Chapter 24
Madison, Wisconsin

Society of Broadcast Engineers *March 1994*

FIBER OPTIC OSP

PART 3:
POLE-ATTACHMENT RIGHTS FOR FIBER OPTIC OSP

by Neal McLain
Communication Technologies, Inc.

This is the third in a series of articles about Fiber Optic Outside Plant. This article will be devoted to the process of getting permission from pole owners to attach a new cable in the communications space of existing poles.

THE COMMUNICATIONS SPACE OF A UTILITY POLE

As we noted in a previous article, the "communications space" of a utility pole is the portion of the pole devoted to communications facilities. The communications space may occupy the entire pole or a portion of the pole. If supply (electric power) and communications spaces are both present on the same pole, it's called a "joint" pole, and the communications space is below the supply space.

New fiber facilities can be placed in the communications space of existing poles if three conditions are met:

- There must be sufficient space on the poles along the desired route.
- Permission must be obtained from the owner of the poles.
- Permission must be obtained from owner of the underlying land.

Selecting the best route involves consideration of all of these conditions. We discussed the first issue — space on the poles — in last month's article. This article will be devoted to the process of getting permission from pole owners. The remaining issue — permission of the landowner — will be discussed a future article.

Continued on Page 6

Trans 56 Given to Legislature

The final version of Trans. 56 has been submitted to the State Legislature's Joint Committee for Review of Administrative Rules. Over the past year, Richard Wood of Skyline Communications, John Laabs, president of the Wisconsin Broadcasters Association, and other tower owners have succeeded in persuading the Department of Transportation to down-size the effects of administrative code Trans. 56. Great progress was made during various public and private meetings with the (D.O.T.).

Trans. 56 was first proposed in late October 1992. The rules would have set up an elaborate permit process for both new construction and modifications to existing towers and other tall structures.

The main items that have been removed from Trans. 56 are:

1. No insurance or escrow account is required.

2. Transfer of the tower permit when the property sells is automatic by simply notifying the D.O.T.

3. If a tower collapses a new permit does not need to be applied for if the new structure is erected within 60 days and does not exceed previous tower height.

4. The secretary does not need to be notified if modifications are made to the tower that do not change the overall height.

5. Any preemption of FCC or FAA rules by the DOT has been removed.

6. Time periods for review of applications and public comment have been shortened.

The only remaining issue upon which the WBA will make comment to the legislature committee is the item which states that the Secretary can refuse issuance of a permit even if the FAA makes a no hazard determination in their aeronautical study of a tower application.

A further positive change in the process will allow towers being added to a group or a tower that is not a hazard to aircraft to be fast-tracked through the process in 30 days.

(Information from Richard Wood and WBA's newsletter, WISCONSIN BROADCASTER)

MARCH MEETING

Monday, March 28

DINNER: Nitty Gritty
Corner of Johnson & Frances
(5:30 p.m.)

MEETING
(7:00 p.m.)
and
PROGRAM (7:30 p.m.)
at WHA-TV
821 University Avenue
entrance on Park Street
"NAB Review"
and tours of Wisconsin Public Television & Radio
Vilas Hall, UW Campus

IN THIS ISSUE

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Denise Maney	277-8001
Kerry Maki	833-0047
Steve Zimmerman	274-1234

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Sustaining Membership: Stan Scharch

Strategic Plan: Dennis Behr

Special Events: Kevin Ruppert

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February Business Meeting Minutes

Chapter 24 of the Society of Broadcast engineers met on Wednesday, February 23, 1994 at WISC-TV's studio in Madison. Twenty-one SBE members attended, twelve who were certified, and two guests for a total of 23.

Chair Leonard Charles called the meeting to order at 7:10 p.m. Minutes were approved as printed in the newsletter.

Treasurer and Newsletter Editor Paul Stoffel reported the checking account balance. The newsletter deadline is March 9th, with the folding session set for March 13th, 1994.

Membership Chair Leonard Charles reported no change in membership.

Sustaining Membership Chair Stan Scharch indicated the latest renewals were WMTV Ch. 15 and Electronic Industries.

Program Chair Steve Zimmerman reminded all members attending the NAB show to take note of items they find interesting and provide a short presentation at Chapter 24's March SBE meeting and program.

Special Events Chair Kevin Ruppert indicated Dennis Behr is a member of a PBS video standards committee. A breakfast is tenatively set for April 12th, from 7 to 9 am at which Richard Schaphorst of Delta Information Systems will update everyone on the video standards committee's progress. The breakfast will be Dutch-Treat. Contact Kevin Ruppert at 277-5151 if you are planning on attending or for more information.

Certification Chair Jim Hermanson announced he has updated certification application forms. The next local Certification Exams will be given June 3rd-16th. The application deadline is April 15th.

Frequency Coordinator Tom Smith had a request for information for an RPU for a new FM station in Adams-Friendship. Plans are underway to update the frequency coordination database.

In news from the national office, Chair Leonard Charles stated the National Executive Committee has not recommended another teleconference from the Broadcaster's Clinic next year. They also didn't think Madison was an appropriate location for an Ennes Workshop, indicating the workshop is designed for areas without access to engineering shows or workshops. Chair Leonard Charles has also accepted an invitation to be on the National Nominations Committee. If you know of anyone interested, please notify Chuck, but bear in mind this person must attend the spring and fall SBE shows at their expense.

New Business: If you are interested in becoming a Chapter 24 Officer, please notify Nominations Chair Dennis Behr. The University of Wisconsin-Platteville, will be holding their second annual televison engineering symposium: "The Future of Broadcast Entities" April 13, 1994.

There was no old business.

The meeting was adjourned at 7:35 pm. At this time program Chair Steve Zimmerman introduced Stan Scharch of WISC-TV, who presented a program on basic phone systems, their operation and common problems.

Secretary, Kerry Maki

TCI Rebuild Continues

by Paul Stoffel

TCI is rebuilding their Cable TV system with plans that include taking down the old and putting up the new. "We have started the first phase and it should be about two more years before we complete that," says Maury Lee, General Manager of **TCI Cablevision of Wisconsin.**

Lee spoke during Citicable 12's ***Live!* Access: City Hall** program entitled "Cable Television: Taking Us Into Tomorrow, or Just For a Ride." The program aired on February 23 on Madison's government access channel and is produced by the League of Women Voters of Dane County and Citicable 12.

TCI's rebuilding plan starts in the Deforest-Windsor area, moving toward Cross Plains, going through West Madison and East Madison, and then, finally, out to Sun Prairie, Stoughton and Cambridge.

The rebuilding includes replacing the cable and adding new electronics that have the capacity of carrying many more channels. "We will be taking fiber into every community. Digital compression will allow us to pipe hundred-channel capacity," said Lee.

TCI hopes to complete the rebuilding before its franchise contract with the City of Madison expires in 1996.

Beginning this Spring, according to Dr. Barry Orton, UW Outreach, the City of Madison will conduct a survey through public hearings, mailings and telephone call. The surveys will be conducted to assess city government, subscribers and non-subscribers needs and expectations of their local cable system. A new cable TV franchise contract with Madison is to be awarded in 1996. Surrounding communities may join with Madison in the contract process.

Citicable 12's program was a panel discussion with Lee, Orton and Pat Skaleski, Cable TV Coordinator, Madison.

☐ ☑ ☐ ☐ Chapter 24 Nominations Committee Assembled

This year's Chapter 24 nominations committee has been formed and will be chaired by Dennis Behr. Fred Sperry and Kerry Maki will also serve on the committee.

If you are interested in running for a Chapter 24 Office or you would like to nominate a Chapter 24 member for an office, please contact any of the nominations committee members by the April 26th chapter meeting.

Chapter elections are scheduled to take place at the May 25th meeting.

New Operator's Certification Level

by Jim Hermanson
Certification/Education Chairman
SBE Chapter 24

The SBE will be introducing a new entry-level radio station operator training course at the upcoming NAB. This course is intended to fill the void left by the elimination of the FCC Third Class license with the Broadcast Endorsement.

A similar Television Operator Certification course is also planned.

This certification level covers many of the topics of the old FCC Third Class license exam. In addition, it covers many of the practical skills that applied to operators that are beyond the scope of the FCC rules.

An FCC operator license is still required to operate a broadcast transmitter. SBE certification is evidence of your qualifications to serve at a broadcast station and will certainly be used when seeking employment or advancement.

Expectations are that many stations will make certification a requirement for employment for their operators, as some have done with the more advanced levels of certification for their engineers.

A special Operator's Certification Handbook is a key ingredient to the new certification offerings. It is the official SBE training manual for use in preparation for the new Operator Certification levels.

The applicant will have one year from the date stamped on the application card (located on the last page of the course in the handbook) to complete the final exam. The handbook includes an examination request form that the purchaser can mail to the SBE National Office when the applicant has completed all portions of the training program.

Upon receipt of the examination request form, the SBE will generate a custom test of 50 multiple choice questions from a pool of 150 questions. The test will be a closed book exam and the candidates must receive a score of 90% or better to be issued a certificate.

Exams are given during the regularly scheduled twice-yearly local certification exam sessions or at the SBE spring and fall conferences.

In addition, if the need arises, special arrangements may be made for special exam sessions. Membership in the SBE is not required to be certified.

The cost of the handbook is $35.00, including shipping, handling, and the cost of the exam. To order it, complete and mail an order form that is available from the SBE National Certification Secretary at (317) 253-1640.

I will try to have a supply of the handbook order forms for our area. If you like, contact me at (608) 231-2005 and I'll do my best to help you get one.

Grand Alliance Picks HDTV System

By Tom Smith

The FCC HDTV advisory committee and the Grand Alliance has selected Zenith's VSB or vestigial sideband system of modulation for the transmission of Advanced Television. The Zenith system beat out the various QAM or Quadrature amplitude modulation systems from General Instruments/MIT and the Sarnoff, Phillips, Thomson and Compression Lab system. AT&T is a partner with Zenith. The committee felt that it was the most robust system with the greater coverage and less interference to existing analog signals.

While the broadcast subgroup endorsed the Zenith system, they will continue to investigate the COFDM* system from Europe that may be more robust than VSB modulation. The COFDM system uses multiple carriers instead of multi-level modulation as the QAM of VSB systems use.

The MPEG compression system for video was selected last fall along with DOBLY's AC-3 five channel audio system and data packet systems. The MPEG committee has dropped the MPEG 3 standard for HDTV, so the video standard will be an enhanced MPEG 2 standard. the MPEG system will use "B" frames for bi-directional frame motion compensation. Scan formats selected were 1280 pixels at 720 lines progressive scan at 24, 30 or 60 HZ to 1920 pixels at 1080 lines at scan rates of at 24 or 30 frames progressive scan or 60 Hz interlaced.

The Alliance will begin testing the completed system in November and should be finished in March of 1995. After that it will be up to the FCC to set a standard based on the committee's findings.

The Grand Alliance was formed by all the parties proposing HDTV systems as a way to speed up the standards process. All the parties agreed to cross license their findings.

The selection of the VSB system may be of help to Zenith, which has not been profitable since 1988. Zenith's stock rose $1.25 after the announcement. General Instrument rose $0.875 at the same time.

* **COFDM** = Coded Orthogonal Frequency Division Multiplexing

*From **BROADCASTING&CABLE** and **NY TIMES** with additional information from **TV BROADCAST** and **TELEVISION TECHNOLOGY.***

Leonard Charles is the editor for the Electronic Version of this Newsletter uploaded monthly onto the Chapter 24 BBS.

Antenna Proofs

by Clay Freinwald
SBE WAVEGUIDE
Chapter 16, Inc., Seattle

This writer has been spending a lot of time "in the field", lately, performing Antenna Proofs on my company's two AM antenna systems. What a frustrating situation this is. You can spend days running around measuring signals in an attempt to come up with numbers that have changed due to circumstances beyond your control.

For years the great RUBBER RULER that was used by the FCC to determine, in part, the performance of AM Directional Arrays has been the MONITOR POINT. When you built your antenna system you just hoped and prayed that the signal strength at the Monitor Point did not go beyond a certain figure. If it did, you prayed the FCC did not catch you at it.

The problem is that in this geographic area (Seattle) we are cursed with variable, and at times lousy, conductivity that will cause AM propagation to change to the degree that measured signal strengths can vary by as much as 50%, well beyond what the FCC permits.

The bottom line is the licensee is made responsible for the Lord's work. Hopefully, the FCC is "getting in the mood" to look at these matters a little differently. They recently had a meeting where a number of consulting engineers met with the Commish to discuss getting these things modernized. In that light I have a few suggestions.

If the FCC wants to be able to dispatch an inspector to a station to check the antenna system here are some things I'd have them look at:

1. Are the phase and ratios and power within tolerance and does the monitor agree?
2. Is the array in a state of good repair? If not, write him up. (Approach this like an emission check, i.e., you have to have it fixed.)
3. Visit the monitor points, ALONG WITH A LOG SHOWING THE SEASONAL VARIATIONS OF FIELD STRENGTH AT THE SITE. IF THE MEASURED FIELD IS WITHIN THE HISTORIC VARIATIONS, LEAVE THE FELLOW ALONE!
4. If the Monitor Point is higher than normal seasonal variations and it appears from an inspection of the facility that things are in poor repair etc., THEN require the station take the following steps:

A. Run a partial proof on the Null Radials to determine if the point is bad or if the array is out — in Directional AND Non-DA mode.

B. The DA/Non-DA RATIO should be the criterion used to determine compliance. The original full antenna proof, at time of construction, checks the DA and Non-DA fields at many points in system nulls and from this you come up with a RATIO. If in the testing process this ratio is essentially the same as it was in the first place, YOU'RE IN COMPLIANCE.

C. Eliminate this: THOU SHALT NOT EXCEED XXX VALUE CRITERION. THIS IS SIMPLY NOT REASONABLE. MAINTAINING A RATIO IN A GIVEN DIRECTION IS.

Now don't get me wrong. I'm very much in favor of de-regulation in an area where regulations are simply out of touch with reality. However, I feel that some things need to be tightened up. If the rules are going to be state-of-the-art THEN THE INSTALLATIONS THAT THEY ARE DESIGNED TO RULE OVER SHOULD BE ALSO. With that here are some suggestions for the Commish:

REQUIREMENTS FOR ALL AM DIRECTIONAL STATIONS

1. THE ABILITY TO SWITCH TO NON-DIRECTIONAL OPERATION WITH THE PUSH OF A BUTTON. This will make DA compliance checking (using the ratio method) fast and quick.
2. HAVE INSTALLED A STATE-OF-THE-ART MONITORING SYSTEM. (These new ones really tell you what's happening)
3. HAVE INSTALLED A COMMON POINT BRIDGE WITH STATE-OF-THE-ART CURRENT MONITORING EQUIPMENT. (Eliminate the "how much power are we running here?" guess work)

OTHER CHANGES....

1. THROW OUT THE COMMISSION'S M-3 CONDUCTIVITY MAP AND ANY REFERENCE TO IT.
2. IN SETTING UP ARRAYS ELIMINATE ALL FIELD MEASUREMENTS IN DIRECTIONS WHERE THERE IS NO PROTECTION REQUIRED. It's nothing short of stupid to require field measurements to demonstrate that an array is performing like the computer program said it would in directions where NO ONE cares or is effected. Many a DA has lobes and nulls that are not required but are simply created because that's they way DA's work. Why measure them?
3. COME UP WITH SOME SORT OF CRITERIA FOR MAKING GOOD AM MEASUREMENTS. If you have ever walked in the foot-steps of someone who has gone before you who did not have a clue you will understand.

I applaud the FCC's willingness to back off and get real with DA's, but at the same time I know that many an antenna system out there is no where near 1994.

Let's get the nation's antenna systems up to speed AND THEN change the rules to match.

For those of you who have AM stations, don't forget that starting June 30th the Commish will start requiring annual measurements of harmonics and emissions.

You don't have to go out and buy a spectrum analyzer calibrated in accordance with 73.44 (a), but, what ever you do, it should be able to stand up against a challenge from someone that is doing it that way.

I would look for lots of companies cashing in on this new regulation at the NAB; certainly Delta's Splatter Monitor will be displayed for all to see.

SBE "SHORT CIRCUITS VIA BBS"

SBE EVENTS AT NAB SPRING CONVENTION

SBE Day at NAB will be Tuesday, March 22 in Las Vegas. A full day of sessions is planned. A Membership Meeting will be held at 5:30 PM (previously announced for 4:00 PM) at the Convention Center, followed by the Chapter Chairman's Meeting at 6:15 PM. The SBE Board of Directors will meet from 9:00 AM to 1:00 PM, Sunday, March 20 in Conference Rooms 1,2 & 3 of the Las Vegas Hilton Hotel. Members are welcome to attend. Be sure to stop by the SBE Booth. You can pick up certification pins, membership pins, and other SBE merchandise such as books, shirts, caps, and jackets.

SBE MEMBERSHIP DRIVE

"One New Member" is the theme of this year's SBE membership drive. From March 1 through May 31, SBE members who recruit at least one new member will be eligible to win the Grand Prize, A Trip for Two to Los Angeles for the SBE Engineering Conference this Fall! The prize includes air transportation, first class hotel accommodations, full Conference Registration and more. Other prizes will be awarded as well. All SBE members will receive details in the mail.

MARCH SBE DATES AND EVENTS

20 SBE Board of Director's Meeting, Las Vegas, Nevada
21 Ennes Scholarship Trustees Meeting, Las Vegas, Nevada
22 SBE Day at NAB Spring Convention, Las Vegas, Nevada
SBE Certification Exams
Membership and Chapter Chairman's Meetings

FCC RULEMAKINGS

compiled by Tom Smith

DA 94-67 Request by WavePhore, Inc. for clarification to allow Digital Data Transmission within the video portion of television station transmissions.

WavePhore, Inc. seeks clarification of the FCC rules to allow the transmission of digital data signals within the video passband of television transmissions. They would like the FCC to allow the use of their "TVT1" systems by TV broadcasters without prior authorization by the commission.

The "TVT1" system places a 384 Kbps signal into a video signal at between 3.9 to 4.2 MHz. The signal is supposed to be only several IRE above the noise floor and is interleaved into the video signal so it will not be seen in the normal picture. The system may be able to operate at 1.544 Mbps in the future.

The request was published in the Jan 31, 1994, issue of the FEDERAL REGISTER with comments due on March 14 and replies on March 29, 1994.

Register to Attend Breakfast Meeting

If anyone is interested in attending a breakfast meeting to hear about digital compression standards, please contact **Kevin Ruppert at WISC-TV, 277-5151**. This breakfast will be held on April 12th (Tues.) from 7-9 am. It is dutch. No location has been set yet. At this point, we are only trying to get a count of how many people are interested.

The breakfast is being put on by the local PBS video standards committee. (Chapter 24 member Dennis Behr is on this committee.) The guest speaker is **Richard Schaphorst of Delta Information Systems**. His interest is measurement standards for codecs that use digital compression techniques.

Please leave a message at 277-5151 so we can add your name to the list of those interested. Thanks.

MARCH MEETING and PROGRAM

Society of Broadcast Engineers
CHAPTER 24 MADISON, WISCONSIN
Monday, March 28, 1994

5:30 p.m. Dinner at Nitty Gritty Restaurant
223 North Frances (Corner of Frances and Johnson)

7:00 p.m. Meeting and Program at WHA-TV , 821 University Avenue
(Use Park Street entrance)
Parking available on Lake Street surface lot or below Business School

Program: "NAB REVIEW"

Members who attend the **NAB'94** Convention in Las Vegas this year are encouraged to share what they have learned and observed.
After the discussion, tours of both Wisconsin Public Television and Radio will be given.

Visitors and guests are welcome at all our SBE meetings!

1994 MEETING/PROGRAM DATES

Date	Topic	Presenter
Apr. 26, '94 Tues.	Vender Program	Roscor
May 25, '94Wed.	**Elections**/Advanced Electronics	*T.B.A.*

Program Committee: Mark Croom 271-1150 Kerry Maki 833-0047 Denise Maney 277-8001 Steve Zimmerman 274-1234

AMATEUR RADIO NEWS

by Tom Weeden, WJ9H

● The American Radio Relay League (ARRL) has made several FCC comment filings recently, stating its positions on various proposals which are pending before the Commission. One that seems to be getting the most attention is PR Docket 93-305, the so-called "Vanity Call Sign" proposal. Eligible hams could once again select their own call signs, a privilege which ended in 1978 when the FCC implemented a computerized licensing system which assigned calls sequentially. ARRL has requested an extension of time for the comment period, from March 7 to April 21, stating the former deadline did not allow ARRL members enough time to express their views.

● ARRL has also petitioned the FCC to make portions of the 902-928 MHz band a primary amateur allocation. Amateurs currently share the band with a variety of users, including government, industrial, fixed and mobile services, scientific and medical equipment, and nonlicensed "Part 15" devices. ARRL seeks 902-904 and 912-918 MHz. In other filings, the League has asked for operator licenses to be made valid for life, and has requested the FCC to terminate its proposed adoption of stricter ANSI RF radiation standards.

● The FCC has revised its Form 610 for amateur license applications, and effective March 1, only the new style form will be accepted for filing. The new 610 conforms to new data entry screens that are part of a recent computer hardware and software upgrade at the Gettysburg licensing facility.

● Oklahoma farmer and ham radio operator Troy Fehring, N5VIN, was baling hay on October 28, 1993, when he heard astronaut Bill McArthur, KC5ACR, aboard space shuttle STS-58 operating on 2 meters. Fehring managed to make a two-way contact with the shuttle, and since he normally doesn't carry a logbook with him while baling, he "jumped out of my tractor, took my screwdriver and scratched it on my toolbox so I wouldn't forget!" It is believed that this was the first ever tractor-to-space shuttle radio contact....

*(Excerpted from March 1994 **Badger State Smoke Signals** and **QST Magazine**)*

Announcing the 1994 WBA Engineering Workshop and Regionwide SBE Meeting & Lunch

Tuesday, July 12, 1994
Landmark Resort
Egg Harbor, Door County

Registration begins at 8:00AM.
Sessions end at 4:30PM.

The focus on this year's workshop will be:

Systems In Transition: Broadcasting in the 90's

The program committee has a entire day of sessions that will deal with all manner of technological and computerized issues that we all find ourselves dealing with each and everyday.

Cost for this year's workshop remains the same as in years' past.

$25.00 **Sessions, Lunch and Exhibits.**

$40.00 **All of the above plus the WBA Banquet at 7:00 p.m..**

The WBA will mail registration information soon.

Please join us this year!

Program Co-Chairs: Terry Baun, Chris Cain, Art Williams, Mark Berg, Greg Dahl

CHAPTER 24 SUSTAINING MEMBERS

Broadcast Communications
BTS
Clark Wire and Cable
Comark Communications
CTI
Dynatech Video
Electronic Industries
Emmons Associates
Fuji Film I&I
Harris Allied Broadcast
Maney Logic
Panasonic Broadcast
Roscor Wisconsin
Scharch Electronics
Skyline Communications
Sony Broadcast
Tectan, Inc.
Teleport Minnesota
The Tape Co.
Video Images
WISC-TV 3
WKOW-TV 27
WMSN 47
WMTV 15

NRSC-2 MEASUREMENTS

by Chris Hays
Chapter 47 Vice-Chair

AM stations will be required to make NRSC-2 measurements annually after June 30, 1994.

What's an NRSC anyway?

In the days of yore, when FM was something only rich hi-fi nuts had, AM radio was secure with the 10 Khz channel spacing allotted it. Broadcasters all pretty much ran their systems flat, and although receivers weren't necessarily hi-fi sounding, they were adequate. A few of us had special "hi-fi" AM tuners in our systems, which had a narrow/wide bandwidth switch that let us enjoy the full bandwidth that stations transmitted. With less crowding on the band, and less man-made electrical noise, these receivers gave surprisingly good sound.

The trouble began in the early 60's, when the FCC decided to allow stereo technology on FM but not AM radio, even though the technology was available in both mediums. More interest in FM developed, but generally the expense of upgrading held the general public back. Stereo required additional circuitry. FM itself required more components to receive it than AM.

However, moving into the late 60's, we had the development of the integrated circuit, and somebody noticed that a very complicated circuit that was designed in the 30's could now be packaged inexpensively. That old/new circuit was called the phase-lock loop. FM receivers got better and cheaper overnight. Combine this with the fact that the stereo LP was now on everyone's shelf, a fidelity revolution was beginning.

AM was starting to feel the pinch. To add insult to injury, receiver manufacturers began to cheapen the AM receiver and improve the FM portion of the receiver. After all, AM wasn't selling radios any more, FM was. AM broadcasters reacted by equalizing signals to try to squeeze some fidelity through the too-narrow AM receivers. This caused adjacent channel interference. The receiver manufacturers responded by making receivers narrower, and the broadcasters added more eq, clipping and processing, and so on. The result was that AM radio, by dirtying up its own band, had begun to shoot itself in the technical foot.

As the AM band continued to deteriorate, the National Radio Systems Committee (now you know what NRSC means) began looking into the problem. Ultimately two standards were created. They are NRSC-1 and NRSC-2.

NRSC-1 prescribed a specific pre-emphasis and frequency response characteristic for AM stations. One of the problems created by the efforts of AM stations to sound better through poor receivers was that every station had its own idea of what the "correct" equalization was. This made it impossible to build a receiver that would sound right on every station. NRSC-1 standardized the modified 75 microsecond curve, making it possible to build a radio that would sound correct on all stations. It also had the side effect of being essentially the same pre-emphasis as FM, which created an interesting extra benefit: both AM and FM would now be processing against the same curve, making them sound more alike. NRSC-1 also required a "brick wall" 10 Khz audio low-pass filter. This meant that audio in the range above 10 Khz can could longer be passed by AM stations, thus eliminating most of the serious adjacent channel interference problems.

NRSC-2, also known as the "RF-mask," addressed the total spectral purity of the station, prescribing specific limits at given spacing from the carrier that could not be exceeded. This standard opened the door to a way of measuring stations to determine whether they were complying with the standard.

In April of 1989, the FCC issued a report and order that wrote NRSC-2 into the rules (part 73.44). Although many broadcasters had hoped the FCC would adopt the NRSC-1 standard, the FCC was concerned that, while that standard was an improvement, it did not guarantee that stations would not cause interference to adjacent channels due to problems downstream of the audio processor (such as over-modulation and envelope distortion). The FCC decided that annual "proof" measurements showing compliance with NRSC-2 would insure stations would not interfere with their neighbors. The FCC also noted, that many stations (and many contract engineers) did not have the equipment or know how to do these measurements. To soften the blow while accelerating AM improvement, the rule exempted stations from these measurements if they installed NRSC-1 processing equipment. The catch was that this exemption would only be good until June 30, 1994. As of that date, ALL AM stations must make annual measurements showing compliance with the NRSC-2 standard.

NAB Awards

from NAB Press Releases

The Engineering Achievement awards for NAB 1994:

- Radio honoree is Charles T. Morgan, Senior Vice-President and Vice-President of Engineering for Susquehanna Radio Corporation in York, Pennsylvania. He is being honored for a lifetime of radio industry work where he was instrumental in developing the AM transmission and receiver standards, as well as the RBDS broadcasting standard. He continues to lead the NRSC in the areas of FM high speed subcarriers and digital audio broadcasting.
- Television honoree is Thomas Vaughan, President of PESA Micro Communications, Inc. of Manchester, New Hampshire. His industry work includes pioneering efforts in very high power UHF TV systems, transmission systems for advanced television signals, and significant contributions to the development of high power, wideband, multichannel FM station combiners and antenna systems. He holds 16 patents for broadcast products.

Each year NAB presents Engineering Achievement Awards to radio and television engineers who have made significant contributions to the broadcast industry.

Copied *from:*
THE BROADCAST NEWSLETTER
Chapter 28, Milwaukee
Terry Baun, Editor

Amalgamation Formed For Video Compression Techniques

A "Large Amalgamation" of video industry companies involved in bit-rate-reduced recording and transmission systems was announced on January 18 in Las Vegas. This "Amalgamation" was formed to pool the resources of several companies that were all working on the process of trying to get as much "full action" video on as little space or bandwidth as possible without sacrificing the quality that most consumers would expect to get from consumer video gear.

The Amalgamation has announced a compression method which it says promises to provide the ultimate scheme for broadcasters who feel that they must actually restrict themselves to only 6 million cycles per second of bandwidth. This compression scheme relies on a technique newly developed at the Applied Sciences Segment of Ohio State University called "Imagine" by its developers. "Imagine" takes full advantage of a little understood human psychovisual principle known to experts as "persistence of Imagination." The concept behind persistence of imagination is very difficult for most people to understand, unless they possess a high degree of imagination themselves. With this in mind, the editor claims that it might actually be possible to explain the concept to an artist, a program director, or possibly a character generator operator, but very difficult to explain to someone who has a technical understanding of video compression techniques.

Very roughly, however, the persistence of imagination theorem says that, if you remove every third frame of significant video, (or 3.5 seconds out of a 30 second automobile commercial) the viewer will replace those missing frames with pictures that have been formed in his or her imagination. In other words, you will be literally "thinking" about how the picture should look before the redundant information was chopped out.

Without going into a lot of detail about how the technique works, and due to the fact that it is almost technically unexplainable, this article will only briefly touch on the basics of the "outer layer" of the forward, subliminal, bit rate reduction scheme engine. This scheme is known as an "Anti-Interframe Nulling Technique" which uses a vector squared, reverse nulling technique. The engine has been dubbed the "AINT" processor by the members of the Amalgamation Name Designation subAmalgamation. (This subAmalgamation is assigned the task of coming up with names for all of the different processes that are proprietary.) The AINT process is, indeed, one of those proprietary processes that is protected by the agreement between the various companies and industry agencies that are represented by the Amalgamation. Because it is still a highly guarded, proprietary process, not all of what is involved has, at the time of this writing, been released to the Trade Press.

People that have been contacted by this author that know people who have worked with people who have close relatives that are members of the Amalgamation were asked what the new process looked like in a subjective matter, now that the empirical data are known to some degree by a select few experts.

The biggest problem at this time is that a sufficient vocabulary for subjectively judging video under bit rate reduction does not exist. So the Amalgamation formed a Sub-Amalgamation to begin working out a way to describe the quality of bit rate reduced video so that other industry experts and golden eye viewers could exchange comments on what they were seeing while looking real hard at their video monitors. The Sub-group decided that it would be good to adopt several of the already commonly used subjective terms to describe the quality of video. Terms such as "as good as VHS" or "as good as Betacam" would have a scale attached to them so that they would be more meaningful.

A new term was coined by the committee to describe the AINT engine video. This new term is "SAKU", which means "Sorta, Almost, Kindalike U-mat" quality. SAKU would just be slightly to the left on the continuum of "Quad on a Bad Day" or "QUBD" but to the right of "I Bought My Betamax at American in 1978" or "IBBA_78".

Now that most of the preliminary work of the Amalgamation and the various Sub-amalgamations is done, a period of blind and also deaf testing must be made. In order to do this, the Testing and Evaluation Sub-amalgamation is looking for a select group of golden eye test subjects. Some subjective testing will be performed, but it is thought that most of the testing will actually be introspective in nature.

The final recommendations of the Amalgamation is expected to be made on **April 1, 1994.**

Kevin Ruppert

UW - Platteville Department of Communication
Spring Symposium
Future of Broadcasting Entities
Wednesday, April 13, 1994
Platteville Campus Television Center in Pioneer Tower

PRE-PROGRAM

Symposium related activities will extend for the first time this year into the evening prior (Tuesday, April 12) in the form of a "cracker barrel" session featuring representatives of several trade associations interacting with UW-P students. The Society of Broadcast Engineers (SBE), the International Teleproduction Society (ITS), Wisconsin Broadcasters Association (WBA), the International Television Association (ITVA), and the International Teleconferencing Association (ITCA) have all been invited to campus to participate and to present their associations between 7:00 and 8:00 p.m. at the Student Center. The plan is to then form a panel at 8:00 to share insights and ideas of what the future has in store for the field. All registrants for Wednesdays symposium are welcome to arrive early and add their input to this "cracker barrel session."

PROGRAM

9:00 Coffee and Registration - Pioneer Tower Lobby
10:00 "The Challenges and Opportunities Available to Broadcasters Made Evident by the March to a Nationwide Information Highway"
11:00 "Information Highway Buzzwords"
12:00 Lunch Served (included with registration)
12:30 "A Vision for Telecommunications and Broadcasting in Wisconsin"
1:20 "The Intersection of Emerging First Amendment Principles with Information Superhighway Policy"
2:15 "New Technology Applications in Post-Production"

Registration Fee: $34.95 ($10.00 discount If you are a SBE, ITVA, ITCA, WBA or ITS member.) Register by April 6 to: Dept. of Communication 1 University Plaza, Platteville, WI 53818

Fiber

Continued from page 1

GOVERNMENTAL REGULATIONS

Attachment rights are granted by the pole owner, subject to applicable governmental regulations, the policies and procedures of the pole owner, and the concurrence of other pole occupants, if any.

Few applicable governmental regulations exist at any level, federal, state, or local. However, the following are worth noting:

- At the federal level, only cable television attachments are regulated; enforcement rests with the FCC. The basic thrust of this regulation is to ensure that costs are allocated equitably among all pole occupants, and that no single occupant is forced to subsidize other occupants. Unfortunately, this regulation does not extend to fiber networks owned by non-cable entities; accordingly, pole owners are free to charge whatever the market will bear.
- States exercise direct control over utility (electric power and telephone) entities; enforcement rests with a designated board or commission. In Wisconsin, this authority rests with the Public Service Commission, or PSC. The PSC directly controls pole attachments made by the utility companies themselves; however, its authority over attachments by non-utility entities is largely restricted to safety issues. Beyond safety issues, each pole owner is free to grant, or refuse to grant, pole attachment rights under whatever conditions it chooses.
- At the local level, most municipalities, including Madison, have ordinances which generally discourage any kind of new overhead construction, and encourage placing existing overhead facilities underground. Such ordinances are usually based on environmental and aesthetic concerns. These ordinances may be used, either by the municipality itself, or by environmental groups, to block any new overhead construction, including additional construction on existing poles.
- In an apparent contradiction of such ordinances, many municipalities own poles within their jurisdictions. Typical uses include support of signs, streetlights, traffic signals, and seasonal decorations. Many municipal governments also own and operate electric utilities; in such cases, the municipality may own all poles within its jurisdiction. Local regulations may or may not permit attachments by other entities; in any case, local environmental groups may oppose any new overhead construction.

The net effect of these regulations is that pole owners are under no obligation to grant attachment rights to any non-utility entity except cable television, and that even if they do grant such rights, they can impose whatever charges they wish.

This is not to say, however, that overhead construction of a new fiber network cannot be accomplished; it simply says that, except for local environmental concerns, there are few government regulations which either encourage or discourage their construction.

POLICIES OF POLE OWNERS

The process of getting permission to attach to utility poles varies widely, depending on the policies and procedures of the pole owner.

If the poles are owned by a municipality (including a municipal electric utility), there may not be any local policy governing pole attachments, other than the political whim of the governing board in power at the moment.

If the poles are owned by a utility company, the policies and procedures are usually well-defined. The remainder of this article will describe with the procedures generally followed the major utility companies operating in the Madison area: Ameritech, GTE, Mid-Plains, MGE, TDS, and WPL.

The process requires three steps: a Pole Attachment Agreement with each pole owner, a permit for specific poles, and makeready work where needed. We will discuss each step separately.

THE FIRST STEP: THE POLE ATTACHMENT AGREEMENT

The Pole Attachment Agreement is a formal contract between the owner of the poles (the "licenser") and the party desiring attachment rights (the "licensee"). Agreements are usually prepared by legal departments and executed by corporate officers.

The fundamental purpose of the agreement is to establish the business relationship between the licenser and the licensee. Typical agreements cover such items as annual rental fees, the geographic area covered by the agreement, inspection procedures, allocation of makeready costs, insurance requirements, liability for damages, and permit procedures.

A separate agreement is usually required with each utility company; at a minimum, this usually means two agreements, one with the power company and one with the telephone company. Additional agreements may be required if attachments are to be made to poles owned by other parties.

Four items covered by most pole attachment agreements are worthy of special note:

- Rental Fee: The agreement specifies the annual rental fee per pole, and the procedure for changing it. In the case of a fiber network owned by a non-regulated entity, this fee is wide open to negotiation. For comparison purposes, the FCC-regulated fee paid by cable television companies typically ranges from $4.00 to $10.00 per pole per year.
- Liability: Most agreements specify minimum general liability coverage of $1,000,000.00, with the licenser named as an "additional insured". In addition, most agreements include a "hold harmless" clause to protect the licenser.
- Makeready Costs: Virtually all agreements specify that the licensee requesting makeready must reimburse all current pole occupants for all makeready costs, and must deposit the estimated makeready charges in advance.

- Landowner Permission: Most agreements require evidence that the licensee has obtained legal permission from underlying landowners to cross their lands.

THE SECOND STEP: PERMITS FOR SPECIFIC POLES

A Pole Permit is an authorization to attach to a specific pole or group of poles. The pole permit application typically contains the following information for each pole:

- Identification of the pole by its location, map reference, and/or utility company pole number.
- A profile drawing of the pole and all adjacent spans.
- Evidence that all clearance requirements will be met under all sag conditions. It may be obvious from the profile drawing that clearance problems will not arise; however, in doubtful cases, it may be necessary to submit worst-case sag calculations.
- A description of makeready work, if any, requested by the licensee.

Once all Pole Attachment Agreements have been signed, the licensee is free to submit pole permit applications for the desired poles. By common practice, permit applications for all poles along the desired route are submitted simultaneously to all pole owners involved. Copies are also submitted to other any other pole occupants whose facilities may be affected.

After the applications are submitted, each licenser assigns an OSP engineer who reviews the applications, identifies which poles it owns, and responds to the licensee. The responses vary according to the situation:

- If the pole has only one owner, no other occupants are involved, no makeready work is requested, and it is obvious from the profile drawing or a drive-by inspection that clearance problems will not arise, the engineer usually approves the application immediately.
- If the situation is more complicated, the pole is designated for "multiparty driveout".

After all OSP engineers have reviewed all applications, the multiparty driveout is scheduled. On the appointed day, engineers from all companies involved meet to visit the problem poles. Depending on the complexity of the situation, the driveout may require anywhere from an hour to several days.

During the course of the driveout, most pole problems are resolved. If the licensee has prepared his case carefully, his makeready suggestions are usually accepted. Even complicated makeready problems are usually resolved after a few minutes' discussion.

The biggest problems arise in cases where code violations already exist. Obviously, the licensee does not want to pay for correcting existing violations; yet pole owners can claim, with some justification, that they wouldn't have to do anything if it weren't for the licensee's application for space.

In my experience, even these problems usually can be resolved in a spirit of mutual cooperation. OSP engineers from power and telephone companies have wide latitude in allocating costs, and often accept responsibility for correcting clear violations, even to the extent of replacing entire poles. One of my favorite memories from my cable TV days: a crusty old telephone engineer who would look at a pole and say something like, "That old gal's been settin' there since '46 ... probably rotten at the base ... 'reckon she oughta be replaced anyway ... we won't charge you for that one."

By the end of the multiparty driveout, all problem poles should have been resolved one way or the other: either the licenser and the other occupants have agreed to a makeready solution, or the licensee has given up and decided to do something else.

THE THIRD STEP: MAKEREADY WORK

At this point, the licensee has done all he can; he must now wait patiently until the makeready work is done.

This may take a while. Most utility companies insist that makeready work can be done only by their own maintenance crews, and the OSP engineers won't approve the permits until the makeready work is actually finished. Unfortunately, makeready work is a low-priority item for most utility maintenance crews, particularly during warm-weather months.

But eventually, it will get done. And at last, the licensee with have the entire stack of approved permits in hand. Construction can begin.

The next article in this series will deal with right-of-way acquisition: the process of getting permission from the owners of the underlying land. Route planning, pole-attachment rights, and right-of-way acquisition are not separate processes, even though we have discussed them separately in these articles. Ideally, the three processes should proceed concurrently.

Periodic Review of FCC Rules and Regulations

On January 25, 1994, the FCC issued a notice of rules that it plans to review in 1994. The public is invited to comment on the rules chosen for review within 60 days of January 25, 1994.

Some of the rules to be reviewed that would be of interest to broadcasters include:

FM broadcast section; 73.204 International agreements and other restrictions on use of channels.

TV broadcast rules; 73.665 Use of TV aural baseband subcarriers, 73.667 TV subsidiary communication services, and 73.669 TV stereo aural and multiplex subcarrier operation.

Rules for all broadcasters; 73.1400 Remote control authorizations, 73.1410 Remote control operation, 73.1695 Changes in transmission standards, 73.1735 AM station operation in persunrise and post-sunset, 73.3555 Multiple ownership and 73.3562 Staff consideration of applications not requiring action by the commission.

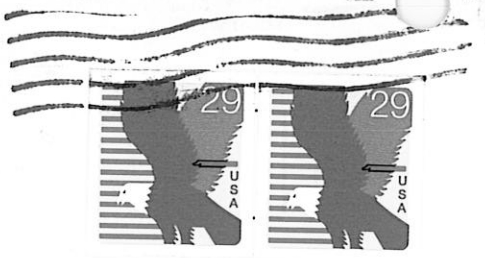
Remote pickup broadcast stations; 73.402 Authorized frequencies.

TV broadcast auxiliary stations; 73.655 Authorization of equipment.

They also are reviewing rules concerning broadcast experimental stations under rules 73.101 to 73.184 and televisions services under part 21 of the rules. Tariffs and telephone connections are also covered.

The notice is on pages 3633 to 3635 of the January 25 issue of the FEDERAL REGISTER.

Compiled by Tom Smith.



SBE
SBE Chapter 24 Newsletter
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FIRST CLASS MAIL

March's Meeting is on Monday, March 28!

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