B sized carts? Then check the 5300B! The 5300B is rugged, full featured cart machine. The advanced mechanical design employs an internal bulkhead for accurate deck and capstan positioning. Other features include removable upper decks, direct drive synchronous motor, reliable solid state solenoid switching, superb Phase Lok IV head brackets, FET muting, active cue tone filters, and rear panel LED service aids.



(A & B Size)

One Left! Special Price \$3150.00

It's 3:55 a.m. Do you know what your transmitter is doing?



Now your transmitter can alert you to problems by phone—anywhere, anytime with the VRC-1000 Remote Control. A preprogrammed, synthesized voice quotes parameters; you make adjustments right on your Touch Tone® phone. Or you can dial from any

where with complete remote control capabilities.

- VDT and printer options
- Full automatic commands
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- Automatic alarm reporting and correction.

Patent Pending

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