No.	Date	Item
1.	12/18/92	Memo re Nighttime Studies for AM Apps.
2.	12/10/92	FCC Proposes Adoption of the Motorola C-Quam as the Single AM Radio Stereophonic Transmitting Equipment Standard (ET Docket 92-298)
3.	12/9/92	AM Gets a Wakeup Call (AM STEREO)
4.	8/12/92	U.S. and Mexico Sign Major Bilateral Telecommunications Agreements in Mexico City
5.	7/28/92	Commission Issues Policy Statement on Upgrades for Daytime-Only AM Stations
6.	7/24/92	Radio TechCheck, AM Expanded Band Application and Allotment Process
7.	6/22/92	Broadcast Applications
8.	4/6/92	FCC Ends AM Application Freeze
9.	3/27/92	FCC Ends AM Application Freeze and Makes Effective New AM Rules

10.	3/25/92	EIA Interim Standard, Audio Bandwidth and Distortion Recommendations for AM Broadcast Receivers
11.	3/23/92	Memo re FCC Inspection Check List
12.	3/16/92	Kahm Communications Letter re AM data
13.	3/13/92	Memo re AM Groundwave--New Curves
14.	2/1992	Microwave News, OSHA Warning on RF Shocks and Burns near AM Transmitters
15.	1/14/92	FCC Letter re WEEU
16.	1/10/92	EDX Engineering transmittal letter
17.	1/1992	Canada Rejects "Second-Best" Option
18.	1/1992	CKTS Ceases Operation

OFFICE MEMORANDUM

MEMO TO: All Engineers

FROM: Kent Dorsey

RE: Nighttime Studies for AM Applications

DATE: December 18, 1992

Please be aware of all RSS calculations on AM nighttime studies. See attached deficiency letter for WHJB application.

Attachment

FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

29 JUN 1992

In Reply Refer to:
8910-EAL

Mr. Melvin A. Goldberg
WHJB Corporation
245 Brown Street
Greensburg, Pennsylvania 15601

In re: WHJB Corporation
WHJB, Greensburg, Pennsylvania
BP-920501AB

Dear Mr. Goldberg:

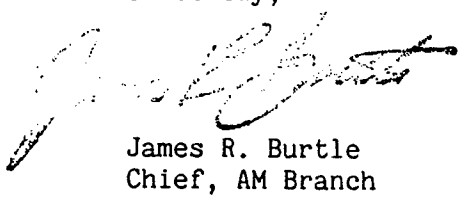
This refers to your above-captioned minor change application for an AM station construction permit.

A preliminary engineering study of the application reveals that the proposed operation would raise the site-to-site RSS nighttime limitations based on the 25% exclusion method of stations WTMT, Louisville, Kentucky, and WRJZ, Knoxville, Tennessee, in violation of Section 73.182 of the Commission's Rules. Specifically, station WTMT has its 25% RSS raised from 8.45 mV/m to 8.55 mV/m and station WRJZ has its 25% RSS raised from 6.97 mV/m to 7.22 mV/m. In addition, staff calculations indicate that WHJB's proposed nighttime interference free (NIF) contour to be 14.49 mV/m comprised of 10.4 mV/m from WRJZ, 7.7 mV/m from WTMJ, and 6.50 mV/m from WSKQ (BP-920408AC). Therefore, you must resubmit the nighttime city coverage exhibits based on the NIF of 14.49 mV/m, and the percentage of area covered by the 14.49 mV/m contour.

Further action on your application will be withheld for thirty (30) days from the date of this letter in order to afford you an opportunity to submit responsive information to the Secretary of the Commission in proper amendment form. It should be noted that these above deficiencies were discerned after a preliminary study of the application. A detailed review was not made of the

entire application to determine other deficiencies which could result in a subsequent dismissal of the application. Failure to amend will result in the dismissal of your application.

Sincerely,



James R. Burtle
Chief, AM Branch
Audio Services Division
Mass Media Bureau

cc
Clarence M. Beverage
Susan A. Marshall

AM STEREO 2

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30933

Report No. DC-2291 ACTION IN DOCKET CASE December 10, 1992

FCC PROPOSES ADOPTION OF THE MOTOROLA C-QUAM AS THE SINGLE AM RADIO STEREOPHONIC TRANSMITTING EQUIPMENT STANDARD (ET DOCKET NO. 92-298)

In accordance with the Telecommunications Authorization Act of 1992, the FCC has proposed to adopt the Motorola C-Quam system as the single AM broadcasting stereo transmission standard.

The Act directed the Commission to initiate a proceeding to adopt a single AM radio stereophonic transmitting equipment standard that specifies the composition of the transmitted stereophonic signal and within one year, adopt such a standard.

In 1982, the FCC authorized AM stations to offer stereo service. However, the Commission declined to select a single system standard from among five competing AM stereo technical systems. Rather, the Commission concluded that it would be more effective and efficient to allow market forces to determine the course of AM stereo development. After a period of time, the field narrowed to two systems, Motorola's C-Quam system and the Kahn Communications, Inc./Hazeltine Corporation (the Kahn system).

About 660 AM broadcast stations have converted to AM stereo out of approximately 5,000 AM stations. Of the AM stations that have converted to AM stereo, approximately 90 percent use the Motorola C-Quam system. There are approximately 24 million Motorola C-Quam receivers currently in use by radio listeners, and the Motorola system has been adopted as the national standard in six foreign countries: Canada, Mexico, Australia, Brazil, South Africa, and Japan. The Commission believes therefore that the public interest would be best served by adopting the Motorola C-Quam system as the U.S. AM stereo standard.

The Commission would incorporate the Motorola C-Quam standard into its rules and require stations employing alternative AM stereo systems, such as the Kahn system and the Harris Corporation C-Quam compatible system, to discontinue using them as of one year from the effective date of the rules. Any stations converting to AM stereo after the effective date of the rules will be required to employ the system adopted by the Commission.

Consistent with its general policies towards improvement of the AM broadcasting service, the Commission will continue to encourage the availability of AM receivers, including AM stereo receivers that meet appropriate quality standards. The Commission proposed to condition the selection of the Motorola system as the AM stereo standard by requiring Motorola to license its patents to other parties under fair and reasonable terms.

Comments are due April 5, replies April 20, 1993.

(over)

Action by the Commission December 10, 1992, by Notice of Proposed Rulemaking (FCC 92-546). Chairman Sikes, Commissioners Quello, Marshall, Barrett, and Duggan.

-FCC-

News Media contact: Patricia A. Chew at (202) 632-5050.
Office of Engineering and Technology contact: David L. Means at (301) 725-1585, ext. 206.

The Washington Post

3

BUSINESS

DIGEST

DOW UP 14.85
DETAILS ON PAGE 2

DOLLAR
VS. JAPANESE YEN (N.Y.)
123.75 YEN
UNCHANGED
VS. GERMAN MARK (N.Y.)
1.5562 MARK
– 0.0001 MARK

GOLD
COMEX SPOT
$335.40 PER OUNCE
– $0.70

BONDS
30-YEAR TREASURIES
7.43% YIELD
– 0.02

CRUDE OIL
NYMEX CURRENT CONTRACT
$18.84 PER BARREL
– $0.34

Ames Department Stores fired chairman and chief executive Stephen L. Pistner and reported a $91.4 million third-quarter loss, compared with a $196.3 million loss a year earlier. A newly created three-member committee will oversee the company's operations.

Equitable Federal Savings Bank, a Wheaton-based thrift with six branches, will be acquired by Federal Trust, an Orlando, Fla.-based bank holding company. The deal will enable Equitable to meet federal standards for capital, the financial cushion that protects banks against losses. Equitable will convert to a stock company.

Purchasing executives at U.S. companies are more optimistic about prospects for the economy than they have been in nine years, according

AM Gets A Wakeup Call

FCC to Mandate Single Standard For Stereo Sound

By John Burgess
Washington Post Staff Writer

Left behind when the rest of the audio industry moved to the dual richness of stereo sound decades ago, venerable AM radio is about to get a new chance to close the gap.

Tomorrow, the Federal Communications Commission will take action intended to set the stage for wholesale conversion to stereo sound at the country's 4,900 AM stations.

To receive sound as two channels, radio listeners need AM radios that are stereo-capable. Though each channel retains the characteristic tinny texture of AM sound, many people say that hearing it in stereo makes it *seem* better.

"There is a depth—it pops out at you," said Barry Umansky, deputy general counsel of the National Association of Broadcasters.

Commercial broadcasting in the United States was pioneered on AM radio, but it is has long been under siege from smoother-sounding FM. About half the nation's AM stations reported losing money last year; some have simply gone off the air.

Although AM badly needs a pick-me-up, some in the industry believe stereo is too late to help. Many stations are now looking beyond it to an all-new approach—digital radio, in which programming would cross the air as pulses representing the ones and zeroes of computer language and produce compact disc-quality sound.

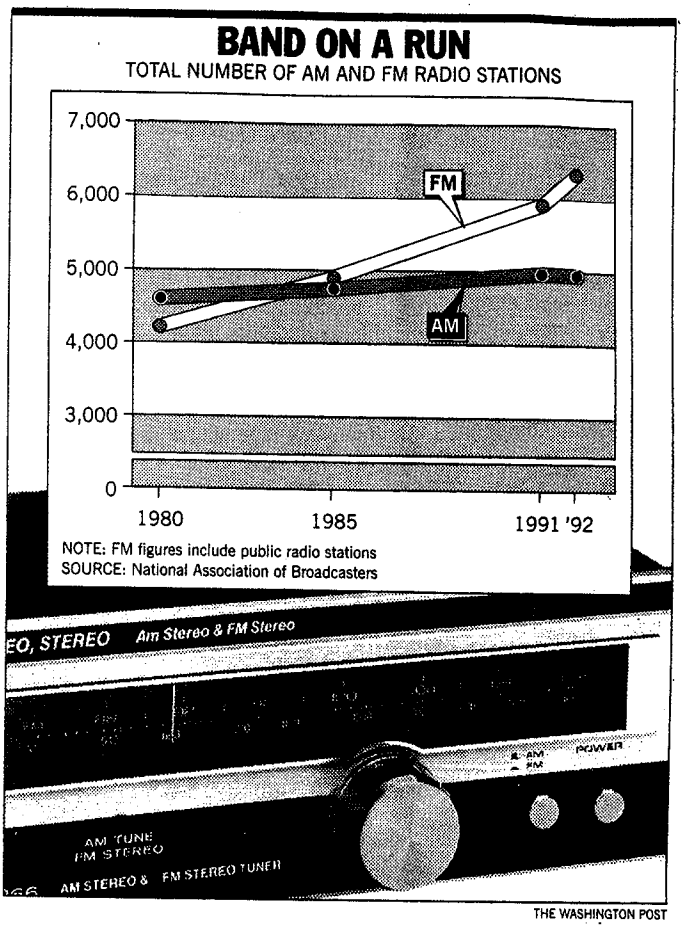
With many in the industry thinking that digital radio might arrive in the mid-1990s, said Gary Shapiro, group vice president at the Electronics Industry Association, "the question is whether broadcasters will invest in upgrading their AM."

AM stereo was supposed to come on big a decade ago. Many in the industry say that the FCC is the main reason it didn't.

What the commission will do tomorrow is begin to undo a decision it made in 1982. At that time, reflecting the Reagan administration's faith in market forces, the commission broke with established policy and declined to mandate a single basic design, or standard, that all AM stereo technology would have to follow.

Rather, the commission opted to let five rival designs battle it out

See RADIO, F3, Col. 1



THE WASHINGTON POST

Area Economy Stalled, Future Prospects Dir

funds will be the primary investment vehicles chosen by savers. Moreover, this trend is expected to last a while because the last of the baby boomers—born in 1964—will not reach 50 until the year 2014.

■ **The search for yield.** The steady decline of interest rates has sent millions of investors and billions of dollars searching for higher yields than can be found in bank certificates of deposit or in savings accounts. Mutual funds have been able to provide higher returns—although they do not come with the federal insurance found at banks.

products to keep depositors' money "in-house."

■ **On-the-job savings.** As corporate pensions change from "defined benefit" plans, where the employer makes the investment decisions, to "defined contribution" plans, where employees make the decisions, employees must be given more investment choices and information, to meet new federal guidelines. Mutual funds are expected to be big players in this business, meaning that their income from servicing fees could increase dramatically in the future.

owned. Only a small number of [illegible] on stock exchanges.

For some years, mutual fund company as well as the Standard & Poor's 500-sto spring of 1991, these stocks suddenly bro the pack and soared to record highs, acco which tracks the performance of 10 mutu management company stocks.

For the five years from September 19 1992, the mutual fund companies in the I

FCC to Help AM Ride The Stereo Bandwagon

RADIO, From F1

in the marketplace. The logic was that consumers, rather than bureaucrats, should decide which was the jewel.

Ten years later, one of the systems—developed by radio and semiconductor giant Motorola Inc.—has largely driven the others out, as predicted. But only about 15 percent of AM stations broadcast in stereo. Only a tiny fraction of the nation's 500 million-plus radios, primarily ones in new-model automobiles, can receive AM in stereo.

Many in the industry say stations delayed installing stereo equipment out of concern they would have to do it all over again if they chose a system that lost out. In the same way, radio makers held back on converting production lines. As for consumers, most have never even heard of AM stereo.

"If the FCC said, 'This is the system' . . . everyone would have lined up behind it," said Tom Shedlick, chief engineer at local station WMZQ-AM (1390), which made the shift to stereo in 1984. He said he believes it has had little effect on its listeners.

The cost of converting—it can cost a station $25,000—and limits to the technology's appeal also are cited as reasons for the slow changeover. Still, AM stereo's fans hope that with an official standard in place, the last uncertainty will vanish and the market will at last take off.

The FCC is taking its action tomorrow under orders from Congress, which broadcasters had lobbied.

But some commission officials say they goofed in 1982. So when the agency began thinking several years ago about how the new video technology known as high-definition television would come to Americans, it quickly dispensed with the laissez-faire approach. It began an exhaustive technical evaluation of five systems and hopes to name one the winner by the end of 1993.

"There's nothing like the experience of a marketplace to sober one up."

—Tom Stanley, FCC chief engineer

"There's nothing like the experience of a marketplace to sober one up," said Tom Stanley, the FCC's chief engineer.

Many AM stations have in recent years moved to all-talk formats. But one music that continued to thrive on AM was Big Band: Many people who grew up with that kind of music in the 1930s and '40s say it sounds authentic only on AM.

But even if stereo makes AM more music-friendly, noted WMZQ's Shedlick, it won't address other problems, such as static. "It doesn't get rid of what happens when there's a lightning strike or you pass under a high-tension line," said Shedlick.

For that, the industry is putting hopes on a separate reception technology called AMax, which is starting to be incorporated into radios. Proponents claim it makes AM's sound virtually indistinguishable from FM's. "It's Coke and Pepsi," said Umansky.

Other help is coming from the FCC, which has expanded the AM band from the current 535-1605 kiloherz up to 1705 kiloherz in an attempt to give stations more breathing room and reduce interference. Starting next year, stations are to begin "homesteading" the new space. Expanded-band receivers are already on sale.

Though the 1982 decision on AM stereo is widely reviled in the industry, its chief architect stands by it. Mark Fowler, who was FCC chairman at the time, said that the competing systems were very similar in technical quality. Deciding on one would have opened up the commission to endless appeals and lawsuits.

Letting the market decide also took it out of the hands of "high-paid lobbyists" who were being fielded by the companies that created the systems, according to Fowler.

The trouble with standards, he said, is that they tend to lock an industry into one technology even though something better might be just around the corner. "The decision could be made before the new technology is generally known," Fowler said. The same holds true for HDTV—the FCC is making a mistake by trying to outguess the market, he said.

D.C. Downtow

8-Year-Old Booster Gr

By Kara Swisher
Washington Post Staff Writer

The board of directors of the D.C. Downtown Partnership voted yesterday to disband after eight years as a public-private organization founded to guide downtown development.

Sources said the group has lost members, and dues, owing to the soft economy. Members, who now number about 40, provided about 60 percent of the partnership's $225,000 budget, while the rest came from the District government.

The partnership is a nonprofit alliance of business, government and civic officials designed to bring disparate forces together for the greater good of downtown Washington.

Marietta Taps A Top Army Official

By John Mintz
Washington Post Staff Writer

Bethesda-based Martin Marietta Corp. said yesterday it is hiring Stephen K. Conver, the Army's top procurement official, as vice president for systems integration next month.

he will help the company in its merger with GE Aerospace.

Conver, well-respected in the industry for his knowledge and judgment, was minority staff director of the House Armed Services Committee for five years before becoming Army assistant secretary for research, development and acquisition in 1990.

He has been criticized by some defense contractors who say he has favored Martin Marietta in some contract disputes, in particular a recent decision to have that company build its $480 million Hellfire II antitank missile rather than endorse Rockwell

Economy Of D.C. Area Gets Weaker

LOCAL ECONOMY, From F1

cent—and all four components showed declines.

The biggest fall was in spending on durable goods such as automobiles and appliances, while smaller

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24390

August 12, 1992

U.S. AND MEXICO SIGN MAJOR BILATERAL TELECOMMUNICATIONS AGREEMENTS IN MEXICO CITY

Federal Communications Commission (FCC) Chairman Alfred C. Sikes and Mr. Andres Caso Lombardo, Mexican Minister of Communications and Transport signed 10 major bilateral telecommunications agreements August 11, 1992 outside Mexico City, Mexico.

The agreements were signed at the third annual meeting of the U.S. - Mexico Consultative Group on Communications which was held August 7-12, 1992. This was the first time Minister Caso Lombardo attended the meeting. Chairman Sikes signed similar agreements in 1991 at the second meeting, in Chestertown, MD.

Sikes hailed the agreements saying, "These agreements will allow for improved radio service in the AM and FM bands along the border, and facilitate advanced mobile communications services such as cellular, paging, land mobile, and wireless cable. These agreements are in harmony with the North American Free Trade Agreement (NAFTA) as they make substantive progress toward compatibility and complementary usage of communication media between the U.S. and Mexico, clearly important to facilitating trade."

Specifically, the parties agreed to:

(1) An allotment plan and technical procedures for implementation of additional channels at the upper end of the current AM broadcasting band. AM

(2) Replacement of the 1972 agreement on FM broadcasting to take into account new technology and provide for low power stations and short spaced stations that provide equivalent protection. FM

(3) The introduction of MMDS (wireless cable systems) within 80 km (48 miles) of the border and a list of coordinated stations along the border in eight cities. MMDS

(4) The introduction of narrowband (5 kHz) spectrum-efficient mobile radio systems. This band could be used for nationwide tracking of packages and the Department of Transportation's (DOT) Intelligent Vehicle Highway System.

(5) A Memorandum of Understanding to use the bands 896-901 and 935-940 MHz for specialized land mobile systems (SMRs).

(over)

(6) An exchange of letters on the adoption of procedures to allow users of cellular radios to roam back and forth across the border and receive service from U.S. and Mexican cellular systems.

(7) A Notice of Intent to formalize a Memorandum of Understanding signed by U.S. and Mexican delegations at the World Administrative Radio Conference (WARC 1992) on the sharing of the 17.7-17.8 GHz band by the fixed services and the broadcasting-satellite service.

(8) A Notice of Intent to sign at the upcoming meeting of the Bi-National Commission, a Memorandum of Understanding on the allocation of additional spectrum for cellular radio systems.

(9) A Memorandum of Understanding on the allocation of additional spectrum for cellular radio systems outside the frequency bands covered by the 1982 agreement.

(10) Establish a preliminary understanding on the use of additional spectrum for common carrier paging systems and identification of channels for use by Mexico.

The AM and FM treaties will expand service in these bands, and will allow the FCC to fully license stations along the border in accordance with FCC priorities.

The agreements will also allow users of cellular telephones to roam on either side of the border. This cross border traffic will be permitted through compatible channels in the U.S. and Mexico.

Ambassador Bradley P. Holmes, Director and Coordinator, Bureau of Communications and Information Policy of the Department of State co-chaired the bilateral discussions that preceded the signing, together with Walda Roseman, Director, FCC Office of International Communications for the U.S. and Undersecretary Carlos Mier y Teran, for the Mexican Secretariat of Communication (SCT). Other FCC officials participating include Roy Stewart, Chief, Mass Media Bureau; Ralph Haller, Chief, Private Radio Bureau; Wendell Harris, Assistant Bureau Chief, International, Common Carrier Bureau; and Larry Olson, Chief, International Branch, Mass Media Bureau.

-FCC-

News Media contact: Anthony Pasquarelli at (202) 632-5050.
Office of International Communications contact: Rudolfo Lujan Baca, Esq. at (202) 632-0935.

AM

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24131

Report No. MM-630 MASS MEDIA ACTION July 28, 1992

COMMISSION ISSUES POLICY STATEMENT ON UPGRADES FOR DAYTIME-ONLY AM STATIONS

The Commission has established a policy for reviewing applications for qualified AM daytime only stations wishing to upgrade to provide full-time service. Qualified applications will now be handled on an ad hoc basis.

On December 20, 1991, the Communications Act was amended to establish a new policy regarding AM radio stations. The statute directs the Commission to ensure that the licensee of an AM daytime-only station in a community of more than 100,000, that lacks a local full-time aural station licensed to that community, and that is located within a Class I station primary service area, be given the opportunity to provide full time service to that community. There are fewer than ten licensees now qualified under the provisions of the new statute.

Upon notification in writing by a qualified licensee, the Commission's Mass Media Bureau will work to determine how best to provide such service. The Bureau will consider the following possibilities: An upgrade to full-time service on the licensee's current channel; an upgrade on an adjacent channel (that is, within three channels of the existing channel); or an upgrade on any other AM channel including the then new channels recently added to the AM band.

The Commission believes that this process will enable it to entertain proposals from qualified licensees, to evaluate those proposals in light of statutory requirements and to consider, where appropriate, feasible alternatives.

Under the new guidelines, once appropriate solutions have been identified, licensees will be offered the opportunity to file an application to make the necessary modifications to their existing operations. This application will not be subject to competing or mutually exclusive applications, but must otherwise conform to the established rules and regulations governing the AM broadcast service.

Action by the Commission July 23, 1992, by Policy Statement (FCC 92-344). Chairman Sikes, Commissioners Quello, Marshall, Barrett, and Duggan.

-FCC-

News Media contact: Anthony Pasquarelli at (202) 632-5050.
Mass Media Bureau contact: Tom Albers at (202) 254-3394.

PLEASE FORWARD TO THE ENGINEERING DEPARTMENT

NAB BROADCASTERS

Radio TechCheck

The weekly newsfax for RADIO broadcast engineers — *July 27, 1992*

AM EXPANDED BAND APPLICATION AND ALLOTMENT PROCESS

On July 23, the FCC released details of the AM expanded band (1605-1705 kHz) application and allotment process. FCC staff work on various petitions for reconsideration in this proceeding is now complete and is awaiting final Commission approval. After final approval (in the next couple of months), the application and allotment process for the AM expanded band should proceed as follows:

1. Issuance of an FCC Public Notice announcing the opening of a filing window in 30 days.

2. Opening of a 14 day filing window for applicants. Applicants may file informally with no application fee.

3. Entering applicant data into the FCC database upon closing the filing window. Process will take 7 to 10 days.

4. Issuance of an FCC Public Notice announcing the applicants.

5. The ranking process begins to calculate improvement factors and rank stations as to the amount of interference they create to the AM band. (Process about 30 days.)

6. Issuance of an FCC Public Notice announcing and listing the station ranking, followed by a short period of time for comments.

7. Calculation of allotments which is expected to take 60 to 90 days. The process is completely computerized with no human intervention.

8. Issuance of an FCC Public Notice announcing the plan followed by a 30 day comment period.

9. Approval. Stations will have 60 days to complete FCC Form 301. There will be a filing fee associated with this filing. Applicants will then probably go to a "B" cutoff list whereby parties could file petitions to deny, but no competing applications will be accepted.

10. Another window filing period will be established for all unused allotments.

The expanded band allotment process is based upon a station power of 10 kilowatts day and 1 kilowatt night. Omni-directional antennas will be assumed. In some cases, primarily near coastal areas or in close proximity to foreign borders, simple directional arrays may be proposed by the applicant. Foreign agreements are being finalized to allocate specific frequencies to areas near foreign borders (i.e. Phoenix may be alloted one specific frequency). Minimum transmitter spacings in the expanded band will be as follows:

Co-channel	800 km
1st adjacent	200 km
2nd adjacent	53 km

The FCC allotment will consist of a frequency, a set of transmitter site coordinates, and a 20 km box within which the site may be located.

Successful expanded band applicants will be required to simulcast on their original frequency and new frequency for at least a five year period. Those applicants committing to AM Stereo operation in the expanded band will be looked upon favorably. For those interested, the computer software that the FCC will use for the ranking process will be available to the public when the opening of the filing window is announced. FCC computerized MS conductivity data will be used as will the skywave algorithm established in MM Docket No. 88-508.

For further information contact John Marino at NAB (202) 429-5391 or Jim Bartle at the FCC (202) 254-9570.

Jane Frock, Editor (202) 429-5418 FAX: (202) 775-4981

AM

AM BROADCAST STATION APPLICATIONS FOR DIRECT MEASUREMENT OF ANTENNA POWER ACCEPTED FOR FILING

KS BZ	-920615AA	KBUF 1030KHZ	KBUF PARTNERSHIP HOLCOMB , KS	DM
MN BZ	-920615AB	KDHL 920KHZ	RADIO INGSTAD MINNESOTA, INC. FARIBAULT , MN	DM
MN BZ	-920615AC	KLIZ 1380KHZ	SIOUX VALLEY BROADCASTING, INC. BRAINERD , MN	DM
VA BZ	-920610AA	WHAP 1340KHZ	CONNON COMMUNICATIONS CORPORATION HOPEWELL , VA	DM

AM BROADCAST STATION APPLICATIONS PERMIT CANCELLED

AK BP	-840604AB	DKAJD 950KHZ	DENALI BROADCASTING COMPANY INC. JUNEAU , AK	CP FOR NEW AM ON: FREQUENCY: 950KHZ; PWR: 5KW, 500W; HRS OF OPER: UNL; TL: 1.5 MI SE OF STATE CAPITOL JUNEAU, AK SL&RC: TO BE DETERMINED, JUNEAU, AK 58 17 12 134 23 23
AK BP	-840702AG	DKOBG 1360KHZ	VALLEY BROADCASTING CO.,INC. WASILLA , AK	CP FOR NEW AM ON: FREQUENCY: 1360KHZ; PWR: 5KW; HRS OF OPER: UNL; TL: S 1/4 NE 1/4 SEC 22 - T18N - R1 WEST SEWARD MERIDIAN, WASILLA, AK; SL&RC: TO BE DETER WASILLA, AK 61 38 5 149 26 01
AL BP	-831031AF	DWAFK 760KHZ	ALABAMA BROADCASTERS SPANISH FORT , AL	CP FOR NEW AM ON: FREQUENCY: 760KHZ; PWR: 1KW/ 5KW; DA-2; HRS OF OPER: UNL; TL: US HWY 31, 98, 90 SPANISH FORT, AL; SL&RC: TO BE DETERMINED, SPANISH FORT, AL 30 40 22 87 55 49 MAJOR ENVIRONMENTAL ACTION UNDER SECTION 1.1305
AL BP	-831130AC	DWBSH 1020KHZ	BROADCAST SERVICES HEFLIN , AL	CP FOR NEW AM ON: FREQUENCY: 1020KHZ; PWR: 500W; HRS OF OPER DAY; TL: OXFORD STREET EXTENDED, HEFLIN, AL; SL&RC: TO BE DETERMINED, HEFLIN, AL 33 38 39 85 36 10
CA BP	-860627AD	DKVGR 720KHZ	GARRY & VIRGINIA INFANTE BRILL TEMPLETON , CA	CP FOR NEW AM ON: FREQUENCY: 720KHZ; PWR: 1KW, 250W, DA-2; HRS OF OPER: UNL; TL:0.5 MI SE OF TEMPLETON, TEMPLETON, CA SL&RC: TO BE DETERMINED TEMPLETON, CA 35 32 31 120 41 56 MAJOR ENVIRONMENTAL ACTION UNDER SECTION 1.1305

-O V E R -

AM. 6/22/92

AM BROADCAST STATION APPLICATIONS PERMIT CANCELLED

CO BP	-850729AH	DKCBB 890KHZ	COLORADO BROADCASTERS, INC. STRATMOOR , CO	CP FOR NEW AM ON: FREQUENCY: 890KHZ; PWR: 1KW, 10KW, DA-2 HRS OF OPER: UNL; TL: SQUIRREL CREEK ROAD CIMARRON HILLS, CO SL &RC: TO BE DETERMINED CIMARRON HILLS, CO 38 41 39 104 28 34 MAJOR ENVIRONMENTAL ACTION UNDER SECTION 1.1305
CT BP	-881128AI	DWSAG 870KHZ	THOMAS KRON POQUONOCK , CT	CP FOR NEW AM ON FREQ: 870KHZ; PWR: 410WATTS/1000WATTS; DA-2; HRS OF OPER: UNLTD; TL: 185 WEST NEWBERRY, BLOOMFIELD, CT; SL/RC TO BE DETERMINED POQUONOCK, CT 41 52 01 72 43 52
DE BP	-860904AH	DWMPP 1170KHZ	GWENDOLYN GLADYS EVANS LAUREL , DE	CP FOR NEW AM ON: FREQUENCY: 1170KHZ; PWR: 5KW, DA-D; HRS OF OPER: DAY; TL: COUNTY ROAD 525, CANNON, DE; SL&RC: TO BE DETERMINED CANNON, DE 38 41 8 75 33 4 MAJOR ENVIRONMENTAL ACTION UNDER SECTION 1.1305
FL BP	-850531AO	DWTWF 1160KHZ	TALLAHASSEE RADIO, INC. WOODVILLE , FL	CP FOR NEW AM ON: FREQUENCY: 1160KHZ; PWR: 250W, 5KW, DA-N; HRS OF OPER: UNL; TL: 1/4 MI E OF HWY 363 WOODVILLE, FL; SL&RC: TO BE DETERMINED WOODVILLE, FL 30 17 21 84 14 12 MAJOR ENVIRONMENTAL ACTION UNDER SECTION 1.1305
FL BP	-861224AC	DWBND 1570KHZ	PENSACOLA BAY BROADCASTING COMPANY PENSACOLA BEACH , FL	CP FOR NEW AM ON: FREQUENCY: 1570KHZ; PWR: 5KW, 500W, DA-2 HRS OF OPER: UNL; TL: AT N-W CORNER OF JUNCT OF PORPOISE & GARCON POINT RDS, GARCON POINT, FL; SL&RC: TO BE DETER GARCON POINT, FL 30 27 51 87 05 26 MAJOR ENVIRONMENTAL ACTION UNDER SECTION 1.1305
GA BP	-820811AN	DWREE 890KHZ	ATLANTA RADIO II, INC. COLLEGE PARK , GA	CP FOR NEW AM ON: FREQUENCY: 890KHZ; PWR: 2.5KW, DA-D; HRS OF OPER: DAY; TL: 4 MI DUEW OF HWY 285 2 MI DUE W OF COWAET LAKE, S OF CAMP CREEK, COLLEGE PARK, GA; SL&RC: TO BE DETER, COLLEGE PARK, GA 33 41 45 84 34 00
GA BP	-860331AE	DWMDE 1000KHZ	MICHAEL DEE HOWARD REMERTON , GA	CP FOR NEW AM ON: FREQUENCY: 1000KHZ; PWR: 10KW/10KW(CH) DA-D; HRS OF OPER: UNL TL: W SIDE OF HWY #75 & APPROX 5 MI NORTH OF REMERTON, NR REMERTON, GA; SL&RC: TO BE DETERMINED NEAR REMERTON, GA 30 52 46 83 20 53 MAJOR ENVIRONMENTAL ACTION UNDER SECTION 1.1305
HI BP	-890313AD	DKXDS 810KHZ	NORTH SHORE RADIO, INC. PRINCEVILLE , HI	CP FOR NEW AM STN ON 630KHZ; PWR: 10KW/10KW, DA-1; HRS OF OPER: UNLTD; TL: 7 KM W OF WAILUA, ON THE S. SIDE OF HWY 580, ACROSS FROM WAILUA RESERVOIR, WAILUA HI 22 03 50 159 24 15

-OVER-

AM BROADCAST STATION APPLICATIONS PERMIT CANCELLED

IN BP	-860428AH	DWICI 600KHZ	INDIANA COMMUNICATIONS, INC. ELLETTSVILLE , IN	CP FOR NEW AM ON: FREQUENCY: 600KHZ; PWR: 500W, DA-D; HRS OF OPER: DAY; TL: TUNNEL ROAD, 1.5 MI (2.4 KM) NW OF UNIONVILLE, IN; SL&RC: TO BE DETERMINED UNIONVILLE, IN 39 14 56 86 25 45 MAJOR ENVIRONMENTAL ACTION UNDER SECTION 1.1305
MD BP	-880927AE	DWRUB 650KHZ	RADIO 650 PITTSVILLE , MD	CP FOR NEW AM ON FREQ: 650KHZ; PWR: 250W(250W CH), DA-D; HRS OF OPER: DAY; TL: OLD DAGSBORO & MELSON ROADS - APPRX 6.4KM E OF DELMAR, MD; SL/RC TO BE DETERMINED PITTSVILLE, MD 38 26 27 75 30 24
ME BP	-860109AC	DWARP 1250KHZ	RICHFORD COMMUNICATIONS COMPANY BANGOR , ME	CP FOR NEW AM ON: FREQ: 1250KHZ; PWR: 5.0 KW; HRS OF OPER: DAY; TL: KITTREDGE ROAD, BANGER, ME; SL & RC TO BE DETERMINED, BANGOR, ME 44 50 49 68 44 56
ME BP	-870617AC	DWTKS 1600KHZ	MICHAEL VENDITTI BREWER , ME	(APPL RESUBMITTED NUNC PRO TUNC) CP FOR NEW AM ON FREQ: 1600KHZ, PWR: 5KW, DA-1; HRS OF OPER: UNLTD; TL: 0.2 MI SW OF INTERSECTION OF PARKWAY & WISWELL RDS, IN S. BREWER, ME; SL/RC TO BE DETERMINED, BREWER, ME 44 45 54 68 46 18
MI BP	-870327AB	DWDXW 1340KHZ	AARON JAMES COFFEY L'ANSE , MI	CP FOR NEW AM ON: FREQ: 1340KHZ, PWR: 1.0KW; HRS OF OPER: UNLTD; TL: 0.6 MI (0.96KM) NORTH OF BARAGE ON OLD US-41, BARAGA, MI; SL & RC TO BE DETERMINED, L'ANSE, MI 46 47 33 88 29 10
MN BP	-840502AP	DKCUS 1010KHZ	SARTELL BROADCASTING COMPANY SARTELL , MN	CP FOR NEW AM ON: FREQUENCY: 1010KHZ; PWR: 500W; HRS OF OPER: DAY; TL: 1 MI N ON COUNTY RD 55, SARTELL, MN SL&RC: TO BE DETERMINED SARTELL, MN 45 38 47 94 11 53 (RETURNED TO PROCESSING LINE)
MN BP	-841108AB	DKCHN 1120KHZ	GFC BROADCASTING CORPORATION JEFFERS , MN	CP FOR NEW AM ON: FREQUENCY: 1120KHZ; PWR: 2.5KW, DA-D; HRS OF OPER: DAY; TL: 10.7KM E OF JEFFERS, HWY 30, .32 KM NORTH OF HWY 30, EAST OF JEFFERS, MN; SL&RC: TO BE DETER EAST OF JEFFERS, MN 44 03 20 95 04 13 MAJOR ENVIRONMENTAL ACTION UNDER SECTION 1.1305
MS BP	-850228AD	DWLJH 1120KHZ	LOUISE M. HARDING & HAROLD R HARDING PETAL , MS	CP FOR NEW AM ON: 1120KHZ; PWR1KW; HRS OF OPER: DAY; TL: HWY 11 NORTH PETAL, MS; SL&RC: TO BE DETERMINED PETAL MS 31 20 40 89 17 20
MS BP	-860825AH	DWJHP 1200KHZ	JOHN H. PEMBROKE COLUMBIA , MS	CP FOR NEW AM ON: FREQUENCY: 1200KHZ; PWR: 500W, HRS OF OPER DAY; TL: W OF HWY 98 1 1/2 MI FROM COLUMBIA, COLUMBIA, MS SL&RC: TO BE DETERMINED COLUMBIA, MS 31 13 18 89 53 12

-OVER-

AM BROADCAST STATION APPLICATIONS PERMIT CANCELLED

MT BP	-850712AA	DKKMT 710KHZ	BIG M BROADCAST ASSOCIATES, INC. ENNIS , MT	CP FOR NEW AM ON: FREQUENCY: 710KHZ; PWR: 10KW; HRS OF OPER DAY; TL: JEFFERS LOOP RD. 3.68KM E. (80 DEGREE) OF THE ENNIS TOWN HALL, ENNIS, MT; SL&RC: TO BE DETERMINED, ENNIS, MT 45 21 15 111 41 15 45 19 58 111 42 54
NC BP	-850329AG	DWNOC 720KHZ	NORTH CAROLINA RADIO WAKE FOREST , NC	CP FOR NEW AM ON: FREQUENCY: 720KHZ; PWR: 1KW, DA-D; HRS OF OPER: DAY; TL: NEW HOPE RD & SOUTHALL RD, RALEIGH, NC; SL&RC: TO BE DETERMINED RALEIGH, NC 35 48 56 78 33 51
NC BP	-860724AC	DWKMP 1120KHZ	KAREN M. COX DBA/ ROCKY MOUNT RADIO ROCKY MOUNT , NC	CP FOR NEW AM ON: FREQUENCY: 1120KHZ; PWR: 2KW; HRS OF OPER DAY; TL: CO HWY 1710 ROCKY MOUNT, NC; SL&RC: TO BE DETER ROCKY MOUNT, NC 35 55 44 77 53 33
NE BP	-850211AC	DKZNE 1230KHZ	CHADRON COMMUNICATIONS, INC. CHADRON , NE	CP FOR NEW AM ON: FREQUENCY: 1230KHZ; PWR: 710, 1KW; HRS OF OPER: UNL; TL: 0.2 MI E OF CITY LMTS N OF RAILROAD TRACKS CHADRON, NE; SL: W 6TH HWY 385, CHADRON, NE 42 49 55 401 58 89
NV BP	-870929AK	DKDHB 1100KHZ	BRADEN RADIO, INC. LAS VEGAS , NV	CP FOR NEW AM ON FREQ: 1100KHZ; PWR: 1KW/50KW, DA-2; HRS OF OPER: UNLTD; TL: 1.6KM WEST OF HENDERSON, NV; 1KM EAST OF PARADISE ROAD, 4.8 KM SOUTH OF SUNSET RD, LAS VEGAS, NV; SL/RC TO BE DETERMINED LAS VEGAS, NV 36 01 37 115 07 59
NV BP	-890801AB	DKGZA 1030KHZ	WILLIAM H. POLLACK BOULDER CITY , NV	CP FOR NEW AM ON FREQ: 1030KHZ; PWR 1KW/50KW, DA-2; HRS OF OPER: UNLTD; TL APPROX 5 KM WEST OF THE CENTER OF BOULDER CITY, NV; SL/RC TO BE DETERMINED BOULDER CITY, NV 35 59 00 114 53 25
NY BP	-840426AA	DWJIW 980KHZ	ROYAL ASSOCIATES, INC. CAZENOVIA , NY	CP FOR NEW AM ON: FREQUENCY: 980KHZ; PWR: 1KW, 500W, DA-2; HRS OF OPER: UNL; TL: FENNER RD, 0.35 MI N OF HWY 20, NELSON TOWNSHIP, NY; SL& RC: TO BE DETER, NELSON TOWNSHIP NY 42 55 20 75 46 46 MAJOR ENVIRONMENTAL ACTION UNDER SECTION 1.1305
NY BP	-850729AE	DWJFG 890KHZ	JANE A. FILLER DBA SOLVAY RADIO SOLVAY , NY	PET FOR RECON: CP FOR NEW AM ON FREQ: 890KHZ; PWR 500WATTS DA-D, HRS OF OPER: DAY: TL: 936 SPENCE STREET, SYRACUSE, NY SL/RC TO BE DETERMINED SOLVAY, NY 43 03 34 76 15 54 MAJOR ENVIRONMENTAL ACTION ER SECTION 1.1305
NY BP	-851202AO	DWANQ 1040KHZ	ERIC W. REID DELMAR , NY	CP FOR NEW AM ON FREQUENCY: 1040KHZ; PWR: 1 KW, 5KW DA-2; HRS OF OPER: UNLTD; TL: FREDERICK RD---------- NEAR ALBANY, NY; SL&RC: TO BE DETERMINED NR ALBANY, NY 42 41 15 73 59 41 MAJOR ENVIRONMENTAL ACTION UNDER SECTION 1.1305

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AM BROADCAST STATION APPLICATIONS PERMIT CANCELLED

NY BP	-860116AE 1600KHZ	DWLMO	ALAN M. BURKE GENESEO , NY	CP FOR NEW AM ON FREQ: 1600KHZ; PWR: 0.62 KW/1.80KW-DA-2; HRS OF OPER: U; TL: AT JUNCTION OF LIMA & NORTH ROADS, GENESEO TOWNSHIP, NEW YORK; SL & RC TO BE DETERMINED GENESEO, NEW YORK 42 49 55 77 45 05 MAJOR ENVIRONMENTAL ACTION UNDER SECTION 1.1305
NY BP	-860922AC 670KHZ	DWAQX	ATLANTIC VENTURES OF NEW YORK, L.P. SYRACUSE , NY	CP FOR NEW AM ON: FREQUENCY: 670KHZ; PWR: 2.5KW, DA-N; HRS OF OPER: DAY; TL: FREMONT & KIRKVILLE, NR MANLIUS, NY SL&RC: TO BE DETERMINED NR MANLIUS, NY 43 04 28 76 01 53 MAJOR ENVIRONMENTAL ACTION UNDER SECTION 1.1305
NY BP	-870130AB 600KHZ	DWXIK	WATERTOWN INDEPENDENT CHRISTIAN COMM BROWNVILLE , NY	CP FOR NEW AM ON: FREQUENCY: 600KHZ; PWR: 1KW, 950W, DA-2 HRS OF OPER: UNL; TL: AT JUNCT OF NORTH SHORE AND TIMMERMAN RDS, BROWNVILE TOWNSHIP, NY; SL&RC: TO BE DETERMINED BROWNVILLE TOWNSHIP, NY 44 00 46 76 07 26 MAJOR ENVIRONMENTAL ACTION UNDER SECTION 1.1305
OH BP	-880516AC 1570KHZ	DWLVZ	MINORITY CHRISTIAN RADIO OF OHIO ATHENS , OH	CP FOR NEW AM ON FREQ: 1570KHZ; PWR 280WATTS/400WATTS HRS OF OPER: UNLTD; TL: EAST STATE ST, ATHENS, OH; SL/RC TO BE DTERMINED ATHENS, OH 39 20 14 82 04 03
PA BP	-860530AD 1180KHZ	DWBCQ	NANCY REILLY QUAKERTOWN , PA	CP FOE NEW AM ON: FREQUENCY: 1180KHZ; PWR: 300W, DA-D; HRS OF OPER: DAY; TL: .35 MI RT 212, .925 MI FROM CENTER OF RICHLANDTOWN ON 45 DEGREE RADIAL, RICHLANDTOWN, PA SL&RC: TO BE DETERMINED RICHLANDTOWN, PA 40 28 49 75 18 30 MAJOR ENVIRONMENTAL ACTION UNDER SECTION 1.1305
SC BP	-831031AI 1200KHZ	DWWRJ	J & K BROADCASTERS HOLLYWOOD , SC	CP FOR NEW AM ON: FREQUENCY: 1200KHZ; PWR: 1KW, 25KW, DA-N; HRS OF OPERD UNL; TL: HWY 165 & US 17, HOLLYWOOD, SC; SL&RC: TO BE DETER, HOLLYWOOD, CA 32 46 38 80 14 38 MAJOR ENVIRONMENTAL ACTION UNDER SECTION 1.1305
SC BP	-851029AJ 890KHZ	DWPGP	PETER V. GURECKIS &STEPHEN E.BRISKER PENDLETON , SC	CP FOR NEW AM ON: FREQUENCY: 890KHZ; PWR: 25KW/5KW(CH), DA-D HRS OF OPER: DAY; TL: AT JUNCT OF HWY #76 & #28, SOUTH OF PENDLETON, PENDLETON, SC; SL&RC: TO BE DETERMINED PENDLETON, SC 34 38 03 82 46 56 MAJOR ENVIRONMENTAL ACTION UNDER SECTION 1.1305
SC BP	-851223AE 1180KHZ	DWLRG	TIMMONSVILLE RADIO TIMMONSVILLE , SC	CP FOR NEW AM ON: FREQUENCY: 1180KHZ; PWR: 10KW/5KW(CH) HRS OF OPER: DAY; TL: AT INTERSC OF HWYS #75 & #107 TIMMONSVILLE, SC; SL&RC: TO BE DETERMINED TIMMONSVILLE, SC 34 09 11 79 54 09 MAJOR ENVIRONMENTAL ACTION UNDER SECTION 1.1305

AM BROADCAST STATION APPLICATIONS PERMIT CANCELLED

TN BP	-870121AC 1330KHZ	DWMII	MINORITY BROADCASTING OF NASHVILLE HENDERSONVILLE , TN	CP FOR NEW AM ON: FREQUENCY: 1330KHZ; PWR: 700W, 500W, DA-2 HRS OF OPER: UNL; TL: .26 MI SE OF TWIN BRIDGES ON OLD HICKORY BLVD, NASHVILLE, TN; SL&RC: TO BE DETER NASHVILLE, TN 36 15 40 86 40 15 MAJOR ENVIRONMENTAL ACTION UNDER SECTION 1.1305
TX BP	-870303AH 1180KHZ	DKCLP	MARLENE V. BORMAN CLAUDE , TX	CP FOR NEW AM ON: FREQ: 1180KHZ, PWR: 0.25KW, 1.0KW, DA-2; HRS OF OPER: UNLTD; TL: FIRST ST HWY. 287, CLAUDE, TX; SL & RC TO BE DETERMINED, CLAUDE, TX 35 06 21 101 20 49 MAJOR ENVIRONMENTAL ACTION UNDER SECTION 1.1305
VA BP	-850729AC 890KHZ	DWLJD	LIGHTHOUSE BROADCASTING CO. FALMOUTH , VA	CP FOR NEW AM ON: FREQUENCY: 890KHZ; PWR: 10KW/2.5KW(CH) DA-D; HRS OF OPER: DAY; TL: HWY 17 AND I-95 FALMOUTH, VA SL&RC: TO BE DETERMINED FALMOUTH, VA 38 20 30 77 29 16 MAJOR ENVIRONMENTAL ACTION UNDER SECTION 1.1305
VA BP	-860404AD 1290KHZ	DWRFS	VIOLA R. WESTLAKE GARRISONVILLE , VA	CP FOR NEW AM ON: FREQUENCY: 1290KHZ; PWR: 550W; HRS OF OPER DAY; TL: STATE ROUTE 610, GARRISONVILLE, VA 38 28 19 77 26 07 MAJOR ENVIRONMENTAL ACTION UNDER SECTION 1.1305
VA BP	-861030AS 1180KHZ	DWNDT	DANVILLE RADIO DANVILLE , VA	CP FOR NEW AM ON: FREQUENCY: 1180KHZ; PWR: 4.5KW/3.7KW(CH), DA-D; HRS OF OPER: DAY; TL: STATE ROADS NO. 750 & 1524 NEAR DANVILLE, VA; SL&RC: TO BE DETERMINED NEAR DANVILLE, VA MAJOR ENVIRONMENTAL ACTION UNDER SECTION 1.1305
VA BP	-861229AC 1170KHZ	DWARN	STEPHEN E. BRISKER D/B/A RADIO 1170 FALMOUTH , VA	CP FOR NEW AM ON: FREQUENCY: 1170KHZ; PWR: 2.5KW, DA-D HRS OF OPER: DAY; TL: ROUTE NO. 17, APPROX 1.0 MI EAST OF BEREA, BEREA, VA; SL&RC: TO BE DETERMINED BEREA, VA 38 21 20 77 30 05 RE: IN CONTRAVENTION OF SECTION 73.37(A)
VA BP	-880126AC 880KHZ	DWARH	LARRY W. COBB, SR DBA DAYTON RADIO DAYTON , VA	CP FOR NEW AM ON FREQ: 880KHZ; PWR: 1KW/1KW(CH), DA-D; HRS OF OPER: DAYTIME; TL: 0.45KM SOUTH OF JUNCTION OF HGHWAYS #33 & #276, NEAR DAYTON, VA; SL/RC TO BE DETERMINED DAYTON, VA RE: IN CONTRAVENTION OF SECTION 73.37(A) RULES
WA BP	-850822AJ 720KHZ	DKSWX	KMO, INC. LONG BEACH , WA	CP FOR NEW AM ON: FREQUENCY: 720KHZ; PWR: 250W, 5KW, DA-2. HRS OF OPER: UNL; TL: PENINSULA HWY LONG BEACH, WA; SL&RC: TO BE DETERMINEDF LONG BEACH, WA 46 20 24 124 02 41 MAJOR ENVIRONMENTAL ACTION UNDER SECTION 1.1305

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AM BROADCAST STATION APPLICATIONS PERMIT CANCELLED

WA BP	-880128AC	DKCDV 1600KHZ	KMO, INC. DUNGENESS , WA	APPL RESUBMITTED NUNC PRO TUNC: CP FOR NEW AM ON FREQ: 1600KHZ; PWR: 5KW,DA-1; HRS OF OPER: UNLTD; TL: TOWNE RD, DUNGENESS, WA; SL/RC TO BE DETERMINED DUNGENESS, WA 48 07 38 123 08 10
WV BP	-870330AE	DWMSP 1570KHZ	MINORITY CHRISTN. RAD. OF CHARLESTON ELK HILLS , WV	CP FOR NEW AM ON: FREQ: 1570KHZ; PWR: 250W/860W; HRS OF OPER: UNLTD; TL: HILLPOINT DR., ELK HILLS, W. VA, SL/RC TO BE DETERMINED, ELK HILLS, W. VA 38 24 30 81 34 09

AM BROADCAST STATION APPLICATIONS ACCEPTED FOR FILING

CA BP	-920611DA	KAVR 890KHZ	DESERT BROADCASTERS ROSAMOND , CA	CP TO REINSTATE EXPIRED PERMIT (BP-860328AH) FOR CHGS.
KY BAL	-920611HJ	WFTG 1400KHZ	LONDON BROADCASTING CO., INC. LONDON , KY	VOL AL FROM LONDON BROADCASTING COMPANY, INC., TO F.T.G BROADCASTING, INC FORM 314 ATTY: TIMOTHY K. BRADY ASNE ADDRESS: P.O. BOX 1450; CORBIN, KY 40702
MA BMP	-920609DA	WLAW 1270KHZ	EDWARD DINIS FAIRHAVEN , MA	MP(BP-900417DA AS MOD) FOR EXT OF TIME TO------NEW AM STN.
MA BP	-920612DA	WWEA 740KHZ	ROBERT MILES BITTNER CAMBRIDGE , MA	CP TO REINSTATE EXPIRED PERMIT (BP-861215AN) FOR CHGS.
NY BMP	-920616DA	WNYC 830KHZ	WNYC COMMUNICATIONS GROUP NEW YORK , NY	MP(BP-810410AH AS MOD) FOR EXT OF TIME TO------FOR CHGS.
OR BP	-920611DB	KAGI 930KHZ	SOUTHERN OREGON STATE COLLEGE GRANTS PASS , OR	CP TO REINSTATE EXPIRED PERMIT (BP-910226AD) FOR CHGS.
VT BAL	-920611HH	WDOT 1390KHZ	NICHOLS RADIO BROADCASTING CORP. BURLINGTON , VT	VOL AL FROM NICHOLS RADIO BROADCASTING CORP. TO RADIO VERMONT, INC FORM 314 ATTY: NATHANIEL F. EMMONS ASNE ADDRESS: P.O. BOX 550; WATERBURY, VT 05676

-O V E R -

Warren AM-8

[FRL-4119-9]

Proposed Administrative Superfund Settlement; Hawaiian Island Drum Site, MO

AGENCY: Environmental Protection Agency.

ACTION: Notice; request for public comment.

SUMMARY: In accordance with section 122(i) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), notice is hereby given that a proposed administrative cost recovery settlement concerning the Hawaiian Island Drum Site ("The Site") located in Miller County, Missouri was issued by the Agency on March 16, 1992. The settlement resolves Agency claims under section 107 of CERCLA against the Hawaiian Island Land Company, Richard Wilhelmi and Betty Wilhelmi, Pauline E. Mathews, Bual Bales and Letha Bales, Jimmie D. Norman and Ruby Norman, Amy M. Singer, Richard and Virginia Jasinsky, Maurice Moore, Charles and Earleen Myers, and Sextro Painting and Decorating, Inc. ("The Settling Parties"). The settlement requires the Settling Parties to pay response costs in the amount of approximately $5,000 to the Hazardous Substance Superfund.

For thirty (30) days following the date of the publication of this Notice, the Agency will accept written comments relating to the settlement. The Agency's response to any comments received will be available for public inspection at the EPA Region VII Office, located at 726 Minnesota Avenue in Kansas City, Kansas 66101, and at the local repository for site information: City Hall, P.O. Box 317, 1292 Bagnell Dam Boulevard, City of Lake Ozark, Missouri, 65049, telephone (314) 365-5378.

DATES: Comments must be submitted on or before May 6, 1992.

ADDRESSES: The proposed settlement and additional background information relating to the settlement are available for public inspection during weekday business hours at the EPA Region VII Office at 726 Minnesota Avenue in Kansas City, Kansas 66101. A copy of the proposed settlement may be obtained from Vanessa Cobbs, Regional Docket Clerk, EPA Region VII, 726 Minnesota Avenue, Kansas City, Kansas 66101, telephone: (913) 551-7630.

Comments on the proposed settlement should reference the Hawaiian Island Drum Site, in Miller County, Missouri and EPA Docket No. VII-91-F-0004 and should be addressed to Ms. Cobbs at the address above.

FOR FURTHER INFORMATION CONTACT: Ms. Leslie Humphrey, Assistant Regional Counsel, EPA Region VII, Office of Regional Counsel, 726 Minnesota Avenue, Kansas City, Kansas 66101, telephone: (913) 551-7227.

Dated: March 25, 1992.

Robert Morby,

Acting Director, Waste Management Division, U.S. EPA Region VII.

[FR Doc. 92-7743 Filed 4-3-92; 8:45 am]

BILLING CODE 6560-50-M

[OPTS-44583; FRL-4056-4]

TSCA Chemical Testing; Receipt of Test Data

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice.

SUMMARY: This notice announces the receipt of test data on triethylene glycol monomethyl ether (TGME) (CAS No. 112-35-6), submitted pursuant to a final test rule under the Toxic Substances Control Act (TSCA). Publication of this notice is in compliance with section 4(d) of TSCA.

FOR FURTHER INFORMATION CONTACT: David Kling, Acting Director, Environmental Assistance Division (TS-799), Office of Pollution Prevention and Toxics, Environmental Protection Agency, rm. E-543B, 401 M St., SW., Washington, DC 20460, (202) 554-1404, TDD (202) 554-0551.

SUPPLEMENTARY INFORMATION: Section 4(d) of TSCA requires EPA to publish a notice in the **Federal Register** reporting the receipt of test data submitted pursuant to test rules promulgated under section 4(a) within 15 days after it is received.

I. Test Data Submissions

Test data for TGME were submitted by the Chemical Manufacturers Association on behalf of the test sponsors and pursuant to a test rule at 40 CFR 799.4440. They were received by EPA on March 9, 1992. The submission describes the developmental neurotoxicity evaluation of TGME administered by gavage to time-mated CD rats on gestational day 6 through postnatal day 21. Developmental neurotoxicity testing is required by this test rule. This chemical is used as an intermediate and diluent for brake fluids.

EPA has initiated its review and evaluation process for these data submissions. At this time, the Agency is unable to provide any determination as to the completeness of the submissions.

II. Public Record

EPA has established a public record for this TSCA section 4(d) receipt of data notice (docket number OPPTS-44583). This record includes copies of all studies reported in this notice. The record is available for inspection from 8 a.m. to 12 noon, and 1 p.m. to 4 p.m., Monday through Friday, except legal holidays, in the TSCA Public Docket Office, rm. NE-G004, 401 M St., SW., Washington, DC 20460.

Authority: 15 U.S.C. 2603.

Dated: March 26, 1992.

James B. Willis,

Acting Director, Existing Chemical Assessment Division, Office of Pollution Prevention and Toxics.

[FR Doc. 92-7841 Filed 4-3-92; 8:45 am]

BILLING CODE 6560-50-F

FEDERAL COMMUNICATIONS COMMISSION

Federal Communications Commission Ends AM Application Freeze

March 27, 1992.

The Federal Communications Commission will end the current freeze on filing applications for new AM construction permits and modifications of existing facilities at midnight on April 19, 1992. Applications may be filed on the current version of forms 301, 302 and 340 provided the applications also include the information responsive to the attached supplement and fee form. Revised forms which include the questions on the attachment and fee information have been approved by OMB; the new forms will not be available until approximately May 7, 1992. A subsequent public notice will set forth the date after which the new forms must be used.

For more information, contact Jim Burtle at 632-7010.

FCC Form 301 additional information requested from applicants for new or modified AM facilities.

Section II

7 Does the applicant, or any party to the application, have a petition to migrate to the expanded band (1605-1705 kHz) or a permit or license either in the existing band or expanded band that is held in combination with the AM facility proposed to be modified herein?

Yes_____ No_____

If yes, provide particulars as an Exhibit_____

Section V–A

3 Class of Station (A, B, C or D)_____

Stereo_____

Monaural_____

6 Type of feed circuits (excitation)

Series Feed_____ Shunt feed_____

Folded Unipole_____ Other (explain)_____

Overall height (meters) above ground without obstruction lighting:

Tower No:

1.....

2.....

3.....

4.....

5.....

6.....

14(b)

Distance from tower(s) to the nearest point of the fence enclosing the tower(s) in meters.

_____Meters

15(a)(4)(c)

Basis for ground conductivity utilized along each azimuth specified in (4)(a). If field strength measurements are used, submit copies of the analyzed measurements. If measurement data are taken from Commission records, identify the source of the measurements in the Commission's files.

15(C)(2)

Does the night 5 mV/m or nighttime interference free contour (which ever is higher) encompass 80% of the principal community to be served (50% for expanded band stations).

Yes_____ No_____

FCC Form 302 additional information requested from applicants for new or modified AM facilities.

Section I—General Data

6 Does the applicant, or any party to the application, have a petition to migrate to the expanded band (1605–1705 kHz) or a permit or license either in the existing band or expanded band that is held in combination with the AM facility proposed to be modified herein?

Yes_____ No_____

If yes, provide particulars as an Exhibit_____

Section II–A

6. Has type-approved stereo generating equipment been installed?

Yes_____ No_____

7. Does the sampling system meet the requirements of 47 C.F.R. Section 73.68?

Yes_____ No_____

If yes, attach as Figure_____ a detailed description of the sampling system as installed.

FCC Form 340 additional information requested from applicants for new or modified AM facilities.

Section II

9 Does the applicant, or any party to the application, have a petition to migrate to the expanded band (1605–1705 kHz) or a permit or license either in the existing band or expanded band that is held in combination with the AM facility proposed to be modified herein?

Yes_____ No_____

If yes, provide particulars as an Exhibit_____

Section V–A

3 Class of Station (A, B, C or D)_____

Stereo_____ Monaural_____

6 Type of feed circuits (excitation)

Series Feed_____ Shunt feed_____

Folded Unipole_____ Other (explain)_____

Overall height (meters) above ground without obstruction lighting:

Tower No.:

1.....

2.....

3.....

4.....

5.....

6.....

14(b)

Distance from tower(s) to the nearest point of the fence enclosing the tower(s) in meters.

_____Meters

15(a)(4)(c)

Basis for ground conductivity utilized along each azimuth specified in (4)(a). If field strength measurements are used, submit copies of the analyzed measurements. If measurement data are taken from Commission records, identify the source of the measurements in the Commission's files.

15(C)(2)

Does the night 5mV/m or nighttime interference free contour (which ever is higher) encompass 80% of the principal community to be served (50% for expanded band stations).

Yes_____ No_____

Federal Communications Commission.

Donna R. Searcy.

Secretary.

[FR Doc. 92–7506 Filed 4–3–92; 8:45 am]

BILLING CODE 6712–01–M

FEDERAL MARITIME COMMISSION

Security for the Protection of the Public; Financial Responsibility To Meet Liability Incurred for Death or Injury to Passengers or Other Persons on Voyages; Notice of Issuance of Certificate (Casualty)

Notice is hereby given that the following have been issued a Certificate of Financial Responsibility to Meet Liability Incurred for Death or Injury to Passengers or Other Persons on Voyages pursuant to the provisions of section 2, Public Law 89–777 (46 U.S.C. 817(d)) and the Federal Maritime Commission's implementing regulations at 46 CFR part 540, as amended: Mitsui O.S.K. Passenger Line, Ltd., MOPAS Cruise Line S.A. and Mitsui O.S.K. Lines, Ltd., 1–1, Toranomon 2-chome, Minato-ku Tokyo 105, Japan.

Vessel: NIPPON MARU.

Dated: March 31, 1992.

Joseph C. Poling,

Secretary

[FR Doc. 92–7761 Filed 4–3–92; 8:45 am]

BILLING CODE 6730–01–M

Security for the Protection of the Public; Indemnification of Passengers for Nonperformace of Transportation; Notice of Issuance of Certificate (Performance)

Notice is hereby given that the following have been issued a Certificate of Financial Responsibility for Indemnification of Passengers for Nonperformance of Transportation pursuant to the provisions of section 3, Public Law 89–777 (46 U.S.C. 817(e)) and the Federal Maritime Commission's implementing regulations at 46 CFR part 540, as amended: Mitsui O.S.K. Passenger Line, Ltd., 1–1, Toranomon 2-chome, Minato-ku, Tokyo 105, Japan.

Vessel: NIPPON MARU.

Dated: March 31, 1992.

Joseph C. Polking,

Secretary.

[FR Doc. 92–7762 Filed 4–3–92; 8:45 am]

BILLING CODE 6730–01–M

PUBLIC NOTICE

FEDERAL COMMUNICATIONS COMMISSION
1919 M STREET N.W.
WASHINGTON, D.C. 20554

22446

News media information 202/632-5050. Recorded listing of releases and texts 202/632-0002.

March 27, 1992

FEDERAL COMMUNICATIONS COMMISSION
ENDS AM APPLICATION FREEZE
AND MAKES EFFECTIVE NEW AM RULES

The Federal Communications Commission will end the current freeze on filing applications for new AM construction permits and modifications of existing facilities at midnight on April 19, 1992. Applications may be filed on the current version of forms 301, 302 and 340 provided the applications also include the information responsive to the attached supplement and fee form. Revised forms which include the questions on the attachment and fee information have been approved by OMB; the new forms will not be available until approximately May 7, 1992. A subsequent public notice will set forth the date after which the new forms must be used.

The amendments to the AM Technical Rules, found in Review of the Technical Assignment Criteria for the AM Broadcast Service, 6 FCC Rcd 6273 (1991), will also become effective at midnight on April 19, 1992. Requests to migrate to the expanded band (1605 - 1705 kHz) will not be accepted at this time. A filing window for these requests will be announced at a later date.

For more information, contact Jim Burtle at 632-7010.

FCC Form 301 additional information requested from applicants for new or modified AM facilities.

Section II

7 Does the applicant, or any party to the application, have a petition to migrate to the expanded band (1605-1705 kHz) or a permit or license either in the existing band or expanded band that is held in combination with the AM facility proposed to be modified herein?

Yes _____ No _____

If yes, provide particulars as an Exhibit _____

Section V-A

3 Class of Station (A, B, C or D) _____

Stereo _____ Monaural _____

6 Type of feed circuits (excitation)

Series Feed _____ Shunt feed _____
Folded Unipole _____ Other (explain) _____

	Tower No. 1	2	3	4	5	6
Overall height (meters) above ground without obstruction lighting	_____	_____	_____	_____	_____	_____

14(b)
Distance from tower(s) to the nearest point of the fence enclosing the tower(s) in meters.

_____ Meters

15(a)(4)(c)
Basis for ground conductivity utilized along each azimuth specified in (4)(a). If field strength measurements are used, submit copies of the analyzed measurements. If measurement data are taken from Commission records, identify the source of the measurements in the Commission's files.

15(C)(2)
Does the night 5 mV/m or nighttime interference free contour (which ever is higher) encompass 80% of the principal community to be served (50% for expanded band stations).

Yes _____ No _____

FCC Form 302 additional information requested from applicants for new or modified AM facilities.

Section I - General Data

6 Does the applicant, or any party to the application, have a petition to migrate to the expanded band (1605-1705 kHz) or a permit or license either in the existing band or expanded band that is held in combination with the AM facility proposed to be modified herein?

Yes _____ No _____

If yes, provide particulars as an Exhibit _____

Section II-A

6. Has type-approved stereo generating equipment been installed?

Yes _____ No _____

7. Does the sampling system meet the requirements of 47 C.F.R. Section 73.68?

Yes _____ No _____

If yes, attach as Figure _____ a detailed description of the sampling system as installed.

FCC Form 340 additional information requested from applicants for new or modified AM facilities.

Section II

9 Does the applicant, or any party to the application, have a petition to migrate to the expanded band (1605-1705 kHz) or a permit or license either in the existing band or expanded band that is held in combination with the AM facility proposed to be modified herein?

Yes _____ No _____

If yes, provide particulars as an Exhibit _____

Section V-A

3 Class of Station (A, B, C or D) _____

Stereo _____ Monaural _____

6 Type of feed circuits (excitation)

Series Feed _____ Shunt feed _____
Folded Unipole _____ Other (explain) _____

	Tower No. 1	2	3	4	5	6
Overall height (meters) above ground without obstruction lighting	_____	_____	_____	_____	_____	_____

14(b) Distance from tower(s) to the nearest point of the fence enclosing the tower(s) in meters.

_____ Meters

15(a)(4)(c) Basis for ground conductivity utilized along each azimuth specified in (4)(a). If field strength measurements are used, submit copies of the analyzed measurements. If measurement data are taken from Commission records, identify the source of the measurements in the Commission's files.

15(C)(2) Does the night 5 mV/m or nighttime interference free contour (which ever is higher) encompass 80% of the principal community to be served (50% for expanded band stations).

Yes _____ No _____

10

EIA INTERIM STANDARD

EIA/IS-80

Audio Bandwidth and Distortion Recommendations for AM Broadcast Receivers

EIA/IS-80

MARCH 1991

ELECTRONIC INDUSTRIES ASSOCIATION
ENGINEERING DEPARTMENT

NOTICE

EIA Engineering Standards and Publications are designed to serve the public interest through eliminating misunderstandings between manufacturers and purchasers, facilitating interchangeability and improvement of products, and assisting the purchaser in selecting and obtaining with minimum delay the proper product for his particular need. Existence of such Standards and Publications shall not in any respect preclude any member or nonmember of EIA from manufacturing or selling products not conforming to such Standards and Publications, nor shall the existence of such Standards and Publications preclude their voluntary use by those other than EIA members, whether the standard is to be used either domestically or internationally.

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Published by

ELECTRONIC INDUSTRIES ASSOCIATION
Engineering Department
2001 Pennsylvania Avenue N.W.
Washington, D.C. 20006

NATIONAL RADIO SYSTEMS COMMITTEE

Electronic
Industries
Association

National
Association
of Broadcasters

AUDIO BANDWIDTH AND DISTORTION RECOMMENDATIONS FOR AM BROADCAST RECEIVERS

Sponsored by the Electronic Industries Association and the National Association of Broadcasters

AUDIO BANDWIDTH AND DISTORTION RECOMMENDATIONS FOR AM BROADCAST RECEIVERS

CONTENTS

AUDIO BANDWIDTH AND DISTORTION RECOMMENDATIONS FOR AM BROADCAST RECEIVERS

1. Scope

The National Radio Systems Committee (NRSC) is a joint committee of the Electronic Industries Association and the National Association of Broadcasters, composed of all interested parties including representatives of broadcast stations, radio receiver manufacturers, and broadcast equipment suppliers. This document describes a voluntary national standard that specifies audio bandwidth and distortion recommendations for AM broadcast radio receivers. The voluntary standard applies to both AM monophonic and AM stereophonic receivers, as well as to receivers of single, multiple or variable reception bandwidths. Compliance with this standard is strictly voluntary. To the NRSC's knowledge, no industry group or entity is or will be adversely affected by issuance of this document. Every effort has been made to inform and accommodate any and all interested parties. The NRSC believes that implementation of this voluntary standard will lead to improved AM receivers, thus providing enhanced service for all AM stations and an increase in quality of service to present and future AM listeners. However, the NRSC also believes the work to reduce interference conditions in the AM band must continue in order to improve the competetiveness of the service.

2. Introduction.

It is the intent of the NRSC that this document serve as a voluntary national standard which may be used by receiver manufacturers to complement the broadcast elements of the NRSC-1 standard.[1] The NRSC-1 standard defines a broadcast/reception system capable of 10 kHz audio bandwidth. However, the NRSC-1 standard provides little specific guidance for receiver manufacturers who wish to determine whether a particular AM receiver design actually matches NRSC AM broadcasts.[2] In order to help clarify the NRSC-1 standard, and to provide more specific guidance on the performance expectations for AM receivers that match NRSC AM broadcasts, the NRSC issues the following voluntary standard, "Audio Bandwidth and Distortion Recommendations for AM Broadcast Receivers."

---

[1] *See National Radio Systems Committee, NRSC-1 AM Preemphasis/Deemphasis and Broadcast Audio Transmission Bandwidth Specifications (ANSI/EIA-549-1988)*, ("NRSC-1 standard").

[2] See NRSC-1 standard at 4 and 6.

3. Specifications for AM Receivers

3.1. Purpose

The purpose of the following specifications is to serve as a voluntary design guide for manufacturers of AM broadcast radio receivers. They are further intended to augment and clarify elements of the NRSC-1 standard that cover radio receivers.[3]

3.2. Requirements

3.2.1. Audio Frequency Response

Radio receivers that satisfy the technical requirements of this specification shall have a frequency response of not less than 50 to 7500 Hz, with limits of plus 1.5 dB, minus 3.0 dB, referenced to 0 dB at 400 Hz. Receivers capable of selecting more than one bandwidth will meet this requirement if one bandwidth setting satisfies this requirement. Measurements to determine compliance with this section must be made in accordance with § 3.4, below.

3.2.2. Maximum Nonlinear Distortion

Receivers that satisfy the technical requirements of this specification shall not exhibit more than two percent total harmonic distortion plus noise (THD+N) at measurement frequencies between 50 and 7500 Hz. Measurements to determine compliance with this section must be made in accordance with 3.4, below.

3.3. Recommendation: 10 kHz Attenuation

The NRSC recommends that manufacturers incorporate circuitry into receiver designs that attenuates 10.0 kHz adjacent-channel carrier frequencies by at least 20 dB (with the NRSC-1 preemphasis characteristic inserted at the amplitude modulation input of the RF test signal generator, as specified in § 3.4.3.1.), or 30 dB (without use of the NRSC-1 preemphasis characteristic, as specified in § 3.4.3.2.).

---

[3] See NRSC-1 standard at 5.

3.4. Measurement Procedure

3.4.1. RF Connection to Receiver Under Test

A test loop antenna, driven by the RF output of a test signal generator, shall be placed 24 inches (61 cm) from the loop/loopstick antenna of the receiver under test, in the plane of strongest signal performance. If the receiver under test does not normally utilize a loop or loopstick antenna, the RF output of a test signal generator may be directly connected to the AM antenna input connection of the receiver under test using a dummy antenna.[4]

3.4.2. RF Level into Receiver Under Test

The test signal generator RF level is adjusted, using its internal or an external attenuator, for best THD+N performance, using either antenna coupling method as described in § 3.4.1. THD+N measurement is described in § 3.4.6.

3.4.3. AM Modulation Level and Frequency Response

One of the following two methods shall be employed, the selection of which being determined by whether or not the preemphasis characteristic, defined in the NRSC-1 standard, is included prior to the amplitude modulation input of the RF test signal generator.[5]

3.4.3.1. With NRSC Preemphasis at Generator

The NRSC-1 preemphasis characteristic is inserted after a flat response, spectrally-pure audio frequency modulating source, prior to the amplitude modulation input of the RF test signal generator. Monophonic amplitude modulation is used, set to 15 percent with reference at 400 Hz. The receiver under test must exhibit a flat frequency response characteristic within the limits of plus 1.5 dB, minus 3.0 dB, from 50 to 7500 Hz.[6] See Figure 1.

---

[4]Such a "dummy antenna" is specified in 3.06 of *I H F M Standard Methods of Measurement for Tuners (IHFM-T-100), December 1958.* This section defines the dummy antenna to be used as consisting of a 200 picofarad capacitor connected between the RF test signal generator RF output connection and the AM antenna input terminal on the receiver under test.

[5]See NRSC-1 standard at 4.

[6]The NRSC recommends that attenuation be at least 20 dB at 10.0 kHz, as specified in 3.3.

3.4.3.2. Without NRSC Preemphasis

A flat response, spectrally-pure audio frequency modulating source is connected to the amplitude modulation input of the RF test signal generator. Monophonic amplitude modulation is used, set to 30 percent with reference at 400 Hz. The receiver under test must meet the NRSC-1 standard deemphasis characteristic[7] within limits of plus 1.5 dB, minus 3.0 dB, from 50 to 7500 Hz.[8] See Table 1 and Figure 2.

TABLE 1

Frequency Response Limits using Method of § 3.4.3.2.

Frequency	Nominal Response	Upper limit	Lower limit
50 Hz	0 dB	+1.5 dB	-3.0 dB
100 Hz	0 dB	+1.5 dB	-3.0 dB
400 Hz	0 dB (reference)	0 dB	0 dB
700 Hz	-0.3 dB	+1.2 dB	-3.3 dB
1000 Hz	-0.7 dB	+0.8 dB	-3.7 dB
1500 Hz	-1.5 dB	0 dB	-4.5 dB
2000 Hz	-2.4 dB	-0.9 dB	-5.4 dB
2500 Hz	-3.3 dB	-1.8 dB	-6.3 dB
3000 Hz	-4.1 dB	-2.6 dB	-7.1 dB
4000 Hz	-5.6 dB	-4.1 dB	-8.6 dB
5000 Hz	-6.8 dB	-5.3 dB	-9.8 dB
6000 Hz	-7.7 dB	-6.2 dB	-10.7 dB
7000 Hz	-8.4 dB	-6.9 dB	-11.4 dB
7500 Hz	-8.8 dB	-7.3 dB	-11.8 dB

[7] See NRSC-1 standard at 5.2.

[8] The NRSC recommends that attenuation be at least 30 dB at 10.0 kHz, as specified in 3.3.

3.4.4. Measurement Point

Audio frequency measurements of the receiver under test are made using a suitable a.c. voltmeter attached at either the receiver output terminals (with the influence of all equalization, tone, and loudness circuits factored out) or at a suitable intermediate low level point where fully deemphasized audio is present. If loudspeaker output terminals are used, a suitable resistive, non-inductive load may be substituted for the loudspeaker, with measurements taken across the load.

3.4.5. RF Test Generator Carrier Frequencies

Measurements shall be made with the RF test signal generator set to the following carrier frequencies: 600, 1000, and 1400 kHz.

3.4.6. Total Harmonic Distortion plus Noise (THD+N)

A flat response, spectrally-pure audio frequency modulating source is connected to the amplitude modulation input of the RF test signal generator. As required by § 3.2.2, THD+N shall not exceed two percent, between the frequencies of 50 and 7500 Hz. THD+N shall be measured at 80 percent monophonic amplitude modulation, referenced to 400 Hz. NRSC-1 preemphasis is not employed. THD+N shall be measured at the measurement point specified in § 3.4.4. using the RF test generator carrier frequencies specified in § 3.4.5.

3.4.7. Stereophonic Receivers

Set up for monophonic conditions as in methods described in § 3.4.1. through § 3.4.6., then measure channels individually.

4. Effective Date

October 15, 1990.

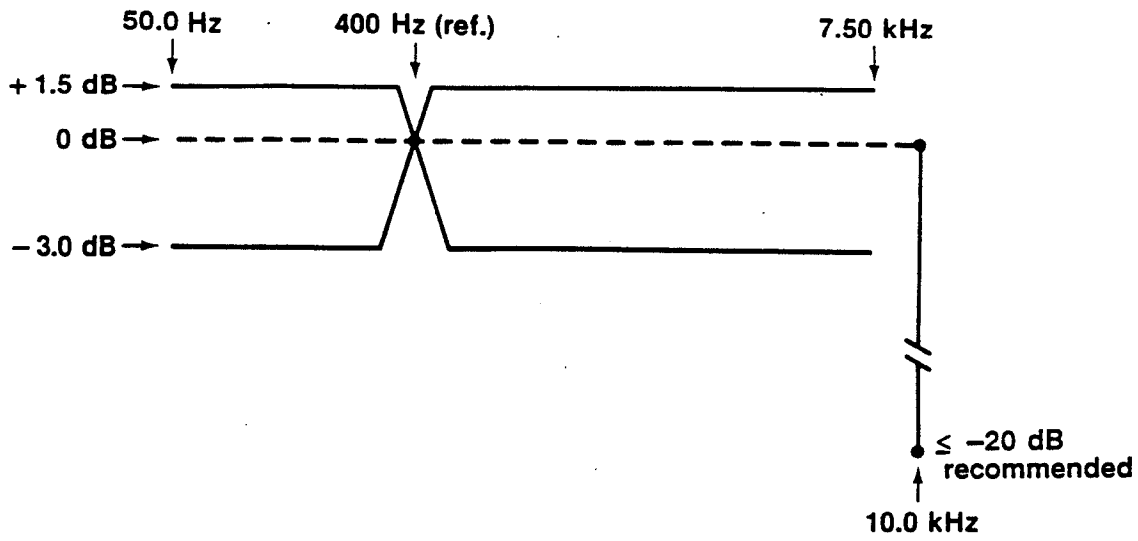


Figure 1 — Demodulated Output Employing Generator with NRSC-modified 75 μS Preemphasis

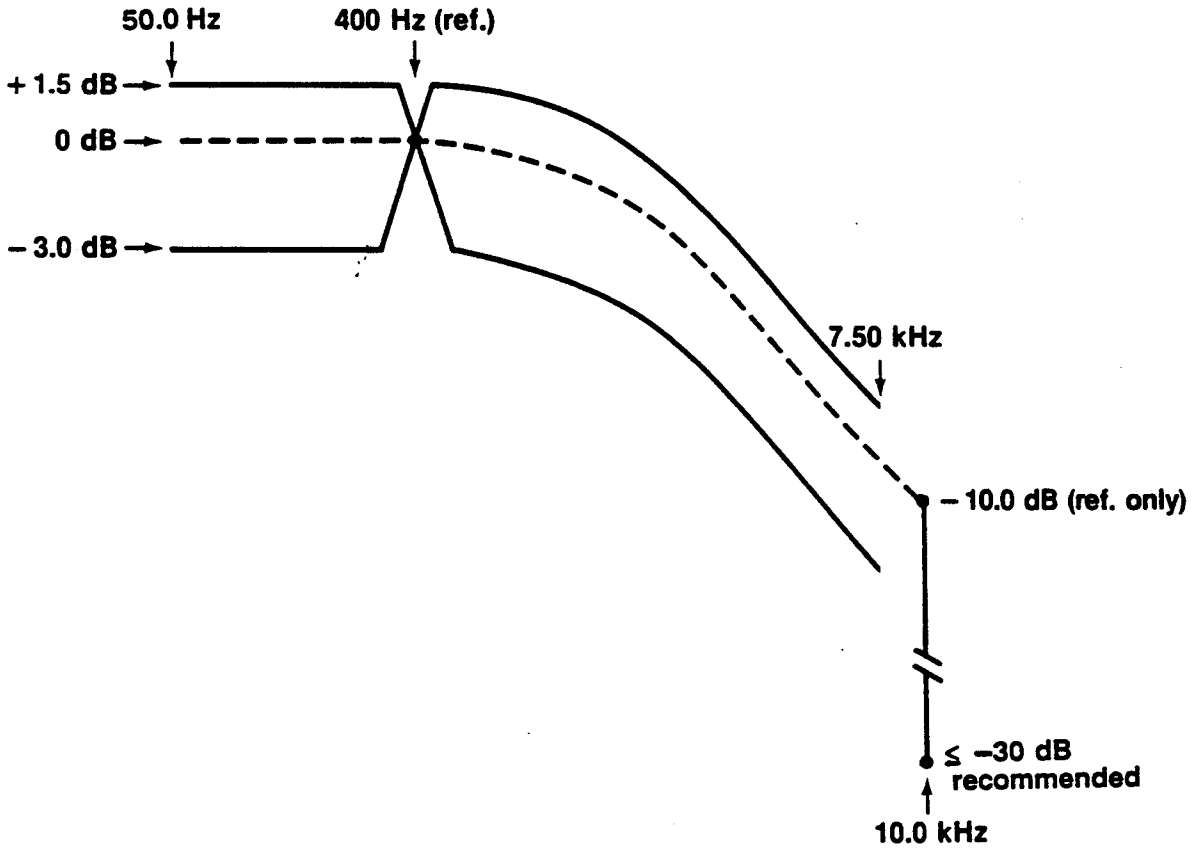


Figure 2 — No Audio Preemphasis at Generator


ELECTRONIC INDUSTRIES
EIA
EST. 1924
ASSOCIATION

AM 11

W.P.'s
ORIGINAL

TO: Attached Merge List
FROM: Warren Powis
RE: FCC Inspection Check List; Memo No. 2
DATE: March 23, 1992

Enclosed for your information is a copy of a recent FCC inspection report that has come to our attention with emphasis on AM and EBS compliance:

1. According to the FCC cover letter dated February 3, 1992, it infers a lower than desired compliance of AM station directional parameters; however, no details are furnished.[1/]

2. FCC attachment A details various violation rates of specific items found during inspections.

3. FCC attachment B is the latest partial check list.

4. FCC attachment C describes base forfeitures.

5. A sample tower light outage report form.

If we become aware of any further information regarding this matter, we will forward them promptly.

Attachment

[1/]We are also aware of AM stations in the last month receiving another letter regarding AM station operation with directional patterns.

AM

FEDERAL COMMUNICATIONS COMMISSION
Field Operations Bureau
February 3, 1992

Address Reply To:
Suite 1215
2203 N. Lois Avenue
Tampa, Florida 33607

Dear Broadcaster:

As part of the Commission's on going efforts to increase AM and FM broadcast compliance, the FCC conducted a nationwide survey of some 125 broadcast stations in 1991 to determine compliance with the FCC Rules. We are providing you with the results of the survey (see Attachment A). The FCC checked 24 areas of the stations' operations for compliance. Although overall compliance was 90 percent or higher in most areas, it was less than 90 percent in the following areas:

Public File, 85 percent compliance
EBS checklist, 87 percent compliance
EBS test, 82 percent compliance
EBS tests logging, 87 percent compliance
AM directional parameters, 71 percent compliance
AM monitoring points, 87 percent compliance

Our goal is to obtain a minimum compliance rate of 90% in all areas.

We have provided a partial checklist (see Attachment B) that will help you inspect your station to insure compliance with the Communications rules. Please be reminded this is only a partial checklist, and that your ultimate responsibility is to comply with all FCC Rules and Regulations.

DO NOT MAIL THE CHECKLIST BACK TO THE FCC, IT IS FOR YOUR OWN USE ONLY

Now is a good time to check your station for compliance. If you or your staff have questions that we may be able to answer, please call this office at (813) 228-2872 during the hours 8:00 AM to 4:00 PM, Monday through Friday and we will do our best to assist you.

This office will continue to conduct compliance sampling of broadcast stations in the very near future. Notices of violation and monetary forfeitures will be issued to those stations that are found not in full compliance with the FCC Rules and Regulations. We have enclosed an excerpt from the Commission's Standards For Assessing Forfeitures for you information (see Attachment C).

Your interest is appreciated.

Sincerely,

Ralph M. Barlow

Ralph M. Barlow
Engineer in Charge

Attachments

ATTACHMENT A

BROADCAST INSPECTIONS SUMMARY (1991)

VIOLATION RATES FOUND DURING INSPECTION

	AM		FM		EDUC. FM		TV		TOTAL	
	# of insp	% in viol	# of insp	% in viol	# of insp	% in viol	# of insp	% in viol	# of insp	% in viol
OUTSIDE INSPECTIONS -										
Tower lights functioning	34	15%	41	7%	3	0%	8	0%	86	9%
Tower painting ok	36	11%	42	5%	2	0%	8	0%	88	7%
Facilities appear as auth.	53	2%	55	0%	8	13%	9	0%	125	2%
AM - antenna ground ok	51	8%							51	8%
AM - fencing ok	49	10%							49	10%
INSIDE INSPECTIONS -										
On duty operator	53	0%	57	5%	8	0%	9	0%	127	2%
Adequate meters/warnings	53	6%	57	12%	8	0%	9	0%	127	8%
Transmitter control	53	4%	57	9%	8	13%	9	0%	127	6%
Public file	52	10%	57	16%	8	63%	9	0%	126	15%
no file		8%		9%		13%		0%		8%
items missing		2%		7%		50%		0%		7%
Authorization available	52	2%	57	4%	8	0%	9	0%	126	2%
Operating as authorized	53	2%	57	4%	8	0%	9	0%	127	2%
EBS INSPECTIONS -										
Current checklist	52	13%	57	12%	8	0%	9	22%	126	13%
Current authenticators	52	6%	57	12%	8	13%	9	11%	126	10%
EBS monitor	51	4%	57	14%	8	0%	9	22%	125	10%
missing		0%		2%		0%		11%		2%
malfunctioning		2%		7%		0%		11%		5%
tuned to wrong station		2%		5%		0%		0%		3%
EBS tests received	51	12%	57	23%	8	0%	9	33%	125	18%
EBS generator	52	0%	57	0%	8	13%	9	11%	126	2%
missing		0%		0%		13%		11%		2%
malfunctioning		0%		0%		0%		0%		0%
EBS gen. tests conducted	52	2%	57	2%	8	13%	9	11%	126	3%
EBS gen. tests on log	52	10%	57	14%	8	25%	9	11%	126	13%
TECHNICAL INSPECTIONS -										
Frequency OK	53	0%	57	2%	8	13%	9	0%	127	2%
Modulation OK	53	0%	57	4%	8	13%	9	0%	127	2%
Emissions OK	53	2%	55	2%	8	0%	9	0%	125	2%
Power OK	53	9%	57	12%	8	13%	9	0%	127	10%
under power		8%		9%		0%		0%		7%
minimum: 0.0%	average:		55.5%							
over power		2%		4%		13%		0%		3%
maximum: 131.0%	average:		116.9%							
AM DA parameters OK	24	29%							24	29%
AM Monitoring points OK	23	13%							23	13%

ATTACHMENT B

PARTIAL CHECKLIST
Last updated 1/10/92

This partial checklist is provided as a guidance to help you insure that your station is in compliance with FCC Rules and Regulations. The items on this list do not cover all relevant FCC Rules and Regulations. It is the Licensee/Permittee ultimate responsibility to comply with all FCC Rules and Regulations.

DO NOT RETURN THE COMPLETED LIST TO FCC, IT IS FOR YOUR OWN USE ONLY

Inspection Date:_____

Chief Operator:_____

Call Sign: _____ AM FM FMED. Frequency/Channel:_____

City:_____

Licensee name and address:_____

_____

Authorized main studio location:_____

_____

I. STUDIO/CONTROL/OPERATING POSITION

1. NOTE: "General Radiotelephone Operator Licenses issued after December 31, 1985, cannot be used to operate or maintain broadcast stations."

Manager:_____Phone No._____

Chief Operator(Acting):_____

Valid License?_____Posted? _____

Designation Letter? _____ Phone No. _____

2. Check current station authorization:_____

   STL license: _____

3. Operators licenses posted?_____ . Keep technical logs at studio? _____

   _____

4. See if operator on duty has a license:_____

5. Required meters in direct view of operator?_____

6. Knows how to take readings? _____Knows authorized limits? _____

   _____

7. Knows how to make required adjustments?_____

8. Get readings for:
   A) Plate Voltage: _____Volts. B) Plate Current:_____ Amps.

REMEMBER TO CUT MODULATION FOR AM

   C) Common Point Current:_____ Amps.
   D) Common Point Resistance:_____Ohms.

   E) Phase | #1 | #2 | #3 | #4 | #5 | #6 |

   F) Sample Current Ratio | #1 | #2 | #3 | #4 | #5 | #6 |

   G) Transmitter efficiency (know how to calculate power?):_____

   H) Common point current at phasor:_____

   I) Transmitter efficiency: _____

   J) Transmitter power output (calibrated meter?):_____

   K) Modulation (or deviation): AM pos:_____AM neg:_____FM:_____

9. Has received EBS TESTS and logged them?_____If not, why?_____
   _____
   _____

10. Sent EBS TEST once a week at random and logged?_____
    _____

11. When is the next one schedule to be broadcast?_____

12. Check for current authenticator and checklist (participating or not participating)_____

13. EBS receiver tuned to correct common program control (CPC) station? _____
    _____
    _____

14. Make and Model No. of receiver:_____

15. EBS tone generator operating properly? _____

16. Make and Model of Tone Generator:_____
    _____

17. Tower light monitor? _____Who is in charge of tower?_____
    _____

18. Write down make and model of monitors:
    Make:_____ Model:_____

19. Overall studio condition (safety, wiring, etc....) _____
    _____
    _____
    _____

20. Check documents and logs:

A) See if operation agrees with authorization

B) Logs (retained normally for 2 years).

C) Reviewed, signed and dated by Chief Operator or designee, at least once a week.

D) Daily observation of tower lights logged?

E) Quarterly Inspection (every 3 months) of light system (control, indicators and alarms etc...).

F) Malfunctions of towers lights logged?

G) For AM, periodic field monitoring points meas. done as necessary?

H) NRSC (for AM, 73.44) bandwidth equipment installed? When?

I) Check frequency:

J) Check if harmonics/spurious meas. done at intervals (14 mo for AM Max.):

K) Impedance measurement records kept at station?

L) Transmitter efficiency (source of same):

M) BSPP Loan Agreement (when applicable) see if equipment present and operational

21. Check the following in the Public Inspection Files. (See Section 73.3526 or 73.3527 and other applicable rules for retention periods)

A) All applications (copies) and associated letters and documents filed with the FCC: _____

B) All application for modifications: _____

C) Letters received from the public: _____

D) Ownership reports (FCC Form 323): _____

E) Records about BCST by candidates for public office: _____

F) Copy of every annual employment report filed by licensee: _____

G) Every 3 months, a list of programs that have provided the station's most significant treatment of community issues during the preceding 3 months period: _____

H) Statement certifying compliance with public anouncement regarding renewal: _____

I) "The Public and Broadcasting, Procedural Manual": _____

J) Donor announcement (non-commercial stations): _____

Are all of the above (#21) complete, current, easily accessible and readily available for Public Inspection at a permissible location? _____

II. TRANSMITTER SITE:

1. Make and model numbers of transmitter and monitors.

   XTR make: _____ XTR model: _____

   Monitor make: _____ Monitor model: _____

   Remote control: _____ Remote control model: _____

2. Check plat voltage, plate current, modulations, etc.. Call the control location to make simultaneous readings to see if both sites are within 2% calibration (no modulation for AM).

   P. Voltage at XTR: _____ volts. P. Voltage at studio (remote): _____ volts.
   P. Current at XTR: _____ AMPS. P. Current at studio (remote): _____ AMPS.
   Common point current at XTR: _____ AMPS.
   Common point current at studio (remote) _____ AMPS.
   Common point current at phasor _____

   Extension meters? _____

Phase: +/-3*	#1	#2	#3	#4	#5	#6

Sample Current Ratio:	#1	#2	#3	# 4	#5	#6

   Common point impedance: _____ OHMS. How/when determined: _____

   Are above values/readings in accordance with current authorization? _____

3. BSPP equipment present and operational (when applicable) (over) _____

4. Check for safety or operation: _____

Check for harmonics, spurious emissions. If present, are they well within the required limits _____
Write and log results of measurements: _____

Operating Power (IND) = Plate Volts X Plat Current X Transmitter Effcy
P =( )X( )X( )
P =( )Watts

OR
P = (I) (I) (R) = ( ) X ( ) X ( ) = ( ) Watts

III. OUTSIDE INSPECTION

1. Check tower paint: _____

2. Check tower lights to see if system is working properly: _____

3. Tower specs. per license/authorization: _____

4. Check for adequate base and/or perimeter fence (AM) _____

5. Sampling loops condition: _____

6. Check for problems with antenna ground system (AM): _____

7. Tuning coils. etc...safely enclosed? _____

8. Antenna Base Currents:

#1	#2	#3	#4	#5	#6

Ratios (Calculate):

9. Common Point Current at Phasor: _____ AMPS.

11. For AM directional, check monitoring points (day/night power).

Point #	Reading	Time	Description of Point

12. All directional antenna parameters within tolerance? _____

13. All remote control, automatic transmission system (ATS) equipment operating properly? _____

ATTACHMENT C 1. BASE AMOUNTS FOR SECTION 503 FORFEITURES

Violation	% of Stat. Max	BC/Cable ($25,000)	CC ($100,000)	Other ($10,000)
Misrepresentation/lack of candor	80%	20,000	80,000	8,000
Failure to comply with prescribed lighting/marking	80%	20,000	80,000	8,000
Construction and/or operation without an instrument of authorization for the service	80%	20,000	80,000	8,000
Unauthorized substantial transfer of control	80%	20,000	80,000	8,000
Violations of rules relating to distress and safety frequencies	80%	20,000	80,000	8,000
False distress communications	80%	20,000	80,000	8,000
Failure to permit inspection	75%	18,750	75,000	7,500
Violations of operator services requirements	75%	N/A	75,000	7,500
Malicious interfence	70%	17,500	70,000	7,000
Failure to respond to Commission communications	70%	17,500	70,000	7,000
Importation or marketing of unauthorized equipment	70%	N/A	70,000	7,000
Exceeding authorized antenna height	60%	15,000	60,000	6,000
Exceeding power limits	50%	12,500	50,000	5,000
Unauthorized emissions	50%	12,500	50,000	5,000
Using unauthorized frequency	50%	12,500	50,000	5,000
EBS equipment not installed or operational	50%	12,500	50,000	5,000
Transmission of indecent/ obscene material	50%	12,500	50,000	5,000
Violation of broadcast EEO rules	50%	12,500	50,000	5,000
Violation of political rules: reasonable access, lowest unit charge, equal opportunities and discrimination	50%	12,500	50,000	5,000
Unauthorized discontinuance of service	40%	10,000	40,000	4,000
Use of unauthorized equipment	40%	10,000	40,000	4,000
Violation of children's television commercialization of programming requirements	40%	10,000	N/A	N/A
Violation of main studio rule	40%	10,000	N/A	N/A
Construction or operation at unauthorized location	40%	10,000	40,000	4,000
Failure to engage in required frequency coordination	40%	10,000	40,000	4,000
Failure to file required forms or information	30%	7,500	30,000	3,000
Violation of public file rules	30%	7,500	N/A	N/A
Violation of sponsorship ID requirements	25%	6,250	N/A	N/A
Violation of requirements pertaining to broadcasting of lotteries or contests	25%	6,250	N/A	N/A
Viol. of technical logs/time brokerage agreements file requirements	20%	5,000	N/A	N/A
Broadcasting telephone conversations without authorization	20%	5,000	N/A	N/A
Failure to make required measurements or conduct required monitoring	10%	2,500	10,000	1,000
Violation of enhanced underwriting requirements	10%	2,500	N/A	N/A
Failure to provide station ID	10%	2,500	10,000	1,000
Unauthorized pro forma transfer of control	10%	2,500	10,000	1,000
Failure to maintain required records	10%	2,500	10,000	1,000
Miscellaneous violations	5%	1,250	5,000	500

Dear FCC licensee,

We have been informed by the FAA Flight Service Stations in our area of confusing information being phoned into them about tower light outages In order to make reporting of tower light problems as simple as possible for all of us we ask that you complete as much of the attached form as possible, and please see to it that this information is posted and used when contacting the FAA. Having this information in hand while talking to the FAA can save a lot of confusion. Calling and reporting that you have a tower light out and your tower is somewhere in the area does not fulfill your requirement BE SPECIFIC as to location GIVE EXACT COORDINATES. This information could save you a large fine. Please fill out now makes copies and post where usefull.

OBSTRUCTION LIGHT OUTAGE REPORT

FAA Flight Service Station: Call 1(800)WX BRIEF for FAA

Initials of FAA Specialist you spoke to: Date Reported:

Problem: All Lights Out: ( ) Top Lights Out: ( )
Intermediate Flashing Light(s) Out: ( )
Other (Describe):

Latitude, Longitude (it's written on your license):

Name of Nearest Airport:

Distance and Direction from Nearest Airport:

Obstruction Height (from your license) AGL (feet) AMSL (feet)

Structure Type: Tower ( ) Other:

Who do you represent: Tower Owner ( ) FCC Licensee on that tower ( )
Utility Company ( ) Other ( )

Your Name/Title:
Address:

City/St: Zip:
Phone: ( )
Your FCC Call Sign:

Party Responsible For Obstruction (if known): Same As Above ( )
Tower Owner ( ) FCC Licensee ( ) Other ( )

Name/Title:
Address:

City/St: Zip:
Phone: ( )

REMEMBER YOU ARE REQUIRED TO REPORT RESTORATION OF SERVICE

Restoration reported to _____ at the FAA Flight Service in _____ this day _____ , 1992 at _____ AM/PM.
Please file in Tower Log.

==========

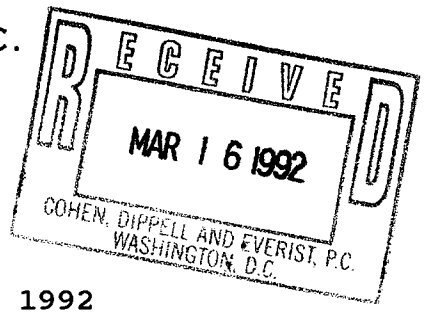
2/92 FCC Tampa twr.gen

KAHN COMMUNICATIONS, INC.

222 WESTBURY AVENUE

CARLE PLACE, NEW YORK 11514

(516) 222-2221



Mr. Warren M. Powis
Cohen, Dippell & Everist, P.C.
1300 L Street, N.W.
Washington, D.C. 20005

March 13, 1992

Dear Warren:

I very much enjoyed meeting with you and Messrs Cohen, Everist and LaFollette. Obviously I missed Ralph and I assume by now he is back to work.

If I sounded hyper-active it was the result of being excited by my first, and probably last, appearance as a witness before a Congressional Sub-Committee. I know it is probably old hat for you folks to appear before such groups but us little town guys from New York City aren't used to such activities.

As promised, I am enclosing a copy of U.S. Patent 4,896,371 and a copy of some material that was circulated by its author Mr. George Whitaker, Sr. I have a "gut feeling" that a lot more can be done to improve synchronous operation and I would be interested in working in the field.

By the way, I meant to mention that probably there will be some announcements re our work on AM data. As you may recall we did some work for Bonneville and the actual on-the-air tests over KSL were very encouraging. It could well fit in to the EBS system and can help AMers future. For example, it could be useful in such concepts as switching the tuning of receivers to follow a type of music format or even identical signal transmissions so as one travels from Maine to Florida they can stay tuned to the same or similar programming as the receiver automatically retunes.

In any case, I sure enjoyed meeting with you all and hopefully the next time Ralph will be joining us for lunch and you guys will let me pick up the tab. Thanks again.

Best regards,

Leonard R. Kahn
President

LRK/jd
Encls.

United States Patent [19]

Kahn

[11] **Patent Number: 4,896,371**

[45] **Date of Patent: Jan. 23, 1990**

[54] **SYNCHRONOUS AM TRANSMISSION SYSTEM HAVING REDUCED SELF INTERFERENCE EFFECTS**

[76] Inventor: **Leonard R. Kahn**, 137 E. 36th St., New York, N.Y. 10016

[21] Appl. No.: **123,508**

[22] Filed: **Nov. 20, 1987**

[51] **Int. Cl.**[4] **H04B 1/02**

[52] **U.S. Cl.** **455/105**; 455/108; 455/103

[58] **Field of Search** 455/59, 49, 50, 51, 455/101, 102, 103, 105, 108; 381/15, 16

[56] **References Cited**

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1,994,288	3/1935	Scheibell	455/50
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OTHER PUBLICATIONS

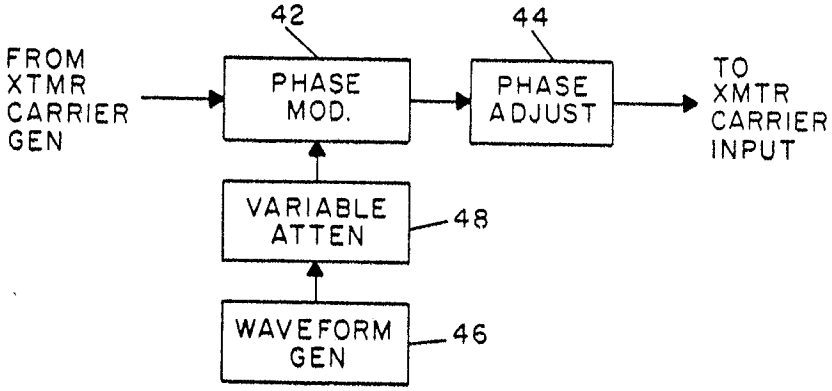
"Quasi-Synchronous Operation of A.M. Transmitters"; International Conference on Communications Equipment and Systems, Brighton, Sussex, England; Jun. 8-11, 1976; D. Carter; pp. 90-93.

Primary Examiner—Benedick V. Safourek
Assistant Examiner—Ralph E. Smith
Attorney, Agent, or Firm—E. A. Onders

[57] **ABSTRACT**

A synchronous transmission system that improves reception in areas where the main and the satellite signal create significant self interference. At least one of the synchronous transmitters is phase modulated in accordance with a selected modulation function which varies at a sub sonic rate.

7 Claims, 1 Drawing Sheet



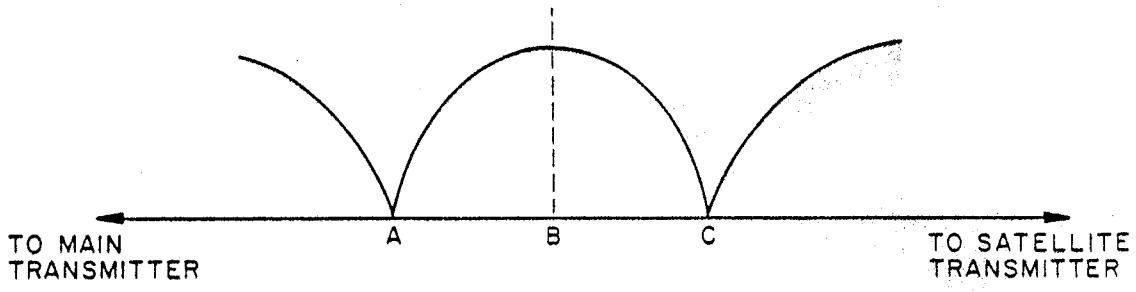


FIG. 1

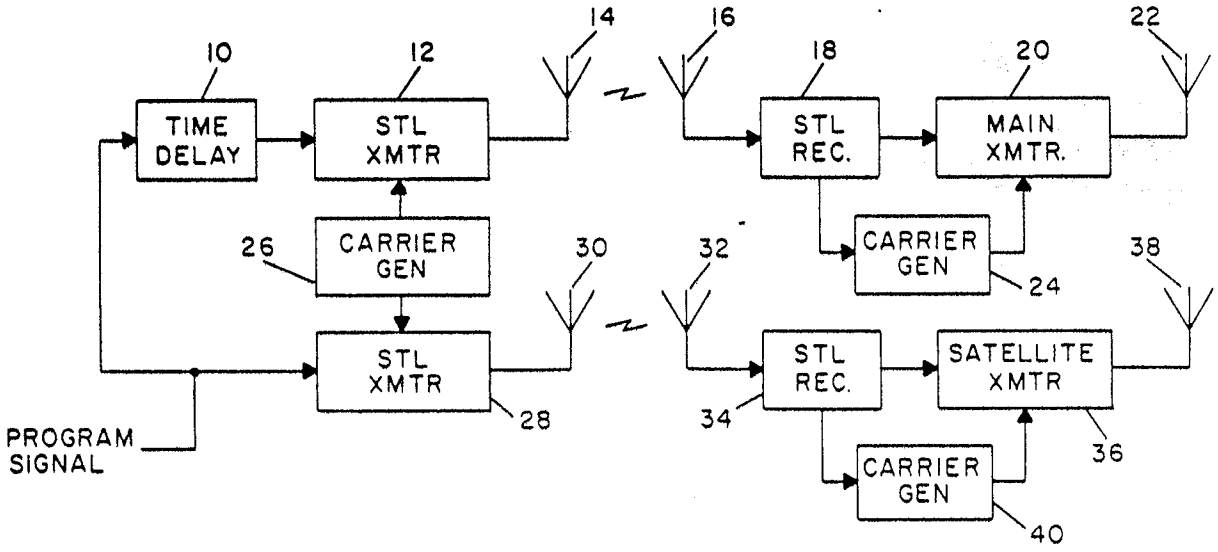


FIG. 2
(PRIOR ART)

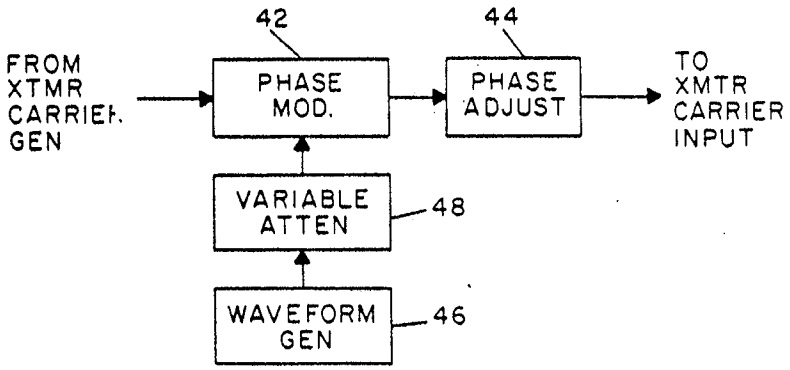


FIG. 3

SYNCHRONOUS AM TRANSMISSION SYSTEM HAVING REDUCED SELF INTERFERENCE EFFECTS

FIELD OF THE INVENTION

This invention relates generally to synchronous amplitude modulation (AM) radio transmission systems, including those used for broadcast purposes.

BACKGROUND OF THE INVENTION

Synchronous, or common frequency, transmission systems are well known and may be broadly defined as those which use a single carrier frequency shared by two or more transmitters that have identical program modulation, where the transmitters are located close enough to provide overlapping service areas.

It has been known, since the early days of AM broadcasting, that synchronous transmission could provide improved coverage, while not appreciably increasing interference. The system is especially attractive where dense "islands" of population are to be served. In such cases, a satellite transmitter, or transmitters, can be located close to the clusters of population in cases where they are not adequately covered by the primary or main transmitters.

The basic weakness of synchronous transmission is that it creates a zone of self interference, where signals from the primary and satellite transmitter overlap and are approximately equal in amplitude, in which carrier nulls can occur, thereby producing distortion in receivers. Such zones are called "mush zones", and it is desirable to locate them in regions of the radio stations's coverage area where there is low population density and where no major roads are located so as to minimize the number of listeners likely to encounter the distortion which results from the self interference. However, mush zones continue to be the greatest deterent to widespread use of synchronous AM transmission.

Accordingly, considerable engineering effort in the prior art has been directed toward reducing the adverse effects of self interference in the mush zones. For example, there are three basic synchronous transmission system arrangements in use.

In one form of prior art system the individual oscillators in the main and satellite transmitters, which establish the carrier frequency, operate independently and their frequencies are compared and adjusted to "zero beat" with some common standard, such as the reference signal produced by WWV. Alternatively, the frequency of the satellite oscillator is compared with that of the carrier frequency of the main transmitter. As long as the frequency difference between the main and satellite carriers is maintained accurately, say to less than one-tenth of a hertz, the mush zone is fairly narrow and well confined.

In another reform of prior art system, the main and satellite transmitter oscillators are locked in frequency and maintained in a close phase relationship. This arrangement avoids variable beating effects due to any frequency difference, but it creates, at least during the daytime under stable propagation conditions, sharp but very deep carrier cancellation nulls at specific locations in the mush zone. Accordingly, listeners that live in or close to such a null suffer poor reception. Furthermore, listeners driving through such nulls will hear significant bursts of noise and distortion. For example, when driving a car at 55 miles per hour directly along a straight line connecting the main and satellite transmitters of a synchronous station operating on a carrier frequency of 1 MHz, a listener's receiver will see a complete cycle of phase difference between the main and satellite signals about every six seconds.

Another prior art approach has been to maintain a precise frequency offset, for example ±0.1 Hz, between the main and satellite transmitters of a synchronous station so that the location of carrier nulls in the mush zone slowly and continuously move. Since the nulls move, they cause degradation throughout the mush zone, compared with fixed nulls which cause degradation at specific locations in the mush zone. The AVC of a typical radio receiver is able to average out these slowly moving nulls, providing a somewhat noisier signal, but one whose level is relatively constant.

My U.S. Pat. No. 4,569,073 and pending U.S. patent application Ser. No. 07/117,594, filed Nov. 5, 1987 cover assymetrical sideband AM transmission systems one of which (known as POWER-side TM) is presently being used experimentally for reducing the adverse effects of sideband cancellation also which occurs in the mush zone of a synchronous transmission system. The POWER-side system, which is manufactured by Kahn Communications, Inc., Westbury, N.Y., also allows listeners to favor one sideband in tuning, which in laboratory tests indicates that superior reception can be achieved under worst case conditions using this technique.

In light of the above, it is an object of the present invention to provide an improved synchronous AM transmission system wherein the adverse effect of self interference in the mush zone is reduced.

SUMMARY OF THE INVENTION

In accordance with the present invention there is provided an improved synchronous AM transmission system which includes a first and second AM transmitter, each having program and carrier signal inputs and means, for supplying a program signal to the program signal input of each of the transmitters. The apparatus also includes means for supplying a first carrier signal of predetermined frequency to the carrier signal input of a selected one of the transmitters and means, for supplying to the carrier signal input of the other of the transmitters a second carrier signal of substantially the same frequency as that of the first carrier signal and having a relative phase with respect thereto which is varied in accordance with a selected phase modulation function.

For a better understanding of the present invention, together with other and further objects thereof, reference is made to the following description, taken in conjunction with the accompanying drawings, and its scope will be pointed out in the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a graph illustrating signal strength vs. distance in the mush zone between the main and satellite transmitters of a synchronous AM station.

FIG. 2 is a block diagram illustrating a prior art two transmitter synchronous AM station arrangement wherein the main and satellite transmitters are phase locked.

FIG. 3 is a block diagram of a modification of the synchronous AM transmitter arrangement of FIG. 2, embodying the invention in one form.

DESCRIPTION OF THE INVENTION

FIG. 1 illustrates the signal strength which results from the combination of the separate but overlapping signals radiated from the main and satellite transmitters of a two transmitter synchronous AM station such as that shown in FIG. 2. FIG. 1 is valid for the area between the transmitters where the transmitted signals are approximately of equal levels. Because the overlapping signals create self interference and, in fact, cancel at specific distances from the two transmitters where signal levels are equal in amplitude and opposite in phase (i.e., at points A and C), the resulting combined signal strength is very sensitive to location. The signal strength level actually follows the absolute value of a sine wave (i.e.: rectified sine wave) and exhibits cusps at null points A and C. On the other hand, the slope of the curve in FIG. 1 goes to zero at point B, where the two signals are in phase and, therefore, add.

FIG. 2 shows a prior art synchronous transmission system which is capable of exact frequency and phase-locked operation. In the system of FIG. 2, it is assumed that both the main and satellite transmitters 20 and 36 are located remote from the radio station's studio and that they are fed programming via studio-to-transmitter links (STL), which in this case are radio links.

In FIG. 2, a program signal to be transmitted (either monophonic or a stereo pair) is supplied to the input of STL transmitter 12 via time delay circuit 10 and also directly to STL transmitter 28. Time delay unit 10 may, for example, utilize "bucket brigade" type integrated circuits (ICs) to provide an amount of time delay which can be controlled by an adjustable frequency clock signal. Changing the clock frequency produces a corresponding change in the delay introduced by unit 10 in a manner well known in the art. This time delay is provided because it is assumed that main transmitter 20 is located closer to the studio than satellite transmitter 40 and it is desired to equalize the transit time for audio modulation traveling from the main and satellite transmitters to the mush zone.

STL transmitters 12 and 28 each are coupled to a corresponding one of the STL antennas 14 and 30. Both STL transmitters derive their carrier signals from common carrier generator 26, so that the two STL carriers are either of the same frequency and locked in phase, or bear a fixed relationship in frequency and phase.

At the main transmitter location, the STL signal from STL transmitter 12 is received by STL antenna 16 and STL receiver 18 and the resulting program signal is coupled to the audio input of main transmitter 20, which, in turn, feeds main antenna 22. The carrier frequency for main transmitter 20 is derived from carrier generator 24, which is controlled by another output from STL receiver 18 so that the carrier frequency of the main transmitter 20 bears an exact frequency relationship to the STL carrier frequency.

Main transmitter 20 may be a conventional AM transmitter, or it may incorporate a stereo encoder or a "POWER-side" generator in accordance with the teachings of my U.S. Pat. No. 4,569,073 and my pending U.S. patent application Ser. No. 07/117,594 filed Nov. 5, 1987.

Similarly, the satellite installation receives the STL signal from STL transmitter 28 using STL antenna 32 and STL receiver 34, which feeds the resulting program signal to satellite transmitter 36 and synchronizing information to carrier generator 40.

Because the carriers of STL transmitters 12 and 28 are of the same frequency and are phase-locked or bear a fixed relationship in frequency and phase, the main transmitter signal and the satellite transmitter signal can be synchronized in frequency and made to have a fixed phase relationship, and, when received during daytime conditions, should have coincidence audio modulation.

The system shown in FIG. 2 is just one example of a prior art synchronous AM transmission system.

FIG. 3 shows how either the main or the satellite transmitter in FIG. 2 may be modified so as to embody the present invention. It is assumed, for purposes of illustration, that the modification shown in FIG. 3 is applied to the main transmitter because generally the main transmitter site is more accessible to station personnel and more convenient for adjustment and maintenance. However, the invention could be implemented at either the main or the satellite transmitter. If two or more satellite transmitters are used in a synchronous system and the mush zone results from the presence of the main signal, the implementation of the invention in the main transmitter is proper. However, if two satellite stations interfere to create a mush zone, the invention should be implemented in one of the interferring satellite transmitters.

As shown in FIG. 3, the carrier signal from main carrier generator 24 in FIG. 2 would instead be coupled to the input of a phase modulator 42. Phase modulator 42 is modulated by a selected waveform from waveform generator 46 which varies at a sub sonic rate. Although a triangular shaped waveform is preferred, other waveforms can be used, such as a saw tooth shaped wave, but they should not have a rich harmonic content which might create undesirable audible effects. Waveforms having portions with fixed amplitudes, such as a square wave, are not preferred because they cause the nulls in the mush zone to remain at a particular location for relatively long periods of time, instead being smeared as described previously. The rate at which the selected waveform varies may be any within the sub-sonic range.

For example, a triangular wave of 0.1 Hz may be generated in block 46. Its amplitude is then suitably adjusted by variable attenuator 48 to produce the desired amount of phase modulation in phase modulator 42.

The output of phase modulator 42 feeds a phase adjuster 44, which may be an adjustable tuned circuit, for example, for may be implemented by simply applying a dc bias to phase modulator 42. It should be noted that phase adjuster is not needed if the phase modulation produced by phase modulator 42 is equal to $+/-180$ degrees or if the main and satellite signals are not in true lock, since in these cases there would be no optimum setting for the adjuster. Under such conditions, phase adjustment 44 may be deleted. The output of block 44 supplies the carrier input for main transmitter 22.

If phase modulation is added to one of the transmitted signals in accordance with FIG. 3 it will have a much more pronounced effect at points A and C in FIG. 1 than at point B. Accordingly, a small amount of phase modulation will provide much more improvement in the signal strength at points A and C than it will cause a reduction in signal strength at point B. For example, if ± 60 degrees of phase modulation is introduced into one transmitted signal, the average signal strength at points A and C will rise from zero to 0.256% of the peak level; i.e., 11.84 db below the peak signal strength of the two

combined signals or about 5.8 db below that of one of the signals.

On the other hand, this same amount of phase modulation, i.e., ±60 degrees, will cause only an average reduction to 0.9885 of the peak or less than one-tenth of a db loss at point B. Accordingly, with proper adjustment of the system it is possible to make a significant improvement in reception at null points in the mush zone while maintaining almost all of the advantages of carrier addition in other areas. The location of these reinforced areas can be chosen such that they cover important listening locations, such as entrances to major toll bridges and tunnels where traffic tends to slow or halt.

If, however, the phase modulation is increased to ±180 degrees, then all signal locations are affected equally. This would be the adjustment one might make if there were no preferred listening locations in the mush zone or if the oscillators of the main and satellite transmitters where not phase locked and the nulls constantly moved.

Another important advantage of using less than 180° phase modulation is that it allows one to avoid deep null noise when listening at points where the signal is close to the maximum reinforced signal strength.

The present invention causes the location of the cusps or nulls to "smear" by oscillating about points A and C in FIG. 1 and, therefore provides signals having reasonable average levels at points A and C. At the same time the peak signal locations (point B in FIG. 1), while being reduced in amplitude slightly, will retain an acceptable signal strength. Synchronous transmission systems in accordance with the present invention are capable of compromise operation that retains almost the full strength at strong signal locations (such at point B in FIG. 1), while providing a very usable signal at locations which would otherwise be at a deep null (such as points A and C in FIG. 1).

While there have been described what are at present considered to be the preferred embodiments of this invention, it will be obvious to those skilled in the art that various changes and modifications may be made therein without departing from the invention and it is, therefore, aimed to cover all such changes and modifications as fall within the true spirit and scope of the invention.

I claim:

1. An improved synchronous AM transmission system, comprising:

first and second AM transmitters, each having program and carrier signal inputs;

means for supplying a program signal to the program signal input of each of said transmitters;

first means for supplying a first carrier signal of predetermined frequency to the carrier signal input of a selected one of said transmitters; and

second means for supplying to the carrier signal input of the other of said transmitters a second carrier signal of substantially the same frequency as that of said first carrier signal and having a relative phase with respect thereto which is varied in accordance with a selected phase modulation function.

2. A system in accordance with claim 1 wherein said modulation function is such as to vary the phase of said second carrier signal about a quiescent value by less than ±180°.

3. A system in accordance with claim 2 wherein said modulation function is such as to vary the phase of said second carrier signal by less than ±90°.

4. A system in accordance with claim 2 or 3 wherein said modulation function is a triangular waveform.

5. A system in accordance with claim 2 or 3 wherein said quiescent value is adjustable.

6. A system in accordance with claim 2 or 3 wherein said modulation function varies the phase of said second carrier signal at a predetermined sub sonic rate.

7. An improved synchronous AM transmission system having at least two system transmitters whose transmitted signals interfere to create one or more nulls in a mush zone, comprising:

first and second system AM transmitters, each having program and carrier signal inputs;

means for supplying a program signal to the program signal input of said first transmitter

means for supplying a program signal to the program signal input of said second transmitter;

first means for supplying a first carrier signal of predetermined frequency to the carrier signal input of a selected one of said transmitters; and

second means for supplying to the carrier signal input of the other said transmitters a second carrier signal of substantially the same frequency as that of said first carrier signal and having a relative phase with respect thereto which varies about a quiescent value by less than ±90, where said variation is at a sub sonic rate in accordance with a triangular waveform phase modulation function, thereby causing the location of said null to vary.

* * * * *

SYNCING IN DALLAS

GEORGE WHITAKER, SR.

KSSA-AM-FM

Although the Commission has indicated that they are going to put any ruling regarding synchronous operation on the back burner, I thought there might be some interest in what we are doing here with our experimental system.

First of all, I have to admit that we are not running true synchronous. No company seemed to have a working model that would actually lock the two transmitters together. The compromise was to use high-stability oscillators at each location. I have talked with Harris and with Continental about the possibility of getting other equipment to try out, but, so far nothing new has been developed.

KSSA operates a 1 KW directional from a site just northeast of Plano and a 1 KW with almost the same pattern from a site in southeast Dallas. The Sync site is approximately 20 miles due south of the main site with both transmitters pushing the main lobe westward. The Dallas site is used for day and night. The Plano site operates at night only.

Considerable planning went into the selection of the sync site due to the fact that you will have zones of interference anywhere the two transmitters overlap with a signal strength of approximately 4:1 or less. I chose the site in Dallas in order to drop our zone of interference across DFW airport, the silk stocking district, and the north Dallas commercial district.

When we actually began to make measurements and subjective listening tests we found that the zone of interference did, indeed, fall as projected. However, it did turn out to be somewhat wider than we had hoped for. It turns out that it is detectable for about a three mile wide swath. But, the area that we considered unlistenable was only about a mile to a mile and a half wide. These statements, of course, are based on subjective tests. The effect of the interference is vastly different if you are driving down the highway at 55 as compared to a stationary location.

We have experimented with the effect when the beats are 15 seconds apart up to five minutes apart. We settled on a 3 minute separation as being the most tolerable. The compromise here is that, if you slow the beat, you will have a longer period without the drop-out and then distortion that occurs when a beat moves through. However, the slower the beat the longer the duration of the drop-out and distortion. We found that, assuming we were Joe Listener, we would probably be able to stand a short period of distortion every three minutes better than a long period every

five minutes.

Having decided what period of distortion would be most tolerable, we then proceeded to see what we could do to minimize the distortion when it came through.

There really is no established procedure for setting the audio time delay. Therefore, we first calculated what the delay would be based strictly on the difference in the distance to the two transmitters from the S.T.L. transmit dish atop the building housing our studios, using this as a starting point we varied the time delay up and down. It turned out that we could tell very little difference in the distortion caused by the audio delay factor. We finally decided that it sounded best when the delay was set to the calculated figure.

The thing that seemed to have the most effect in decreasing the distortion was when we brought the "POWERSIDE" back on line. We have been running the Kahn "POWERSIDE" for some time in order to improve our coverage in the fringes of the metroplex. However, in order to keep from having too many things in the mix at one time, we had left it off for the first several weeks of experimentation.

We are favoring the upper sideband at the Dallas transmitter only. The Plano site is running symmetrical sidebands. We would like to be able to try running a system with one transmitter favoring the upper and one favoring the lower. However, even in a major market, getting the funds for such endeavors is like pulling hen's teeth.

All in all we are very pleased with the results of our operation and I, personally, would like to see the FCC proceed with the licensing of synchronous transmitters. In our case, we are very satisfied that the gain in potential listeners far and away offsets the trouble. Money, and loss of intelligibility in the zones of interference.

I would be happy to visit with anyone seeking more information about our operation. My office number is 214-528-1600. Since we operate synchronously only at night I would suggest that you call me ahead of time if you would like to study the system in operation so that we can get together in the evenings.

MEMORANDUM

TO: ALL ENGINEERS AND DRAFTSMEN

FROM: DON

TOPIC: AM GROUNDWAVE--NEW CURVES

DATE: MARCH 13, 1992

WE WILL SOON HAVE NEW GROUNDWAVE UPDATE CURVES FOR USE WITH AMGW. WE NOW HAVE AN EARLIER VERSION WHICH CAN BE USED FOR PRELIMINARY STUDIES. ITS NAME IS NGWM.015

munications and navigation equipment from potentially hazardous interference, the FCC and broadcasters claim that the new rules are unnecessary and that compliance would be very costly for regulators and industry alike.

Under the proposed rules, the FAA would have to be notified of any construction or alteration of very high frequency (VHF) television transmitting stations or radiofrequency (RF) transmitters operating at frequencies above 30 MHz and with an effective radiated power above 10 kW. The new rules would also classify EMI as a "potential obstruction" to aircraft, restricted by the same rules as physical structures.

"All the new rules do is clarify some gray areas," Gerald Markey, manager of the FAA's Spectrum Engineering Division, told *Microwave News*, adding that, "We have been accused of being conservative, but when it comes to air safety, it's our job to be conservative. If radiation interferes with an aircraft's communication system, we consider it a hazard to aviation."

The FCC does not agree. "While the FCC certainly endorses and shares the goal of improved air safety, we believe the proposed FAA rules would impose substantial additional costs—without offsetting benefits—on the FCC as well as the communications industry," wrote FCC Chairman Alfred Sikes in a January 4, 1991 letter to Samuel Skinner, Secretary of Transportation. The FAA is part of the Department of Transportation.

"Because it failed to consider the legitimate needs and views of the FCC and communications licensees when it prepared its proposed new rules, the FAA has produced proposals that are technically flawed and discriminatory...against communications licensees. These proposed rules wholly fail to serve the public interest," argued the National Association of Broadcasters (NAB) in a joint statement with the Association for Maximum Service Television. The FAA proposals have also met with objections from the land-mobile radio and cellular telephone industries.

FM radio and VHF television transmitters, which operate at frequencies close to the aircraft communications band, would be affected most directly by the new rules.

The FAA and the FCC have been struggling for control over the broadcast spectrum for over a decade. In 1978, Congress directed the FAA to consider EMI. In the years that followed, increased FAA regulation of EMI consistently met with opposition from the FCC and broadcasters.

In 1985, the FCC proposed rules to enhance the compatibility of FM broadcasts with aviation electronics. These rules were criticized as too lenient by the FAA and were never adopted (see *MWN*, My85). Though both agencies acknowledge the need to cooperate, they have yet to agree who has the final say on EMI.

The FAA's notice of proposed rulemaking appeared in the August 3, 1990 *Federal Register* (pp.31,722-31,738).

OSHA Warning on RF Shocks and Burns near AM Transmitters

The Occupational Safety and Health Administration (OSHA) has issued a warning against potential radiofrequency (RF) shocks and burns to longshoremen working near AM radio transmitters.

The September 5 bulletin was prompted by reports of burns suffered by longshoremen while unloading cargo in San Francisco, CA. According to OSHA, a crane cable picked up RF energy from nearby AM radio transmitters and discharged it into the workers. An OSHA health response team measured currents in the cables as high as 200 mA—double the proposed American National Standards Institute (ANSI) exposure limit for controlled environments. (The proposed limit for uncontrolled environments is 45 mA.)

Mac Cheeks, an OSHA spokesman in Washington, DC, told *Microwave News* that the wharf is considered to be a "controlled environment," even though the AM stations are not part of the work site. At a June 1989 meeting of the subcommittee charged with revising the 1982 ANSI RF limits, the definition of a "controlled" environment was a hot topic of debate (see *MWN*, S/O89). Cheeks pointed out that the longshoremen's electric field exposures were only 10 V/m—well below the 1982 ANSI safety limit of 632 V/m at AM frequencies.

In an interview, Bob Curtis, director of OSHA's Health Response Team in Salt Lake City, UT, pointed out that RF shocks and burns occur well below the ANSI contact standards. "It's a real hazard," he said.

OSHA has recommended that dock employers protect workers unloading cargo at the San Francisco site by placing an insulator between the crane hook and the crane cable, by grounding the crane cable or by providing insulating clothing.

Similar shock and burn hazards were documented in 1988 by Paul Gailey, a consultant now based in Salt Lake City, UT, at the H-3 highway site on Oahu, HI, located under an OMEGA transmitter operating at 10–13 kHz (see *MWN*, J/A88). Gailey's report for the U.S. Coast Guard was highly controversial at the time; however, OSHA has since imposed specific requirements at the worksite to protect against RF shocks and burns, according to Curtis.

In 1982, *Chemical Engineering* magazine warned of possible fire hazards at chemical plants located near AM transmitters (see *MWN*, Ap82).

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January 14, 1992

Mr. Larry Olson
Federal Communications
Commission
2025 M Street, N.W.
Room 8120
Washington, D.C. 20554

Dear Mr. Olson:

This firm represents AM radio station WEEU, 850 kHz, Reading, Pennsylvania. The purpose of this letter is to object to harmful nighttime interference that is being experienced by the WEEU listening audience as a result of co-channel station CKVL, Verdun, Quebec. High levels of CKVL nighttime signals were observed by the undersigned on 850 kHz while driving across Loudoun County, Virginia, on January 2, 1992. WEEU has reported on numerous interference complaints from its listening audience on January 2, 3, 6, 7, 9, and 10, 1992.

This interference problem from co-channel station CKVL has been recurring on an approximate annual basis for many years. It is, therefore, requested that immediate action be taken to resolve this matter with the Canadian Department of Communications.

On the evening of January 10, 1992, skywave field intensity measurements were performed by the undersigned from a rural location in Loudoun County, Virginia, at the following geographic coordinates:

North Latitude:	39° 13′ 53"
West Longitude:	77° 29′ 56"

The following field strength values were observed:

Date/Time 1/10/92	CKVL Measured Skywave Field Strength mV/m
2045-2050	0.08 to 0.25
2050-2055	0.12 to 0.35
2055-2100	0.35 to 0.73
2100-2105	0.20 to 0.45
2105-2110	0.35 to 1.05
2110-2115	0.30 to 1.05
2115-2120	0.23 to 1.0
2120-2125	0.16 to 0.66
2125-2130	0.11 to 0.68
2130-2135	0.15 to 0.49
2135-2140	0.22 to 0.42
2140-2145	0.12 to 0.46

The program consisted of French language talk programming with advertising and CKVL identifications. A tape recording of the CKVL programming taken for approximately 30 minutes during the observation of field strength measurements can be made available to the FCC on request.

Experience through the years has shown that the problem occurs because CKVL is not changing to its nighttime power and directional pattern in accordance with the bilateral U.S./Canada AM Broadcasting Agreement. It is our understanding that during the past three years the Department of Communications was able to verify that CKVL was not changing to its nighttime mode of operation.

Therefore, it is requested that the appropriate communications be performed with Canadian counterparts to bring this issue to a rapid conclusion. Your assistance is greatly appreciated. If there is any additional information required, please advise.

Sincerely,

Warren M. Powis

WMP:mcw
cc: Henry Straube
Jim Ballis
Larry Cohn

AM 16

EDX ENGINEERING, INC.
P.O. Box 1547 ■ Eugene, Oregon 97440 ■ Tel.: (503) 345-0019 ■ Fax: (503) 345-8145

January 10, 1992

Dear AMSW™ / AMRD™ User:

You'll find enclosed updated copies of programs AMRD and AMSW. These updates more easily function with the requirements of the new AM Rules adopted in MM Docket 87-267. We understand that the new Rules will become effective February 20, 1992.

The nighttime study extraction function (Function 4) in AMRD has been modified so that the points file only contains co-channel and adjacent channel stations with RMS's above 141 mV/m since interference studies to stations with lower nighttime RMS's are not required. Similarly, non-US adjacent channel stations are also excluded from the points file. The station file, however, contains all of these stations as before. A bug has also been fixed in AMRD so that you can now search for stations inside small search radii (less than 100 km).

Program AMSW has been modified so that adjacent channel contributions to non-US stations are excluded from RSS calculations at those stations. AMSW also produces a new file called RSS.TMP after each run of Function 5. This file contains the 50%, 25% and 0% RSS exclusion levels for all points in the points file. File RSS.TMP is over-written each time you use Function 5, so if you want to preserve the results, re-name or copy the file to something else. Also, the prompts in the program have been changed so that the new Rules (and new propagation equation) bear the designation "1992 method" where appropriate.

Doug joined RCA in Montreal after graduating from the University of Manitoba in 1953, eventually becoming manager of RCA's Broadcast Engineering Group. He founded D.E.M. Allen Associates in Winnipeg in 1965 and today, when most of his contemporaries have retired, continues as company president and a very active engineer.

Also involved in the Association for Disabled Skiing, Doug received the Order of Canada in 1986 in recognition for his work in disabled sports.

The George McCurdy Bursary Award, established to honor the late George McCurdy for his contributions to the broadcast industry, went this year to Owen Mekitarian, who brings a unique background to the broadcast industry. Raised in Ireland and now a Toronto resident, Owen worked for Eastern Breeders Inc., which deals with the artificial insemination of cows. He worked part time at CJSS/CFLG-FM Cornwall during his electronic training at St. Lawrence College in Cornwall. After graduating with honors he joined Tri-Co Broadcasting, where he is currently directing a Sentry/Audisk automation installation with an R-Sound and Columbine interface.

Business Meeting

The annual CCBE business meeting, held October 21 after the scheduled convention session was completed, heard reports from the president and executive committee members.

A new executive was elected by acclamation. The 1992 executive is:

President, Bruce Carnegie; Vice-President, Marc Germain; Trade Show Manager, Bill Onn; Papers Chair, Robert Latreille; Publicity Chair, Robert Findlay; Secretary/Treasurer, George Roach; Membership Chair, Gerald Belanger; Member-at-Large, Paul Firminger; CCBE Rep to CAB, Jim Mercer. Tom Young is the past-president.

The 1992 changeover meeting was to be held early in the new year. The 1992 convention will be held in Ottawa in September, a month earlier than usual.

WABE Convention Report

Tom Young was the CCBE's delegate to the 41st annual WABE convention at Calgary's Westin Hotel in early October. It was, according to Tom, a great success.

The convention opened with an evening Attitude Adjustment Period sponsored by MSC Electronics, Labatt's Alberta Breweries and WABE.

The papers session was opened by WABE President John Bruins and Bob Lamb of R.W. Lamb Consulting & Management Ltd. The 22 papers covered a wide range of topics including advanced television and radio systems, digital storage, D2 and D3 tape systems, tower maintenance and the CAB technical report.

WABE Ambassador awards were presented to Tim Cuddy and Wayne Gedelman at the annual awards luncheon.

Attendees at the WABE business meeting were informed that the convention was a success with 572 registered delegates and 280 pre-registrations. A total of 49 exhibitors were located on three floors of the hotel; there were 46 booths and 32 room displays.

The new WABE executive is:

President, John Bruins; Sec/Treasurer, Bob Hall; Exhibits Chair, Bob Urban; Accom. Chair, Brian Luscombe; Host Chair, Peter Sara; Papers Chair, Dave Tidbury; Sessions Chair, Bob Bennert; Ad Hoc: Jack Weibe. Bill McCambly is past president.

WABE has a wonderful tradition at the conclusion of its conventions, the Slo-down Hoe-down. This time it was held at the Symon's Valley BBQ Ranch. A reception was provided by the host stations and Labatt's Alberta Breweries and the beef BBQ dinner was provided by LeBlanc Royles Telecom Inc. and WABE.

Delegates were bussed back to the hotel and invited to finish the evening with an Irish coffee, courtesy of Nortec West Limited.

WABE's 1992 convention will be a joint affair with the CAB in early November at the Vancouver Trade and Convention Centre.

Bob Findlay, a prominent Montreal television engineering executive, is publicity chairman for the CCBE, the Central Canada Association of Broadcast Engineers. He may be contacted at (514) 352-4038 or fax (514) 354-7514.

DAB UPDATE:

Canada Rejects "Second-Best" Option

(The following is an edited summary of remarks by the author during the panel discussion on digital radio at the CAB's annual convention.)

by Wayne A. Stacey, P.Eng.

As of October 1, Canada's preparatory work for WARC-92 was completed and our proposals transmitted to the ITU in Geneva. We will be asking for an allocation of 74 MHz of new spectrum for digital sound broadcasting, to be located in the L-Band from 1441-1515 MHz.

Our recommendation is that a new digital service be designed to accommodate both terrestrial and direct-to-home satellite transmissions in the same band. We concluded early in the planning process that a satellite component must be included if the concept is to be sold internationally or we run the risk of encountering serious opposition from countries that wish only to implement satellite digital services and have no use for terrestrial coverage.

Because the proposed band is presently used by certain non-broadcasting services, and because there are legitimate concerns about unfair competition to local services, the Canadian plan calls for the more disruptive satellite component to be implemented much later than the terrestrial one.

This achieves two purposes. It gives considerable time for existing non-broadcasting services to vacate the band. It also allows terrestrial services to begin operating at least five or six years before competing satellite services would be available.

We propose to do this by providing terrestrial stations with 60 MHz of the initially-allocated 74 MHz; the remaining 14 MHz would be opened for use after 2001.

As for satellite services, none could be implemented until at least 2001, when 46 MHz of the total band would become available. Another 14 MHz would be provided after 2012 and the final 14 MHz after 2020.

As a result, terrestrial digital broadcasting would proceed almost immediately, allowing existing broadcasters the opportunity to begin offsetting the in-roads that are being made by competing digital audio entertainment services.

DBS Threat Overstated

Some ... believe that ... planning for a mixed satellite/terrestrial band is a mistake because the large number of digital receivers that would be purchased following introduction of terrestrial digital services would constitute a ready-made market for competing satellite services.

It is my belief that the concern about satellites is considerably over-stated.

If enough spectrum is allocated at the WARC to accommodate terrestrial services than local broadcasters will have the advantage of time. They will be able to begin broadcasting digital signals, and grab market share, long before any competitor can design, build and launch a high-power satellite that would compete with them.

Let's remember that digital services can't be implemented on any satellite that exists today, or is even on the drawing board. The concept-to-launch cycle for satellites is now at least five years ... Canada's WARC proposal would delay this even further, to 2001.

On the other hand, it is possible that the WARC will allocate spectrum *only* for satellite services. If this happens there is a remote chance receiver penetration would ever be high enough to pose a threat to conventional broadcasters.

New Band Best

Before settling on this "new band" option, we looked long and hard at how we might accommodate digital services in existing broadcasting spectrum. Our conclusion was that a new band is a far better alternative. Here's why.

Whenever we have tried in the past to add up-graded services to an existing band, we have found ourselves burdened with technical compromises that just never go away. The worst example of this is the North American NTSC color transmission system. Because of the requirement to ensure monochrome receiver compatibility, the color system we selected has had to suffer for 25 years from inherent technical faults.

In short, TV broadcasters are still dragging around all the unwanted technical baggage of a 43-year-old monochrome transmission system that itself is now obsolete.

If we are forced to implement digital radio services in the present FM, AM or TV bands, performance compromises are inevitable. New services, no matter how beneficial, will simply not be allowed to disrupt existing ones. This will constrain the new services, either in the quality they can deliver or the coverage that they can achieve.

Moreover, the many propagation and interference problems that exist in the present bands will not magically disappear just because digital services are added. For example, digital receivers operating in the AM band would not be immune to skywave interference at night from distant stations. This phe-

nomenon would continue to limit effective nighttime service in the future, just as it does today.

If it is possible to acquire a new radio band at WARC-92, we will be able to start with a clean slate to design a state-of-the-art radio broadcasting system that will serve the industry and the public well for at least the next 25 years.

If WARC-92 is unsuccessful, then — *and only then* — should we seek other alternatives.

It makes no sense to opt for second-best as our first choice. We should put everything we have into taking our best shot at the spectrum resources we need to do the job properly.

As an engineer, it puzzles me greatly why anyone would, as their *preferred option*, want to try to cram a brand new digital service into the present AM and FM bands. Every time we have done something bone-headed like this in the past, we have burdened ourselves with technical compromises that just never go away.

Surely, if a new radio band can be allocated at WARC-92, it is much preferable to start with a clean slate and design a proper ... system that will serve the industry and the public well for at least the next 25 years.

L-Band Testing

Over the past summer, the CAB, the CBC and the DOC sponsored an extensive series of field tests in Ottawa and Montreal to evaluate propagation and multipath characteristics in the L-Band spectrum at 1500 MHz. The results were extremely encouraging and, in fact, compared favorably to what was experienced when we tested the Eureka 147 DAB system at 800 MHz in 1990.

At L-Band, signal losses on straight-line paths are higher than those experienced on the FM band. On the other hand, digital receivers, by their nature, can live with much less signal power at their antenna terminals and still provide superb CD quality sound.

Also, the higher the frequency the greater the number of physical objects from which emitted signals will reflect and the easier it is for them to sneak through windows and into tunnels and underpasses.

Using the L-Band will require adjustments in the way transmission facilities are planned. However, we are convinced that it will be possible to come up with innovative frequency allotment schemes that will allow radio broadcasters to shift their operations from analog to digital, without seriously compromising the services they provide to the public or their revenues.

Many of the concerns expressed about the parity issue centre around the mistaken belief that conversion to digital will mean that all stations in a market will have identical coverage and be capable of the same high transmission quality. While equivalence in quality for all digital stations is likely, coverage need not be identical.

In designing a frequency allotment plan, it will be quite feasible to provide for different coverage for stations in the same market. What this will mean is that ... coverage can be custom tailored to suit the requirements of the licensee and the desires of the regulator.

In summary, we think that our long-term plan for digital radio makes good sense, for three important reasons:

(1) We are not relying on "vapourware" technology. Our concept is based upon using technology that has been proven, through actual field tests, to meet all of our technical requirements for a state-of-the-art digital radio transmission system;

(2) New services will be implemented in a brand new band — one that can ensure effective coverage with requiring technical compromises to protect existing services; and

(3) Our mixed terrestrial/satellite delivery concept allows each country the freedom to choose how its digital services will be delivered, but delays the advent of potentially disruptive satellite services for a period of time.

Wayne Stacey, a partner in the Ottawa consulting engineering firm of Stacey, Lawson Associates Ltd., is a consultant to the Canadian Association of Broadcasters and a member of the CAB's Digital Radio Task Force.

TORONTO SECTION REPORT:

PAPERS PRESENTED ON COMPUTER GRAPHICS, ANIMATION

by Peter Laidlaw

The theme of the November 12 meeting was computer graphics and animation, with papers presented on both topics.

The program opened with a paper titled *Imaging from Computers to Film* prepared and presented by Linda Jackson of Autographix Inc. Linda began by explaining the range of computer graphics technologies available for preparation of materials for both film and print media. She also provided the audience with an explanation of the color separation process and the means by which modern graphics systems deliver output to these presentation systems.

Linda provided a description of the electronic and software systems required to create graphics, pointing out that developments in both hardware and software has resulted in much work being done on personal computers fitted with appropriate high resolution display and output devices. She was able, through demonstrations, to show the effect of varying resolution on the resultant outputs.

Of particular interest was discussion relating to the high resolution for film recording. Linda focused her attention on the resulting requirements of the displays, citing the need to reach resolutions in excess of 8,000 lines for modern large format presentations.

Linda concluded her remarks with a graphic demonstration of artistic materials prepared through various graphics platforms, showing the relative merits of each technology.

Computer Animation

The second paper, *Computer Graphic Animation and Live Action* by Harold Harris of Topix Computer Graphics and Animation Inc., dealt with the artistic and technical requirements of producing computer animation for live action.

Harold's presentation began with a videotape showing some of the work Topix has carried out on behalf of clients, which demonstrated the high degree of commercial animation practised today. The presentation was annotated with information providing the audience with knowledge of the production aspects of modern computer graphics animation and giving an indication of the manpower and time required to do the work.

Harold described, on a step-by-step basis, the methods Topix uses to create computer graphics animation, including the initial aspects of development, work carried out by third parties, wire frame models and, finally, the rendering process required to complete the work. He also noted the special mathematics required in the software to produce reflected and refracted surfaces to achieve realistic perspective.

The paper concluded with a video presentation of state-of-the-art computer graphics animation features Harold had collected. The fascinating presentation provided a future perspective of the trends of the industry.

FOCUS ON DIGITAL VIDEO COMPRESSION

The theme of the October 8 program of the Toronto SMPTE chapter was digital video compression technologies.

Colin Boyd of Scientific Atlanta (Canada) Inc. opened the program with the paper *Developments in Digital Video Compression* and introduced the discussion with a brief summary of the historical aspects of satellite delivery technologies which have been applied by the industry — and by Scientific Atlanta — in the past.

Boyd pointed out that his company had developed the popular B-MAC system now giving way to newer digital delivery modes, using FM delivery modes. Rationale for "going digital" detailed by the presentation included: decreased signal degradation, easier processing, more channel availability, and the ability to encrypt signals.

Boyd also discussed the differences between discrete cosine transform and vector quantization compression technologies, outlined the salient features of each basic technique, and noted that Scientific Atlanta had adopted the vector quantization principle in development of their products. Among the reasons he cited for the decision were the low cost of receiver components, minimization of motion artifacts, and robustness of the signal from a transmission point of view.

Boyd outlined some possibilities for future development of the system and noted that, as the vector quantization technique is highly memory-dependent, future developments in the semiconductor industry offer potential for system improvements in terms of both quality and cost.

He concluded his presentation by noting that these were exciting times from a television point of view, and provided the audience with a video demonstration of S/A's video compression technologies.

Video Compression

Terry Snazel of TSN Enterprises presented the second paper of the evening — *Video Compression From the*

A.M. 18.

stations in the news

WIC APPEALS CHCH DECISION

WIC Western International wants a new hearing to argue against a CRTC decision that it sell either CHEK-TV Victoria or CHAN-TV Vancouver within two years if it wants to buy CHCH-TV Hamilton.

WIC's board decided not to accept the CRTC's conditions placed on its purchase of CHCH, calling them "unacceptable in light of financial implications to the Company and reduced service consequences to the viewing public."

WIC planned to file a new application with the CRTC for transfer of ownership of CHCH and ask for another hearing. WIC president Doug Holtby has said WIC would abandon the deal if the commission insisted on the sale of either of its B.C. stations.

In its decision the CRTC said CHEK and CHAN serve the same market and having two stations with the same ownership in one market is against commission rules. A commission spokesman said the situation was one the broadcast regulator has wanted to rectify for some time.

CKTS CEASES OPERATION

Quebec's only English-language commercial radio station off the island of Montreal has signed off after 45 years of broadcasting.

CKTS Sherbrooke ceased to exist in mid-October. Instead, following an agreement between station owner Telemedia and Standard Broadcasting, programming from CJAD Montreal replaced CKTS at 900 on the AM frequency in Sherbrooke.

Telemedia is reported to have lost $2.9 million on the station since 1969, $250,000 of that last year.

Meantime, Radiomutuel has asked the CRTC for permission to drop local programming on its CJRS Sherbrooke in favor of programming originating from the Radiomutuel network and/or Radiomutuel's CJMS Montreal, until December 1992.

RADIO OWNERSHIP CONTINUES TO CHANGE

The ranks of owners of Canadian radio stations continues to change.

In the latest moves, Electrohome Ltd. is selling off its radio properties and Moffat Communications Ltd. says it plans to do the same.

Electrohome is selling CFRN/CJKE-FM Edmonton to Standard Broadcasting Corp. Ltd. and CKKW/CFCA-FM Kitchener to a company headed by Jack Schoone. No purchase prices were announced and the sales are subject to CRTC approval.

Electrohome said it plans to focus on and expand its television broadcasting, retaining CFRN-TV Edmonton and CKCO-TV Kitchener.

Meanwhile, Moffat has its 10 radio stations up for sale.

Moffat president Randy Moffat said the radio division isn't making money,

work, Toronto; **Ken Clark**, VP/GM, CKY-TV Winnipeg; **Ron Evans**, president/GM, CHBC-TV Kelowna; **Doug Garraway**, VP/GM, CKVR-TV Barrie; **Serge Gouin**, president/CEO Tele-Metropole Inc., Montreal; **Steven Harris**, president/CEO, CHCH-TV Hamilton; **Bill Holmes**, manager, CJCB-TV Sydney; **Douglas Holtby**, president/CEO, WIC Western International Communications Ltd., Vancouver; **Gordon Leighton**, GM, CKPG-TV Prince George; **David Mintz**, president, Global Television Network, Toronto; **Larry Nichols**, president, New Brunswick Broadcasting Co. Ltd., Saint John; and ex-officio members **Cam Fellman**, president Television Bureau of Canada, Toronto and **Richard Hetherington**, executive VP/GM, Alexander Pearson & Dawson, Toronto.

Gold Ribbon Awards

The man many call "The Senator" was given private broadcasting's highest honor during the conference.

Elmer Hildebrand, president of Golden West Broadcasting Ltd., Altona, Man. and immediate past chair of the CAB, was presented with the Gold Ribbon award for Broadcast Excellence.

Moffat Communications' **CFOX-FM Vancouver** was the only multiple Gold Ribbon award winner. CFOX's annual talent search was named best Canadian Talent Development project of the year; the station also won for Best Radio Promotion.

Other radio Gold Ribbon winners were: **CFFM-FM Prince Albert**, Community Service; **CKAC Montreal**, News Series; **CJAD Montreal**, News; and **CFFR Calgary**, Public Affairs/Documentaries.

Television winners were: **CHMI-TV Portage la Prairie**, Canadian talent development; **CKSH-TV Sherbrooke**, Community Service; **ATV Halifax**, news; and **CFQC-TV Saskatoon**, Public Affairs/Documentaries.

Three other major awards were also presented during the conference:

- Former CAB chair **Jim Sward**, president, Cantel Inc. and vice-chair/CEO, Rogers Broadcasting Ltd., Toronto received the Ted Rogers Sr./Velma Rogers Graham award for making "the most significant contribution to the Canadian broadcasting system".

- **Paul H. Schurman**, president and manager of CJRW Summerside, PEI, won the Paul Mulvihill Heart Award as the broadcaster "who has uniquely given of himself to enhance charitable or community endeavors in Canada."

- **Ted Rogers**, president/CEO, Rogers Communications, Toronto and owner of Toronto's multilingual CFMT-TV, received the Real Therrien award for achievement in the area of multilingual broadcasting.

CRTC Prepared To Help

Keith Spicer, in his first industry-wide address since returning to the CRTC chair, told the convention the commission is prepared to meet broadcasters halfway to help solve financial problems facing the industry — but only halfway.

Spicer said the CRTC "intends to exempt the promotion of Canadian television from being considered as advertising. As is already the case in radio, this will act as an incentive to increase the amount of promotion for ... Canadian television shows."

He credited the idea to the CAB's new discussion document, Taking The Lead II, but suggested some of its other suggestions might not receive such a favorable reception.

For example, he said, even though industry interest charges have "skyrocketed" as debt has increased — much of it "attributable to takeovers" — he couldn't imagine the CRTC relaxing rules on Canadian program spending. And he reminded his audience that the CRTC has to look out for the public interest.

Spicer also suggested that applicants for new TV licences would have to present "an extremely strong case" to receive approval.

Meanwhile, five of the 12 members of the CRTC acknowledged at the close of the convention that the situation is tight for many private broadcasters, but warned there's no universal cure to help private stations that are in serious trouble.

The five — Adrian Burns, Bev Oda, Ed Ross, Bud Sherman and David Colville — were invited to respond to industry demands for assurances the CRTC would regulate in favor of greater profitability for private broadcasters.

Sherman told about 200 convention delegates that the radio situation "is very serious. The CRTC is particularly concerned with the closure of some stations in recent years and by lower profits, and with the potential for even further damage.

"And television faces structural, not just cyclical problems. If we ignore it, incalculable damage will be caused to the culture and economy of Canada."

But delegates were also told the CRTC will not regulate across-the-board to protect private broadcasting interests.

"We must take into account the individual problems of individual licencees, and caution against adopting universal solutions," Sherman said.

GOOD NEWS FOR CBC

The federal government is giving the CBC an extra $46 million next year — a bonus that will allow the CBC to avoid major layoffs, station closures and service reductions.

The money won't cover the entire expected shortfall — estimated at more than $50 million — but the CBC expects to make up the other $5 million to $6 million by improvising productivity.

CBC spokesman Iqbal Rahemtulla called it "the best fiscal news that the CBC has received in years" and said there was a sense of "great optimism" at the CBC.

CBC President Gerard Veilleux credited Communications Minister Perrin Beatty for persuading the government to give the CBC the extra funds.

He said the money will enable CBC to avoid service reductions. –BT