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Radio's 'Ripe Moment'

Will the technologies of podcasting and satellite bring a renaissance to radio journalism?

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Raise and Lower

Buyer's Guide ups the power on signal monitoring, remote control and test gear.

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Radio World



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The Newspaper for Radio Managers and Engineers

November 17, 2004

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FBI Probes Tower Site Break-ins

by Randy J. Stine

HOUSTON A recent spate of radio and TV tower site break-ins here has piqued the interest of the FBI and raised concern about broadcast site safety and security.

At least nine break-ins, including seven at radio station tower sites, have been reported in and around the Houston area this fall. Pacifica's KPFT(FM), Rice University's KTRU(FM), Entravision's KGOL(AM), Clear Channel's KTRH(AM) and Salem's KKHT(AM) have been hit. KTRH and KTRU have been victimized twice.

Representatives from the FCC, FBI and the bureau's local counter-terrorism intelligence group attended an October meeting of the local chapter of the Society of Broadcast Engineers to address concerns about the break-ins. The meeting may have raised more questions than it answered, according to those in attendance.

Broadcast engineering sources who were at the meeting say the bureau is concerned the tower site tampering may be more than just the work of a disgruntled former employee or teenage pranksters; there are indications that the break-ins

See BREAK-INS, page 6 ►

NEWS ANALYSIS

AM Bandwidth Issue Catches Fire

Littlejohn Notwithstanding, Not Everyone Wants to Reduce Their AM Bandwidth

by Leslie Stimson

The concept that all AMs should reduce bandwidth to cut analog interference on the band is proving controversial.

"There was tremendous controversy about that; and there were respected and well-qualified engineers who were totally against doing that," said Smith. "It turns out that 10 kHz was a compromise between the 15 kHz we had and the 5

What incentive is there for transmitter manufacturers to build quality analog audio sections to their units now?

— Mark Heller

The debate parallels one in the 1980s, when the National Radio Systems Committee considered how low it could go with bandwidth to reduce interference including second-adjacent "splatter."

At that time the compromise was 10 kHz, according to Milford Smith, DAB Subcommittee co-chairman of the NRSC and vice president of engineering for Greater Media.

kHz that some people were suggesting would be appropriate. The 10 kHz happened."

The new proposal by Clear Channel Radio that AMs follow its lead and reduce bandwidth to 5 kHz for non-music-intensive stations and 6 kHz for music stations became public when Radio World Online reported it on Sept. 30.

See BANDWIDTH, page 3 ►

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Hams Not Happy With BPL Changes

by Leslie Stimson

WASHINGTON The FCC has amended its Part 15 rules to encourage development of "broadband over power lines" technology. The agency also changed its rules to ease deployment by wireline carriers of BPL.

Amateur radio operators have concerns about interference from BPL devices and the Amateur Radio Relay Leagues plans to ask the commission to reconsider key parts of its decision.

The commission says its rule changes ensure existing services are safeguarded from interference from BPL devices. The text of the order was released Oct. 28. To

see it, go to http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-04-245A1.doc. The FCC stated in a press release that its new rules impose new



FCC Chairman Michael Powell and Commissioner Jonathan Adelstein

technical requirements on BPL devices such as the capability to avoid using any specific frequency and to remotely adjust or shut down any unit.

The rules also establish "excluded frequency bands" such as aeronautical communications frequencies.

The ARRL was disappointed that some of the ham frequencies were not excluded as well.

FCC officials have said that not all amateur bands would experience interference at the same time, leaving some usable. AARRL attorney Chris Imlay said it's possible to change band in the case of interference, but communication would be cut off.

"If I'm in touch with a ship in the South Pacific that's sinking and I can't hear that guy anymore because of BPL interference on the signal, I can't just go to another frequency because propagation isn't open on the other frequency at the same time," Imlay said.

The amateur bands that experience the heaviest use also are the most affected by changing propagation characteristics depending on the time of year or the weather, he said.

"The bands above 14 MHz are not open much due to sunspots now. I can't talk to someone in Murmansk except in the evening. You get to know the characteristics of these bands when you've been a lifelong amateur radio operator."

The FCC changed the equipment authorization for Access BPL systems from "verification" to "certification." (BPL can use internal house wiring to link computers, or to couple other devices to computers. It can also be used on outdoor power lines to connect users to the Internet, an application often referred to as "Access BPL," according to Radio Amateurs of Canada Web site.)

The AARRL was pleased the commission

See BPL, page 3 ▶

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Bandwidth

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It is receiving much attention from broadcasters. Some radio groups have embraced the concept, including Crawford Broadcasting, which implemented the policy on its AMs shortly after Clear Channel.

Other engineers have told Radio World the idea isn't new and that individual AMs have been implementing the idea for years.

Better or worse

Some critics worry about the effect on wideband receivers and believe implementation actually would degrade the analog AM band further.

Clear Channel Radio's Senior Vice President of Engineering Jeff Littlejohn, who made the decision at his company, also is co-chairman of the NRSC Subcommittee on AM. He brought up the bandwidth reduction issue to fellow members of the committee during its meeting at the NAB Radio Show in October. He believes the plan would reduce interference on the analog AM band if all AMs reduce bandwidth.

After two years of study, Littlejohn says, he concluded it serves no purpose for AMs to continue broadcasting 10 kHz audio when the typical receiver has audio response of less than 4.5 kHz. He said the benefit to the change would be two-fold: increased modulation efficiency and reduced interference to first-adjacent frequencies.

NAB has not taken a position on the issue, preferring to poll its members, according to John Marino, vice president of NAB Science and Technology.

Littlejohn didn't expect the NRSC to make a decision on the issue at the October meeting, and it didn't.

Smith said the committee has several options, including conducting tests, issuing its own recommendation or doing nothing. He said no decision has

been made.

Several sources complained to Radio World about the proposal, particularly its impact on AMs that don't intend to go digital. In their view, the idea boils down to degrading analog to make digital sound better in comparison, to drive consumers to buy HD Radios. These engineers say reducing AM bandwidth to limit interference doesn't negate the interference produced on the IBOC side-

anything except 6 kHz or lower-grade receivers for analog. "So long, broad bandwidth." ...

"What incentive is there for transmitter manufacturers to build quality analog audio sections to their units now?"

He said his station has bandwidth of about 8 kHz and cited the GE SuperRadio and a model from C.C. Crane as wideband radios available on the market.

a different view.

"Some people do have wideband receivers. If there were no wideband receivers, this wouldn't be an issue," he said. Gonsett and several other sources said the proposal should not be mandated for all stations, that individual outlets should have the option to reduce bandwidth voluntarily.

He believes the marketplace will decide the outcome of this issue.

Old battle

IBOC proponents say reducing AM bandwidth makes sense.

"It reduces interference," the top engineer of a large radio group said. "As a practical matter, most of the receivers out there aren't going to pick up the higher fidelity of the wider-bandwidth signals anyway. That battle was lost 20 years ago."

Some sources have told Radio World they believe the proposal is a way of "junking up" the AM analog band to stimulate the sale of IBOC radios artificially. But the group engineer quoted above finds this a stretch.

"If Clear Channel wants to do something to promote IBOC, all they have to do is convert all of their stations," he said. "That would do far more to stimulate IBOC sales in the marketplace than simply proposing a reduction of bandwidth so that AM would sound worse."

Tell Radio World what you think about this issue. Send e-mail to radioworld@imaspub.com or write to Reader's Forum, P.O. Box 1214, Falls Church, VA 22041.

'Most of the receivers out there aren't going to pick up the higher fidelity of the wider-bandwidth signals anyway.'

bands to first-adjacent stations, especially at night.

Although the proper implementation of IBOC will require AMs to reduce audio bandwidth to 5 kHz, Littlejohn said Clear Channel's AM bandwidth reduction decision was unrelated to the group's digital conversion stance.

"I want to be clear about the distinction," he told Radio World. "If we decrease interference it will help out the AM band. Whether it's analog or digital doesn't matter. It will help all AM radio simply because there's reduced interference."

'Extreme' idea

Mark Heller, owner of 1,000-watt daytimer WTRW(AM) in Two Rivers, Wis., part of the Green Bay market, called the proposal "extreme," one that would make analog AM sound like shortwave.

"As an industry, we've promoted building better-quality AM radios. ... We're going to have another opportunity to miss improving our AM receivers," he said. "There is now no incentive for any AM radio receiver manufacturer to build

take years to solve."

FCC Chairman Michael Powell and the chairman of the Federal Energy Regulatory Commission, Pat Wood III, urged utilities to develop new technologies, such as BPL, to give consumers more options for broadband and provide more efficient management of the power supply system and more operational reliability.

Imlay believes fiber-to-the-home or fiber-to-the-curb options hold more promise than BPL.

The FCC removed some of the obstacles in the way of local phone companies deploying fiber optic broadband networks to deliver advanced data, voice and video service to consumers. The action relieves incumbent phone companies from unbundling requirements for fiber-to-the-curb loops, where fiber is extended within 500 feet of the customer's home.

It also frees local phone companies from most obligations to lease advanced fiber-to-the-home networks to competitors at a regulated, cost-based price. The agency found these obligations chilled carriers from investing in fiber-to-the-home networks.

The commission wants consumers to be able to experience speeds of 20 Mbps or higher, well in excess of today's DSL or cable modem services.

BPL

► Continued from page 2

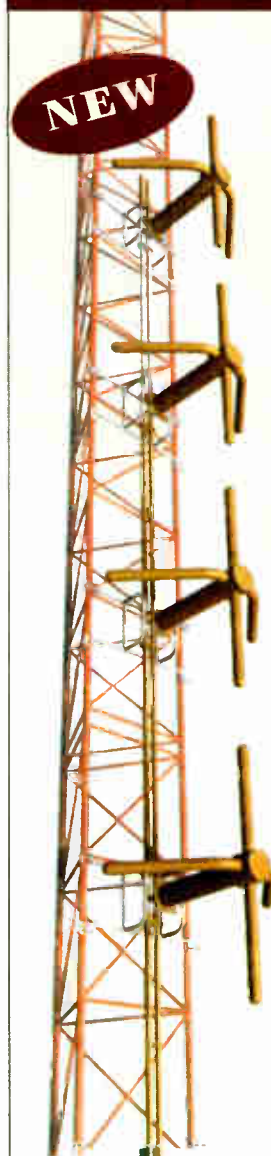
required certification, in which private labs conduct tests for compliance and turn the results in to the FCC, as opposed to verification, in which the device manufacturers perform the tests. But Imlay said protection to amateur frequencies doesn't go far enough.

"They're only testing the modems, not the entire system. They should have required the entire systems be tested and certified after the system is installed to make sure it's not putting out radiated RF in excess of Part 15 limits," said Imlay. "Fifty percent of the ones we have tested have been in excess" of the allowable limits.

The commission said it would create a public Access BPL notification database for an organized approach to identification and resolution of interference.

FCC Commissioner Michael Copps said in a statement, "If interference occurs, we must have a system in place to resolve it immediately. If an amateur radio user makes a complaint and an agreement between the BPL provider and the amateur radio user cannot be reached, the FCC should step in and resolve the matter. These cases must not

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KUVO Has 5.1 Ready, 'in the Vault'

When KUVO(FM) in Denver aired a Colorado Symphony Orchestra concert with Dianne Reeves on Sept. 24, it did so in both stereo and 5.1 surround sound.

Few, if any, listeners could hear the five channels. But this is believed to be the first live concert broadcast in 5.1 surround via HD Radio.

The station also will take part in the first national surround broadcast next month on NPR, a big event with programming from multiple venues, including one in Paris.

But this is not the first time KUVO has given thought to 5.1.

"We record every major live remote we do in 5.1," Chief Engineer Mike Pappas told me. Why? Because management at "jazz89" expects that, at some point, the programming will be needed.

Pappas said radio enjoys the perfect environment for surround: the car, a "fixed listening environment, closed, with no 'wife acceptance factor,'" he said. Fans of new technology, often male, don't have to talk their spouses into home surround systems.

"We have dozens of recordings that we've done in 5.1 over four or five years, and figured it was time we had a method to transmit that technology to our listeners. We've been building that library because we know that at some point we're going to need these broadcasts.

"We in the radio business have to come up with new innovations to keep people from going someplace else," he said. "That involves programming too; but technically it's up to us to try new things and push the envelope. The first guys who broadcast color knew there weren't any receivers out there, but they knew it would be important to the growth of the medium."

KUVO also was Colorado's first public station to convert to HD Radio.

Watermarked

I enjoy — I love — talking to people who innovate. How refreshing to hear an articulate technical leader brag that his bosses want to invest in radio.

(When I hear this kind of talk, it's usually at public stations. Not always, but often. Don't believe it? I have two words: Tomorrow Radio.)

I remember that several years ago, Leslie Stimson and I were discussing an article about surround and whether the technology might work on radio. At the time it seemed a stretch. But as we reported then and have since, forward-thinking types said that if surround worked, it could be the "killer app" people talk about for radio and IBOC.

"I'm hoping the 5.1 thing catches on because we need it," Pappas said. "We need HD Radio, we need the digital service, we need surround for radio. Look at the number of people who own home theaters — now you can buy a \$500 system."

In Europe, experiments with 5.1 surround broadcasts also are ongoing. The 2003 and 2004 Prix Europa media festivals featured live 5.1 surround broadcasts of the festival's opening concert that were distributed to public broadcasters across the continent via satellite.

But is a surround experience something of interest only to high-end public jazz stations?

"Look at what happened with digital," Pappas replied. "CPB said, 'Let's take a bunch of money to get public stations going.' The commercial guys stood back and watched. Suddenly you have a hundred or so public stations on the air or getting ready. Then the commercial guys said, 'Holy cow, we have to get this going.'"

"I think public radio will do the work, work the bugs out and then commercial will go after it."

For the September broadcast, KUVO used equipment on loan from suppliers: a Harris/Neural NeuStar audio conditioner and two Neural Audio's 5225 Mix-Edit Transcoders, which allow the broadcaster to create or edit content that originates as 5.1, mono or stereo, blend discrete and upmixed elements and store the content in 5.1 or 2.0 formats. This is a "watermarked" downmix system that creates a compatible stereo sig-

nal. Pappas runs the 5.1 into the 5225, then takes the stereo output and broadcasts that.

"We had two (5225s), so we could back to back them after running it through our router — listen to the 5.1 going in, the stereo feeding the plant and then the 5.1 decode."

Image stability

Pappas was delighted with the outcome — concerned foremost with the effect on his existing signal.

"We would not have risked the biggest remote KUVO's ever done if it in any way was going to impair our conventional stereo signal." He said the 5225 gave "the best surround you can get out of a 96 kilobit stream in any shape. It delivers pristine decoded 5.1; and the watermarked stereo it creates is just amazing."



Mike Pappas

"You hit it with four AES/EBU inputs — left-right, center-LFE, left surround, right surround. It is running 1.35 billion operations per second," Pappas said.

"It's not a matrix. I worked in TV and we did matrixed for big events. Matrixed systems in music environments have a problem: there's little image stability. You can't have violins wafting around the sound field and cellos showing up in the rear channels. This is the only box I've ever heard that lets you take 5.1, make stereo out of it, then convert it back to 5.1 and have perfect image stability. Everything is in the spot we put it on the input side."

He said, "The four inputs give you an

From the Editor



Paul J. McLane

AES 44.1/24-bit stereo output, with a 16 kbps watermark that I cannot hear on my \$85,000 home hi-fi. You can edit it on ProTools, record it to DAT, MiniDisc, CD-R or even analog tape; you can play it back and, voilà, you've got surround. And I don't need 3 times as many inputs in my plant — which you'd need if you wanted to handle surround as a discrete approach; that's financially infeasible."

Experiment

Pappas is sold. But make no mistake: in his eyes this is a technological experiment.

"In fact I didn't tell anyone we were planning until probably 3 or 4 days before. You don't want to tell the listeners you're doing it if they have no provisions to play it back. Second, our underwriter for the event, Ultimate Electronics-SoundTrack, doesn't have any 5.1 decoders to sell our listeners. ...

"It was an experiment to see if we could do it, if it made high-enough-quality conventional stereo, albeit with watermarking, and what the response was from a listening audience that had no preconceived notions." Pappas said the station received two dozen unsolicited e-mails complimenting the broadcast. Of course, this may also reflect the program content and other factors.

"We pulled out all our stops to make this our best session ever. We requested from Sennheiser Germany that they send their resident Tonmeister because we needed more ears that had done a lot of symphony work. You don't get an opportunity to record the Colorado Symphony with Dianne Reeves every day."

See 5.1, page 6

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XM Snags Baseball; Radio Ponders

*Commissioner Bud Selig on XM Baseball:
'The Best Sports Deal in the Next Century'*

by Leslie Stimson

NEW YORK It's like watching a ping-pong game, wondering which big talent or sports franchise satellite radio will sign next, after recent news that Howard Stern, Opie & Anthony, Bob Edwards, NASCAR and the NFL can now be heard on satellite radio.

Will satellite reap sufficient return from this spending? That's one of the questions terrestrial radio broadcasters are asking.

The satellite radio companies are lining up big talent and programming to establish their presence as a choice for consumers. XM snagged former NPR talent Edwards

have NASCAR and college sports relationships.

Now XM Satellite Radio gets its turn in the limelight, announcing again in October it had landed the right to air all 2,000 + Major League Baseball games each season. XM President/CEO Hugh Panero called the agreement "the crown jewel, the deal we've been waiting for."

Baseball Commissioner Bud Selig called the agreement with XM to carry games "the best sports deal in the next century."

News that XM Satellite Radio had landed the official satellite radio rights to air the national pastime hit terrestrial radio hard, although XM and MLB sought to soften the blow.

Baseball wants both

Selig said his goal is to continue to make the game relevant to new fans.

"We've talked about the traditions of baseball. We don't want to tamper with any of that. But at the same time, we think it's important to develop the brand in the face of more competition."

He pegged overall attendance for major league games at 73 million this year, the highest ever, with average attendance at each game of 30,401.

The \$650 million agreement covers 11 years. XM was to pay baseball an initial \$10 million, followed by \$40 million when

the expenses of this deal. XM subscribers pay \$9.95 per month.

(By comparison, when Sirius landed Stern, a company spokesman told Radio World the company needs to generate 1 million subscribers over the course of the five-year deal to pay for it.)

The baseball games would be on up to

games start in 2005 and \$60 million annually in 2006 through 2012. At that point baseball has the right to decide whether to exercise its options for another three years at \$60 million per year, an XM spokesman said.



XM CEO Hugh Panero and baseball's Executive Vice President of Business Tim Brosnan take part in a news conference in New York. Panero is holding a baseball, Brosnan an XM Delphi SkyFi2 satellite radio.

Selig called the initial payment a "bounty" that MLB would divide among its 30 big-league owners if Major League Baseball clubs set up programs to sign XM subscribers. Panero said if XM gets about 700,000 subscribers as a result of this deal, the same number it gained in its recent quarter, it would generate enough cash to cover

15 channels as part of the base service; XM will also dedicate a channel to baseball. The company believes it will have 3.1 million subscribers by year-end and more than 20 million paying customers by 2010.

When questioned about whether XM would see a return on the baseball deal,

See XM, page 7 ▶



and shock jocks O&A. Sirius Satellite Radio had the buzz during the NAB Radio Show when it announced that Stern will leave Infinity for the satcaster.

In the world of sports programming, Sirius landed the NFL earlier; both satcasters

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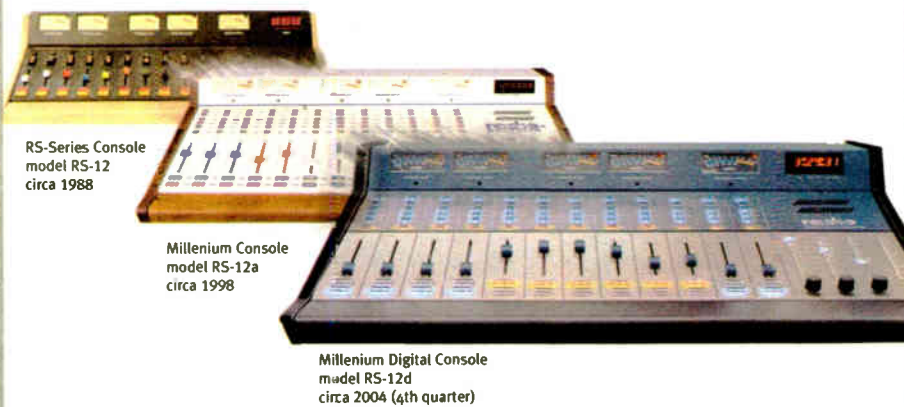
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Break-Ins

► Continued from page 1

could have possible homeland security implications. Police said they are taking the matter very seriously, according to the sources.

While local authorities investigate the break-ins, broadcast engineers are being told to take someone along when going to tower sites at night for off-the-air emergencies.

The string of break-ins is curious, according to those familiar with the police reports. Fred Morton, chair of the Houston SBE, said exterior locks were cut off and transmitter buildings entered, but with little damage done or items stolen.

Instead, vandals typically throw circuit breakers to knock the stations off the air, disable all stand-by equipment and steal maintenance logbooks, Morton said. In one case, the vandals removed the transmitter remote control equipment.

"It's almost as if they are breaking in to see how long the response time is to the alarms. It's kind of creepy," Morton said. "It's someone who seems to know their way around the transmitter building. They're not cutting guy wires and burning coax."

Morton said the break-ins have occurred at night and on weekends at very remote broadcast sites.

"The FBI also told engineers to look for anything left behind in a building if it is broken into," Morton said, who does contract work for Spanish-language radio broadcaster Univision.

The FBI told broadcasters at the Houston

SBE meeting that a number of broadcast and cellular site break-ins have been reported across Texas this year. The FBI is investigating a number of similar break-ins of cellular and pager sites belonging to Nextel and Cingular near Houston. Cellular site break-ins were reported in Oregon this year, too, Morton said.

"It appears as if they are gathering intelligence," said Steve Brightwell, chief engineer for KPFT, which is owned by the Pacifica Radio Foundation.

There has been no pattern to the break-ins, Brightwell said, with the vandals striking FMs and AMs, commercial and non-coms.

"We had speculated they were pirate broadcasters looking for equipment, but they leave behind very valuable tubes and other equipment," Brightwell said.

Vandals broke into KPFT's transmission facility in early October using bolt cutters to cut a padlock on the building's door and then shut off the power disconnect switches, Brightwell said.

'Buddy up'

Broadcast engineers contacted for this story said their level of concern is on the rise.

"It's frightening. And what's astounding is the level of risk people are putting themselves in to do this. These are federal offenses and they face federal prison time if caught," said Mike Pappas, chief engineer for KUVU(FM) in Denver.

Pappas recalled a time when Denver radio engineers were told to "buddy up" when visiting transmitter sites on Lookout Mountain west of the city.

"We had bomb threats made against us in 1999 and things were very tense between broadcasters and a homeowners association who didn't want us there. We were carrying side arms when we visited the tower site," Pappas said.

The Canyon Area Residents for the Environment is a Denver-based group that has become known among broadcasters in that region for the group's concern over development at the Lookout Mountain antenna farm, home to a dozen radio transmitter sites, including pubcaster KUVU. Pappas said police never determined the source of the threats.

"Engineers are not paid enough to be confronted with these types of situations. It's sad that any of us have to worry about coming into contact with people who wish us harm," Pappas said.

Broadcast engineering consultants regularly tell clients to be security conscious with regard to their tower sites, which includes installation of adequate fencing and signage.

"People are mostly in a reactive mode when it comes to security. The truth is, if someone really wants to get into a transmitter building and create havoc, they probably can't be stopped," said Ralph Evans, partner with Evans Associates Consulting Communications Engineers.

Security bolts, alarm systems and protec-

tive roller sleeves on guy wires are a few of the commonsense checklist items Evans recommends to broadcast clients.

"Even video surveillance cameras should be considered, whether they are really hooked up to anything or not," Evans added.

Owl Engineering Inc. President Gary Lysiak said, "Attacks on transmitter buildings are certainly on the rise. We've seen a lot of gang-related activity in urban areas."

Burglar alarms are a must, Lysiak said. Another option for broadcasters is selecting a self-contained building, made of fireproof and waterproof material, to house a transmitter.

"These things are made of shock-proof materials that are nearly bullet-proof," Lysiak said. "They come with HVAC already installed and are ideal for very remote locations."

Lysiak said such buildings can cost \$50,000-\$100,000.

"I think broadcasters have to realize that they are not welcome in some neighborhoods and more people are beginning to take matters into their own hands. I imagine we will continue to see these types of incidents on the rise."

Anyone with information about the tower site break-ins in the Houston area is encouraged to contact the Houston office of the Federal Bureau of Investigation via e-mail to www.ctighouston.org.

5.1

► Continued from page 4

Pappas said you don't need HD Radio to use this technology; he believes analog stations also would benefit from using the 5225. "Our analog listener can decode the signal and make 5.1. We shipped the exact same stereo watermarked signal to both the analog FM side and the HD Radio side."

So, what will it take for surround on the radio to work?

"From a delivery standpoint, we've proven we can deliver it with the current infrastructure. The problem is promoting it. Until we get magic decoder boxes for the consumer — I foresee that a year from now, we'll be promoting it. For car listeners, I'm

gonna stick my neck out and say decoders will be under \$400."

Pappas is excited to be part of the Dec. 31 nationwide NPR broadcast, for which his station will provide 75 minutes of 5.1 programming. Radio World will tell you more about this in an upcoming issue.

But for now, Pappas knows the "pitch" for surround won't be easy.

"We do have some selling to do here. If you go to broadcasters, they'll look at the cost and say 'no way.' We've gotta come up with a system that allows you to use your existing infrastructure, conventional stereo which is what the 5225 lets us do.

"Broadcasters tend to be a conservative lot. I do this because I have the full faith and support of my PD and president at KUVU. They like to see us on the cutting edge, and they realize that comes with a cost."

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XM

► Continued from page 5

Panero said, "This is a business now that has over 2.5 million customers. We don't stand here alone in executing this plan. There are huge companies on XM's board like GM and Honda. ... The question used to be, 'Will people pay for radio?' Now it's, 'Can you hit your subscriber numbers?' This is huge."

Impact on radio

The impact on traditional radio is unclear.

While Stern, in going to Sirius, presumably will no longer be heard on traditional radio at all, the XM deal does not supplant terrestrial radio baseball games. Local listeners can still hear games on terrestrial radio, or on XM if they subscribe.

For terrestrial radio, there is no single national contract for rights to air games. Individual teams negotiate with stations in each market.

A spokesman for MLB told Radio World he couldn't say how much terrestrial radio pays for the rights to air games, nor whether or how future talks might be affected.

XM and Sirius got their chance to bid on the games when radio rights-holder ESPN relinquished its satellite broadcast rights within the past three months in renegotiating its national broadcast contract with baseball, according to MLB.

Baseball and radio have a long history.

Don't Like It? Too Bad'

No permission is required from local broadcasters to allow XM to air their station feeds on satellite, under the existing contracts between stations and local teams.

"There's an MLB rider in every contract that says they can do this," said Darryl Parks, director of AM operations for Clear Channel Cincinnati. The rider basically gives MLB the right to redistribute games using another technology besides terrestrial radio, he said, such as the Internet.

Disney-owned ESPN owns the rights to air network baseball. Locally, the teams contract with a station in each market. For example, Clear Channel's WLW(AM), in Cincinnati, retains the rights to air the Reds in that market and the right to create a regional radio network for the team's games.

In baseball, Parker said, radio game announcers usually are employees of the team; in football, normally the announcers are employees of the local rights-holder station.

Other employees who work on games are station employees. WLW's baseball broadcasts usually require, on average, five people to work the game including the announcers, Parker said. Football may need twice as many to produce a broadcast.

What if the local rights-holder doesn't want XM to air its feed?

Too bad, Parks says.

"We don't have the right to say no," he said. The future could be a different story, he said. "It's certainly going to be a point of re-negotiation when your contract is up," he said, speaking of the average station.

He said his company's research shows satellite radio has about a 3 percent penetration in the Cincinnati market.

And beyond the nostalgia angle of listening to a home team on a home-city AM station, terrestrial organizations have paid a lot of money over the years for the rights to air MLB games.

Asked if baseball expects terrestrial radio broadcasters to rebel in future rights negotiations, Selig said, "We don't think this will be competitive. This will complement the local broadcast."

Selig and Panero sought to paint the impact on radio in a positive light. They said they're trying to attract out-of-town listeners to the satellite radio games. Unlike Sirius, which has two feeds of each NFL game it airs, XM will use one — the local station broadcast feed, complete with local announcers, identifiers and ads from the originating station (see sidebar).

Selig and Panero said MLB and XM would decide whether to air the home or

away team feeds, but they believe most of the feeds will be the home team's.

Thus, "The radio rights-holder ends up getting more listeners," Selig said. Presumably those stations then would charge more for their ads, thanks to the additional exposure given by XM, one radio observer said.

Terrestrial radio observers contacted for this story complimented XM and MLB for trying to create a new market for out-of-town listeners, but wondered if most of that market would prefer to watch the games on satellite TV.

XM and baseball are discussing content to air before and after games so that XM could sell national ads for those portions of the broadcast. Panero said revenue would be split 50-50 with MLB.

XM would air some games in Spanish, seeking to complement its other Spanish-

language programming, such as CNN and several Latin music channels.

Separate from the games, XM and MLB are co-creating content for a 24-hour baseball channel to talk about the game year-round and air classic games, an XM spokesman said.

Sirius paid \$220 million for the satellite radio rights to NFL games. A source close to the company said its bid for baseball was "significantly lower" than XM's.

In reply to a question about whether it had paid too much for baseball rights, the XM spokesman pointed out that baseball has more games than football, played over 7 to 8 months, whereas football is mostly played on Sundays.

He also pointed to the game's "natural pace," which, as terrestrial radio knows, allows time for verbal description. 🌐



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How to Renovate Radio Regulation

A Look at Various Plans That Have Been Proposed for Restructuring the FCC

by Skip Pizzi

As the recent political season suggests, decision-making often comes down to a what's-in-it-for-me analysis. While many lofty discussions on various candidates and "the issues" may fill our dinner and water-cooler conversations, the real impact of government's workings is only felt when something strikes close to home.

So most readers of this publication will have that kind of focused interest in some of the recent (albeit early) posturings on how the Federal Communications Commission might be restructured to better serve the industry and American consumers in the digital age. Some of these proposals call for quite radical shifts, while others recommend more conservative change. Exploring them also sheds light on some things we may have forgotten, or never knew, about the current structure of the agency, so let's start there.

A unique design

The FCC is one of the federal government's so-called *independent agencies*, which means that although it is officially a part of the executive branch, it does not fall under the control of any executive (i.e., "cabinet") department. Independent agencies are structured and governed in a way that is intended to provide some measure of insulation from partisan politics. Such agencies include several other regulatory bodies like the FTC, EPA, Federal Elections Commission, Nuclear Regulatory Commission and the SEC (along with numerous non-regulatory federal operations, some familiar examples of which include the CIA, NASA, FDIC, the U.S. Postal Service, the Federal Reserve, the Peace Corps, NEA/NEH, the Social Security Administration, SBA, Amtrak and VOA).

Contrast this to the *executive agencies*, many of which also are involved with regulation, and each of which reports directly to a cabinet secretary and thereby to the president. Among these are the FAA (Department of Transportation), NTIA (Commerce), FEMA (Homeland Security), OSHA (Labor), NIST (Commerce), the Bureau

of Land Management (Interior), FBI (Justice), the National Weather Service (Commerce), NSA (Defense), FDA (Health & Human Services), IRS (Treasury) and many others.



Photo by Ben Kovacs

The special attributes that attempt to keep independent agencies apart from direct or overt political influence by a given administration include their governance by a relatively large, odd number of commissioners that is balanced by party affiliation — the majority and leadership of which goes to the party of the current administration, just like congressional committees — with commissioners serving staggered terms (of five years, in the FCC's case). Candidates also require some technical expertise in the field of the agency's jurisdiction, and although the president nominates all candidates (and selects the chairman), and each are subject to Senate confirmation, sitting commissioners cannot be removed by the president during their terms for policy reasons.

On the other hand, executive agencies often have a single director — or a very small number of commissioners — who serves at the whim of the administration, with appointments also subject to Senate approval, and who can be removed at any time for any reason. Therefore such an agency is considered more vulnerable to political pressure from the White House.

One proposal for change at the FCC is espoused by a think tank called the Progress & Freedom Foundation, and generally presented by its senior fellow and director of communication policy studies, Randolph J. May.

This approach cites many of the FCC's recent policy actions as being too slow

and producing unclear or ambiguous results that invite judicial or congressional reversal. May believes this is directly attributable to the FCC's structure as an independent agency, and therefore proposes that the commission be reshaped as an executive agency, most likely under the Department of Commerce.

His plan also calls for the number of commissioners to be reduced from five to three, or perhaps to a single director. (May feels this would help even if the FCC remained an independent agency. Many readers will recall that the original structure of seven FCC commissioners was reduced to five in 1983, during Mark Fowler's tenure as chairman in the first Reagan administration, primarily for reasons of expediency.)

May believes that the resulting increased politicization of the commission would be beneficial, and should be allowed to transpire as part of normal American governmental process. He acknowledges that the adjudicatory and administrative parts of the FCC's process (such as licensing, renewals and regulatory enforcements) should not be politicized, however, and that these should be split apart from the

The Big Picture



Photo: Gary Hayes, BBC

by Skip Pizzi

pure policymaking element of the commission under his plan.

Finally, May's proposal calls for a reduced scope and size of the resulting agency, in reaction to the growing competition now emerging in the telecommunications industry, on the premise that the marketplace increasingly will exercise its own controls to the consumer's benefit.

As staggering as this scheme may sound to broadcasters, it is not without precedent. Some readers may remember the Civil Aeronautics Board and the Interstate Commerce Commission. Both were former independent agencies, regulating the airline and trucking/railroad industries respectively, that have since been eliminated.

In the ICC's case, its functions were reduced in scope by deregulatory action of Congress in 1995, and all remaining regulation assigned to a new executive agency called the Surface Transportation Board, under the Department of Transportation. The CAB's demise is even more apt to May's proposal, in that some of its work — accident investigation and safety recommendations — remained insulated under the NTSB, which was made an independent agency in 1975 for this reason, while the rest of CAB's work — primarily rate regulation — moved directly to the executive branch, in the Office of the Secretary of Transportation, when the CAB was shut down in 1985.

Next time we'll discuss other views on possible restructuring of the FCC.

Should the FCC be restructured? How? Tell us your thoughts via e-mail to radioworld@imaspub.com.

Skip Pizzi is contributing editor of Radio World.

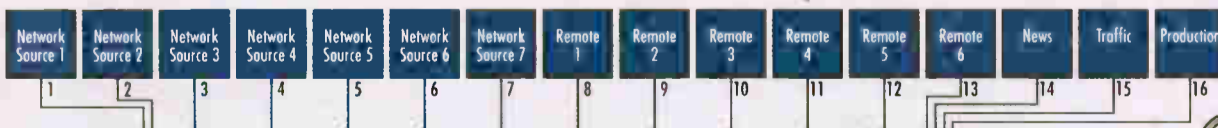
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Everybody needs to share audio. Sometimes just a few signals — sometimes a few hundred. Across the hall, between floors, now and then across campus. Routing switchers are a convenient way to manage and share your audio, but will your GM really let you buy a router that costs more than his dream car? Unlikely.

If you need a routing switcher but aren't made of money, consider Axia, the Ethernet-based audio network. Yes, Ethernet. Axia is a *true network*. Place our audio adapter nodes next to your sources and destinations, then connect using standard Ethernet switches and Cat-6. Imagine the simplicity and power of Ethernet connecting any studio device to any other, any room to any other, any building to any other... you get the idea.



Routers are OK... but a network is so much more modern. With Axia, your ins and outs are next to the audio, where they belong. No frame, no cards, no sweat.

Scalable, flexible, reliable... pick any three.

An expensive proprietary router isn't practical for smaller facilities. In fact, it doesn't scale all that well for larger ones. Here's where an expandable network really shines.

Connect eight Axia 8x8 Audio Nodes using Cat-6 cable and an Ethernet switch, and you've got a 64x64 routing switcher. And you can easily add more I/O whenever and wherever you need it. Build a 128x128 system... or 1024x1024... use a Gigabit fiber backbone and the sky's the limit.

Are you still using PC sound cards?

Even the best sound cards are compromised by PC noise, inconvenient output connectors, poor headroom, and other gremlins. Instead, load the

Axia IP-Audio Driver for Windows® on your workstations and connect *directly* to the Axia audio network using their Ethernet ports. Not only will your PC productions sound fantastic, you'll eliminate sound cards and the hardware they usually feed (like router or console input modules). Just think of all the cash you'll save.

Livewire



There's a better way to get audio out of your PC. No more consumer grade "k" connectors — with Axia your digital audio stays clean and pristine.



Put an Axia Microphone Node next to your mics and send preamplified audio anywhere you need it, over Ethernet — with no line loss or signal degradation.

Put your preamps where your mics are.

Most mainframe routers have no mic inputs, so you need to buy preamps. With Axia you get ultra-low-noise preamps with Phantom power. Put a node in each studio, right next to the mics, to keep mic cables nice and tight, then send multiple mic channels to the network on a single Cat-6 cable. And did we mention that each Mic Node has eight stereo line outputs for headphones? Nice bonus.

Put your snake on a diet.

Nobody loves cable snakes. Besides soldering a jillion connectors, just try finding the pair you want when there's a change to make. Axia Audio Nodes come in AES/EBU and balanced stereo analog flavors. Put a batch of Nodes on each end of a Cat-6 run, and BAM! a bi-directional multi-channel snake. Use media converters and a fiber link for extra-long runs between studios — or between buildings.



An Axia digital audio snake can carry hundreds of channels of digital audio on one skinny CAT-6 cable. We know you're not going to miss soldering all that multi-pair...



Axia is already working with some great companies. Like Enco Systems, Prophet Systems, Scott Studios, Radio Systems, Balsys Technology Group, and of course Telos and Omnia. Check AxiaAudio.com/partners/ to find out who's next.

With a little help from our friends.

A networked audio system doesn't just replace a traditional router — it *improves* upon it. Already, companies in our industry are realizing the advantages of tightly integrated systems, and are making new products that reap those benefits. Working with our partners, Axia Audio is bringing new thinking and ideas to audio distribution, machine control, Program Associated Data (PAD), and even wiring convenience.

Would you like some control with that?

There are plenty of ways to control your Axia network. For instance, you'll find built-in webservers on all Axia equipment for easy configuration via browser. PathfinderPC® software for Windows gives you central control of every audio path in your plant. Router Selector nodes allow quick local source selection, and intelligent studio control surfaces let talent easily access and mix any source in your networked facility.



Control freaks of the world, rejoice: intelligent Axia mixing surfaces give talent complete control of their working environment. Reconfigure studios instantly and assign often-used sources just where they're most useful.



"This sounds expensive." Just the opposite, really. Axia saves money by eliminating distribution amps, line selectors, sound cards, patch bays, multi-pair cables, and tons of discrete wiring — not to mention the installation and maintenance time you'll recover. And those are just side benefits: our hardware is about half the cost of those big mainframe routers. That's right... *half*. Once you experience the benefits of networked audio, you will never want to go back. AxiaAudio.com for details.



THE NAB RADIO SHOW

Here and in the next issue, Radio World provides a sampling of products at the fall NAB Radio Show. More will appear here Dec. 1. For new products in the Signal Monitoring, Remote Control & Test class, see this issue's *Buyer's Guide*, page 29.

Harris Highlights HD Radio

An "end-to-end solutions" approach was the theme for Harris Corp.'s Broadcast Communications Division, particularly for stations making the transition to digital and HD Radio.

The company launched a Flexstar family of HD Radio products, including an importer and an exporter; it demo'd its Split-Level Combining method, which it says cuts HD Radio implementation and power costs; the company said it is shipping the new PR&E RMXdigital audio console, an affordable approach to digital audio networking; and it displayed the NeuStar product line, talking about the benefits to FM broadcasters of 5.1 surround sound via the HD Radio channel.

The Flexstar platform is aimed in part at broadcasters planning supplemental audio and data services. The HDI-100 data importer accepts advanced application services, including supplemental program audio streams, enabling stations to add services and generate revenue. The HDE-100 exporter multiplexes data from the importer with a station's main program channel, producing one bandwidth-efficient bitstream for the HD Radio exciter.

The new Mini-HD Series, shown, are low-power HD Radio FM transmitters, aimed at FM stations using space combining to implement HD Radio. Applications include separate antennas, interleaved antennas, dual-port antennas and FM combiner port injected feeds. They are available in four models from 60 to 600 watts.

Also shown were a new line of studio furniture and the Intraplex STL HD Plus.

Info: (513) 459-3400 in Ohio or www.broadcast.harris.com.



BE Shows New AM Transmitter

Broadcast Electronics introduced a 50 kW AM transmitter at the NAB Radio Show in San Diego, called the 4MX 50 AM.

The company said it is based on a patent-pending Fourier Modulation technique that modulates RF devices directly and independently; the unit doesn't need a modulator stage, nor need to turn PA modules on and off.

Among its selling points is that the user does not need another low-power transmitter at night; the model has duty cycle modulated RF that BE says produces optimum efficiency over its range of 250 watts to 55 kW. BE's Richard Hinkle led the development team; the product is to ship in the first quarter of 2005 and retails for \$150,000.

Other points are its small size, which BE says is one-third that of comparable models thanks to the use of offline switching power supplies; 89 percent efficiency; power factor greater than 0.99; DSP exciter with adaptive audio correction; 32 hot-pluggable power amps; and advanced diagnostics, including impedance sweeps of the antenna system and spectrum analysis of the output signal to verify spectral performance of a standard AM or HD Radio system.

The model allows for implementation of HD Radio, and can change modes between AM and AM + HD locally via GUI interface or remotely via closures.

The company also showed a software upgrade to its FXi digital FM exciter that makes it possible to calibrate audio levels within a fraction of a decibel, which BE called an important development for synchronous FM.

BE provided systems integration services in surround sound demos of the Fraunhofer format at the Telos Systems booth and another surround format at the Orban booth. Those exhibits ran 5.1 surround sound formatted by their respective technologies into a BE FXi digital FM exciter and FSi 10 HD Radio signal generator. BE said it also has participated in testing of the Fraunhofer format in Germany, and conducted system testing of SRS Labs' Circle Surround, a 6.1 surround sound format approved by Ibiqity Digital for HD Radio compatibility.

Info: (217) 224-9600 in Illinois or www.bdcast.com.



Media Monitors Dips Into Newspapers

Media Monitors plans to launch a newspaper monitoring service in New York, then roll it out in other markets during 2005. Users will be able to compare a newspaper and radio campaign of an advertiser or competitor using the service.

"The introduction of newspaper monitoring allows users to see newspaper ads as well as the ad's page number and relative position on the page," the company said. "This information can then be directly viewed against radio spot placement and frequency for the same advertiser."

Users can compare newspaper ads on one screen next to the advertiser's monitored radio spots using the AirCheck online radio service, it said.

Media Monitors is a subsidiary of RCS Inc.

Info: (800) 67-MEDIA in New York or www.mediamonitors.com.



Telos/Omnia, Fraunhofer Demo Surround System

Telos/Omnia and the Fraunhofer Institute for Integrated Circuits came to the convention with the first public demo of their new surround system for HD Radio.

"The system promises full surround audio that does not compromise the stereo signal. This way, both users equipped with conventional stereo receivers and those owning surround receivers will get the maximum audio pleasure while listening to the same radio program," they stated.

The audio elements for surround are present in the stereo channels. An ancillary data channel transmits spatial information. The surround decoder, if present, uses that info to move the audio to its correct position. The companies said 80 kbps was used for the stereo channels, and 16 kbps for the surround data.

The system is based on work in binaural cue coding by Fraunhofer and Agere Systems.

Info: (216) 241-7225 or www.telos-systems.com.



ENCO Supports 5.1 and 7.1 Surround

ENCO Systems said it will support multichannel sound, configured as 5.1 or 7.1 in its DADpro32 and DADtv products.

President Eugene Novacek said, "Surround sound is here in the television space and it's coming for HD Radio." He said the company is "the first digital audio automation and playout system to support multichannel 5.1 and 7.1 sound. Our DADtv clients have been asking for it, and we believe our radio clients will be asking for it soon."

Support will be included in products at no additional charge. The 5.1 and 7.1 audio files appear to the user the same way as stereo or mono files appear. Files are stored as single linear uncompressed files using interleaved .WAV streams. Implementing multichannel sound on legacy DADpro32 and DADtv may require replacing the audio card, the company said.

Multichannel support was expected to begin shipping in November.

ENCO also showed enhancements to its AirPlay live assist user interface allowing jocks more abilities to customize the look and operation of the screen.

Info: (800) 362-6797 in Michigan or www.enco.com.

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Think of the new Commander G3 as a codec foundation with two expansion slots which accept your choice of POTS, ISDN and GSM modules. You simply buy what you need.

For example, if you need a mono 15kHz POTS codec, simply buy the Commander G3 with a POTS module for one low price. Need 15kHz Stereo or dual mono over POTS? Just add another POTS module.

If you're looking for a mono/stereo ISDN codec without POTS, you can buy a Commander G3 with an ISDN module only. It comes with G.711, G.722, and Mpeg Layer 2. Tieline's "Music" algorithm also delivers an astounding 15kHz stereo over a single ISDN B channel! You can always add a POTS or wireless GSM module later if you need.

Need a stereo ISDN STL with automatic failover to 15kHz mono POTS? Buy the Commander G3 with POTS and ISDN modules plus Tieline's new Freedom Failover software kit.

Plug in the GSM module and deliver up to 7.5 kHz over GSM networks and up to 15 kHz over HSCSD wireless networks.

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The new Tieline Commander G3 is simply the world's most powerful, flexible and customizable codec. It's even compatible with your Comrex** Vector, Matrix, Blue and Musicam Liberty POTS codecs.

Every Tieline codec comes with a two year warranty plus the support of an experienced engineering team with more than 25 years in the broadcast industry right here in Indianapolis. That's why hundreds of stations, major radio groups and networks across America use Tieline to deliver audio every single day.

Hurry, free demonstration Commander G3's are limited. Call your favorite broadcast dealer or call us at 800-750-7950 to book your free demo.



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World Radio History

THE NAB RADIO SHOW

SAS Connects With Rubicon

SAS showed ongoing development of its Rubicon and the SAS Connected Digital Network.

At the show, the Rubicon was demonstrated connected directly to the 32KD Router/Mixer. In most facilities, one or two RIOLinks in each control room concentrate local audio and control, and interconnect it to the 32KD system via one or two CAT-5 cables.

Also demonstrated were the SAS Router and Mixer Control Software, a GUI interface that gives the station engineer control over programming of the system, and SAS Automation to provide a range of event- or time-based "if this/then that" functions.

The company said there are approximately 50 Rubicons on the air and another 50 on order.

Info: (818) 840-6749 in California or www.sasaudio.com.

BIA: Cash Flow Margins Higher at Top-Grossing Stations

BIA Financial Network announced results of a study on commercial radio station revenues, expenses, number of employees and profitability.

The company said the FCC stopped requiring radio stations to submit financial statements in 1980, and it has been 12 years since NAB profiled station financial performance.

The study found a significant increase in operating margins from radio stations with net revenues of \$5 million or more. BIAfn officials attributed this to the "tremendous efficiencies" that larger revenue stations enjoy.

Results are available to participating stations.

Info: (800) 331-5086 in Virginia or www.bia.com.

AudioScience Shows PCI Audio Adapter Line Prototype, SSX

AudioScience debuted two technologies.

The prototype ASI6400 CobraNet PCI audio adapter is the first in a line that provide CobraNet audio networking. A Texas Instruments 32-bit floating point DSP used with Cirrus Logic's CS18101 CobraNet interface enables the card to record and play 16 mono or eight stereo streams of 24-bit audio over a 100 Mbps Ethernet network. Features of the other ASI6000 series adapters are featured, such as MPEG Layer 2 and 3 compression, MRX multi-rate mixing, TSX time-scaling and mixing.

The company added surround sound extensions (SSX) to its ASI5000 audio adapters, enabling them to play and record multi-channel streams with up to eight channels of audio. Two multi-channel streams may be mixed to one physical output using the same mixer model and Microsoft-compatible APIs as other AudioScience products operating in mono/stereo mode.

Info: (949) 650-6263 in Delaware or www.audioscience.com.



Comrex Piles Up a STAC

Comrex Corp. showed its Studio Telephone Access Center for listener lines, talk shows and call-in segments. It has two digital telephone hybrids, handling up to four callers, and is offered in six- and 12-line versions with the ability to upgrade in the field.

The accompanying control surface supports various producer and screener configurations. IP-based call screening and control are embedded. Other features include auto-attendant and support of up to four control surfaces.

Visitors can try STAC IP on the Comrex Web site. A STAC has been networked to the Internet; the link is at the Comrex home page. Enter any user name and use the password "comrex."

Info: (978) 874-1776 in Massachusetts or www.comrex.com.



Audioarts Debuts D-75

Audioarts Engineering, a subsidiary of Wheatstone Corp., debuted its D-75 audio mixer, aimed at small to mid markets. The modular D-75 comes with four stereo busses, dual-domain outputs, SRC on digital inputs and interchangeable input module daughter cards for A-to-D field switches. The hinged meterbridge swings up for access to console dipswitch programming, and its LED meter displays offer full-scale digital peak plus VU metering.

The D-75 is available as a 13- and 21-fader mainframe, and may be ordered with an optional Superphone module, which supports two callers.

The company also exhibited its R-55e modular analog radio on-air console, also aimed at small to mid markets and offering more features than its R-55 predecessor, including illuminated LED switches and a flip-up meterbridge that enables access to I/O connectors and logic programming dipswitches.

Add-on options include a six-input stereo line pre-selector module, a dual failsafe power supply system and remote tape modules. The R-55e console is available in a 9-, 13- or 21-fader mainframe.

Info: (252) 638-7000 in North Carolina or www.wheatstone.com.



Audemat-Aztec Test Equipment To Include HD Radio

Audemat-Aztec licensed Ibiqity's HD Radio technology for inclusion in its radio test and monitoring equipment, saying the deal will assist AM and FM broadcasters in the transition to digital by offering mobile products capable of measuring coverage and analyzing the quality of HD Radio reception.

Additionally, Bruno Rost, managing director for Audemat-Aztec SA, said the company received requests from U.S. customers to develop a mobile RF field strength meter to measure coverage and analyze quality of HD Radio reception. A product named NAVIBOC is scheduled for debut at NAB2005.

Info: (305) 692-7555 in Florida or www.audemat-aztec.com.



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Arrakis Offers Automation by Per-Month Fee

One hundred dollars per month is the basic monthly fee for radio automation from Arrakis.

The company says a user supplies a PC, and it provides audio hardware, software and support in a system that involves no down payment and free software upgrades.



Hardware supplied by Arrakis contains the sound cards, routing switchers and logic control. The fee is per-workstation; thus an AM/FM combo with production room would cost \$300/month.

Info: (970) 461-0730 in Colorado or www.arrakis-systems.com.

Expecting a little more from your AM processing?

Omnia-5EX for AM delivers.

Many people are saying that HD Radio will benefit AM stations most, because the fidelity improvement will be so dramatic. Probably so. But you'll need a processor that gives you maximum quality on a low-bitrate coded channel. You need a processor designed by people who understand both processing and audio coding - and nobody knows these audio arts better than Telos / Omnia.

The new Omnia-5EX HD+AM is the only processor that accommodates **both your analog and digital channels** in a single unit that easily integrates with your HD encoder and transmitter.

Processing for the HD Radio side is smooth and clean, capably handling AM's programming variety - and really showing off the digital channel to listeners first sampling the new medium.

And you get a **potent upgrade for your analog AM**. Consider: Omnia AM processing is already on many legendary 50kw stations. Understandably, most of these want to keep their advantage a secret. But if you imagine the major AM signals - the real flamethrowers that sound great - you may very well be hearing an Omnia. CEs at these stations tell us, "Phone calls are clearer than before. And the bottom end is phenomenal, so the promos really punch." "Amazingly clear - even when we're in the 5 kHz analog mode for HD Radio compatibility."

You should expect more from your AM processing. More clarity, more presence, more power, more flexibility. Omnia-5EX HD+AM delivers.



The new Omnia-5EX HD+AM has enhanced processing for standard AM, and a second limiter section and digital output for HD Radio. Both limiters and outputs are included as standard.



For those who don't need HD Radio capability, there's Omnia-3AM, with a four band limiter, wideband AGC and our famous high-performance, non-aliasing final limiter for sweet, clear, natural audio that keeps listeners hooked.

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ALLISS and High-Power Shortwave

A 500 kW High-Frequency Rotating Curtain Antenna Has Changed the Design Approach

by Jack Quinn

High-power shortwave broadcasting installations have followed the same basic design layout since the early 1930s: A transmitter/administration building, multi-

The system is named ALLISS after two installations in France, one in Allouis and the other in Issudun. It uses a 17-foot-diameter hollow steel mast with arms that support a common wire mesh reflector, with dual, back-

Originally, this curtain antenna used wire half-wave elements supported by large catenaries cables. The latest version uses metallic tubing elements supported by ridge steel arms. The latter provides slightly greater bandwidth characteristics and requires less maintenance. Both versions use conventional transmission lines connecting to a transmitter.

A conventional 300-ohm open-wire

called ALLISS. Here the mast protrudes from a shielded concrete bunker. Inside is a 500 kW shortwave transmitter with all its ancillaries. As the Germans say, "Schlüssel fertig" — key-ready. Just walk in the door and throw the switch.

Twenty have been installed worldwide, plus 11 stand-alone antennas, totaling 31. See Figs. 7 and 8.

Cost savings

The bottom rotating mast section is shown at the top of Fig. 8.



Fig. 1: Typical Transmitter Hall, RFE/RL Biblis, Germany



Fig. 2: Coax 6x20 Antenna Switching Matrix at RFE/RL, Maxoquierra, Portugal



Fig. 3: 500-Foot Tower Multiple Antennas (RFE/RL, Pals, Spain)

ple transmission lines, antenna switching matrix, three large antennas per transmitter, and several 300-to-500-foot towers. A typical 10-transmitter installation required 640 acres, or one square mile of expensive real estate.

But as world politics change, so do the target countries. A broadcaster then is forced to add more transmission lines, antennas and switch matrix, etc. Figs. 1-3 show the major cost components of a classic installation.

There is a wonderful alternative. In the last two decades, a 500 kW high-frequency rotating curtain antenna has been introduced. This changes the equation.

Special steel

The Mannheim, Germany antenna division of Switzerland's Brown Boveri Corp. designed and introduced this antenna in 1984. In 1993 it became part of the French firm Thales (ex-Thomson).



Fig. 4: Aerial View of the Gigantic ALLISS System

to-back, low- and high-frequency panels (6-11 MHz and 13-26 MHz) placed on either side. Antenna gains vary between 18 to 23 dBi, depending upon the operating frequency. The entire structure can be rotated 360 degrees in less than three minutes. See Fig. 4.

The large rolled steel masts can only be fabricated by a few of the world's steel companies. Sections are shipped and assembled on site.



Fig. 5: Wire-Array Tower Base Section



Fig. 6: Wire-Array Upper Mast Detail

balanced line connects to the tower base through two ceramic feed-through insulators. A switch inside the mast selects either of the high or low frequency panels. Figs. 5 and 6 will give the reader an appreciation for the massive physical size.

But the prima design is their self-contained integrated turnkey system



Fig. 7: Overall ALLISS View

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A 500 kW HF transmitter is on the left. The RF output is routed through a 50-ohm coax switch that selects either a dummy load or the antenna. Located just above the roof inside the hollow shaft is a rotating gear tooth ring drive, and a rotating coax joint that connects from a 50-ohm balun to a short 100-ohm balanced line. That output is then switched between the low- and high-frequency panels.

Adjacent to the bunker is a concrete pad with water-to-air heat exchangers used to cool the tube anodes and other components such as vacuum capacitors, output circuit, etc. The primary power feed is routed underground.

An ALLISS system will fit on approximately one acre. Multiple installations must be spaced several wavelengths apart to avoid coupling between antennas.

It can be operated by remote control from anywhere on earth. That includes

See ALLISS, page 16

Workbench

Radio World, November 17, 2004

Past columns are archived at www.rwonline.com/reference-room

Forget the 'Scope, Grab the DMM

by John Bisset

Bob Sneeringer handles engineering with WBAL and WIYY in Baltimore. Bob writes with a complaint that many of us seasoned engineers have: failing eyesight. Bob says he has a tough time see-

numbers colored, doing the next engineer a favor!

Bob is at rsneeringer@hearst.com.

Paul Kaminski of Motor Sports Radio

A tower owner is running into a problem of locks being cut by hunters and "four wheelers" — with the result that the gate at the tower entry point is left unlocked and open. Have you encountered this problem and found a lock system that deters trespassers?

in the back of the shop. They are too pretty to throw away, but in some instances are too small to be of any use.

Al Peterson at Radio America offers a great use for these boxes. He trims the foam blocks on the inside, and creates a grab-and-go reporter's kit for his portable MiniDisc machines.

Fig. 2 shows a case formerly used for an Electro-Voice microphone. The blue block of plastic foam was trimmed from packing material that a computer was



A Sharpie marker can be used for many things — although you don't need one for an Audioarts D-16 Digital Console, as Jim Peck of SCMS cautions Jeffrey Rosenberg of Modulation Magic. Vermont Broadcast Associates engineer Jamie Dennis looks on during the BOS-CON show in Marlborough, Mass. (The console sports an integrated router with channel source displays; no Dymo labeling needed.)



Fig. 2: This case had been used for an EV mic.



Fig. 3: All of the reporter's tools are accommodated; the foam cutouts guard against any part being left behind.

ing the pin numbers on Molex or other connectors.

Bob has found, though, that by running a Sharpie permanent marker over the end of the connector makes the numbers pop right out. You can leave the end black, or remove the coloring with alcohol or lighter fluid. I'd prefer to leave the

and Radio World liked the advice regarding locks in the Sept. 24 *Workbench*. Paul adds that the TSA now is approving certain locks for luggage. The approval uses a "master key" approach, which means that an approved lock will have a "TSA" and a code number on it. This will permit the TSA operative to know which master key will open the locks.

While on the subject of locks, I'd like to throw out a question to our readers.

With all of the recent site vandalism, site security should be top of mind. Share your successes (and what doesn't work) by e-mailing your suggestions to me at john.bisset@dielectric.spx.com.

Paul Kaminski can be reached at motorsportsradio@compuserve.com.

We've all got them, the hard carry cases that microphones come in. A typical station can have up to a dozen or so stuck

shipped in. The components were placed, traced, then removed; and the areas of foam were cut away to fit the components.

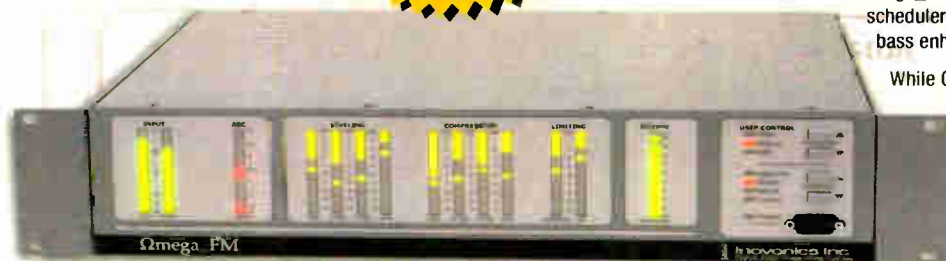
Inside the case is room for the MD recorder and media, a three-foot cable and matching transformer, a couple of batteries and an Audio-Technica microphone. Creating one of these kits takes minutes, saves your news department hours and helps to recycle both microphone cases and waste packing foam that might otherwise be discarded.

See DMM, page 16 ▶

Digitally Diverse Omega_FM - \$5880

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COMPREHENSIVE PROCESSING FOR FM, WITH AN INDEPENDENT AES/EBU OUTPUT THAT CAN FEED A DAB EXCITER AT THE SAME TIME.



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While Omega_FM's composite/MPX output feeds your existing FM exciter, the fully independent AES/EBU digital output can be configured for flat, 20kHz response with programmable delay. This allows a single processing chain to impart a common 'sonic signature' to simultaneous FM and DAB transmissions. The inherent audio quality limitations of FM (15kHz cutoff, plus pre-emphasis and its attendant 'protection' limiting) will not compromise the digital broadcast.

Despite its modest price, Omega_FM challenges the versatility and performance of any processor on the market. Even if you are delighted with what you're using now, see your preferred equipment supplier for a comparison demo at your station.

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Hear It... Processing doesn't get any better than this.

ALLISS

► Continued from page 14

the satellite program feed, transmitter control and status information, frequency change and ability to select any antenna bearing. Of course, a few engineers must be available for normal maintenance.

the older designs.

But design compromises had to be made in this beautiful self-supported rotating array. There is a loss of gain over larger conventional fixed antenna panels. Part of the loss is due to the extreme broadband requirement for each of the two curtains. Normally 6-26 MHz would require four curtains. And because ALLISS uses a fixed antenna height above ground over the

This contrasts with a typical fixed curtain specifically designed for a narrower frequency spectrum, using more half-wave element sections and designed for a known target distance, producing an ideal vertical take-off angle of 5 to 8 degrees. But the advantages of the ALLISS system compensate in most cases.

SW in the future

There are three major 500 kW HF high-power transmitter manufacturers: Continental Electronics in Dallas, Thales in France and Telefunken (AEG) in Germany. All transmitters can be used with this new concept.

Shortwave is not dead yet, contrary to what you might have been hearing recently. Sony and Grundig are still enjoying record sales of world-band

shortwave radios all over the world.

If international broadcasters want to reduce add-on or new installation cost, i.e. less expensive real estate, lower maintenance and operational costs, plus having the flexibility to make rapid directional changes, this is the way to go.

Jack Quinn is former manager of technical operations for RFE Munich. He spent 30 years with Varian/EIMAC, retiring as director of marketing and marketing consultant to Varian. He has consulted to RFE/RL and IBB/VOA. E-mail him at w6mz@att.net.

The author thanks Herr Jürgen Reiche, CEO of Thales Mannheim; George Woodward, retired Continental Electronics/DRS, RFE/RL, VOA; and Nick Olguin, retired VOA, RFE/RL, for their contributions.

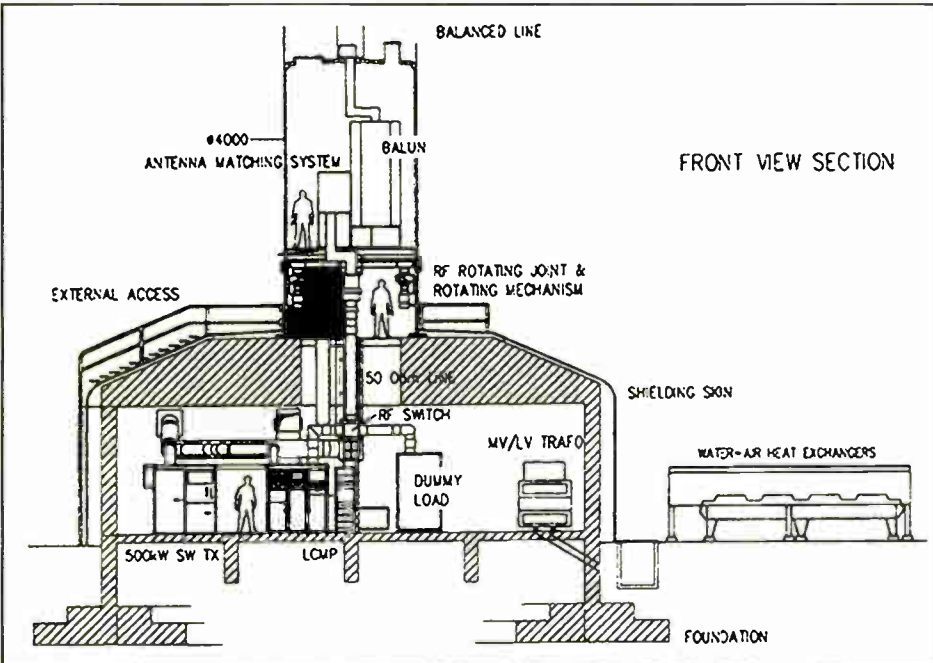


Fig. 8: Integrated Bunker Cross-Sectional Details

It is estimated that adding a new ALLISS systems to an existing site would cost approximately \$8 million, compared with \$15 million or more for

entire frequency range, the optimum vertical angle and gain combination is only realized at the mid to upper frequency ranges.

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DMM

► Continued from page 15

Fig. 3 shows the finished product, with all components in place. In addition to having a case that holds all of the reporter's tools, the foam cutouts guard against any part being left behind.

A Wavetek DM16XL will measure down to a full scale range of 200mV. Greg writes that it is worth a quick test to see if the more inexpensive DMMs (<\$20 or so) will accurately make this measurement before you have to rely on them to do so. Some may behave strangely. So the best advice is to lug out that 'scope, and compare the readings to your DMM. Once you've veri-



Fig. 4: Wavetek's DM16XL

Don't forget to include your business card or identify the case with your station's calls and a phone number, with a note about a reward if returned. In case the kit is left behind, the identification may be useful, and some honest soul may actually call the number.

Greg Muir liked the reminders in the Sept. 24 issue, in which we discussed capacitors and ripple in power supplies. Greg has found that the easiest way to measure ripple is simply to use a digital multimeter on the AC range and apply it across the DC circuit you want to measure. If there's an appreciable AC component, you'll see it.

Most DMMs are DC-isolated in the AC mode. Use the range switch to scale the meter down to the millivolt range to measure a small AC component accurately. The measurement process is quick and accurate, and it sure beats lugging around a scope. With the prices dropping, hopefully everyone has a DMM in their toolbox.

fied that you can rely on the meter, measure away.

Greg adds another tip, useful for "future" troubleshooting. Take the DMM and make a large number of quick, non-invasive "good" circuit measurements. Note them on the equipment schematics. These "good" measurements will be useful for future reference when troubleshooting the equipment.

Using a DMM in this manner has an advantage over the tried-and-true analog VOM. Due to the full wave bridge meter rectifier used for AC measurements, used in the analog VOM, the DC component will also be passed.

Greg Muir can be reached at engineer@sofast.net.

John Bisset has worked as a chief engineer and contract engineer for more than 30 years. He is northeast regional sales manager for Dielectric Communications. Reach him at (571) 217-9386, or john.bisset@dielectric.spx.com.

Submissions for this column are encouraged, and qualify for SBE recertification credit.

MARKET PLACE

Transmitter Buildings From Balsys Are Prewired



You've heard of "plug and play" electronics. Now here's the Plug & Play Transmitter Building.

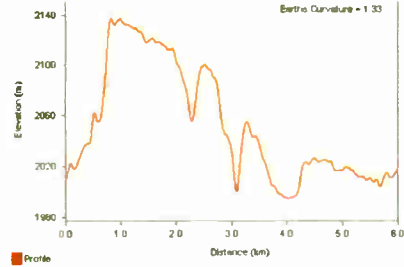
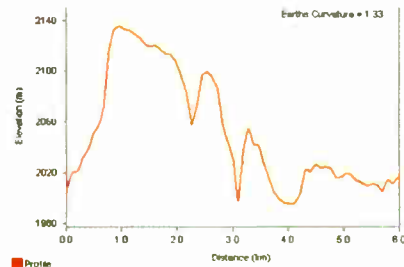
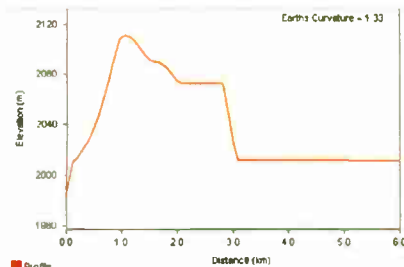
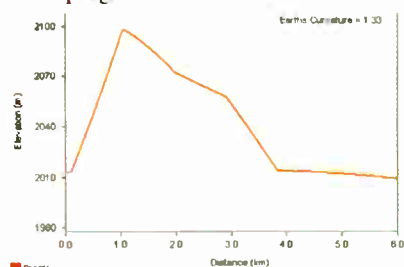
Balsys Technology Group CEO Larry Lamoray said the company's pre-cast concrete buildings are custom sized and configured. Electrical and other specifications adhere to local codes. Equipment is installed at the Balsys facility in Florida, wired, tested and powered.

"When delivered to the final site, all that is required is a pad to place the building, electrical and transmission line hookups, phone line and/or STL hookup, proof, and the job is done," the company said, estimating that its configurations typically represent a 15 percent or greater savings over site-built facilities.

For information contact the company in Florida at (407) 656-3719 or visit www.balsys.com.

V-Soft Releases Terrain Database Suitable for STL Work

V-Soft Communications said it has compiled the U.S. Geological Survey National Elevation Dataset 30-meter database for use with its Probe 3, Terrain-3D, PlotPath and other programs.



The new, satellite-corrected, terrain database includes the continental United States, Hawaii and Puerto Rico; the company said it offers "superb" resolution.

The NED 30-meter dataset is suitable for doing critical STL path and Longley-Rice coverage analyses.

Shown are four terrain profiles done with Probe 3 showing the differences between the company's NGDC 30 arc-second terrain, USGS 3 arc-second terrain, NED 3-arc second (Figs. 1-3) and the new NED 30 meter database (Fig. 4).

For information contact the company in Iowa at (319) 266-8402 or via e-mail to info@v-soft.com.

NEWSWATCH

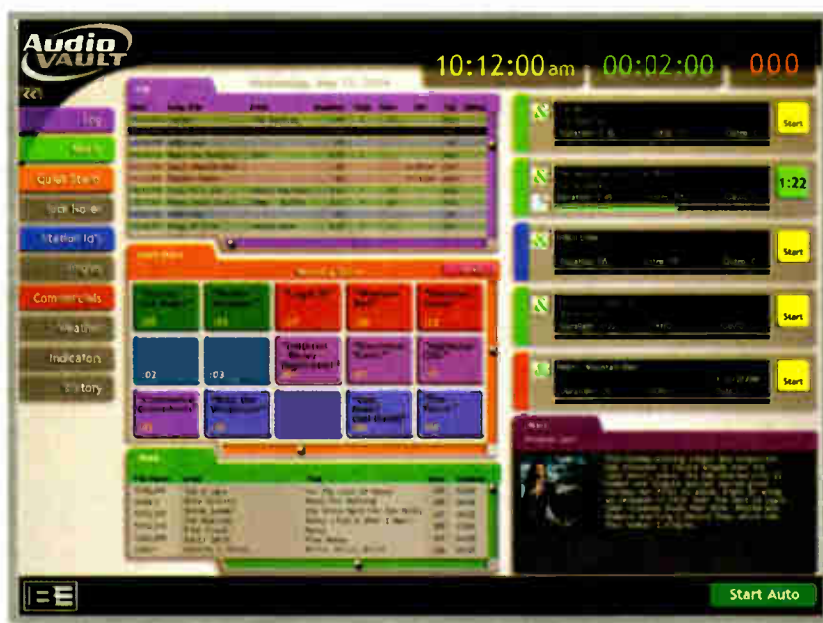
XM, Delphi Show Wearable Satellite Radio

WASHINGTON Not only does the new wearable XM receiver from Delphi allow time shifting; it also has an FM transmitter that "makes any FM radio an XM Radio."

The ability to listen to radio programs later is touted as one of the big benefits of the new MyFi, which was introduced in late October. Elton John will be part of a TV ad campaign promoting it. The receivers will reach major retailers in December.

Listeners can use the MyFi in live or time-shifting "memory" mode, called "My XM," which allows the user to store five hours of content.

The MyFi retails for \$349.99, including the 7-1/2 ounce receiver, rechargeable battery, headphones and what the company calls the first built-in XM antenna. Other features include stock and sports "tickers," an alarm clock and the wireless FM transmitter.



AudioVAULT Big Bang for Small Bucks.

"But, we didn't change our price tag... AudioVAULT has always been an economical, modular solution for small- and mid-sized stations requiring the right balance to meet programming, operational and budget requirements. Support of multiple studios and stations, as well as true IP networking, are only some of the reasons AudioVAULT is also the first choice for major markets. The latest version of reliable, flexible AudioVAULT provides individualized user interfaces, and integrates with RDS and HD Radio data, including secondary audio services, such as Tomorrow Radio. AudioVAULT can improve your productivity and profit, backed 24/7 by a company you know you can trust. Contact BE today for a custom quotation... and be prepared to spend less for more."



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'It's a Ripe Moment for Radio'

Will the Technologies of Satellite, 'Podcasting' Bring A Renaissance to Radio Journalism?

by Mark Glaser

This article appeared in the Online Journalism Review and is reprinted with permission.

A funny thing happened when I decided to try out XM Radio, a pay satellite radio network. Two shock jocks, Opie & Anthony, were discussing how people probably didn't want to hear such an obscene bit so early in the morning. But then they realized that people might be tuning in at a different time, hearing a time-delayed broadcast or replaying a show, as I was, by streaming online.

"I think we'll have to throw all the rules of radio out the f---ing window!" said Opie, a.k.a. Gregg Hughes. For shock jocks, throwing out the FCC obscenity rules is the whole point of making the jump to satellite radio; kingpin Howard Stern made the biggest jump yet to satellite radio with a \$500 million deal with Sirius, set to begin in 2006.

But the rules for the broadcast radio business — the traditional "terrestrial" radio — are changing in many other ways, with satellite radio coming on like cable TV with hundreds of niche channels for a monthly fee. And the recent "podcasting" phenomenon offers a relatively simple way to get MP3 audio programs via RSS feeds, letting you play news stories, music shows, comedy and more on your own time via your portable MP3 player.

What next?

With the sorry state of radio journalism — a victim of massive corporate buyouts — can these new technologies bring a broader range of audio reportage than just public radio, local AM news and repurposed big media fare like ESPN

Radio? The jury is still out, but radio junkies are filled with hope.

"It's a ripe moment for radio," said Jake Shapiro, executive director of PRX, an innovative online exchange for public radio shows. "Several trends are converging: digital audio production tools are

cheap and accessible; new distribution paths like streaming, satellite radio, digital broadcast radio, wireless and 'podcasting' are emerging. And concerns over broader media consolidation underline the importance of independent voices and non-commercial journalism."

PRX lets public radio programmers troll for digital radio content with a searchable database of programs, but anybody can sign up to listen to shows and review them. Shapiro notes that the Net has become a much bigger part of the radio production process, with easier digital distribution, as well as radio Web sites giving pieces a longer shelf life.

As for satellite radio, the two main rivals in the United States, Sirius and XM, are relying mostly on repurposed journalism from broadcast networks. XM, the current leader with 2.5 million subscribers paying \$9.95 per month, offers news channels such as Bloomberg Radio, Fox News Channel, National

Public Radio, as well as XM Public Radio, featuring The Bob Edwards Show. Edwards was recently fired from hosting NPR's "Morning Edition" and is now doing an original one-hour interview show for XM.

Sirius is trying to come from behind, with only 600,000 subscribers paying \$12.95 per month. The rival services require different satellite radio receivers, setting up a possible

also throwing in some terrestrial radio. He believes the Stern move will benefit all of satellite radio, bringing needed attention to the technology. But journalism is another story.

"In terms of journalism, they're not creating entire new and exciting ventures into investigative worlds, like 'let's look into government, and let's do an investigative series.'" Mitchell said. "With Bob Edwards and now Howard Stern, it seems like the satellite radio people are looking to create original shows. But it's always first driven by the personality; you have to have a name brand, in the individual."

So while satellite radio companies might have snagged some bigger personalities, it would take a much bigger investment to create their own version of public radio or ABC News.

"Here at NPR, they're a little nervous" about satellite, said Mitchell though he thinks that NPR and Public Radio International still have very little competition in their realm.

Build your own radio station

While satellite radio will always have limited appeal due to the monthly charge, podcasting offers a free way for you to create your own radio station on the fly each day, listening when you want. Satellite radio services have been loathe to allow people to record their programs due to copyright concerns. XM Radio threatened legal action against the maker of TimeTrax software, which lets users record satellite shows on MP3s.

But Reuters reported that XM is planning its own TiVo-like devices soon that will allow users to pause and rewind live satellite broadcasts. Plus XM has a deal for streaming its programming onto the next generation of TiVo television recorders.

Still, podcasting goes much further, giving listeners full control over what they listen to, depending on the available RSS feeds. Basically, you need a portable MP3 player — not necessarily an iPod — Apple's free iTunes software and the new iPodder software. The latter is an open source application.

See PODCASTING, page 19 ►

KOMO is the first commercial news station to take the leap into podcasting.

VHS/Betamax situation, where people are stuck with orphaned technology. Sirius also offers mainly repurposed material from CNBC, Fox News Channel, NPR, CNN, etc. While Sirius is doing cartwheels over getting Howard Stern and his millions of listeners, it hasn't shown the desire to create its own news programs.

Innovations

"Howard's joining Sirius is a transformational event in the radio industry," said Ron Rodrigues, senior director of public relations for Sirius. As for news, he said, "our philosophy is to provide our subscribers with the greatest variety, selection and choice. We are working on a variety of innovative technological advances that go way beyond our current capabilities."

Radio veteran Doug Mitchell is project manager for NPR's Next Generation Radio, helping train minority students in radio journalism. Mitchell subscribes to Sirius for his car, and listens to XM at home, while

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Podcasting

► Continued from page 18

birthed by Adam Curry, the former MTV VJ, blogger and serial entrepreneur now based in Amsterdam.

Curry runs the iPodder site, which includes a nascent directory of podcasting feeds with everything from music to news to audiobooks. So far, the selection is weighted to technology radio shows, and it sometimes seems as if a small group of people are just listening to each other.

"So this morning, here in my hotel room, I listened to the latest edition of Adam Curry's Daily Source Code, Dave Winer's Morning Coffee Notes about the open-sourcing of Frontier, and a conversation between Adam and Dave about all the above, iPodder, Trade Secrets Radio and much more," wrote Doc Searls in his Weblog about his new fascination with podcasting.

But Curry is optimistic that podcasting will catch on with a much wider audience. He thinks MP3 player manufacturers will be able to build iPodder functionality right into their devices.

"Mass appeal is likely, since the installed base of MP3 players is huge," he said. "Most of them have gigabytes of empty disk space and users are apparently really enjoying this new use for their players."

New way to think

Beyond the smaller productions, there are now more polished podcasts from public radio station WGBH(FM) in Boston as well as Fisher Broadcasting station KOMO(AM) news in Seattle. KOMO is the first commercial news station to take the leap into podcasting. The station's assistant director of news and programming, Stan Orchard, said his station has always been on the cutting edge with technology, launching a Web site in 1994 and an RSS feed last year. Podcasting was an easy addition.

"For the user it's easy-squeasy," Orchard said via e-mail. "They just install iPodder or some other such program and type in our podcast feed URL. That's it. As for setting it up at this end ... all it takes is a RSS feed, which we already had. We just had to tweak it a bit. Then we had to crank out some stories. Again, we were already doing that for the Web site so it wasn't much (work)."

One of the challenges for KOMO was getting the radio reporters to think a little differently, according to Orchard. Now they have to consider three formats while producing a story: the radio broadcast, the MP3 podcast and a written story for the Web site.

While the iPodder directory is still a bit threadbare, a commercial service called AudioFeast offers more than 300 copy-protected radio shows, mainly from big-name media companies. The cost is \$49.95 per year, but the service will only work with select non-iPod players that use the WMA format; iPods use AAC or MP3 — a limiting factor at the moment.

Look ma, no iPod!

While podcasting is only in its embryonic stage, people are already looking beyond time-shifted radio on portable MP3 players.

NPR's Mitchell, for one, thinks that ubiquitous wireless Net connections could bring on-demand radio to a variety of devices, cutting out the computer as content server.

"The next big thing is ... I think eventually you'll be able to wirelessly download something, stick on some headphones, and sit with your iPod or phone and listen to a program," Mitchell said. "I think you'll eventually be able to do that. Handheld devices will keep shrinking. You can already download and listen to shows online."

Plus, Mitchell notes just how cheap radio production has become. Now a college student can spend about \$1,000 on audio equipment, maybe \$2,000 on an Apple laptop, and with the right training, start reporting stories and put them online.

"I don't have to burn CDs unless someone wants to purchase it," Mitchell says. "It's extremely cost-effective. All the barriers are coming down. It's becoming extremely decentralized."

For the independent radio producer, the biggest barrier might be getting heard above the noise of so many like-minded folks online. Adam Curry says skill, experience and talent will still set people apart. "There will be a lot of crap, and just like Weblogs, we'll also have our superstars," he said. "And everyone can have their 15 minutes" of fame.

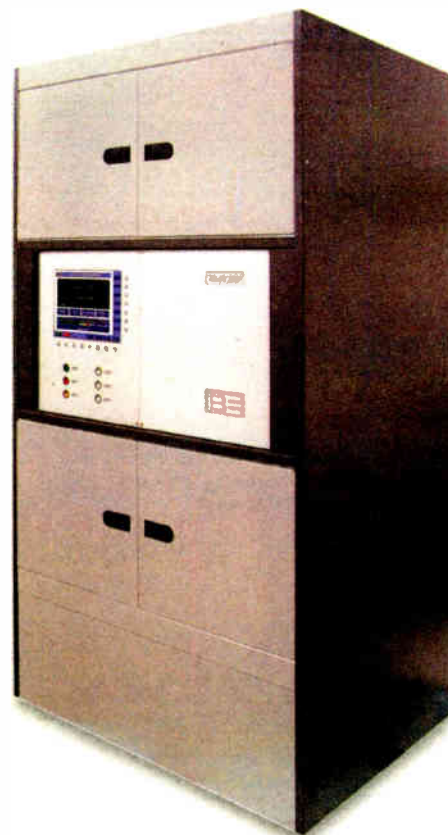
Blogger Russell Beattie, a technology consultant and programmer based in San Francisco, thinks that next-generation mobile phones will play a vital role in the wireless radio revolution.

"Right now there are four million

iPods, and yet there are going to be 650 million phones shipped this year alone," Beattie wrote. "How big will podcasting be when all those phones can be 'podcast players'? Think you're at the beginning of a trend now? Just wait. ... The phone may not hold the thousands of hours of audio that a normal iPod holds, but it'll be perfect for the day's podcasts, no? ...

"Convergence, ubiquity and connectivity are going to change society as we know it. Podcasting is only at the very tip of this."

Mark Glaser is a freelance writer in San Francisco who writes a regular column on online media for the *Online Journalism Review* (www.ojr.org), where this article first appeared. Contact him at glaze@sprintmail.com.

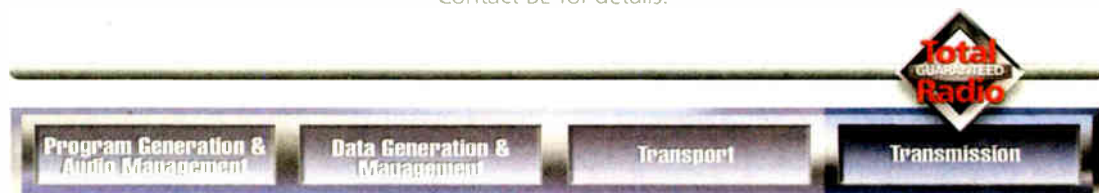


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Stern Makes Radio Look in the Mirror

Media 'King's' Departure Raises Questions About Radio's Ability to Respond and Replace

by Scott Fybus

"What do you make of Howard?" That was the question in the days and weeks following Stern's headline-making announcement that he would jump to satellite, and the answers ran the gamut

Cumulus Media, during the Group Executive Super Session that kicked off the Radio Show. "Howard certainly signals to me and my company the need to develop live, local talent so we can control our own product and our own destiny."



Stern's Web site was promoting his Sirius deal heavily after the announcement, including a countdown clock to his departure.

from resignation to excitement to fear. For the 3,500 or so radio folks who attended last month's NAB Radio Show in San Diego, the news was on everyone's mind.

No 'farm system'?

"I'm not that tall, but I think I hit my head on the ceiling when I heard," said John Dickey, executive vice president of

But even in markets where Stern has never been a factor, there's concern about where that talent might come from.

"What troubles me is, where is the farm system?" asked Mark Osborne, director of sales for Federated Media, a group operator in three Indiana markets. "Where are we growing the Sterns, the Rick Dees?"

Even without Stern as a presence in

his markets, Osborne says he sees firsthand the risks and rewards in relying on a syndicated personality to build a station's identity. Federated's WFWI(FM) in Fort Wayne was one of the first two affiliates for Premiere's "Bob and Tom Show" and depends heavily on the Indianapolis-based morning duo in imaging the classic rock station for the rest of the day.

"Bob and Tom is the franchise," Osborne said.

Underlying that concern is a bigger worry, the possibility that with Howard Stern as its star personality, satellite radio will become a bigger threat to the audience levels for terrestrial radio.

Stern's announcement "put to the test the extent to which people will spend their own money to avoid listening to us on terrestrial radio," said Westwood One syndicated talk host Jim Bohannon.

But the man heard on AM skywaves from coast to coast says it's far too soon to count out the older medium.

"As long as terrestrial radio still can be local, local, local, I don't see how (satellite radio) is ever going to erode that base away," Bohannon said, pointing out that even during his late-night national talk show, his affiliates are providing their listeners with local news, weather and emergency information that satellite radio can't match.

Practical outlook

"Regulation" was another word on the lips of many NAB attendees, as conversation after conversation touched on what the Howard Stern show might sound like without the constant concern about FCC fines that's been a running theme of the program for the last few years.

Stern's eagerness to jump to satellite "certainly says a lot about the difference between regulated and unregulated

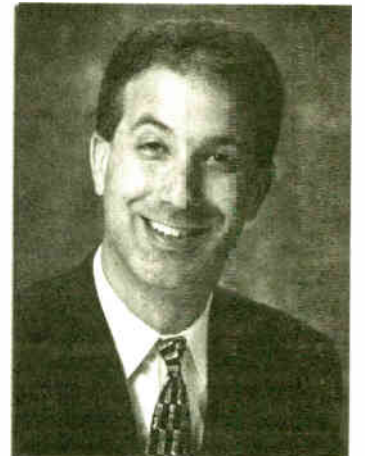
See STERN, page 23

The Cluster View From Younger Eyes

"No, really. How do you cue up a record?" the operations manager asked.

I thought he was joking; then I remembered I was talking with someone under 30. I tried to explain the process in detail, and I think he understood it; but I suspect this was akin to discussing childbirth with someone who hasn't had a baby. Logically they get it; yet emotionally it doesn't strike the same chord.

Promo Power



by Mark Lapidus

Ever since this interaction, I began to pay more attention to my young friend's work habits, questions and line of thinking.

Why? I realized he's got less baggage about the way radio should be today than I do.

I'm a pre-consolidation guy, like many readers, I suspect. Yes, I have embraced consolidation; yet it's been a process for

See CLUSTERS, page 21

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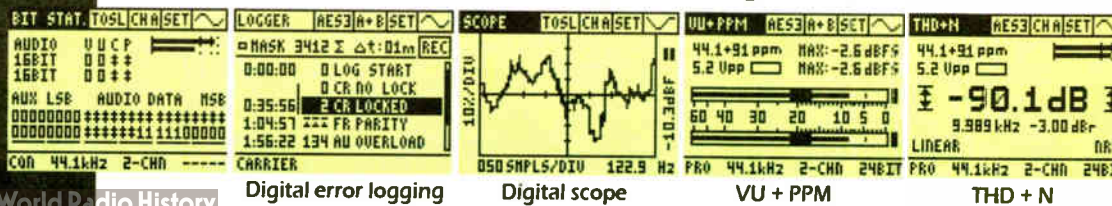
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Clusters

► Continued from page 20
me, and I often have to question my bias about the past vs. the present.

Half-full glass

Let's spend a few moments examining the way things are and the tremendous opportunities we have with clusters that we did not have prior to 1996.

I'm hoping you're employed in radio. If so, you are relatively new, like my young friend, or a survivor who has adapted — and likely grown — in the business.

If you are not working, I'm sorry; many great people have left the building. Our workforce in radio has shrunk in a fairly predictable way. It happens in every industry that goes through consolidation.

We have to be smart about which stations are selected to receive outside media. It's a huge mistake to treat a cluster of stations as a "family" in which treatment is always equal. Instead, we must focus our resources where they are most needed. If that means individual stations in a cluster feel ignored, so be it. Spreading an already meager budget will, in the end, deliver poor results.

As for the branding issue, I'm referring to a matter that is easily confused. Our listeners still know us by our individual station identity or brand. They may have heard of our parent company but are unlikely to think of us that way unless their recall is aided.

Newer programming promotion and marketing people sometimes will use a parent company name on-air, in promos, in print ads, on banners — you name it

— and add the station brand; this may be a dictate from the parent company. But the practice confuses what should be a simple proposition: trying to get someone to recall your station brand (name) and write it down in diary.

Focus the benefit

Another common error is to believe we can transfer feelings about one brand to another simply by associating the brands on-air or through outside marketing.

For example, too many clusters will include several stations in an event just because they can. Instead of one station brand that owns the event, you'll see five logos on the banners and newspaper ads, and five stations on-site for the event. This leaves the impression that a lot of radio stations were involved; but the con-

sumer may well not recall which ones.

The positive news is that you can use the power of a cluster to get behind an event by using non-branded promotion on all but one station, which then "owns" that specific event.

Young eyes may see other cluster advantages, including better pay because of multiple responsibilities; the ability to be on the air in several markets without leaving home; better promotional toys, because they can be shared among stations; and a greater brain trust to pull together strategy and tactics.

Now if you'll excuse me, I have to go see if I can find that turntable in my attic so I can demonstrate the ancient art of cueing up a record to a new friend.

The author is president of Lapidus Media. Contact him at marklapidus@clearchannel.com.

It's a huge mistake to treat a cluster of stations as a 'family,' in which treatment is always equal.

So what's the positive news here?

We don't stop to think about it; but most employees now have more responsibility. PDs, marketing directors, promotion directors, sales managers, engineers, traffic managers, jocks and webmasters often work with multiple stations. Those in the biz for a long time sometimes complain about this; many younger people love it because they get to wear more than one hat and exercise more creativity.

Marketing/promotion for a cluster primarily is about two things: How to allocate limited financial resources; and understanding that brands are for listeners, not for us.

It's fairly common practice for companies to spend as much marketing money for an entire cluster than what old-line companies might spend on one or two stations — and this doesn't even take into account that TV ads, direct mail, outdoor and the like are much more expensive than they were eight years ago.

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World Radio History

Canadians Protest Station Closure

by James Careless

A final court ruling is expected no sooner than spring 2005 in the case of CHOI(FM).

Angered at a decision by the Canadian broadcast regulator to close their favorite radio station, thousands of Radio X fans protested noisily outside the Parliament Buildings in August.

Spurred on by a live remote broadcast by CHOI afternoon host Gilles Parent and CHOI owner Patrice Demers, the crowd, estimated to be as large as 7,000, repeatedly chanted "Liberté, Liberté!" and demanded that Canadian Prime Minister Paul Martin reverse the Canadian Radio-Television and Telecommunications Commission decision.

"The message to Paul Martin today is (to) send this decision back to the CRTC," Demers told the black-shirted CHOI fans. "This is about freedom of expression. Why should functionaries in the CRTC be able to close a station that all these people want to hear?"

The CRTC revoked the license of the Quebec City station — a draconian tactic rarely used in Canada — after repeated complaints about on-air defamatory and racist comments from CHOI morning show host Jeff Fillion.

According to The Globe and Mail newspaper, Fillion referred to a ward in a local psychiatric hospital as the "zoo." He then added, "What I think they should do in the zoo is fill up the rooms, and then there'd be a switch, and once every four months, they press the button and just a little bit of gas comes out, and then you go in and pick it all up and put it in bags."

Fillion is also alleged to have made several racist and sexist comments on-air, making him one of Canada's few shock jocks.

The CRTC, which has spent years fighting with Demers about complaints similar to these, announced that the CHOI license would not be renewed when it expired on August 31. In 2002, the commission renewed CHOI's license for only two years, rather than the usual seven, in an attempt to force CHOI to curb its hosts on air.

However, in the CRTC's view, the 2002 attempt failed. So did a February



Thousands of Radio X CHOI(FM) fans protested at Parliament to object a decision against its license renewal.

2004 hearing in which the commission questioned Demers about CHOI's apparent noncompliance with the terms of its license.

"When questioned at the (February) hearing about the most serious complaints, the licensee, in virtually all cases, denied that a problem existed and expressed its disagreement with the apparent failures to comply identified prior to the hearing," according to a July CRTC news release announcing the non-renewal of the CHOI license.

"In view of the inflexible behavior demonstrated by Genex," CHOI's parent company, of which Demers is president and reportedly chief shareholder, "its lack of acceptance of its responsibilities and the lack of any demonstrated commitment to rectify the situation ... the commission has denied Genex's application to renew CHOI's license."

Public support

Since the news became public, Demers has fought the CRTC in the media and before CHOI's fans. His efforts have won support from Quebec Premier Jean Charest.

"I think the penalty imposed on CHOI — which is the most extreme penalty — is a penalty that goes too far," Charest told CBC News in Montreal.

According to the Canadian Broadcast Corp., federal New Democratic Party leader Jack Layton, who effectively holds the balance of

power in Canada's recently elected Liberal minority government, has

echoed Charest's support for CHOI. "We think the on/off switch approach of the CRTC is wrong and it doesn't make sense," he was quoted as saying.

Despite the protest, the federal Liberal government appears to be resisting pressure to overturn the revocation of CHOI's license.

Minister of Canadian Heritage Lisa Frulla has refused to tamper with the CRTC ruling, preferring instead to refer the matter to the federal court system.

On Aug. 26, the Federal Court of Appeal, citing legal precedents, ruled that CHOI could remain on air while its review of the CRTC decision is under way.

In the meantime, CHOI put Fillion on an 8-second delay.

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Stern

► Continued from page 20 media," said Suzanne Goucher, president of the Maine Association of Broadcasters.

And while one might expect one of Stern's fellow "shock jocks," Westwood One's Tom Leykis, to have some deep thoughts about what his show might be like outside the FCC's content guidelines, Leykis thinks he's the wrong person to ask.

"It would be like asking the Rolling Stones when cassettes were hot, 'When are you going to CDs?'" Leykis said.

Leykis is under contract to Westwood One through 2007; he says whatever happens after that, he doesn't see much difference between doing a show on terrestrial radio and on satellite.

"It's just a delivery system," he said. "So we'll go where the best people are,

where the best deal is."

If that suggests that, as Federated's Osborne says, "it's a great week to be a morning show talent agent," there's no disagreement from Bob Eatman.

The president of Los Angeles' Robert Eatman Enterprises is the agent for many edgy morning shows, including several — such as "The Regular Guys," formerly of WKLS(FM) in Atlanta — who've had their own run-ins with the FCC over content.

Speaking at a panel on indecency issues and freedom of speech, Eatman said that even before the Stern deal was announced, most of his clients were asking him specifically to look into satellite radio deals as they investigate new job opportunities.

"The clients that I have are the bad boys of radio, and they're afraid to say anything" that may run afoul of the FCC, Eatman said.

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*The Radio People
Russell Kendrick, Chief Engineer*

Russell Kendrick, Chief Engineer for The Radio People of Monroe, Louisiana, has been relying on BSW for low prices and lightning-fast service since he joined the company. "We had an open account when I started, and I quickly found out that if I needed something fast I could just put the order together and with BSW I'd know it was a done deal, end of story. And now with your new Midwest shipping location, we get our gear even faster," says Russell.

"The Radio People has six stations in Monroe and two in Vicksburg and we do just about every format from urban to country, including a talk show that goes out statewide via satellite...so we're always busy. With BSW I always get my order on time, with great service – and the prices are so consistently low

I don't need to waste time shopping around. Also, your catalog is a great reference for putting together quotes...I always look like a real hero when BSW's bid comes through."

In a post-deregulation world, Russell says his strong technical background has helped him rise up in the business as many of the old guard retire. "The Society of Broadcast Engineers is a great group of guys, and their certification really helps people grow and prove themselves." In addition to his CBRE certification, Russell also has an FCC-GROL license with a radar endorsement.

When he's not on the job or continuing his HAM involvement, Russell enjoys time with his wife and new 5-month-old son.

Thanks for the continued business, Russell.



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World Radio History



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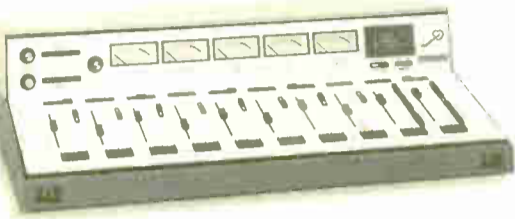
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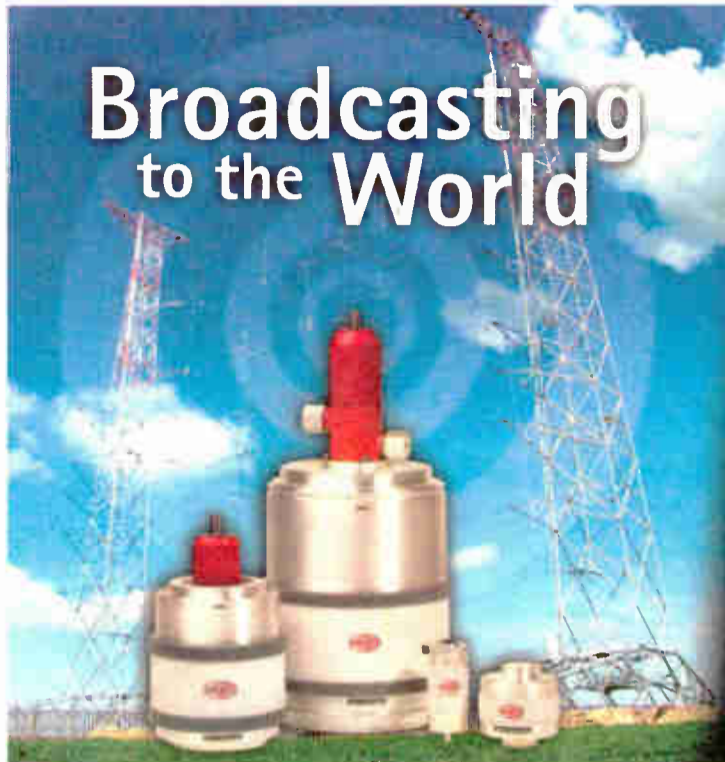
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BOOK REVIEW

'Unipress': What It Was Like at UPI

by Bill Clough

In 366 pages, authors Richard Harnett and Billy Ferguson have attempted to chronicle the history of United Press International, from its origin at the beginning of the last century until its demise due to managerial mishandling and shifting market forces 92 years later.

The book is "Unipress: United Press International, Covering the 20th Century," a 366-page hardcover from Fulcrum Publishing.

It begins with what arguably was UPI's greatest scoop: White House Correspondent Merriman Smith, who beat the Associated Press in November 1963 with news about shots fired on a presidential motorcade in Dallas, Smith grabbing the mobile phone and refusing to relinquish it.

It ends, 37 chapters later, with the end of UPI a traditional wire service.

"The day had finally arrived," is the last sentence. "Associated Press reporters no longer needed to hurry on the phone."

Long 'death watch'

Harnett, who spent 36 years of his journalistic life with United Press, died shortly after completing the manuscript. Ferguson spent 40 years as a UP and later UPI staffer. They have earned their membership in a small elite fraternity: Unipressers who have written books about their company.

The first, "Deadline Every Minute," by Joe Alex Morris in 1957, captured the second-by-second excitement of the days when newspapers dominated the news business and depended almost exclusively on wire services for national and international news.

The tone of the second book, "Down to the Wire," by Gregory Gordon and Ronald E. Cohen in 1990, is much darker. The subtitle says it all about what happened to UPI in the subsequent decades: "UPI's Fight for Survival."

Today's UPI bears little resemblance to the UPI of old.

According to its Web site, "UPI is a global operation headquartered in Washington ... (that) licenses content directly to print outlets, online media and institutions ... In addition, UPI's distribution partners provide our content to thousands of businesses, policy groups and academic institutions."

But Tom Foty, former Washington bureau manager and executive editor of UPI Radio, speaks for most for Unipressers when he says, "UPI is far removed from the once-vital, comprehensive and innovative multimedia news and information provider that United Press International used to be."

"It appears to be a small, mostly Web-based, niche news service, marketing limited text and photo products to some secondary Web sites, 'think tanks,' information resellers (also known as 'aggregators') and short-form digital text delivery services."

When I joined the UPI Radio Network in 1993, staffers privately told me I would witness the longest death watch in history. By then, as anchor Dennis Daily was quick to point out, UPI had endured five owners and two bankruptcies in seven years. Managerially and financially, it was descending into a black hole, its product maintained mostly by the pure stubborn pride of its staffers who still felt that the label "UPI" demanded a professional product.

"Unipress" reveals that management depended on that pride and even exploited it.

Underdogs

Back in what could be called the heyday of UPI, Hollywood released "Teacher's Pet," one of many motion pictures about the newspaper business. On the editor's desk was a plaque that read, "The purpose

its engine sputtering over London during World War II. The authors say it was a German V2. But V2 missiles fell faster than the speed of sound and were not heard until they hit. The V2's predecessor, the V1, was something akin to today's cruise missiles. They were powered by a ramjet engine that sputtered, hence its name of "buzz bomb."

Perhaps because I was a photojournalist for 35 years before I got into broadcast, I'm



Merriman Smith, far right, is intent on his copy as President Harry Truman chats up a competitor in a photo believed taken in a press room at the U.S. Capitol. This print hung for years in the executive offices of UPI in Washington. The photographer and the identity of the man in the center are unknown.

of a newspaper is to comfort the afflicted, and to inflict the comfortable."

If UPI staffers can be covered by a single blanket, it is their penchant for the underdog. That's because, as Harnett and Ferguson point out repeatedly, UPI was an underdog. What staffers lacked in revenue and expenses, they made up for with ingenuity and spunk. In the process they earned the company a reputation for feisty, snappy writing.

It is precisely the dogged determination to compete with the bigger, and profoundly richer, Associated Press that kept Unipressers going for most of a century. In the process, the staffers forged memories and anecdotes unparalleled. They are the Tabasco that brings life to the bland salad of factual recitation. The authors make a reader anxious to keep turning the page, from one war story to another concerning the major and minor events UPI covered during the last century.

The book's 35 pages of index, bibliography and notes are testimony to the authors' exhaustive research. Perhaps inevitably, a project of such magnitude is going to have its errors.

Some stand out, though. The book states that the Soviet Union put the first man-made satellite, Sputnik, into orbit on Sept. 30, 1957. The actual launch was Oct. 4, a date that marked a turning point both in the U.S. neophyte space efforts and for its educational system as well.

The authors say that in 1950, Russ Jones of UP won the agency's first Pulitzer Prize for his dramatic eyewitness reporting of the Soviet Union's military suppression of a budding revolt in Hungary. The revolt was in 1956.

Named among the reporters sent by UPI to cover the Korean conflict is Fred Painton, who actually died in the Pacific during World War II and was the subject of one of the last columns by famed correspondent Ernie Pyle.

Staffers Edward Beattie and Walter Cronkite are mentioned hearing a plane with

sensitive to photographers receiving proper credit. In one chapter, the authors list eight Pulitzer prizes between 1960 and 1980 won by UPI photographers. None of the names is listed. Why?

It is easy to spot that the two authors did not always coordinate their efforts. On page 89, essayist William Allen White, economist J.M. Keyes, golfer Bobby Jones, writer Edna Ferber and author Sir Arthur Conan Doyle are listed among those who had written for a United Press subsidiary, United News. Twenty-seven pages later, in a later chapter, the exact information

appears again. A similar redundancy appears on pages 207 and 267 concerning the stock market.

Ferguson asked for any mistakes to be brought to his attention on the "Downholders," the Internet chat forum for former Unipressers. He got his wish. So many replied that one member finally asked the rest to be gentle with the authors, pointing out that Ferguson and Harnett produced the book with little help from others. They have, he said, done a helluva job.

That they have. Subsequent editions no doubt will clear up most of the problems.

Recalling the teletype

What will remain is a gigantic effort to tell the story of a wire service that kept fighting until the end.

It's a unique book if, at \$50, an expensive one. But there's not another like it; in its pages, history comes alive. Any student of journalism who has no idea what a teletype sounded like and who really wants to know what competitive journalism was like — and what it should be like — should read it with enthusiasm.

Then he or she will understand the ironic humor in a message posted by former UPI Radio Tokyo Bureau Chief Thomas Caldwell to "DeadMike," the Internet chat forum he started for former UPI Radio staffers.

Of a wire service that had once chronicled the fall of nations and the birth of kings, Caldwell wrote that on Nov. 5, 2003, UPI reported that biologists in Canada had linked "an odd underwater farting sound to bubbles coming out of a herring's anus."

One can only imagine how the sound bite guys in the audio slots at UPI Radio would have handled that story. Which points out something missing on the bookshelves of journalistic history: where's the book devoted entirely to the UPI Radio Network?

Bill Clough is news and operations director of South Texas Public Radio in Corpus Christi, Texas. During nearly six years with the UPI Radio Network he was a producer, religion editor and news anchor, and he covered the Pentagon, State Department, Senate, House and ultimately the White House.

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November 17, 2004

USER REPORT

Burk ARC-16, Interface Link Sites

The Author Enjoys the Ability to 'Shift Gears' Among Nassau Broadcasting's New Hampshire Stations

by Dirk Nadon
Director of Engineering
New Hampshire
Nassau Broadcasting

HOOKSETT, N.H. Nassau Broadcasting recently acquired three separate groups of radio stations here in central and southern New Hampshire. As with any mass consolidation, it became necessary to standardize the various platforms to operate the new group: FM stations WNNH, WHOB, WJYY, WNHI, WOTX, WLNH, WLKZ, and WBHG, as well as AM WEMJ;

When it came to transmitter remote control systems, after reviewing the landscape of the existing stations and conferring with Nassau's senior vice president of engineering, **Burk Technology's** straightforward ARC-16 was an easy choice. It is capable of performing all the tasks that Nassau requires.

The ARC-16 is a transmitter control system that allows for unattended and walk-away control. It can be configured as a full-time, dial-up or multi-site system, and offers 16 channels of status, metering and control. Units may be cascaded for more channels.

Operators at live stations prefer a full-time transmitter control system because it gives them the ability to respond quickly. A full-time system includes a studio unit and a transmitter unit, with internal link modems for connecting with a variety of link types. Metering and status at the transmitter are available at the control point, and corrective action involves pressing a button.

The ability to monitor and control studio equipment such as program automation, EAS and security through the SIO option is a notable benefit of the ARC-16.

'Smart' system

Our demands included a full studio and transmitter interface, capable of easily managing control and display of parameters for each of Nassau's nine New Hampshire transmitter sites. In this digital day and age, we also insisted the remote controls be "smart" enough to alert our engineering staff



The ARC-16 can be configured as a full-time, dial-up or multi-site remote control system.

of conditions that operators may not immediately notice or know how to deal resolve.

Specifically, we wanted a single package to perform tasks at the studio and transmitter — and from the field. I wanted a unit that I could call and interrogate from anywhere I happen to be; one that would call my engineering staff or me to alert us in the event of out-of-tolerance conditions or dead air on the left channel.

Many of the existing remote control sys-

tems at the nine stations were already Burk. The company's Good as New program enabled us to "upgrade" these existing systems to the current version of hardware and software, as the option to upgrade older existing units to the current standard saved money. It's nice knowing that the device you purchase today won't be obsolete tomorrow.

Being in the Northeast, I simply had one of our staff drive the units to Burk, located outside Boston. Their staff upgraded the units while we waited, and within hours the system was back in service. The stations that didn't already have Burk systems were outfitted with the identical platform and we were in business.

Now I can "shift gears" between any of our stations anywhere in the state, as all the sites have the same hardware and talk the same language. This equipment consistency is the key strategy in successfully managing the mass amount of information reported to Nassau's engineering staff.

With the assistance of Burk's AutoLoad program, I can upload language changes to the Enhanced Speech Interface, so the ARC-16 will "talk" to our staff in plain English to

report events and conditions so they're easily understood. I can then save these settings on my laptop and copy the function from station to station and back up the files in case of data loss. If necessary, I can take control of a site while sitting on the beach, which I've done on many occasions.

Burk's AutoPilot 2 transmitter remote control software enables me to program events when I want them to happen. I see all 16 status and analog inputs at a glance. We like the feature that tracks and records readings, status and other incidents. AutoPilot 2 also executes time-based activities to carry out power changes, program switching or tower light operation.

The received signal strength of one of our STL systems at a tower site recently dropped to about half its normal level. The signal loss was not immediately significant, but because the Burk ARC-16 logs the parameter, we were immediately aware of the condition and had it documented.

Knowing exactly when the parameter changed enabled us to determine that a tower crew had "bumped" the dish while performing maintenance on another one of the tower's tenants. Knowing about this occurrence as it happened allowed us to fix the problem before it deteriorated further and interrupted the stations program. A remote control system that is flexible and capable means I can go off and work on the next challenge.

Additionally, new firmware for the ARC-16 system was recently made available. The company says firmware v5.6 offers faster baud rates for digital communication links, providing more responsive site-to-site communication, particularly with multiple remote sites.

For more information, including pricing, contact Burk Technology in Massachusetts at (800) 255-8090 or visit www.burk.com.

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USER REPORT

BE's RTDS System Gives Fault Readings

Engineer Selects the Remote Transmitter Diagnostic Software Add-On When Upgrading FM-30As

by Gary L. Ellingson, CPBE
Chief Engineer
KFNW(AM-FM), KNWC(AM-FM)
and WSMR(FM)
Northwestern College Radio

ST. PAUL, Minn. Data. Trend line analysis. Temperature differential. Mean time between failure. Terms and conditions of license. Direct vs. indirect power. Efficiency. Pattern change time.

Each phrase is familiar to broadcast engineers, the individuals charged with the installation, operation, maintenance, troubleshooting and repair of everything from the microphone to the antenna.

As chief engineer, I am directly responsible for three of Northwestern College's stations, located in Fargo, N.D., Sioux Falls, S.D. and Sarasota, Fla. For years, I have used the data capture feature in the Gentner (now Burk) GSC3000 transmitter remote control system to download scheduled readings from designated transmitters and import those readings into Microsoft Excel for logging and analysis.

I not only have systematic records of station operation, but I have the means to analyze transmitter performance over time. These trend line graphs, produced within Excel, yield valuable information and oftentimes allow me to spot problems before they become catastrophic failures.

The one data criteria I could not pull out of the existing remote control system, because it essentially logged only historical events, was pre and post-fault data capture.

Pre-fault readings, as opposed to captured scheduled data, provide valuable troubleshooting information by showing

the state of the equipment immediately prior to and shortly thereafter a failure. When I learned that Broadcast Electronics, in their T-Series upgrade to

add-on to the controller.

With a cost of under \$3,000, I knew the system would be well worth the investment, and included it in the on-site factory upgrade that Gil Housewright, senior field service engineer from BE, would be doing. Factory field-service support is an important consideration in

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Date	Time	Index	Eff	PA Fwd	PA Rfl	PA Temp	Pfl V	Pfl I	Scn V	Scn I	Grid V	Grid I
2	11/4/2000	17:14:38	1	77	2.43E-03	0	254	7.84E-02	3.32E-02	7.515152	5.558139	199.2459	1.068966
3	11/4/2000	17:14:38	2	77	2.43E-03	0	254	7.84E-02	3.32E-02	7.515152	5.558139	199.2459	1.068966
4	11/4/2000	17:14:39	3	77	5.47E-03	0	254	9.726753	3.32E-02	7.515152	5.558139	199.2459	1.068966
5	11/4/2000	17:14:39	4	77	5.47E-03	0	254	9.726753	3.32E-02	7.515152	5.558139	199.2459	1.068966
6	11/4/2000	17:14:40	5	77	0.196785	17424	254	9.690991	0.697627	3.757576	33.34983	257.2787	109.0345
7	11/4/2000	17:14:40	6	77	3.89E-02	0	254	8.197143	3.32E-02	15.0303	5.558139	205.0492	1.068966
8	11/4/2000	17:14:40	7	77	5.47E-03	0	254	5.098701	3.32E-02	11.27273	5.558139	199.2459	1.068966
9	11/4/2000	17:10:50	1	77	2.43E-03	0	254	7.84E-02	3.32E-02	7.515152	5.558139	199.2459	1.068966
10	11/4/2000	17:10:51	2	77	2.43E-03	0	254	7.84E-02	3.32E-02	7.515152	5.558139	199.2459	1.068966
11	11/4/2000	17:10:51	3	77	5.47E-03	0	254	9.726753	3.32E-02	7.515152	5.558139	199.2459	1.068966
12	11/4/2000	17:10:51	4	77	5.47E-03	0	254	9.687532	3.32E-02	7.515152	5.558139	199.2459	1.068966
13	11/4/2000	17:10:52	5	77	0.102644	8464	254	9.56987	0.664407	3.757576	22.23256	245.6721	102.6207
14	11/4/2000	17:10:52	6	77	2.19E-02	0	254	7.648952	3.32E-02	11.27273	5.558139	203.1147	1.068966
15	11/4/2000	17:10:52	7	77	5.47E-03	0	254	4.824156	3.32E-02	11.27273	5.558139	199.2459	1.068966
16	11/4/2000	16:18:40	1	77	5.47E-03	0	254	7.84E-02	3.32E-02	7.515152	5.558139	197.3115	1.068966
17	11/4/2000	16:18:40	2	77	5.47E-03	0	254	7.84E-02	3.32E-02	7.515152	5.558139	197.3115	1.068966
18	11/4/2000	16:18:41	3	77	5.47E-03	0	254	9.726753	3.32E-02	11.27273	5.558139	197.3115	1.068966
19	11/4/2000	16:18:41	4	77	5.47E-03	0	254	9.687532	3.32E-02	7.515152	5.558139	197.3115	1.068966
20	11/4/2000	16:18:42	5	77	0.3796	35344	254	9.690991	0.697627	3.757576	38.90697	255.3443	107.9655
21	11/4/2000	16:18:42	6	77	3.89E-02	0	254	7.569611	3.32E-02	18.78788	5.558139	201.1803	1.068966
22	11/4/2000	16:18:43	7	77	5.47E-03	0	254	4.784935	3.32E-02	11.27273	5.558139	197.3115	1.068966
23	11/4/2000	15:38:24	1	77	28.07524	0	254	9.138442	3.654237	574.9091	172.3023	251.4754	76.96552
24	11/4/2000	15:38:24	2	77	28.07524	0	254	9.138442	3.654237	574.9091	172.3023	251.4754	76.96552
25	11/4/2000	15:38:25	3	77	28.07524	0	254	9.138442	3.687458	571.1515	172.3023	251.4754	79.03448
26	11/4/2000	15:38:25	4	77	28.07524	0	254	9.138442	3.654237	574.9091	166.7442	251.4754	76.96552
27	11/4/2000	15:38:26	5	77	27.81468	65025	254	9.138442	3.687458	574.9091	172.3023	251.4754	79.10345
28	11/4/2000	15:38:26	6	77	20.78691	0	254	9.452208	3.654237	569.8788	133.3953	228.2623	1.068966
29	11/4/2000	15:38:26	7	77	0.321294	0	254	8.510909	3.32E-02	349.4546	5.558139	201.1803	1.068966
30													

The author feels fault capturing is the most important feature of RTDS: 'Notice the seven "snapshots" covering the period of time between 15:38:24 and 15:38:26 on 11/4/2000 ... The RTDS captured the exact time of the damage as snapshot five at 15:38:26, the time correlating to essentially infinite reflected power.'

the FM-30A transmitter, had an optional RTDS (Remote Transmitter Diagnostic Software) system available, including pre and post-fault data captures, BE had my attention.

Expanded remote control

I was already in the process of upgrading one of our BE FM-30As up to current factory update status, as well as the T-Series controller. The RTDS module is an

the purchase of high-end broadcast equipment. The RTDS system allows factory personnel to gain access to dozens of data points within the transmitter and provide that important assistance when needed.

The RTDS system is connected to a modem at the transmitter site to allow dialup access. It also works quite well with a line selector unit, so that other modems within the building may be con-

nected to the same telephone line. For instance, the sites I maintain have the GSC3000 unit as first dial-in, RTDS as second and the Orban Optimod units as third; all of these operating on the same phone line.

The main screen emulates the front panel of the FM-30T controller on status and control functions, making remote diagnosis of problems as easy as standing in front of the transmitter. The remote display may be expanded further by enabling the detailed readings feature, which provides access to another level of readings all the way through the IPA and exciter. The amount of information attainable through the RTDS system can keep any data-hungry engineer fed for weeks.

The RTDS system also facilitates setup. Rather than configure the transmitter controller through miniature switches with hard-to-see settings, a laptop loaded with RTDS can do the metering limits, overload setups and calibrations with point, click and keyboard execution. I am so pleased to see the broadcast industry at par with the calibration ease of modern

See RTDS, page 31 ▶

TECH UPDATE

Ward-Beck XTM4 Measures Over Wide Range

Ward-Beck's XTM4 is a test meter for the measurement of analog, AES-3 and SDI-embedded audio signals over a wide range. The company says it is a valuable tool in master control that can accurately measure signals from microphone levels to the clip point of equipment.

The unit occupies two rack spaces and is equipped with a stereo VU and PPM moving needle meter pair. Meters are LED-illuminated.



Front-panel controls and a dot matrix display enable the user to select between signal sources, mode of operation and the sensitivity of the meter. XTM4 is field-programmable, so customer-defined names, containing four alpha-numeric characters, can be displayed. A bar graph LED phase indicator is included.

Connection to the XTM4 is via rear-panel XLR connectors for the analog and 110-ohm AES-3 signals, and via BNC connectors for the AES-3ID and SDI signals. The rear panel has a stereo analog output of the displayed signal on an XLR connector pair. The analog input pair and AES-3 input pairs are routed through "normalling" telephone jacks located on the front panel, which give access to the XTM4. A stereo headset jack also is provided on the front.

The base XTM4 features analog, AES-3 and AES-3ID inputs. SDI and expanded AES ports may be added as an option. The XTM4 is internally powered and operates with 115/230 Volt, 60/50 Hz AC mains.

For more information, including pricing, contact Ward-Beck in Toronto at (800) 771-2556 or visit www.ward-beck.com.

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RTDS

► Continued from page 30
industrial control systems.

The RTDS system is simply an expanded remote control system — one that gives a much more detailed display of system status than that which is commonly obtained through traditional remote control systems. However, its shining point is in its diagnostic capability.

Data captured in the RTDS system may be exported as files in various delimited formats, which can be read in Excel, Access or other spreadsheet/database software. Once exported, the data may be analyzed utilizing the powerful analysis and graphing functions within Excel.

I might add, having taught courses in electronic systems troubleshooting, this makes a valuable contribution to the overall understanding of the device operation. Having a baseline reference of "normal" readings makes identifying fault location much easier when problems arise.

Case in point

One particular occurrence demonstrates how the RTDS system really paid for itself. One of the stations for which I am responsible encountered a severe late autumn storm. I mean, *severe*.

Instead of cool and clear late autumn weather, the heat and humidity of the day felt like summer. Shortly after noon, the temperature began to plummet and by mid-afternoon there were tornadoes to the west and straight-line winds of 80+ mph at the transmitter site. This was in addition to torrential rain, hail and lightning. And then it froze.

Somewhere in the middle of the storm, the transmitter went dark. All attempts to restore operation failed. A TDR analysis of the feedline and antenna showed a marked line discontinuity at the antenna feedpoint, but that was 1,000+ feet up the tower now covered in ice. Equipment failure or storm damage? It was a legitimate question.

Using National Weather Service-published information and the fault event log from RTDS, I was able to correlate the transmitter failure with the storm and convey to the insurance adjuster that the station had indeed suffered storm damage. It would be a full 30 days before a climber could get up the tower and locate the fault — a definite lightning strike at the last transition before rigid line at the antenna. Long before that climb occurred, I had the insurance company's permission to proceed and had the station on a temporary system, a system on which the staff would operate for the 75 days it took to complete the repairs because of winter conditions.

Another case also comes to mind, one I know will register with many other engineers. Wes Tschetter, the local engineer for one of Northwestern College's stations, and I had been over and over various attempts at correcting a nasty intermittent transmitter problem — one of those that never occur when on site but always at an inconvenient time.

Wes and I had methodically, with the factory's assistance, located and

replaced several suspect parts. We had also verified, at least to our satisfaction, the operational status of other components. It wasn't until Stuart Peters, BE manager of customer service, dialed into the RTDS system and analyzed the actual data within the transmitter that the real problem surfaced.

Stuart's analysis revealed that a component, which tested and adjusted within tolerance, was actually intermittently failing, but failing at a rate too fast for the latency in the controller to display. It was not too fast, however, for the RTDS system to catch. I also need to report that this particular RTDS was installed on a BE FM-30 that had been fully upgraded in the field, again by Gilbert Housewright from BE, to a full T-Series transmitter and controller. Talk about extending the service life of

a capital asset.

So, there you go. I am obviously sold on the product. It has paid for itself many times over just in the assistance it provides in maintaining and troubleshooting BE's FM transmitter line. As a line item on a new purchase, at 5 percent or less than the transmitter itself, it makes perfect sense to include it as a factory-installed option.

As one who is charged with maintaining the value of large capital assets, I also can commend BE for their program of obtainable factory upgrades, which facilitate the operational life of their equipment well beyond traditional amortization schedules.

I have been using a lot of TCP/IP devices for harvesting data within the LAN and WAN structure I work within, and I would like to see BE integrate

TCP/IP capability within their RTDS system, allowing personnel to browse in to the various units from wherever they may be.

I also would like to see the fault events automatically sent to a designated e-mail client as an alarm message. This alarm could also be sent to a cell phone, alerting the responsible person that a fault event had taken place. That sequence alone would save valuable front-end response time by eliminating the "let's dial in to see what happened" procedure.

Finally, I would like to see the RTDS system retrofitted to BE's line of AM transmitters.

For more information, including pricing, contact Broadcast Electronics in Illinois at (217) 224-9600 or visit www.bdcast.com.

The Best Distant City Voice Tracker Citadel Standardizes on Scott

by Jeff Schroeder, Corporate Director of Digital Technology, Citadel Broadcasting Corp.



"LAS VEGAS—An obvious benefit of digital technology and the Internet is the ability to share top production, news and air talent across markets. Many radio broadcasters have good people, but the best tend to get overexposed on too many spots and promos. Citadel now efficiently shares top air talent on fewer spots over more markets. Listeners enjoy fresher production and more variety.

"All the digital systems allowed some sharing of announcers, but none met all of Citadel's needs. In particular, our program directors were unhappy with the standardized corporate music library required by most brands. PDs were not even willing to renumber their music libraries to a corporate standard. Every PD had different ideas about versions, remixes, short or long versions, and even whether or not to speed up some songs slightly.

"We found the solution we sought at Scott Studios. After our initial roll-out, I contacted Frank McCoy, a principal developer and bleeding-edge user of another brand of hub-and-spoke digital system. Frank and I met with Dave Scott in Dallas, and Frank detailed the problems his former company suffered, which Citadel needed to overcome. The three of us brainstormed possibilities and came up with the perfect plan—except that what we wanted did not exist yet.

"Scott Studios went to work developing the new features we needed. We began testing and fine-tuning our concept. Citadel now feels it has the best multi-market sharing system available.

"The company's remote voice tracker lets the distant announcer listen to heads or tails of the actual songs and spots where the show will air—yet our programming people didn't have to standardize, duplicate or unify their music libraries.



This dual-screen SS32 is at Citadel's WGFX (FM), Nashville.



PM drive air personality Ann Perkins with Scott Studios' SS32 touchscreen at Citadel's "Crest," KRST FM, Albuquerque.

"One beauty of Scott Studios' system is when a market PD adds or changes any song in his library or log, remote market Voice Track studios are updated quickly and automatically. Also, we use only inexpensive Internet FTP and VPN bandwidth. No costly Frame Relay connections are required.

"One thing Citadel likes about its Scott Studios systems is that we enjoy both a mature system and ongoing new development. If there is a feature, change or simply something new we'd like to do, we send the suggestion to Scott Studios and typically have new software within days."

For details, including pricing, contact Scott Studios in Dallas at 888 GET-SCOTT (438-7268) or visit www.scottstudios.com.

Text quoted excerpted from Radio World newspaper, 10/20/2004

Scott Studios



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TECH UPDATES

Belar Monitors With Sentry 16

The Belar Sentry 16 is an audio/status monitoring system that scans eight audio channels and eight logic inputs to detect changes in station-operating parameters.

It combines single-point monitoring of program channels and equipment status, local and remote alarm capabilities and a computer interface for remote interrogation. Sentry 16 senses changes in audio program levels, faults and phase reversals occurring in the audio chain and changes in equipment operational, or logic, status.



Each of the 16 input channels is activated and controlled by a menu-driven front-panel control system. Status of each channel is monitored and displayed on 16 three-color, front-panel LEDs.

Indications are green for a normal operating status, orange for an out-of-tolerance condition and red for an alarm condition.

Adjustable time-outs may be set to delay an alarm indication in each channel. These time-outs are adjustable from 1/4 second through to two minutes. At initial setup, each channel may be set so that, when an alarm state does become valid, it selectively triggers the Sentry 16 master alarm.

The master alarm consists of the Master LED and, by menu selection, the chassis-mounted Sonalert. If activated by the master alarm, the Sonalert may be muted by pushing the front-panel "mute" button. Once alarm conditions are cleared, pressing the Master Reset button returns the active alarm LEDs to their normal condition and extinguishes the Master Alarm LED.

Broadcast functions of the Sentry 16 include the ability to link via menu two separate pairs of program lines to sense transmission faults. This feature bypasses long time-outs of program level alarms to provide indication of "line-loss" events in program circuits.

Audio channels 1 and 2 are equipped to sense audio polarity reversals occurring at a prior point in a stereo transmission system. The company says this is of special interest to broadcasters who must maintain monophonic compatibility.

Two internal relays provide normally open and normally closed dry contacts to selectively control external alarms. An open-collector output provides a logic alarm signal for external devices. External readout by other serial devices is facilitated via the rear-panel RS-232 port. The Sentry 16 also operates in conjunction with Belar modulation monitors via the company's Wizard Standard Interface.

For more information, including pricing, contact Belar Electronics Lab in Pennsylvania at (610) 687-5550 or visit www.belar.com.

Harris ReCon Uses Interfaces For Site Monitoring

Harris offers the ReCon remote control and facility management system. The company says it offers capacity for an unlimited number of status, analog and control channels for radio stations, and is suitable for multi-site and multi-user operation.

ReCon is SNMP-capable and can be configured through existing data paths for large broadcast groups, networks or a single transmitter in a remote location.



ReCon communicates with broadcast, network and facility control equipment through an IP connection. The system uses serial interfaces with most transmitters and associated equipment, and enables the user to control and monitor equipment in local and remote sites that are typically unmanageable by traditional remote control units. Multiple transmitters can be managed at a single site, in addition to most transmitter facility functions including, RF controls, HVAC systems, security alarms and tower lights.

Harris says ReCon reduces the need for bulky wire harnesses, multiple relay panels and time-consuming installation and configuration, as it is a Windows-based software program that monitors and controls a transmitter from any location through computer access via your network or the Web.

For more information, including pricing, contact Harris in Ohio at (513) 459-3400 or visit www.broadcast.harris.com.

BTI tinyTools Offers Web-Based Remote Control

The tinyTools WRC-4 Web-based remote control from Broadcast Tools is a four-channel analog, digital and relay RC system. Features include a Web server with non-volatile memory; 10/100base-T Ethernet port; four channels of 10-bit analog inputs with a wide monitoring range; optically isolated status inputs; SPST relays; and front-panel status indicators. The front includes a temperature sensor and e-mail notification.

WRC-4 is SNMP-enabled and, the company says, RFI-proofed. It is supplied with removable screw terminals and loaded with a generic Web page that can be edited by the end user. WRC-4 works with dynamic or static IP addresses, but when

used with a dynamic IP, a cable or DSL router may be required. Multiple WRC-4s may be used with an existing Ethernet hub or switch.

Additionally, the WRC-4 may be set on a desktop, or mounted on a wall or up to four units with the company's RA-1 rack-able mounting shelf.

The tinyTools VAD-2 is a user-programmable two-input auto dialer with integrated stereo silence sensor and a multi-number voice/pager. The company says it is suitable for dial-out voice message notification.

The VAD-2 has two dry contact inputs and a stereo silence sensor, which dials sequentially up to four phone numbers and plays a user-recorded message corresponding to the tripped input. Up to four phone numbers and one pager phone number can be stored. The pager number may be associated with any of the two inputs and/or stereo silence sensor.

VAD-2 also is equipped with two SPST one-amp relays for control of external equipment. The SPST relays may be programmed for momentary, latching or tone duration operation. VAD-2 features remote or local configuration and message recording capabilities, with a recording time of 16 seconds. VAD-2 also works with the RA-1 mounting shelf.

For more information, including pricing, contact Broadcast Tools in Washington state at (360) 854-9559 or visit www.broadcasttools.com.



Autoswitch Rids DJ Headphones Of Digital Echo

Henry Engineering says its AutoSwitch is an audio switcher that eliminates the annoying echo and "flanging" effects heard by on-air talent in their headphones as a by-product of digital audio processing.

AutoSwitch replaces Henry's MonoSwitch, and also incorporates a stereo silence sensor. It can be used to switch to a backup audio source if the main source fails.

AutoSwitch has two stereo inputs and one stereo output. One input is normally fed with the stations off-air audio, and the second input is fed with "non-delayed" audio, such as audio from the console Program output or any pre-processor source. The Control input of the AutoSwitch is connected to the console's Mic Tally output, e.g., a spare contact on the speaker-muting relay.



The company says the AutoSwitch audio output should feed the studio monitor system, or at least the DJ headphone. When the DJ is not using the mic, the signal heard through the monitor system will be the off-air audio, as usual. However, when the DJ turns the mic on, AutoSwitch will switch to the non-delayed audio source, thereby eliminating the source of echo in the headphones. This audio switching is done electronically, so the transition is smooth and seamless, sounding like a rapid crossfade.

AutoSwitch also has an integral silence switcher. It can switch to a backup audio source if the main source fails or loses a channel, or if audio falls below the silence threshold for a preset time delay. When the Main audio source returns, it switches back.

For more information, including pricing, contact Henry Engineering in California at (626) 355-3656 or visit www.henryeng.com.

Leading POTS Codecs Compared.

	Comrex Matrix	Tieline Commander	Zephyr Xport
Audio Bandwidth @ 24 kbps @ 19 kbps	14 kHz 11.2 kHz	15 kHz 9 kHz	15 kHz 15 kHz
Direct Internet Software Updates	No	No	Yes, via Ethernet port
Digital PC Audio Input	No	No	Yes, via Ethernet port and supplied driver
Audio Metering (XMIT/RCV)	Transmit only	One-at-a-time	Simultaneous
Audio Processing	None	Simple AGC	Digital multi-band AGC with look-ahead limiter by Omnia
Remote Control	No	RS-232 and dedicated computer	Ethernet via Web browser
Auto Dial Storage	19 Numbers	50 Numbers	100 Numbers
Frequently-Used Settings Storage	none	none	30
Standards-based POTS Codec	No - Proprietary	No - Proprietary	Yes - aacPlus (MPEG HEAAC)
Transmit-Receive Quality Display	No	Yes	Yes
Contact Closures	2	2	3
Display Resolution	120x32 LCD	120x32 LCD	128x64 LCD
Analog Cell Phone Interface	Optional	Standard	Standard
Mixer Inputs	1 mic, 1 mic / line	2 mic / line	1 mic, 1 line
Phantom Power	No	No	Yes - 12 volt
Automatic Voice-Grade Backup	No	No	Yes
Power Supply	External	External	Internal auto-switching
Local Mix Audio Outputs Headphone Line Level	Yes Yes	Yes No	Yes Yes
Direct Receive Audio Output	No	Yes	Yes
Uses ISDN at the Studio Side for More Reliable Connections	No	No	Yes - your Zephyr Xstream becomes universal POTS and ISDN codec.
Available ISDN Option	\$850.00 (adds MPEG 1.3 & G.722)	\$850.00 (adds G.722)	\$495.00 (adds G.722 & state-of- the-art AAC-LD for high fidelity and low delay)
List Price:*	\$3,700.00	\$3,650.00	\$2,495.00



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TECH UPDATES

ModSci Releases Dual-Mode Software for FM ModMinder

Modulation Sciences developed a software package for use with its FM ModMinder digital modulation monitor. The software runs on a Windows PC and connects the FM ModMinder unit serially, via a COM port, either locally using a null modem cable, or remotely via modem.

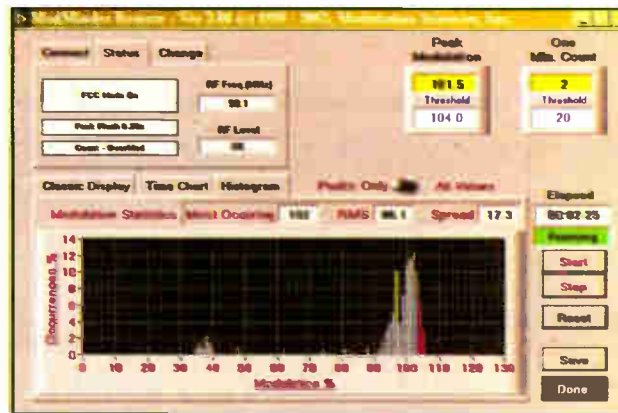
The ModMinder software package includes Mod Analysis version 2.00, which allows the user to monitor, capture and analyze modulation data in real time or off-line. The Monitor utility can be used in one of two modes: basic or advanced monitoring.

The Basic Monitoring mode provides real-time displays of peak modulation, over-modulation status alarms and a one-minute rolling count of overmodulation occurrences. The company says Basic Mode is optimal for standard studio monitoring.

The Advanced Monitoring mode provides a continuous bargraph display of average, peak and minimum modulation, and a cumulative histogram display that shows peak modulation or all values of modulation on an X-Y graph. A time chart shows

peak modulation over real time, and the data can be logged into a time-stamped file for off-line review and analysis using the statistical analysis tools.

Traditional histogram or 3-D "waterfall" plots can be created to visualize modulation trends or spot disturbances. Additionally, the threshold settings for the FM ModMinder can be changed remotely.



The ModMinder Histogram

Minimum system requirements are: Pentium 200 MHz; 64 MB RAM; 15 MB hard disk space; an RS-232C serial port; Windows 9X or 2000; and display resolution of 800 x 600.

For more information, including pricing, contact Modulation Sciences in New Jersey at (800) 826-2603 or visit www.modsci.com.

Videoquip Silence Detector Has Two Channels, Alarm LEDs

The Phase 3 model SD-2 from Videoquip Research is a two-channel device that detects silence or the absence of audio. Two detector channels monitor the A and B inputs. Each channel has an indicator for the presence of active audio, an adjustable silence level and an adjustable delay before silence notification occurs.

When a silence condition still exists following the delay period, the silence alarms are activated. The red Silence LED illuminates for the corresponding channel. An audible piezo alarm (debatable) is activated.



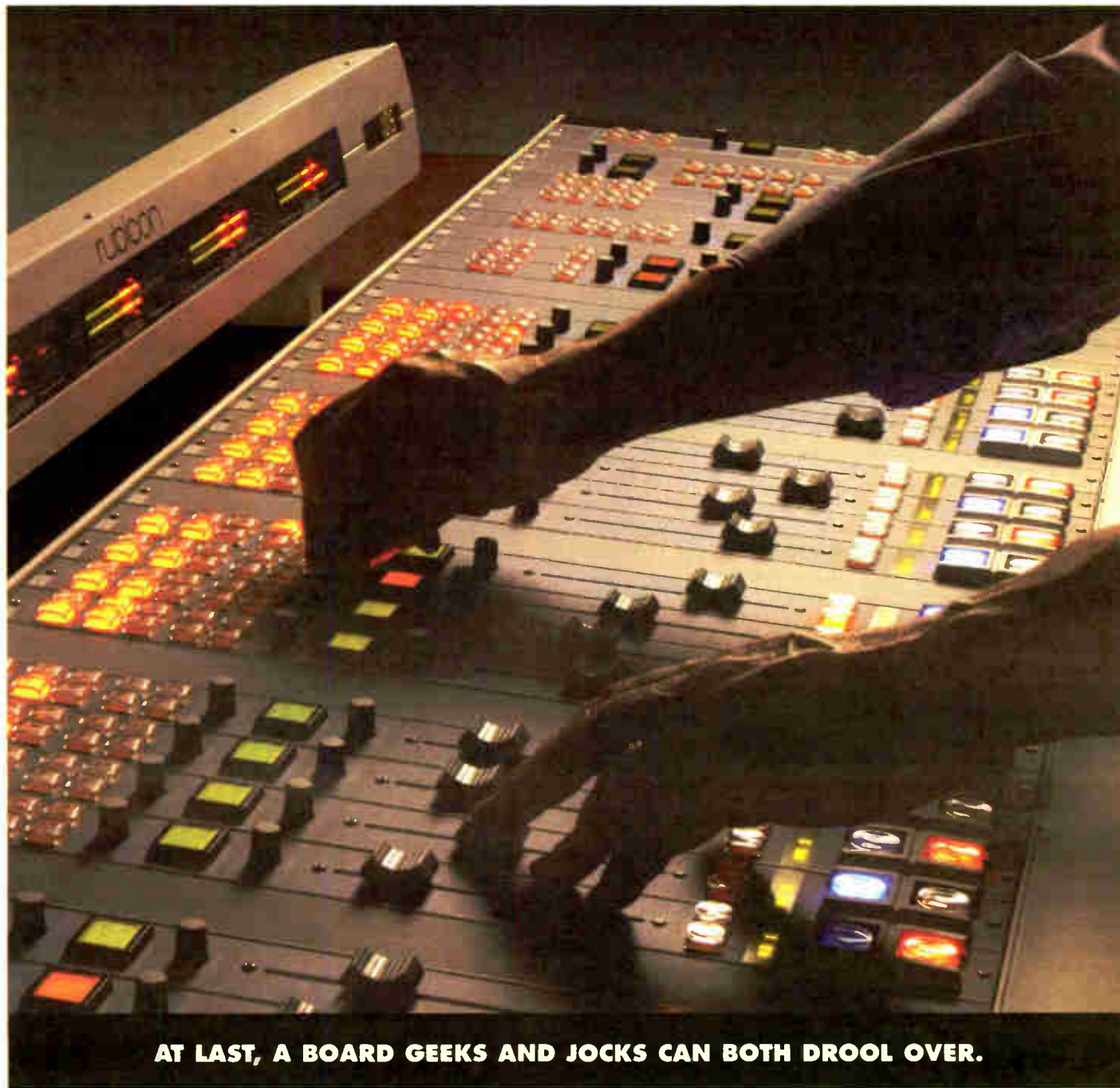
Two form-C gold relay contacts also are activated for each channel. These contacts can be used to control other remote devices, or to route active audio for back-up audio switching.

Relay connections are screw clamp terminal blocks. Audio inputs are balanced XLR. The silence level is adjustable between -40 and 0 dBm. The standard delay time range is adjustable from 1 to 50 seconds, but is optionally available from 1 to 10 minutes.

The SD-2 is housed in a half-rack enclosure, and is available for desktop or rackmount applications.

The power supply is internal, and the power cord is attached.

For more information, including pricing, contact Videoquip Research Limited in Canada at (888) 293-1071 or visit www.videoquip.com.



AT LAST, A BOARD GEEKS AND JOCKS CAN BOTH DROOL OVER.

Next Month in Buyer's Guide:

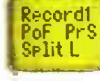
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Rubicon Control Surface™
32KB Digital Audio Router
RIOLink™ Remote I/O

Yet Rubicon is so intuitive, so comfortable, so easy to use, the weekend intern is sure to sound like a pro. Here's why:



Frequently used controls are always right at the operator's fingertips. And for the power-user, the multi-function "dynamic control matrix" provides quick access to deeper capabilities. In other words, Rubicon has a bucket load of features for the simplest or most complex of broadcast-related tasks.

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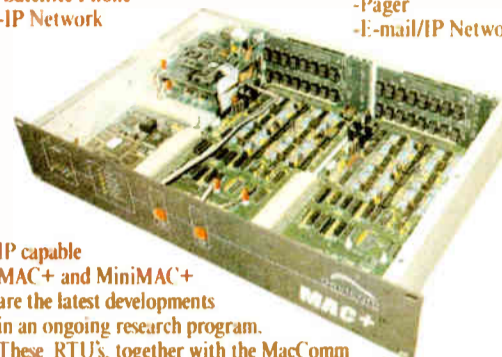
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MAC+ and MiniMAC+ are the latest developments in an ongoing research program. These RTU's, together with the MacComm and MacNet software, provide solutions that can meet needs from small single-station operations to large international networks.



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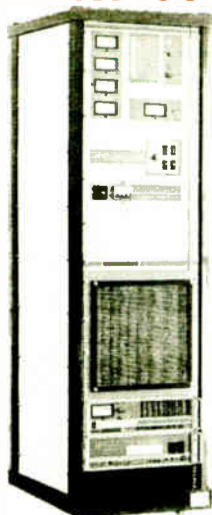


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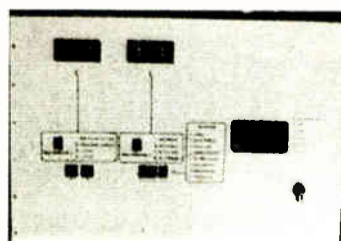


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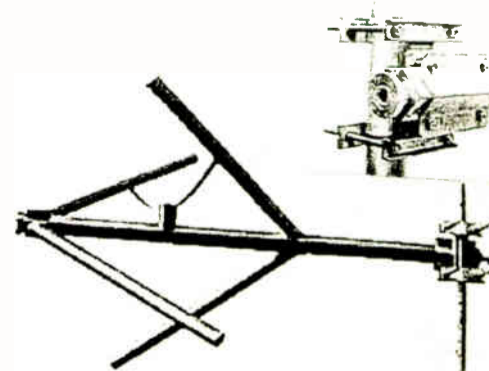


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USER REPORT

MDA-8 Minds the Digital Store

Titus Eight-Channel Switcher Monitors Sources In the 'Digital Domain' Via Six AES-3 Inputs

by Paul Shulins
Director of Technical Operations
Greater Media

BOSTON Lets face it. Analog audio is on its way out. Sure, we still see it in circuits leading to transducers, such as microphones and speakers. But everything in between rapidly is being replaced by digital circuitry, and audio is being transferred, distributed and processed as ones and zeros. Soon, just about every XLR plug you see will carry stereo audio as data with just three conductors.

Almost all audio processors these days have the popular AES/EBU input/output interface. It is also true that a growing number of excitors and audio processors no longer give you the option of putting analog audio into or getting analog audio out of their ports. Yes, we are firmly entrenched in the digital age.

Push-button ease

Recently I was planning the installation of HD Radio transmitting equipment, and one of the first things I noticed about the new STLs, audio processors, transmitters and excitors was that analog audio was no longer a practical option. After all these years of patch panels, Belden 8451 left and right cable pairs, and spade lugs, I found myself asking, should I just go digital at the transmitter site? It sounds cool, but will it really do me any good?

After all, the analog audio sounded just fine. And besides, it would be a lot of work to pull out all that analog wiring, and replace it with new digital wire, while keeping the place on the air.

The answer was yes. It did not make



Paul Shulins

sense to try to further complicate the site with expensive A to D converters and even more wires.

Going digital simplified things. It instantly cut the number of wires in half, rendering audio patch panels unnecessary. With the digital signal, RFI, hum and buzz were things of the past. The cabling was so simple that each XLR acted as its own patch point, eliminating the need for a patch-panel system.

I was still faced with a problem: How do you monitor your sources when they are all in the digital domain? Last time I tried to plug a pair of headphones into an AES audio source, all I got was buzzing, pops and a headache.

This is where the MDA-8 digital and

analog switcher monitor comes in. This device by **Titus Technological Labs** is a IRU unit that accepts up to six AES-3 digital sources, and up to two stereo analog

sources. It has eight large push-buttons on the front that allow you to select any of the sources, and feed a balanced analog output suitable for feeding a power amplifier (like a Crown D-75) so you can listen to your eight sources with the push of a button. The button for selected source is illuminated, and can be labeled nicely inside the lens.

In addition, each channel shows one green LED status indicator for channel signal preset. At a glance, you can see if you have a valid digital signal without having to listen to it. The unit also includes discrete silence-sense circuitry with adjustable level and threshold controls from the front panel, with discrete relay contacts for each chan-

nel so you can monitor your STLs remotely. The front panel has two pots, one for output level and a second to control the level to the headphone jack on the front.

A feature I find most valuable is the "preset button." How many times have you thought, "It sure would be nice to be able to return to a pre-set audio listening level with the touch of a button"? Larry Titus included a feature that allows you to set the output level to whatever you like, and after pressing the preset button, establish a reference level to which you can return in the future.

Having a good reference to go back to, especially in a noisy area like a transmitter site, is a welcome thing when you are trying to adjust audio levels and processing critically.

Other features include a universal power supply (no dreaded "wall wart" on this puppy), quick disconnect connectors for audio I/O and contact closures for silence sense, easy-to-view, peak-reading LED VU meters, and the ability to control and monitor the device remotely through a DB-9 connector. The device also will give you an individual dedicated full-time analog output for each of the six AES inputs, effectively giving you six discrete analog-to-digital converters.

Another notable capability of the MDA-8 is connectivity to the Internet by way of an RJ-45 jack on the rear. The MDA-8 has an internal Web server that can be attached to a local LAN or to the Internet. This access enables the user to switch remotely among MDA-8 sources and monitor status of each source from anywhere in the world.

There are a few of these types of devices stating to pop up in the market. I suspect in the not-too-distant future, more of us may be looking in this direction as we rapidly grow out of the analog jungle in which we have prospered for many decades.

For more information, including pricing, contact Titus Technological Labs in Connecticut at (860) 633-5472 or visit www.tituslabs.com.

TECH UPDATES

RDL ACM-3 Tests AM Noise in FM Transmitters

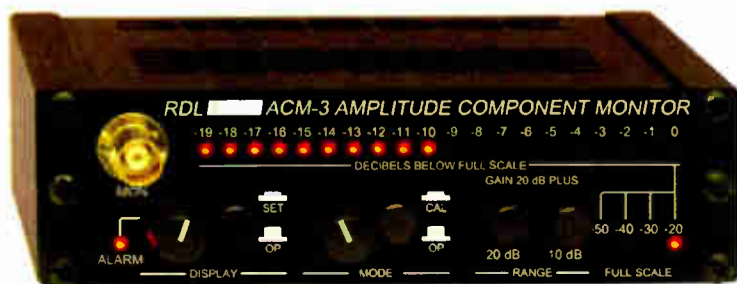
The ACM-3 from **Radio Design Labs** is a professional test instrument for measuring and monitoring the level of AM noise in an FM transmitter. AM noise is a direct product of bandwidth limitations in a transmission system, so the ACM-3 provides constant assurance of FM signal quality at the measurement point.

Installation consists of an included detector, fed by a directional sampling slug. A coaxial cable connects the detector to the instrument chassis, which mounts directly above the transmitter metering bridge or in an equipment rack using optional mounting accessories. A carrying case is available for portable use.

ACM-3 front-panel controls enable the setting of an alarm threshold and the calibration of the carrier level. In the operating mode, the ACM-3 monitors signal quality and provides an alert signal to the remote control when the threshold is exceeded. AM noise is displayed on a 20 dB red LED string display, front-panel switch-selectable in four ranges. Rear panel switches select de-emphasis and high pass filters. In addition to the alarm function, remote outputs are provided for the AM noise value and for the carrier level.

The ACM-3 replaces the RDL ACM-2 and is available through broadcast distributors. A discounted upgrade kit is available to ACM-1 and ACM-2 owners through SCMS until the end of 2004.

For more information, including pricing, contact Radio Design Labs in California at (805) 684-5415 or visit www.rdl.net.



Inovonics 531 Has Synthesized Digital Tuning

Inovonics replaced its first FM monitoring device, the Model 530 off-air Mod-Monitor, with Model 531. The company says the most notable upgrade is synthesized digital tuning, which allows remote selection of the several station presets. This feature allows a broadcaster to compare modulation and other signal characteristics with those of market companions.



Other features include a measurement utility for synchronous AM noise, selective measurement of RDS and SCA subcarriers and adjustment of peak flashers, dead air and other alarm functions. The 531 offers a preselector that accepts an antenna feed for off-air measurements, or may be connected to a high-level transmitter RF sample. A composite/multiplex input and output are offered, along with hardware tallies for the various alarms.

Metering is presented through three high-resolution bargraph displays, both for total modulation, pilot and subcarriers, and for the demodulated left/right channel stereo program signal. More of the signal analysis and presentation is under microprocessor control in the 531.

The receiver portion is a dual-conversion design featuring a FM demodulator, which the company says is largely unaffected by out-of-band modulation components. This feature permits the 531 to continue giving accurate FM deviation indications in the presence of digitally encoded IBOC sidebands.

For more information, including pricing, contact Inovonics in California at (831) 458-0552 or visit www.inovon.com.

TECH UPDATE

Dorrrough 40-A Features Remote Control, Power Supply

Dorrrough's Model 40-A analog loudness meter has a scale allowing 14 dB of headroom in 1 dB steps from -25 to +14. It is a standalone unit with an internal power supply, and features three-color LED display single-channel meters.



Remote control is now available for this unit, and accesses the functions of phase correlation display, peak hold, sum/diff and activating a reference mode allowing for accurate 0 setting within a .1 dB. A red LED notification alarm is present on the front.

The 40-B analog loudness meter is a scale variation of the 40-A and is calibrated in percent modulation, referenced at 100 percent. It has a lower scale in dB from -36 to +3 dB. The company says it is suitable for accurate peak protection at transmission sites.

The 40-C analog loudness meter has a scale allowing for 20 dB of headroom in 1 dB steps. The headroom scale is identical to the AES/EBU digital standard.

The mini-DIN connector on the 40 series rear panel provides access to alarm relays, meter mode functions and peak hold modes. XLR, dip-switch assignments and the mini DIN are standard on Dorrough units.

For more information, including pricing, contact Dorrough in California at (818) 998-2824 or visit www.dorrrough.com.

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TIPS AND TRICKS

Get Beyond Subjective Metering

Until Standards Are Agreed Upon, Monitoring Loudness Remains a Mix of Art and Science

by Blažo Guzina

In 1979, the Buggles foresaw the end of radio and the beginning of the video music age with their pop hit "Video Killed the Radio Star."

Despite gloomy predictions that the technological challenges of television and then the Internet would jeopardize its future, good old radio is still alive and kicking.

In fact, radio has proven itself capable of embracing new technologies, such as satellite and terrestrial digital services and the implementation of surround sound programming along with stereo.

Old illness

While analog studio equipment is making way for better — and often less expensive — digital systems, and while automation and computerization are more common, one old illness has yet to be cured: discrepancies in sound levels between various types of sound programming put together in sequence.

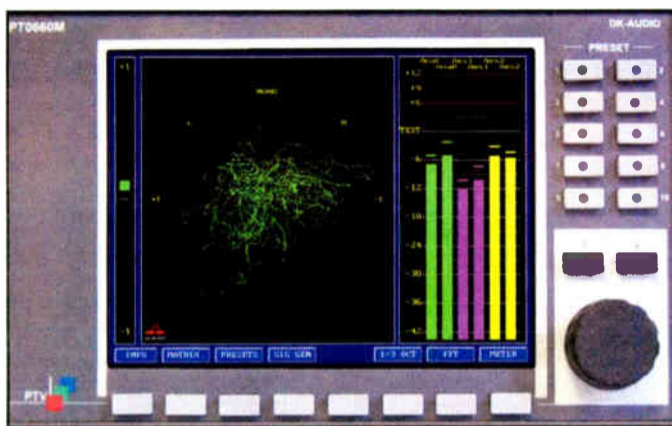
Radio listeners are aware of unequal audio levels of mixed speech and music programs. While some can understand and accept it, a lot of listeners are annoyed by, for example, the difference in sound levels between commercials and the main program.

Thanks to the inventor of remote control, listeners can solve the problem themselves by keeping a thumb on the volume or mute button; although, in the long run, this may be tiresome and listeners can equally use the remote to tune away from any offending station.

According to recent acoustic research, commercials sound louder simply because too many words are packed into a 30-second sequence. A commercial composed of

punchy music and voiceover always overpowers a predominantly speech-based program.

The common rule that commercials simply must be compressed also lends to their increased volume. Compressed sound always sounds louder than uncompressed.



The DK-Technologies PT0660M Multichannel and Surround Analyzer

Compression has a long tradition, dating back to the time when radio was mainly amplitude modulated. It assured the program would stand out under poor reception conditions, for instance when listening to car radios.

Advantages, disadvantages

Despite all the efforts thus far, professionals, not only in radio but also in post-production studios and television stations, have yet to answer the question of how to deal with the problem of loud commercials.

The sound levels of programs mixed with commercials are set during recording and post-production, according to prescribed levels, national preferences and the type of work being done.

But, while broadcast studios mainly use peak program meters (PPMs), recording and post-production studios primarily work with volume unit (VU) meters, which also are practically a broadcasting standard in the United States.

PPMs and VUs each have advantages and disadvantages, the former being better for measuring peak volume in order to pre-

vent distortion, clipping and overdriving a transmitter; the latter being most reliable when it comes to measuring the average volume of signals.

Due to the lack of internationally accepted standards, PPMs and VU meters in different countries work with different settings not only for 0 dB and for test level, but for the entire working range.

When the VU meter appeared in the 1920s, its ballistic characteristics were initially set with the intention of approximating the response of the human ear.



The Logitek Super VU Bargraph Audio Meter

Even though the VU was designed as a tool for metering the perceived loudness level of a program, neither the VU nor PPM can do the job satisfactorily. Neither comes close to performing as well as a human ear can.

Subjective feeling

Furthermore, broadcasters know from psychoacoustic studies that measuring discrepancies in sound levels between different types of programs is only possible — with varying degrees of success — by using a loudness meter.

The aim of such an instrument is to approximate the objective average readings as closely as possible to the subjective feeling of the loudness of sound, while enabling prevention of sudden extreme peaks.

In past years, manufacturers and standards organizations further analyzed the sound issue in an attempt to set a universal recommendation for measuring perceived loudness.

Consequently, several manufacturers introduced loudness meters. Devices by companies like Dorrrough, Dolby, Chromatec and TSL simultaneously display the average loudness and program peaks.

The idea is a good one. It allows a sound operator to keep an eye on a simple-to-read scale, monitoring both loudness and peaks that may overload the

transmitter, and to respond to audio signal transients, sudden signal bursts that could cause clipping.

However, different algorithms applied in each instrument make the adoption of a standardized way of measuring and displaying loudness impossible.

Growing interest

The International Telecommunication Union has initiated tests that could result in a recommendation for the measurement of loudness.

These include subjective evaluations of different types of broadcast programs, and determining whether existing measurement methods correlate well with the results of the subjective tests.

While broadcasters and studios are still waiting for the draft ITU recommendation and a possible standardized meter, existing loudness meters continue their coexistence with the inevitable human operator with good ears and a finger on the volume control of the output signal.

For radio broadcasts, subjective monitoring of audio with a quality pair of loudspeakers remains indispensable.

The introduction of surround sound makes the issue more complex due to the need to control the content of discrete 5.1 surround sound signals.

DK-Technologies (formerly DK-Audio), which produces Jelly-Fish MSD600M, MSD600M++ and PT0660M multichannel meters, responded to the interest in loudness measurement by implementing the Leq scale — loudness equivalent to a weighted noise — introduced by Dolby Laboratories.

However, there is still a great deal of confusion surrounding these scales due to the lack of standardization, forcing manufacturers to follow their own preferences. Companies are responding in part by building in the capability to update software via the Internet, as DK has done, so that meters can cope with future standards.

The introduction of surround sound further emphasizes the need for a standardized loudness meter that would help a human operator have full control over a complex signal output. 🌐

TECH UPDATES

Burk Interfaces Offer Connectivity To Remote Control

Remote control manufacturer Burk Technology is shipping the GSC/VRC Web interface and ARC-16 Web interface, which the company says provide Web connectivity to Burk's line of transmitter remote control systems.

Each provides an HTML-based display for remote monitoring and control from the Web. E-mail alarm capability sends alerts to pagers, PC, cell phones, PDAs or any device that receives e-mail or SMS. The interface also provides direct TCP/IP connectivity for use with remote control system software.

Burk also debuted Lynx 5 software for the GSC3000 and VRC2500 systems. Lynx 5, featuring firmware version 5.0, provides real-time data updates from the remote site. The company says tools in the Custom Views feature allow greater detail for customized site displays, and a set of U.S. maps is included for geographic-based drill-down views. Lynx 5 includes an on-screen data charting utility for history analysis.

Version 5.6 firmware for the ARC-16 transmitter remote control system supports 4800 and 9600 baud rates, allowing ARC-16 users to take better advantage of digital STLs. The company says the faster speeds enable an improved response, especially for broadcasters monitoring multiple sites.

The firmware update is available as part of Burk Technology's Good As New

upgrade program, available factory-direct with a renewed two-year warranty to ARC-16 users, and featuring manufacturing, cosmetic and firmware updates.

For more information, including pricing, contact Burk Technology in Massachusetts at (978) 486-0086 or visit www.burk.com.

Lectrosonics Provides Sound System Test, Measurement

Lectrosonics says it has entered the test and measurement market with its TM400 wireless system, designed for use with sound systems.

The TM400 uses the company's digital hybrid technology to encode the audio signal into a 24-bit digital data stream, then transmit it over an analog FM UHF carrier.

The company says this approach avoids the use of an analog compander while maintaining frequency response of 30 Hz to 20 kHz +/- 1 dB and a signal to noise ratio of 107 dB. By using the analog UHF transmission scheme and high RF power, the TM400 extends range and promises dropout-free audio.

The TM400 system consists of the UH400TM 100mW plug-on transmitter, which provides phantom power for use with a calibration microphone; the R400 receiver; and a waterproof carrying case. Initially, the company will be selling the systems in Block 22 and Block 27.

For more information, including pricing, contact Lectrosonics in New Mexico at (800) 821-1121 or visit www.lectrosonics.com.

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RCA AMN-1 freq & mod monitor with instruction book, \$350 +shpg. Donald De Rosa, WAMF, 113 Schuyler St, Fulton NY 13069. 315-593-1300 or wamf1300@alltel.net.

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Telex FMR-50 wireless receiver, frequency 170.245 MHz, \$20. P. Russell, Bowdoin College, Sills Hall, Brunswick ME 04011. 207-725-3066.

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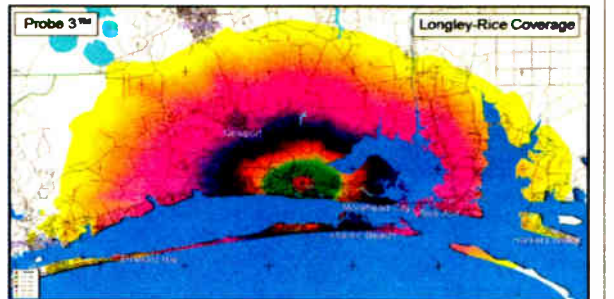
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◆ READER'S FORUM ◆

Radio World, November 17, 2004

GUEST COMMENTARY

The Pie-BOC in the Sky

The Author Says 'IBOC on AM Is a Solution Looking for a Problem'

by Mike Shane

I applaud my colleague Robert Savage for his astute observations about the Standard Broadcast (AM) band and how people use it (*Reader's Forum*, Oct. 6). I would like to expand upon his comments by noting that usage and habits of listeners in no way affect the physics of signal propagation.

Signals propagate, whether or not someone is listening to a distant station not intended to provide primary service to his area. Its signals still "skip" at night when the absorptive D layer disappears, whether or not a station is on a designated clear channel. This is why there is so much background hash on the designated local channels. Two hundred-odd, 1,000-watt signals on each channel each contribute to the higher noise floor at night, when all those non-directional signals are "skipping" in all directions.

(sidebands off to either side of 660) be able to compete with the 50-kW analog carriers booming in on 650 and 670?

If this argument needs any more fuel, the recent objective to reduce the analog bandwidth announced by Jeff Littlejohn and Clear Channel proves my point. If the present 10 kHz analog sidebands can produce interference — and we all know they do but only on a part-time basis because they are analog — how much worse will 100-percent-duty-cycle digital sidebands produce similar interference? And won't the character and high average power of that new interference render more adjacent signals unusable?

To quote Jeff's own statement, albeit out of context, "Whether it's analog or digital doesn't matter."

I still believe IBOC on AM is a solution looking for a problem. It is not optimum usage of this band of frequencies and its characteristics. A new band should have

Isn't having 50 kW signals running IBOC sidebands at night the equivalent of having a 5,000-watt jammer on adjacent frequencies?

— Mike Shane

The arguments seen here and elsewhere about "daytimers after dark" creating great interference problems are ridiculous compared to the damage done to local channels by having nearly everyone running 1,000 watts at night. But I digress.

Bear with my oversimplified math here, but isn't having 50 kW signals running IBOC sidebands at night the equivalent of having a 5,000-watt jammer on adjacent frequencies? How will any signal on an adjacent frequency be able to be heard over the noise that will be generated? Or better yet, why would anyone want to listen to it?

By way of example, my station's 54-watt night signal covers its target area well, and does little to interfere with anyone else's reception, save anyone trying to DX 660 kHz in our immediate area. In fact, there would be little to hear most of the time. Additionally, the signal wouldn't have been licensed if it put any kind of interfering signal into the dominant station's protected area.

However, there are closer Class As on 650 and 670, which sometimes put in "peeling the paint off the wall" signals into our service area. If these stations are running IBOC sidebands — and let's call them what they are: not carriers, but sidebands on the already existing carrier, just like the analog sidebands that create "monkey chatter" now — how will my 54-watt signal be able to compete with 5,000-watt jammers right on my frequency?


On the other hand, how will my station's effectively 5.4-watt digital signal

been, and should still be, chosen. Those who wish to ride the old band down 'til the end could do so in peace. Either way, the consumer needs a new radio, but with a new band, old radios wouldn't have been made obsolete until there was nobody transmitting anything to hear rather than having signals fighting for their lives against what amounts to legalized jamming. Who knows how long the old band would hang on if the programming is worth listening to and can indeed be heard?

The FCC says it wants to bolster "local" radio. Seems like the deck is stacked against local radio (again). It was the Class A operators who didn't want to move to a new band and give up "sky-wave" service they can't even sell that in part gave us this "IBOC-cle" we now face, which will effectively jam out local service in many areas. As I've said before, this has nothing to do with audio quality to the consumer; it's a spectrum grab plain and simple.

It's also short-sighted. With today's technology (not tomorrow's pie-BOC in the sky) those operators who objected to losing coverage area could have been compensated in a new band with additional allocations, which they could have programmed centrally at little, if any, additional recurring cost.

I don't expect the steamroller will be stopped, and I regret that one day I'll be able to say, "I told you so."

The author is operations manager of KCRO(AM) 660 in Omaha, Neb. 

Our readers have something to say

"I read the magazine nearly cover to cover before leaving the post office."

Gary Kline
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◆ READER'S FORUM ◆

IBOC and AM Bandwidth Reduction

Congratulations and kudos to Jeff Littlejohn for his recommendation to restrict AM bandwidth to 5 kHz.

In addition to the benefits he eloquently states in your article, it has the additional benefit of more effectively allowing audio pre-emphasis out to about 4.5 to 5 kHz followed by a "brick wall" 5 to 5.5 kHz filter. This will more effectively compensate for the consumer radio's restricted bandwidth and in time will



allow the consumer radio manufacturers to increase their bandwidth to the 5 kHz region. The net result of both actions

more investigation by our engineering community. Why does this degradation appear to be a smokescreen for IBOC-quality issues? By degrading analog AM to 5 kHz mono, IBOC will seem like a huge improvement — although analog stereo out to 10.2 kHz is equal to or better-sounding than IBOC in some instances. Perhaps the reasoning is, "Let's make analog AM sound so bad now that IBOC will seem like a good investment."

Is that why Clear Channel killed the spectacular stereo music from KABL? Downgrade their decent-sounding stations to telephone audio in advance of IBOC?

To those who say there are no decent-bandwidth AM radios, look no farther than your local Wal-Mart and Dollar General stores. They both have a portable \$5 AM/FM radio with wide AM bandwidth beyond 5 kHz. There also is a "one-chip" AM tuner, which typically uses a "barn door" ceramic filter, and even Ford has an AMAX (7.5 kHz) bandwidth radio in its 2005 models.

Congratulations and kudos to Jeff Littlejohn for his recommendation to restrict AM bandwidth.

— George Woodard

(more effective pre-emphasis as well as better radios) will result in better-sounding analog AM — not worse.

*George Woodard
Consultant
McKinney, Texas*

I read the news with amazement. The headline, "Clear Channel Radio Reduces AM Audio Bandwidth," requires much

I just don't buy this AM analog audio downgrade as an engineering improvement. Clear Channel can do what they want with the audio quality of its stations, but its business decisions should not be mandated to the rest of the AM broadcasters via the NRSC.

*John Pavlica
System Engineer
Toledo, Ohio*

The whole IBOC situation makes me sick.

Now that KCBS turned on its IBOC garbage, I can't listen to KDWN Las Vegas anymore. They also are boogering up KCBC on a couple radios. Not to mention it makes KCBS themselves unlistenable on all of my radios — the newer factory radio in my truck, included.

The whole "promotion of new technology at all costs" mentality is sickening. This calculated raping of the radio industry for a bloody buck is depressing and

**Transmitter/Tower Site Security
Do's and Don'ts**

As the story on page 1 of this issue reminds us, radio engineering can be a dangerous job — and not just because of equipment or tower hazards.

Many consulting engineers have a set of "do's and don'ts" when it comes to unattended transmitter/tower site security. These are highlights from the list of Bob Clinton, senior engineer at Cavell, Mertz & Davis Inc., a broadcast and communications consulting engineering firm in Manassas, Va.

- ✓ **DO** lock perimeter fence/gate.
- ✓ **DON'T** simply use some off-the-shelf alarm system because they can be defeated fairly easily and quickly. Use a commercial alarm system connected to a monitoring service.
- ✓ **DO** lock building/tower gate as well as fences around guy anchors.
- ✓ **DO** have fire detection and prevention. Integrate with remote control.
- ✓ **DON'T** use booby traps. Serious liability issues arise if someone is injured or trapped, even if it "gets" a perpetrator.
- ✓ **DO** consider using two sets of keys for a site: a master key for everything and a submaster or separate set for contractors such as mowers and landscapers.
- ✓ **DO** fence in generator and fuel tank.
- ✓ **DON'T** alienate close residential neighbors (give them T-shirts, and maybe even an occasional concert or game ticket). Good neighbors can be your best allies when it comes to unwanted activity at your site.
- ✓ **DO** check with local law enforcement to see if you can get a regular courtesy security visit to assist your security planning.
- ✓ **DON'T** be in the dark. Keep it bright — most intruders will avoid places that have a well-lit exterior.
- ✓ **DO** put iron bars over any windows (HVAC vents/louvers). However, be aware of potential zoning and fire code issues if blocking a fire exit.



A security fence surrounds Cox Radio's WKHK(FM) in Richmond, Va., where Jon Bennett is chief. A generator is visible on the platform.

Got a safety tip to help your colleagues? Share it with us via e-mail to radioworld@imaspub.com.

— RW

Corrections

The story "Vehicle Signal Services Test, Remain Hopeful" in the Oct. 20 Issue was by Randy J. Stine. The article's byline was omitted.

The caption on page 7 of the Nov. 3 issue was incorrect. The photo shows John Dickey, executive vice president of radio for Cumulus Media, and David Gleason, president, SIP, Univision Radio.

an AM. It is not some flawed technology that will "save the AM band." It is good programming. Last I looked, the AM band did not need any saving, except from those who would destroy it while they walk away from the burning debris, giggling as they count their new money.

*Paul Shimm
Chief Engineer
Stockton, Calif.*

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Telephone: (703) 998-7600 • Business Fax: (703) 998-2966 • Editorial Fax: (703) 820-3245
E-mail: radioworld@imaspub.com • Web site: www.rwonline.com

—ADVERTISING SALES REPRESENTATIVES—

US East: John Casey	330-342-8361	Fax: 330-342-8362	e-mail: jcasey@imaspub.com
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Japan: Eiji Yoshikawa	+81-3-3327-2688	Fax: +81-3-3327-3010	e-mail: caliems@msn.com
Asia/Pacific: Wengong Wang	+86-755-5785161	Fax: +86-755-5785160	e-mail: wwg@imaschina.com
Latin America: Alan Carter	703-998-7600 x111	Fax: 703-671-7409	e-mail: acarter@imaspub.com

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