

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 Sarch
Phil Mikalofsky

MEETING ANNOUNCEMENT

DATE: June 21, 1990

ALEXANDERS
SCHROEDER ROAD
(Whitney Way at the Beltline)
Dinner: 5:30pm
Business Meeting: 7:00pm
Program follows meeting

This month Ray Duley of the Grass Valley Group will talk about GVG's new digital encoder system called "Emphasys." Emphasys uses a new concept of interactive encode processing with all digital (10 bit) processing. It can encode any color difference or RGB format to both analog and digital composite.

UPCOMING MEETING DATES

(new date) July 10, 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

YOUR 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

SUMMER PICNIC....

It's almost that time of year! Time for the annual Chapter 24 Summer Picnic! Doug McDonell has once again graciously offered to host the party at his home on Saturday, July 21. (The rain date is Sunday, July 22.) Although Doug didn't have as much luck with the fishing as he would have liked this year, there will be a potluck supper. The party will start mid-afternoon and run until dark. Doug will have grills available, which should be ready around 5PM.

WBA SUMMER SESSION....

Mark the 3rd week in July for the second WBA Summer Convention/Engineering

SONY

Kevin Peckham
Account Manager
Broadcast Products Division

Sony Communications Products Company
1200 North Arlington Heights Road
Itasca, Illinois 60143
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(708) 773-6046
Service Center (708) 773-6037
Emer. Tech. Assist. (201) 833-9533
National Parts Center (800) 538-7550

Conference! In 1990 we will meet in Door County's Egg Harbor for another mid-summer update session. Representatives from all of Wisconsin's SBE chapters are actively involved in the planning, with sessions to include discussions on FCC/FAA agreements and improved closer resolution regarding AM station coverage, computer studies, the latest on satellite technology, and a look at computer use in broadcast operations and engineering. Watch for details in a WBA mailing soon. This year, you will be able to attend the engineering sessions for only \$25, or both the sessions and the afternoon reception and evening dinner for \$50. Should be a fun time this summer, and a great excuse for a mini-vacation in scenic Door County! The sessions are July 18th from 1:30 to 4:30pm. For registration forms call Chris Cain at 271-4321.



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KEITH EMMONS

CPR LAST CALL....

This is your final notice for those having been certified in last year's Chapter 24 organized CPR/First Aid classes. It's time to re-certify with a short refresher class. Dave Gerisch at WMTV 15 is handling the coordination again this year. Call him if you're interested. 274-1515.

YOU COULD WIN....

One of the goals of the newly elected officers of Chapter 24 is to send one member of our Chapter to the fall National SBE Convention. \$275 will be awarded to the person chosen. This would cover the \$125 registration fee,



as well as \$150 toward transportation costs. The officers have developed the following criteria for the selection of this person:

1. Attendance at 6 of the last 12 meetings required.
2. Eligibility requires non-management employment in a broadcast related position.
3. Must have SBE dues paid for the year of the convention.
4. Open only to non-elected SBE members. Appointed chapter officers are eligible.
5. Application, with chapter 24, for selection is required. The application must be signed, dated, and received by July 1, 1990. Applications should be sent to the following address.

Jim Hermanson
WTSO/WZEE Engineering
5721 Tokay Blvd.
Madison, WI 53719

6. Selection will be based on a points

system. Points will be assigned as follows:

- (a) 5 points will be awarded for each newsletter article written.
- (b) 5 points will be awarded for certification.



- (c) 2 points will be awarded for each monthly meeting attended, in excess of the 6 required.

Final selection will be determined by the Chairman, Vice-Chairman, Secretary, and Treasurer of Chapter 24. An alternate chapter member will also be selected to attend. The alternate will be the member with the second highest number of points.

The selected member who attends the convention will be asked to report to the chapter at the following monthly meeting as well as write a summary article for publication in the chapter newsletter.

The above criteria will be discussed at the next chapter meeting on June 21. After discussion and possible modifications at the meeting, a vote of approval by the members present will be taken.

LAST MONTH'S MEETING....

Madison, Wisconsin Chapter 24 of the Society of Broadcast Engineers met on Wednesday, May 23, 1990 at the Educational Communications Board's TOC for the regular monthly meeting. The attendance at the May meeting was 24. 22 were SBE members and 16 of these were SBE certified.

Chairman Steve Zimmerman called the meeting to order at 7:11 PM. Secretary Tom Weeden read the minutes of the April meeting. Membership Chairman David Gerisch reported that a new membership list was received from the national

office. He and Newsletter Editor Leonard Charles will consolidate the national and local mailing lists. Treasurer Fred Sperry reported that the chapter's account balance was \$1416.68. Sustaining Membership Chairman and Newsletter Editor Leonard Charles reported that there are currently 15 sustaining members and a possible new one. He also reported that the newsletter will now include SBE meeting minutes. Frequency Coordination Chairman Chris Cain passed around the latest frequency coordination list for inspection and reported a new coordination for an STL for WXRO in Columbus.

In professional announcements, David Gerisch announced two full-time position openings at WMTV, one for a master control operator and one for a maintenance engineer. Andy Murphy announced that he will be resigning as Chief Engineer of WMSN May 25 to accept a position with Midwest Communications in Cincinnati. (Chairman Steve Zimmerman expressed congratulations to Andy and thanks for his performance as past chairman of chapter 24.) WMSN is looking for a replacement for Andy. Kerry Maki from WMTV will be taking on the Assistant Chief Engineer position at WMSN. A guest at the meeting, Craig Deibele, who is a senior in electrical engineering at UW-Madison, announced that he was seeking employment in an engineering field.

In old business, there was discussion on CPR recertification. David Gerisch will look into the procedure for those interested.

In new business, Chris Cain announced a summer engineering session sponsored by the Wisconsin Broadcaster's Association on Wednesday, July 18 at Egg Harbor in Door County. Registration fees for sessions only will be \$25; with reception and dinner, \$45. Chris said he would have official information and registration forms available in two



weeks. He can be contacted at 271-4321.

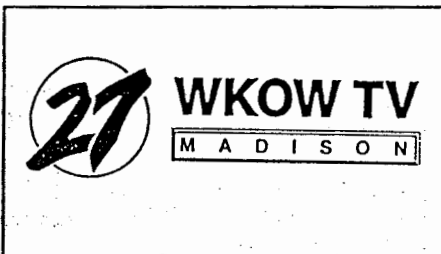
Steve Zimmerman showed the display case that Dennis Behr had constructed and asked for a volunteer to bring it to all SBE meetings. Neal McLain volunteered.

A vote on Resolution #3-90, the meeting smoking policy, was taken by secret ballot. The results will be announced at the next meeting.

Program Chairman Kevin Ruppert announced the program for the June 21 meeting. A Grass Valley Group representative will show the "Emphasys" composite/NTSC encoder/decoder. Kevin said he is looking for program suggestions for future meetings.

The business meeting was adjourned at 7:27 PM.

Kevin Ruppert introduced Phil



Mikalofsky, TOC engineer, for the evening program on the TOC's Ku-band satellite uplink.

CERTIFICATION....

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

Contact Doug McDonell for examination application information.

NO SMOKE RESULTS....

At the May meeting, a secret ballot was taken on Chapter 24 referendum #3-90, "should smoking be allowed at monthly meetings". The "No Smoking" votes won by a 19 to 1 margin.

THE LEGALS....

info by Doug McDonell

An application has been granted allowing voluntary transfer of control of WNNO (900KHZ) and WNNO-FM (107.1MHZ) licensee Armada Broadcasting Co. from S. Horning, L. Goldammer, D. Sharp, ET AL. to Teresa and L. Robert Van Genderen & Bonnie and Jerome Gerke. The Stations are located in Wisconsin Dells.

An application has been granted for an FM translator to serve Avalon WI. on Channel 207 (89.3MHZ). Primary Station is WMMK, 88.1 MHZ Milwaukee. TL will be Thompson Electronics in Janesville with 1W.

Inspirational TV of Southern OR Inc. of Madison, WI has been granted a CP for a new Television Translator station for Madison on Ch 33 584-590 MHZ plus offset with an ERP of 8KW and a TL near Springfield Corners, WI. Height 152 Meters, RCAMSL 494 Meters. Primary TV Station KTBN-TV, CH 40, Santa Ana. CA.

WSSM TV Inc. of Madison, WI has been granted a modification of CP to change ERP to 4.32KW at a Height of 366 Meters. RCAMSL 472 Meters.

Skywave Comm Corp of Madison, WI has been granted a CP for a new LPTV for Madison on Ch 11, 198-204 MHZ, minus offset with ERP of .0132KW and TL near Tokay Blvd and Rosa Rd Madison. Height 365 Meters, RCAMSL 472 Meters omni.

The FCC has released a new filing fee schedule. The schedule is too long to print here but Doug advises that there are now fees for some of the filings that were free before. For example, you must now pay to file for Special Temporary Authority (STA), for an extension of time to construct, and to file an Ownership report. Make sure you check before you file as a wrong fee code or remittance will result in application being returned without processing. A separate completed Fee Processing Form 155 is required with each filing until such time as application forms are revised. Public

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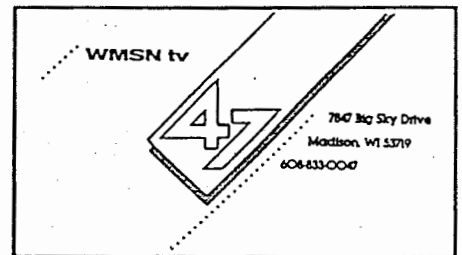
notices will be issued as new application forms become available.

FCC NEWS....

The FCC has instituted a new fee structure for filings. See the LEGALS section of this newsletter for more info.

Bahakel Comm, licensee of WCCB TV, Charlotte NC, and Media Access Project, on behalf of United Church of Christ, have filed to request the FCC deny the settlement of the comparative proceeding for a new UHF for Rock Hill, SC. In the settlement, the license went to someone other than any of the original 12 applicants.

The Senate confirmed re-nomination of Andrew Barrett last week to a full five



year term on the FCC. The Illinois Republican took over a commission seat last September that will expire June 30.

Representatives Edward Markey and John Dingell introduced a bill to provide additional funding to the FCC to aid in setting terrestrial HDTV transmission standards. The bill would authorize an additional \$2.2 Million for 1990 and \$2.45 Million in 1991.

As part of a spectrum re-allocation bill circulating the Hill, the FCC would be required to present a feasibility report in two years on the eliminating of UHF TV transmissions in the top 20 markets by the year 2010.

The FCC has suspended Washington attorney Thomas Root from practicing law before the commission pending the outcome of an order that he show cause why he shouldn't be disbarred permanently. Root was fished from the Atlantic Ocean last year after his plane crashed into it. He had been shot.

FCC commissioner Sherrie Marshall told members of the Land Mobile Communications Council that the FCC will likely open a broad proceeding later this year to assess various land mobile services of the not to distant future to get background for spectrum allocation decisions. Marshall would not comment on re-allocation of UHF channels but did endorse John Dingell's plan to re-allocate 200MHz from the military to commercial uses.

Speaking to American Women in Radio and Television, FCC chair Alfred Sikes said the Cable Act of 1984 authorized local governments to award monopoly franchises. He said that through cable proceedings currently underway in the FCC and due for action in July, the

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commission will take steps aimed at improving the potential for competition and providing some safeguards where competition does not exist.

The FCC has issued a further Notice of Inquiry on alleged home satellite distant signal discrimination. A Commission report last year acknowledged differences charged home dish owners vs cable distributors for programming and now seeks comments on the reasons.

RADIO....

by Stan Scharch, N9HMA

NRSC compliance is due June 30, 1990. If your AM station has an NRSC filter on line, the FCC will assume compliance until June 30, 1994 when RF mask compliance will have to be proven for each facility.

The FAA has made two changes in their computer program used for calculating predicted FM interference that should lessen the number of FM station applications rejected. The original program had considered some low level FM band signals as interference that

broadcasters say do not reflect real world conditions.

(Excerpts from Radio World)

AMATEUR RADIO NEWS....

by Tom Weeden, WJ9H

One of the four major amateur radio periodicals, Ham Radio magazine, will publish its last edition this month. HR and its associated Ham Radio Bookstore have been sold to CQ Communications, Inc., publishers of CQ magazine. HR subscribers will receive CQ for the balance of their subscription after this month.

After strong opposition from the amateur community, the American Radio Relay League has withdrawn a petition to the FCC for limited automatic control on the high frequency bands. Some automatic HF data transmissions are currently allowed by the FCC under a Special Temporary Authority. However, since the STA was about to expire, ARRL sought to make the authority permanent by petitioning for a rule change. ARRL's proposal to designate narrow subbands which are different from current band operations drew the most negative reaction.

The Westlink Report quotes ARRL Kentucky Section Manager John Thernes, WM4T, as saying that the 40 meter band may be lost to amateurs in the upcoming World Administrative Radio Conferences. Forty meters is allocated to amateurs only in the western hemisphere; the rest of the world permits shortwave broadcasting on the band. Thernes said there is considerable talk among the world's poorer nations to reallocate the 40 meter band to commercial communications interests, or have it redesignated for exclusive worldwide shortwave broadcasting. Even if the amateur community has total support from the US FCC, third world countries will be in a position to control huge voting blocks at the upcoming WARC's.

The SAREX (Shuttle Amateur Radio EXperiment) remains on hold as of this writing. The rescheduled May 30 launch of STS-35 was scrubbed again due to fueling problems.

Field Day, probably the most popular of ham radio contests, takes place the weekend of June 23-24. The official

object of the contest is to "meet the challenge of emergency preparedness and to acquaint the public with the capabilities of Amateur Radio." Thousands of US and Canadian hams will set up makeshift stations outdoors using emergency power and temporary antennas in an attempt to contact the most stations.

From the enforcement department: FCC fined two west coast amateurs \$1000 each for following other hams up and down the bands and willfully interfering with their transmissions....A ham in Maryland was nailed for operating a pirate radio station on 25.000 MHz and fined \$1000....US Marshals and FCC confiscated \$3000 in illegal radio equipment from Bob's CB in Santa Rosa, CA....Michael

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Harrison of Oceanside, NY, was fined \$125,000, sentenced to 21 months in prison, and ordered to pay restitution to victims after pleading guilty to mail fraud. Harrison had placed ads in amateur magazines under the name Atlas Radio, Inc., offering Uniden radio products for sale and never shipping the merchandise after receiving payment.

(From June 1990 Badger State Smoke Signals and QST magazine.)

SATELLITE NEWS....

by Phil Mikalofsky, WB9TAE

Here's a further update to last month's report of PBS's satellite problems--In early March, Hughes Aircraft Company initially responded to the charges contained in PBS's lawsuit issued against the company, by indicating the guaranteed operational lifetime of WESTAR 4 was 9 years and the company's design lifetime goal of the satellite was 10 years. The Hughes position on this issue is, "PBS's claim is inconsistent with the agreement between Hughes and Western Union, which limited Hughes' obligation to the nine-year

operational life. Because of this and other deficiencies, PBS's claims should be denied."

A satellite uplink operator for CBN (Christian Broadcasting Network), Thomas Haynie, has been indicted by an Eastern District of Virginia grand jury for alleged intentional interference to satellite broadcasts. The incident in

greater Cincinnati area (actually in Kentucky).

Former Chapter 24 member Erv Vanaags, also formerly of WMSN TV, has moved on to Nashville, TN. Erv is employed as a maintenance engineer with WKRN TV, Channel 2 in Nashville.

Best of Luck to both Andy and Erv!

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question occurred at CBN headquarters in Virginia Beach on Sept. 7th, 1987, where, according to FCC reports, Haynie used satellite uplink facilities to broadcast a video text message (religious in nature) and fully capture The Playboy Channel's transponder on SATCOM 4 and Home Dish Only's transponder on SPACENET 1. Haynie is looking forward to the maximum penalty of a 10-year prison sentence plus a \$250,000 fine if convicted.

(excerpts from TV Technology and 1990 World Satellite Almanac)

LIFETIME MEMBERSHIPS....

In accordance with Article V Section 4 of the SBE by Laws, when retired from full time employment, any member or fellow in good standing who has been a member of the society continuously for five years or more, may, at their request be placed on the life membership list and be exempt from further payment of dues. If you or someone you know qualifies, get in touch with a Chapter 24 officer for the necessary form.

KEEPING IN TOUCH....

Chapter 24 president for the past two years, Andy Murphy, has resigned his position of Chief Engineer at WMSN TV. Andy has moved from the area and is working for Midwest Communications as a special Projects Design Engineer. Midwest Communications is located in the

LETTERS....

Last month's article on "Noise Free Radio" by Doug Smith spawned a couple of response letters to the Editor. One from the "Father" of NFR himself. In the interest of space, most of George's commercial content was not printed but just the nitty gritty technical details.

Dear Editor,

Doug Smith joined a group of other excellent engineers who "intuitively"

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dismiss NFR as a joke. I have been able to convince most of them that NFR can be the salvation of AM, and would like to try to convert Doug from a "coffin nail driver" to an enthusiastic booster. ...

On March 22, WOYK AM, Seffner, FL was authorized to conduct over the air tests of a narrow band FM modulation system superimposed on the carrier. ...

Let me describe a workable NFR system. The carrier of an AM "standard band" broadcast transmitter can be frequency modulated with either the same audio program as the amplitude modulation, or separate programming. The maximum deviation would be limited to not exceed the new NRSC-2 spectrum occupancy regulations. ...

Here's how it works. When you vary the frequency of a carrier with a single modulating tone, for example a 1MHz

carrier deviated +/- 1KHZ with a 15KHZ tone, you create an infinite number of sidebands above and below the carrier, at 15KHZ, 30KHZ, 45KHZ, 60KHZ, etc. The amplitude of these sidebands varies with the "modulation index". (Accurately identified by Doug as the ratio of peak deviation divided by the modulating frequency). In this case the modulation index (1,000 divided by 15,000) would be .067.


Most text books on frequency modulation point out that at a very low modulation index only the first order sidebands (in this case 15KHZ) are significant, but as the modulation index is increased, other sidebands "appear" at 15KHZ intervals. Remember, they have been in there all the time, but are so weak as to be undetectable.

Text books continue to explain that to achieve very low signal to noise ratios, capture effect, and all the other good attributes of FM, you need a "wide-band signal". FM broadcasts have been standardized at a peak deviation of +/- 75KHZ and the most popular Intermediate Frequency (IF) of 10.7MHZ.

So, the easy way to convert our narrow band, low modulation index signal to a wide-band modulation index is by frequency multiplication. One way is to pick off the 455KHZ IF signal at the first IF stage and multiply it 75 times. The new IF signal is 34.125MHZ and the deviation is now +/- 75KHZ. Heterodyne that signal with a 23.425MHZ Oscillator to 10.7MHZ (+/- 75KHZ) and inject that signal into the IF amplifier of the FM portion of the receiver. When demodulated it sounds just like FM, because that's what it is!

To clear up two more points. Using Fred Bessell's functions, the first order sidebands 15KHZ above and below the carrier in our example above will be 29.7db below unmodulated carrier level, well below the 25db limit imposed by NRSC-2 mask.

*Your News
Station*



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As for multiplying the "noise" in our frequency multiplier, the opposite is true. We are multiplying the bandwidth, not the amplitude. Noise in the relatively narrow bandwidth of the 10KHZ channel is spread out over 750KHZ. It is also interesting to note that adjacent channels which were out 10KHZ either side of the carrier are now way out to 750KHZ away!

Tests on WQYK are producing amazing results. Spectrum analysis, proof of performance tests and field listening tests are turning out as we expected. Complete details will be released to the press as soon as our report is filed with the FCC.

Comments, questions, suggestions are welcome.

George W. Yazell, P.E.
P.O. box 8086
Lakeland, FL 33802
(813) 682-2270

Dear Editor,

I have got to hand it to Doug Smith for the piece on NFR. I do however wish to defend George Yazell. NFR is to be a slow transition from AM to FM by decreasing envelope modulation and

increasing deviation until a rather narrow (but significantly larger than 20 Kz) FM is left. Actually neither AM or FM has an inherent SN figure (although after a few proofs, you might think so). In its defense, the formulae quoted are fairly accurate representations of FM and AM signals of equal strength in a medium with quasian noise. In NFR, using the same bandwidth, neither AM or FM provides any great advantage over the other until one realizes that the frequencies used for AM are filled not with the gentle blanket of quasian noise that God filled the universe with, but impulse noise from man made stuff and lightning, as well as adjacent and co-channel goo. In these cases, the narrow-band FM wins, and that is in fact George's point, that the one MHz band has been fouled with impulse noise and FM does a better job of cutting it than AM. As Doug correctly points out, it ain't perfect, but what are the alternatives? To turn a phrase, maybe the gradual FMization of the AM band is not a bad idea. I can only marvel that the AM band, once thought to be the gem of the spectrum, is the focus of so many efforts to "save" it for the only service that has any possible use for it.

Fred Baumgartner
7237 Madison Village East Drive
Indianapolis, IN 46227
(317) 783-7225

CLASSIFIEDS....

A TV Maintenance Engineer position is open at CBS affiliate KOLD TV (Ch 13) in Tucson, AZ. Responsibilities include maintenance and repair of all equipment. FCC license or SBE certification is required. Contact:

Robert Gaff
KOLD TV
115 W Drachman St.
Tucson, AZ 85705
(602) 624-2511

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