

September Meeting
Tuesday, September 22nd, 1998
12:00 Noon
Rosie's Rib Joint
8125 E. 49th Street
Tulsa, OK

September Chairman's Report

By Don Dobbs

Attendance at the monthly chapter meetings has been down over the summer. This is probably due to everybody's busy schedules. This must not allow us to lose sight of the overall mission of our chapter. We have some terrific programs coming up this fall. This month, Sandy Stines with Belden Wire and Cable will present a very informative program on broadcast cable characteristics. In October, Richard Chambers with Sony Media will host our monthly meeting and present a program on audio and video tape. In November, Ron Fisher will demonstrate the latest audio testing techniques. We are also planning some additional continuing education sessions later this fall.

As broadcasters, should we be concerned about the growing market penetration of Direct Broadcast Satellite (DBS) including DirecTV and PrimeStar. A market report predicts that Cable TV penetration in the U.S. will only rise 3% to cover 67% of the households by the year 2000, but Direct-Broadcast Satellite services will serve about 12% of the nation's home's-up from 2.4% at the end of 1995. Market Penetration in some areas of the country are up to 35%, while here in Tulsa, the market penetration for DBS is about 18%.

The implications are extremely important, as cable providers must overcome a broad public perception that satellite is better than cable when in fact, satellite and cable much of the same programming. Surveys also suggest that DBS subscribers have a tendency not to watch local broadcast television stations. Many subscribers may not even have the capabilities of receiving their local stations given their particular type of installation. This trend doesn't only effect local television stations. Digital Music Services on satellite and cable also effect local radio stations. Listeners and viewers will choose quality in the program decisions. Broadcasters must be ready to be competitive in a very aggressive and changing industry.

September Meeting Program-Belden Wire and Cable will present this month's program. Sandy Stines, Field Representative for Belden Wire and Cable will present information on the new audio and video cable lines. She will have samples of audio and video cable products for each of us to examine. With transition to digital in radio and television facilities, an over view of the products available for use is important. For the Ham's in the membership she is also going to show the more flexible 9913 product.

ENCODED GAMUT

By Mark Everett

We, at Videotek, have learned a lot over the last three years on all of the fine points and specific issues relating to Encoded Gamut. We are one of the leaders in the detection and prevention of this complex problem, and I feel that we should share much of our learning experiences with you.

When we introduced the VIDEOTEK, SDC-101, we included the "Make Legal" function in that unit. The SDC-101 includes detecting and correcting one Gamut problem, Production or RGB Gamut. That is the Gamut which monitors, and 601 scopes search for and alarm. It is the Gamut which make colors look wrong in some Desk Top editing applications and it is the Gamut which makes inputs to some RGB production devices appear to be wrong.

As a small refresher, let me remind you that Gamut is defined as the whole or all of something. In color television, it is a bit more elusive, since 601 Gamut is much greater than either Production (RGB) Gamut or Encoded (NTSC or PAL) Gamut. The first issue is to then be specific about which color space to which you refer, and then to be aware that some colors which look perfectly great in 601 may not appear the same in RGB situations or once they are encoded to NTSC or PAL for broadcast. Production Gamut is universally agreed upon and it defines all legal colors as any color, when viewed in the R, G or B representation, which do not go below 0.0 mV or above 700.0 mV.

Encoded Gamut or NTSC or PAL Gamut is dependent upon two different signal characteristics - luminance and encoded color. The situation is further aggravated by some interaction considerations and by the fact that there is little agreement as to the limits of these values. The rules of defining Encoded Gamut vary from country to country, and sometimes, from user to user.

The whole crux of the matter is ... How much encoded color level is acceptable in your system? The answer will vary. A second, and closely related question is... How much luminance is allowed in your system? This is a bit easier, but still a little tricky. Encoded gamut is dependent upon those two answers taken together.

Most of the world of video users and regulatory agencies agree that the maximum luminance video level is 100 units - either IRE or units - depending upon where you are located. We have a bit harder time *cont'd page 4*

**Society of Broadcast Engineers Chapter 56, Inc.
August Meeting Minutes**

A regular meeting of SBE Chapter 56 was held on Tuesday, August 25, 1998 at Rosie's Rib Joint in Tulsa, Oklahoma. The meeting was called to order at noon by Don Dobbs, chairman.

Minutes

The minutes of last month's meeting were approved by voice vote.

Treasurer's Report

Jim Hicks, treasurer, reported \$2599.55 in the chapter checking account.

Newsletter

Bill Lee reported the newsletter by E-Mail is taking some time to get set up, please send Bill your e-mail address at willilee@oru.edu. The newsletter is now available at the chapter web page, www.broadcast.net/~sbe56.

Internship Committee Report

Don Dobbs reported, Tim Martin has completed his internship and it is time to select a new candidate, also we need a member to volunteer as committee chairman.

Today's Program

Ken Ostmo of Fairview AFX presented information on the advantages of networking computer systems using Serial Storage Technology (SSA) built by Pathlight Technology.

**The Ham's Corner Sept '98
by Glenn O. Thomas W5INU**

I saw a report on the status of licensing of new hams and up grades. It was a little startling to see such a large percentage drop in new licenses in just one year. Of course we hope it is just a fluke but don't bank on it. While thinking about the trends in communications today I realize I spend more time with E mail then I do on the air. No, I have not deserted ham radio it is just that with E mail I keep in touch with family members around the country and even did when the grandson was in England for a short time. There must be something that is getting the fancy of all ages today that was missing in the past. I still find a lot of interest and enjoyment in contacts on the air. I will admit I really enjoy visiting with hams from other countries when ever I get the chance. Speaking of DX I have been hearing a number of DX qso's on the high bands. I think this winter will see the return of good times on the 10 and 15 meter bands.

I wonder what if any thing we can do to attract more young people to ham radio. Nor do we want to forget the older people and retired who are looking for new adventures. Are the ham magazines just *Cont'd page 6*

www.broadcast.net/~sbe56

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Meeting Information

Chapter meetings are held at 12:00noon on the fourth Tuesday of each month, except December, at Rosie's Rib Joint, 8125 E. 49th Street, Tulsa OK

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SBE's SHORT CIRCUITS

September 1998

A Monthly Update from the Society of Broadcast Engineers

BOARD ELECTS NEWEST FELLOW

The Society of Broadcast Engineers will welcome its newest Fellow inductee during the SBE National Meeting in Bellevue, Washington, October 28. Terrence M. Baun, CPBE, of Milwaukee, has been elected a Fellow of the Society.

To be elected a Fellow, a member must have rendered conspicuous service to the Society or made a valuable contribution to the advancement of broadcast engineering.

Baun is Immediate Past President of SBE and also serves as Certification Committee Chairman (see "Baun Named Certification Chairman" elsewhere in this issue). A complete story about Terry will appear in the November/December issue of the SBE SIGNAL.

CHAIRMEN INPUT SOUGHT ON 2 GHz ISSUE

SBE President, Ed Miller, CPBE, recently mailed a letter to all Chapter Chairmen, requesting input on the Society's future involvement in preserving the 2 GHz BAS spectrum. As of this writing, many responses have already been returned. Chairmen are asked to fax their responses in by September 8 to the SBE National Office at (317) 253-0418.

BAUN NAMED CERTIFICATION CHAIRMAN

SBE President, Ed Miller, CPBE, has appointed Terrence M. Baun, CPBE of Milwaukee, chairman of the SBE Certification Committee. Baun replaces David Carr, CPBE, who stepped down from the post at the end of July. Baun is Vice President of Engineering, Cumulus Broadcasting, Inc. and founder of Criterion Broadcast Services.

The Certification Committee is responsible for the development of the certification program, setting program policies and developing the exams. In the announcement, Miller expressed thanks and appreciation to David Carr for his dedicated service as Certification Chairman for the last two years.

CERTIFICATION EXAM PERIODS ADDED

SBE Certification Chairman, Terry Baun, CPBE, has announced that opportunities to take SBE Certification Exams will double in 1999. There will be four 10-day periods when exams can be offered in local chapters. This should provide more flexibility and convenience to members wishing to become certified.

It's not too late to register for a November 1998 exam. For more information about SBE Certification, see your Chapter Certification Chair or contact Linda Godby-Emerick, Certification Director at the SBE National Office at (317) 253-1640 or lgodby@sbe.org.

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BRIEFING ON LEONID METEOR STORM FROM PANAMSAT

The discussion below represents PanAmSat's conclusions with respect to the effects on its satellites of the natural phenomena described, and is based on the prior experience of PanAmSat and other operators in the industry and on information available to PanAmSat from various sources. However, notwithstanding prior experience and the information available to PanAmSat, no assurance can be given by PanAmSat that its satellites will be free of any adverse effect or damage from the meteor storm.

The Leonid meteor storm in November 1998 is generating considerable interest about the potential implications for satellite communications. PanAmSat, the world's largest commercial provider of satellite services, operates 16 satellites located approximately 22,300 miles above earth in geostationary orbit. PanAmSat's satellites cumulatively have logged hundreds of service years without any problems related to collision with space debris.

The probability of a collision during the Leonid storm is very low due to the relative small size of a satellite in space and the extremely small size of meteor particles. While predictions vary widely based on the debris models and researchers, the probability of an adverse collision ranges to 1/10th of 1 percent or less for the duration of the storm. In addition, PanAmSat's satellites have on-board shielding and redundancy to protect critical space-

"...PanAmSat does not believe the Leonid meteor storm poses a significant risk..."

craft components.

During the last year, PanAmSat has participated in conferences and evaluated studies by government agencies and the scientific community that have addressed the potential effect of the upcoming storm on man-made satellites. Based on the analysis to date, PanAmSat does not believe the Leonid meteor storm poses a significant risk to PanAmSat satellites.

This conclusion is supported by the following reasons: The Leonid storm will create more particles than during non-shower periods, but these particles will be very small in density. In addition, the duration of the storm period will be relatively short - less than two hours.

The probability of a collision is extremely low, and PanAmSat's satellites are designed with shielding to tolerate collisions with very small particles, reducing the probability that a meteor strike would cause immediate problems or impair performance.

The timing of the upcoming storm presents a favorable geometry relative to the largest surfaces on the satellites, which are the solar panels. This reduces the probability of an impact that would affect electrical power generation or cause loss of pointing.

June 10, 1998

THE UNITED STATES AND CANADA AGREE ON
CONDITIONS FOR IMPLEMENTATION OF U.S.
SATELLITE DIGITAL AUDIO RADIO SERVICES (DARS)
AND CANADIAN TERRESTRIAL DIGITAL RADIO
BROADCAST SERVICES (T-DRB) ALONG THE
U.S./CANADA BORDER AREA

The United States and Canada have agreed on technical conditions for implementation of Terrestrial Digital Radio Broadcasting (T-DRB) services in Canada in the 1452-1492 MHz band and Satellite Digital Audio Radio Services (DARS) in the United States in the 2320-2345 MHz band. As a result, T-DRB service can be implemented immediately, and the launch of DARS can occur after a transition period. Coordination discussions regarding DARS are continuing with countries other than Canada.

These agreed upon conditions are the result of negotiations that took place over several years and involved complex inter-service frequency sharing considerations unique to the U.S. and Canadian these two bands. Although these bands are used for different services in Canada and the U.S., new applications of digital technology will be introduced by Canadian and U.S. providers. It is important to note that the continued operation of U.S. aeronautical telemetry stations was a paramount concern in these discussions. Looking to the future, FCC Chairman William E. Kennard, stated, "This successful negotiation will provide U.S. consumers access to innovative CD quality audio programming and will promote new communications services using innovative satellite-delivered digital technologies."

U.S. Ambassador Vonya McCann and Canadian Assistant Deputy Minister Michael Binder exchanged letters that will allow both countries to begin to implement by September 1, 1998 the technical conditions for the introduction of these new digital sound broadcasting services on either side of the border. Both the United States and Canada have pledged to work swiftly to convert these technical conditions into binding international agreements.

In the interim both countries will implement these mutually agreeable conditions on an interim basis, beginning on September 1, 1998. Details of the conditions are available on the FCC internet site for the International Bureau (<http://www.fcc.gov/ib>).

Cont'd from page 1 with where minimum luminance is located - 7.5IRE in most NTSC systems, 0 IRE or units in other NTSC and all PAL systems. Then there is super black, but it doesn't work in 601, so I won't try to make it fit.

In all cases, and in all countries, the peak level of color which can be modulated is absolutely limited to a second value. The rule is 100 units in Germany and some

other countries including some US video users, 110 units is another popular value including some US broadcasters, 120 units is, of course, the US limit and then some countries, like Great Britain, go as high as 133 units. There are other values, but this list at least the highest and lowest limits in common usage.

This issue of gamut gets aggravated with the understanding of the extra rules encoded systems allow for color levels. If we just consider, for instance, the limit of 120 units. Color bars, for instance, have some interesting mixed values. First, the luminance range is from 7.5 units at Black and 100 units at the white flag. If you look at only the luminance (or Low Pass) portion of the video, you see a descending staircase from white through grays down to black.

The highest color bar with modulated color information is the Yellow bar, and the amplitude of that bar is typically at a level of around 70 units and a modulated color packet at an amplitude of 62 units. Lower amplitude color bars like Cyan or Red have color packet amplitudes of 87 units. And these values are for 75% saturated bars, we can go as high as 140 units of color modulation as long as the associated luminance is at 50 units.

The point is we can have fairly highly saturated

"we can have fairly saturated colors"

colors as long as the combination of luminance and color saturation don't exceed our encoded limits.

Another way of stating this is for luminance values of 100, the maximum color saturation allowed is 40 units. As the luminance decreases to 50 units, the color saturation can increase to 140 units and then decrease back down to 55 units as the luminance approaches 7.5.

These are all values which apply to NTSC systems. In Great Britain, the saturation rules would go as follows. At maximum luminance, 100 units, the maximum color saturation would be 66 units. At a luminance value of 50 units, the color saturation may be as high as 166 units, and then it goes back down to 66 units of color saturation as the luminance value approaches 0.

These rules must be applied on a pixel by pixel basis, and the video industry has yet to develop a method of display like a waveform or vector to give the user or operator or engineer a graphical method of viewing these errors as they occur. There is at least one scope from a competitor, which has a display to let the user know when he has exceeded the Gamut encoding limits, but that tool does not indicate what to do to fix the problem and doesn't work on a pixel by pixel basis.

The immediate solution Videotek has developed is the DPA-100 Serial Digital Proc Amp which can be set for the specific encoding rules appropriate to the user's situation, and then monitor the 601 video on a pixel by pixel basis. As a further step, the VIDEOTEK, DPA-100 can indicate an error, via an LED. Finally, the DPA-100 has an "Auto Legal" function, which limits the *Cont'd page 5*

Cont'd from page 4 video when and where appropriate, to assure that the resultant 601 will successfully encode in the target video system without any surprises.

Well, that's enough for right now. Application will continue, on a regular basis, and we will post a notice on our web page to announce all future issues. As always, feel free to call (610 327 2292), write (243 Shoemaker Road, Pottstown, PA 19464) or e-mail (mjeverett@videotek.com) me, Mark Everett, at Videotek, with your comments, suggestions, requests and questions.



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Exam Date(s)	Location
November 13-23, 1998	Local Chapters
Application Deadline	September 25, 1998
February 10-20, 1999	Local Chapters
Application Deadline	December 31, 1998
April 20, 1999	NAB Convention
Application Deadline	March 22, 1999
June 11-21	Local Chapters
Application Deadline	April 30, 1999
August 18-28, 1999	Local Chapters
Application Deadline	July 5, 1999
November 12-22	Local Chapters
Application Deadline	September 30, 1999

SBE OPENS MEMBERSHIP TO YOUTH

SBE's new program targeting high school age students officially began August 1. High school students interested in the technical aspects of broadcasting are invited to become Youth Members.

They will receive a special newsletter three times during the school year containing information on school operated stations, post secondary institutions offering broadcast engineering related courses, scholarship information and age appropriate technical articles.

Youth Members will also receive other SBE member benefits including discounts on technical books and seminars and access to the SBE Job Line. Annual dues are just \$10. For an application, contact the SBE National Office.

NATIONAL MEETING IN SEATTLE

Check out the August/September issue of the SBE SIGNAL for information about the 1998 SBE National Meeting in the Seattle suburb of Bellevue. It's being held in conjunction with Chapter 16's Electronic Media Expo, October 28-29.

Although targeted for those in the Pacific Northwest, anyone may attend the event. It includes technical papers and a large exhibit hall - for free! Ennes Workshops and the SBE National Awards Dinner will both be held on Wednesday, October 28.

There is a charge for the Workshop, which includes lunch, and tickets to the Awards Dinner are just \$10. Craig Tanner, Executive Director of the Advanced Television Systems Committee, will be the keynote speaker. To register, visit the Electronic Media Expo web site at www.emexpo.org.

MEMBERS' RESUME SERVICE AVAILABLE

SBE members have begun taking advantage of the new Resume Service which opened July 1. One member has already found new employment by utilizing the service.

Members may submit five copies of their resume to the SBE National Office, along with a short questionnaire outlining individual preferences. They are matched with employers who can request resumes of those on file who generally match the specifics of the position they need to fill.

The service is free to members submitting resumes and just \$25 for employers requesting resumes. Call Teresa Ransdell or Scott Jones at the SBE National Office to make use of the Resume Service.



PANAMSAT PROVIDES GALAXY X CUSTOMERS WITH CONTINUED SERVICE ON ITS U.S. SATELLITES, PROCEEDS WITH LAUNCH PLANS FOR FOUR ADDITIONAL U.S. SATELLITES OVER THE NEXT 18 MONTHS

CAPE CANAVERAL, Fla., August 26, 1998 - PanAmSat Corporation (NASDAQ:SPOT) announced today that the company has implemented a comprehensive service plan that combines the use of its in-orbit satellite resources and the launch of additional spacecraft in response to today's launch failure of the Galaxy X satellite.

The plan includes the continued availability of U.S. satellite services on the current Galaxy IX and SBS 5 satellites, the upcoming launches of additional U.S. satellites starting early next year and the construction of a Galaxy X replacement satellite for launch in early 2000.

Galaxy X, a Hughes-built HS 601 HP spacecraft with 24 C-band and 24 Ku-band transponders, was destroyed during a Delta III rocket failure here. Galaxy X was to provide video and telecommunications services throughout the United States. The satellite and launch were fully insured. Boeing Co., which provides Delta launch services, has announced that an investigation into the cause of the Delta III launch failure would begin immediately.

"PanAmSat is a resilient company with a proven track record for providing service to its customers in the United States and around the world," said Frederick A. Landman, PanAmSat's president and chief executive officer. "Our breadth of resources over the United States enables us to maintain service for *Cont'd page 6*

Cont'd from page 5 most Galaxy X customers, many of whom are currently on Galaxy IX and SBS 5. In addition, PanAmSat has implemented a comprehensive satellite strategy to provide expanded and backup capacity in space and on the ground. We already plan to launch three additional satellites for the U.S. market by late 1999. We will now also proceed with the immediate procurement of a fourth U.S. satellite, the Galaxy X replacement, for launch in approximately 18 months."

PanAmSat had several sales-type lease agreements on Galaxy X, which would have generated significant revenue in 1998. A substantial portion of these revenues will be deferred into subsequent years under existing contracts that will be served on current capacity.

PanAmSat's four upcoming satellites for the United States are Galaxy XI, Galaxy III-C, Galaxy IV-R and the Galaxy X replacement. The first to be launched will be Galaxy XI, which will deliver 64 transponders for the U.S. market upon launch during the 1st quarter of 1999. Galaxy XI will be PanAmSat's largest satellite ever launched.

Galaxy X was intended to occupy the orbital location of 123 degrees West Longitude, thereby facilitating the shift of Galaxy IX and SBS 5 customers to Galaxy X and the relocation of the Galaxy IX and SBS 5 satellites to new orbital locations. PanAmSat now plans to maintain Galaxy IX and SBS 5 at 123 degrees until the Galaxy X replacement is launched in early 2000.

Galaxy IX, a Hughes-built HS 376 spacecraft, was launched in May 1996 and contains 24 C-band transponders. SBS 5, also an HS 376 spacecraft, was launched in September 1988 and contains 14 Ku-band transponders.



Cont'd from page 2 not in tune with today's people who would welcome new outlets. Something must be wrong as so few of the licensed hams do subscribe to the ham magazines. In my case with out the ham magazines I probably never would have gotten in to broadcast radio or ever held a ham license. One problem at the local level and I am as guilty as any one as I no longer belong to a club or take part in local activities. I don't have the answers or the cure but it is some thing we all should be aware of and maybe asking our national organizations what they are doing to help.

I noticed the local ham convention did not have much in the way of major manufactures except MfJ listed. That was the case several years ago and I have heard this is the case at many hamfests today. While thinking about it I looked through some of the ham magazines from the prospective of a non ham looking for information on amateur radio. I didn't see much that would of fired up my interest. Lets face it unless we have a number of hams belonging to some group or other we won't have much clout at the national level. I admit I am as guilty as any one as just this year I decided to renew subscriptions to more ham magazines. I have subscribed to QST since 1947 and not very happy with what I see today. The August

issue had one construction article far too complicated for most hams let along a beginner. The September issue did have more information of general interest. No I don't have the answers but the magazines must be more interesting and up to the times. One answer has to come from hams, when you think the magazines are letting us down, write the editor and let him know your views!!!!

I have been reading about some coming changes in ham radio in the way we are licensed today. I don't usually get too excited about what might happen tomorrow. However with the changes proposed in the European licensing programs and the proposal of the English group it could be we might face a change here. No I don't think any proposal to enhance CW would be worth while. I don't think we should drop CW but instead view it as a facet of ham radio to be enjoyed if it is of interest to you! Not to be forced down your throat as a matter of policy. Without thought to what damage this actions might cause.

The new proposals by the ARRL to the FCC are a disappointment to me. The same stubborn mind set about CW is still very much alive. They did drop the twenty words per minute requirement for the extra class license. Though they still want to keep too many classes of licenses which means more paper work, etc. for the FCC. Lets face it CW is not a wave of the future and I can't see any reason to require more then five words per minute exams for the two top classes of licenses. With only three classes starting with the class C, with the class B and then the Class A. The class C would not have any CW requirement but would be only for 50MC and above bands.

One thing I did do was connect a long run of wire fencing around my back yard and several other neighbors back yards to my ground system. My friend in Northwest Iowa is convinced my signal has increased enough to make it easier to copy even in mid-summer. It is now part of my ground system for the quarter wave sloper on 75.

This morning while listening on 75 I was again left wondering where are all the local hams. I heard a few who had been to the Texas convention but not one local ham was to be heard. For a city the size of Tulsa it seems odd there aren't more local hams on the air. I don't hear them on two meters either. Maybe there are on other bands or modes and I am not listening at the right time or place. I know a number of local hams I have visited with in the past are no longer active but where are the new ones?

73'S W5INU

The SBE Chapter 56 Inc. Newsletter is published on the 16th of each month, except December, and mailed to members and other interested parties. A \$15 annual donation is requested to cover publishing costs. Make checked payable to SBE Chapter 56, Inc., PO Box 703155, Tulsa OK 74170-3155. Other SBE Chapters may use excerpts, if attributed to the original author and this newsletter. The deadline for submitting articles is the 15th of each Newsletter month.

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<p>SBE Jobline Information</p> <p>If you have a job opening you wish to place on the SBE JobLine, please fax, e-mail, or mail the job description, along with the contact information, to Teresa Randsell at the SBE National Office in Indianapolis at transdell@sbe.org or fax at (317) 253-0418.</p>	<p>Audio precision</p> <p>P.O. Box 2209 Beaverton, OR 97075-2209 Tel: (503) 627-9832 Fax (503) 641-8906 US Toll Free 1-800-231-7350</p> <p>Oklahoma Representative: Ron Fisher & Associates, Inc. 9802 East 37th Place, Tulsa, OK 74146 Tel: (918) 966-8899 Fax (918) 963-9456</p> <p>Web site: www.audioprecision.com</p> <p>Audio Test & Measurement Systems</p>
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