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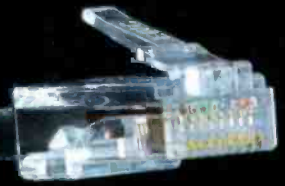

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Contents

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THE RADIO TECHNOLOGY LEADER
Radio Magazine
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October 2005 • Volume 11, Number 10

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Features

Columns

Departments

ON THE COVER:
When seen from above, the destructive power of Hurricane Katrina is not so obvious. Photo by Jeff Schmaltz of NASA, MODIS Land Rapid Response Team.

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*Audio over IP and wi-fi software module for all Tieline G3 codecs available late 2005.
Compatible with [1]Comrex Matrix, Blue and Vector Codecs. [1]Comrex and associated trademarks are the property of Comrex Corporation

Currents Online

Harris, Neural Host Live 5.1 Broadcast

Harris provided a live 5.1 surround sound broadcast of two local Philadelphia FM stations during the NAB Radio show.

Priestly Joins Ibiquity

As director of international broadcast business development, Perry Priestly will broaden the corporation's efforts to roll out HD Radio digital AM and FM technology in markets around the world.

HD Radio
Pure Digital. Clear Radio.

EAS in Transition

The FCC is looking at ways to improve the system to make it an all-hazard warning system.

Next NAB Leader Possibly Chosen

Several media outlets are predicting that the NAB has chosen David K. Rehr to be the next president of the NAB.

Harris Acquires Leitch

Total price consideration, net of cash on hand, will be about US$450 million.

Site Features

NAB Radio Photo Blog

Don't miss any of the sights of the 2005 NAB Radio Show in the *Radio* magazine NAB Radio Show Photo Blog.

119th AES Photo Blog

We also have the views from the 119th AES Convention in New York.

Industry Links

Schools, museums, associations and more.

2005 Product Source

The September issue included the annual *Radio* magazine Product Source. Access the Product Source online as well.

Applications & Solutions

Looking for specific articles relating to a type of product? We provide easy links to technology through the Applications & Solutions section at www.beradio.com. Click on a product category to see articles relating to your interest.

Advertiser Links

Web links to the advertisers in the October issue.

Industry Events

The *Radio* magazine Industry Events section lists upcoming conventions and conferences.

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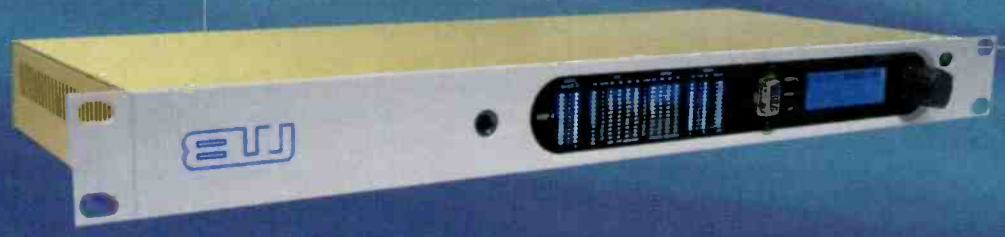

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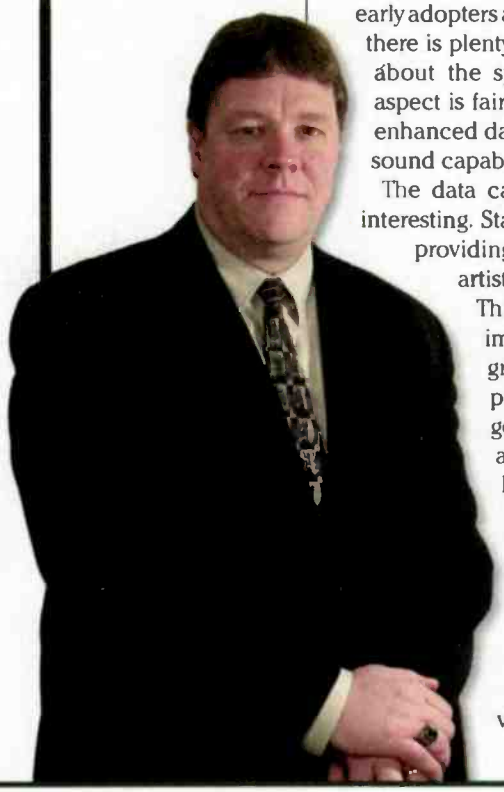
Getting it

The 2005 NAB Radio Show is behind us. Overall, it seems that it was a good convention for the exhibitors and attendees. Even the NAB was pleased, because the event attracted about 400 more people than it did in San Diego last year.

Unfortunately, I was not able to attend many of the sessions for more than a few minutes. The topics were interesting and echoed the tone on the exhibit floor with their focus on HD Radio. Like it or not, the IBOC rollout has begun.

I spoke to several manufacturers who have an interest in the HD Radio rollout. Most of them said the same thing: stations are finally getting it. While there are still many opponents to the Ibiquity system, even these people are beginning to acknowledge that the system is here and is seeing acceptance. Because of this, the time has arrived for the unconvinced to take notice and learn what must be done to install the system.

For those who have supported the IBOC rollout, "getting it" has a different meaning. Instead of catching up with the crowd, the early adopters are beginning to realize that there is plenty that they still don't know about the system. The transmission aspect is fairly straight forward, but the enhanced data, multicast and surround sound capabilities are less cut and dry.



The data capabilities are particularly interesting. Stations have discovered that providing simply the song title and artist name are the minimum. This program-specific data is important, but providing program-relevant data and non-program-associated data are going to aid listener interest and provide the next challenges to the station.

Back to the convention. The question that I am always asked on the convention floor is, "What have you seen that is new?"

Like most of the fall conventions, this was not a venue for product introductions, but for product updates. Many of the new products shown in the spring were shown in Philadelphia with notes that they are now shipping. This was repeated over and over, but there were a few exceptions.

Several of the automation manufacturers, including Broadcast Electronics, Enco, Mediatouch and Prophet, demonstrated additions to their systems to provide the data enhancements. I particularly liked the updates that allow data to be read from a CD player so that program-associated data can be displayed for these sources. In addition, interfaces are now being shown to allow instantaneous updates to the PAD stream for last-minute information.

Interest in providing methods to create podcasts is still high. Several loggers were shown that can fulfill not only the station's need to provide as-aired affidavits, but also serve as the interface for the podcast generation.

The overall approach from previous years of opening the convention floor on Wednesday evening and Thursday and Friday afternoons worked well. However, the 8:30 a.m. to 3 p.m. hours on the last two days was odd. Unfortunately, these hours did not attract more attendees to the floor in the morning. The convention floor could just as well have opened at 9 a.m. or 10 a.m.

It seems that the NAB Radio Show has seen another successful year, but there are still concerns about the longevity of the convention, but for now it is healthy.

Next year, the convention heads to Dallas and joins with the R&R Convention. This raised some eyebrows too, particularly because the NAB Radio Show began as a programming convention and tried to branch out to cover sales, management and engineering interests. Joining with a programming convention may help increase attendance, but I doubt that it will be the magic combination to propel the fall convention forward. The last time a joint convention was tried in the fall—the World Media Expo—it did not provide such a stellar result.

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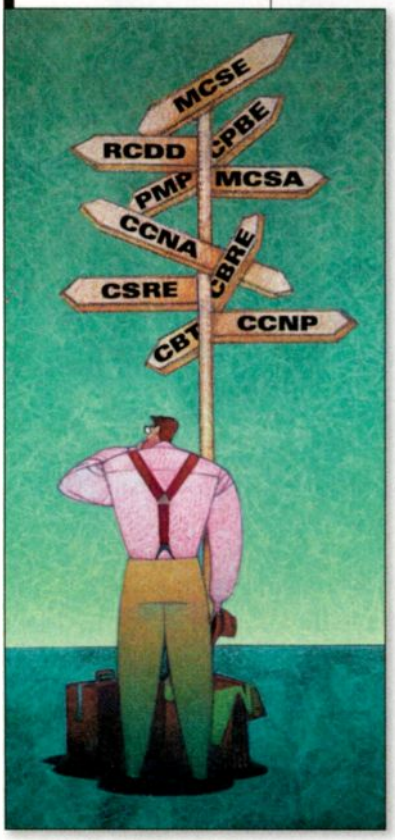
Investing in people

By Kevin McNamara, CNE

I consider the most formative years of the broadcast industry to be from the early 1970s to the present. It was in this period of time we first saw the transition of listeners moving from the heritage AM powerhouses to what would be the dominant FM medium.

Being the best wasn't just about having the best programming. As the quality of FM receivers improved, so did the reality that the quality of the technical product needed to keep up and, thus, someone coined the phrase "listener-fatigue." In the programming world, this had two connotations: 1) listeners would spend more time listening to you and not a competitor, and 2) random listeners would likely stop at your station just because it sounded so good and the ratings would follow.



Choose the certification that not only reflects your own career experiences, but also fits with your career goals.

I'm not sure if any of this is true, but it spawned a technical evolution that brought us improved transmitters, better antenna systems and the multiband audio processor. More recently, the evolution from analog to digital technologies has created the need for additional skill-sets for engineers and people involved with the operation of a facility.

There has been a shift in importance from an industry that felt success was measured directly as function of its programming (and more particularly its air personalities), to one where the technical product, whether resulting from improved on-air product or creating efficiencies that reduce costs, reigns supreme. Employees now need more skills and a broader base of knowledge than ever before. Acquiring and maintaining the skills specific to the various technologies is essential in the day-to-day activities of the engineering staff. But, it is also important not to forget that engineers are also managers; while perhaps not always possessing the title, they are typically the common hub that is required to interact and support the other business functions. An engineer is generally the project manager of a new facility or upgrade projects. It is not hard to see that investing in your best assets, your people, is not simply to help them progress as individuals, but will also help the company realize a significant return on its investment.

Proof of performance

When it comes to supporting network infrastructures, most major manufacturers of software and hardware prefer that problems be handled by people and companies that are certified in their product. From a manufacturer's point of view, a certification program provides two benefits: it reduces the number of specialists the company needs to employ directly to handle customer problems, saving substantial expense, and certification programs make the same manufacturers a lot of money with education programs and testing fees. What makes this even better for them is that the certification programs are continually changing to reflect new products and therefore require that certifications be periodically updated, which means plan on budgeting for the appropriate continuing education.

Microsoft offers a wide range of certifications for all of its product lines. While the majority of them are for people interested in programming and writing code, there are three I would recommend for personnel involved with maintaining the Windows-based networking platform or general office applications.

The Microsoft Certified Systems Engineer (MCSE) is perhaps one of the most useful certifications to possess. Within the MCSE program, there are several tracks that an engineer can pursue depending on a particular networking platform/version, i.e. Windows 2000, Windows 2000 Server. The core focus is on networking technologies along with system administration competence. Along with the specialization you will be required to select elective specialties, such as messaging or security. There are also upgrade paths you can take to stay current with new versions.

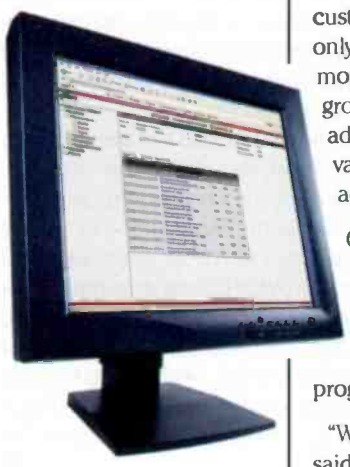
The Microsoft Certified Systems Administrator (MCSA) deals primarily with the administration of Windows-based network platforms and less emphasis on the networking knowledge, therefore the requirements are somewhat less than that of the MCSE.

The Microsoft Office specialist certifies proficiency with the suite of office products and the MS Project application. The certification requires the successful completion of tests for each of the individual products with the Office Suite, i.e. Word, Excel.

Cisco is the largest supplier of network routing equipment and high-end IP networking hardware. It offers a

Shrinking Revenues?

dMarc's new revenue solution gains momentum



RevenueSuite's Online Control Console keeps you informed.

The chase for new revenues has exasperated radio execs for what seems like years, yet some are now starting to see light at the end of the tunnel. RevenueSuite, a newly launched revenue-on-demand program from dMarc is finding revenue streams where none existed before.

Offered exclusively to Scott Studios and Maestro customers, RevenueSuite has been on the market only a few months, yet it is already syndicated into more than 250 stations. That makes it the fastest growing new revenue solution in the industry. An additional several hundred radio stations are in various stages of review and/or pre-installation, according to dMarc management.

One of the early adopters is Nassau Broadcasting Partners, headquartered in Princeton, NJ, and serving multiple markets in the Northeastern U.S. Nassau recently committed all 55 of its market-leading stations to the RevenueSuite program.

"We give RevenueSuite a resounding thumbs up," said Nassau's Senior Vice President of Engineering Tony Gervasi. "It's performing exactlyas dMarc said it would. The best part about it is that we literally set it up, turned it on, and it operated seamlessly with our Scott Studios (SS32) systems, generating revenue. Prior to installing it group-wide, we put it through numerous performance tests. We found that RevenueSuite was easy to install, highly intuitive, hands-free and reliable. Now it's up and running, generating revenues across our network of stations."

Other managers report liking the fact that, once RevenueSuite is installed, it requires virtually no traffic management or operational maintenance. "After you close the logs for the day," said dMarc President Ryan Steelberg, "the RevenueSuite program begins to fill unsold and designated avails automatically without the need for station overhead or local trafficking. You can turn it on, and the system will run autonomously while providing real-time revenue reports and local control through a simple-to-use web-based interface. The RevenueSuite program is made available to any Scott Studios or Maestro enabled station." ■

For more information on RevenueSuite, check out the company's online site at www.dmarc.net.

variety of certifications related to not only its own products, but it also provides a valuable foundation for advanced networking fundamentals. If you are involved with any networking infrastructure design or operation, these are valuable certifications to possess. The core certification programs that should be considered follow.

Cisco Certified Network Associate (CCNA) is the entry level certification that provides a solid foundation of knowledge to install, configure and operate a variety of specialized IP router products for small networks.

Cisco Certified Network Professional (CCNP) is the professional designation that builds on the CCNA and provides the additional skills that can be applied to large-scale network infrastructures.

If you are involved with the design and installation of structured cabling systems, particularly that related to networking, consider certification as a Registered Communications Distribution Designer (RCDD). Offered by BICSI (www.bicsi.org), the RCDD designation has become the defacto certification for anyone involved with the design, installation and troubleshooting of any cable or wireless-based infrastructure. There are a variety of specialties within the program ranging from wireless design to outside plant cabling.

While not a technical certification, another program for people who are involved with the management of projects is the Project Management Professional (PMP) designation. This program is recognized, and in some cases required, by virtually all major companies where project management is an active part of their business. Certification requires a great deal of coursework and a test. There is also a prerequisite that the candidate possesses a minimum amount of project management experience, which for most engineers should be no problem to meet.

I would be remiss if I didn't mention the certifications offered by our own SBE. These, after all, represent the core activities that you are involved with in your daily activities.

Employers need to consider the value added by having employees prepared for the ever increasing complexities of broadcast operations and provide incentive programs for educational reimbursements or grant time off for people that take the initiative. If you are work for a company that has yet to realize the benefit, seek the certifications that you feel are important. These are highly marketable certifications and I'm confident you will see your own "return on investment" in a short time.

McNamara is president of Applied Wireless, Elkins Park, PA.

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- Modular Architecture
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XM plans terrestrial wireless operation

By Harry Martin

A proposal by XM Satellite Radio to acquire terrestrial Wireless Communications Service (WCS) frequencies has radio broadcasters up in arms. Since the inception of satellite radio, broadcasters have fought the addition of terrestrial radio capability because it would permit satellite operators to compete with local over-the-air radio.

XM now has applied for FCC consent to acquire terrestrial WCS frequencies. The frequencies in question are held by a company that obtained them in an FCC auction of WCS spectrum in 1997 but has not initiated any type of service on them. After the FCC's Wireless Telecommunications Bureau, which oversees WCS frequencies, recently placed XM's application in the bureau's special fast-track "streamlined" processing system, the NAB petitioned the FCC to deny the application or at least remove the application from streamlined processing.

In its application, XM states that grant of the application would allow XM to accelerate development of a system capable of providing a wide range of innovative mobile multimedia subscription services, similar to those under development in other frequency bands by other companies. In its petition, the NAB argues that XM may use the frequencies to provide local radio service and other services that differ from market to market and are sold to subscribers together with XM's national satellite radio service.

XM recently announced that it will begin broadcasting local emergency alerts in the Washington, DC, market. XM will receive from local government officials in a Washington suburb the same alerts local radio stations receive. XM will broadcast the alerts on the same channel it uses in Washington to broadcast local traffic and weather.

Satellite radio constitutes a direct competitive threat to traditional analog radio in terms of audience and revenue. Digital technology not only provides better sound quality than analog, it makes it possible for satellite operators to reach a national audience, and a mobile audience, with multiple types of programming on a large number of channels. By adding new terrestrial capability, XM also will be able to tailor programs to local markets and sell commercials locally.

Auxiliary licenses to terminate

This fall the Commission will implement a new system under which some auxiliary authorizations will be automatically terminated if a separate notice of completion of construction has not been filed.

All authorizations for fixed broadcast auxiliary facilities, such STLs, ICRs and RPU base stations, will have a limited six-month construction period. (RPU mobile authorizations are not affected.) This construction date is listed on the license authorizations issued by the FCC. Before the expiration of that six-month period, the licensee must notify the FCC that installation of the facility has been completed.

For those licenses that have been issued by the FCC since 2002, similar procedures will be implemented. Licensees in that position should have already received a letter this past spring from the FCC if a construction notification was not filed. Soon, the FCC will send a second reminder. If notifications are not submitted by the stated deadline, the Commission will then issue a public notice indicating that the licenses are cancelled. Licensees will then have 30 days to file a petition for reconsideration or lose their authorizations.

Martin is immediate-past president of the Federal Communications Bar Association and a member of Fletcher, Heald & Hildreth, Arlington, VA. E-mail martin@fhhlaw.com.

Dateline:

Dec. 1 is the deadline for radio stations in Connecticut, Maine, Massachusetts, New Hampshire, Vermont and Rhode Island to file their 2005 renewal applications, ownership reports and EEO program reports. Also by Dec. 1, renewal applications must be filed by FM translators and LPFM stations in those states.

Dec. 1 is the start date for pre-filing renewal announcements by radio stations in New York and New Jersey, who will be filing their renewal applications on Feb. 1, 2006.

Dec. 1 is the date by which radio stations in Alabama and Georgia must file biennial ownership reports.

Finally, Dec. 1 is the date which radio stations in Alabama, Georgia, Colorado, Minnesota, Montana, North Dakota, South Dakota, Connecticut, Massachusetts, Maine, New Hampshire, Vermont and Rhode Island must place their 2005 EEO public file reports in their public files and post them on their websites (where applicable).

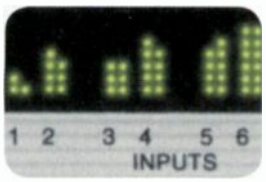
"IP-Audio in New York City? Not on my station."

"Buckley Radio decided to move WOR to a new location, leaving behind studios we'd called home for over 50 years.

"My staff and I had spent months carefully planning new facilities, and we were more than halfway through preparations — then, the rug got pulled from under us.

"Quotes to build new studios were astronomical! I had to cut our equipment budget *in half.* And the huge amount of syndicated, network and local programming WOR produces *demanded* digital audio routing and consoles.

"I'd heard that the Axia IP-Audio system could give us the high-end features we needed. And they said our budget wasn't a problem; Axia costs less because they use standard Ethernet for audio routing instead of expensive proprietary mainframes.



"Using Ethernet for Audio was certainly new and different, and I had some concerns. But moving from cart to PC was a big change, too — and for the better. In our industry, change is natural.

"The more I learned about Axia, the more impressed I became with their routing switcher and consoles, and how well their network topology was designed. I began thinking that this Ethernet stuff might just work!

"So I decided to break new ground and order the Axia consoles and routing setup, nine studios worth. It's been on the air half a year now, and we love it. Our operators keep raving about how easy things are to operate. Even our listeners tell us how good WOR sounds.

"And from the day the Axia surfaces, engines and IP-Audio nodes were hooked up, we've had zero downtime. Zilch. Zip. Nada. Axia works — end of story."

— Thomas R. Ray III, CPBE, Vice President / Corporate Director of Engineering, Buckley Radio

AXIA
A TELOS COMPANY

www.AxiaAudio.com

Trends in Test Equipment

What are your options?

By Doug Irwin

A sage, old broadcast engineer once told me that all I needed to keep a radio station going was a Simpson 260 and a three-pound soldering iron. Of course, he also said CDs wouldn't catch on, so his wisdom wasn't worth too much. I guess he wasn't so much of a sage after all. But it leads to some interesting questions:

If you had the opportunity to equip yourself anew for the year, which pieces of equipment would make your core list? How could you get the most bang for your buck? I hope to answer these questions and provide some insight into the trends in the types of test equipment that a broadcaster should have at his disposal, mainly for use at a studio location, but some of it will be of use at a transmitter site as well.

A digital multimeter (DMM) is the most basic piece of test equipment that belongs in each engineer's bag of tricks. With this meter alone you can measure battery voltages, dc power supply voltage, ac line voltages and contact resistance. With a fancier meter you can measure audio levels, frequency and current flow.

While there are many inexpensive units, my favorite DMMs are made by Fluke. If I were buying a meter today I would consider the Fluke 189, which is a hand-held DMM with a long list of features: true rms dc and ac voltage measurements; dual-display with bar graph; resistance, conductance, continuity and diode testing; temperature; ac levels displayed in dBV or dBM; a 1MHZ frequency counter; a PC interface for data exchange with a PC; and a lifetime warranty. Even as a high quality piece of equipment, the Fluke 189 is not going to break the bank. The next step allows you to verify that all the computers plugged into one outlet aren't drawing too much juice by adding the Fluke i1010 ac/dc current clamp, which connects directly to the 189. It reads from 1A to 1,000A.

Net working

Most likely you maintain and possibly install Ethernet networks in the studio facility. If you have Ethernet cables you know that it is vitally important to have some way to test them. Take, for example, another Fluke product, the Micromapper. This hand-held cable tester tests cables for opens, shorts, crossed, reversed or split pairs. It features an on-board tone generator to help trace cables in walls, under floors and above ceilings. It also provides a small remote unit that plugs into the far end of a

cable under test, allowing one person to do all the testing.

Those are some basic items. The reality is that each facility has thousands of wires and dozens of voltage and current sources. Now you can test them all. But let's go to the next level.

Many one-man engineering radio shops are charged with more than just wiring the LAN. There are quite a few PC-based LAN analysis systems available. This software loads on a PC and uses that same PC's NIC to interface to the network. One that I have found is called Commview, made by Tamosoft. Commview allows the user to see what information is traveling about on the network; it allows the user to view unauthorized activity; it allows the user to identify network problems and thus facilitates more efficient data transmission; and it allows the user to test firewalls and other intrusion detection systems. The program will display vital statistics such as IP connections and it will even generate alarm flags corresponding to certain events.

Hand-held test instruments pack a lot of power into highly portable packages.

Another PC-based LAN analysis system is Ethertest from Frontline Test Equipment. The idea behind it is the same: use a PC as the test equipment and the NIC as the primary interface. Like Commview, it will run on any Windows 98/2000/Me/NT/XP/2003 compatible PC and supports 10Mb/s and 100Mb/s Ethernet data rates. Commview will work up to 1,000Mb/s.

Not all (net)work

The typical day is not filled with computer work alone. The engineer's job is to make sound. The proper test equipment is needed to help with this critical task. In consideration of all the digital audio sources and destinations in a radio system, it's a good idea to have equipment that can work in the analog and digital domain. Fortunately, this isn't hard to find.

Ward-Beck Systems makes a pair of units that can hang on your belt while hanging out behind the equipment racks. The first piece is called the ABB-1 (Audio Bit-Buddy) and it provides a convenient means to receive and monitor digital and analog audio signals. The user listens to the audio (analog or decoded AES) at the headphone output while the left and right levels are displayed on LED bar graph meters. Critical signal parameters such as sampling frequency, emphasis, professional or consumer format and data errors are displayed when monitoring AES/EBU or S/PDIF signals. The digital input (via female XLR) decodes sample frequencies from 30kHz to 50kHz automatically.

The ABS-1 Audio Bit Spitter is the companion to the ABB-1. This portable, battery-powered unit generates digital and stereo analog audio test signals that can be injected into the signal path when testing device performance or signal path continuity. The ABS-1 generates an AES/EBU digital audio signal of 1kHz or 400Hz at sampling rates of 48kHz, 44.1kHz or 32kHz.

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The unit may also be synchronized to an external digital reference signal. Digital signal levels of -20, -12 and 0dBFS are front-panel selectable.

A similar system with more features is made by NTI and it also comes as a pair of hand-held units: the generator, called the Minirator, and the receiver, called the Minilyzer. The digital version of the Minilyzer is called the Digilyzer.

The Minirator has several output signal types and functions. It generates low-distortion sine waves that can be swept. It also generates square waves, white noise, pink noise and a polarity test signal that is recognized by the Minilyzer.

The Minirator reads all the Minilyzer test signals and has the necessary functions built in. It will measure audio levels as VU or PPM and sound pressure level. It includes a distortion analyzer (second through fifth harmonics), can determine speaker polarity in conjunction with the Minirator, can record swept-frequency tests generated by the Minirator, and has an onboard oscilloscope. With the addition of Minilink, which is a USB interface, and the Minilink PC application, data can be recorded from the Minilyzer to a PC.

The PC interface is a practical method of performing equipment tests.

Another hand-held unit that encompasses the generator and analyzer in one package, is the Terrasonde ATB-3. It has balanced XLR and ¼" TRS ins and outs with two built-in mic preamps with phantom power and a headphone out to monitor audio. The input sensitivity ranges from -120dBu to +50dBu with an output level of up to +17dBu. This kind of power in a set of hand-held devices was simply not available a few years ago.

If more power is needed, consider the Terrasonde ATB-3C (Trinity), which is a more-capable version of the ATB-3. The Trinity includes a full-complement of audio analysis tools, such as distortion analysis, 1/12 or 1/24 octave FFT analysis, and a real-time analyzer with digital filters and all the typical weightings. Terrasonde also makes the Digital Audio Toolbox, which, like the ATB-3 and ATB-3c, incorporates the generator and the analyzer in one package. It has two sets of AES inputs, along with S/PDIF inputs, word-clock and even video sync in. Included on the output side are one AES out, one S/PDIF out and word-clock out. A high-quality headphone output is included. Included in the digital tool set are a clock and sample rate counter, a bitstream analyzer, a jitter meter and a digital watchdog to trap signal errors such as lock, CRC, biphase, eye pattern, validity and parity errors. The captured errors are displayed on a graph.

Prism Sound makes the Dscope III, which is a signal source and analyzer that works in conjunction with a user-supplied PC via a USB connection. It uses Windows as the GUI. The

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Dscope III provides simultaneous AES3 and analog outputs; a user-selectable digital or analog input signal analyzer that includes what Prism calls its Continuous Time Analyzer (essentially a distortion analyzer) and an FFT analyzer that will perform a battery of tests, including user-defined ones. The Dscope also includes a battery of tests for the digital carrier itself.

Audio Precision has a 20-year history in the production of audio analyzers that work in conjunction with a user-supplied PC. The AP ATS-2 is just such a system, and includes basic tests, such as interchannel phase response, channel separation, distortion measurement and noise measurements. Its own capability can determine whether or not the device under test (DUT) meets all digital standards and whether or not it is compatible with other digital devices. Other measurement capabilities include jitter, pulse amplitude, bit activity and word length. AP offers an upgraded measurement capability that allows the ATS-2 to make measurements on the digital carrier signal.

No matter how well versed you are in theory, and no matter how many years you've been in the business, without proper test equipment you won't be able to accomplish much. The best thing about test equipment is that it often goes beyond being simply a tool. Good test equipment can help you learn more about the equipment you work on as well. Good test equipment is worth fighting for at budget time.

Irwin is director of engineering for Clear Channel Radio in Seattle.

Resource Guide

A sample of manufacturers of DAWs and accessories.

Anritsu
800-ANRITSU
www.us.anritsu.com

ATI-Audio Technologies
800-522-8001
www.at audio.com

Audio Precision
800-231-7350
www.audioprecision.com

Behringer
877-672-0816
www.behringer.com

Berkeley Nucleonics
415-453-9955
www.berkeleynucleonics.com

Channel D
732-933-9388
www.channld.com/mts.html

Conex Electro Systems
800-645-1061
www.conex-electro.com

Dorrough Electronics
818-998-2824
www.dorrough.com

Fluke
800-44-FLUKE
www.fluke.com

Fluke Networks
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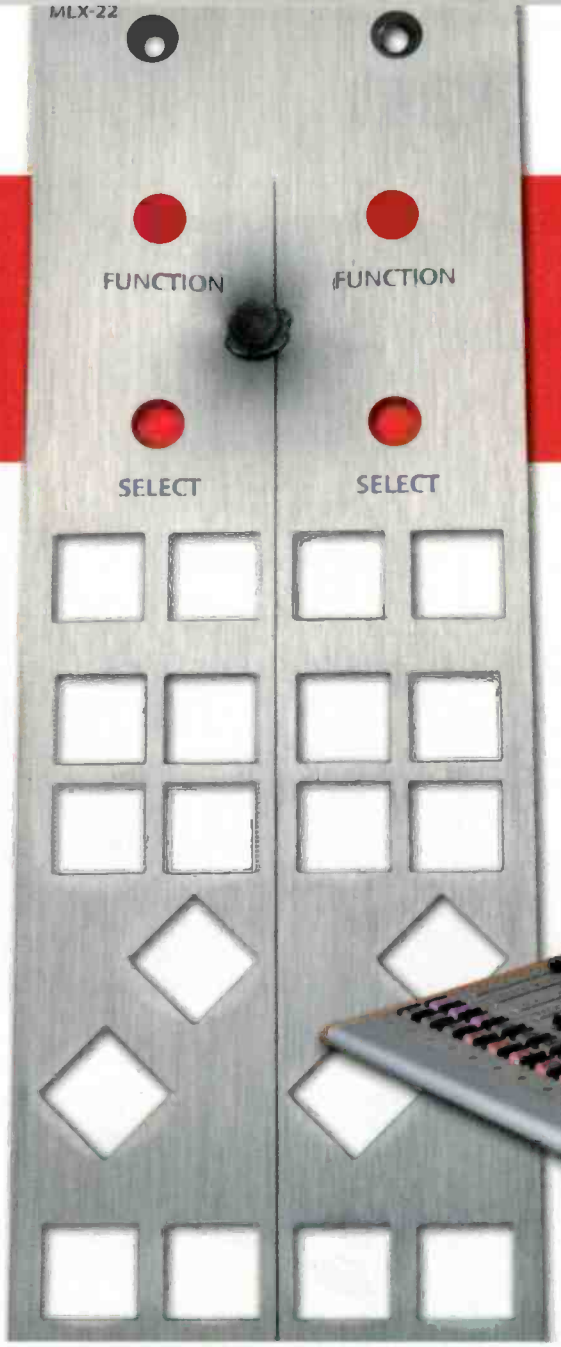
www.flukenetworks.com



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We really did shoot a bullet at a Mosaic panel. The bullet dented the panel, but it didn't puncture it. For details on how the Logitek Mosaic bullet test was conducted, visit www.logitekaudio.com/bullet.

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info@logitekaudio.com **www.logitekaudio.com**

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Console Router Systems

Frontline Test Equipment
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www.fte.com

Gage Applied Sciences
800-567-4243
www.gage-applied.com

Gold Line
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www.gold-line.com

IFR Systems
800-835-2352
www.ifrsys.com

Leader Instruments
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Miles Technology
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NTI (Neutrik Test Instuments)
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www.nt-instruments.com

Pomona Electronics
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www.pomonaelectronics.com

Prism Sound
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www.prismsound.com

RCI Custom Products
800-546-4724
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RDL (Radio Design Labs)
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Rohde & Schwarz
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Short on time

Having several windows provides an open and spacious feel to the studios.

Cumulus rebuilds in Shreveport-Bossier City, Louisiana

By Dave Supplee

It's Jan. 10, 2005. Instead of being in chilly Pennsylvania, I find myself in almost balmy Bossier City, LA, staring at a large sea of mud that contains the steel framework for the new home for our cluster. Our new nine-studio location is just a small part of an even greater sea of mud that I have been told will contain a 500,000+ square foot retail and entertainment complex. I have also just been informed that the complex, including our five stations, will all be opening on May 12; a short four months away. That amount of lead time was fine for a retail store, but not for a cluster of radio stations. In addition to the expected increase in my stress level, I am also not convinced.

This was the beginning of my involvement in the relocation of the Cumulus stations in Shreveport-Bossier City to the Louisiana Boardwalk, but the story actually began nearly two years earlier. At that time the area now occupied by the Louisiana Boardwalk was undeveloped riverfront property, across from the Red River entertainment district in Shreveport and adjacent to the successful Horseshoe Casino and Hotel. The developer, O&S Holdings, announced the ambitious plan to build the complex and contacted Cumulus with an attractive proposal to relocate to the site. The logic being the high visibility of our cluster in the market would help to promote the new complex. The concept of the boardwalk

Like many multi-station installations, all the air studios have similar layouts.

Equipment List

Adobe Audition
AirCorp ProAnnouncer mic processors
ASI 5111 audio cards
ATI digital DA
Audioarts D75 consoles
Audion Voxpro
Behringer Powerplay Pro headphone amp
Belden audio cable
Broadcast Tools COP and COA Starguide adapters, SMIII silence monitors, SS2.1 TERMIII switchers, AVR-8
Cybex KVM extender
Denon DNC680 CD players
Denon TIU1500RDP FM/AM tuners w/RDS
Dixon NM250 newsroom mixer
Ergotron 300 series video monitor arms
ETA rack-mount power strips
Furman Power Plus II power conditioners
Geffen USB extender
Gepco audio multi-, dual- and single-pair AES cable
Henry Superrelay
HHB CDR830 Plus CD recorders
JBL 4410 studio monitors
Krone punch blocks
Leibert Master UPS
Lucid AD9624 A/D converters
Mackie M800 power amplifiers
Middle Atlantic racks and accessories
Minicom Phantom KVM switch
Neutrik ¼" connectors
OC White single and double joint mic arms
Radio Systems analog DA
Sage Endec EAS
Shure RE-20 microphones
Sony PCM R500 DAT recorder
Switchcraft XLR connectors
Telos 1, 1×6 and 2×12 telephone hybrids
Wheatstone Bridge router
Wheatstone Preference studio furniture

was a combination of outlet type stores, a large anchor store, movie theatre and several entertainment and dining venues. The setting was to resemble a small downtown, complete with a trolley and carousel and the stores housed in individual buildings, each with its own unique look.

By the time Gary Kline, Cumulus director of engineering, invited me to Bossier City, the anchor store, Bass Pro Shops, had opened, and the Regal Cinema was nearing completion. The rest of the stores and nightclubs were barely beginning construction. Our space had been promised to be ready for us to begin our work by March 15, so we began to hastily line up our equipment and outside contractors to perform some of the work. My goal was to build it to be as cost-effective and flexible as possible and in a short period of time, but also to do it to the same standards that new Cumulus builds have been in the past when the time budget was greater.

Making good time

We chose equipment and vendors that we had worked with on several prior projects, minimizing the time needed to supervise and manage their work. For our studio furniture,

Short on time

we selected the Wheatstone Preference series furniture and took advantage of Wheatstone's ability to provide us with prewired components. We used the Phase-3 prewire, which consists of wiring from the new Audioarts D75 consoles to blocks, and cabling from blocks to the peripheral studio equipment. We also purchased their Announcer and Headphone panels prewired as well. The furniture comes in pieces that need to be assembled on-site. It's not a huge job and only takes a few hours per studio to set the bases, screw them together with nuts and bolts and attach the countertops. The wiring cage is just that: blocks attached to the metal framework. Once assembled, the furniture is solid; a large man can stand on the countertop without fear of breaking it.

Hal Stinett and James Kester install rack equipment.

Skyline Communications of Indianapolis, IN, handled the IT wiring, pulled the audio trunks and fiber cables, and installed the satellite dishes and STL antennas. Lightner Electronics installed the rack room blocks, punched the cable down, installed the rack room trunk cables, assembled the studio furniture and mounted the consoles and prewire. Both of these contractors have provided superior work for us in the past, and this project was no exception. For our detail integration work we decided to use our own engineers. I asked Gary Zocolo from our Youngstown, OH, cluster to join me for this part of the project. Zocolo has been involved in several of our other recent consolidation projects. His attention to detail, ability to find solutions to the issues that arise when building large projects such as this, and excellent work ethic made him the ideal choice. Jeff Chancey, Cumulus regional engineer, and

The STL and satellite antennas are mounted on the roof of the adjacent building.

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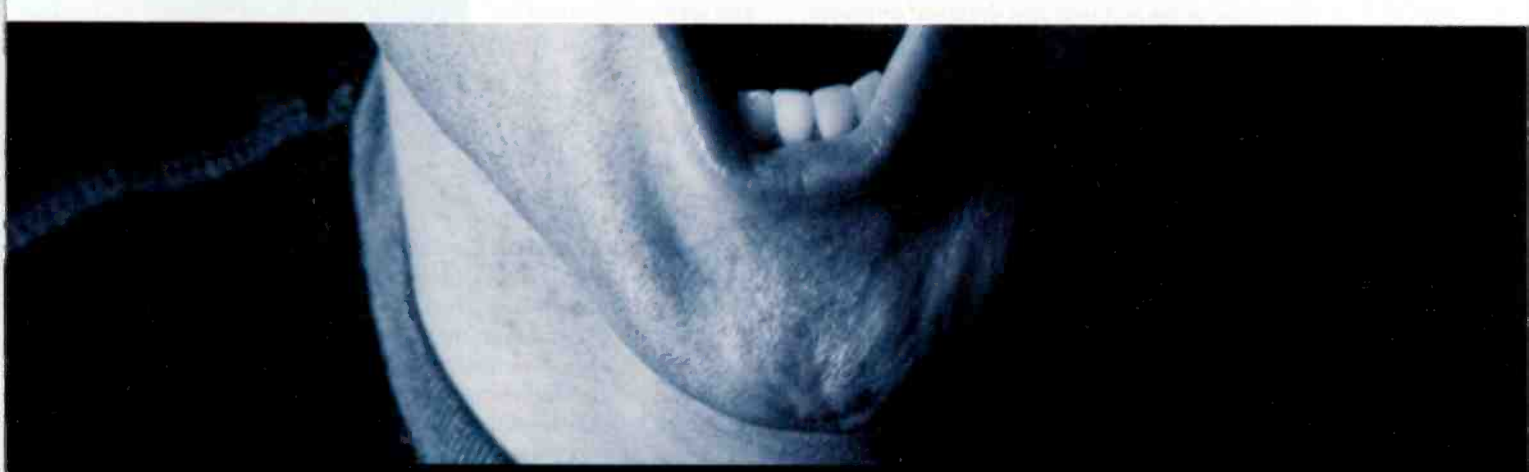

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Short on time

local engineers James Kester and Hal Stinnett were all heavily involved in the integration. They also handled the day-to-day crises of the early stages of the project, but like all engineers their time was somewhat limited due to many ongoing needs at the existing facility, and in Chancey's case, the large geographic region for which he is responsible.

Nothing is easy

We faced some unique challenges for this project. One of them was the high cost of plenum-rated cable. The developer's architect had designed our space and chose an open plenum design for the hallway ceiling where the cables were to run. We extensively examined the costs of plenum-rated AES cable vs. conduits with Cat-5 or regular AES multipair. We finally decided to use shielded non-plenum Cat-5 multipair inside plenum-rated interduct tubing. This was approved by the fire inspector, so we had a cost-effective method of dealing with the open-plenum design.

Another unusual feature of the facility is that the building that houses our STL and satellite dishes is physically a different building than our studios, and three stories higher. The dishes themselves rest on the top of an escalator room of the boardwalk parking garage. The design called for a small building or room to be built on the roof of the studio building to house any equipment we needed up there. The design was later changed to move the penthouse to the third level of the garage. We explored several options and finally arrived at using a Wheatstone Router in the main rack room linked to a Bridge Router Satellite cage in the penthouse two stories above via fiber cable. This allowed us to send and receive just about as much audio to and from the penthouse as we could possibly want, and as the old studio location had a history of lightning damage, this gave our new studios a degree of protection from lightning coming back from the STL equipment. We also decided on a fiber path for the satellite equipment as well, but rather than place the Starguide receivers in the penthouse, we decided to locate them in the rack room where they would be more accessible and use fiber to bring the RF down from the dishes. This was accomplished by using single-mode cable and Fibercom fiberoptic L-band transceivers. Other fiber devices were used to send the computer network to the penthouse for router control, and Internet access and RS-232 for data return from AP.

The equipment racks face a glass wall so visitors can see the backbone of the station.

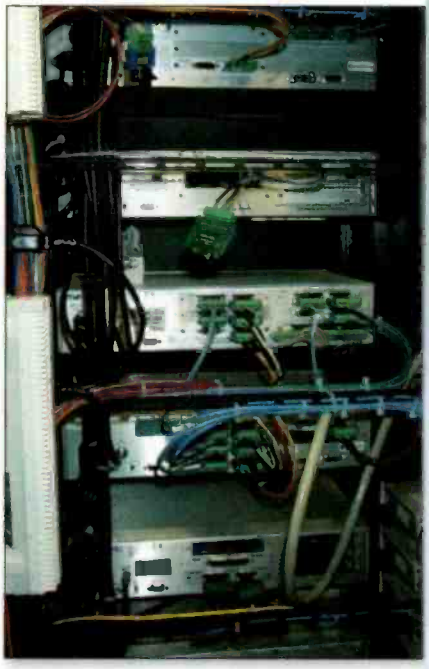
By early March I was convinced the March 15 date would not be met. Skyline communications had arrived and had begun pulling the trunk cables and the IT wiring. We had no windows, carpet, lights or security. Equipment was beginning to arrive but we had no good secure place to put the large items. By April 4, when Lightner Electronics arrived, we had windows but only temporary lighting. Gary Zocolo and I arrived on April 8 to assist with the furniture assembly and begin some of our prewire work. We still had no permanent lights, HVAC or substantial security. Meanwhile, equipment was arriving based on the initial March 15 date.

The furniture arrived a few days later, most of which was installed before we left for the NAB convention. The office furniture supplier also decided to bring all of the office chairs in; we're not really sure why. On my way to Las Vegas I received a phone call while at a layover in Atlanta. It was the local fire marshal requesting that we remove all of our furniture and equipment from the building, as there is no working sprinkler or alarm system in place. Not only did he need it removed, he wanted it done by 5 p.m. CDT. I received this call at 4 p.m. CDT. After a few tense minutes, we arrived at a compromise: all of the office chairs (which is what he was really concerned about) needed to be moved to the bathrooms, which had working sprinklers and alarms.

Finally, after the NAB convention and a few days rest to recover we returned to Bossier City. Still no lights or HVAC but we could lock the doors, so we began the integration portion of the project.

We used as many time-savers as possible. Broadcast Tools has a line of devices to interface with Starguide receivers. This greatly reduces the time spent in wiring them; no soldering DB connectors. These items combined with the significantly simplified wiring needed by taking advantage of the Bridge Router enabled us to have the facility ready to move-in in 4½ working weeks following our return from the NAB show. As a result we were ready to move the stations in over a three-day span in early June.

We did not make the grand opening of the Boardwalk on May 12, mainly because our building was simply not ready, but the shopping center opened with a lot of fanfare that included some great publicity for our stations. The new Cumulus Shreveport-Bossier City location is truly a showplace operation and a valued addition to the Louisiana Boardwalk. I am proud of the people involved and what we accomplished in the building of this outstanding broadcasting facility.



The installation team used many tools to speed installation time, including these DB breakout connectors from Broadcast Tools.

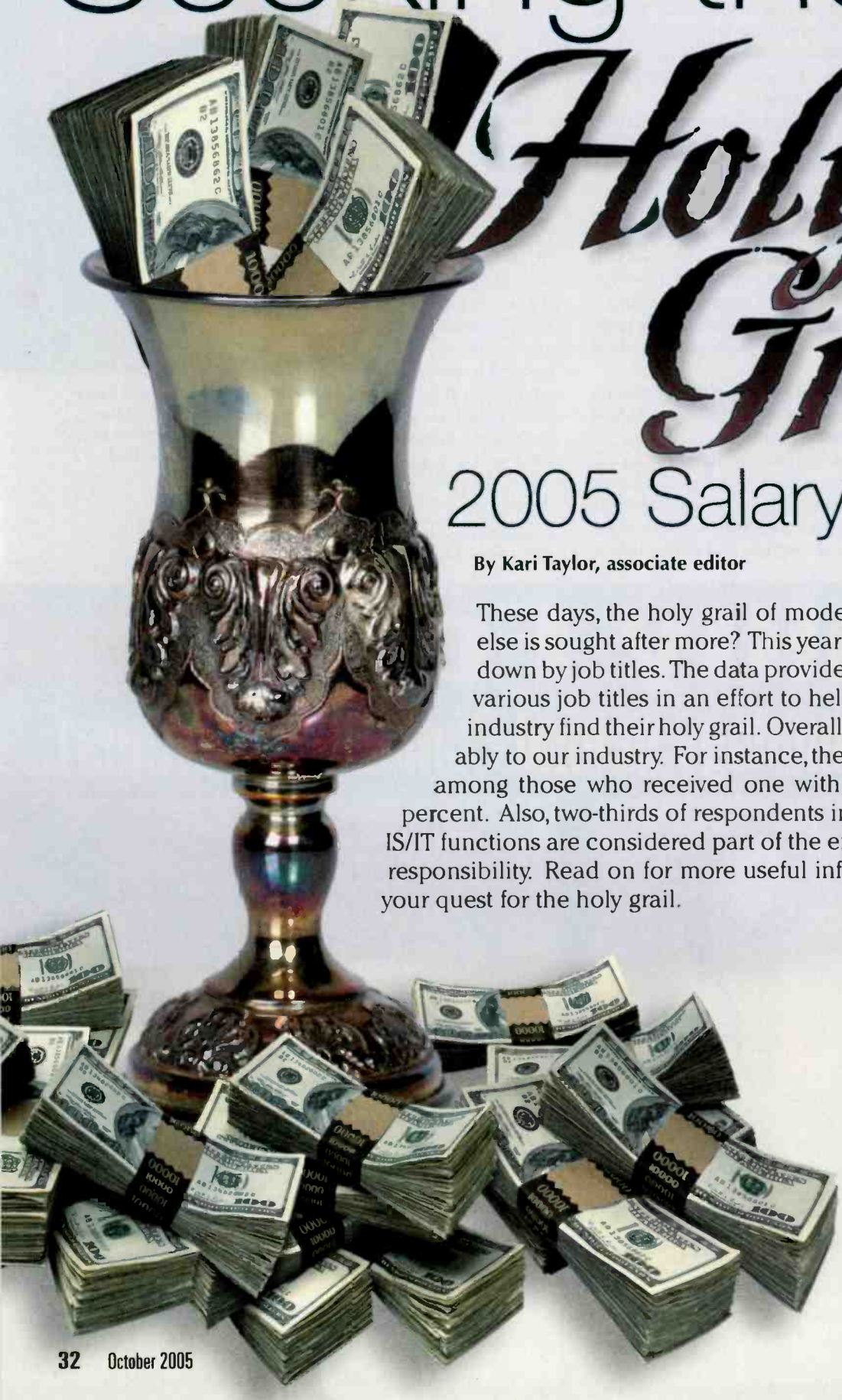
Supplee is regional engineering coordinator for Cumulus Media. He is based in Harrisburg, PA.

Seeking the Holy Grail

2005 Salary Survey

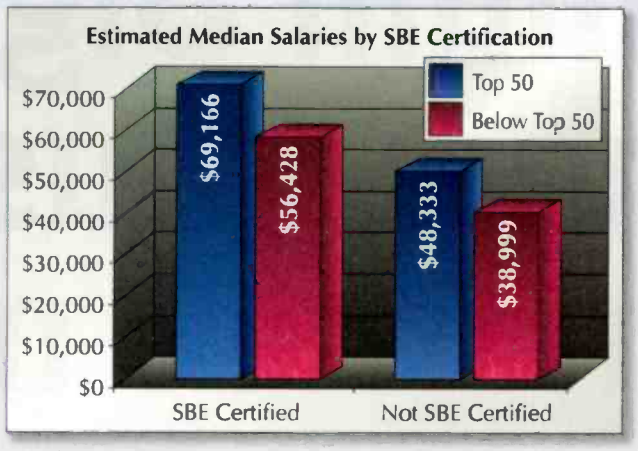
By Kari Taylor, associate editor

These days, the holy grail of modern man is money. What else is sought after more? This year's salary survey is broken down by job titles. The data provides statistics on salaries for various job titles in an effort to help engineers in the radio industry find their holy grail. Overall, the statistics show favorably to our industry. For instance, the average salary increase among those who received one within the last year was 5.3 percent. Also, two-thirds of respondents indicated that computer/IS/IT functions are considered part of the engineering department's responsibility. Read on for more useful information to help you in your quest for the holy grail.



Station chief engineer

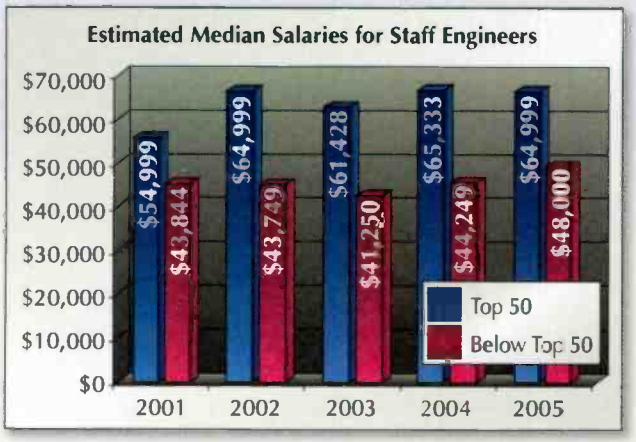
If you are the chief engineer at your station, you probably wonder if you are being compensated fairly compared to your peers. According to the 2005 salary survey, the average chief engineer received a salary increase to $54,999. In fact, 61 percent of his peers received a salary increase. And if you hold a SBE certification of some sort, you would be in good company because 39 percent of radio station chief engineer respondents hold some level of SBE certification.



The average age for a station chief engineer is 49 and he has been in the broadcast engineering industry for about 24 years. On average, station chief engineers have worked in that position for 11 years. He is personally responsible for three radio stations.

Station/staff engineer

As a staff engineer at a radio station, do you feel you are leading the pack in the race for the holy grail or do you feel you might be lagging behind? *Radio* magazine's 2005 salary survey shows that the average station/staff engineer's salary in 2005 remained stable, regardless of market size. In 2005 the average staff engineer earned $48,000 in Below Top 50 markets and $64,999 in Top 50 Markets. Sixty-three percent of staff engineers received a salary increase in the last year.



The average staff engineer respondent from the salary survey is responsible for four stations. He has been in the radio industry about 16 years and has been a station/staff engineer for about eight years. The average age for a staff engineer at a radio station is 44.

Of all the station and staff engineer respondents, only 25 percent of station/staff engineers are SBE certified.

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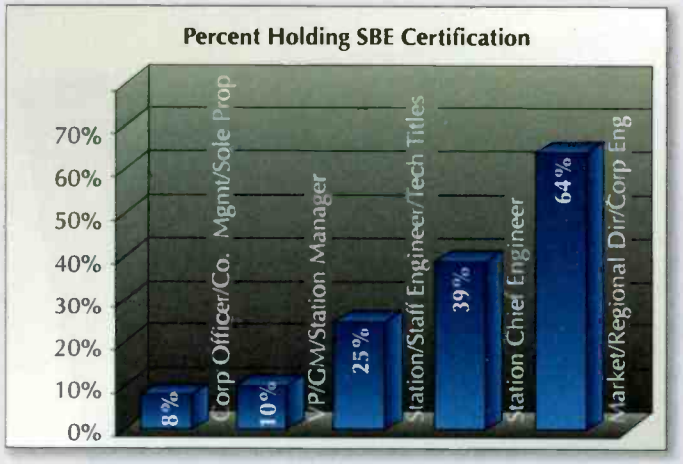
2005 Salary Survey

Operations staff/managers

If your job title includes operations staff or manager, your estimated median salary is $36,000. This breaks out to $41,666 in Top 50 markets and $34,166 in Below Top 50 markets. For operations staff and managers 15 years is the average time spent in the broadcasting industry. You have spent an average of eight years in your current position, which is just under the industry average of nine years. Operations staff and managers tend to be some of the youngest members of the group at 42 years of age.

Market regional director/corporate engineer

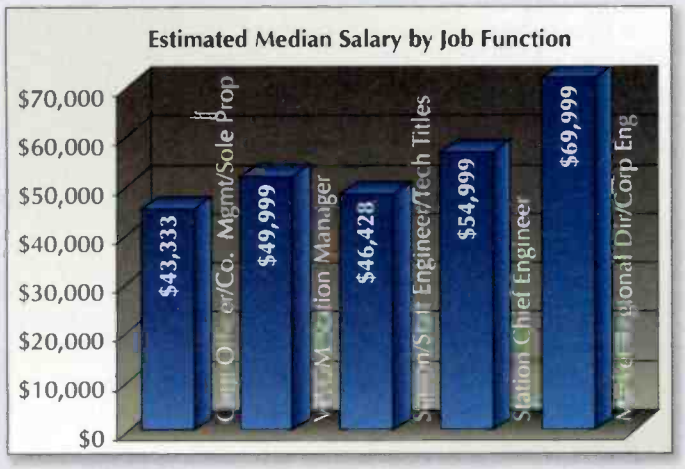


Market regional director and corporate engineers have found the holy grail. Not only are these people most likely to receive a salary increase (70 percent received one), but they also earn the highest salaries. The average median salary for a market regional director and corporate engineers is $69,999. In Top 50 markets the average median salary is $82,000 and in Below Top 50 markets its $64,999.

These people average about 50 years old and have been in the business for 28 years. The average time they have spent in their current position is eight years.

People under these job titles are the most likely to hold an SBE certification: 64 percent of them, according to the salary survey. Of those engineers who hold SBE certification, it is most likely to be at the CPBE or CBMT level.

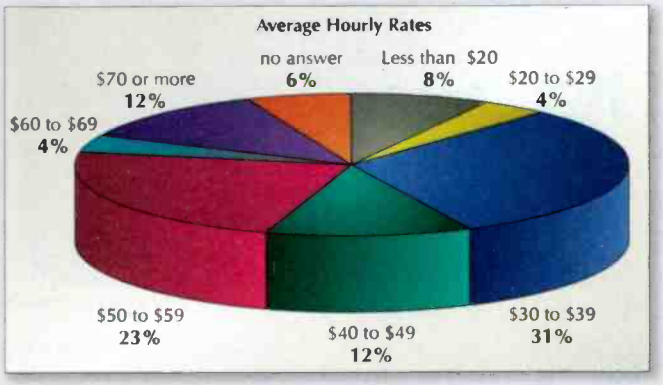
Corporate officer/co. management/sole proprietor



As a corporate officer, company management or sole proprietor, you average a salary of $43,333. You have been in the radio industry about 25 years and in your current position for about 15 years, which is the longest time in one position compared to any other job title. Corporate officers average 53 years of age.

Contract engineer

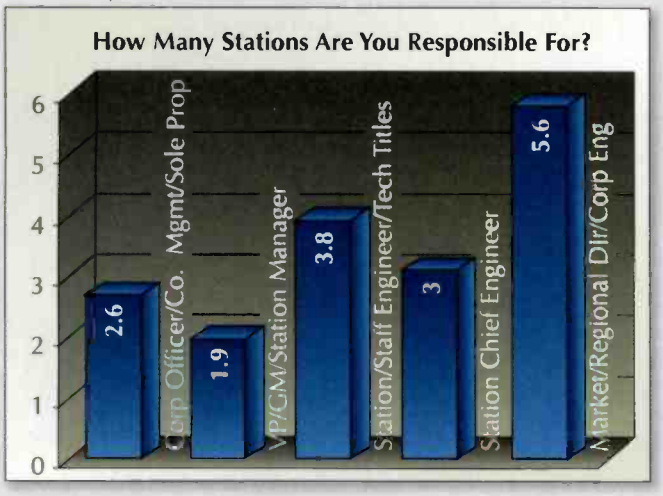
Nearly a third of contract engineers earn an hourly rate of $30 to $39. And nearly half of contract engineers indicated in the survey that their charges are based on time only. Thirty-five percent indicated that their charges are based on a combination of time and fee, and 15 percent charge a flat fee for specific



work. While 54 percent of contract engineers have a minimum charge for emergency calls, 46 percent charge a different rate for these calls. Almost 38 percent of contract engineers bill between three and nine hours per week.

2005 Salary Survey

Vice president/general manager



The typical vice president or general manager of a radio station has worked in this industry 18 years and has been working in his current job title for 10 years. He is about 46 years old and earns a salary of $49,999. Fifty-seven percent of vice president and general managers received a salary increase this year.

Few vice presidents and general managers of radio stations hold SBE certification: only 10 percent.

On June 16, 2005, we sent e-mailed invitations to participate in an online survey to more than 3,600 subscribers of *Radio* magazine. A link was included on the invitation to route respondents directly to the questionnaire. Some of the results of this study are presented by job title group and market rank. (Top 50 and Below Top 50). The survey's objectives were to determine salary levels among *Radio* magazine readers for select title groups and to examine salary trends over time. ■

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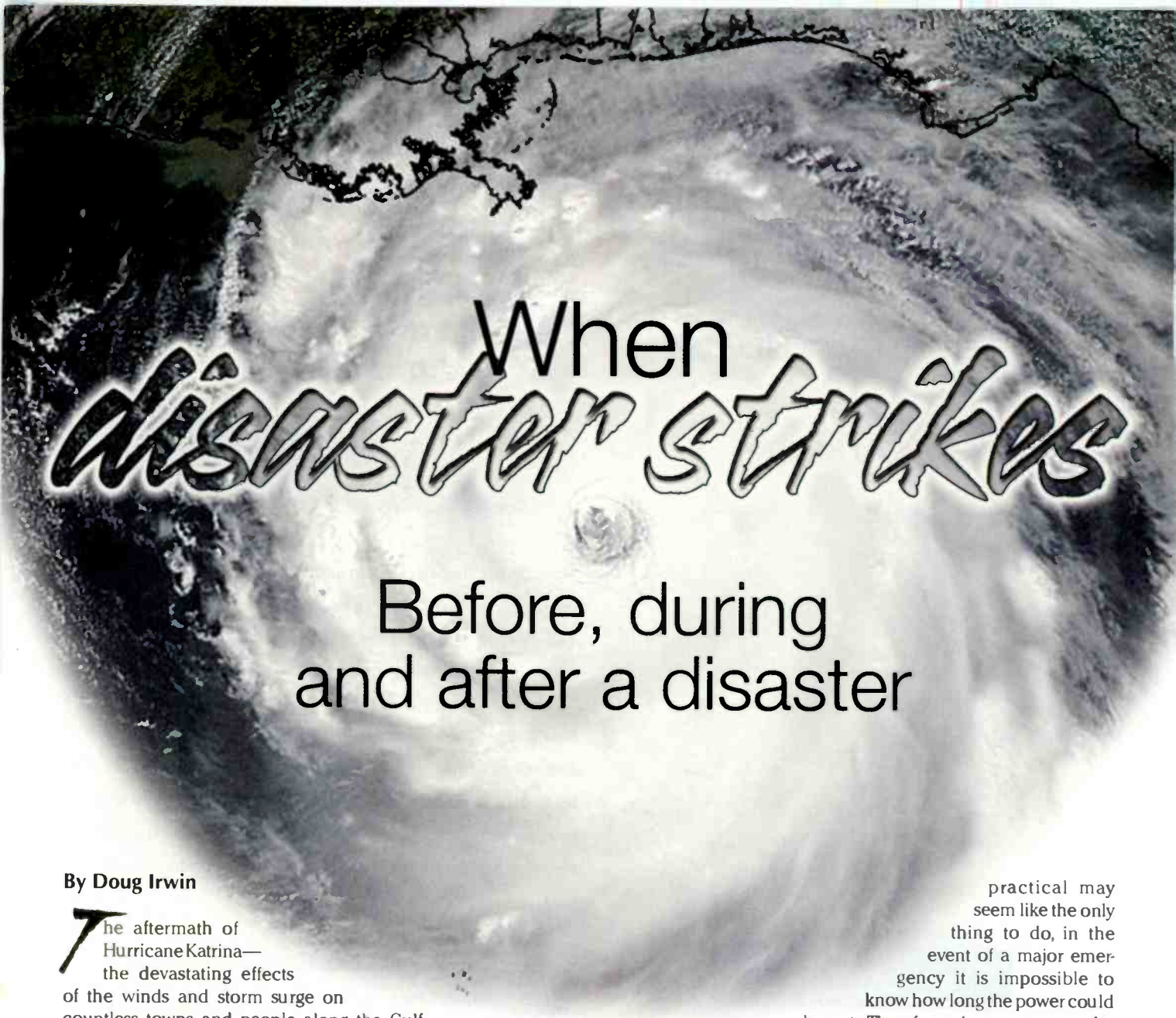


When disaster strikes

Before, during and after a disaster

By Doug Irwin

The aftermath of Hurricane Katrina—the devastating effects of the winds and storm surge on countless towns and people along the Gulf Coast, and the flooding that occurred throughout New Orleans and environs—are still being felt even as I prepared this article at the end of September.

As the water is pumped out of New Orleans, and as the full extent of the destruction becomes evident along the Gulf Coast, it is only natural and prudent that those of us who were not directly affected think about what our "Hurricane Katrina" is; the disaster scenario that no one really wants to contemplate, let alone plan for. That is what this article is about: emergency planning from the most basic emergency to the most devastating of circumstances. There is no time like the present to consider it.

In preparing this article I was fortunate to have the opportunity to interview Marty Hadfield, the vice president of engineering for Entercom Communications, which is the licensee of WWL radio in New Orleans, and Mike Hagans, most recently the vice president of engineering for the Premiere Radio Networks and now fulfilling a crucial engineering role on behalf of Clear Channel in New Orleans. They spoke about the situation there and how they and fellow company personnel are coping with the disaster.

The most basic emergency circumstance to plan for is that of a power outage.

While outfitting a generator set with the largest fuel tank as is practical may seem like the only thing to do, in the event of a major emergency it is impossible to know how long the power could be out. Therefore, plan on a means for the station to obtain more fuel. Don't wait till the tank is almost empty before considering it.

"WWL has a 12,000 gallon tank," said Hadfield. "That sounds like a lot, but [Entercom station] KIRO in Seattle has 16,000 gallons. You literally cannot have too much fuel. If you don't use it you can pump it out to help someone else."

Proximity of fuel sources should be an area of concern. "Clear Channel has fuel stockpiled, and trucks and people that are capable of driving them," said Hagans. Another issue to consider—and this goes way beyond planning for a "run-of-the-mill" emergency—is the fact that generator sets need substantial amounts of maintenance to run over long periods, and you may or may not be able to carry out the most basic service during an extended power outage, like those that the Gulf Coast have experienced. It is possible that finding qualified generator technicians could be exceedingly difficult in this event.

Hagans said that Clear Channel is prepared for this contingency. "We have trailer-mounted generator sets with skid tanks ready to go. With a company the size of Clear Channel, you've got that kind of stuff, and it's stored in a protected area, and they can get to it when a storm like this hits."

The situation for WWL was complicated. "WWL's generator was

Photo by NASA/Jeff Schmaltz, MODIS Land Rapid Response Team

serviced and the fuel topped off about three weeks ahead of the storm, but the station had to run at half-power because the generator balked with the transmitter at full-power. I contacted the Army Corps of Engineers 249 Brigade—the power engineers—to see if we could get a replacement generator in there. Something higher like a 400kW would have been perfect, and they came through with a 380kW unit; fixed it up, and they're delivering it to the site tomorrow [which was on Sept. 9]. Site access is a problem so they are going to bring it in with a Chinook helicopter."

Fortunately, commercial power was restored to the WWL transmitter site before the generator arrived.

Staying connected

Communications—or the lack thereof—is another aspect of disaster recovery that can bring the entire recovery process to a halt. Shortly after the 1989 San Francisco earthquake, there were so many attempts to use the telephone system, as people attempted to contact their loved ones, that it was virtually impossible to get a dial tone. Cellular phone systems were knocked out in many cases because of widespread power outages. This result was duplicated, in effect, in New Orleans.

"Emergency workers were using cell phones and if you didn't have a priority card issued by NCS then you weren't going to be able to use the system," said Hagans.

Photo courtesy of Marty Hadfield

New Orleans radio station WKBU-FM's transmitter site was flooded during Hurricane Katrina.

Hadfield agreed. "The worst part is when you have lots of people concentrated in one spot; the cellular system gets overloaded. All the downtown sites were constantly overloaded. After about three days though, people's batteries began dying, and so the cell sites came back in to a useable condition."

Fortunately, there are alternative means to communicate, some of which you can plan on using in the event of an emergency.

"One of the primary means we used in communications to the Jefferson Parish EOC was the old analog bag phones. Works almost every time. It became an integral part of our efforts in New Orleans. The other thing that we've seen work is the text-

In the course of researching this article, the author spoke primarily with two people about their experiences. There is story upon story marked with the heroism of those that lived through the event and the aftermath—too many to tell, and too many names to mention. If you are one of those people, please understand not everyone can be mentioned, and know your efforts were no less important.

When disaster strikes

The tower site of WYLD-AM. *Photo courtesy of Troy Langham*

messaging system."

Hagans agrees. "You couldn't get a voice channel but you could get a data channel."

"With the phone lines out, there was no way to communicate with engineers in the field from the command post—in this case Baton Rouge, LA—so having satellite phones was a huge benefit," said Hagans. "You have to be willing to have them in place ahead of time and to be willing to pay the price for using them. Otherwise, you just won't have communications for the most critical days right after the event."

My own experience after the 1989 quake was that communications and power availability came back to normal within a few days. But what happens when the course of the disaster is far more extensive? What happens if a tower falls, a transmitter building is completely flooded, or the studio building itself becomes unusable? What kind of planning should be done in advance?

Geographic diversity may be the best (and perhaps most costly) means by which you can plan to stay on the air in the event of a tower collapse. At the very least (in the case of FM and TV antenna sites) having the main and a backup antenna on separate towers is a reasonable plan. Entercom Seattle's main FM facilities are located on Tiger Mountain, which is east of Seattle and famous for its tough winter weather. By locating its backup FM facilities on Cougar Mountain (about half the elevation of Tiger and with much better winter-time access) the stations have hedged against all the "normal" site failures—transmitter failure, antenna failure, power loss and generator failure—and one that is site-specific: impassable winter weather.

All broadcast engineers have heard tower disaster stories, from the

World Trade Center to the destruction of the KFI tower last winter-caused by an airplane. Thorough disaster planning kept WKTU on the air after the destruction of the World Trade Center towers; they had recently completed an entirely separate transmitter site at the Conde Naste Building. KFI was only off the air briefly because it had a back-up tower at the same site.

KNBR in San Francisco had an airplane strike a guy-wire on its primary tower several years ago, and although the tower did not fall, the station had a separate backup ready to go.

I asked Hadfield about any specific strategic plans that were in place for WWL. "We have a licensed backup for WWL at the transmitter site," he said. "A horizontal wire is attached directly to a backup transmitter. Knowing it was available was comforting. WWL and WSMB also share the same type of [Nautel] transmitter, so we could pull the exciter deck out of the WWL transmitter and take it to WSMB, and then retune that transmitter to WWL's frequency. Also, one of the WSMB towers is exactly 90° at WWL's frequency, and so we could easily tune it up for non-directional operation."

Emergency planning should of necessity include what to do in the event of the loss of the studio facility. Hagans has been a principal player in this type of planning. "In some Clear Channel markets there are already plans in place for moving a facility to another facility. For example, Premiere Radio Networks and the Clear Channel/Los Angeles cluster have a plan in place to back one another up and it works; it's been tested."

Wasted planning

Throughout my conversations with Hagans and Hadfield, and from paying attention to the news of the disaster and its aftermath, it was obvious to me that the most difficult issues were really not technical ones at all; they were people issues. Immediately after the scope of the disaster became apparent, corporate management in both companies leaped in to action. David Field, the president of Entercom, appointed an emergency panel of the three company executives—Marty Hadfield, Ken Beck (the Entercom vice president of news and sports programming) and Noreen McCormick (the Entercom vice president of human resources) to coordinate the company's response. They formed a war room in Beck's office in Seattle, where each

Photo courtesy of Marty Hadfield/Troy Langham

This generator was crunched by a storage van belonging to the CUU.

When disaster strikes

member of the committee is headquartered, and ran the show from there.

At the Clear Channel technical management headquarters in Tulsa, OK, the reaction was swift. Steve Davis, the senior vice president of engineering for Clear Channel, coordinated Clear Channel's entire triage and restoration effort and quickly had people from the CCTM office along with several of the Clear Channel regional engineering VPs on the ground and in action in Baton Rouge, New Orleans and Biloxi, MS. Dick Lewis, Clear Channel's regional VP and market manager for the New Orleans area, played a crucial role in the coordination and facilitation of the emergency work.

Photo courtesy of Troy Langham

Following the storm, many things were out of place. While some sites are intact, a cleanup effort is still required.

Hadfield was in the middle of the process when I spoke to him. "The people [in New Orleans and environs] were extremely receptive to our help because of our outside perspective."

"You have to treat the people who are involved in this recovery with care and concern because they are under an incredible amount of stress," said Hadfield. "They are all heroes. They love their communities. Sometimes they have to be told to stop and sit out for some time.

"If they go too long they may need to be rescued themselves. The rescuers have to stay rescuers; they can't turn into victims."

Hagans had similar sentiments after his first week of triage work in New Orleans. I asked him if he had seen local engineers and others heading for the burnout stage.

"A lot of the staff had lost their homes. One of the engineers was staying with his brother; his house was flooded. Everyone worked really long hours and did his best to keep a radio face on, and each had his own personal issues to deal with as well. I don't know how many people were lost between Clear Channel and Entercom—I think it was a small number—but the loss of friends and loved ones, along with the loss of personal property is a pretty significant thing that will eventually get to them. Maybe not for weeks because they're dealing with so many other things that are taking their minds off of their own losses and they're seeing others that may have lost even more, but eventually it'll hit."

Clear Channel has taken the step of bringing in grief counselors experienced in the aftermath of disasters such as this to help its employees. Entercom is doing all it can to help its employees as well.

"Some of [the Entercom employers] had

evacuated early and they had spread out to nearby states. We set up a call center so that people could check in via telephone or e-mail," said Hadfield. "You plan for the events, but all the secondary and tertiary needs catch up with you."

A means by which engineers and others at the stations can keep from getting burned out is being practiced by both of the company's engineering management teams. Mike Hagans, after working for a week in New Orleans, was replaced on site by Troy Langham, a member of the CCTM team from Tulsa. Hagans had similarly replaced Langham onsite one week earlier.

Entercom carried out a similar plan. The person about to go in to the mandatory rest period would be shadowed for two days by the person that would fill in for him, and then they in turn would shadow that person for a day after the four-day rest period so that he could get "caught up" on what was happening.

Photo courtesy of Troy Langham

The transmitters for WRNO and WNOE-FM in New Orleans were flooded and left caked with mud and debris.

What are you taking for granted?

As we carry out our day-to-day business it is easy to become complacent and to simply start taking the means by which we satisfy our most basic needs for granted. At a radio station, the most basic needs are a place at which a program can be produced along with ac power. There is a roof to keep out the rain and a dry floor. At a transmitter site, the most basic needs are similar: a roof and four walls along with a dry floor, plenty of power and a tower or antenna system. Every day the station's employees come and go from home in similar style. But what if one day, unexpectedly, it just wasn't so?

Through an unprecedented cooperative effort, the two companies, normally at odds with one another as competitors, put aside everything else so that they could serve the citizens of the greater New Orleans area in the aftermath of Hurricane Katrina. The technical infrastructure of Clear Channel made it possible, and power, strength and tradition of news at WWL made it effective.

Will your station be ready to do the same should the need arise? The implementation of a plan and the drills necessary to see if the plan works will consume a lot of time and expense. With the Hurricane Katrina disaster still top-of-mind, there is no time like the present to develop plans and to present them to management, colleagues and family.

Irwin is director of engineering for Clear Channel Radio in Seattle.

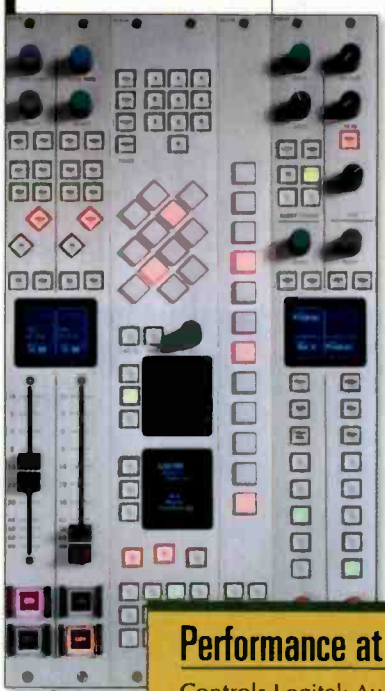
Field Report

Logitek Mosaic

By Barry Thomas, CPBE CBNT

I admit it. I'm a console snob. I've always held the conceit that a respectable radio audio console would only come from less than a handful of companies. Truthfully I never seriously considered Logitek for any of the replacement projects, regardless of the market size. Until now.

I was charged with creating a studio suite for network origination that would serve three disparate functions on our networks: origination for sports broadcasts; execution of a standard-style personality-based radio talk show; and a non-linear audio editing suite. We added the additional complexity of redesigning a vocal booth so that it could also serve as an edit suite when the booth functions aren't needed. This system would need to be in a two-studio suite of rooms that could serve as sports programming head-end to compile on-site reports from eight positions, and feed six IFB mixes and three program chains. It would also need to operate as a conventional talk show suite with a control room with a producer, call screener, and engineer and a vocal booth with the talent. Finally, these rooms would be used as the source selector and mixing position for two different Protools workstations.



Detail of the various modules: (left to right) dual-fader module, wide soft key module, narrow soft key module, monitor control module.

Performance at a glance

- Controls Logitek Audio Engine
- Module frames from 10 to 32 slots
- Two input faders per module
- Two meter bridge configurations
- RJ-11 connections for modules and meters
- Color LCD screens for status
- Assignable buttons for control and status

I thought this design would simply be a matter of ergonomics, and that the technology would be an easy decision. That proved to be an incorrect assumption. During the planning process I learned of a new control surface from Logitek that would address every prejudice I had. After a particularly in-depth SBE meeting hosted by a station with a fully deployed Logitek system, I decided to look carefully at the system.

There's plenty of history available for the working part of the console: the Audio Engine. Logitek was one of the pioneers of the router-based console design and has been at it for a long time. Network radio coverage of the Olympics operates through the Engines and there were several stations and groups using the system. The router engine seemed solid. One of my chief objections to Logitek in the past has been the strength and resilience of the work surfaces. To be considered, the Mosaic had to be a departure from the normal product line to offer the kind of work surface our network is accustomed to.

Logitek demonstrates the durability of the Mosaic with the help of a Houston law enforcement officer. Like a Master Lock, a Mosaic panel endured the impact of a .22 caliber rifle but, unlike the padlock, the bullet didn't pierce the steel. The result of the research on the engine and mixer was that I bought a fully populated, single-engine system with two of the Mosaic control surfaces.

No surprises

The Audio Engine frame holds the input and output cards; a communications module to connect to the console surfaces, the programming and operation computer and any intercom or guest turret panels; and the power supplies. I left a module slot open to later add a fiber optic network card in case we add more engines and want to network the sources to other studios. Our engine was also fitted with two Sharc Attack cards, which fill the system with DSP functions such as delays, processing, virtual mixes and routing. The system requires a computer to be attached and running the Supervisor program for triggers, scene changes and DSP functions but is not required to mix and pass audio. The computer is also required for the console meterbridge clock so the console PC must have some sort of time reference. I would have preferred to reference the clock directly into the engine. It took some tweaking with the computer SMPTE sync adapter to make it match the rest of the in-house SMPTE analog and digital clocks.

The Sharc Attack DSP cards on the engine are installed to help incorporate processing functions into the console and reduce the equipment count in the studio. Each studio worksurface has a dedicated 10-second broadcast audio delay on the program output that works like any standard

broadcast delay with multiple levels of program dump and a smooth, program-related ramp up and down. The delay can even be programmed to make GPI outputs follow the delay. This is important for a network program that operates in delay but must send time-aligned affiliate signals or start off-site automation equipment. The Sharc Attack modules also provide the power for assignable EQ, compression/limiting, de-essing and more that can be added to any of the output busses or even on an individual source.

Outward appearance

I am impressed with the Mosaic's appearance. The brushed-aluminum-finish panels are fitted with two faders per module. We had one minor issue of infant mortality and one strange failure about a week after sign-on but neither problem took the console off the air. Both situations were resolved extremely well and quickly by Logitek support.

Each Mosaic fader module has a 2.5" x 3" screen that displays input metering, source assignment and various other module functions for the two fader positions (note I didn't say "inputs" because this is router-based, the fader position doesn't control an input until it's assigned). The same screen is used in several places on the console for the purposes of status monitoring and text labels.

Each mixer on the Logitek engine has 24 pre-designed mix-minus busses. When the console is configured, the mix minus is assigned to the corresponding input and the choice is made whether the mix minus will contain console program, cue, aux one, two or three.

The Mosaic surface is a full departure from the stand-alone console, yet it's a natural extension of Logitek's background with the router/console concept. I have hopes that this is the beginning of a manufacturing standard they will extend to their entire product line.

So am I still a console snob? Well yeah, but my list of favorites just got longer.

Thomas is vice president of engineering for Westwood One Radio Networks, New York.

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These reports are performed by the industry, for the industry. Manufacturer support is limited to providing loan equipment and to aiding the author if requested.

It is the responsibility of Radio *magazine to publish the results of any device tested, positive or negative. No report should be considered an endorsement or disapproval by* Radio *magazine.*

Hush Technologies ATX

By Harold Beer

I'm sure you've heard it before. The music fades out, the microphone opens and you hear a room full of noise. Twenty-five years ago, that noise was probably those bad bearings in the triple-decker cart machine. Today, the noise is likely the computer in the control room. At WKAR, we've had a computer in the control room since 1990.

There are many ways to deal with the noise generated by PCs. Some like to use extension cables for the keyboard, video and mouse, dealing with the noise by putting the noisy PC outside the studio. Others use extension boxes that do the same thing, but manage to put everything onto one Cat-5 cable. I have put thermostatic controls on the fans inside to maintain a constant 40°C temperature. This lowers the noise by running the fans at a lower speed. All these techniques address the problems of PC noise but none can really be considered a solution. The solution would be not to generate noise in the first place.

Performance at a glance

- Silent operation
- No fan noise
- Hefty heatsinks for cooling
- Clean interior
- Customizable

Silence is golden

My search for a truly silent PC started with one of the Internet search engines, which led me to a website: www.silentpcreview.com. This website includes a lot of information about quiet, low-noise or silent PCs. Armed with this information, you can build a PC that would generate much less noise than most commercially made computers.

While that is one way to proceed, I really wanted a computer that was designed and built to be quiet by someone else. Radio engineers are a busy lot these days, and I didn't want to start building PCs for work, and risk making something that wouldn't work or wasn't quiet.

I found a computer reviewed on the website from a company called Hush Technologies, that claimed to be silent. No fan noise, because there are no fans. Medialink Communications is the U.S. representative, as Hush Technologies is located near Stuttgart, Germany. Silence came for a price, which is the golden part, but the Hush computer comes in black or silver.

Heavy with fins, not fans

I wanted to get a silent PC and see if it would really work in our operation. I selected a Hush Technologies ATX computer to replace our older Gateway, which our program hosts (we play classical music so our DJs are called program hosts) use to access the music database, AP news, the Internet and e-mail. While it's important to the operation, it's not as vital as the computer that runs our BE Audiovault.

I was struck by the pictures on the website of the computer, which looked more like a streamlined audio power amplifier than any PC that I had seen. Convinced enough to order one, it arrived quickly, even given that the manufacturer is in Europe. And when taking it out of the box, I found hefty heatsinks that are the sides of the PC box. Big fins are in with this PC, which is nearly 17.5" across, and 15" deep. While the computer case is not rackmountable (and I'm not sure you would want to hang it in the rack from the front fins anyway), it will fit—barely—into a good quality rackshelf. The computer cools all those hot components with conduction via heatpipes to the finned heatsinks to be cooled by convection.

The CPU, video chip and the chipset are all connected with heatpipes to the external heatsinks. The interior of the Hush ATX is clean, with all cables nicely harnessed. It'll stay clean too without fans drawing dust into the cabinet.

And on the air, this PC is silent, with the noise that we've heard in the microphone of the whirring fans for so long gone.

The next step was to start replacing the PCs that came with our Audiovault system in 1997. The regular configuration for the Hush ATX has only one PCI slot available. And I knew that I would need two slots to support the Audiovault. I fired an e-mail to the distributor at the time, and received

ordering instructions the same day for customized Hush computers with two PCI slots.

Now installed, all fan noise in the studio is gone. Faintly, with your ear close to the cabinet, you can hear the hard disk spinning and the heads moving. The CD drive makes some noise when operating so you wouldn't want to burn CDs when the microphone is open.

This brings us to why I bought Hush Technologies' ATX instead of extension cables for our operation. After all, extension cables work, and they are probably cheaper than purchasing a new PC. To do so places the CD media slot outside the control room. Add the sound card cabling, and USB or Firewire and the result is a much more complicated solution than putting a computer that is truly silent right in the control room where it can be easily accessed. This allows the flash recorder to be plugged in, edits made, and files copied to the automation and burned to a CD without hassle.

We had a power supply fail early in the life of one of our Hush ATX computers, but it was quickly replaced under warranty. Silence is golden and silence never sounded so good.

Beer is chief engineer at WKAR, Michigan State University.

Hush Technologies

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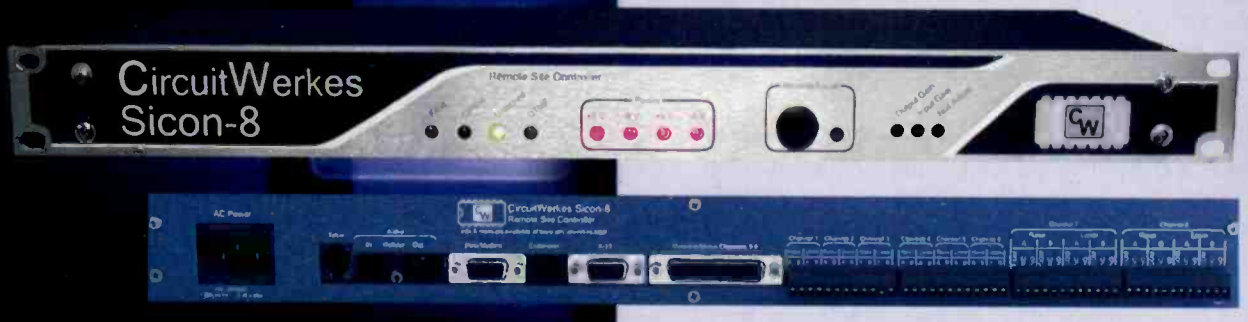
The 1st annual 2004 Radio Innovative Product Reader's Choice AWARD WINNER

Facility Support

Circuitwerkes Sicon-8

This dial-up remote control provides speech capability that can be programmed with the user's voice. Designed for facilities with basic to moderate control requirements, the unit includes metering, status and control for eight channels. Additional channels can be added.

Relay contacts are provided on removable screw-terminal connectors. Metering and status connections are created with a DB25 connector. A separate breakout cable is available for the metering connector to provide screw-terminal connections. Channels one through six provide momentary relay contacts. Channels seven and eight can be configured for momentary latching or latching DPDT contacts.



Sicontroller, the Windows control software, displays the metering and provides a control interface.

The telephone connection features hybrid connections to send audio to and receive audio from the phone line.

As many as five alarms per channel are available.

A cell phone audio interface allows the unit to work with an auto-answer wireless phone, which is well suited for transmitter sites without wired phone service. A high-speed Internet option allows the unit to communicate via DSL or cable modem. An X10 option adds additional control over existing electrical wiring.

The unit is pre-programmed with English prompts. Spanish prompts are available on request. All the prompts can be rerecorded. The Sicontroller software is included with the unit. Sicontroller also provides basic logging functions. ■

Introduced in 2004, the *Radio* magazine Innovative Product Awards were developed to honor excellence in new product development in the radio industry. The awards demonstrate the talent and commitment of the people in every aspect of development at each company, from concept through sales. The entrants were listed in the 2005 *Radio* magazine Buyers Guide that was included in the December 2004 issue.

Manufacturers submitted products in several categories, and the winners were selected through an online form by you, the *Radio* magazine reader. The results were tallied at the end of February, and the winners were presented with their awards at NAB2005. Over the next few months, we will profile each of these winning products.

The 2005 Innovative Product Award entries will be listed in the *Radio* magazine 2006 Buyers Guide, which will be released in December.


MASTER CONTROL™
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Doug Varner, Chief Engineer
WMUG-FM 105.1
Indiana, PA
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Reader Feedback

www.beradio.com

Respectfully yours

The June Viewpoint discussed the perception of engineers within the station, and how each person can work to improve his or her image to the non-technical staff. This has spurred several responses from readers.

Kudos! I agree with you on the respect for engineering issue you addressed [Viewpoint, June 2005]. I will add one thing from personal experience. Some companies have an ingrained culture of "engineer disdain." I left a company like that a little over a year ago. (The director of engineering for that company left about four months ago to take a job in another field at half pay.) I am currently with Morris Communications and could not be happier. I was immediately included in the management team, and given the opportunity to earn the respect due everyone working on the team.

Again, thanks! The respect issue is an extremely important one that only progressive, long-term profitability businesses seem to recognize.

R.V. Zeigler
chief engineer
Salina Media Group
KABI-KBLS-KSAJ-KSAL AM/FM, KYEZ
Salina, KS

I am going to share this with my staff.

Frederick R. Vobbe
vice president and chief engineer
WLIO-TV
Lima, OH

Great editorial in the June edition. I fully agree that the SBE could probably look at opportunities to create some better visibility in the magazines and journals read by the industry leaders. One idea is to spotlight engineers who have made quantitative engineering improvements that add value to their organizations or who advance the state of the art—and find a way to tie it in with SBE membership. For example, "SBE member John Smith, CE of WXYZ, successfully negotiated the purchase of two HD Radio facilities and saved his company $10,000."

With a bit of self-help, this can still be a great career for those willing to become a part of their respective teams and for those with a desire to continually educate themselves about changes in the industry. When I was a market engineering manager, one PD used to tell me that I had more creative ideas than his air staff and promotions director. A CE that can blend in and create value to the organization is one who will always be respected by his or her peers.

During the past 10 years, I have been a part of other allied industries and the grass ain't necessarily greener on the other side—although it has certainly been more stable and the income has been better. But there are few other careers in the engineering field that allow for independent thinking and an entrepreneurial spirit within the scope of one's job responsibilities. In my case, gaining respect was never an issue, but demanding job security and commensurate pay for performance were ultimately the driving forces that pulled me away.

Creating a successful career path in broadcasting has become much more challenging than it once was. Beyond the role of the CE, the opportunities at the VP and DOE level in radio are extremely limited due to consolidation, especially for those outside the organization. The path can still be created, but it takes a lot of effort to attain for those who want it: continual education, SBE participation, peer visibility in the form of publishing and committee involvement are just some of the ways of getting there—and just as importantly, the demonstrated ability to smartly manage operating and capital funding.

One factor that seems to keep some qualified engineers away from the broadcasting industry is the perceived circus-like atmosphere at commercial radio stations. Come to think of it, life in the radio business is a bit like a circus with its high turnover rates, wacky morning shows, and the WKRP-type personalities involved with the GM functioning as the ringmaster. But at the same time, it's a bit of that craziness that makes the job fun as long it comes in small doses.

Paul Christensen, CPBE
Law Office of Paul B. Christensen
Jacksonville, FL

Katrina coverage

Thank you for staying on top of the news of the storm as relates to radio in the affected areas. BERadio.com is the only place I have been able to find current information on the fate of the radio stations.

Tom Sittner
broadcast engineer
KSTX, KPAC, KTXI
Texas Public Radio
San Antonio, TX

comments?
radio@primediabusiness.com

What's up IBOC?

Your July Viewpoint is right on. HD Radio should use the hotel market as a way to build consumer awareness of HD Radio. The average length of stay in a business class hotel is less than three days: 365 days times 70 percent occupancy divided by three gives you about 85 different guests in each guest room each year. In the U.S. there are about four million guest rooms. Not counting overlap, this is quite a few eyeballs to see the product. I think that is reason enough to want to put it in hotels before XM and Sirius beat them to it.

I tried to work with a vendor to have an inexpensive HD Radio made for a hotel (100,000 units) but my supplier couldn't come up with anything cost effective.

Christopher Holman
In-Room Television & Entertainment Systems,
Carlson Hotels Worldwide

I read your August *Viewpoint* and agree with you. I also tried the store test here in Bryan-College Station. One guy at Best Buy got really angry when I told him he was wrong and that IBOC was real.

My company has spent millions on our major-market stations going IBOC. I helped with a couple installs here in Texas and heard the big difference on AM. But at the end of the day no one in the general public could hear the difference, just us geek-type engineers.

If IBOC isn't going to go the way of AM stereo, everyone needs to start talking about HD Radio or IBOC or whatever they want to call it, and talk about it loud, clear and often. I think to it will help if the FCC would do as it has done with TV and set a date to turn off the analog. Then I think that might help get some folks moving a little faster on it.

Bill Sutton
chief engineer-IT
KAGG-KKYS-KNFX, Clear Channel
Bryan-College Station, TX

Your August *Viewpoint* "Digital radio? What's that?" was good news to me. I hope it stays the best-kept secret, at least on AM. So far, our station on 970 [WWDJ] has lost two exits of listenable coverage to HD Radio on 950 in Pennsylvania.

Stuart Engelke
Salem Media of New York City,
WMCA-AM, WWDJ-AM
New York

New Products

By Kari Taylor, associate editor

www.beradio.com

Multichannel monitoring system
Genelec

8030.LSE Powerpak: This multichannel monitoring system consists of five 8030A two way, bi-amplified active monitors, one 7060A LSET Series active subwoofer, and an Acousti/Tape frequency/wavelength measuring tape. The LSE 7060A features a single 10" proprietary driver with 120W power amplifier, a frequency response of 29Hz to 85Hz (120Hz) 3dB, and delivers SPLs of 108dB at one meter. The monitor boasts 6.1 bass management system, which has six signal input and output channels (L/C/R front and L/C/R rear), as well as a discrete LFE signal input with a selectable 85/120Hz low-pass filter and a summed signal output, providing flexibility and easy connection.

508-652-0900; fax 508-652-0909
www.genelec.com; genelec.usa@genelec.com

Multichannel sound cards
Digigram

VX882HR, VX881HR, and VX822v2: Low-latency WDM Direct Sound, Wave and ASIO drivers make the trio compatible with a wide range of audio software. The VX882HR, with four balanced analog and AES/EBU stereo I/Os, and the digital-only VX881HR are the first VX sound cards to offer Digigram's High Resolution series. Both are available with a breakout cable or a breakout box. The BOB8 presents all analog and digital inputs and outputs, as well as Word Clock, AES/EBU house clock sync, LTC and video inputs, on its front panel. The VX822v2 features four balanced analog stereo outputs and one balanced analog stereo input with 24-bit/48kHz converters, four stereo AES/EBU outputs and one stereo AES/EBU input, as well as Word Clock and AES/EBU house clock sync inputs.

703-875-9100; fax 703-875-9161
www.digigram.com; input@digigram.com

Wall cabinet
Lowell Manufacturing

L83-5S: This tilt-out cabinet measures 24" x 32" and mounts to the wall with a 6" deep projection for vertical surface installation. The unit features gas-lift cylinders for open access to equipment in a horizontal/service position, 3RU EIA mounting rails, a built-in/removable writing surface, and a separate top compartment with an additional 5.25" x 4.3" mounting area hidden behind a pocket door. The top compartment facilitates field installation of controls such as mic connectors, phono jacks, switches or volume controls into a 3RU panel. A lock secures the contents of both compartments.

636-257-3400; fax 636-257-6606
www.lowellmfg.com; info@lowellmfg.com

Cabling bandwidth tester
Fluke Networks

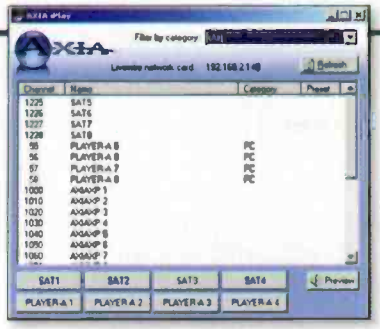
Cable IQ Qualification Tester: This cable tester helps close trouble tickets 30 percent faster and ensures easy upgrades to higher network speeds by quickly determining if an existing cabling link can support the bandwidth requirements of the network. This hand-held tool shows network technicians what speeds existing cabling can support and helps solve network connectivity problems. The qualification test determines if existing cabling can support 10Base-T, 100Base-TX, VoIP and Gigabit Ethernet. Its ability to see cabling bandwidth, coupled with device speed and duplex detection, allows techs to isolate bandwidth-related cabling problems from network problems. When problems are determined to be cabling related, technicians can use CableIQ's diagnostics to locate performance faults.

800-28-FLUKE; fax 425-446-5019
www.flukenetworks.com; info@flukenetworks.com

FM alert receiver
Weisinger Engineering Services

WWES Pilot: An FM alert receiver, this unit instantly alerts the user when an FM stereo pilot or transmitter goes off the air. Three built-in alert options take action when the stereo pilot is lost: front panel red flashing LED; switchable aural alert buzzer and SPST relay can turn on user-selected low voltage devices. The receiver includes built-in battery backup capability (six D cells) and telescoping FM whip antenna.

330-626-2469; fax 330-626-2469; www.wwes.org; wwes@juno.com



IP-audio monitoring program
Axia Audio

Iplay: A software-based IP-audio monitoring program, this system lets Windows PC users select and listen to any audio source available to their Axia network with the click of a button. Axia IP-Audio networks convert analog and digital audio sources into uncompressed, real-time PCM audio and distribute it throughout the broadcast plant via switched Ethernet. The program allows users of desktop and laptop computers that are connected to an Axia network to choose and play any available stream, without the need for external audio inputs or adapter boxes. Iplay helps users navigate large systems, using filtering and sorting capabilities to help users find the stream they want to hear. The system also continually scans the network, updating its list when new sources are discovered; eight user-programmable preset buttons allow access to frequently accessed channels. An on-screen level display provides metering of the audio being auditioned.

216-241-7225; www.axiaaudio.com; inquiry@axiaaudio.com

Digital format converters
Otari

FS-96: This converter offers five digital audio formats. Input signals in any of ADA, AES/EBU, SDIF-2, TDIF-1 or MADI formats can be output in all of these formats in parallel. The signal routing function allows the connection between input and output channels to be changed freely. The converter can handle a 32kHz to 96kHz sample rate and 16- to 24-bit quantization. The built-in sample rate converter can convert the sample rate/bit resolution of the incoming signal. Whenever audio is input in a given format, the output for that same format is also available, and it can be sample rate converted to the same output format if needed. As many as 10 machine setups and signal routing can be memorized. 19" rack mount adapters are included. The unit occupies 2RU.

800-877-0577; fax 615-255-9070
www.otari.com; sales@otari.com

www.beradio.com

Digital stereo monitors
Edirol

MA-15D: These desktop reference monitors offer a two-way bass reflex system in a compact wooden cabinet. These 15W + 15W monitors are shielded for placement near a computer and offer 1/4" and RCA inputs with independent volume control. The monitors also host S/PDIF coax and optical inputs to play audio directly from digital sources to 24-bit/192kHz without signal degradation between the device and the speakers. The device also comes with a built-in bass enhancer that uses psychoacoustic principles causing the user to perceive accentuated low-end signals without over-driving the 100mm woofers.

360-594-4273; fax 360-594-4271
www.edirol.com; sales@edirol.com

New Products

Announcer's console
Studio Technologies

Model 230: A microprocessor provides this tabletop unit's logic power, allowing precise control of operation. A mic preamplifier circuit provides low noise and low distortion amplification over a 20dB to 60dB gain range. The gain is adjustable in 10dB steps. The input is compatible with balanced dynamic and condenser mics. The mic power source is 48V nominal and meets the worldwide P48 phantom standard. An LED indicator serves as an aid for optimizing the preamplifier's gain setting. The output of the mic preamplifier is used by the main output as well as being routed to the compressor circuit that supports the talkback functions. Three pushbutton switches, four LED indicators and two rotary controls create an easy-to-use interface.

847-676-9177; fax 847-982-0747
www.studio-tech.com; stisales@studio-tech.com

Midfield studio monitor
SLS Loudspeakers

S1266: The large format midfield studio monitor is designed for high output critical monitoring in two-channel or multi-channel configurations. The system offers a frequency response of 40Hz to 30kHz (1.5dB), with power handling of 600W RMS and 2,400W peak. The system delivers a maximum SPL of 127dB at one meter. The system needs to be actively bi-amped at 250Hz. The enclosure, with dimensions of 30" H x 34" W x 17.5" D, is constructed out of 1" Baltic Birch plywood. The cabinet weighs 200 lbs. The standard finish is black Nevermar. The cabinet is also available in unfinished furniture-grade birch for in-the-field color matching.

417-883-4549; fax 417-883-2723
www.slsloudspeakers.com; sales@slsloudspeakers.com

Upgrades and Updates

Danagger Audio Works has added an emergency announcement feature to Plan B systems that allows users to call the unit and make a live voice announcement directly to air. The password-protected feature can be added to existing Plan B and Plan B Plus units with a field installable upgrade. (www.danagger.com)... APT's Worldnet Oslo, a modular, multi-channel audio codec, now has an IP transport card in addition to the existing E1/T1 options. In addition, Quad Encoder and Decoder modules are available, which offer four simplex channels per card. The APT Worldnet Rio audio codec, which features the Standard and Enhanced Apt-x algorithms, now adds MPEG Layer II and III and an SNMP option for remote operation. (www.aptx.com)...**Broadcast Electronics** has created a new audio capture and archiving module for its Audiovault digital audio system. The AV Logger records multiple audio feeds from a wide range of sources at a variety of bit rates, and provides file markers for logging events such as keying a microphone. (www.audiovault.com) ■

Hard disk workstation Tascam

X48: This 48-track hybrid hard disk workstation offers a stand-alone hard disk recorder with the GUI, editing features and plug-in compatibility. The workstation provides 96kHz/24-bit recording across 48 tracks and 192kHz recording across 24 tracks. The system offers 32-bit floating point audio file recording and playback with no loss of track count. The unit features two 24-channel option slots that support analog, ADAT or AES/EBU expansion cards as well as a built-in 80GB hard drive and a built-in DVD drive for backup. Two Firewire (IEEE-1394) and four USB 2.0 ports for external hard drive support are provided.

323-726-0303; fax 323-727-7635
www.tascam.com; tascamlit@tascam.com

Radio exciter R.V.R.

TEX50-LCD/S/CR: This exciter offers a continuously adjustable power output from zero to 50W with a universal multi-voltage power supply from 80 to 260V. The equipment features a built-in stereo coder, two RDS/SCA inputs and fits in a stainless-steel 2RU chassis.

305-471-9091; fax 305-471-6979; www.rvrusa.com; sales@rvrusa.com

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Help Wanted

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Craig Hodgson
VP / General Manager
Backyard Broadcasting South Dakota, LLC.
KELO-AM KELO-FM KRRO-FM
KTWB-FM KWSN-AM
500 South Phillips Avenue
Sioux Falls, SD 57104
Craig.hodgson@bybradio.com or fax to 605-271-5819
NO PHONE CALLS PLEASE.

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Help Wanted

Assistant Chief Engineer

Newsweb Radio Group is seeking an Assistant Chief Engineer for it's 9 Station Chicago cluster. You need to have a high degree of knowledge with windows 2003 server/XP networked computer operations and oplog or other automation as well as be familiar with all facets of AM/FM Broadcast Technical Operations. Candidate should have three years experience in Broadcast Engineering with an IT background and/or certified Microsoft MSCE for 2003/XP.

Send resume and salary history to:
Michael McCarthy
NEWSWEB RADIO GROUP
6012 S. Pulaski Road
Chicago, IL 60629
No phone calls please.

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Dallas-headquartered, Media, Broadcasting, Internet & Entertainment company is seeking a Chief Engineer to provide technical, operational and administrative oversight of the Tom Joyner Morning Show studio and technical facilities.

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- Prepare monthly and annual reports for Department
- Provide broadcast technical planning support as needed
- Serve as the studio's physical facilities coordinator and maintain all broadcast facilities
- Responsible for studio and remote equipment installations, repairs, preventative maintenance and trouble shooting down to the component level

Requirements:
- Flexible schedule - position requires the ability to be on call 24 hours a day
- Strong communication skills
- Demonstrated experience in broadcast computer systems maintenance, trouble-shooting and instruction with and emphasis on broadcast and production software running on both the Windows XP and Macintosh platforms
- Demonstrated experience in radio studio design and construction of satellite systems
- Experience in budgeting, project management and staff supervision

Experience/Education:
- Bachelor's degree in Electrical Engineering
- Minimum of six (6) years experience in radio or television maintenance with emphasis in digital and RF transmission and facility construction, in lieu of degree
- SBE Certification preferred

Compensation:
Competitive salary & benefits package

Submit resumes along with salary history & references via email or fax to:

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jobs@reachmediainc.com
FAX: 972-934-0629

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Contributor Pro-file

Meet the professionals who write for Radio magazine.
This month: Field Report, page 48.

Harold Beer
chief engineer
WKAR
Michigan State University

Beer began his radio industry career in 1978 as a student employee at WEMU, in Ypsilanti.

He has worked for WKAR for 20 years. Among Beer's achievements, he engineered the first stereo broadcast of a college basketball game in 1985, and he engineered the annual Labor Day Detroit Jazz Festival live broadcasts from 1982 to 2002.

Radio
THE RADIO TECHNOLOGY LEADER

Written by radio professionals
Written for radio professionals

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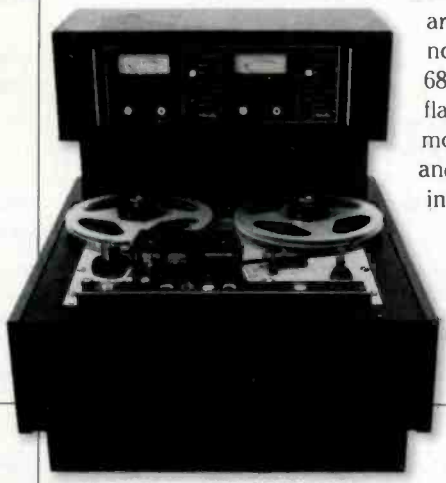
Sign Off

By Kari Taylor, associate editor

www.beradio.com

Do you remember?



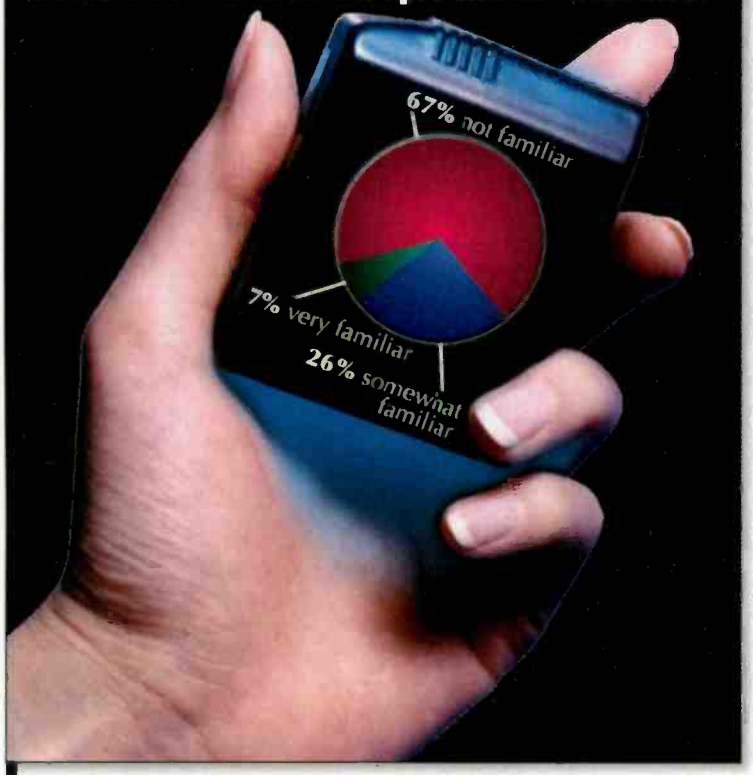
Scully-Metrotech, the recording division of Dictaphone, manufactured the 280-B recorder around 1974. The unit offered a signal-to-noise ratio up to 72dB on full track ¼" tape at mastering speed and 68dB on two-track ¼" and four track ½". The recorder also featured flat bandwidths of ±2dB, 30Hz to 18kHz. Solid-state circuitry and mother-daughter board architecture provided greater reliability, and made testing and repairs easier. All signal electronics were in slide-out drawers.

Using Optac motion sensing, tape motion was smoothly controlled to reduce tape wear and stretching. Users could go from one transport mode to another without touching the stop button, which was a departure from earlier reel-to-reel designs. They could also enter and leave "record" while transports were in play.

Sample and Hold

PPM Progress

How familiar are advertisers with Arbitron's Portable People Meter Initiative?



Source: RAB/Forrester Consulting Phone Survey, April 2005.

That was then

The humble patch bay was once the premier method of switching audio sources within a facility.

This BBC control room in Belfast was equipped with a home-made console built from a four-channel remote mixer. Two sets of patch bays were used for source switching. One was built into the center of the console for line termination and test equipment and the other set was in the equipment rack shown here. This was made up of about eight bays: some commercially made bays and some custom-made from angle iron. Photographed in March 1936, much of the wiring was taken direct to the jackfields without going via mounted terminal blocks.

These patch bays were replaced that same year with standard bays. Because the racks were placed 18" from the back wall, this was not an easy task. In addition, the bays were active with audio circuits during the upgrade.

Today's routing has been simplified with the use of electronic routing systems, which make source changes and system upgrades much simpler.

Photo courtesy www.roger.beckwith.btinternet.co.uk

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Can Do BIG Things!

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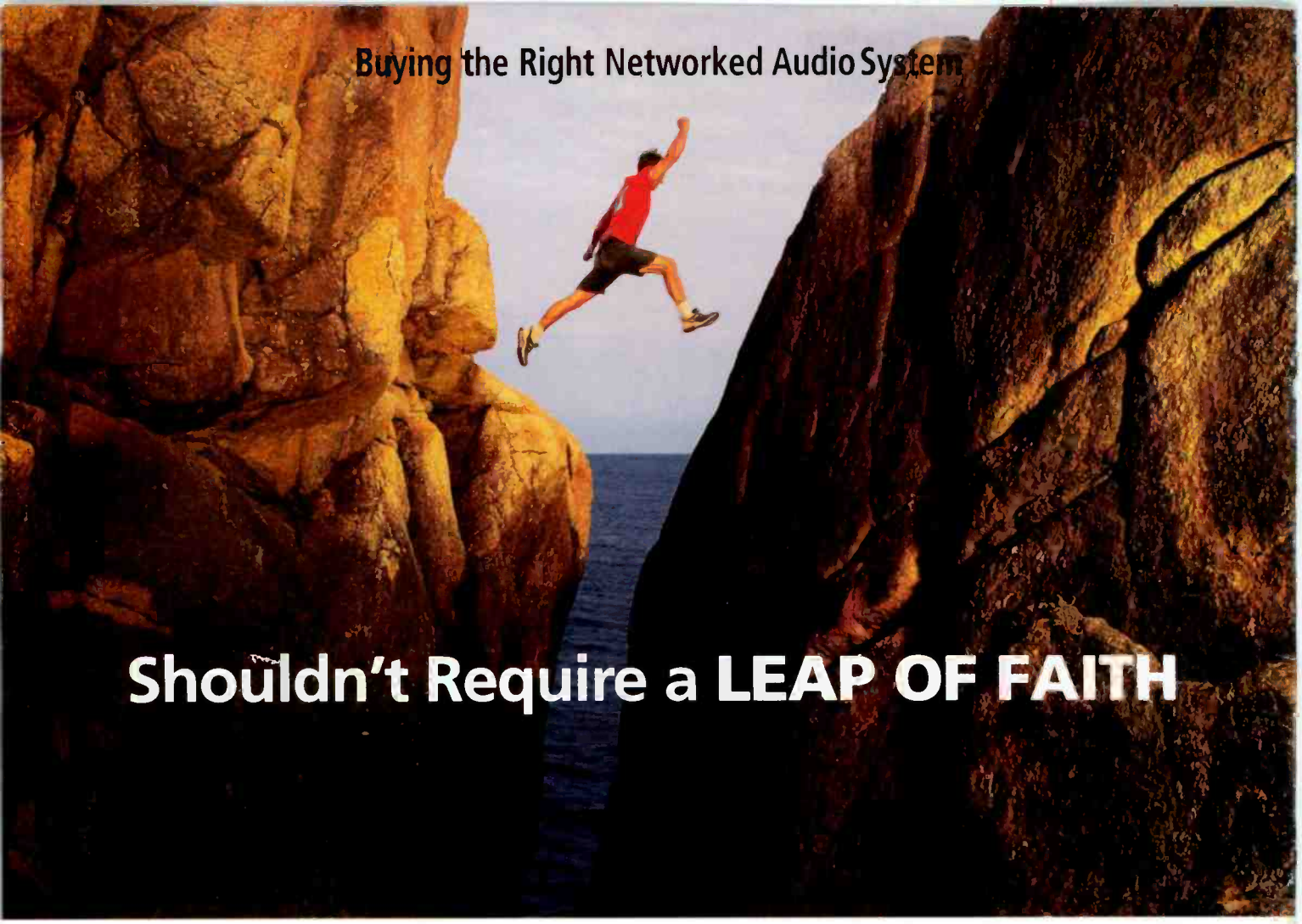

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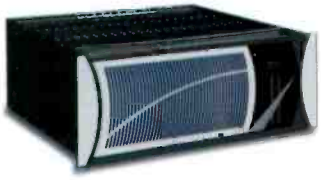

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