

Edited by: Leonard Charles.  
Articles Welcome!! Send them to:  
Chapter 24 Newsletter  
5714 Modernaire St.  
Madison, WI 53711  
(608)-274-0041  
(608)-271-4321  
(hard copy or ASCII text message  
on BBS at 608-274-7776)

Contributors this month:  
Doug McDonell  
Doug Smith  
Tom Weeden  
Stan Scharch  
Phil Mikalofsky

**MEETING ANNOUNCEMENT**

DATE: May 23, 1990

Dinner: 5:30pm at ALEXANDERS  
SCHROEDER ROAD  
(Whitney Way at the Beltline)

Business Meeting: 7:00pm at the TOC  
Program: 7:30pm-KU Uplink at the TOC

We have Alexander's booked for the usual dinner time, 5:30. We have a conference room at the TOC booked for the business meeting at 7:00pm. (Reconvene for business at the TOC.) Then we will have a tour of the Satellite uplink there.

**CERTIFICATION....**

Future Exam Dates:  
SBE Convention October 6th  
November 9-19

Contact Doug McDonell for examination application information.

**UPCOMING MEETING DATES**

- June 21, 1990
- July 17, 1990
- August 15, 1990
- September 13, 1990
- Oct 4-7 - SBE National
- October 16, 1990
- November 14, 1990
- December 13, 1990
- January 15, 1991
- February 13, 1991
- March 21, 1991
- April 23, 1991
- May 22, 1991

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Broadcast Sales Division

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**ELECTION RESULTS....**

Our fine candidates have all been personally notified and the results are as follows:

- CHAIRMAN ..... Steve Zimmerman
- VICE-CHAIRMAN ... Jim Hermanson
- SECRETARY ..... Tom Weeden
- TREASURER ..... Fred Sperry

- Resolution #1-90 .... Yes
- Resolution #2-90 .... Yes

We want to personally thank all the candidates and congratulate the newly elected officers! We know that their dedication and professionalism will

continue to bring our chapter to new heights in the year ahead!

A special thanks to Dennis Behr, Kevin Peckham, and David Woodcock for their work on the nominations committee.

**YOUR NEW OFFICERS....**

- CHAIRMAN:**  
Steve Zimmerman (WKOW TV) W - 274-1234  
H - 845-8738
- VICE CHAIRMAN:**  
Jim Hermanson (WTSO/WZEE) W - 275-7130  
H - 231-2005
- SECRETARY:**  
Tom Weeden (WMTV TV) W - 274-1515  
H - 271-7633
- TREASURER:**  
Fred Sperry (ECB/TOC) W - 273-5420  
H - 833-6074

**COMMITTEE APPOINTEES**

- Past President - Andy Murphy/Denny Behr
- Membership - Dave Gerish
- Sustaining Membership - Leonard Charles
- Strategic Plan Comm - Denny Behr (Chair)
- Newsletter - Leonard Charles
- Program Chairman - Kevin Ruppert
- Cert/Ed - Doug McDonell/Tim Trendt
- Frequency Coord - Chris Cain
- Chapter Liason - Doug Smith

Patrick Allcock  
Service Manager

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**THE LEGALS....**

info by Doug McDonell

Shalom Christian Center, Inc., of Madison has had its application returned for a construction permit for a new low power TV station for Madison on Channel 59.

An application for modification of FM station WJAM's CP has been granted to D.L. Markley & Associates, Inc., of Columbus, WI. The modifications include to change the TL to the SE corner of St. Hwy 60 and Co. Rd. A. The station is licensed on 100.5MHZ.

Odon Madison Limited Partnership of Sauk City, WI has had its application granted for an aural STL on 945.875MHZ transmitting from 4610 University Avenue to be used with station WMLI FM Sauk City, WI.

**FCC NEWS....**

info by Doug Smith

South Carolina's two senators (Republican Strom Thurmond and Democrat Ernest Hollings) called in FCC officials to explain the Commission's refusal to

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approve WLOS-TV's purchase of WAXA-TV. WLOS, located in Asheville, N.C., proposed to use WAXA, located in Anderson, S.C., as a satellite relay. Apparently the FCC's explanation was sufficient as the senators' staffs had no further comment.

On the heels of the proposal for WHMA-FM, Anniston, Ala. to move to suburban Atlanta, WHMA owner Crown Broadcasting appears to be prepared to repeat that move elsewhere. Crown has purchased 5 FM stations in the general vicinity of Tucson, Ariz.; Denver, Colo.; Sacramento, Calif.; and Columbus, Ohio.

Timothy Brumlik, convicted last fall of drug charges, was sentenced April 30th

in Orlando. Brumlik is 55% owner of WTSG-TV Albany, Ga., and 85% owner of WGNM-TV Macon, Ga. He will likely sell the stations. Rumor has it actress Kim Basinger, native of Athens, Ga., is considering buying WTSG.

Mass Media Bureau officials met with a group of broadcasting lawyers in Washington on April 17. Subjects

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discussed included FAA interference standards (the Commission claims some progress in talks with the FAA); attempts to speed action on FM applications (some applications are being offloaded on other branches of the Commission); and a new federal law loosening restrictions on advertising of lotteries.

Several AM/FM broadcasters have expressed dismay over the FCC proposal to re-enact the prohibition of AM-FM simulcasting. The stations say they can't afford to operate the AM's standalone, and will have to take them off the air if they can't simulcast their FMs.

WCPX-TV Orlando, Fla. has petitioned the FCC to declare the Prime Time Access Rule unconstitutional under the First Amendment. The "PTAR" prohibits stations in the top 50 markets from airing off-network programs between 7 and 8 PM Eastern Time.

The owners of KADY-TV, Oxnard, Calif., have offered to buy bankrupt KDOB-TV,

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Bakersfield. KDOB, currently owned by Buck Owens' sister Dorothy, had run into local opposition when it sought permission for a sale to Buck. Buck already owns KUZZ AM & FM in Bakersfield, and FCC rules would prohibit him from buying a TV there without a special waiver.

An interesting change in ownership recently occurred in Winnipeg, Manitoba. Israel Asper squared off against former partners Paul Morton and Seymour Epstein in a bidding war for Ontario-based Global Television, owners of several TV stations in Canada's largest province. The auction was ordered by, and refereed by, a Manitoba appeals court, in an attempt to settle the ownership dispute. Asper won the network; he already owns four independent TV stations in western Canada, and hopes to add more in other parts of the country in order to create Canada's third national TV network.

KKJZ (AM) Hesperia, Calif. has been granted permission to move their city of license to Costa Mesa, about 70 miles away.

The application of KGH1 (AM) Bellingham, Wash. for a translator on 102.3 FM has been returned-- not because it's an AM station requesting an FM translator, but because of the general freeze on FM translators.

WIMG, Ewing NJ (near Trenton) has been

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finned \$10,000 by the FCC. It appears they forgot to renew their license; after being so warned, twice, by the FCC, they continued to broadcast into February. They are now off the air-- no word on whether the Commission will now approve a renewal application. (or if WIMG even bothered!)

(an FCC editor's editorial comment on the simulcasting item... I thought that was the point! Only by thinning out the AM band, deleting those stations not strong enough to make it by themselves,

can we strengthen the remaining facilities!)

**RADIO....**


by Stan Scharch, N9HMA

In an April 12 FCC meeting, the commission has revealed that it will

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issue a notice of proposed rulemaking that should have a major effect on AM broadcasters. In an effort to improve the AM band, the commission says it will propose the following.

1. Assignments of the new 1605 kc to 1705 kc channels to existing stations from within the present 535 kc to 1605 kc band. The FCC says that stations causing the most interference will be moved to the new channels. During the transition, the new channels will not be open to new applicants.
2. Increase adjacent channel protection parameter from 0db to 16db.
3. STEREO transmission to be mandatory, or given a preference in comparative proceedings. The FCC still does not wish to endorse a particular AM STEREO system, however.
4. Reduction or elimination of AM/FM simulcasting.
5. Allow class 3 stations to operate at 50kw if new protection criteria are met.

The FCC says it will take action against 6 Philadelphia FM stations found to be overmodulating. The measurements were made March 12-16 by the FOB. Fines could range from an advisory notice to \$3000.00.

The NAB has chosen "IQ" as the mark that may be displayed on radio receivers that meet the new NRSC-AM bandwidth criteria. Some of the 11 receiver manufacturers surveyed are not happy with the criteria

required to use the "IQ" mark. Delco, a major car radio maker, says that the "IQ" criteria will result in first adjacent channel problems in automobile radios, particularly at night.

(Excerpts from Radio World)

**AMATEUR RADIO NEWS....**

by Tom Weeden, WJ9H

The last week in April found thousands of hams in Dayton, Ohio for the annual "Dayton HamVention," which can be considered the "NAB" for amateur radio operators. Our own Doug Smith, W9WI, attended and talked with the many equipment manufacturers and vendors on hand. Space doesn't permit a full report, but one of the more interesting items shown was by Advanced Electronic Applications (AEA). It was a multimode data controller using digital signal processing to replace traditional modems. As a result, they offer virtually every modem standard known, and can accept any future modem standard through firmware upgrades or by uploading modem definition software from a host computer!

Solar activity rose to near-record levels in 1989. The year was punctuated with powerful geomagnetic storms, the

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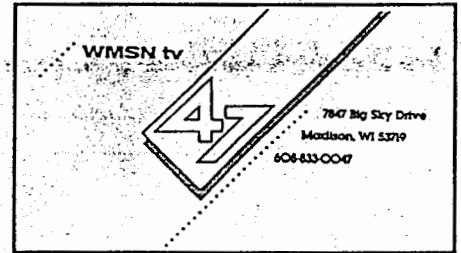
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strongest of which occurring in mid-March. Geomagnetic storms not only disrupt high-frequency amateur radio propagation, but can have other spectacular results. June "Sky and Telescope" magazine says that intense radiation from the strongest storms caused solar panels on geostationary satellites to deteriorate rapidly, some effectively aging five YEARS in only seven days. Low altitude satellites in near-polar orbits tumbled out of control, and increased atmospheric drag caused satellites and space debris to shift orbits. Even astronauts in the shuttle Atlantis during last October's

deployment of the Galileo Jupiter probe reported flashes in their eyes caused by energetic protons. The storms also caused damage to power distribution systems in the U.S. and other high latitude nations; the province of Quebec was blacked out for nine hours during one storm.

The American Radio Relay League has received a letter from FCC General Counsel stating that the FCC has exclusive jurisdiction in radio-frequency interference (RFI)



matters. ARRL had requested an opinion on a Pierre, South Dakota ordinance regulating RFI. The FCC letter stated that the U.S. Congress declared "...Such matters shall not be regulated by local or state law, nor shall radio transmitting be subject to local or state regulation as part of any effort to resolve an RFI complaint."

The FCC's Baltimore and Detroit Field Offices located and shut down an unlicensed West Virginia pirate broadcast station on January 30. The operator was fined \$1000 for illegally operating on 3.820 MHz in the 75-meter amateur band.

(Excerpts from May "QST" and June "Sky and Telescope" magazines, and Doug Smith's/W9WI packet radio bulletin board)

**SATELLITE NEWS....**

by Phil Mikalofsky

Hughes Aircraft Company has been named as the defendant in a lawsuit that PBS has filed in a California U.S. District Court, which charges a miscalculation of orbital lifetime of the WESTAR 4 C-band communications satellite; on which PBS holds title to 4 of a total 24 transponders. In April 1987, then satellite owner Western Union notified PBS that Hughes had made errors in

WESTAR 4's station-keeping fuel efficiencies and that the bird could be shut off as soon as January 1991; 15 months short of the 10 year contracted minimum lifetime.

To maintain continuous nationwide Satellite Interconnection Service, PBS has secured transponder service from GTE Spacenet Corporation on the Spacenet 1 satellite for the "interim period" starting in January 1991. PBS is seeking compensation for loss of space segment time on WESTAR 4 through February 1992 plus incurred legal fees as a result of the suit. As reported earlier, PBS will be utilizing TELSTAR

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401 C and Ku-band transponders when they become available in April 1993 after that satellite's tentative December 1992 launch.

In early April, China successfully launched AsiaSat 1, a C-band geosynchronous communications satellite built by Hughes Aircraft Company of the United States. The AsiaSat bird is owned by the Asia Satellite Telecommunications Co. Ltd., a Hong Kong-based consortium with Chinese, British, and Hong Kong partners. The launch of AsiaSat was almost blocked by a U.S.-to-China weapons ban imposed after Chinese military forces killed over 500 people in pro-democracy demonstrations. United States President George Bush waived the ban for delivery of AsiaSat and two other Hughes satellites that China will launch for an Australian company in the next several years.

AsiaSat 1's antenna systems have been configured to generate a primary beam over China and spot beams centered over Pakistan and Thailand. China, Thailand, Pakistan and neighboring countries of Bangladesh, South and North Korea, Burma, Afghanistan, Nepal, Taiwan, Malaysia, and Hong Kong will all have transponder access to the satellite for their domestic telecommunications needs.

AsiaSat 1 was previously launched in a 1984 U.S. Space Shuttle mission as WESTAR 6, but it failed to reach geosynchronous orbit as a result of failure in its payload assist module (PAM). It was then recovered by a special 1985 Shuttle mission and then refurbished and sold to the Asia Satellite Telecommunications Co. Ltd.

(excerpts taken from TV Technology magazine, Associated Press, and 1990 World Satellite Annual)

### WISCONSIN DX REPORT....

A list of Wisconsin broadcast stations heard elsewhere by radio/TV hobbyists.

#### --AM stations--

Heard in Hereford, England:

WFCL, Clintonville  
WRIG, Schofield/Wausau  
WTDY, Madison

Heard in Winnipeg, Manitoba:

WFHR, Wis. Rapids

Heard in Omaha, Nebraska:

WTMJ, Milwaukee  
WIZM, LaCrosse  
WRJQ, Appleton



Heard in Midland, Michigan:

WNYD, Rice Lake

#### --FM stations--

Heard in Woodland Park, Colorado:

WWIB, Ladysmith  
WGMN, Madison  
WIFC, Wausau  
WRJO, Eagle River  
WHLA, LaCrosse  
WHWC, Menomonie  
WROE, Neenah  
WEZW, Wauwatosa

Heard in Clinton, Ontario:

WEZW, Wauwatosa  
WJMM, Milwaukee

#### --TV stations--

Seen in Clinton, Ontario:

WDJT, Milwaukee	ch. 58
WVTV, Milwaukee	ch. 18
WCGV, Milwaukee	ch. 24
WISN, Milwaukee	ch. 12
WITI, Milwaukee	ch. 6
WBAY, Green Bay	ch. 2
WLUK, Green Bay	ch. 11
WGBA, Green Bay	ch. 26
WPNE, Green Bay	ch. 38

### NOISE FREE OR NOT....

by Doug Smith

Well, it looks like Noise Free Radio (NFR) isn't going to die... So, before anyone takes it too seriously, I want to put a nail or two in its coffin...

If you haven't heard about it, NFR is a system that purports to improve the signal-to-noise ratio of AM broadcasting by permitting AM stations to also frequency modulate their carriers, with an extremely small peak deviation. (I believe 20Hz. The formulas hold for peak deviations up to about 5KHz.) The idea would be to frequency-multiply the received AM signal to a frequency in the FM broadcast band, then receive the NFR signal with a standard FM receiver. The thought is that this system would allow AM broadcasters to obtain the signal-to-noise benefits of FM without eating the large chunks of spectrum required for regular FM.

Problem is, it won't work....

First, the "intuitive" explanation-- it's pretty simple. The noise gets frequency multiplied along with the signal, so the S/N going into the FM receiver isn't any better than it would be for AM-- in fact, it'd probably be worse. Also, the station would have to

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watch its negative-going amplitude modulation much closer; if the modulation percentage were to reach 100% in the negative direction, the FM signal would totally disappear- resulting in a noise burst in the NFR receiver. (practically, the FM signal would probably become pretty noisy before the negative modulation percentage reached 100%)

Next, the "academic" explanation-- There's a parameter in FM Transmission called "modulation index". This is defined as the ratio of peak deviation to maximum modulating frequency. In FM broadcasting, the modulation index is 75KHz/15KHz, or 5. In NFR, assuming a peak deviation of 1KHz (I believe it's considerably lower), the modulation index is 1/7.5, or about 0.13. The S/N in a FM system increases with increasing modulation index. (at least to a point-- with extremely high modulation indices, the noise bandwidth of the receiver becomes so wide that S/N begins to fall again)

The S/N of a FM system, relative to an AM system with the same power, follows this formula:

$$S/N(fm) = 3B^2(S/N(am))$$

where B is the modulation index. (the formula is 3 B



squared in case your computer doesn't have a ^)

If you solve this equation for equivalent S/Ns for AM and FM, you find that the modulation index is 1 over the square root of 3, or about 0.577. For lower modulation indices, the S/N for FM is WORSE than it is for AM.

(source: Introduction to Communication Systems, Prof. Ferrel G. Stremler (U.W. ECE), Addison-Wesley 1979)

The only reason FM with small modulation indices is used for police radio/cellular phones/VHF amateurs/etc. is that it permits simple, relatively

efficient, transmitting and receiving equipment. AM would actually work BETTER if an infinite amount of space and DC power was available.



KEEPING IN TOUCH....

Former Chapter 24 Chairman, Fred Baumgartner, has changed addresses moving from the Mile High City to the flat lands of Indiana. Fred has accepted a position on the management team of Capitol Broadcast with station WTTV channel 4 in Bloomington IN and WTK channel 29 in Kokomo IN, both near and/or covering Indianapolis (home of the SBE). Those of us who know him well, knew he wouldn't remain out of broadcasting for very long. Good Luck Fred! (317)-787-2211

STATISTICS....

ESTIMATED PENETRATION OF U.S. HOUSEHOLDS (1989)

Television	98%
Color Television	95%
Videocassette Recorders	61%
Monochrome Television	58%
Cable Television	53%
Prerecorded Videocassettes	48%
Video Games	40%
Pay-cable Television	34%
Home Computers	21%
Stereo Television	15%
Addressable Decoders	15%
Camcorders	7%
Projection Television	4%
Pocket Television	2%
Satellite Earth Stations	2%
Videodisc Players	0.5%

CLASSIFIEDS....

Chief engineer needed for Shamrock Communications Tulsa AM-FM. Applicants

should have strong management skills and SBE certification. Send resume to Mark Timpany, WQFM, 606 West Wisconsin Avenue, Milwaukee, WI, 53203.

Opening for Assistant C/E or Senior Broadcast Tech in Milwaukee WI. Call 414-271-5800. WDJT TV-58, 509 West Wisconsin Ave, Milwaukee, WI 53203. Rich Owens C/E

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## VIDEO IMAGES

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RUMOR OF THE MONTH....

From Chapter 93

For engineers who mourn the demise of two inch tape, there may be good news for you. According to a well placed source at a major manufacturer, a camcorder using two inch tape may hit the market late this year. In the meantime a couple of design problems are still being worked out. One obstacle that needs to be hurdled is the 170 pound weight of the shoulder held camera/recorder. But the biggest struggle is finding a way to muffle the noise generated by the 70 pound backpack/air compressor.

SUSTAINING MEMBERS

Thanks to our latest Renewals

Sony Broadcast-Kevin Peckham  
Roscor Corp-Ned White

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