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PROFESSIONAL AUDIO AND MUSIC PRODUCTION

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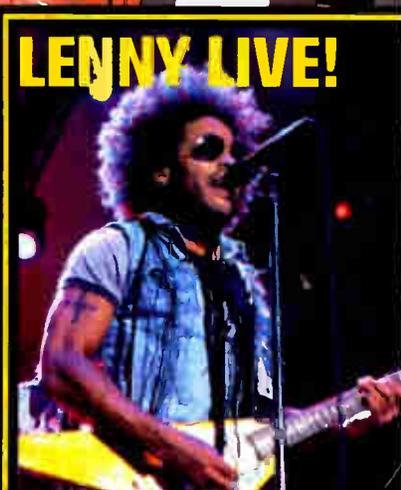
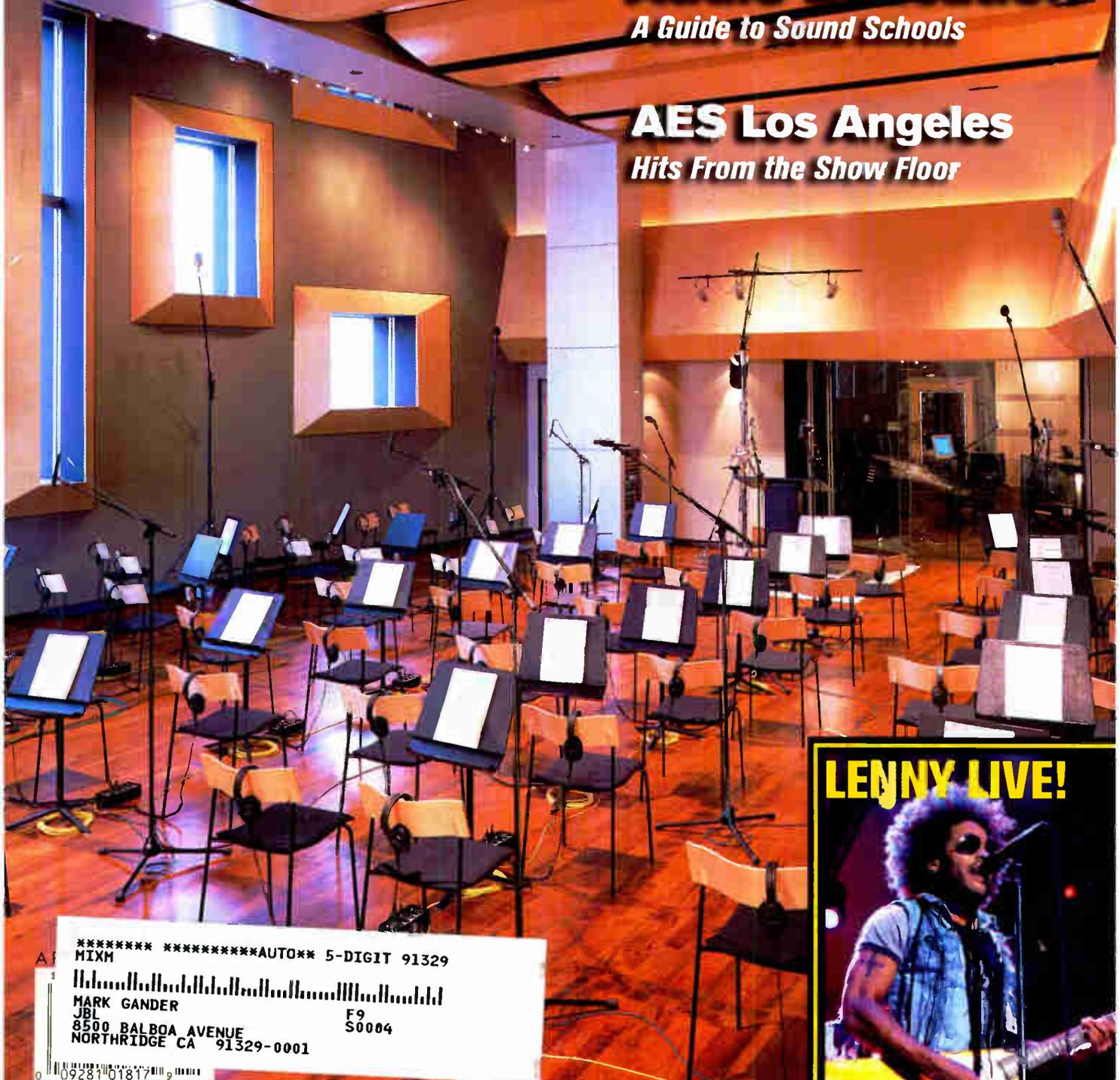
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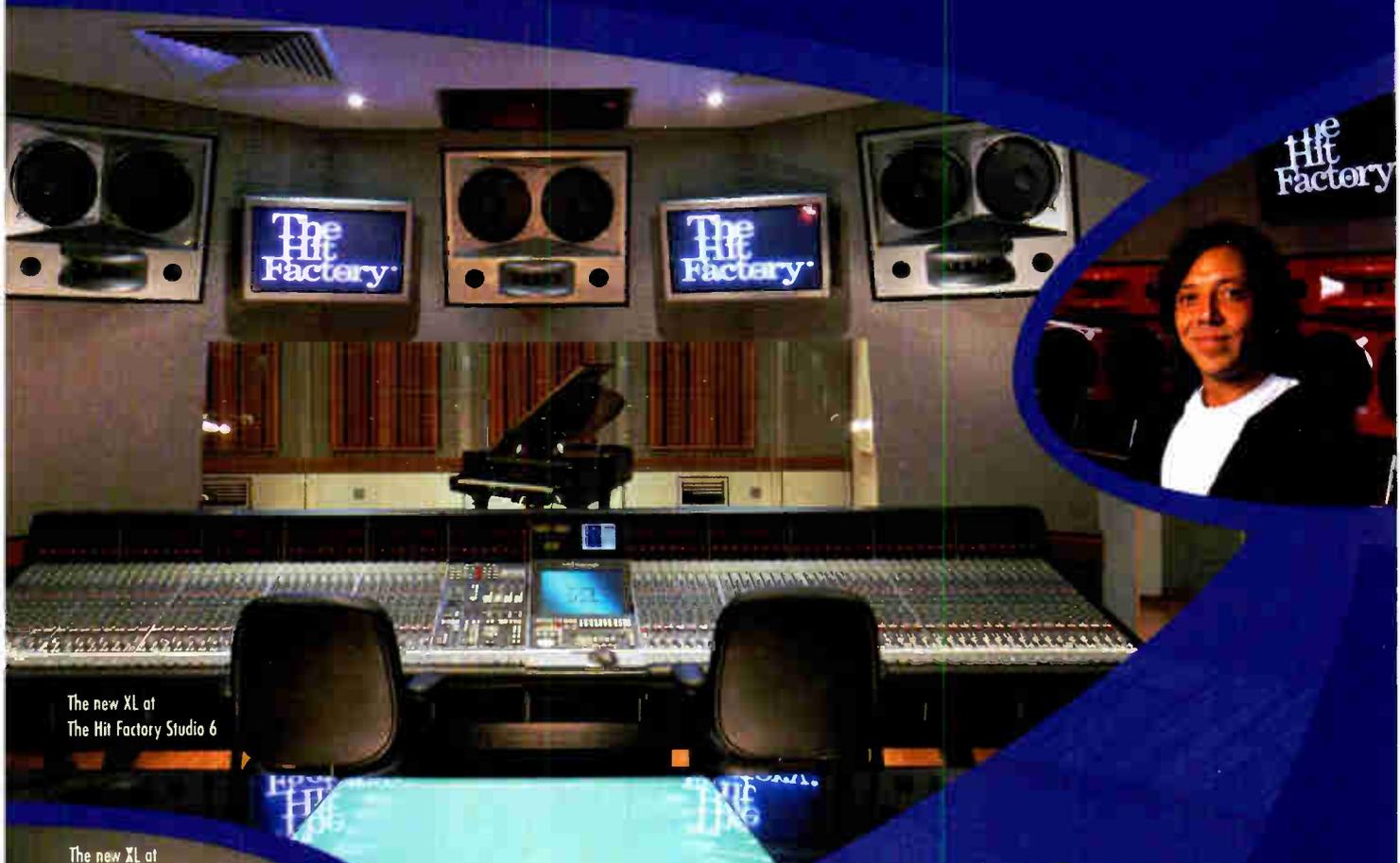
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The Hit Factory

The new XL at
The Hit Factory Studio 6

The new XL at
The Hit Factory Studio 7

XL Session Report

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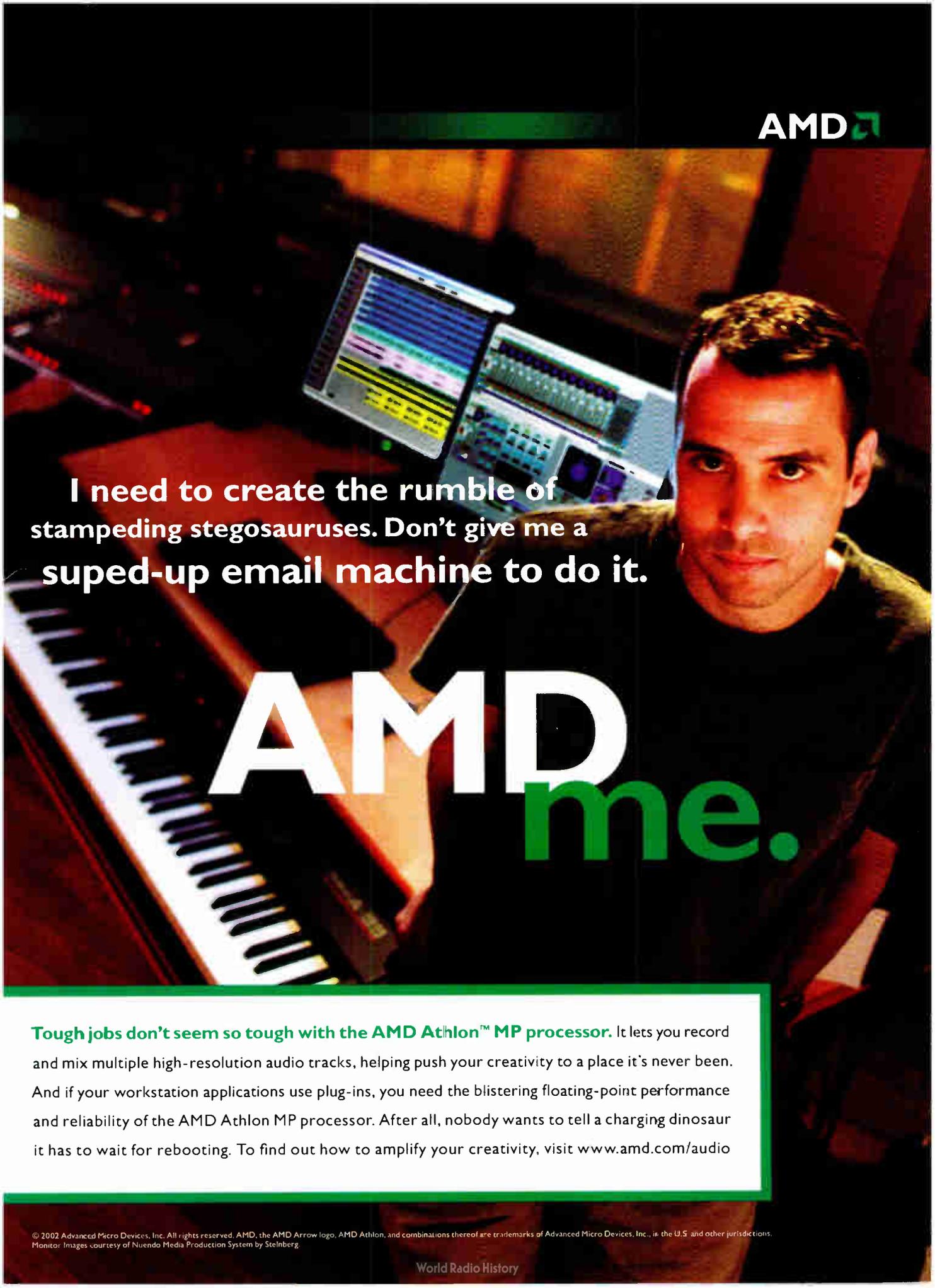
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PROFESSIONAL AUDIO AND MUSIC PRODUCTION

November 2002, VOLUME 26, NUMBER 12

features

28 Recording Vocals

Mix's senior editor Blair Jackson chose four stylistically different, recent CDs and talked with the engineers about their gear and methods they used to capture the singers: rock titan David Bowie, up-and-coming chart-topper Avril Lavigne, the talented and sophisticated Duncan Sheik and the incomparable soul group Boyz II Men.

40 AES Show Report

The *Mix* editorial staff scoured the show floor for all of the biggest hits and highlights. If you didn't make it to the convention in L.A., check out all of the newest gear here.

46 2002 TEC Awards Winners

Find out who took home the trophies from the 18th Annual Technical Excellence & Creativity Awards, *Mix's* showcase event that benefits healthy hearing and hearing awareness charities.

48 Studio Monitors 2002

Today's speakers range from compact near-fields to gargantuan, ultra-SPL main systems, and engineers must also choose between powered and unpowered models, analog or digital inputs, stereo pairs or 5.1-management features, etc. The *Mix* editors unveil the latest studio monitors in a variety of designs and price points.

58 NFL Films

Forget, for a moment, that they do football. NFL Films has built the largest ground-up production facility in the past five years, accommodating everything from weekly shows on ESPN to specials for the History Channel and A&E. On this month's cover is its crown jewel, Studio A.

66 File-Format Interchange, Part 2

In this final part of Ron Franklin's discussion of formats, we address AES31—the first and only recognized international standard for file interchange—the OpenTL initiative from Tascam, and the Advanced Authoring Format (AAF) and the Material Exchange Format (MXF).



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PAGE 28



PAGE 40



PAGE 48



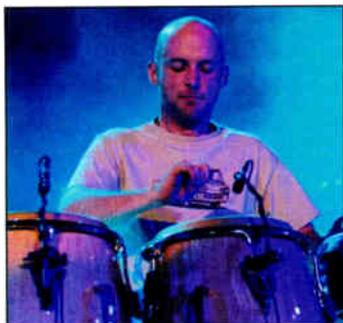
PAGE 58

On the Cover: Studio A at NFL Films can hold up to 70 pieces, tracked through an SSL 9000 J to Fairlight QDC, with monitoring on PMC BB5s. For more, see story, page 58. **Photo:** Pier Nicola D'amico. **Inset Photo:** Steve Jennings.



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sections



PAGE 152

LIVE MIX

- 146 Tour Profile:** Lenny Kravitz
by Sarah Benzuly
- 152 All Access:** Moby's Area2
by Steve Jennings
- 154 New Sound Reinforcement Products**
- 156 Soundcheck**

RECORDING NOTES

- 158 The Dixie Chicks Come "Home"**
by Elianne Halbersberg
- 159 David Sylvian** by Chris J. Walker
- 160 Classic Tracks:** King Floyd's "Groove Me" by Blair Jackson



PAGE 158

- 162 Cool Spins:** The Mix Staff Pick Some Favorite CDs

COAST TO COAST

- 176 L.A. Grapevine** by Maureen Dronoy
- 176 Nashville Skyline** by Rick Clark
- 177 New York Metro** by Paul Verna
- 178 Sessions & Studio News**
by Robert Hanson

technology

- 88 Tools of the Trade**
- 94 Off the Shelf:** Audio Books for Students and Pros
- 96 Field Test:** Steinberg Cubase SX—New From the Inside
- 102 Field Test:** RØDE NT4—Stereo, Simplified



PAGE 102

- 104 Field Test:** SLS Pro Studio S8R—Ribbon Tweeter Studio Monitors
- 106 Field Test:** Vintech X81 Preamp/EQ—A New Twist on Some Classic Favorites



PAGE 106

- 108 Field Test:** Emes Owl Speaker System
- 112 Auditions:** Snapshot Product Reviews
- Radial JD-7 Guitar Signal-Distribution System
 - Korg PXR4 Pocket 4-Track Recorder
 - Sennheiser HD280 Pro Stereo Headphones
 - Prism Sound Dream AD-2 2-Channel A/D/D Converter
 - CheckPoint DLT-675 Inco-Matic Laser
- 216 Power Tools:** Emagic EXS24 Software Sampler—the REX File Connection
by Erik Hawkins

columns



PAGE 20

- 20 The Fast Lane:** I Sing the Body Electric by Stephen St. Croix
- 24 Insider Audio:** The Right Stuff—Music and Technology at the Hartt School
by Paul D. Lehrman
- 76 Producer's Desk:** Stevie J
by Chris J. Walker
- 82 Bitstream:** How the Leopard Got His Spots—Mac OS 10.2
by Oliver Masciarotte

departments

- 8 From the Editor**
- 12 Feedback:** Letters to *Mix*
- 14 Current/Industry News**
- 184 Studio Showcase**
- 188 Ad Index**
- 191 Mix Marketplace**
- 199 Classifieds**

AUDIO EDUCATION, 2002

Our annual directory of audio education schools, seminars and programs begins on page 117 and features more options than ever before. Budding engineers will also want to read Paul Lehrman's "Insider Audio" column on the Hartt School of Music and "Off the Shelf," reviews of new pro audio books.



MIX

A PRIMEDIA Publication

Learning and...Re-learning

Over the years, the TEC Awards has been host to many special moments, and the Hall of Fame award to Beatles engineer Geoff Emerick just a couple of weeks ago was certainly near the top. Having a trio of masters (Elliot Scheiner, Al Schmitt and George Massenburg) on hand to present the award made it even more special.

Joining George Martin to work on The Beatles' landmark *Revolver* album, and continuing with *Sgt. Pepper's*, the *White Album* and *Abbey Road*, Emerick's influence is unquestionable, as he, Martin and the lads explored the use of the studio as an instrument for creative expression. Tape loops, orchestral tracks, backward playback and creative panning were just a few of many techniques the team employed, breaking the mold and the constraints of traditional stereo mixing. Creators today too frequently search for a new preset, yet these innovators were establishing new precedents with works that are still held in the highest regard decades later.

A new approach need not always be earthshaking. If the industry norm is stereo instruments and center-panned vocals, a simple reversal such as "Ob-La-Di, Ob-La-Da," with divergent L/R voices and down-the-middle instruments immediately puts the listener into a new space. Not every song needs a gimmick; sometimes a clean, straight-ahead recording that captures the essence of the song and performance is best. Knowing when to push the envelope—or when to hold back—is the mark of a master who understands the importance of patience, simplicity and purity in the recording process. That is why certain individuals—Emerick, Massenburg, Scheiner, Schmitt, Swedien, Ramone, et al—stay on top.

Equally important is understanding the medium. Analog production has its own set of rules and limitations, whether the engineer is center-panning LF-heavy sources and dealing with RIAA curves with vinyl, or using a custom machine bias or overload saturation to advantage with tape. When digital arrived, many users didn't bother to learn the ropes of the new media: Digital overload was verboten, sending countless engineers to record at -4/-10/-15dB levels—often followed by normalization, which provided a safe haven from clipping, yet decimated (sometimes literally!) the record resolution, yielding lifeless 12- and 14-bit recordings from 16- and 20-bit systems. Meters don't always reflect the truth; trust your ears.

More recently, high-resolution systems (SACD, DVD-A) have appeared, offering many more choices in shaping the timbre of the final product, while LCRS, 5.1 and 6.1 mixes open new perspectives in placement. Not lost on the buying public is the reality that a DVD-Video soundtrack can sound very good—punchy, rich and full—despite the fact that this is a lossy, data-compressed medium. But by experimenting and *learning* a few nuances, such as the different requirements of DTS and Dolby Digital tracks, and keeping a close watch on the basics—gain structure, signal clarity, phase and the like, we can ensure that our productions deliver the best in any delivery medium.

The lesson may be simple, but the challenge is formidable.

George Petersen
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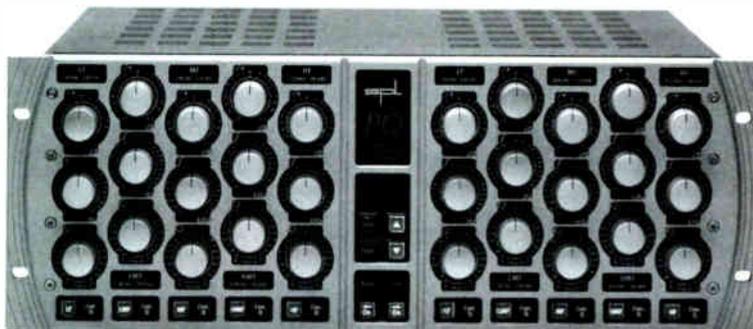


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Letters to Mix



REMEMBERING DENNY

I'm just one of the very blessed people who got to spend time with Denny Purcell. All of the projects that I worked on from 1987 to the present, Denny mastered for me. I'm an independent engineer in Jacksonville, Fla., and because I am an outsider to the Nashville community, most people might not give me the time of day. But when I got off of the airplane and drove to Georgetown, I was in Denny's world, and there I was equal to anyone who Denny has ever worked with. Denny viewed everybody as an equal; it didn't matter how much fame, money or what you thought of yourself. My money spent the same as Garth Brooks', Rick Skaggs'...you get the picture.

I hope that these could be a tribute or something written about Denny; not just about his mastering/engineering, but about him as a person.

Jeff Alford
Jacksonville, Fla.

Please read "Current" in our October issue for some personal and professional tributes to the late Denny Purcell.—Eds.

PRODUCTION SOUND HEROES

I wanted to offer kudos to George Petersen's "Unsung Heroes" editorial ("From the Editor") in September *Mix*. Having come from production sound and then moving on to post, I truly appreciate your article. You are so right when you say "least appreciated," and it's not always by the general public. Sometimes, those in our own industry are unaware of what's going on. So, again—and I know I speak for my brothers and sisters out there—I thank you for getting the word out.

David Weishaar
Board of Directors
Cinema Audio Society

MAZER: HD MAKES THE GRADE

Here is an update to my recent rant in these pages about analog versus digital. I now have the ability to record and mix multitracks at 192/24, and I am very pleased with my purchase.

We purchased a Pro Tools|HD system a few months ago. Our only previous experience with PT was with the 001, which we found to be very useful, friendly and easy to use. It sounded pretty good for a 48/24 system when we used our Apogee converters.

Since first hearing 192/24 last year, I knew that I would be satisfied owning a digital system only if it offered the ability to record and mix at least 24 tracks at 192/24 or higher. I wanted user-friendly software that is common to our industry and works on the Mac OS.

I have done two high-resolution projects in the past year, Neil Young's *Harvest DVD-A* (to be released this month) and Janis Joplin's *Cheap Thrills SACD* (released last month). Both were mixed in the analog domain. I am very pleased with both, and I want to make sure that any projects I do in the future sound this good. My experience with the 001 also made me want to use a system that remembered everything I did, statically and dynamically.

David Smith, who runs Sony Music Studios, and I do a lot of projects together. His facility can handle SACD, DVD-A, -Video and most every analog format. We call it a Noah's Ark (two of everything). The late great mastering engineer Denny Purcell is my guru. We all talked about PT and agreed that a listening test would be the next step. David took a beautiful George Massenburg 1/2-inch master recording and an ATR that has response out to 50 kHz and fed it into his PT HD system at 192/24. We did an A/B test comparing the direct output of the ATR and PT. The results were amazing, and I ordered my system the next day.

It is very common to see people moving hard disks, DVD-ROMs and AITs from studio to studio. On a recent project for NBC, we sent an AIT backup of one song to Mike Bradford in L.A. Mike's song, "In a Little While" (Uncle Kracker), was in the show, and Mike wanted to tweak the mix. In a few days, he sent back the AIT with a new session that I was able to drop into the show. It synched up perfectly, and everybody was happy. I am very happy to be a part of this revolution.

Elliot Mazer
New York City

CARE AND FEEDING OF ACETATE

I enjoyed Eddie Ciletti's recent *Mix* piece on resur-recting old Mylar tapes ("Tech's Files," July 2002).

Thanks to the Almighty, it seems that my '70s

location recordings are in good shape. (They are Scotch 203 and 207, and Ampex 407. I used 1-mil tape to get maximum recording time on my Stellavox, which used 5-inch reels.) Seva (one of the founders of Waves) is a good friend of mine. He has kindly been transferring some of my 1974 Eastern Himalayan recordings to digital, and he tells me that the originals are in excellent condition—and that's after the most casual storage in Hawaii's high heat and humidity! No need to bake them, it seems.

But my 1966 recordings from Bali and 1968 recordings from the Andes are a horse of an entirely different feather: acetate tapes, 1-mil Scotch 150 and such on 5-inch reels. Quite frankly, I've been too scared to take them out of their boxes, fearing that they will simply disintegrate. Any advice to offer?

Incidentally, the 1966 recordings were apparently the first stereo recordings ever made of Balinese gamelan. In Singapore, en route, I went into an electronics store and discovered, to my excitement, a stereo battery-powered recorder called the Concertone 727, 1/4-track stereo with 3 3/4-inch and 7 1/2-inch. It was flimsily built, but it worked long enough for me to make the recordings, which Tracey Sterne issued as the Nonesuch Explorer albums *Music From the Morning of the World* and *Golden Rain*. In the Andes in '68, I used a battery-powered Akai, which I recall as being bulky and heavy and also 1/4-track.

David Lewiston
Via e-mail

Thanks for writing. I recently heard a story on NPR about the Nonesuch Series and would love to hear some of your work.

You say you are fearful of the acetate. Is that because they are in poor shape? Or haven't you attempted to play them? I totally understand your feelings about them being 1 mil. My advice is to only play (and not fast-forward or rewind) until you are certain that the tapes can tolerate the abuse. Wind them onto larger NAB reels with plenty of padding at the head, tail and in between until the reel is nearly full. This will reduce stress on the tape. Do not bake!

There are now plenty of high-resolution digital recorder options so that you can comfortably copy these tapes without fear of losing anything. Good luck, and let me know how it goes.

—Eddie Ciletti

Send Feedback to *Mix*
mixeditorial@primediabusiness.com



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World Radio History

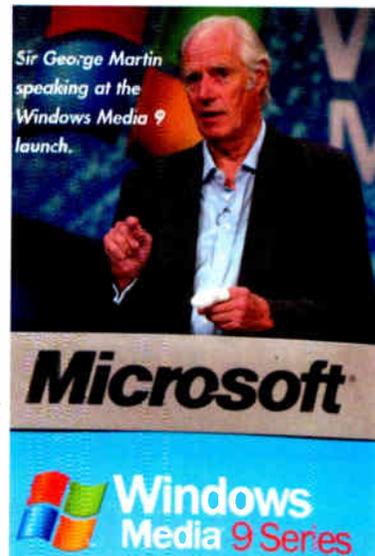
WINDOWS MEDIA 9 SERIES LAUNCH

Sept. 4, 2002, Hollywood—All eyes were on the Hollywood and Highland Media Complex for Microsoft's launch of the Windows Media 9 Series. After \$500 million and years of development, WM 9 Series, like competing systems from RealNetworks and Apple Computer, is for streaming TV and CD-quality music over the Internet. Film and record companies have held back on embracing the idea of Internet downloading of current titles for two major reasons: copyright protection and acceptable picture and sound quality. The Windows Media 9 Series is Microsoft's response to these challenges, as well as to a pending Senate bill mandating a government-approved, anti-piracy mechanism in all computers and consumer electronics.

The WM 9 Series is more than an upgrade. Besides advanced codec facilities and encryption algorithms, the software at the time of encoding allows the content owner complete control over down-

loaded files on the consumer's computer. By way of a digital "envelope" that surrounds and encrypts all Windows Media 9 content, movies and music files are "predestined" according to price, what file is downloaded and how it is to be used. Files could be made to "time out" or rendered useless after a certain time period, and can permit only one copy to your hard drive or play only with no copies authorized.

Among the new features of WM 9 Series are: zero buffering for broadband connections, instant streaming and playing of large media files; full-screen picture with better quality than DVD (MPEG-2) at about half of the bandwidth; better sound quality than music CDs with full support for 24-bit/96kHz, 7.1 surround sound; video smoothing where extremely low bit-rate video or audio files are greatly improved, even over dial-up connections; and a host of client-side features like time-stretching, customizable screens and play listing. —Barry Rudolph



ZOMBIE, CORPSES AND ADR, OH MY!



Taking a break during the final mix are (from left) Joe Barnett (dialog mixer), Rob Zombie (director), George Haddad (effects mixer), Fred Howard (sound supervisor) and Sean Lambert (picture editor).

Widget Post (Culver City, Calif.) recently finished up a comprehensive sound package for Rob Zombie's gothic horror film, *House of 1000 Corpses*, in its new 10,000-square-foot audio post-production studio. Widget's audio team completed ADR/Foley, sound effects, backgrounds, dialog editing and the final mix for Zombie's directorial debut. Zombie also wrote the script and composed all of the film's music.

"This was a unique project in that, as a musician, Rob Zombie had a unique perspective on what things should sound like," commented Fred Howard, sound supervisor at Widget Post. "He wanted to push the limits in the audio landscape to maintain a consistent level of chaos and angst for the viewer. So in that sense, one of the biggest challenges was just keeping up with Rob's imagination."

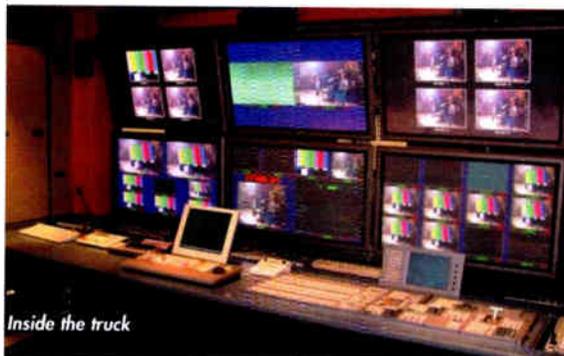
NMT ADDS TO ITS FLEET

COMPANY TO MANAGE TWO TRUCKS

National Mobile Television president Jerry Gepner announced that NMT and Location Solutions by Keslow Television have entered into a joint-venture agreement that provides NMT exclusive access to and management responsibility for the company's twin 53-foot edit and transmission mobile units, LS-1 and LS-2.

These units are multifunction edit facilities that can serve as complete broadcast centers, which will provide NMT and Location Solutions clients with a one-stop solution to manage large events," as opposed to, say, engaging NMT for just the production end and a company like ours to provide the added facilities of a broadcast center," said Jim Palmer, VP and general manager of Keslow Television.

The Location Solutions brand will remain as a separate entity.



ATTENTION EMPLOYERS!



OSHA RELEASES FINAL RULE TO RECORD HEARING LOSS

The Occupational Safety and Health Administration (OSHA) released a final ruling that revises the criteria for recording work-related hearing loss.

Beginning January 1, 2003, employers will be required to record work-related hearing loss cases when an employee's hearing test shows a marked decrease in overall hearing. Employers can make adjustments for hearing

loss that is caused by aging, can seek the advice of a physician or licensed health care professional to determine whether the loss is work-related, and can perform additional hearing tests to verify the persistence of the hearing loss.

Under the new rule, the criteria will record 10dB shifts from the employee's initial hearing test when they also result in an overall hearing level of 25 dB. The old criteria recorded 25dB shifts.

Visit www.osha.gov for more information.

ON THE MOVE



Who: Lynn P. Martin

What: president, North American Pro Audio

Previous Lives:

- August 1999-February 2002, VP merchandising, Technology division at Guitar Center
- September 1991-July 1999, executive VP for sales and marketing at Harman Music Group

Main responsibilities: Continue to build the brand and grow sales for Allen&Heath, while further developing our world-class U.S. distribution company.

I knew I was in the right profession when I... found myself developing, marketing and selling products for the brands and the type of gear that I used to dream of owning.

The one piece of advice I would hand down to students entering this business is... listen to your heart, follow your bliss, only do it if you're going to enjoy the challenge. Oh yeah, and uh...plastics, the future is in plastics.

The one piece of advice I wish someone told me before I entered this business is... it doesn't matter, I wouldn't have listened anyway.

Currently in my CD changer are... Tosca (two discs), Deepsky (getting into techno), Clint Black's *Greatest Hits* and Jean Luc Ponty's *Imaginary Voyage*.

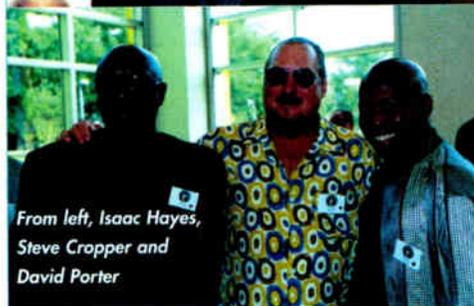
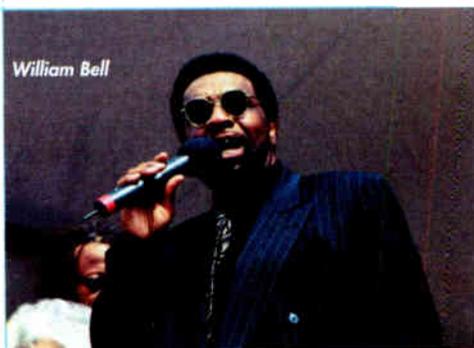
When I'm not in the office, I... think about what I'm going to do when I get there or go scuba diving.

BIG DOG MIXES CUCHARA

Diego Lopez recently finished mixes for the new and soon-to-be-signed group Cuchara at **Big Dog Studios** in Miami. Designed by John Arthur Design Group, the studio features Pro Tools|24 MIXplus with Pro Control. The project was produced by Jay Giron.



WELCOME TO SOULSVILLE, U.S.A.



A 500-seat performing center is also planned.

Design architects LRK, in partnership with Self-Tucker Architects, has contributed to the Soulsville project. For more, visit www.soulsvilleusa.com.

"Just over three years ago, the roughly four-acre site on which the Stax Museum of American Soul Music and the Stax Academy now stand was covered with debris and abandoned apartment complexes in need of demolition," said Andrew F. Cates, chairman and project developer of Soulsville, the nonprofit corporation responsible for the \$20 million Soulsville Revitalization Project in downtown Memphis.

But this past July, Cates and the rest of the Soulsville Revitalization crew celebrated the opening of the 27,000-square-foot Stax Music Academy (which sits on the site of the old Stax Recording studios), one of many planned grand openings for this musically historical district. The academy, which will focus on music to help troubled youths, sits next to a 17,000-square-foot museum of American Soul Music, also newly opened.

ONE-STOP MIX SHOP

A collaborative effort between veteran mixer Bob Rosa and new mixing talent Andy Zulla has resulted in a one-stop, record-fix-and-mix production facility: Miami Mix. Utilizing a state-of-the-art production facility—including a live tracking room, multiple Pro Tools rooms, an SSL/Pro Tools mix room, a well-stocked cabinet of vintage mics, and an extensive array of outboard gear and musical instruments—Miami Mix offers producers and artists recording, mixing and mastering capabilities to finish their projects.

For customers who are unable to physically hand over their master recordings, Miami Mix is equipped with ultrahigh-speed DSL and is also one of the first studios to be wired with DMO:D (Digital Media On Demand) secure mix data-delivery system.

For more, call 305/458-3443.



Bob Rosa (left) and Andy Zulla

ALBUM WORK DREDG'D FROM TRACK RECORDS



PHOTO: DAVID GOGGIN

Pictured from left to right are (standing) Gavin Hayes (vocals) and Dino Campanella (drums); (seated) Tim Palmer.

Interscope artists Dredg recently stepped into **Track Records** (North Hollywood) to work with producer/engineer Tim Palmer (The Cure, Pearl Jam). The group tracked, overdubbed and mixed their upcoming major-label debut *El Cielo* at the studio's new SSL SL 9000 ; Series SuperAnalogue Console.

SAE GOES PLATINUM

TOP OF THE FIELD GATHER FOR ROUNDTABLE

At AES, Desmond Child, DJ Muggs, Roger Nichols, Alan Parsons and Eric Schilling gathered at the SAE Institute booth to announce the "SAE Institute Platinum Series World Tour," a new series where these top audio pros will discuss how they got their start and what they look for in the studio. The series will premiere this coming January.

Cosponsored by *Mix* magazine, Lexicon, Quantegy and Steinberg, these educational roundtable discussions feature leading engineers, producers, artists and songwriters talking about the current and future direction of the recording industry. In conjunction with these events, SAE has established several scholarships that will be awarded in the name of each individual Platinum Series panelist.

For those who will be unable to attend the roundtable discussion, it will be Webcast live via www.sae.edu.



Shown l to r: Roger Nichols, Eric Schilling, moderator Dan Daley, Alan Parsons, Mark Martin (SAE VP of North American marketing/expansion) and DJ Muggs

Industry News

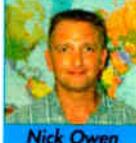
Mackie Designs (Woodinville, WA) has named **Gregory W. Riker**, a director at the company since 1998, chairman of the Board of Directors, succeeding founder **Gregory C. Mackie**, who was named Chairman Emeritus and will remain a director...The new general manager over at **Crest Audio** (Fair Lawn, NJ) is **Richard (Rick) Gentry**...Former senior VP of operations at Universal Studios, **Don Potts** brings his experience in the amusement and entertainment industry to **Techno-media Solutions** (Orlando) as COO...**Brian Divine** returns to



Gregory Riker



Greg Mackie

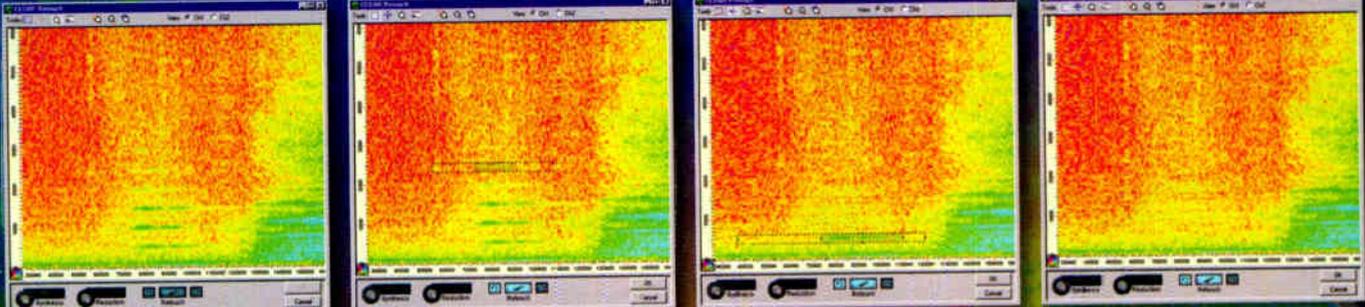


Nick Owen

Crown International (Elkhart, IN) in the marketing communications manager position. In other company announcements, **Nick Owen** has recently been hired to fill the sales director position for Europe/UK, Middle East and Africa customers...**QSC Audio** (Costa Mesa, CA) new appointments: **Barry Ferrell**, senior product development manager; **Francois Godfrey**, cinema market manager; and **Karl Moet**, product application specialist...**Mark Phillips** has been promoted to the newly created position of product orientation manager of **Fostex America** (Norwalk, CA), where he will train the company's reps and dealers, as well as ongoing customer support activities...Overseeing all of **Disc Maker's** (Pennsauken, NJ) sales operations nationwide is **David Olinsky**. In other company news, **Healy Peck** has been brought onboard as the new outbound telesales manager, where he will be responsible for the startup and launch of the company's new Outbound Telesales Program...**Patrick O'Neal** is now responsible for sales and marketing for all of **Terrasonde's** (Boulder, CO) product lines...Jumping over from Kurzweil Music Systems, **David Fox** joins **Sonic Network Inc.** (Arlington, MA) as the new manager of sales and marketing...**Audio Visual Innovations** (Tampa) has brought onboard **Alyson Homenuk** and **Bobby Greene**, regional director of business development for Florida's west coast and senior account manager, respectively.

CORRECTION: ALLMAN BROTHERS

In the September issue, the names of the engineers for the Allman Brothers ("Tour Profile") were backward. Earl McCoy is seated at the console. *Mix* regrets the error.



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The new **SADiE V4.2** editing software for the **SADiE** range of digital workstations offers the sound engineer an awesome range of new tools and displays, making audio editing faster and more concise than ever before. In combination with the implementation of such industry standards as DDP, DDP to Network, Exabyte, AES31 etc., **SADiE** users now benefit from the world's most advanced and professional mastering system, backed up by the availability of regular software upgrades at no-charge, plus unrivalled customer support that the others can only dream about.

Utilising **SADiE V4.2** as the base platform, **CEDAR** has developed a revolutionary tool to remove unwanted acoustic events such as page turns, creaking piano pedals or even car horns.

This development has culminated in the remarkable new **CEDAR Retouch™** for **SADiE**.

Retouch™ expands the renowned **CEDAR for SADiE** range with a remarkable patented process that is simply not available from any other manufacturer.

By using an innovative spectrogram display, the sound engineer can identify an unwanted sound in time, frequency and amplitude. Once identified, **Retouch™** seamlessly replaces the unwanted sound with material generated from the surrounding signal.

In combination with the other legendary **CEDAR for SADiE** processes such as **DeClick**, **DeCrackle**, **DeThump** and **DeNoise**, clicks up to 2000 samples and thumps up to 50 000 samples or longer can be removed with no audible side effects.

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SADiE dealer or office for further information and to arrange a demonstration.



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www.mixonline.com

Send your "Current" news to Sarah Benzuly at sbenzuly@primediabusiness.com.

MIX LOOKS BACK



For *Mix*'s 25th anniversary this year, we begin looking back at where we started. Here are the Number One album and single from *Billboard*, November 1977, with special props to the engineers, producers and studios who make the magic.

NUMBER ONE ALBUM



For the eighth consecutive month: *Rumours*, Fleetwood Mac. Producers: Fleetwood Mac, Ken Caillat, Richard Dashut. Engineers:

Ken Caillat, Richard Dashut. Studios: The Record Plant (Sausalito, CA), Wally Heider (Los Angeles), Criteria (Miami), Davlen (North Hollywood), Producer's Workshop (Hollywood). Mastering: Ken Perry/Capitol.

NUMBER ONE SINGLES



Debbie Boone's "You Light Up My Life." Producer: Joe Brooks. Studio information not available.

STEP INTO THE PARLOR



The Parlor Recording Studio, originally owned by Randy Travis, reopened its doors on Nashville's Music Row. New owners Larry Sheridan and Robin Ruddy (also owners of Best Built Songs and Parlor Productions) have redesigned the studio with Michael Cronin of Michael Cronin Architects.

The room is equipped with a Sony DMX-R100 digital console and a Trident sidecar. Tape formats include 48 tracks of iZ RADAR hard disk and a 24-track/2-inch Studer 800 analog machine. The studio also features a Yamaha C7 grand piano with MIDI.

For more, visit www.BestBuiltSongs.com.

NOTES FROM THE NET



Quickly following the demise of Napster, entertainment industry groups, including the RIAA and NMPA, have asked a federal court judge to rule before a trial on their copyright-infringement claims against file-swappers KaZaA, Grokster and Morpheus, arguing that the past several months have made it "abundantly clear" that the file-swapping services are illegal.

As reported in August, the major labels' new plan to fight online piracy is to hook the users rather than the actual online service. Part two of this new approach lassoes the federal government. Reuters reported that some senior members of Congress were pressuring the Justice Department to invoke the No Electronic Theft Act. Signed by former President Clinton in 1997, this act makes sharing copies of copyrighted products with friends and family members a federal crime if the value of the work exceeds \$1,000. Violations are punishable by one year in prison. If the value hits \$2,500, violators are subject to a maximum penalty of five years in prison. The agency has used this act to imprison software pirates. According to the report, 19 members of Congress—including Sen. Joseph Biden, D-Del., Rep. James Sensenbrenner, R-Wisc., and Sen. Dianne Feinstein, D-Calif.—urged Attorney General John Ashcroft "to prosecute individuals who intentionally allow mass copying from their computer over peer-to-peer networks." No further action has been reported.

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The Contour switch is extremely useful in keeping low frequencies from "muffling" or "punching" holes in your sound.

Monitor either input or output signals.

Our patented switches are designed to be easily seen in the light or the dark

Detented controls and soft-touch knobs assure precision adjustments.

Patented PeakStopPlus™ circuit intelligently tames signal peaks.

Sidechain Monitor selection connects the sidechain return signal to the 1066's output. This allows monitoring of any signal that is inserted into the sidechain loop to assist in setup.

Independently set attack and release times or use Auto mode to get that classic dbx sound.

Vary the Ratio to select anywhere from gentle down-ward expansion to gating.

Adjusts from mild compression to ∞ : 1 limiting.

Add make-up gain or match levels over a 40 dB range.

Internal power supply with easily replaceable power cord.

Heavy-duty steel chassis will take years of road use and abuse.



Easily accessible fuse you'll probably never need to find out how easy.

Connect the unit hassle free using either unbalanced or balanced 1/4" TRS or balanced XLR connectors.

Ensure signal path integrity with gold plated locking Neutrik® XLR connectors.

Add processing to detector path (using the sidechain) for frequency-conscious compression, gating special effects.

Servo-balanced outputs drive up to +22dBu

Separate sidechain send and return jacks—no special "insert Y-cables" required.

Convert semi-pro -10dBV signals to the dbx 1066's professional +4dBu internal level.

Precision balanced inputs reject hum and noise in tough audio environments.

dbx compressors have been the standard in signal processing for over thirty years. After all, our processors are in daily use all around the world with major touring companies, world class recording studios, radio and television broadcast facilities and anywhere else that audio professionals ply their trade.

Why do the best ears in the business time and time again turn to dbx for their processing needs? Maybe it's because we invented the modern day compressor. Perhaps it's because we have over 30 patents to our credit. It could be that our technology like OverEasy and PeakStopPlus won't be found in any other compressor. However, we think it's because dbx just sounds better.

It's no wonder that countless gold and platinum albums have used

dbx processing and that eight out of the top ten U.S. tours use dbx each night because their sound is too valuable to trust to anyone else. But don't take our word for it, head on down to your local dealer today and hear for yourself why dbx just sounds better.

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I Sing the Body Electric

I Ching—Vox Humanus Eclectic



ILLUSTRATION: WILL TERRY

Man sang before he talked. Considerably before, in fact. Whether high-pitched squeals of anticipation, screams of surprise or defense, the low moans of sadness or grief, or the complex pitch sequences of mating, these primal, pitched expressions were, in fact, song. Meaningful, universally understood—and eons before actual speech—true song. It is part of what we are.

At least that's what some guy at MIT told me. But then he was the groundskeeper. As I have certainly committed to columns in the past on considerably less-reliable empirical data, I shall continue.

I HAVE ONE SIMPLE QUESTION: WHAT THE HELL HAPPENED TO SINGING?

Part of what made "Stairway to Heaven" was that you could *feel* Robert Plant work for a lot of those notes. You could feel the toll of the tours, the drugs, the lock-outs. You knew this was rock. You knew it was real.

And speaking of metal flying things, "In-A-Gadda-Da-Vida" was special, not only because it was the world's very first Platinum album with 81 weeks in the Top 10 and 25 million units sold to date, but because Ingle made the probably wise choice of simply *avoiding* any scary notes in the 17-minute title song, giving it that incredibly powerful heaviness and authority.

And the Blues Magoos? Lots of extra notes in there. Several have never been used since.

Listen to SRV. Try *Texas Flood* and *Live Alive*. You can feel Stevie Ray's throat getting raw, you can hear the cigarettes and booze. You can hear the haze...

Ah, haze (of course)...just how much purple do you think it took to get Jimi to sing so simply, so directly and so understandably—all the while coercing a tortured, half-charred left-handed Strat into singing melodies from the far side of the galaxy?

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even while you were trying to run away from all of her intensity and pain, but you did neither. You just stood there in awe. You didn't take a breath until she did.

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Yma Sumac. The debate still goes on: Did she really have that inhuman range? Did she really hit those 15kHz notes?

KC & The Sunshine Band. The only damned thing anybody can remember now is the refrain "That's the way, uh-huh, uh-huh, I like it." Why is that? Was it the amazing polytonal counter-melodic harmony lines? Nuh-uh. It was because the kid pushed "I LIKE it" so he could hit it. It had a *sound*, a simple little fun *feel*.

"Bye, bye, Miss American pie. Drove the Chevy to the levee, but the levee was dry." Everybody sang along. Everybody could. Hell, even if you couldn't, all you had to do was get three or four friends to sing at the same time and you could

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Blues: Delta, Chicago, all real blues. Not a note hit true among 'em. But when they sang—wail or mumble—they told a story that almost everyone felt. And these songs are so simple that you know it's

Singing isn't just hitting
the damned notes,
although it's always a
pleasant surprise when
someone does.
It's about how the singer
gets there.

not the melody that's reaching you, and it's not those infamous 12 bars. It's the loose, informal, soulful, honest delivery.

Singing isn't just hitting the damned notes, although it's always a pleasant surprise when someone does. It's about

how the singer gets there. It's about what's in those notes: the textures, the feelings, the organic honesty, the effort or, in some cases, the *lack* of effort.

TAKE MY HAND AND WE'LL JUMP TOGETHER

Let's try to make a big jump together. Some of you will make it and some won't, but I'm willing to take the chance. Here we go.

What's in, what's *really* in, "Danny Boy"? A few of you, those who have lived a little more than others, those who have felt real loss, experienced humanity in its most pure and honest form might still be with me here. To the others, hold on; I'll be right back.

Has that song ever moved you? Not the Muzak version, but one of the better classic recordings or even the rare contemporary live performances. When the right tenor sings this song the right way, the listener knows *that the performer knows*: Soul to soul, an understanding has been reached.

To be sure, the melody is simple yet haunting, but it's the performance—the

—CONTINUED ON PAGE 190



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World Radio History



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The Right Stuff

Music and Technology at the Hartt School

Not long ago, I talked to Matthew Girard, a 2000 graduate of the Music Production and Technology program at the Hartt School of the University of Hartford. I asked him what he thought of his past four years. "Oh, it was great," he replies. "Except they got all of the cool gear right after I left."

When I told program chairman Scott Metcalfe this story, he laughed. "I hear that from the graduates every year," he says. "If they didn't say it, it would mean I'm not doing my job."

There is plenty of equipment at the Hartt School, and like any good technically oriented school, it keeps changing to keep up with the times. But there is plenty of music training, too, which appeals to me because I'm one of those old-fashioned types who thinks that musicians make the best audio professionals. Engineers who understand scales and harmonies as well as compression and dithering have a much better chance of making it in the audio industry, whether as a mixer, a sound effects editor, a systems designer—you name it. The product of our industry is music—technology is merely the delivery system.

The program at the Hartt School exemplifies this because it combines the idea of audio education



Teacher Justin Kurtz (left) and program chairman Scott Metcalfe

PHOTOS: BILL MORGAN

THE BEGINNINGS

The Hartt School used to be known as Hartt College of Music, which has long ranked as one of the top music conservatories in the nation. Founded in 1920, Hartt College merged in 1957 with a liberal arts college and the venerable Hartford Art School to become the University of Hartford. Hartt maintained its own identity within the university and has recently added theater and dance departments, so the "of music" got dropped.

The university's campus sits on 300 acres of former farmland, about three miles northwest of downtown Hartford, the capitol of Connecticut, a city once described by Mark Twain as "the most beautiful in America." It's just about halfway between Boston and New York, a couple of hours' drive from both cultural centers.

The Music Production and Technology (MPT) program was started in 1994. David Budries, now chair of Theatrical Sound Design at the Yale School of Drama, was the driving force behind it. "The goal was to teach musicians how to be recording engineers and producers," says Metcalfe. Students who apply to the MPT program must audition on an instrument or their voice, and they take a music theory exam before they are admitted. "We look for musicians with a strong enough background in math and science to handle the electronics and engineering courses," Metcalfe explains. "Our philosophy is that music should be first and foremost; to be a successful producer, you have to first be a musician and a technician second."

Metcalfe is a Hartt graduate; he was a music composition major. "I was working as a freelance engineer," he says, "and I did some theater sound work



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for David. He recruited me in 1996. I had never taught before, so I thought I'd give it a try. It turns out I really liked it. When David left for Yale, he recommended me as chair."

WORKING THROUGH THE CURRICULUM

With a rigorous curriculum in place, students have little time to take any more than a handful of electives during the eight semesters. In the first semester, students take a DC electronics course, followed by AC electronics the next semester, then analog circuits, and finally digital circuits. Also required are courses in music theory and analysis, ear training, arts management and acoustics; students are required to take lessons on their instrument (or voice) and participate in one of the school's many ensembles, as well.

Metcalf recently added a practicum to the curriculum. He says, "In the past, students helped out in the studios either as volunteers or work/study. But now we're making it a requirement: at least two hours per week during their sophomore year. They record Hartt concerts, recitals and demos for other students; master per-

formance recordings to CD for duplication and sale; set up P.A. systems for performances; and do archiving, database-ing, invoicing and other business-related duties."

With a large music school around them, the MPT students develop a wealth of ex-

as the big band and jazz combos. Students also do recordings with rock bands, many of which are made up of Hartt students."

MIDI courses have been added to the curriculum recently, with an emphasis on Digital Performer, as well as Unity DS-1, Retro AS-1 and Metasynth. "It puts a little more creative, compositional element into the major, which makes them better producers," Metcalfe says. "We don't get into beats and loops. We teach them what they need to know about MIDI and synthesis and sampling. And if they want to take it further than that, they can do it on their own."

In between their junior and senior years, students are required to participate in an internship. The internship requires 150 to 180 hours in a professional facility, and students maintain a daily journal of their experiences. The largest number of students will take on an internship in studios, while some work at theaters, sound reinforcement companies or sound-for-picture facilities.

Seniors take a unit on what Metcalfe considers to be a very important topic: the business of running your own studio. "We

—CONTINUED ON PAGE 209

Our philosophy is that music should be first and foremost; to be a successful producer, you have to first be a musician and a technician second.

—Scott Metcalfe

perience in different types of music. "We try to record as many different groups as possible," says Metcalfe. "The school has a great symphony orchestra, symphonic band, percussion ensembles, a steel drum ensemble and new music groups, as well

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RECORDING

For our annual look at vocal-recording techniques, we chose four stylistically different recent CDs and talked with the engineers about the gear and methods they used to capture the singers. This time around, we looked in on album sessions with rock titan David Bowie, up-and-coming chart-topper Avril Lavigne, the talented and sophisticated singer/songwriter Duncan Sheik and the incomparable soul vocal group Boyz II Men.

Tips and Techniques From Four



David Bowie's *Heathen*
Engineer: Tony Visconti

The partnership between David Bowie and producer/engineer Tony Visconti dates back to the late '60s and encompasses so many of the legendary singer's greatest works, including *Young Americans*, *Low*, *Heroes*, the magnificent live album *Stage* and many others. Bowie's latest is called *Heathen*, and many fans agree that it is his strongest collection of songs in many years; perhaps not coincidentally, it marks the first time Bowie and Visconti have collaborated on a full album in more than two decades. If anything, Bowie is an even better singer today than he was during the earlier decade-plus he

worked with Visconti. And both remain committed to taking chances in the studio: *Heathen* is loaded with brilliant and unusual instrumental and vocal touches; it's quite a tour de force all the way around.

"He's truly a great singer," Visconti says. "That has never changed. During the *Low*, *Heroes*, *Lodger* and *Scary Monsters* period, he would often write lyrics and sometimes melody right on mic! And that writing session would be the master vocal take, as well. He'd ask me to roll the tape, he'd sing two lines, then he'd pause, work out another two lines and ask me to punch them in. At the end of, say, an hour of this, he'd ask to double-track certain lines, and *voila!* We'd have a lead vocal. I would often stand next to him and sing backups to those vocals. In the end, it would sound so incredibly rehearsed, but it wasn't. Other artists I've worked with

VOCALS

By Blair Jackson

had to try out this method when I told them about it, but it would backfire—after 10 hours of nonproductive writing and singing. I guess only Bowie can work this way. His mind is mercurial, and his vocal chops are first-class!

“We did a bit of that on *Heathen*, although he worked out most of his lyrics before he attempted a master vocal,” Visconti continues. “The daunting thing was, sometimes he’d want to change one line or word a month later and, hopefully, we could match the levels and EQ so that it would sound seamless. Non-linear digital recording made this easier, but EQs and compression levels can easily get nudged over the course of two months.”

Visconti says that the basic vocal chain on the album consisted of Bowie’s own Manley Gold Reference Mic into an Avalon mic pre, into an LA-3A compressor and a Focusrite Red EQ, then

Top Engineers

into an Apogee 8000 A/D converter and a G4 Mac running Logic Audio. “I started recording vocals on analog, as I did with all of the drums [16-track at 15 ips with Dolby SR, or 30 ips with no noise reduction—I consider it to be the ultimate tape format,” Visconti says, but the lock-up became tedious, so we stayed in the digital realm—24-bit, 44.1k]. On one song, ‘I Took a Trip on a Gemini Spacecraft,’ I used a Shure SM57 to get a rockier sound, but I later regretted that because the Manley spoiled me rotten. It’s such a sweet mic, very musical in the midrange. The Manley mic vocals just leapt out of the mixes, whilst the 57 needed lots of EQ, compression and, ultimately, de-essing to get it above the mix.”

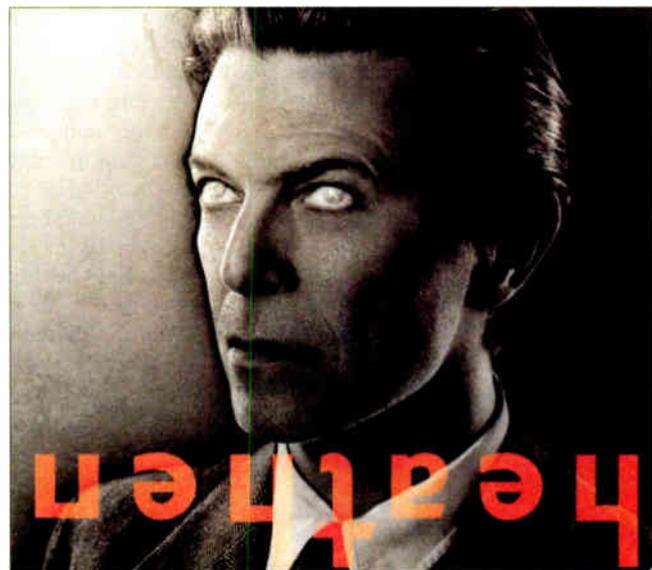
The CD was cut mostly at Allaire Studios, a gorgeous residential facility on the grounds of a 1920s mountain estate two hours north of Manhattan, and posted and mixed at Philip Glass’ Looking Glass Studios in Manhattan. (For more on that studio, see last month’s “Coast to Coast” section.) Because he both recorded and mixed the album, Visconti looked toward the end result and conceptualized effects as he went, rather than waited until the final mix to lay everything on. And he was not above using some of his tried-and-true techniques on the album, either.

“On some tracks, like ‘Sunday’ and ‘I Would Be Your Slave,’ we decided to resurrect the ‘Heroes’ vocal sound that some of your readers might recall when I’ve described it before,” Visconti says. [“Heroes” was the *Mix* Classic Track in February 1997.] “You need a big studio, and Allaire’s room is huge and not treated—other than a few carpets and tapestries judiciously placed on the floors and walls. The pitched ceiling is about 35 feet high,

and the floor is something like 25x40 feet. The way we did it, the main mic was augmented by two more, placed about 12 feet and 30 feet from David. The two distant mics were probably Neumann U87s but going through Drawmer noise gates. I carefully adjusted the thresholds of the gates to open when David sang above a certain volume. The mic at 12 feet would open when he sang *mezzoforte*, and the mic at 30 feet would only open when he sang *fortissimo*. Of course, the mic at 12 feet would be open then, too. I put the distant mics in omni mode to catch more of the reflections off of the walls and ceiling rather than David’s direct voice.

“No other special effects were used during the recording. David likes some reverb in his headphones when he sings. He’s very much a two-take singer and comping is a breeze because of that. If he doesn’t get it entirely in two takes, he will punch in the necessary line, word or even syllable. He is so slick and confident; plus, his voice is possibly the most sonorous voice I’ve ever recorded, rich in overtones and sheer power! He sings bang-on in-tune, so Antares is almost wasted on him. But I must confess to fixing a little unintentional wiggle during the mixes because he wasn’t available to fix it.

“On the mix, I use the usual effects on his vocal,” he continues. “That is, some slapback when called for, some reverb—usually a rich Lexicon program—and the occasional pitch-shifted delay to make an almost automatic double-tracking [ADT]



effect. I've been using these effects on his vocals as long as I've been working with him, since 1968.

"Slapback, since Elvis' day, gives a menacing sound, like a pagan god standing on a monolith in a valley. Flanging and chorusing seem to impart an air of mystery and a kind of druggy feeling for the lyrics—okay, I admit to surviving the '60s and '70s, and none of my children are mutants! Reverb just makes a vocal sound powerful and authoritative when the vocal is loud and confident. Reverb on a light or whispered vocal just sounds sexy. Then there are some really freaky things you can do with pitch shifting, octave dividing, but they are for very specific uses. I am always guided by the lyric and the emotion of the song and singer. And I try to use special effects in an emphatic context, not just for the sake of making a weird sound."



Avril Lavigne's *Let Go* Engineer: Scott Spock

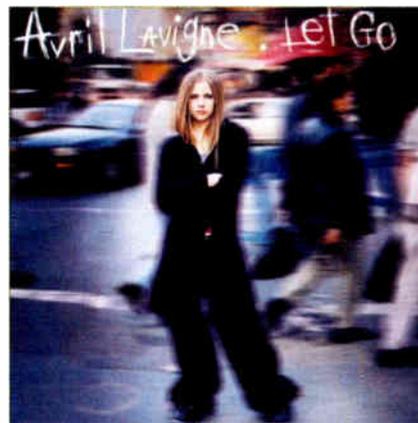
When the red-hot songwriting/production team The Matrix—that's Lauren Christy, Graham Edwards and Scott Spock—was first approached about contributing a song to the debut album of an unknown Canadian teenager named Avril Lavigne, "Initially, we were told she was going to be kind of like Faith Hill," says Spock with a chuckle. "She came in and sat on the couch, and we played her this song we'd written that was along the lines of a Faith Hill track, and she was *not* happy. She said, 'I don't want to do this; I want to *rock!*' We didn't know that she was this skater, punky type of girl. So we said, 'Okay, let's come up with a prem-

ise, then you come back tomorrow and we'll write a song. She came in the next day and we wrote 'Complicated.' *Boom!* L.A. [Antonio "L.A." Reid, president of Arista Records] heard it and said, 'Yeah, that's the direction,' and he sent her back to work with us for a month."

The fruit of their labor was six songs, five of which appear on Lavigne's multi-Platinum debut album *Let Go*, including the hits "Complicated" and "Sk8er Boi," and the projected next single, the ballad "I'm With You." For The Matrix, it's just the latest triumph in a career that's shooting into a higher orbit every day. Other top artists they've worked with include Christina Aguilera, the Backstreet Boys, Ricky Martin, Nick Carter and Liz Phair. All three Matrix members helped write and sing on the tunes they did with Lavigne, and Spock was the principal engineer. Tom Lord-Alge mixed their songs, though Spock's less-polished mix of "Complicated" has also received significant airplay.

Whenever possible, The Matrix like to eschew conventional recording studios in favor of working in rented houses, where they set up their Pro Tools rigs (they have four) and synths. Their work with Lavigne took place in a comfortable house—dubbed Decoy Studios—in an L.A. suburb known as Valley Village. "It works out great," Spock says, "because vocalists come in and they're very relaxed. They don't even realize that when they get on the mic, it's probably going to be on the record. With Avril, I think she thought she was cutting the demo of a song. The comfort level is very high working this way, and she's not standing in a \$2,500-a-day studio and thinking, 'Oh, my God, there's the engineer and this million-dollar board, and I've gotta sing this right 'cause it's going on the record!' She came in, she was really relaxed, and she nailed it. 'Okay, Avril, that sounds good.' 'It does? *Cool!*'"

Though he generally likes to do as much work as he can within his Pro Tools system and using native plug-ins—including compression and EQ—Spock also admits to a fondness for some vintage gear. "I'm a big advocate of recording to Neve 1272s," he says. "All of the guitars on 'Complicated' are through those. When I did the vocals, I was trying a Manley Voxbox at the time, and I really fell in love with it and wanted to use it on a few things. But I felt Avril sounded



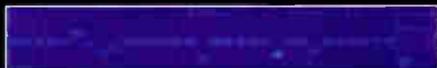
best through the 1272 and the Distressor. There was something in her voice that was malleable with the track going that way." Spock adds, "I'm also heavily into Apogee AD8000 [A/D converters]. They add so much depth to a recording. To me, it's like night and day."

Lavigne was set up in a wood-paneled room that had padding on three of the four walls and sang complete takes against the largely finished instrumental tracks through a Neumann U87. She generally sang five or six takes of each song, "and probably 90 percent of what was finally used came from the first or second takes," Spock says. The Matrix contributed some backing vocals, though more often than not, the shimmering blend is dominated by Lavigne herself—or so it seems.

"She's such a talent," Spock says. "Sometimes you need to really layer things to make someone sound good, but when you work with Avril, who has this amazing voice, if you want to thicken it out in the chorus, what I usually do is group the backgrounds together and EQ the hell out of them to exactly that one frequency that will add a little depth to the lead vocal without getting in the way, so you feel it but don't hear it. There's maybe three-part harmony on the chorus, but when you listen to it, it just sounds like her. I recorded Lauren [Christy] in the background in places, and there might be Graham [Edwards] and myself on a lower part, but heavily EQ'd. I took the group and used Filterbank—you dial in whatever frequency you want, so I EQ it really tight, so what I'm doing is pulling out specific frequencies that Avril has and just building in bits of low end and bits of high midrange to get the depth that I need in the vocals."



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RECORDING VOCALS

Spock concludes, "The more talent somebody has, the easier they are to work with usually, especially singers. And the less talented they are, the more insecure they are. 'The mics aren't right.' 'The headphones sound weird.' You get a lot of that from insecure singers. That's something you have to deal with being a producer. And, fortunately, I didn't have to with Avril. She was really great, really enthusiastic."

Duncan Sheik's *Daylight* Engineer: Michael Tudor

Duncan Sheik is a difficult artist to classify. The New York-based singer/songwriter specializes in an elegant, intelligent, introspective pop that straddles folk, rock and even alternative styles, sometimes all within the same song. His aesthetic was no doubt affected by his early '90s work with producer Rupert



Hine. Sheik's newest album, *Daylight*, finds him working with producer Patrick Leonard, and that turns out to be a good match, too; he's retained the tasteful rock backings and occasional lush orchestrations but added all sorts of interesting sonic and electronic touches. Sheik's vocals—smooth but with a hint of sandpaper in places—are always out front; Leonard understands that Sheik's singing carries the album and defines his persona. The thoughtful and imaginative final mix was by veteran producer/engineer Kevin Killen, so it was quite a team effort all around.

"Duncan is an artist who really has a very thorough sense of production compared to most other artists I've worked with," says Michael Tudor, who engineered the exquisite-sounding *Daylight* album and is perhaps best known for his radio remixes of the Moby hits "Southside" and "We Are All Made of Stars." "He has recording techniques that he likes and a good aesthetic for gear and so on. So working with him is really a collaborative thing, because he'll have ideas about what microphones or preamps he wants to use. My preference is generally to get the vocal through a Neve pre; I'm not even picky about what it is—something old, I guess. Duncan likes to use an 1176 for compression, and then normally, I'll throw some more compression on monitoring so he can have in his cans a real in-his-face kind of sound, as opposed to that sort of far-away sound that you sometimes get in a vocal booth, which is kind of distracting when you're really trying to throw yourself into a vocal performance."

The vocals for *Daylight* were cut in a few different studios, beginning at Capitol Studio A in Hollywood, where the

D P A T Y P E 4 0 4 1 - S M I C R O P H O N E

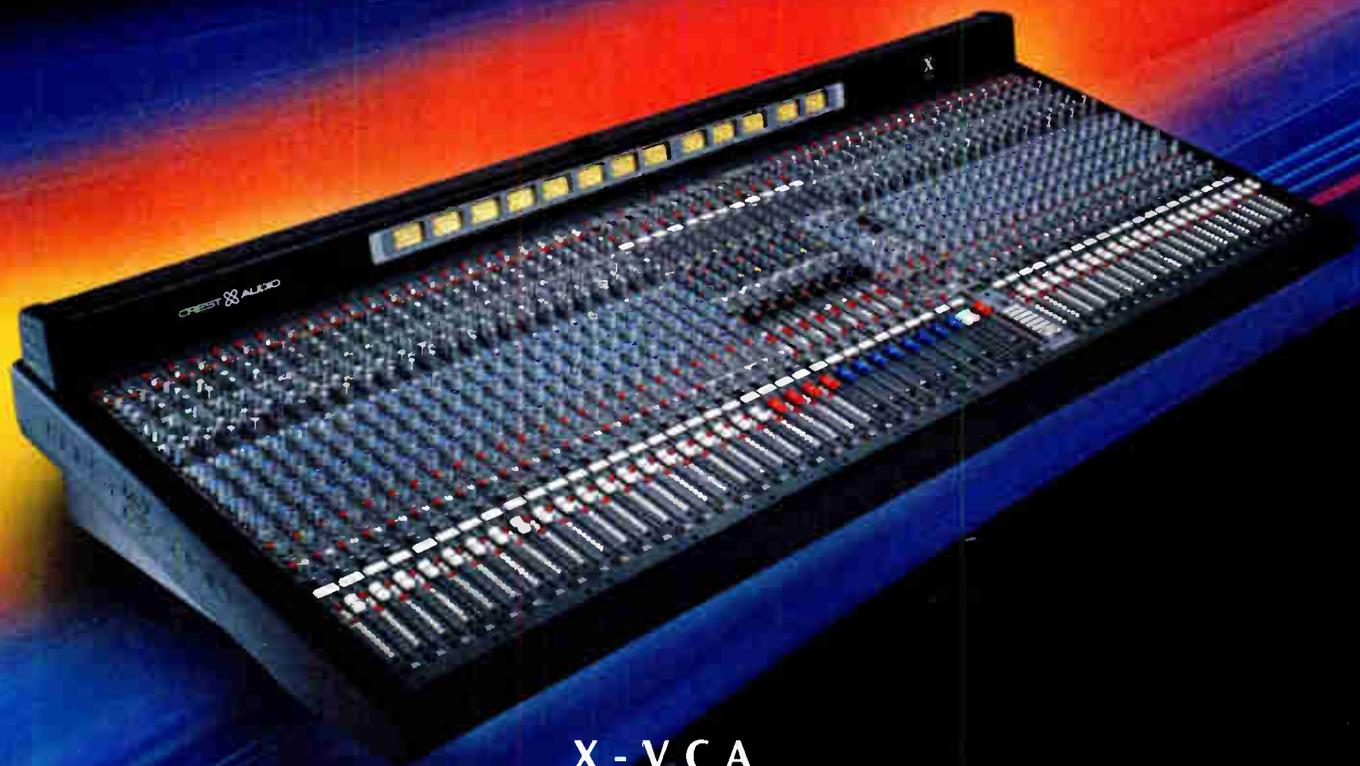
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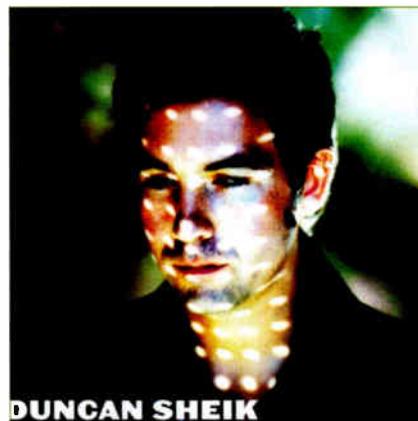
RECORDING VOCALS

basics were recorded. "We did some scratch vocals that turned into keepers there," says Tudor, who is based in New York and co-owns TMF Studios near Union Square. "Initially, we had him set up in a large iso booth with his acoustic guitar, some amps and a vocal mic so he could play and sing along while the band did their thing. But then when it was time to do a vocal overdub, he wanted to go out into the main room, which is really big—something like 60x60 with a 40- or 50-foot ceiling—acoustically, it's a beautifully designed room. I'm very loose about experimenting with things, so we set up a mic right in the middle of the room, and, vibewise, it was just perfect. You didn't even pick up that much room tone even though it's this massive space; it was nice and elegant and not over-the-top. At that point, we were using his mic, which is this Mojave Audio tube mic that Dave Royer designed. It's based on a U47, but it looks kind of like a C-12. So that was the mic we used for most of the vocals. Some of the vocals were also recorded on

a Telefunken 251, which I understand is a somewhat interesting choice because it's sort of picky about what voices it likes. A U47 is a little more forgiving; you can put any voice into that microphone. But Duncan's voice really showed off well with that microphone [the Telefunken], and he really liked singing through that."

The album was tracked to 2-inch Studer. "But we had Logic Audio in sync the whole time," Tudor says. "And after basics, we transferred the analog tracks into Logic and overdubbed against that."

After the Capitol sessions, the action moved to Leonard's now-defunct Johnny Yuma studio in Santa Monica, Calif., to Cello (where Leonard now has a room) and to Sheik's own personal studio, which Tudor says "is an excellent recording space, with a nice analog Calrec console and some other nice equipment. It's a really great environment to work in." Tudor says that Sheik is working on vocals at home; he favors the Mojave mic through a Telefunken V72 preamp and the 1176 compressor.



"Usually," Tudor says, "Duncan's lead vocal parts were sessions of their own, because in a lot of ways, it's the most important element in the track, and singing it is not just a matter of singing it. He has to come up with a concept for the performance and the delivery and the tone and all that. He likes to perform the song all the way through, though the finished vocal might be big



tangles?





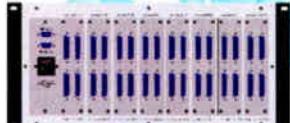
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RECORDING VOCALS

chunks from maybe three different takes.

"With him, the vocal usually solidifies itself over a few takes. Generally, we'll put the song up, get some levels, get him situated with the vibe. I always spend a lot of time trying to make the singer real comfortable so that they're in a good place mentally. Then he'll do a couple of takes just to warm up and get a sense of the thing. Four or five takes into it, he starts to deliver some really great performances. And they'll change from take to take, as they should, ultimately, because it's about being in the moment of the song. So then the comping becomes a performance issue more than anything else. You're looking for the most powerful and appropriate interpretation of a given part of a song.

"The important thing with singers is, you want to give them a sense that they're there in the studio with you to explore and express themselves and that it's going to come from them rather than from me or anyone else telling them what to do."

Boyz II Men's Full Circle Engineer: James Porte

James Porte is young enough that he idolized Boyz II Men years before he had a chance to work with them. "I loved that first album [*Cooleyhighharmony*]," he says. "I remember driving around in my Isuzu Impulse playing the Boyz II Men cassette really loud when I was in high school. So it was cool to get to work with them now—knowing their legend—and getting to hear what they can do in the studio."

Born in Liberia but raised mostly in Tennessee (where he attended Middle Tennessee State's excellent recording program), Porte moved to New York City a few years ago and landed a job as a manager at the Hit Factory and picked up some engineering work along the way. He's done remix work with The Trackmasters and worked with a number of artists on his own, but the eight tracks (out of 14) he engineered on Boyz II Men's latest, *Full Circle*, are probably his best and highest-profile work to date. When we spoke, he had just begun work in Miami with Lauryn Hill.

The first surprise about Boyz II Men, who are certainly in the pantheon of great vocal ensembles, is that they record individually rather than as a group. "They

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never sang together," says Porte, who tracked their vocals in two different rooms at the Hit Factory: studios 1 and 4, each of which is equipped with SSL 9000 J consoles. "We did everything separately. They start off with one guy going in and singing the melody. The next guy will come in—it's almost like it's tag team—and do the harmony or another part. Or somebody may do two parts when they're in there. But it's usually not something they've rehearsed. They know their voices, and they know exactly what to do. It was very relaxed. They wouldn't even be sitting in the studio waiting and listening to what the other person was doing. They'd be recording in another room or just waiting for their turn. 'Okay, let me hear what he just did. Cool. Let's go!' And they'd go in and be on it right away. It was amazing."

Porte says that all four of the Boyz—Wanya Morris, Nathan Morris, Shawn Stockman and Michael McCary—are "very open-minded, and they're into the latest technology, as well as the old-school technology. They were totally into trying different microphones. If it was a more aggressive song, they wanted to use an edgier microphone. If it was a pretty ballad, they wanted to use something that had some smoothness to it.

"What we did was try to find a mic that covered the dynamic range and frequency response of pretty much everyone," Porte continues, "and what we found worked really for us was the Neumann M149 because it covered the bass range and Shawn on the pretty top-end harmony. It's a really warm mic; it adds a nice body to the voice. Plus, it has enough air on the top end that it's a cool sound. We also used a vintage C-12, which has a lot of top end but not as bright as the [Sony] C880G, which we also tried out. That was actually used on the Babyface song ['The Color of Love'], because it works well on that more pop style because it's very open and transparent. But it wasn't as good for the edgier stuff we were doing. The C-12 was used mostly on the more laid-back or lush songs."

Porte tracked the Boyz to a 48-channel Pro Tools setup, "and I had it hooked up to an Aardvark Aardsync to try to enhance the clocking of the whole system. Whenever possible, we tried to use the Apogee AD8000 converters. The two preamps we used the most were the Avalon M2 dual-channel and a Martech. The Martech is



great for anything—clean and transparent, but also with some warmth."

The rich, creamy stacks of background vocals proved to be the most challenging element of the project for Porte. On several songs, there are four tracks of each backing vocal part, and one—"I'll Show You"—has six tracks of each harmony. "We did six parts, six stacks, and the harmonies are so intricate on that song it almost sounds like a Take 6 record," Porte says. "The vocal producer on that one, J. Moss, was a real stickler; we did that song for three days. But it's got 24 tracks of backgrounds and then leads on top of that—probably 36 tracks of vocals. It was grueling.

"But the thing with them is that they blend so well with each other, it doesn't sound like that many tracks. Sometimes it sounds like one person, it's so thick and so tight. At the same time, they make everything they do their own. If Shawn sings something, he makes it Shawn. If Nate sings something, he makes it Nate, and so on."

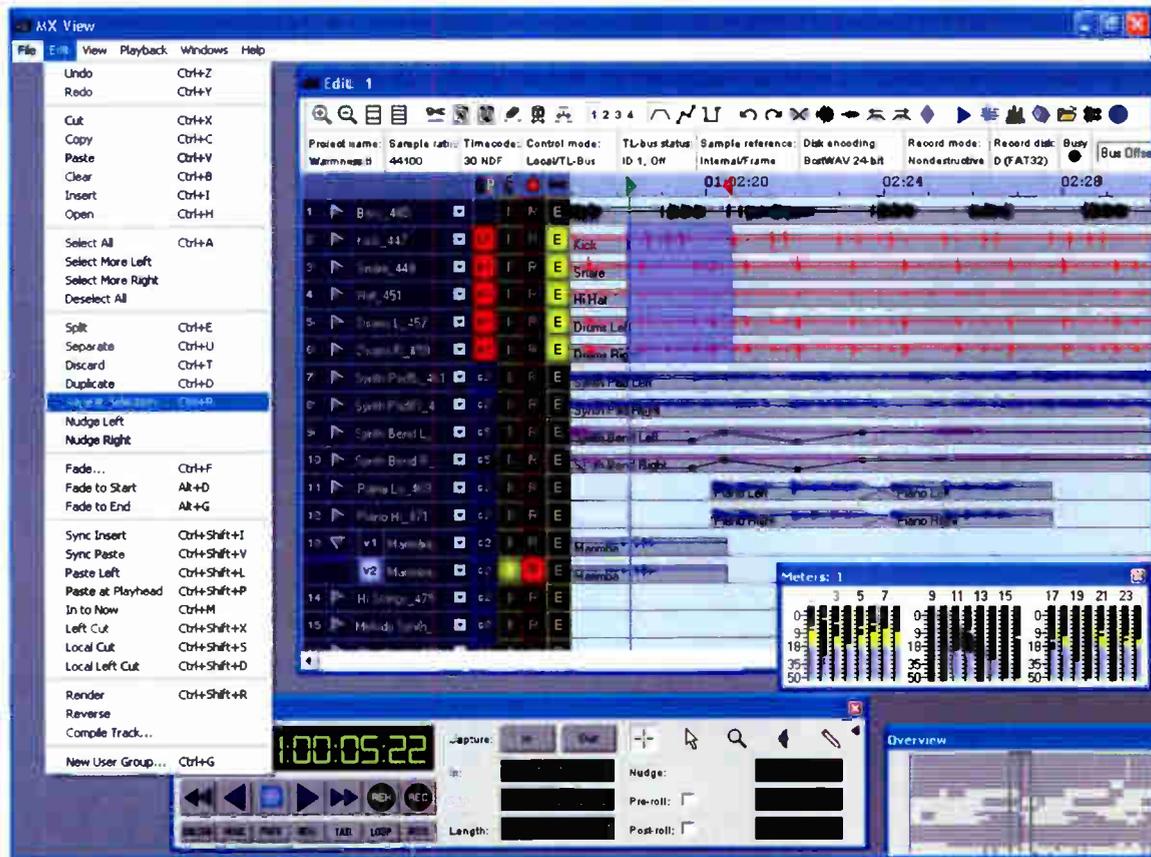
Because he was not going to be mixing the project, Porte didn't have to think too much about effects on the vocals, but he did have his hand in a couple of interesting sonic touches. He reveals that on "Roll Wit Me," the robotic voice was achieved using the Pro Tools AutoTune function: "Then, when it came time to mix, they used the AutoTune mixed with another effect to be a little less clichéd and to create something a little different, because that whole AutoTune sound is getting a little played out." And the telephone vocal sound on "I'm Okay, You're Okay" came from a Q10 plug-in. "The Q10 is a little dark, so you have to brighten it up a little bit," Porte says. "As with anything, you have to tweak until you get the best sound for that song." ■

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Science in the Service of Art

Product Hits of AES 2002

By Sarah Jones and George Petersen

From October 5-8, the Audio Engineering Society returned to Los Angeles for its 113th convention. With the economy in slow recovery, nobody knew exactly what to expect from the show. And with the dockworker lockout strangling U.S. ports, some companies' shipments were stranded offshore, resulting in a lot of last-minute scurrying to put booths together.

Many attendees commented on the convention's smaller size, but there was no shortage of exhibitors, with some 400 companies showing their wares. Many exhibitors simply downsized their booth space from past years, yielding one very packed, highly concentrated main exhibition hall. And, in step with the show's "Science in the Service of Art" theme, the industry came out in force to check out the latest tools for creative audio expression. Here are a few that grabbed our attention.

MICROPHONES!

More than two dozen new microphones debuted at AES, and nothing gets rid of the blues like a new addition to your mic locker.

The most talked about product at AES was Telefunken's (www.telefunkenusa.com) reissue of the classic tube Ela-M 251 studio mic. Each \$10,125 unit is meticu-

lously hand-built in the U.S. to original German specs, with the same methods used to make the originals 40 years ago. Telefunken USA also offers replacement parts for all Ela-M and U47/48 mics, cables, power supplies and CK-12 capsules, and can restore most vintage Telefunken's.

Audio Engineering Associates (www.wesdooley.com) is known for its recreations of classic RCA ribbon mics. Now, AEA debuts its own design, the R84, which features a large, yet ultrathin (0.00007-inch) ribbon element for fast transients and up to 165dB SPL handling. Retail is \$999, with shockmount, cable and case.

Another take on a vintage mic is the AKG (www.akgusa.com) C 414B-ULS/SE Special Stereo Set, which has a nickel finish like the original 1976-1986 C 414EB, but pairs the classic CK12 capsules with modern UltraLinear Series electronics. The two-mic set with case, shockmounts, stereo bar and windscreens is \$2,100.

Among the new tube mics at AES was SE Electronics' (www.seelectronics.com) Z-5600, a nine-pattern condenser with a large 1.07-inch diaphragm. Retail is \$649.

ADK's (www.adkmic.com) A48 is an all-new, multipattern vocal mic featuring a transverse-mounted 12AX7 tube and \$999 pricing.

Tube or solid-state... Can't decide? The DPA (www.dpamicrophones.com) 4041-ST is designed for vocals and acoustic in-

struments with large dynamics: Self-noise is typically 8 dBA. Its modular capsule can be unscrewed from the preamp, offering options of 48-volt or 130V powered, solid-state preamps and a 130V tube preamp. List is \$3,270. Groove Tubes' Model 1B (distributed by www.m-audio.com) is a reissue of its legendary Model 1A side-address true condenser, with a 1.10-inch diameter capsule and either tube or FET electronics.

In another twist, the Soundelux EFET47 (distributed by www.transaudiogroup.com) is designed for the same applications as a classic FET47 and FET87. A quality German-built capsule is mated to two different-sounding sets of internal electronics, with a switch to select between the two. Retail: \$2,100.

RØDE Microphones' (www.rodemic.com) parent company celebrated its 35th year in pro audio by launching the NT1-A Anniversary Model, with an ultralow, 5.5dB self-noise spec, 140dB SPL handling and a new nickel-plated body.

Three new KSM small-diaphragm condensers from Shure (www.shure.com) feature an extended frequency response. The KSM141 (\$770/each or \$1,540 in pairs) mechanically switches from cardioid to omni with a turn of a ring. Two cardioid-only models—the \$575 KSM137 and the \$305 KSM109—round out the series.

For years, Microtech Gefell (

Telefunken USA Ela-M 251



Manifold Labs Plugzilla

microtechgefell.de) has offered well-crafted German mics at affordable prices, but they're now easier to buy with a new English-language Website and North American distribution by C-TEC (www.cabletek.ca).

SPEAKING OUT...

AES had more than 20 new studio monitors. See our complete report on this year's latest developments on page 48, but here are some last-minute additions: Mackie's (www.mackie.com) HR626 is a 140-watt, powered monitor with dual 6.7-inch woofers flanking a 1-inch dome tweeter in a horizontal package for console-top or center-channel applications. The ADAM (www.adam-audio.com) A.R.T. Tower is a floor-standing, four-way system designed for mid-far-field monitoring with a 38 to 35k Hz bandwidth. Our fave monitor at AES was the Pelonis Signature Series from noted studio designer Chris Pelonis (www.pelonissound.com). This four-way active system combines a 15-inch Tannoy Churchill Dual-Concentric driver, a 15-inch subwoofer and TAD tweeter for 20 to 45k Hz response. Sweeeee!

WORKSTATION NEWS

Pro Tools is graduating to OS X: Digidesign (www.digidesign.com) showed a preview of Pro Tools 6, which boasts a new user interface, enhanced databasing, mixing and MIDI extras among its top features. In addition to OS X optimization, the upgrade includes new DigiBase file-management technology, which lets users search and audition and import files directly into Pro Tools. Enhanced MIDI functionality in Pro Tools 6 includes support for OS X's Core MIDI Services. MIDI Time Stamping (MTS) support provides sample-accurate MIDI with Pro Tools system-compatible software synths and samplers, and up to sub-millisecond-accurate timing with MIDI I/O and other MTS-capable interfaces. New Groove Quantize and Beat Detective features, plus increased mixing and machine control capabilities, are included.

Big news at SADiE (www.sadie.com): The new Series 5 workstation line embraces both PCM and DSD technology, and supports real-time DirectX plug-ins and standard Windows networking. This new software platform is currently available in four hardware options, with the flagship DSD serving as an 8-channel PCM/CD mastering editor in addition to

its DSD functionality; further models are in development. A new version of SADiE's operating software, Version 5, includes a completely redesigned user interface, although users who prefer the traditional SADiE look can select the "classic" interface. SADiE is also now distributing Weiss Engineering and Penguin Metering in the U.S. and South America.

Ever wish you had your own personal world-class orchestra? Distributed by Ilio (www.ilio.com), the Vienna Symphonic Library is an enormous sample library that features the complete range of the symphony orchestra, which, when completed, will feature 1.5 million tones and note sequences performed by musicians from Vienna's professional orchestras and recorded at 24-bit/96kHz in custom-built recording environments to ensure minimal noise floor. The First Edition release—available for GigaStudio 2.5 and Emagic EXS24—totals more than 61 Gigabytes (!) of samples.

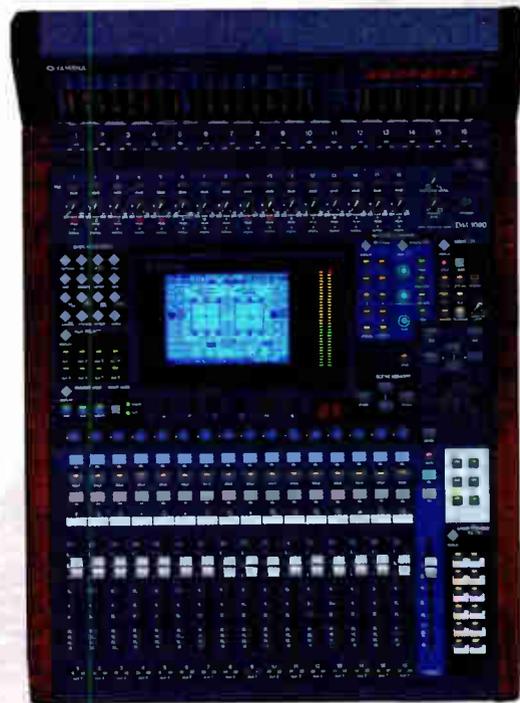
Steinberg (www.steinberg.net) debuted Nuendo 2.0 that is optimized for surround: Every input, audio track, effect, group and output now offers up to 12 discrete channels. Nuendo also offers a new way to organize inputs and outputs, letting users customize multichannel I/O configurations and switch between them with a single keystroke. Several input and output buses can be utilized at the same time, and the architecture allows for recording in split or interleaved surround audio file formats. Other features in 2.0 include signal-routing improvements and networking enhancements, including VST Link and the ability to transfer tracks and events in a network over TCP/IP LAN. List is \$1,499.

Ego Sys (www.esi-pro.com) showed the \$1,999 M-fire MF9600, a rackmount stereo-mastering deck that uses DVD-R or DVD-RW media to store 120 minutes of 24-bit/96kHz audio. But the big news was MAXIO XD, a 24-bit/192kHz system that can handle 32 simultaneous I/Os. The \$1,699 basic system includes a two-rack-space unit with 8-in/8-out XLR connectors and either a PCI interface for desktop systems or a card bus interface for laptop recording. The PCI version supports up to four cards on the same computer, enabling 128-channel recording. Both Windows XP and MAC OS X are supported.

PLUG-INS

TC Works (www.tcworks.de) introduced Assimilator, a \$299 processing plug-in for Powercore that analyzes the EQ curve of a reference mix and applies that curve to target audio material. Processing is phase-linear and employs FFT (Fast Fourier Transform); heavy DSP is handled by Powercore (up to four instances of Assimilator can be run on one card), freeing up the host CPU for other processing.

CEDAR's (www.ceclaraudio.com) Cam-



Yamaha DM1000

bridge noise reduction and restoration software is fully automated, scalable (up to eight channels) and can process 96kHz audio in real time. Algorithms include DNS, DeClickle (de-clicker/de-crackler), NR-4 (de-hisser), EQ, spectrum analyzer, deBuzz and deClip; users can also select from a wide range of I/O formats, channel, metering and dithering options.

Waves (www.waves.com) celebrated its tenth anniversary in style with a host of new plug-in products. The 360° Surround Toolkit is a set of surround production tools for Mac-based Pro Tools|HD and MIX systems. Also, Restoration is now available for HD, the Renaissance Collection is now bundled with the Digi 002, and Version 3.6 of the entire product line for TDM users is available.

AES 2002

At Universal Audio (www.uaudio.com), the exciting news was the announcement that Powered Plug-Ins, plus many plug-ins previously sold under the Kind of Loud name, are being ported over to TDM. And a new version of the UAD card, the UAD-8 I/O, features an ADAT optical interface that supports sample rates from 44.1 to 192 kHz. On the hardware side, UA debuted the 2192 dual AD/DA converter and the 6176 channel strip, which combines the 2-610 mic/instrument pre and the 1176LN compressor.

BIAS' (www.bias-inc.com) Sound Soap

cleans up your audio. By adjusting two knobs, users can easily remove unwanted noise from almost any media file type, including DV soundtracks, Flash and other Web tools, as well as all common audio formats. The software works on both Mac and Windows.

Trillium Lane Labs (www.tllabs.com) showed two cool new Pro Tools plug-ins. TL Metro is a metronome/click track with a variety of percussion samples; TL In-Tune is a software tuner with presets of 20 different guitar-tuning types. The plug-ins are \$250/each, or \$399 for the pair.

Sony (www.sonyproaudio.com) gave us a sneak peek at its powerful new Oxford dynamics plug-in for TDM and Powercore systems, but you'll have to wait until NAMM to see the real deal.



TC Works Assimilator

OUTBOARD TOYS

If you missed the buzz on Plugzilla at AES, then you must have been under a rock. This new two-rackspace box from Eventide offshoot **Manifold Labs** (www.plugzilla.com) will run any VST plug-in, with hardware controls, without a computer. Although we only saw a prototype at the

TOP LIVE SOUND PICKS FROM AES

by Mark Frink

Cadac's (www.cadac-sound.com) renowned quality comes down-market with the new compact S-Type live performance console. It's available in three frame sizes, typically with eight, 16 or 24 input strips. The S-Type offers eight VCAs, eight groups and eight auxes (two of which are stereo), and frames can be linked for larger configurations.

DiGiCo's D5 Live (www.digiconsoles.com) is the newest large-format digital desk and is available with 56 or 96 mic lines from stage and a 64- or 96-channel worksurface. The D5 Live, which spent last year on the road with Rod Stewart, incorporates many of the features and technology from Soundtracs' digital recording and post-production desks, including an intuitive control surface with four touchscreen displays.

Hear Technologies' Hear Back (www.heartechnologies.com) headphone mixer system uses CAT-5 cables to feed eight channels of program (stereo mix, plus six mono "more me" inputs) to pod-shaped personal mixers.

InnovaSon's Compact (www.innovason.com) is now available as the **Sy40** 40-channel Digital Mixer, with eight stereo inputs and 12 stereo aux buses, making it practical for IEM chores and dual FOH/monitor applications. Owners of Compact 32 mixers can upgrade.

JBL (www.jblpro.com) debuted scaled-down versions of its 4889 VerTec line array. The mid-sized **VT4888** is a dual-12, three-way design weighing 108 pounds, with a 2,000-watt LF section, 600W MF section and 150W HF section. The compact **VT4887** is a dual-8, biamp, three-way design weighing 62 pounds. Its companion **VT4881** compact sub employs a dual-coil 15, weighs 120 pounds and can be directly coupled to the 4887 in hanging or ground-stacked applications.

L'Acoustics' (www.l-acoustics-us.com) new **112XT** and **115XT** co-ax floor monitors provide smooth performance in a low-profile de-

sign, plus a pole mount and fly track.

Klark Teknik's DN 9340 Helix Digital Equalizer (www.klarktechnik.com) is a dual-channel EQ, each side offering a 31-band graphic with five filter types and up to a second of delay. EQs include 12 parametric and two dynamic "threshold-dependent" filters, plus four more user-configurable as high- or lowpass, shelf or notch. The 4-channel **DN 9344** is a 1U slave unit. An auto-solo function calls selected outputs (or inputs) from Heritage and Legend consoles to appear in the master Helix.

QSC (www.qscaudio.com) added five two-way models employing composite construction to its **ISIS** line. Single 10-, 12- and 15-inch woofer models are intended to pair with QSC's 215PCM powered subwoofer, and will run off of its extra pair of amp channels and processors. Also unveiled was the **WideLine** compact line array, designed to ground-stack on the sub.

Radian's MicroFill (www.radianaudio.com) employs a 12-inch woofer and a 2-inch driver in a uniquely shaped, multi-angle design that includes versatile rigging hardware and a pole cup.

Shure's (www.shure.com) **SM86** live performance condenser mic offers a warm vocal sound and cardioid pickup pattern for handheld applications.

SLS (www.slsloudspeakers.com) unveiled its new **RLA/2** compact line array. It's only 28 inches wide, employs dual 8-inch, high-power cones, and the high-output PRD 1000 ribbon driver used in SLS' larger products. ■



DiGiCo D5 Live

Mark Frink is Mix's sound reinforcement editor.



Music Production Software

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Logic Platinum for Mac OS X is here. Already installed in thousands of studios, Logic Platinum is the first professional music production software for a next generation operating system. Users around the world are reacting enthusiastically to the outstanding performance, exemplary stability, ultra-precise timing and extremely

low latency of Logic Platinum for OS X. Not only this, but OS X drivers for Emagic's USB hardware products are available as well, making the switch to OS X even easier. Get hold of Logic Platinum OS X and experience the very latest in music production technology. More information from specialist Emagic dealers or direct from Emagic.

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World Radio History



AES 2002

show, Plugzilla was already making deals with plug-in manufacturers, and Wave Arts has already signed on in support. Another Eventide relative, Princeton Digital (www.princetondigital.com) showed its first product, the Reverb 2016, which recreates the algorithms of the legendary Eventide SP 2016.

The 960LS is a stereo version of the flagship 960L Multi-Channel Digital Effects System from Lexicon (www.lexicon.com). It includes a LARC2, one DSP card and eight channels of balanced analog I/O. Options include a second DSP card that more than doubles its processing power, an 8-channel AES/EBU digital I/O card, automation and additional 96kHz reverbs. The unit can be upgraded to full multichannel surround configurations.

Don't forget analog! Ibis from Crane Song (www.cranesong.com) is a discrete, Class-A, 4-band stereo EQ with adjustable bandwidth and switch-selectable frequencies on musical centers. A Color function can be applied to the overall audio path or to an individual band. The ADL 670 Compressor from Anthony DeMaria Labs (www.anthonymariamalabs.com) reproduces the sound of the classic Fairchild 670 compressor in a hand-built unit that's matched part-for-part with the original—the same switches, tubes and specs. Price? About \$18,000.

CONSOLES

Yamaha's (www.yamaha.com) DM1000 is a smaller version of the DM2000, with 16 faders, 16 mic pre's, two mini-YDGA slots, plus four XLR "omni" inputs and 12 XLR "omni" outs. Available in early spring, along with a new 16-channel AES card, the DM1000 brings 48 channels of 96kHz digital functionality to a rack-mountable form factor.

Top film composer/sound designer Frank Serafine has formed a partnership with Japan's Tamura Corporation to design a suite of digital products for the film and video market. The first product is the Qolle (www.qolle.com) izm125, an 8-channel, DC-powered digital mixer featuring high-quality mic preamps, HPF and compression on each channel, 5.1 surround mixing, and a choice of analog or digital outputs (TDIF, FireWire or AES/EBU).

The John Oram-designed S100 from Trident Audio (www.tridentaudio.co.uk) is a compact, rackmountable, 8-channel mixer with 3-band EQ based on the classic Trident Series 80, five aux sends and three stereo output buses configurable as six mono outs for surround tracking. For a limited time, it's offered at a bargain \$1,995.

Steinberg (www.steinberg.net) raised eyebrows with the Euphonix console in its booth acting as the world's biggest hardware controller for Nuendo, thanks to the



Tamura Qolle izm125

Euphonix TransferStation, which translates R-1-formatted files to AES31 file format, retaining all edits, crossfades and vital time-stamped information within a multitrack session. Not so coincidentally, Euphonix and Steinberg announced a strategic relationship to develop integrated professional audio products for the music and audio post-production markets.

MORE TO COME!

In this limited space, we could only spotlight a portion of the cool new toys we saw at AES, and we'll present more of these in our regular new products columns over the next few issues. AES will return to Amsterdam from March 22-25, 2003; in the fall, it's back to New York City from October 10-13, 2003, for the 115th AES Convention. Mark your calendars now! ■

HITS YOU MIGHT HAVE MISSED

Audio Technica's (www.audiotecnica.com) AT8471 is an amazing mic mount with dual-swiveling gimbals that allow placement in any position. Slick!

JL Cooper's (www.jlcooper.com) CS-32 MiniDesk control surface has 32 dedicated channel strips to tweak levels, mutes, solos, track-arming, etc., as well as jog/shuttle wheel, transport buttons and assignable rotaries for plug-in control—all in a notebook-sized worksurface. Shipping in January, the \$499 unit works with Pro Tools, Nuendo, Cubase, Cakewalk, Logic Audio, Soundscape REd, Pyramix, MOTU DP and others.

Line 6 (www.line6.com) takes the POD to the next level: PODxt features modeling technology from Line 6's Vetta line, with 32 amp models, 22 cab models, classic stompbox and studio effects, and a USB output. Expected street price: \$399.

Go portable! Magma's (www.magma.com) new CardBus-to-

PCI expansion systems let you run PCI cards on a laptop. AES demos showed a Pro Tools|HD system on a G4 Powerbook, with a 4-slot CardBus-to-PCI Expansion System with two SCSI disk drives.

Fibrewire from Studio Network Solutions (www.studionetworksolutions.com) is a compact, affordable Fibre Channel drive enclosure that offers A/V SAN and A/V SAN PRO performance in a single-drive 73-gig desktop enclosure.

Studio Technologies' (www.studio-tech.com) Model 90 8x2 USB switcher allows multiple mic support for measurement systems like SIA Software's SMAART Live. ■



JL Cooper CS-32 MiniDesk

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STUDIO MONITORS 2002

New Designs, New Formats, New Directions

BY THE MIX STAFF

The process of buying studio monitors has never been an easy one. Choosing from a plethora of products in a dealer's showroom can be difficult enough, but these days, monitors come in every conceivable size, design style, type and price—ranging from compact near-fields to gargantuan ultra-SPL main systems. Users must also decide between various options such as powered and unpowered models, analog or digital inputs, stereo pair or 5.1 array, dedicated center-channel models, subwoofers, bass-management features, and even remote and network-control functions.

The "old standard" monitors that were so popular 10 years ago won't necessarily cut it in today's production environment, especially with the growing need to work in high-resolution analog and high-bit rate 96/192kHz digital formats for surround and stereo mixing. To help you sort out what's available, we decided to check out some recent entries in the monitor market, focusing on models that have debuted during the past year, listed alphabetically, with Websites provided for more information.

Available in both powered and unpowered versions, the ADAM Audio (www.adam-audio.de) S2.5s and SV4s are designed for stereo and multichannel applications. The S2.5 includes an 8-inch woofer and an A.R.T. (Accelerated Ribbon Transducer) HF driver and handles 120 watts RMS. The powered version of the S2.5, the S2.5-A, drives each component with separate 100W amps. S2.5 frequency response is 38 to 35k Hz, and the S2.5-A dips lower to 24 Hz. The larger three-way SV4 and SV4-A add an A.R.T. midrange and an 11-inch woofer. The SV4 handles 150 watts of program power; the SV4-A has three separate 100W amps. The SV4 has a stated response of 32 to 35k Hz, and the powered SV4-A brings the bottom end down to 28 Hz.

British speaker manufacturer ATC re-enters the U.S. project studio market with its T-16 (\$3,000/pair) monitor. These active monitors were designed with modern music production in mind and are tailored to the sound of rock, hip hop and dance music. The T-16 houses a 6.5-inch mid-bass driver and a 1-inch tweeter in a ported enclosure. All power is derived from the internal amplifier, which delivers 200 watts to the woofer and 50 watts to the tweeter. The T-16 also includes controls for variable sensitivity and bass boost. ATC is distributed by Transamerica Audio Group, www.transaudiogroup.com.

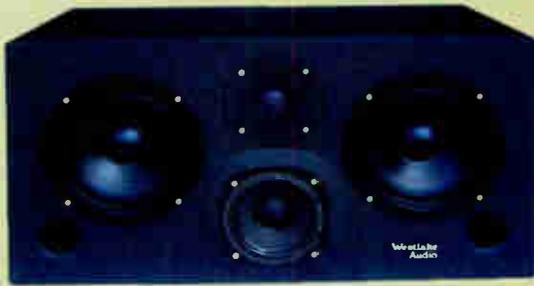
Bag End's (www.bagend.com) INFRASub-18 PRO and INFRASub-12 PRO models offer new features for pro studio surround monitoring, such as six balanced XLR inputs and five highpass-filtered, balanced XLR outs. In addition, an ELF (Extended Low Frequency) calibrated slave output is provided for



Yamaha MSP10 Studio



Tannoy Ellipse 8



Westlake Audio BBSM-6



PMC DB1

additional subs. A remote concealment indicator allows for monitoring remotely from the bridge of the mixing console. Both models have internal 400W amps and Bag End's exclusive ELF dual integrator for a flat response to either 8 Hz (INFRAsub-18) or 20 Hz (INFRAsub-12).

Betting that three speakers are better than two, Blue Sky adds another satellite/subwoofer system to its catalog with the introduction of the ProDesk package, which includes the SAT 5 Active Satellite and the Sub 8 Active Subwoofer. The two-way SAT 5 drives a 1/2-inch tweeter and a 5.25-inch woofer with two 60-watt amps. The SAT 5's LF cutoff is at 80 Hz with an internal crossover at 1.8 kHz. The overall response of the SAT 5 at ± 3 dB is 20 to 20k Hz, with the LF filter bypassed. The Sub 8 pushes an 8-inch woofer with a 100-watt amp, and its typical room response is 20 to 200 Hz. For pricing information, visit www.abluesky.com.

Earthworks (www.earthworksaudio.com) now offers its TEC Award-nominated Sigma 6.2 monitor in a solid cherry version. It's flat from 40 to 40k Hz within ± 2 dB, with a time-accurate output across this range. Price: \$5,000 matched pair.

Based on the Swedish Embracing Sound Experience patent, EMES launches its second ESE-System monitor package. Distributed by X Vision Audio (www.xvisionaudio.com), the Mini-OWL is a biamped, mag-shielded, compact (13x11.5x8-inch) monitor. All amp stages deliver 80W continuous power to each driver—in total 320 watts. Frequency response is 60 to 20,000 Hz (± 1.5 dB). MSRP: \$1,550.

Designed for the near-field needs of budget-minded users is the TR (Tuned Reference) Series from Event Electronics, www.eventelectronics.com. The Series includes the TR5 (\$399/pair, list) and the TR8 (\$599 pair), based on the popular 20/20 and Project Studio monitors. Both the TR5 and TR8 utilize a biamplified design, boasting a frequency response of 53 to 19k Hz, ± 3 dB, and 35 to 20k Hz, ± 3 dB, respectively. The TR5 uses a 5.25-inch woofer and a neodymium, 25mm, soft-dome, HF driver. The TR8 uses a similar 8-inch driver and 1-inch silk-dome tweeter. Both units are magnetically shielded and include balanced XLR/1/4-inch and unbalanced RCA connections.

The FARAudio (www.far-audio.com) Tsunami-10 active monitor is a two-way, biamplified system featuring a 10-inch woofer and 1-inch soft-dome tweeter with symmetrical waveguide. The drivers are mounted on a triple-layer front face that sandwiches a resilient layer between two 22mm MDF panels. Frequency range is 35 to 22k Hz, and maximum SPL is 125 dB (two cabinets @ 1 m). User-adjustable HF and LF contour presets include a lowpass filter and highpass filters. Dimensions are 19.5x12x17 inches; weight is 62 pounds. Inputs are XLR and 1/4-inch, with a link connection for multispeaker applications. Additional fea-



Hot House HOS i15



ATC T-16

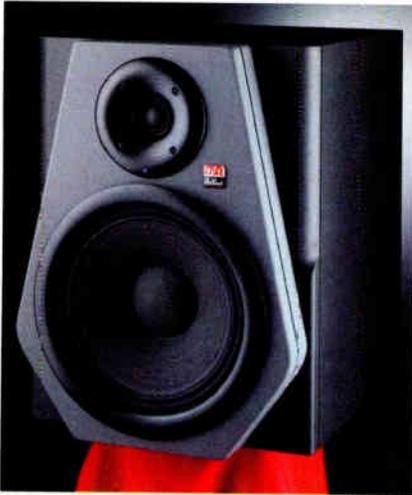


Genelec 7060A

STUDIO MONITORS 2002

tures include a switchable limiter, exceptional power handling and accurate time alignment.

The FAR Audio OBS is designed specifically for remote vans, broadcast facilities and editing rooms. This powered, mag-shielded, two-way speaker has a 5.5-inch woofer and 1-inch soft-dome tweeter, with a high-power, low-distortion



FAR Audio Tsunami-10

amplifier and Butterworth passive crossover. Frequency range is 60 to 22k Hz; maximum output is 112dB SPL (two cabinets @ 1 m). Dimensions: 10x9x7 inches; weight is 13.2 pounds.

The Fostex (www.fostex.com) PM-1 is a biamped powered monitor system, offering 50 to 20k Hz response (± 2 dB) and a \$499 retail. Onboard 75- and 45-watt amps drive the 6.5-inch aromatic, polyamide woofer, and 1-inch, low-mass dome tweeter to peak SPLs of 118 dB. Dimensions are 15x8.5x11.25 inches; weight is 23 pounds.

Genelec's (www.genelec.com) 7000 Series is a revolutionary line of active subwoofers. The four models (in 8, 10, 12 and dual-12-inch woofer configurations) feature proprietary LSE (Laminar Spiral Enclosure™) technology, which virtually eliminates acoustic nonlinearities from port turbulence. The three larger models offer Genelec's new 6.1 bass-management system, with six signal input and output channels (LCR front and LCR rear), a discrete LFE signal input with selectable 85/120Hz lowpass filter and a summed signal output. Connections include balanced XLR I/Os and an RJ11 that has different functions: remote-overload LED indicator, bypass and remote selection of +10dB gain in the LFE channel. The 7000

Series includes the 7071A to complement Genelec's 1032A, S30D or 1037B; the 7070A, for use with the 1030A and 1031A; the 7060A, matched to the 1029A in a multichannel application; and the 7050A, for stereo applications with the 1029A and 2029A/B Series.

At last month's AES, Genelec (www.genelec.com) showed its top-of-the-line 7073A active subwoofer, featuring four 12-inch woofers, full onboard 6.1-capable bass-management system and 1 kW of internal amplification offering 124dB SPLs down to 19 Hz. Its wide, low-profile 56.75x22.6x22-inch (WxHxD) cabinet is ideal for placement under projection screens or studio windows. Retail is \$6,500.

The Hot House High-Output Series (www.hothousepro.com) HOS 115 Modular Main Monitor is the primary building block in a new range of high-SPL, large-format discrete monitor packages. (The 137dB HOS 312 is also available.) Designed to be used with Hot House ASB 115, ASB 215 or HOS 218 subs, SBX Crossover/Controller and Model Two Thousand amplifiers, the HOS 115 system provides 10.5 octaves of dynamic reproduction. The modular system can be configured in various ways, ranging from freestanding midfield with subwoofer as pedestal to large in-wall/multiple subwoofer installs. Frequency response is flat within 1.75 dB from 80 to 24k Hz and extends down to 15 Hz with the ASB subs. The HOS 115 is 18x24x20 inches (WxHxD). System pricing starts at \$36,000 (four-cabinet), depending upon sub and amplifier requirements.

KRK Systems' (www.krksys.com) M118 three-way studio monitor can handle the workload of most dual 15-inch cabinets and still not lose the bottom end. Perfect for post-production, CD mastering and more, the monitor can be in-wall mounted or freestanding. The woofer is an 18-inch, high-strength, paper-impregnated cone; a 7-inch Kevlar cone driver handles mids; and the tweeter has a carbon-ring diaphragm loaded by a symmetrical horn. Frequency response: 19 to 20k Hz (± 2 dB).

The KRK Exposé E12 DSP is a complete, active three-way system, featuring low distortion, excellent imaging and high power handling, with a digital crossover and 620 watts of triamplification. Its driver complement includes a 12-inch woofer, a 5-inch Kevlar cone mid and a 1-inch inverted-dome titanium tweeter. Response is 29 to 22k Hz, ± 2 dB; maximum SPL is

115dB music or 122dB peak. The 125-pound system measures 29.25x19.75x17.4 inches (HxWxD).

KS Systems now offers a full 5.1 monitoring package with analog and digital inputs, rackmount external amplification and an optional advanced remote/system controller. The system is available either as a complete 5.1 unit or as a stereo/expand-to-surround-later system, featuring a single 12-inch subwoofer and five two-way (6.5-inch woofer/1-inch dome-tweeter) ADM 4 satellites with die-cast enclosures and internal video shielding.

The latest in M-Audio's (www.m-audio.com) Studiophile Series, the BX8 is a two-way near-field with a mag-shielded, 8-inch woofer and a swivel-mounted, 1-inch silk-dome tweeter, the BX8 is powered by 130 watts of bi-amplification. Frequency response is 37 to 20k Hz. Input is via balanced XLRs and TRS connectors. Dimensions are 15x10x12 inches (HxWxD); weight is 20 pounds. Price: \$599.95/pair.

Similar to the BX8, M-Audio's SP-5B is a two-way, biamped design featuring mag shielding, a 5-inch polypropylene woofer and $\frac{3}{4}$ -inch, swivel-mounted silk-dome tweeter. Response is 48 to 22k Hz; the total amplifier power output is 75 watts. Dimensions are 10x6.5x8 inches (HxWxD); weight is 28 pounds/pair. Price: \$399.95/pair.

Offered to complement the BX8 and SP-5B, M-Audio's BX8 bass-reflex pow-



M-Audio BX8

ered subwoofer has a single 8-inch polypropylene cone with a Stereo Bass-Management System, which takes a stereo input and splits the signal at the user-defined crossover frequency (50 to 180 Hz), routing LF to the sub and HF to the mains. Frequency response is 30 to 180 Hz. Connections include two XLR and

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two TRS balanced inputs, two XLR balanced outs for the satellites and one XLR out to an additional sub. Controls include level, phase, subwoofer and satellite frequencies, and satellite highpass output bypass. Dimensions are 15.6x10.6x12 inches (HxWxD); weight is 36 pounds. Price: \$499.95.

Mackie Designs (www.mackie.com) HR624 two-way, biamped monitor includes THXpm3 certification, and delivers the same flat response as the HR824 but in a smaller package. The HR624 can be used as primary stereo or surround monitors (with or without Mackie's HRS120 sub) or as rear-channel sources for 5.1 and 7.1 systems. Features include a 6.7-inch LF transducer with cast-magnesium frame and polypropylene cone. The liquid-cooled, 1-inch, aluminum-dome tweeter is the same as used in the HR824. Both drivers are magnetically shielded. The HR624 also incorporates a rear-firing passive transducer that provides bass extension to 49 Hz (-3 dB). Integrated amps provide 100 watts to the woofer and 40 watts to the tweeter. Inputs are TRS/XLR balanced and RCA unbalanced. Controls include an 80Hz highpass filter, HF shelving and an Acoustic Space control for optimizing bass output in various room placements. Response is 50 to 20k Hz (± 1.5 dB). Dimensions are 13x8.25x10.4 inches (HxWxD); weight is 25 pounds. Price: \$649/each.

The Mackie HRS120 is a THXpm3-certified, 400-watt sub to complement Mackie's HR624 near-fields or any multichannel monitoring system that requires a dedicated LF channel. The HRS120 has a 12-inch RCF Precision woofer with 4-inch voice coil and cast-aluminum frame, and a 12-inch passive radiator. Power is via Mackie's 400-watt FR Series low-distortion amplification. Controls include an adjustable crossover with highpass outputs for use with full-range monitors, 110Hz elliptical filter for Dolby AC-3, output level switch for AC-3/THX.1 recording, polarity and a rotary-input sensitivity control. Connections are balanced XLR and unbalanced RCA. Slave In and Master Out options allow multiple woofers to be daisy-chained together, while two ¼-inch phone jacks accommodate a subwoofer bypass footswitch and bypass indicator. Free-field frequency response is 21 to 150 Hz, ± 1.5 dB, and the unit produces 100dB SPL @ 1 m. Dimensions are 21x18x21.3 inches (HxWxD); weight is 94 pounds. Price: \$1,499.

The MPS-1625P from M&K Professional (www.mkprofessional.com) is a tri-amplified, self-powered Tripole Surround loudspeaker. The driver complement includes a polypropylene 6.5-inch woofer,



Mackie Designs HR624

a 1-inch, soft-dome, Ferrofluid transmission-line tweeter, and two 3.25-inch mid-tweeter drivers on each side baffle (the dipole drivers). Separate amps deliver 150 watts to the woofer, 100 watts to the tweeter and 100 watts to the side-dipole drivers. A remote relay switch lets users compare the sound produced by the direct-radiating speakers, the dipole configuration or the Tripole configuration. Suggested retail price is \$2,499/each.

M&K's MPS-RK2 and MPS-RK3 rack-mountable monitors are designed for machine rooms, transfer rooms and other pro environments where high-quality monitoring is essential but space is at a premium. The RK2 provides two channels of monitoring on a single chassis, and the RK3 provides three channels (for left, center and right) in the same unit. Each channel has a single 1-inch, soft-dome tweeter with a 4-inch woofer, fed by an M&K Professional Phase-Focused crossover. An acoustically transparent mesh-metal grille protects the speakers. Retail for the RK2 is \$649; the RK3 is \$849.

The M&K MPS-422 "Wrap-around" multichannel monitor delivers close-field monitoring for seven channels in a single chassis, designed to fit around a standard 19-inch broadcast video monitor. Each channel has a 1-inch soft-dome tweeter with one

or two 3.5-inch woofers. The left/center/right channels have two woofers; the four surround channels have a single woofer. All channels use M&K's Phase-Focused crossover technology. Used with M&K's LFE-5 bass-management controller, an external amplifier and an M&K Professional powered subwoofer, the combination becomes a complete multichannel monitoring station with features that include a multichannel volume control, channel mutes, level trim pots and M&K's technically correct bass management. Retail: \$2,199.

Distributed by Bryston, PMC (www.pmccloudspeaker.com) offers a wide range of studio and consumer loudspeakers. PMC's latest is the DB1, the world's smallest transmission-line design, with an effective line length of five feet in a compact two-way system, with LF output suggesting a much larger enclosure. Intended for stereo or surround applications (with the optional TLE subwoofer), the DB1 combines a 5-inch magnesium, cast-frame woofer with a 1-inch aluminum-dome, Ferrofluid-cooled tweeter. Usable frequency response is 45 to 25k Hz. Dimensions are 11.4x6.1x9.2 inches (HxWxD); weight is 10 pounds. Retail is \$795/each; options include a DB1-M horizontal center-channel speaker, a shielded version, four finishes, stands and wall brackets.

The TLE1 active subwoofer puts dual 6.5-inch woofers in a 21.5x7.5x19.5-inch, 42-pound enclosure using PMC's transmission-line loading system, yielding an effective length of 9.5 feet and frequency response down to 22 Hz. Features include an onboard, 150-watt, Bryston-designed power amp, stereo balanced XLR and unbalanced RCA inputs, and controls for level (with calibrated THX spec setting), phase (0° to 360°), LF roll-off and LF roll-off defeat. Retail: \$2,495.

The latest from Qusted Monitoring Systems (www.quested.com) is the F5 (\$695/each), a compact, self-powered active monitor with a 5-inch bass driver



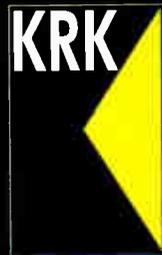
Qusted Monitoring Systems F5 with the F5s sub

Who Says Size Matters?

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(HxWxD), and frequency response is rated at 60 to 20k Hz. Retail: \$4,997/each.

Designed for low-profile, center-channel applications, Westlake's Lc24.75 is a ported, two-way system with twin 4-inch woofers and a 3/4-inch soft-dome tweeter. Frequency response is 65 to 20k Hz, (± 3 dB). The 18-pound cabinet measures 6.25x6.5x7 inches (HxWxD). Other features include extensive electromechanical and acoustical dampening, point-to-point wiring and magnetically shielded drivers. Retail: \$999/each.

Long a favorite with home hi-fi enthusiasts, Wharfedale (www.iagamerica.com) now offers its Diamond Series speakers to the studio monitoring market. The Diamond models feature Kevlar woofer cones, neodymium magnets and bi-wire terminals. All U.S. models are wired internally with Monster Cable. Priced at \$199.98/pair, Diamond 8.1 is a 296x198x191mm, two-way design with a 5-inch woofer and 1-inch silk-dome tweeter; response is 55 to 20k Hz. The larger (364x213x258mm) Diamond 8.2 (\$299.98/pair) has a 6.5-inch woofer, 1-inch silk-dome tweeter and a 45 to 20k Hz response.

Since the unveiling of the NS-10M nearly 25 years ago, Yamaha (www.yamaha.com/proaudio) speakers have been a regular fixture in studios around the world. At last month's AES convention, Yamaha showed the MSP10 Studio, an advanced new near-field. The monitor's two-way, biamped design uses an 8-inch cone woofer and 1-inch titanium-dome tweeter in an integrated waveguide for response extending beyond 40 kHz. The onboard power complement includes a 120-watt amp driving the lows and 60 watts to the HF driver. Pro features include radiused cabinet edges, mag shielding, balanced XLR inputs (with input-sensitivity control), HF and LF response trim switches, and a switchable 80Hz low-cut filter to use the MSP10 Studio with a subwoofer, such as Yamaha's SW10. A wall-mount bracket is optional, and the MSP10 Studio ships this month.

Yorkville's (www.yorkville.com) YSM1p uses the same cabinet and similar components as the popular Yorkville YSM1, including a shielded 6.5-inch woofer and 1-inch silk-dome tweeter in a ported cabinet. The YSM1p's overall sonic charac-

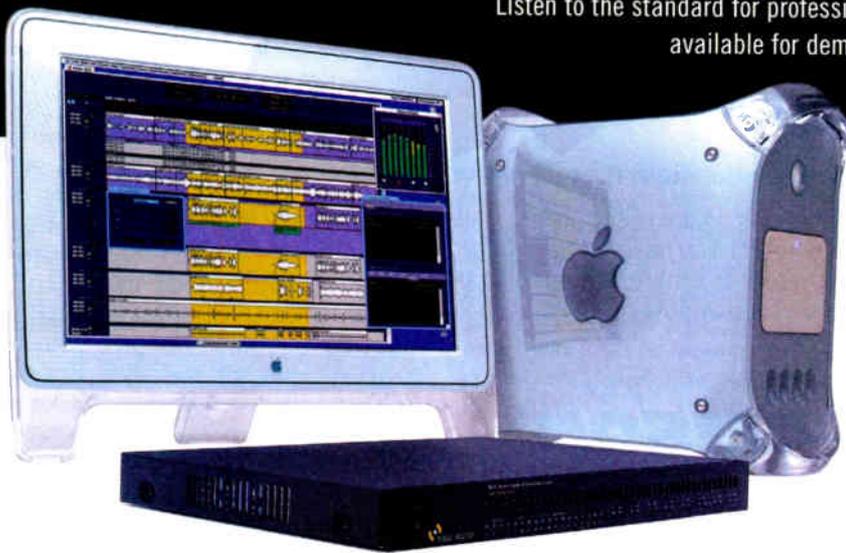
teristics were designed to match the original YSM1, with the big change coming from the new monitor's onboard power module delivering 115 watts (85-watt LF/30-watt HF) with less than 0.05% distortion at full power. Other features include +9/-6dB input trim, defeatable limiter, DIP switches to tailor the monitors LF/HF response and balanced inputs (XLR and 3/4-inch TRS). Dimensions are 11x10x16 inches; weight is 25 pounds. Retail: \$320/each.

At this year's Summer NAMM show, Yorkville launched the YSS1, a complementary subwoofer for the YSM1p, for extended bass or surround system installations. The YSS1 features a 150-watt integrated power amp driving a 12-inch woofer for 35 to 150Hz response. Its built-in power module includes a variable frequency-selectable crossover (60 to 150 Hz tunable), volume pot, phase-reverse switch, two XLR/TRS balanced inputs and RCA unbalanced inputs. The internal preamp ensures stereo-input sources are summed in phase to the integrated amplifier, and two XLR balanced outputs pass stereo-input signals to feed full-range active monitors. Dimensions are 20.5x13.75x16.75 inches (DxWxH); weight is 44 pounds. Retail: \$459. ■

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PHOTO: PER NICOLA D'AMICO

The audio crew at the SSL 9000 J in Studio A, seated left to right: Terry Mader, Gary Winger, Vince Caputo and Shane McMartin. Standing, l to r: Dave Colozzi, Paul Pizzica, Ron Schreier, Scott Perry, Rich Markowitz, Marco Pulcini, Scott Rhame, Steve Moseley, Jerry Mahler and Dave Casuscelli.

PRESENTS!

A Production Model for the 21st Century

By Tom Kenny

Forget for a moment that it's football. You'd be hard-pressed to name any single facility outside of Hollywood that offers as wide a range of audio services as NFL Films: music composition, scoring, editing, mixing, location recording, dialog cleanup, sound effects, transfer, live recording, audio for DVD-Video, record production, re-recording, and archiving; for clients like HBO, ESPN, Fox, History Channel, A&E, Sony Music and a number of commercials and industrials. This year, NFL Films will produce more than 400 hours of highly dramatic, authentic-sounding football highlights for broadcast, and all of it is captured, produced and mixed in-house. NFL Films is a busy place, and they don't just do football.

In the 14-room audio wing on a typical weekday in September, every room was busy. Gary Winger had premix work on a Good Charlotte 5.1 music DVD, while Vince Caputo was in D mixing *NFL Films Presents* for ESPN and Steve Moseley was in B mixing *Inside the NFL* for HBO. Composer Tom Hedden was in Studio A tracking Middle Eastern instruments for a series of NFL spots; the day before, it had been the site of the first full-blown orchestral mix on their SSL 9000 J Series board. Music-selection rooms were busy, narrations were being recorded in

Studio F, the band The Roots was shooting on the soundstage for *NFL Under the Helmet* (a Fox Saturday afternoon TV show), scores were being written, and the transfer department was working 24-hour shifts. Yet in the hallways, there was nothing but the hum of quiet efficiency.

Today, the NFL Films complex stands as one of the great recent achievements in facility design, a stunning architectural and technical display. It's hard to imagine that until July, this same frenzy of activity took place in a patchwork collection of 1986-style rooms three miles away.

EXTERIOR PHOTO: JAMES I. WILSON/COURTESY RBDC

Mix A Construction



The beams are up, but before the floating floor can be poured, conduit must be run to the five 80-line mic panels that ring the scoring stage. The open space behind the beam will be framed to become a 14-foot-high window to capture exterior daylight.



The first slab goes down, and the geometry of the custom-sized windows begins to take shape. A paramount design concept for the entire project was to allow as much natural light into the facility as possible without jeopardizing the functions within the building.



Floor is poured and the window wall has taken on its first layer of acoustic treatment, with mineral fiber sound blankets cut and fit between the studs behind the dry wall. The dark space in the rear is the control room, under construction.

ADD-ON OR GROUND-UP?

In 1995, vice president of audio Jerry Mahler approached the executive team and said that he needed another mix suite. It was evident that both video and audio were outgrowing their space, and the wheels were set in motion to undergo a major expansion. The only decision was whether to tack on or build anew.

"A confluence of factors really drove this decision to build new," says Barry Wolper, chief operating officer. "First, we were simply out of space at the old building. We had cannibalized every broom closet and open space that we could. Second, the NFL was in the middle of negotiations for new television contracts, which included a lot of NFL programming for the League's television partners. And third, with the FCC's DTV mandate, we knew we had to create an electronic infrastructure to be able to accommodate the new digital programming, especially hi-def."

The first move Wolper made was to hire The Staubach Company (owned by former NFL great Roger Staubach) and principal Joseph Fetterman for project management and feasibility studies. Wolper, Fetterman, Mahler and Jeffery Howard, vice-president of operations/engineering, became the de facto "building team," and after garnering League approval, they began scouting locations and viewing possible floor plans. As they will readily admit, nobody on the team could have foreseen the complexity of the four-year "fast-track" project.

As it stands today, the 200,000-square-foot NFL Films plaza consists of a tech wing and an admin wing, bridged by a two-story glass-and-steel connector that Mahler calls "Main Street." The Russ Berger Design Group, which has enjoyed a 15-year relationship with NFL Films, handled the entire project, interior and exterior, headed up by principal Robert Traub.

"As we walked around the 26 acres on our first visit to the new site, I was immediately taken by the shape of the land, the backdrop of the wetlands and the view angles from the street as cars drove by," Traub says. "Conceptually, the master plan was formed right then and there, with the idea of two building elements tied together with a bridge to house the



At the SSL Avant in Studio D, the dubbing stage, Emmy Award-winning mixer Vince Caputo takes a break to talk with the producers.

personnel that literally spanned the two distinct cultures in the organization.

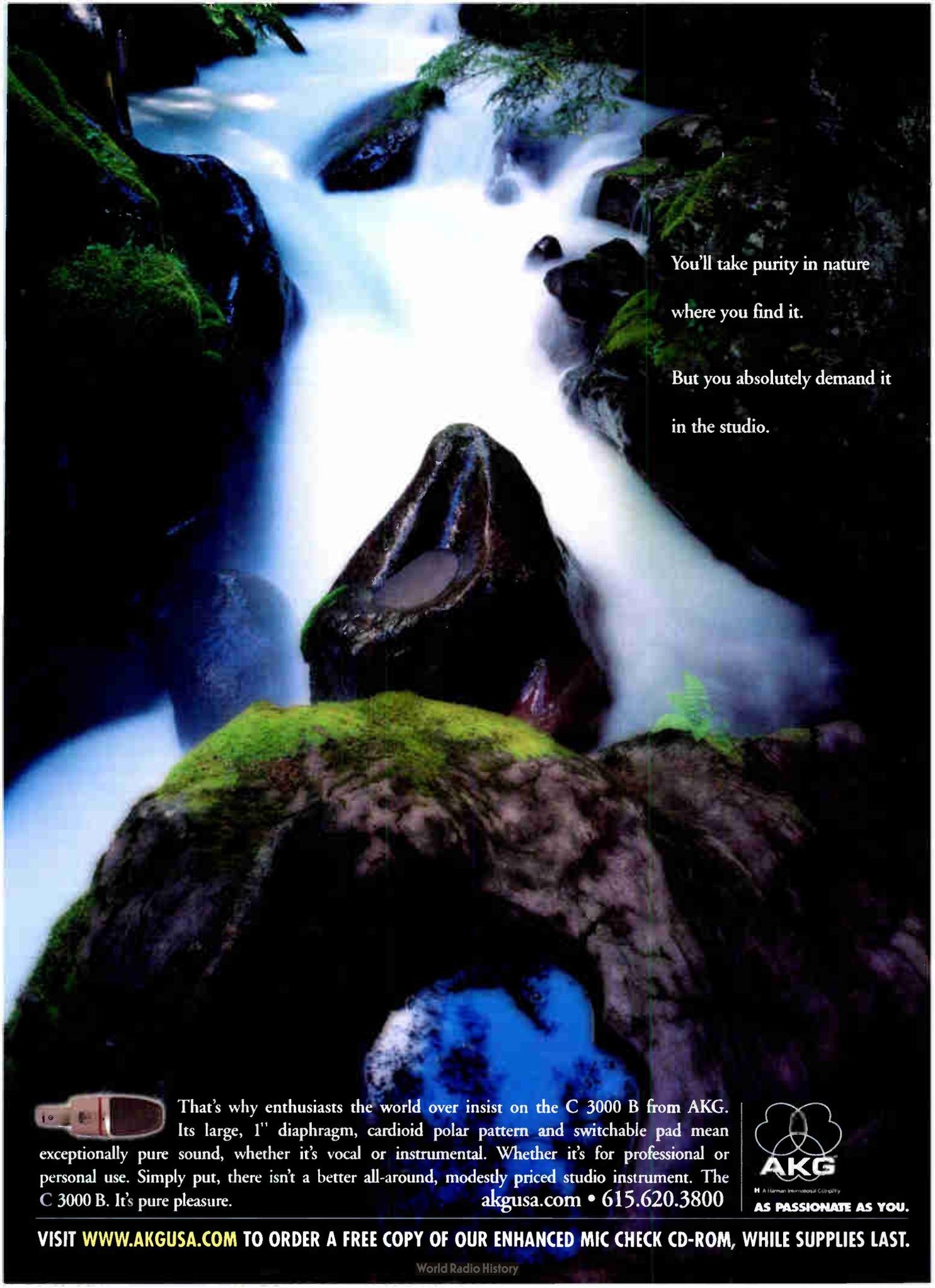
"Then on the technical wing, there exists an audio world and a video world," he continues. "Not that these two universes don't collide on occasion, but functionally, the distinction between them needed to be made clear. Main Street allows easy circulation off of a central thoroughfare to let users venture into either area based on their daily needs to coordinate sight and sound."

Groundbreaking took place—in the middle of a soybean field at the edge of a corporate park in Mt. Laurel, N.J.—in July 1999, and the ensuing three years tested the team's ability to focus on the macro and the micro simultaneously over a long period. The result is an exterior/interior worthy of *Architectural Digest* and a technical infrastructure worthy of the *AES Journal*. It's quite simply a production model for the next 25 years—and you can't see the wires.

THE LAYOUT

Jerry Mahler is a stickler for details, and he's not afraid to offer his opinions on everything from light fixtures to main monitors, fabrics to consoles. He's also a big-picture guy who knows where he wants to go. He knew from the start, based on his experience mixing at Caribou Ranch in Colorado, that he wanted lots of wood and natural light. He also knew that he wanted impeccable acoustics. That combination, more than anything else, determined the tech wing's layout.

Video and audio each occupy a leg of a T-shape, and each is based around a central machine room. Because it is cheaper to build up than out, it was determined early on that all rooms that demanded isolation, including the online video-edit suites (which have identical acoustic specs as the audio premix



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Mix A Construction



The first of the series of curvilinear wood panels are installed. Made from an acoustically damped honeycomb sandwich of aluminum and maple wood, they provide both diffusion and low-frequency trapping, helping to give the room its desired ambient decay characteristics.



The Argentinean mesquite is laid down and the wood frames that act as diffusion elements surround the windows. The construction of the room is essentially complete except for the final fabric finish that is tucked into the concealed track system on the walls.



Sometimes even audio guys have to wear hardhats (from left): Russ Berger, owner of Russ Berger Design Group; Robert Traub, AIA, lead architect on the project; Jerry Mahler of NFL Films; and RBDG project manager Richard Schrag.

rooms), would be on the first floor. Anything else, including telecine and the massive UPS system, would be bumped upstairs. Surrounding the audio central machine room are 14 rooms: all isolated, all with floating floors, all with windows (save Studio D, the dubbing stage).

The other major design consideration was determined by Studio A, the tracking room pictured on this month's cover. For the past 15 years, Mahler and his team had traveled the world, tracking and mixing orchestras to capture that signature, anthemic NFL Films sound. They had been to Abbey Road and CTS in London, The Warehouse in Vancouver, Westlake in Hollywood, Nonstop Studios in Utah, Time Machine and countless others. They now wanted their own stage.

"We needed a room that could handle 70 to 80 musicians and would be just large enough to get the reverb sound we wanted," Mahler says. "It turns out that Abbey Road Studio Two had the reverb time we liked for our style of music and the size of the orchestra. Right from the beginning, Russ determined that the ceiling height needed to be 24 feet, and we weren't going to give an inch. Without the volume, we couldn't accomplish anything. So steelwise, the entire audio wing had to be that height, and all of the acoustic spaces benefited."

WIRE MANAGEMENT AND CMR

Once NFL Films signed off on floor plans—"The last thing we ever signed!" Mahler jokes—construction began in earnest. Tons of dirt and gravel were moved, trailers were brought in, and Mahler and Howard, despite their day jobs of running a working facility, moved on-site to oversee every last construction detail, from months spent on welded corners to walking amid the studs and modifying the wire-management scheme.

Wire management was being developed in parallel as plans were being finalized. The only thing that Mahler and his longtime studio colleague, chief engineer Rich Markowitz, knew at the beginning was that they needed a central machine room, if only for video laybacks. And they wanted it soffited against the walls, with a rear entrance for techs. But then, after looking at the way they produce programs—where five rooms might be working on a project simultaneously and mixers might hop from an SSL Avant



Jerry Mahler insisted on wood floors throughout the facility, even in the central machine room. Architect Robert Traub says he had "never spent so much time with the architectural and interior design of this type of room."

to a 9000 to an 8000 to a Sony DMX-R100 in the course of a single day—shared resources became paramount.

"We have to accommodate timecode, machine control, and audio and video in both analog and digital formats, from multiple rooms," explains Markowitz. "That's where you start thinking about a router and large patching areas, where you can reconfigure your console quickly. In the old building, we had localized 8x8 routers for each control room. Today we're at 512x512. That's a big jump! And that determines the entire infrastructure in terms of how all the audio control rooms are going to operate."

The router consists of an NVision NV3512 512x512 75Ω AES frame, an EnVoy 6128 128x128 Serial Digital Video frame, an NV7256 256x256 timecode frame and an NV3256 256-port serial control frame. All of the patch panels in all of the rooms are set up identically and mirror the CMR patchbay. In addition, the CMR houses a Fairlight Medialink server with just over half a terabyte of RAID 5 storage to accommodate 18 Fairlight QDCs and Audiobase, the library search system from mSoft.

Though the decision to go with a central router came later in the game, Markowitz was charged with setting up the unique wiring scheme, and he had to have it done before slabs could be poured. "Over the past three years of working on this project, our task was to design and build an audio post-production facility the likes of which we had only imagined before," Markowitz says. "I was to design, document and build the infrastructure—the cables, the gear, the guts. I had done rooms before, but one at a time, and I had done a facility before, but over a 10-year stretch.

"So I spent days agonizing over what

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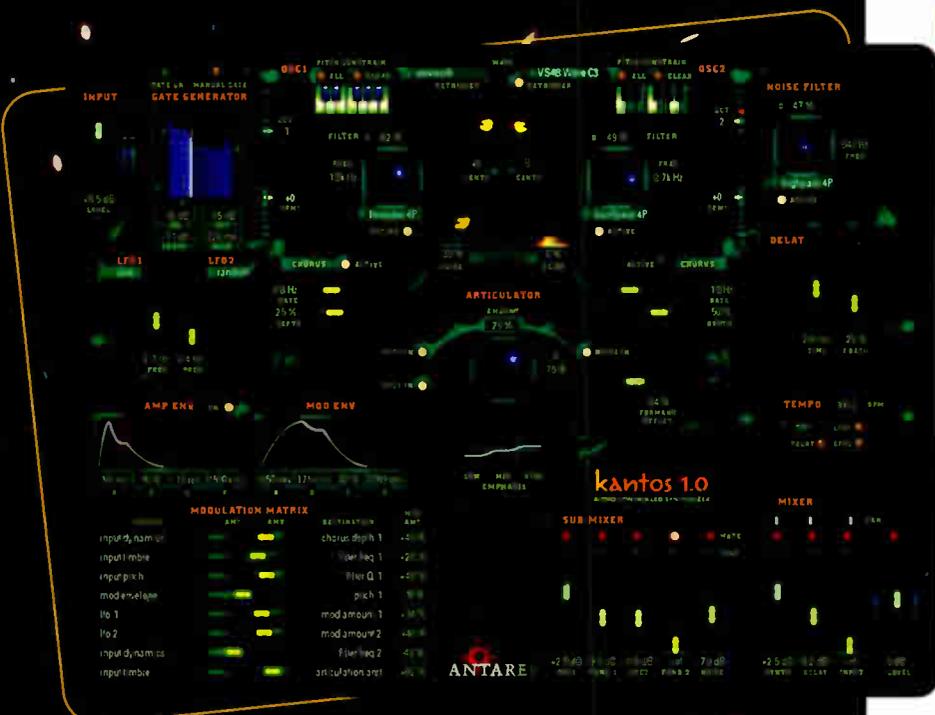
To learn more about kantos 1.0, visit our website at www.antarestech.com for audio demos, guided tours and more. Whether you are looking for an alternative to traditional controllers, or are looking to produce electronic music with a level of sonic innovation and dynamic expression that's simply not otherwise possible, kantos 1.0 will, quite literally, change the way you make music.

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would make the most sense to the mixers, what would be easiest to use," he continues. "We talked endlessly about new concepts, we tried stuff in the shop, we tested different types of cable, we mocked up systems, we tested demo gear—I could imagine nothing worse than putting all of these parts together and having something not work."

It works. Essentially, the wiring scheme is built around a system of pits, tubes and troughs. Six 4-foot-deep pits were strategically placed to connect all 14 audio rooms, with access to the video wing across the hall. Through these pits runs a system of six 6-inch PVC pipes, which, in turn, lead into local machine rooms (all located in the hallways) and a series of troughs running into the rooms.

THE MOVE

Floating floors were poured to flatness and tolerance levels that the contractors had never seen before, walls began going up and rooms were being finalized. Meanwhile, an entire working facility was going full-bore three miles away, and ex-

ecutives were trying to plan a piecemeal move that wouldn't interrupt their seasonal workflow. Plans were made and scrapped based on construction; then, it was decided in summer 2001 to put all contractors onto the admin building, so the staff and producers could move in, and leave post intact off-site. Later, all resources would be concentrated on the tech building.

Then, last December, three months away from the move-in date, NFL Films took on the final stage of system integration; the off-site prep work had been handled by The Systems Group of Hoboken, N.J. "What makes NFL Films unique is that it's designed around a hybrid operational model, whereby control rooms are available as operational islands, providing for separation and independence typical of most recording facilities," says Chris Mehos, TSG president. "At the same time, they use centralized, shared resources typical of broadcast centers. It is the most well-planned and detailed audio production and post facility we've been involved with."

Starting after the Super Bowl last January, the NFL Films audio staff began the wiring and cable pulling. First to go in was the CMR. It was to be followed by Studio A, because that was all-new equipment.



PHOTO: PIER NICCOLA D'AMICO

The "music department" at NFL Films, inside one of the two power-pocked composition rooms. From left, composer Dave Robidoux, composer and director of music Tom Hedden and music editor Jesse LeGrazie. Not pictured: Debbie Markowitz, Christine Black and Dawn Williams.

But because of the need to get the previous season's highlight reels finished, plans flip-flopped, and it was decided that the two premix rooms, two transfer rooms and four music-editing suites needed to be up and running. Mixing would stay at the old facility. No vacations for the crew. Six-day weeks. The advantage? The engineers know every wire in that building.

STUDIO A

What was supposed to be the first room up, Studio A, turned out to be the final piece of the puzzle. With all due respect to Studio D, the theatrical-style, multiformat, SSL Avant-equipped re-recording

—CONTINUED ON PAGE 150

THE 14-ROOM AUDIO TOUR

Because mix engineers work in all rooms, all the time, Jerry Mahler's first mandate to Russ Berger was to "make all of the rooms sound the same." Equipment-wise, the main mix stages all include SSL consoles, Fairlight QDCs and PMC monitoring with Bryston amps. All rooms use Gefen Xtendit to keep all noisy machines in the hallways. Here is a brief control room tour, with travelogue by chief engineer Rich Markowitz:

Mix A: For me, Mix A is our crowning achievement. The new SSL 9080, PMC BB5 speakers and acoustic design combine for the best-sounding control room I've been in. As well as the usual complement of QDCs, DigiBeta, DVC and V1 video playback, Mix A has accommodations for additional analog or digital multitracks and 2-tracks. Lots of tielines, lots of outboard gear, natural light—everything Jerry and I ever wanted in a control room ended up in Mix A.

Mix B: The SSL 8048 console from our old facility has found a new home. Mix B has two voice-over rooms, as well as access to Mix A's recording space.

Mix C: This is next year's project.

Mix D: This "Hollywood-style," all-digital mix theater turned out great. The Fairlight QDCs, SSL Avant console, PMC BB5 speakers and hard disk video playback provide a great way to do any type of multiformat mixing.

Mix E/F: These two rooms were designed as premix/voice-over rooms based around the Sony DMX-R100 console and Fairlight QDC. To standardize our voice-over signal path, we installed a pair of Focusrite 110

preamps and dbx 160SL compressors within arm's reach of the engineer.

Transfer 1/2: Probably the most complex rooms to design, our two sound-transfer rooms needed to be capable of accommodating any source format for transfer to just as many destinations. These rooms are equipped with QDC, CD, DAT, MD, DVC, analog 2-track and 16mm mag, as well as the ability to import and export all the latest computer-based file formats. We designed a lot of the switching and monitoring pieces for these rooms in-house.

Music Composition 1/2: Our two music-composition rooms feature identical Pro Tools MIXPlus systems with Pro Control. With all the new developments in software synths, we've been able to build a very uncluttered, yet powerful music-scoring room. These rooms also include Fairlight QDCs and PMC IB15 speaker systems.

Music Edit 1/2/3: Used for editing music, these rooms all have Fairlight QDCs and custom, NFL-designed monitor selectors.

Music Selection: This room is used primarily for music selection and editing. An 8-track QDC, Sony 40-inch plasma display and 5.1 audio monitoring make this a great place to review our work in a living room (up-scale) kind of environment.

Mix S, the soundstage: We moved the SSL 6032 from a mix room in the old facility to our new shooting stage. With the Fairlight QDC, PMC speakers and video monitor wall, Mix S is capable of handling both weekly shoots and post-production mixing duties.

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Brother to the award winning BlueTUBE, the DigiTUBE adds a three-band sweepable EQ and 24-bit digital output. The DigiTUBE features 70dB of gain with 22dB of headroom. A 24-bit digital output via S/PDIF makes the DigiTUBE the perfect front end for soundcards and digital recording systems. The DigiTUBE offers XLR output and a 1/4" insert point for patching in a compressor or other outboard effects unit.

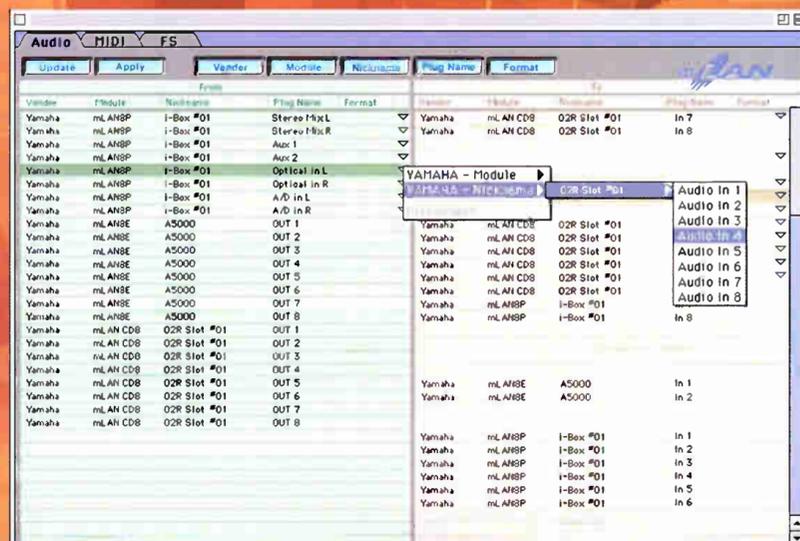
- > Tube Preamp with 70dB of Gain and 22dB of Headroom
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Why mLAN?



The FIREstation uses Yamaha's protocol for FireWire recording called mLAN. The difference between mLAN and other FireWire recording systems is that mLAN is an 'open' platform allowing compatibility with other manufacturer's hardware including Apogee, Korg, Kurzweil and Yamaha with many more to come. mLAN stands for 'Music Local Area Network' and works just like a computer network. Multiple mLAN devices can be chained together so that digital audio, MIDI and Word Clock information can be sent to and from each device. Now, audio interfaces, digital mixers and keyboards can all communicate using mLAN.



FIREstation FireWire™ Recording Interface

Stand Alone Mode



The FIREstation can also be used without a computer in 'Stand Alone Mode' where all eight channels of analog inputs are routed to the ADAT Lightpipe outputs and vice versa. In this mode, you can use the FIREstation simply as an eight channel A/D and D/A converter. This is a great way to add I/O to many of today's popular digital recorders and interfaces such as Digi001, MOTU 2408, and many others. In addition, all eight channels of analog inputs are simultaneously routed to the FIREstation's line mixer. The mixed signal is sent out of the MAIN Outputs as well as the Headphone Outputs. This allows the FIREstation to be used as a stand alone 8x2 analog line mixer. Since the Dual-Path preamps have balanced direct outputs in addition to the mixed Main Outputs, the FIREstation offers even more flexibility by allowing you to use it as an independent stereo mic preamp.

Technical Specifications

Preamp Bandwidth	10Hz to 50kHz	Headphone Output	100mW 20-20k
Preamp Input Impedance	1.3kOhms	Preamp PAD	20dB
Instrument Input Impedance	2MOhms	Phantom Power	48V +/- 2V
Preamp THD	0.002%	Meter	-20dBu, -10dBu, Clip at +18dbu
Residual Noise Floor	-96dBu	Internal Supply	Linear
Preamp Gain	70dB	Analog to Digital Converters	24bit / 44.1K or 48K
TRS Input Impedance	10kOhms	ADC Dynamic Range	107 db
TRS Input Nominal Level	+4dBu	DAC	24bit / 44.1K or 48k
TRS Output Impedance	51Ohms	DAC Dynamic Range	107db
TRS Output Nominal Level	+4dBu	DAC Noise Floor	-96dB
TRS Main Outputs Impedance	51 Ohms	Internal Word Clock Jitter	Ultra low
TRS Main Outputs Nominal Level	+4dBu	mLAN Speed	200mbps



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- Stand-Alone Eight-Channel A/D or D/A Converters or 8x2 Analog Line Mixer
- Dual-Path™ Tube or Solid-State Preamps for Maximum Tonal Flexibility
- Built-in 1x1 MIDI Port for Use with Keyboards and MIDI Devices
- mLAN Compatible
- Mac and PC Compatible (IEEE-1394 Port Required) for Use with Today's Hottest Audio Software (Ships with ASIO Drivers)

Make the FIREstation the heart of your digital recording studio. Plug in microphones, instruments and external preamps into the analog inputs while monitoring the signal with zero-latency. Keyboards with mLAN (i.e. Yamaha Motif or Korg Triton Studio) and DAW's (Yamaha AW series) may be seamlessly patched via the dual FireWire ports on the FIREstation to route audio and MIDI information to your computer. Need more inputs? No problem, daisy-chain multiple FIREstations to add up to 40 channels of I/O!



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Tube or solid state? With the FIREstation you get the best of both worlds. Introducing our new Dual-Path Mic/Instrument Preamp which gives you a true solid state audio path with a vacuum tube that can be switched in or out of the circuit for a totally different preamp characteristic. The outer knob controls gain and the inner knob controls tube drive. When the 'Drive' control is turned fully counterclockwise, the knob will 'click' into the 'off' position and the tube is taken out of the circuit. The Dual-Path Preamps also feature 1/4" instrument inputs allowing you to plug a guitar, bass or keyboards into the preamp directly from the front panel.



Zero-Latency Monitoring

The FIREstation utilizes an onboard line mixer that eliminates latency (monitoring delay). All eight channels of the FIREstation are routed to this onboard line mixer — the first four inputs are mono and the last four are stereo. The main outputs of your recording software (Outputs 1 and 2) are also sent to this mixer and assigned to a knob (labeled mLAN Return) so that you can control the volume of what has already been recorded while you overdub. Since this is all done in real time, there is absolutely no latency even if you are using a slower computer.

Master Control

The master control section selects what is monitored through the headphone and main outputs. You can choose between analog, ADAT or S/PDIF inputs on the line mixer as well as choosing which inputs will go to the computer. This section also provides separate volume controls for your headphones and main outputs.

Word Clock

The FIREstation has a selectable Internal and External Word Clock. If you are using an external source, you can receive Word Clock from BNC, ADAT or FireWire from the computer. Internal Word Clock allows you to switch sampling rates from 32kHz, 44.1kHz or 48kHz.

Power

Power jack and on/off switch.

FireWire

The FIREstation features dual FireWire ports which allow you to chain multiple units together (up to 40 channels). You can also chain hard drives or other peripherals to these ports.

MIDI S/PDIF

This DB-9 port connects to a breakout cable that provides both MIDI and S/PDIF input/output jacks.

ADAT

Eight channels of 24-bit ADAT input/output.

Word Clock

Word Clock input/output via BNC.

Footswitch

Footswitch record punch I/O jack.

Balanced Analog I/O Plus Preamp Sends

All of the analog inputs and outputs of the FIREstation are on balanced 1/4" TRS connectors. The outputs of the mic preamps are directly routed to the first two line inputs, but you can also plug a line level device into Inputs 1 and 2 that disconnects the direct connection with the preamps. However, the preamps have their own direct outputs (labeled Preamp Sends) which allow you to send the balanced output of the preamp to an external processor, like a compressor or EQ, and then return it into the line input of your choice. The best part is that since all of the inputs and outputs including the preamp sends are located on the back panel, you can connect the FIREstation to your patchbay.

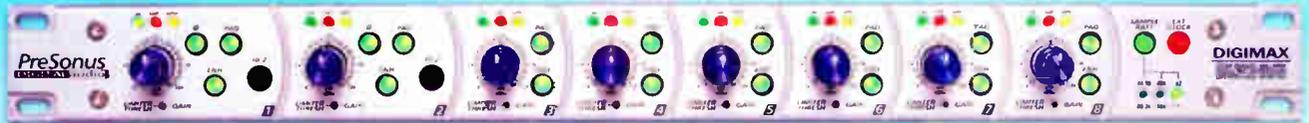
Main Outputs

The main outs are designed for use with monitors. The line mixer dictates the content of this output.

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File-Format Futures

PART 2: WHAT COMES AFTER OMFI?

As described in the first part of this two-part series on file-format interchange, the quest for a way to allow digital audio workstations to exchange files has found a partial solution in OMFI (Open Media Framework Interchange). However, nagging issues of dependable operation and OMFI as an unsuitable formal standard have resulted in some important new interchange file formats (and more cryptic names and acronyms with which to impress your friends). In this article, we'll cover AES31—the first and only recognized international standard for file interchange from the Audio Engineering Society—the OpenTL initiative from Tascam (www.tascam.com), and the heir apparent to OMFI, the Advanced Authoring Format (AAF).

AES31

Once digital audio workstations became a permanent feature of the pro audio landscape, the Audio Engineering Society began looking into creating a standard for file interchange between systems. The official body charged by the AES with examining the issue and proposing a solution is the AES31-06-01 Working Group on Audio-File Transfer and Exchange. (See www.aes.org for information.) The audio community needed a format that allowed for reliable project interchange without placing undue difficulties on manufacturers.

The partition of the audio computer world into systems based on Windows, Macintosh and various proprietary operating systems gave birth to multiple disk file systems, audio file formats and as many proprietary EDLs as there are brands of workstation. For this reason, the file format issue for DAWs is really composed of three basic problems: defining an audio file format; defining a disk media format; and defining one or more edit data formats (EDLs or Edit Decision Lists).

The work was divided into four sections, which became the basis of the AES31 Standard: Audio Format, Disk Format, Simple Project Format and Object-Oriented Project Format (subdividing the EDL issue into both simple and object-oriented formats).

The first and second sections of the standard were settled by adopting AES31-1, the Broadcast Wave audio file format (already adopted as a standard by the EBU), and AES31-2, a disk file system that is compatible with the Microsoft FAT32 disk format. In both cases, a document that describes the technical aspects of these formats in detail is available through the AES31-06-01 committee. These documents provide enough detail to allow software engineers to support a FAT32-compatible disk file system and the Broadcast Wave media format, even on systems not based on the Windows OS.

One advantage of FAT32 is that it is a 32-bit file system that provides access to drives up to 2 terabytes in size. The Broadcast Wave audio media format headers contain important data about the file (metadata), such as a unique media identifier and timecode stamp. Other headers can contain additional information, or even private data, so it is an extensible audio format with a great deal of power and flexibility.

The majority of DAW systems now support FAT32 and Broadcast Wave, so they can also legitimately claim to support these first two components of the AES31 standard. This support means that a user can successfully move a Broadcast Wave audio file from one AES31-1-compliant system to another, and can even move the disk drive containing that audio file from one AES31-2 compliant system to another.

But the real heart of file interchange is moving an edited project with the edits and fades intact from one system to another. A means to achieve this took a

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bit more work from the committee. The turning point came when Brooks Harris, an engineer with deep experience in EDL management and digital media, submitted a detailed technical proposal to the committee that fulfilled its criteria for simple edit data interchange. With the support of AES31-06-01 chairman Mark Yonge and input from the members of the committee, details were hammered out and AES31-3, the simple project data-interchange component of AES31, was formally ratified as a standard in June 1999.

This third section of the AES31 standard uses an Audio Decision List (ADL) with several key features. First, it is an ASCII text file, which is extremely important because it allows a human operator to identify an error by looking at the ADL file itself—something that is impossible with the more complex OMF1 format. Second, AES31-3 supports sample-accurate timecode stamps through what is called TCF, or Timecode Character Format—an extension to SMPTE timecode that adds sample-count numbers to the usual format of Hours:Minutes:Seconds:Frames.

ADL supports definition of fade-in/out or crossfade amounts, identification of media-source files, and Media File Locators that use a URL to identify the source of a media file. This last point is very important because it provides a means to locate a media file wherever it might live, even if it is on a network rather than local storage. Further extensions and additions to the AES31 format specification are entertained by the committee through the formal but open process used to hammer out AES standards.

Joe Bull, managing director of DAW manufacturer SADiE (www.sadie.com), echoes the sentiments of most DAW manufacturers when he says, "It is vital for our industry to adopt low-cost and practical methods of interchange—commercially aware customers are beginning to demand it. However, practical considerations of billable time suggest that they need a simple, native solution rather than a complex, comprehensive solution that would slow down the whole post-production process."

The undeniable ease of implementation and reliability of AES31 are beginning to lead to more widespread support in the professional audio community. According to Digby Richards of AV Media (www.av-transferonline.com/index.htm), "For us, OMF is still the most requested format, followed recently by AES-31. We do currently

provide AES31 support in AV Transfer."

Among the many products and companies offering support for AES31 are: Artemis from SADiE, Pyramix from Merging Technologies (mwww.merging.com), Euphonix AES31 Transfer Station for the R-1 recorder, Nuendo from Steinberg, Logic from Emagic, EDL Convert Pro from Cui Bono-Soft (www.cuibonosoft.com/index.htm), AV Transfer from AV Media (also distributed by Fairlight, www.fairlightesp.com.au, for use with its systems), OMR8 from Digital Audio Research (www.dar.uk.com), DD Series from Akai, Media Magic from Dark Matter Digital (www.darkmatterdigital.com) and others.

Digidesign, the largest DAW maker,

developed the less-expensive but (in many ways) more powerful MX-2424 hard disk recorder. This time, rather than go the expensive route of providing support for multiple formats, TimeLine engineers decided to publish the internal format of the machine (which is the same as the MM Series dubbers) and make it widely available to anyone who wanted to achieve compatibility with the MX-2424 or MM Series.

The OpenTL toolkit is now managed by Tascam, which has inherited the rights and responsibilities for maintaining the format in the wake of TimeLine's recent demise. A number of products now claim support for OpenTL, among them Stein-

The Advanced Authoring Format (AAF) is a major undertaking to develop a comprehensive interchange format for every type of digital media data, including audio, video, text, graphics and various other types of media objects.

has so far decided not to implement the AES31-3 EDL Standard in its Pro Tools system. Product manager Gordon Lyon states, "Digidesign has supported AES level 1 [Broadcast Wave] and level 2 [FAT 32] formats for two years now. Currently, we do not have plans to support AES31 level 3 [EDL format], as we feel it does not add any advantage over the current OMF2 capabilities. The majority of interchange-capable workstations that support AES31 also support the more capable OMF2 format. We feel supporting AES31-3 as well as OMF2 would confuse and defocus interchange."

OPENTL

Perhaps the most popular of the "open" format initiatives to come from an individual company is the OpenTL (Open Track List) format. When Tascam began distributing the MMR Series digital dubbers made by TimeLine Vista, the manufacturer encountered the confusion of multiple incompatible file formats used in the post-production world. TimeLine's approach was to implement direct support for several of the most popular formats used in post-production sound editing: Pro Tools, WaveFrame, Akai, Fairlight and OMF1. This strategy proved to be successful and led to the widespread adoption of the Tascam dubbers in the worldwide post community.

As a follow-up, Tascam and TimeLine

berg's Nuendo, Emagic's Logic, Tascam's SX-1 workstation, Merging Technologies' Pyramix system, Media Magic from Dark Matter Digital, AV Media's audio-transfer program AV Transfer and EDL Convert Pro from Cui Bono-Soft.

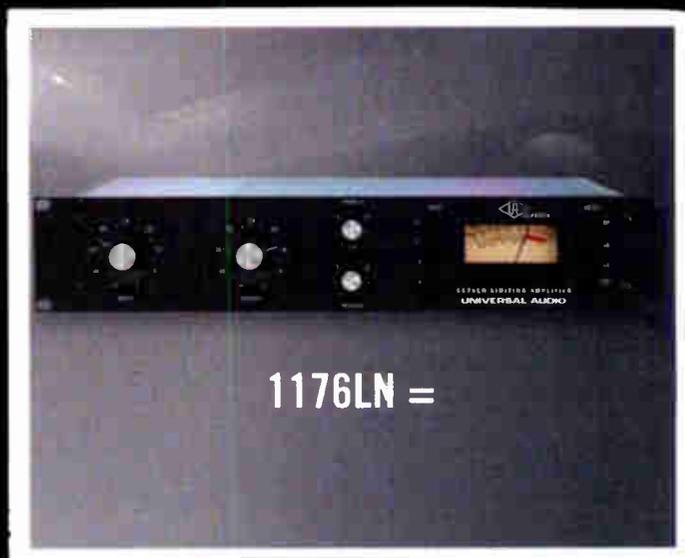
AES31 AND OPENTL: KEEPING IT SIMPLE

According to Ultan Henry from Dark Matter Digital, there are several important reasons for the popularity of both AES31 and OpenTL. "AES31 and OpenTL are both remarkably straightforward to implement," he says. "Being simple text files, both of these formats are easy to read, write and check. Object-oriented formats like OMF and AAF are many times more difficult to handle efficiently and reliably. With both of these formats, the content of files can vary dramatically from one application to another. This makes implementation and testing many times more complex."

Ultan's comments are supported by Digby Richards of AV Media. He gives the following list of reasons why AES-31 and OpenTL are generally very easy to implement:

They are text formats, which allow a developer to examine/edit the generated file with any text editor. They are "simple" formats, meaning that they don't allow you to put everything including the kitchen sink into the file; but AES-31 and

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OpenTL do allow you to describe an audio EDL, with some parameters (e.g., clip levels, etc.). The EDL file never contains media; the audio is always contained in external "well-understood files," such as BWF or .WAV. The syntax of these formats is well-specified. The syntax/semantics of the format do not encourage interpretation; i.e., there is only one way to put a source clip into an EDL. The manufacturers concerned are talking to each other to iron out minor compatibility issues.

He concludes by commenting on the trade-offs involved: "With AES31 and OpenTL, one sacrifices flexibility [can't easily add new functionality] for increased compatibility [meaning, it's more difficult to get it wrong]."

OpenTL is also being used in networked audio-file transfers. According to Jim Bailey, Tascam's production products manager, "Tascam has an application in testing that uses Rocket Network to translate between their protocol and OpenTL. The advantage is that other systems such as Logic and SADiE can then use Rocket Network to exchange projects, taking advantage of Rocket's compression [as needed], translation and dynamic EDL updating."

ADVANCED AUTHORIZING FORMAT

Growing out of a multimedia task force originally put together by Microsoft, the Advanced Authoring Format (AAF) is a major undertaking to develop a comprehensive interchange format for every type of digital media data, including audio, video, text, graphics and various other types of media objects. The business of AAF is now conducted through the AAF Association. Founding members of the AAF association are Avid, the BBC, CNN, Discreet, Liberty Media, Matrox, Microsoft, Pinnacle, Quantel, Sony, Turner Entertainment Networks and the U.S. National Imaging and Mapping Agency. Clearly, this is an effort on a different scale from the simple audio media and EDL interchange efforts represented by AES31 and OpenTL. The scope of AAF is so vast that we'll just scratch the surface here and make a few points about how it may end up affecting the pro audio community. More information is available at www.aafassociation.org.

According to the Association, AAF builds substantially upon the original capabilities of OMFI. This is a simplified explanation, but it largely takes the object model from OMFI and combines it with Microsoft's Structured Storage container

format rather than the Apple Bento format used in OMFI. Microsoft Structured Storage is the same basic container format used by Microsoft to store Word, Excel and other Microsoft Office documents. The presence of so many broadcast and digital video companies in the AAF Association is a good indication of the principal focus of AAF: to be a "Super EDL" for the complex content used in video and broadcast media production (which, of course, includes audio). The heritage of OMFI within AAF is strong, 95% of the AAF Software Development Kit (SDK) has been written by Avid.

So far, many in the pro audio community are taking a wait-and-see attitude toward AAF. Henry of Dark Matter Digital says, "At the moment, I would be reluctant to commit engineering effort to supporting AAF until it is at least more widely used on Avid products."

According to Joe Bull of SADiE, "When the dust has finally settled, SADiE may decide to implement AAF, although it has yet to be widely adopted in the audio community. Many audio facilities cannot afford the luxury of paying for the perfect interchange of graphics files, etc., while

only delivering limited audio interchange." Chief software engineer Dominique Brulhart of Merging Technologies adds, "AAF could be added easily as a new plug-in for Pyramix if the demand is serious, but this is not the case for now—not a single request so far."

One company that has voiced support for AAF as a future direction is Digidesign, a division of Avid Technology. Digidesign product manager Gordon Lyon said, "We have long been strong promoters of 'OMF till AAF.' Digidesign and Avid have been deeply invested in interchange for longer than any other media workstation company, and we feel strongly about the ability of the new open AAF standard to make interchange standards independent and robust." Gordon also lists several points about how Digidesign views the advantages of AAF and how it sees the future there: "AAF is not controlled by a single company but by the AAF members, allowing equal contribution. AAF is open-source, allowing anyone to contribute all the way down to the source code level."

Digby Richards of AV Media points to some of the similarities with OMFI and some of the potential upsides to how the



Originated by the Pro-MPEG forum to handle digital-file exchange, the Material Exchange Format (MXF) is applicable to different audio and video-compression schemes used in the digital broadcast industry. An MXF file serves as a data wrapper that can contain any type of audio or video material in a playable format.

Although audio is a necessary component of MXF, it is initially oriented toward broadcast video production, and its data structure is based on existing SMPTE standards for metadata coding. MXF is now supported by other groups, including the AAF Association and the G-Fors (Generic Format for Storage) project of the European Information Society Technologies Program. It can be viewed as a subset of AAF, and it is expected that any AAF-compliant system will be able to read and write MXF files.

A massive undertaking with a 180-page spec (and more sections yet to come), the scope of MXF is comprehensive, offering solutions for key issues in the larger world of video and broadcast production, such as: retaining metadata regardless of the type of data compression (if any) used; library and archival application; access/use of files before a file transfer is completed; and support for partial file transfers (moving a section of a file without transferring the entire project).

MXF is being submitted to the Society of Motion Picture and Television Engineers for consideration as a standard. In the minds of many, this is a key step to bring file-format interchange technology out of the control of an individual company or consortium and into universal recognition as an ISO standard.

The effort is gaining momentum in the larger broadcast/post-production communities. At least 16 companies—including Avid, JVC Pro, Leitch, Matrox, Sony and Snell & Wilcox—have committed to using MXF in future products, perhaps with some as soon as the end of this year.

MXF's complexities and full details are complex and beyond this article's scope, but sites such as www.pro-mpeg.org offer useful material for further studies.

—Ron Franklin

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format is being handled: "The AAF SDK has remarkable similarities to the OMFI SDK. There are a lot of similar terms, such as master mobs, source mobs, etc. Adding AAF functionality to an application is relatively easy; it's the verification phase that is difficult. We are still at the 'adding AAF' stage with AV Transfer, so I can't yet tell you how it went. We expect to have learned somewhat from our experience with OMFI. We do expect to see variation in AAF files. One thing I think is great is that AAF is truly open-source, and there are discussion forums available so that manufacturers and developers like ourselves can talk to other third-party developers."

CONVERGENCE OF AES31 AND AAF?

Recognizing the usefulness of a more sophisticated, object-oriented format for complex interchange, the AES31-01 committee has reserved the last section of the AES31 specification, AES31-4, for an object-oriented format. Although this last section has not yet been ratified or formally submitted for ratification, it is widely expected that AAF will be the prime candidate to fill this role. Toward that end, discussions between the AES31-01 committee and the AAF Association have begun. It remains to be seen how quickly AAF or something like it makes it into AES31 as the final part of the specification. It is expected that when this happens, there will be tools from some of the companies that are focused on digital-format translation to move projects between the AES31-3 and AES31-4 formats. As AAF becomes an adopted format in the digital video and broadcast world, there will clearly be an impetus for some of the audio DAW manufacturers to pay attention and add this format to their arsenal.

Whether proponents of AAF can avoid the difficulties and fragility many have experienced with OMFI remains to be seen. With so many major media companies signed on, there is reason to hope that the community of such high-powered users will not long abide a file-interchange format unless it lives up to its promise and provides robust and trustworthy service. ■

Ron Franklin is president of Atira Media, a multimedia production company in San Diego, Calif., and Ron Franklin Associates, a digital media and marketing consulting company. Visit www.ronfranklin.net for more.



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Filename	Description	Source	Time	Channels
FILE: AAF\TerraSonde\6071_01_01	450 Cc abs 4ch Fake Start - from Engine	6071\01_01	00:01	2
FILE: AAF\TerraSonde\6071_02_01	450 Cc abs 4ch Fake Start - from Offsets - from Exhaust	6071\02_01	00:11	2
FILE: AAF\TerraSonde\6071_03_01	450 Cc abs 4ch Start Jig - Start Off - from Engine	6071\03_01	00:56	2
FILE: AAF\TerraSonde\6071_04_01	450 Cc abs 4ch Start Jig - Start Off - from Exhaust	6071\04_01	00:39	2

Elapsed: 00:20 | Remaining: 00:36

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Stevie J

“Bad Boy” Producer Moves West

Ten years ago, Stevie J was a teenager living in Buffalo, N.Y., with dreams of being in the music business. In terms of raw talent, he had more than the essentials: a great voice and an uncanny ability to play almost any instrument. Yet, performing was not his objective. Stevie J wanted to produce.

With that in mind, he started working in his attic with a 4-track mixer and a basic keyboard that his father, a Pentecostal bishop, bought for him. With friends, he formed a group and developed a unique hip hop/R&B sound. Eventually, he moved to New York City to seek fame and fortune. One day, while in a studio singing with the group Total, Stevie was discovered by Sean “Puffy” Combs, who was so impressed with Stevie J's vocal ability and guitar chops that he signed him to a contract on the spot.

It wasn't long before Stevie J asked Combs to give him a shot at producing. His first effort was with Lil' Kim and Da Brat, helping them create their remix hit “I Don't Need Anyone Else.” From there, the young producer/songwriter/musician had a major hand in productions of emerging hip hop/R&B artists such as Faith Evans, Carl Thomas, Total, Kelly Price, the Notorious B.I.G. and Combs himself; in all, he was a part of records that sold more than 30 million CDs combined. In fact, there are some who credit Stevie J with developing the hit-making sound for Combs' Bad Boy Entertainment company. In 1997, Stevie and Combs even shared a Best Rap Album Grammy for Combs' *No Way Out*.

Stevie's success led to his becoming an in-demand producer for many non-hip hop artists who wanted to tap into his savvy, streetwise sound. The notables

for whom he produced remixes include Mariah Carey, Dave Hollister, Sting, the Jackson 5 and Garth Brooks.

The project with the Jackson 5 began the transition into the current chapter of Stevie J's career. The young producer's style and energy so impressed Jackie Jackson, the eldest member of the Jackson 5, that he offered Stevie J a position as

talent scout and producing partner for his new record label, Jesco Records. Stevie J jumped at the opportunity to work with one of his childhood idols, so he relocated to Los Angeles and put together a studio called Green Acres with Jackson in the Hollywood Hills. It's



quite a change from Stevie's years at Bad Boy Entertainment. He says that he is optimistic and that his best years are still ahead of him.

What type of producer are you?

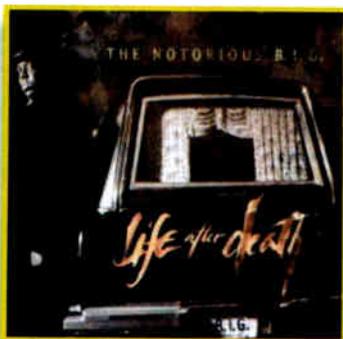
I try to keep my hands in all aspects, from dealing with the artist to the technical issues and songwriting. Even with well-established artists, I try to be in everything. But, it's like a God-given talent; I didn't go to school for anything. It just fell down to me.

What qualities stayed with you from your experiences at Bad Boy Entertainment?

Just to keep it in the realm of hip hop and have everybody dancing. [Combs] pretty much let me spread my wings and do what I wanted to do. He'd have a couple of ideas, too.

How big of an adjustment is it for you to be on the West Coast, and can your style adapt to it?

I love challenges and just plan on taking each day one at a time. So far, it hasn't been that much of an adjustment. The weather is nice, and the girls are pretty cute. [Laughs] But other than those things, I haven't seen much of a difference between the two. My goal is basically to come here, make some good music, find some hot artists and build up Jesco as a record company.





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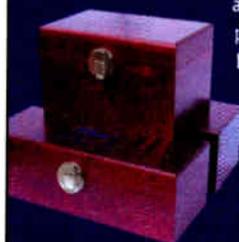
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PRODUCER'S DESK

I like the [AKG] C-12 and the Neumann U47. I really love Neumann microphones, any one of them. I make them sound good going through the Avalon [mic pre]. *Is the East Coast/West Coast rivalry still going?*

I think all that was blown way out of proportion, though some of it was real. I mean, I was there, and I lost my friend Notorious B.I.G. Now most of that has died out.

Do you have any protégés that you're grooming to be hot producers?

I have a couple of guys. Cold P and my brother Mike J are coming along real well. *Since you've moved to L.A., what area there do you find is the hottest for hip hop?* I've been from Compton to Bel-Air, just checking everything out and getting a feel for things. I try to figure out what kind of songs I can make from what I hear. Beverly Hills seems to be the most happening. [Laughs] That's where it's at, and it gets wild!

Has going to Pro Tools and other digital equipment been much of an adjustment for you?

Actually, I like [digital equipment] better; it's much faster and easier. I thought I couldn't get it when I was first exposed to it; it was like Chinese. Then, the next thing you know, it's like one, two and three. Basically, it took less than a month for me to feel comfortable with it. So far, I've done about 80 tracks with it.

Have you ever run across an instrument that's given you fits?

No, not yet. After church, when I was real young, I would play at the piano. But I never played during services. Actually, I never really tried to play until I was about 16. Then, I noticed I could play just about anything, from drums, bass, violin, saxophone, guitar and even xylophone.

Have you interacted with any of the West Coast rappers?

I've been letting them hear what I've been doing, and I've heard what they're up to.

We're all just vibing. I like the West Coast. *Is there a new sound or style you're trying to develop?*

I'm trying to find a nice median [between the East Coast and West Coast]; in a way, bring them together. As Jackie says, "We want to make good songs, bring people together so that they have a great time, and make them smile. And if they can remember the hook, then you got them." I just want to make a difference in the music. If I can touch somebody's heart by putting a beautiful song on the radio, then I've done my job.

What was it like working with Garth Brooks, and are you interested in working with other country artists?

Garth was cool. You do have to get into the feelings of the artist's music. Country is different from hip hop, but it's still music. I gave Garth a little hip hop flavor but kept it along the lines of country music. That's so you can just smell a little [hip hop]. I haven't worked with any other artists like him since, but I'm looking to.

How's the talent scouting going?

Well, you have to go out to see what's happening. I was doing the same thing at Bad Boy, as well, so I've always been doing it. But the difference here is that Jackie has given me the authority to go ahead and make it happen. It's just that everything closes so early in L.A. We did find this one 17-year-old kid who's phenomenal. He sings, raps and wants to be in on everything. He's hungry, so we're letting him do it all. When I go to a club, I might hear something, but my thrill is coming in and turning on these new artists.

What should people know about hip hop that's not apparent?

That it's not going anywhere. The bottom line is, it's here to stay. Most pop stars today like Britney Spears and even Limp Bizkit are going for hip hop, so you can't get around it. ■

SELECTED STEVIE J. CREDITS

Stevie J. has produced tracks on all of these top albums:

Bone Thugs-N-Harmony: *Collection, Vol. 1* (1998)

Boyz II Men: *Evolution* (1997)

Tevin Campbell: *Back to the World* (1996), *Tevin Campbell* (1999)

Mariah Carey: *Butterfly* (1997)

Deborah Cox: *One Wish* (1998)

Eve: *Scorpion* (2001)

Jay-Z: *In My Lifetime Vol. 1* (1997)

R. Kelly: *R.* (1998)

Lil' Kim: *Hard Core* (1996)

The Notorious B.I.G.: *Life After Death* (1997)

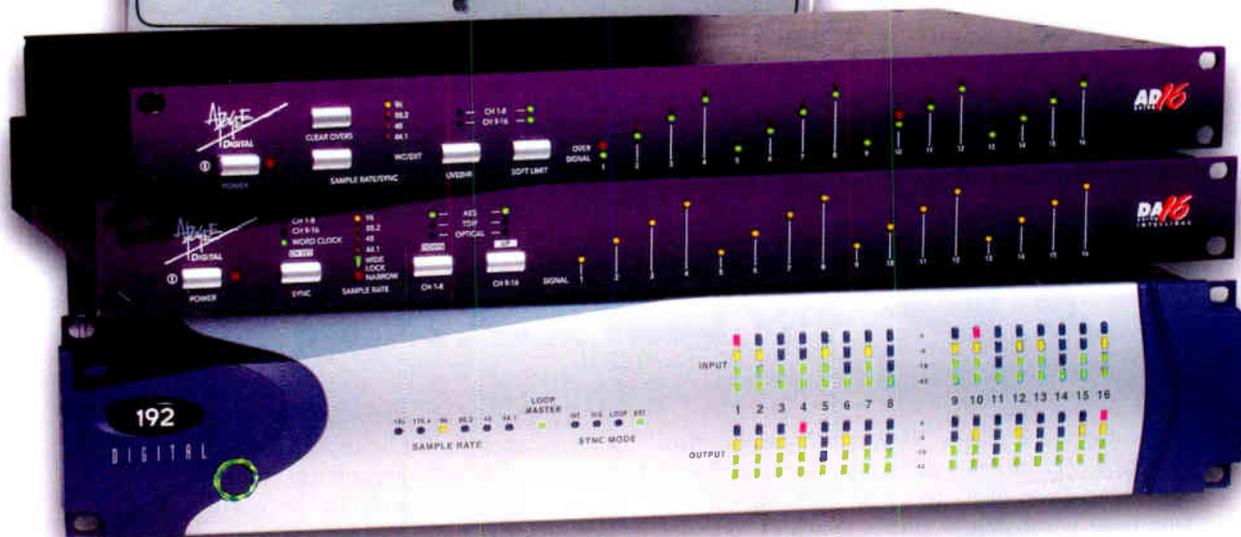
Kelly Price: *Soul of a Woman* (1998)

Puff Daddy: *No Way Out* (1997)

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How the Leopard Got His Spots

Mac OS 10.2 Developed With Audio in Mind



ILLUSTRATION: MAE LAROBIS

In Rudyard Kipling's *The Jungle Book*, the Black Panther chides Mowgli, saying, "How can his little head carry all thy long talk?" Well, my TiBook's little head is carrying around a bunch of long talk these days—namely, Mac OS 10.2, also known as Jaguar. Whether you call 'em panthers, leopards or jaguars, Apple's point-two version of OS X has more than 100 improvements, and many of them translate into more joy for the audio practitioner.

Let's start with an underlying philosophy of OS X: Apple's historic, ongoing assumption of responsibility for "services" that, on other platforms, prove to be a burden to application developers. By services, I mean OS 10.2 has built-in support—via flexible, global APIs (Application Programming Interfaces)—for protocols like plug-ins, PCM processing, audio "rendering" and pass-through, stuff that can be a real bear for programmers to home-brew. Remember that APIs are documented "hooks" for programmers to communicate with someone's hardware or software. Having a built-in framework makes for faster development of simpler and more stable software.

We all know that plug-ins are like other techy gear: you can never have enough. Along with support for VST and TDM in OS X, Apple debuts a new native plug-in architecture called Audio Units. Audio Units build in

native support for hardware and software, which takes care of timing, buffering and real-time control.

Now, a word about real-time vs. not really real-time. Even though OS X is a multithreaded, multitasking OS, services for PCM are sample-accurate and gracefully handle their tasks with overall latency in the 3 to 5ms range. All modern operating systems are able to time-domain multiplex the tasks that they're asked to perform. It's a bit like being an octopus: One tentacle is working on an e-mail job, while another does a reverb convolution, while still another manages hard disk accesses. As I write this, my TiBook is juggling at least 49 separate processes, and I don't need to care, because the computer's time-management skills are transparent. But I would care if there were noticeable and unwanted delay in something my mixing desk was doing, or a recording had a gap in what are supposed to be contiguous samples. Ooops. So, prioritizing tasks is a major aspect of a well-tuned operating system.

In OS X, Apple has provided a new set of multi-tiered API services "so that applications and MIDI hardware can communicate in a single, unified way," according to a representative at Apple. These services "range from low-level access to particular audio devices to sequencing and software synthesis." Did they say MIDI? In the past, Apple has relied on dicey third-par-

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ty solutions for MIDI due to a suit brought long ago by that other Apple, the one that owns a Brit record label. (If you're too young to know about this, ask your local neighborhood geezer. Anyway, that's all history.) So, if MIDI makes your day, then check this: OS X's primary goal of MIDI services is "interoperability between applications and hardware so that everyone is working to the same MIDI System Services standard." In other words, universal, predictable, industrial-strength MIDI support written by the architect of Opcode's OMS and Vision. Other good stuff includes pro-

viding your MIDI I/O with highly accurate timing, which translates into latency under 1 ms and jitter or short-term timing variations under 200 microseconds. In addition, DLS (DownLoadable Sounds) and SF2 (SoundFont 2) files as sample data are supported for sample-based synthesis.

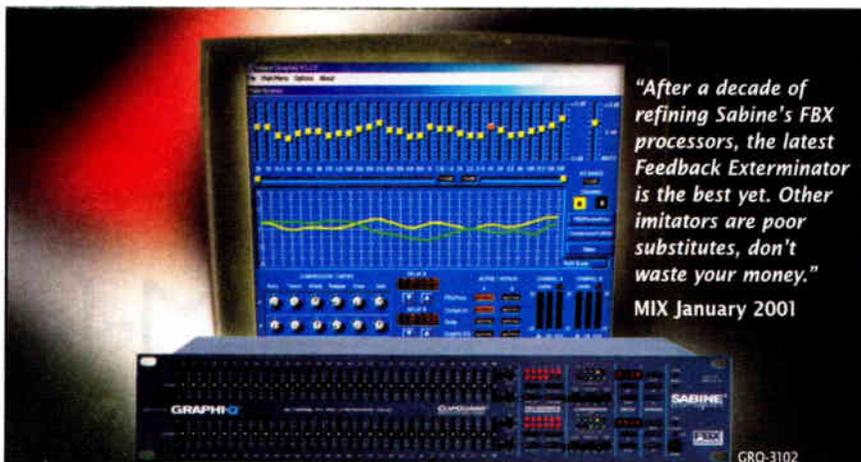
Another goal of the MIDI infrastructure is to provide a single systemwide MIDI configuration controlled via the Audio MIDI Setup utility. This allows the computer to "know" what devices are present, their manufacturers' names and on what MIDI channels they're operating. Of

course, you can assign your own name to each device, and all of this universality works with either FireWire or USB connectivity. The Audio MIDI Setup utility also serves PCM devices, so you can assign channels and set gain and sample rate, as well. To keep things fresh, the MIDI services are designed to be extensible. "Toward that end, a device can have any number of properties attached to it," and device manufacturers can publish the particular properties of their products so that other developers can interoperate or enhance the functionality. An obvious example is optional inclusion of icon properties so that visual appearance in software matches the actual widget.

Back to PCM, where OS X uses 32-bit floating-point (think scientific notation from high school days) as the generic data format. I know, there are those of you out there crying foul at the prospect of only floating-point arithmetic, but Apple's got something for you guys. All conversions necessary for the actual physical hardware, such as 16-bit, fixed-point converters, are handled by the driver in order to preserve the headroom of the PCM device's mix bus. Sample rates of up to 192 kHz are taken in stride with as many channels as the CPU(s) can handle. Integral sample-rate conversion is also built-in, so the OS can deal with goofy synchronization or mismatched rates from multiple sources.

For streams like AC-3, DTS, MLP or even good ol' 24-bit fixed-point, Apple includes "native-format support" for any data type that falls outside the purview of 32-bit floats. Native-format support acts as a sealed conduit from data source to destination, which keeps the OS from messin' with the numbers in transit. With native-format support, the application tells the OS that "these aren't the 'droids you're looking for; you can be on your way."

There are other technologies hiding in 10.2 that affect users, audio geek or not. One is newly optimized math libraries, which are key to zippy DSP and graphics performance. Improvements to the Mach kernel and libraries, along with smarter virtual memory, yield improved performance with host-based applications. B.J. Buchalter, CTO of Metric Halo, is responsible for cool stuff like SpectraFoo and Channel Strip. He says, "10.2 is a pretty major improvement. There has been a wide variety of modifications to the Mach [kernel process] Scheduler and to FireWire in 10.2, all of which contribute to the overall stability and functionality of the OS for audio applications. Apple has also added



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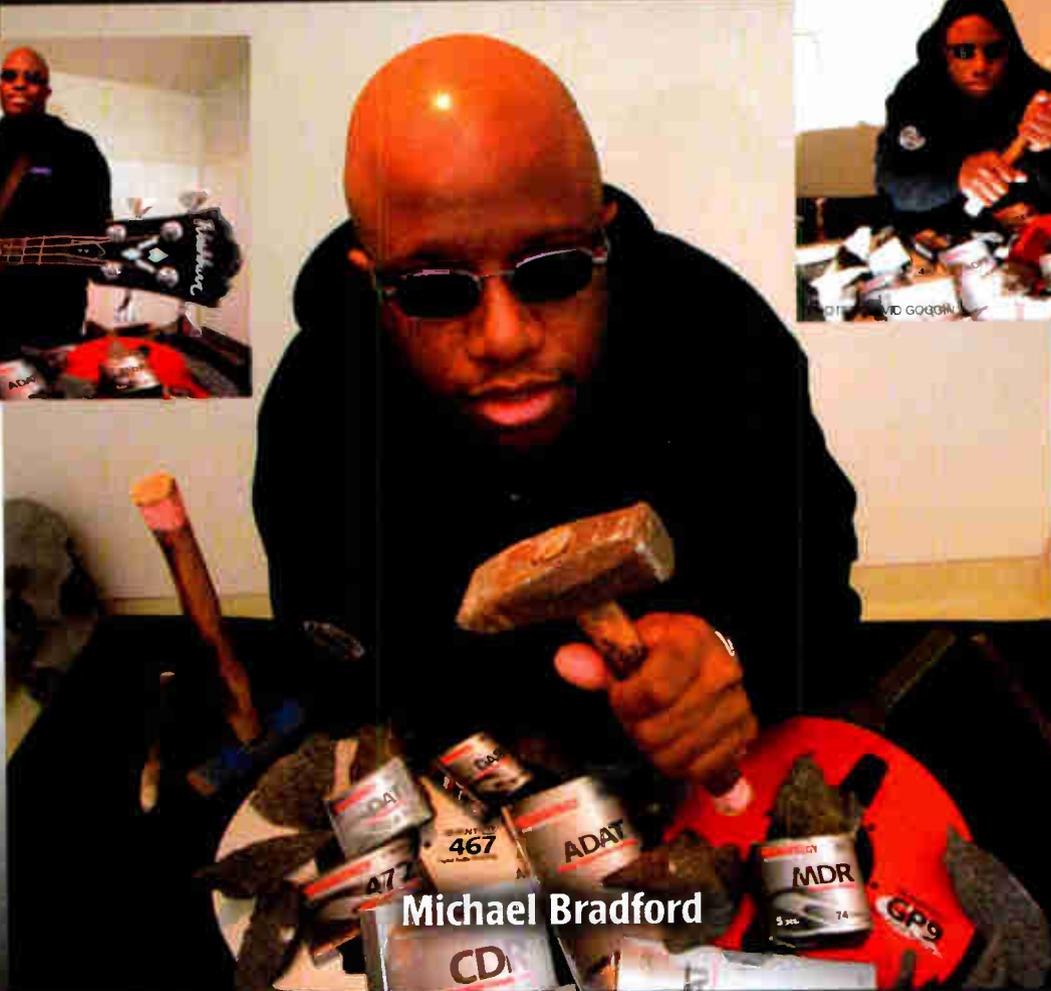
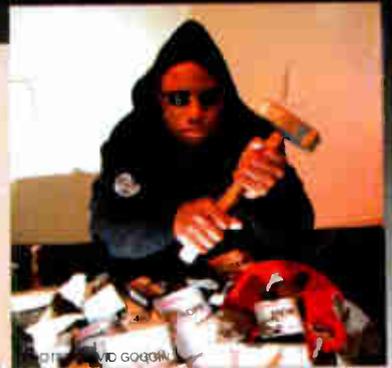


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phase FIR filters that create the four bands without phase-shift distortion. The DC Vocoder divides the input signal into 50 frequency bands for individual processing; each level can be precisely adjusted. A 6-voice synth, modulator and formant function are built-in.

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Vintage Keys Pro, from E-mu Systems (www.emu.com), is a single-rackspace sound module packed with new samples of classic keyboard sounds from the '60s, '70s and '80s, ranging from analog and FM synthesizers to electric pianos and organs, including E-mu's acclaimed B3 module. Features include 32 MIDI channels, 128-voice polyphony, six analog outs and a stereo S/PDIF out. It ships this month; retail is \$795.

TC ELECTRONIC REVERB 6000

TC Electronic's (www.tcelectronic.com) new Reverb 6000 platform offers 24-bit reverb algorithms in every format from mono to 6.1. Reverb 6000 (included in Version 3.0 software for the System 6000) provides several new formats for multi-channel film/music mixing and offers the first commercially available 6-main-channel room simulator. Processing modes include 6-channel, 5-channel, matrixed surround, stereo, mono and 300 film/video post presets created by film and music pros. Also featured are multiformat delay/boundary effects, a de-esser, an Intersample Peak Limiter, EMT 250 simulation, 16 mono reverbs, and a back catalog of classic TC reverbs from previous M5000, M3000 and System 6000 systems at their highest resolution. Registered System 6000 users can upgrade free of charge.



AKAI VST PLUG-INS

Akai (www.akaipro.com) unveils five VST plug-ins: Decca Buddy creates up to nine multipart vocal harmonies, selectable via various preset scales, user scales or MIDI. Other features include a Formant function and randomizer. Pitch Right corrects pitch in real time, with controls for ratio, smoothing and calibrate (to set the reference pitch); 13 factory preset scales, two user scales and MIDI scales are available. The Rotator plug-in (shown) models a rotary speaker cabinet by generating standard rotation speed values of the original physical cabinet, with control of $\pm 25\%$ detuning, distortion and virtual mic placement. The Quad Comp 4-band compressor/expander has linear-

DISC MAKERS ELITE SERIES

Known for media manufacturing, Disc Makers (www.discmakers.com) moves into the hardware realm with its new Elite Series of CD and DVD duplicators. The Elite1, available in CD or DVD models, serves as a full-service disc duplication and printing system. With a 125-disc input and onboard 1,200 dpi, full-color inkjet printer, the Elite1 can duplicate and print at least 12 CD-Rs or two DVD-Rs per hour. The Elite1 is \$3,990, or \$4,790 with DVD-R. The ElitePro1 has all of

SONY DMX-R100 UPDATE

Enhancements to Sony's (www.sony.com) DMX-R100 digital console include new DMSK-R100AE automation editor software, which provides virtually unlimited title and snapshot data storage, as well as offline operations such as cut/paste of channel setup and automation data. A DMBK-R109 MADI interface expands the maximum digital I/O from 32 to 72. In larger applica-





tions, the MADI board can cascade two mixers together, allowing, for example, a system to monitor a 48-track recording with 48 mics using 16 channels of reverb return—all in 5.1. Also new are a remote I/O system comprising a MADI-based I/O rack and a remote-controlled mic preamp system. A new control panel can remotely control the preamp gain. The I/O rack can be located locally or 100 yards away via fiber optic, and can even be shared between two consoles in different control rooms.

WALDORF D-CODER FOR POWERCORE

Based on Waldorf's famed synthesis technology, the Waldorf D-Coder synth-vocoder plug-in is now accessible to TC Works PowerCore users from any VST- or MAS-compatible sequencer. Using an integrated synth as a tone generator, D-Coder goes beyond classic Vocoder concepts—no external carrier signal is required. The D-Coder features a hi-res analysis and vocoder section, plus a 3-band, sweep-mid EQ and chorus. Its synth section has a classic two-oscillator model with the standard waveforms and ring modulation, a filter section with different filter types and resonance, LFO, glide and simple envelopes. Distributed by TC Works, Waldorf D-Coder is \$249. Check out MP3 examples at www.tcworks.de.

AES/EBU digital outputs (24-bit at up to 96 kHz), a variable-impedance input selector and Class-A electronics throughout. Frequency response is 20-40 kHz (± 0.25 dB), and maximum analog output is +30 dBu at soft clip.



MACKIE BABY HUI

Mackie announces the arrival of Baby HUI (Human User Interface), the first HUI-compatible, touch-sensitive control surface priced under \$800. Baby HUI supports the HUI/MIDI-mapping protocol, allowing it to work right out-of-the-box with any HUI-supported PC or Mac DAW. Baby HUI features eight channel strips, each with 60mm, touch-sensitive, motorized faders; Mute and Solo buttons; signal LED; and a multifunction rotary-encoder handling pan, send level, channel select and record/automation arming. Baby HUI also provides Display and Undo buttons and tape-style transport controls. HUI-supported DAWs include Mackie Soundscape 32 and Mixtreme, Digidesign Pro Tools and Digi 001, MOTU Digital Performer and Steinberg Nuendo/Cubase SX. Retail: \$799.

M-AUDIO TAMPA MIC PREAMP/COMPRESSOR

M-Audio (www.m-audio.com) announces the TAMPA microphone/instrument preamp/compressor. The product is based on M-Audio's Temporal Harmonic Alignment technology, a revolutionary alignment process that corrects overtones' phase alignment to achieve the perceived warmth of tubes at solid-state prices. TAMPA also includes a high-performance, dual-optical-servo compressor/limiter, and uses true VU meters to display output and compression gain. TAMPA also incorporates S/PDIF and



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Primera Technology Inc. (www.primera-technology.com) offers the Bravo Disc Publisher, priced under \$2,000 and designed for hands-free, automated production of up to 25 CDs or DVDs per job. After recording, discs are transported to the integrated full-color printer with up to 2,400 dpi resolution. Bravo attaches to any PC running Windows Me/2000/XP via FireWire (IEEE1394) or USB. Veritas recording software is included, along with SureThing™ CD Labeler First-Edition easy-to-use labeling software. The Bravo CD Publisher with a 40x CD-R recorder is priced at \$1,995. The Bravo DVD Publisher with a Pioneer DVD-R/CD-R recorder is priced at \$2,495. The DVD-R unit records DVD-Rs at 2x and CD-Rs at 8x.





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Thirty years after launching the original, Bob Moog has redesigned the legendary Minimoog from the ground up. The result is a monophonic, MIDI-capable synth with a velocity-sensitive keyboard, a 3-D touchpad controller that registers pressure and position, extensive patching facilities and many new panel features. The signal path begins with three wide-range, voltage-controlled oscillators, one noise source and one audio preamp for external audio signals. The sound modifiers are a dual-mode filter module, with a dual-Moog lowpass mode and a highpass/lowpass mode, and one stereo VCA. Modulation sources are two ADSR envelope generators and one multi-waveform LFO. Control devices include a 44-key keyboard with velocity/after-pressure outputs, pitch bend and mod wheels, the 3-D touch surface and many control/pedal input jacks. Nonvolatile memory stores 100 front panel programs. The Signature Edition is priced at \$3,495.

SOUNDFIELD B-FORMAT MIC

Soundfield's (www.soundfieldUSA.com) SPS422B mic offers four operational modes: mono, M/S, stereo and B-Format. Retaining all of the SPS422 model's features and sound quality, the SPS422B adds B-Format direct outputs to enable expansion into 5.1 and future multichannel formats. The two-piece SPS422B system consists of a multicapsule mic and a one-rackspace preamp/processor that controls the system and provides all required mic preamps. When used with Soundfield's SP451 processor (to extract 5.1 from B-Format), the system can deliver "zero phase error" 5.1.

WINDOWS SOFTWARE FOR TEF20

Gold Line (www.gold-line.com) debuts new Windows software for its TEF20 acoustical analysis system. Previously

available only in DOS format, the MLS Windows upgrade lets TEF20 users obtain an impulse-response measurement containing the entire audio frequency range over the measured time range. Impulse data is stored as a .WAV file for

easy export to other applications, and all MLS post processing is available for any other .WAV file. Display options from a single-impulse response include: impulse, doublet, intensity, energy time curve, log-squared impulse from time-domain magnitude, phase, group delay, Heyser spiral, Nyquist from frequency domain and 3-D waterfall. Time-domain data can be further processed to obtain reverb time (RT60) and noise criteria (NC) curves, as well as speech intelligibility indicators, %ALcons and STI/RaSTI. Price for new users is \$450; the DOS MLS to Windows MLS upgrade is \$250.

XLR microphone input. Designed to monitor electronic percussion instruments, the wedge monitor-like PM-1 can support a drum stand for Roland electronic percussion products like the SPD-20 Total Percussion Pad and HPD-15 HandSonic.

STEINBERG PLEX

Steinberg's (www.steinberg.net) PLEX is a VST Instrument featuring restructuring synthesis. PLEX divides the original sound into four discrete components: lower/higher spectrums, filter characteristics and amplitude envelope, and offers independent access to these characteristics of the four components. For example, a new sound can be created by allocating a trombone's lower component, a sitar's upper component and a gong's filter component. More than 300 presets from well-known sound designers are included, as are 97 pre-analyzed sound sources of acoustic, synthetic and filter characteristics. All parameters are accessible via MIDI. Retail: \$249.99.



SUMMIT MIC AND LINE MODULE

The Summit Audio (www.summitaudio.com) 2BA-221 Microphone and Line Module is a high-quality tube mic preamp that includes a swept highpass filter, multiple simultaneous tube and solid-state outputs, insert jack, polarity switch and internal power supply. Featuring continuously variable mic impedance (100-10k ohms) and a separately controlled hi-Z/line and mic input for individual mix control, the 2BA-221 can be linked in multiples to perform as a mixing device. Outputs are XLR and 1/4-inch. Price is \$695, with a three-year warranty.

ROLAND PM-1 PERSONAL MONITOR

Roland (www.RolandUS.com) offers the PM-1 Personal Monitor System, a two-way speaker system containing its own 60-watt amplifier and four inputs, including an

SHURE PHONO CARTRIDGE

The new M25C phono cartridge from Shure (www.shure.com) is a fundamental mix/spin needle capable of delivering high output, solid bass and transparent midrange performance. Well-suited for virtually any DJ application, the M25C tracks with a force of 1.5 to 3 grams and uses the same Type-I cantilever technology as in Shure's M35S and M35X cartridges. Featuring flat frequency response from 20-20,000 Hz and a standard 1/2-inch tone-arm mount, the M25C is supplied with an extra set of four headshell wires, a stylus cleaning brush, user's guide, all mounting hardware and a stylus guard, and is covered by a full one-year warranty. An optional needle for wide-groove and 78 rpm recordings is available. Price is \$39.

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SONIC STUDIO 1.8

Sonic Studio Version 1.8 (which debuted last month) is the first product from Sonic Studio (www.sonicstudio.com), which formed earlier this year to develop and

market the Sonic Studio HD line of workstations.

Enhancements in Sonic Studio HD 1.8



include improved editing functionality, contextual menus, improved lock-to-timecode, and a new user guide and documentation. Other improvements include Gain Overlay enhancements, Lock/UnLock Gain Node commands and Contextual menu support. Save Reversed, Paste to In Point, Navigate to Next/Previous EDL Commands, PQ Marks Lock Status Display, Edit With Audio Support for Desk Events, Gain Overlay and SRPs, Transport Panel/MC Sync, Export EDL as .AIFF, SRP Export/Import and Multiple Zoom to Previous/Next View functions have also been added.

BSS SOUNDWEB VIDEO FOLLOWERS

BSS Audio (www.bss.co.uk) has introduced two new matrix switchers capable of routing multiple video and audio

sources to several zones, all controlled within a Soundweb system. Such systems are typically found in bars and restaurants, corporate boardrooms and themed attractions. The SW9016 Video/Audio Matrix Switcher features eight broadcast-quality composite BNC video inputs, which can accept CBVS or S-Video signals of NTSC or PAL standard. These can be matrixed to four output zones (again on BNC connectors). Alongside the video inputs, 16 balanced audio inputs can be matrixed to eight balanced audio outputs, independent of the video matrix. The SW9016 Video/Audio Matrix Switcher fully integrates with Soundweb Designer's presets and connects directly to the serial port of a Soundweb device. A supplied PC application allows a user to store up to eight presets per video-output zone, which can be controlled from a PC or another control device through the unit's RS-232 port.

UPGRADES AND UPDATES



Telex Communications Inc. began shipping 40x speed-certified media and 2x DVD Media. The CD-R media, which comes in 300-piece cartons (six 50-disc spindles), is available in thermal, printable lacquer finish, ink jet-printable white surface and ink jet-printable silver-printable surface. The DVDs are available in jewel case and spindled product. Call 800/828-6107 or visit www.telex.com/duplication. **BIAS** (www.bias-inc.com) is now shipping **PEAK 3.1**, which adds support for QuickTime 6, Dolby AAC, Mac OS X Version 10.2 Jaguar and other enhancements. **Q Up Arts'** (www.quparts.com) **Increased-Velocity Surround Tools for Post-Production Surround** is a collection of futuristic loops, beats, ambiences, drones, hits,

stinger FX and atmospheres, all processed in Dolby Stereo Surround (4-2-4) and created by sound designers Sean Charles and Gordon Durity. The CD-ROM is \$249...**GRM Tools Classic TDM 1.3.5** is Pro Tools|HD-compatible. Visit www.grm.org for more information...**Manley Labs** is now shipping **SLAM!**, a 2-channel stereo limiter/mic preamp with extensive digital conversion and I/O options. **SLAM!** is now \$6,600; the 24/192 upsampling ADC/DAC digital I/O interface option is \$2,500. Call 909/627-4256 or visit www.manleylabs.com...**ILIO Entertainments** offers the **Memphis Horns CD-ROM library**, a phrase-based brass collection of trumpet, trombone, baritone and tenor sax sounds, presented both in their original, complete form and divided into flexible short phrases. Styles range from slow soul to passionate pop to furious funk, and range in tempo from 70 to 140 bpm. The library is compatible with Akai, Giga, E-mu and Roland software-sample systems. Price is \$299 for the multidisc collection; a two-disc CD-Audio set is available for \$149. Visit www.ilio.com...**Tascam** offers the **GigaStudio Mastery Tutorial** developed by GigaStudio expert Dave Govett. The

four CD-ROM set features over six hours of detailed instruction on virtually every aspect of Tascam's GigaStudio PC-based sampling workstation software. Price: \$59.99. For more information, visit www.tascam.com...**Troubleshooting IP Routing Protocols**, a 750-page book, lays the foundation to understanding IP addressing, IP routers and transport technologies, and how the pieces play together in functional IP networks. Price: \$55. Visit www.ciscopress.com...**Mackie** (www.mackie.com) released **V. 2.2.6 software for the UAD-1 Powered Plugins**, which adds support for MOTU's Digital Performer...**Grubsrof Inc.** has released **Building Pro Audio Loudspeaker Enclosures**, a 198-page guide to designing and building professional loudspeaker cabinets. A resource CD of CAD files and reference materials for all components is included. For more information or to order, go to www.grubsrof.com or phone 919/786-2700...**Sounds Logical** (www.soundslogical.com) announced its **M-Pack 1 .WAV file-processing toolbox** for MATLAB, a collection of MATLAB functions for processing .WAV files of arbitrary size, extending MATLAB's built-in .WAV file-handling functionality. ■

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Steinberg Cubase SX

New From the Inside

In order to stay competitive, digital audio-sequencing programs must be continually updated and upgraded. Generally, keeping track of the latest revision is easy enough if you check for posted updates and revisions. However, Steinberg has broken with tradition with the latest incarnation of its flagship application, Cubase VST. The company reports that Cubase SX, as the new software is dubbed (SX doesn't actually stand for anything), is so named because "Cubase SX is not an updated Cubase version; it is completely redesigned." Though many of the program's windows and commands will be familiar to Cubase users, there are many redesigned interfaces and a seriously revamped audio engine.

Cubase SX retails for \$799. (An SL version, which lacks the more advanced automation, surround and score features of Cubase SX, is \$499.) For those of you who keep track of Steinberg's product line, Cubase SX takes the place of Cubase VST/32 and Cubase Score, and Cubase SL replaces Cubase VST. At the time of this field test, both versions were only shipping for PC, but by the time you're reading this, Mac versions should be available. Upgrades from Cubase VST Versions 5.x to the new Cubase cost \$149, and Steinberg also offers crossgrades. (For example, going from Emagic's Logic Audio to Cubase SX is \$299.)

Minimum system requirements are somewhat heavy-duty: On a PC, you'll need a PIII 500MHz processor with 256 MB of system RAM and Windows 2000 or XP. For a Mac, you must have a G3 350MHz processor with 256 MB of system RAM and OS X. (An upcoming release will require OS X.2.) Both SX and SL work with Steinberg's VST System Link system to interconnect multiple computers via ASIO soundcards and standard digital audio cables for more DSP power. Between the minimum system requirements and VST System Link, Cubase SX appears to be well-prepared to handle a future full of more CPU-hungry plug-ins and infinite track counts.

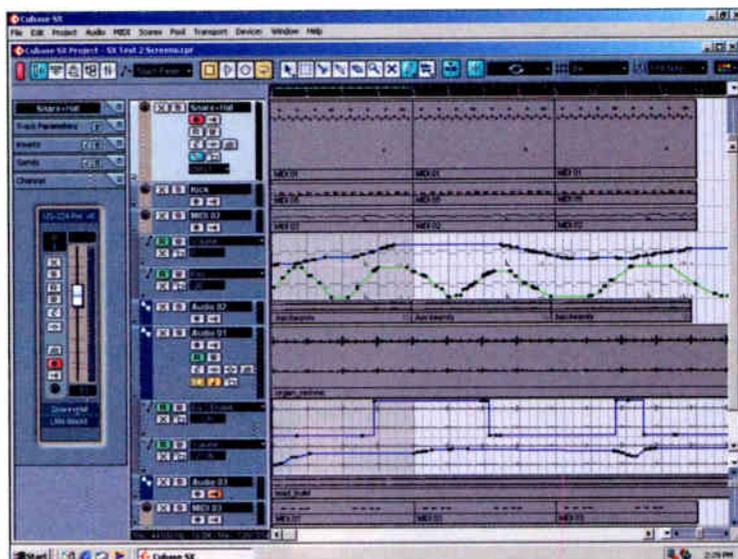


Figure 1: The Project window replaces the old Arrange window, adding track automation views and a significantly enhanced Track Inspector section.

For this field test, I installed Cubase SX Version 1.0.1 in an AMD Athlon XP 2000+ (1.6GHz) computer (which was graciously loaned to me by AMD), running Windows 2000 and packing 262 MB of system RAM. Audio and MIDI I/O were handled by Tascam's US-224. And, though I had some problems using it as a control surface with Cubase SX, the bugs I ran into are reportedly fixed in Version 1.0.2 and higher.



Figure 2: Mixer channels can be arranged in a variety of configurations, including narrow, wide and having different control configurations above a fader.

WINDOWS TO YOUR PROJECT

Cubase SX looks strikingly different from Version 5.x. Its color scheme is decidedly lighter, with more gray tones, making for an appearance with less contrast. There is a ton of new controls and information fields that can be a little overwhelming at

first glance. Quick keys to recall screens and provide access to commonly used functions are liberally dispersed throughout the program. Inspector tabs and lots of scalable control areas are now integral parts of the tracks and mixer channels, and most control elements (like faders and knobs) have been redesigned to look cooler and work more smoothly. The interface changes are very well-implemented and go a long way to make Cubase SX the most user-friendly and intuitive version of the Cubase line.

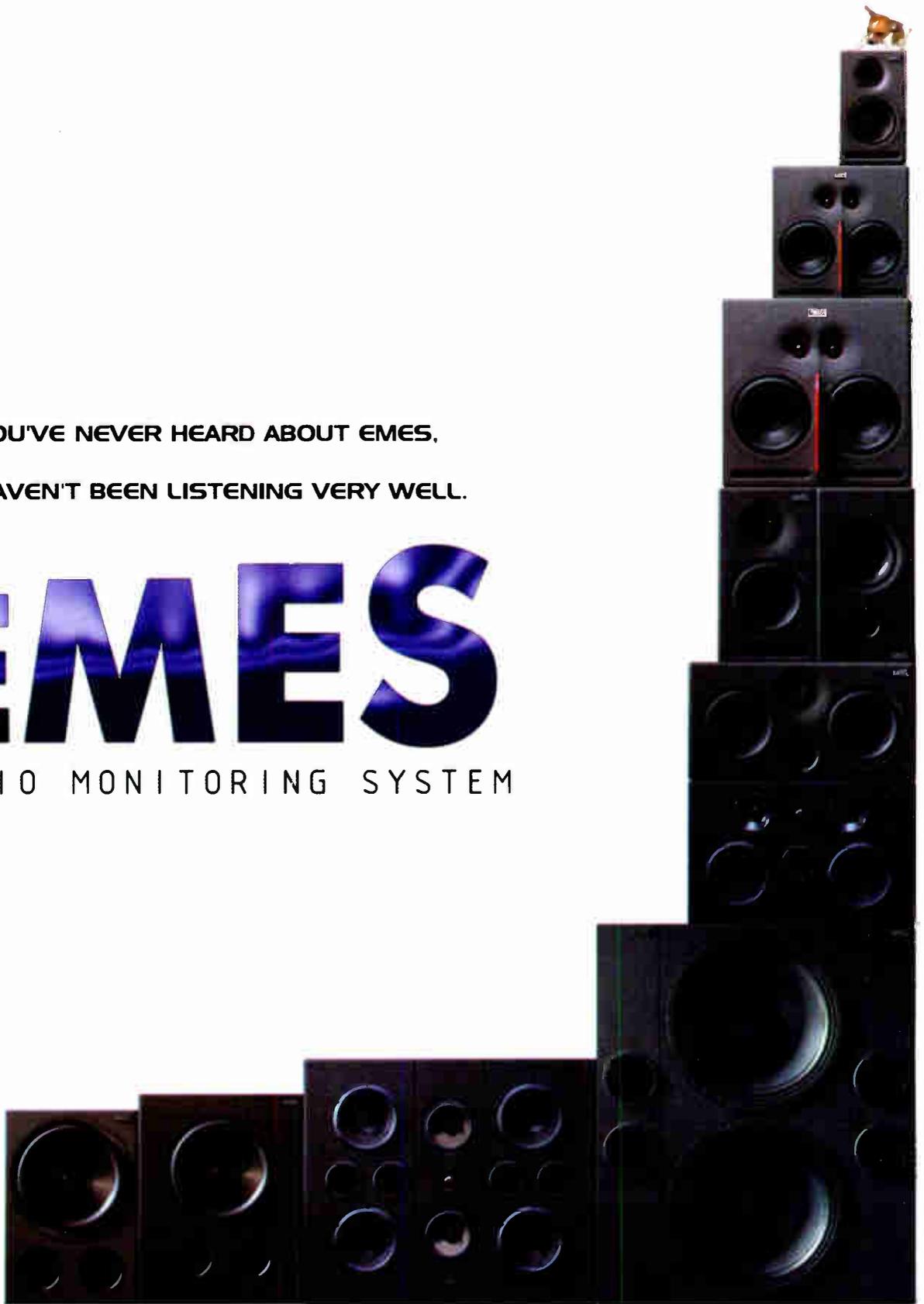
The concept of songs and arrangements has been dropped and replaced with the more streamlined and practical project file. In keeping with this change, the screen that was previously called the Arrange window is now referred to as the Project window (see Fig. 1). Multiple projects can be opened at the same time, so the old arrangement file scheme is unnecessary. Cubase SX can import 5.x song, arrangement and part files.

The Project window has many new features that give it big advantages over the old Arrange window. For example, a global view of your entire session can be opened above the tracks; it is wonderful to reference your relative location within the session, especially when you're zoomed way in on editing tracks. An information bar (called the Event Infoline) can also be expanded above the tracks, displaying the

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stats (such as start, end and length) of your currently selected object. Right-clicking on the timeline just above the Event display (where all of the audio and MIDI objects reside) lets you choose the timeline's units (bars and beats, seconds, samples and six different SMPTE rates).

To the left of the Event display are the Track List and Track Inspector. Although the fundamental idea behind these sections is the same as before, they have been thoroughly redesigned to present more information in about the same amount of space. Each Track tab has its own activity meter and can be expanded to show much of the same information found in the old Track Inspector (such as MIDI channel, patch name, record status, solo and mute). If this is all of the information you need to see, then there's no need to unfold the Inspector. But, if it's more control that you want, the Inspector has multiple tabs that provide access to, among other things, most of the mixer's features (like inserts, sends, EQ and even the selected track's mixer fader). With all of this control so close at hand in the Inspector, there is less need to jump between the Project and Mixer windows.

SHAKE, MIX AND AUTOMATE

The mixer does not look like the old 5.x mixer, and the changes are much more than just superficial. You can still select the types of channels you want displayed (audio, groups, MIDI, VST Instruments and ReWire tracks), but the mixer is now



Figure 3: The surround panner can replace the mixer channels' stereo panners when the user is working in a surround project.

laid out more like a traditional console (see Fig. 2). Above each channel you can choose to display either EQ, inserts or send controls. And on the left side of each fader are keys to reach Inspector-type

functions and bypass the EQ, inserts or sends. The controls above a fader can be hidden, making the mixer look more like the old VST mixer, and the faders themselves have been narrowed to conserve space. In the narrow view, many of the quick keys that were previously on the left are repositioned above the fader. (The EQ, insert and send controls are not shown in the narrow view.) If you prefer the old method of editing a channel as its own separate module, this is still possible if you click on a channel's Edit key.

Cubase SX's automation features are comprehensive: Almost every parameter of the mixer channels, effect plug-ins and VST Instruments can be automated. There are three automation modes: Touch, Latch and a unique function called X-Over, which operates like Latch but automatically turns off when an existing automation move is crossed. The only mode that seems obviously missing is Trim. Read and Write automation keys have been added to the top of VST effects and Instrument plug-in screens, which makes automating plug-ins a real breeze.

Automation curves can be viewed and

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edited in the Project window. However, rather than overlaying all of the automation curves right on top of the audio waveform or MIDI notes as in other programs, each automation curve gets its own event display track. Audio and MIDI tracks can be unfolded to show their associated automation tracks. The exceptions to this rule are VST Instruments, whose automation data is kept separate from the instrument's MIDI track in a dedicated VST Instruments Automation track folder (which is also visible in the track list). With the Pencil tool, you can draw automation curves directly in the automation tracks. Periodic shapes have even been added to the Pencil's palette, opening up the possibility of creating cool rhythmic automation performances—very nice.

It is certainly convenient to give each automation track its own event display track. You don't have to dig through layers of automation tracks to get to the parameter you want to tweak. Multiple automation curves can be viewed and edited simultaneously as easily as you would edit a stack of MIDI tracks. But on the flip-side, it's easy to end up with too many tracks open and find yourself staring at a really confusing track list. I can see Cubase SX's automation paradigm driving some people batty, but ultimately, I don't think anyone can argue with the fact that it's powerful and gets the job done.

BIG AUDIO TRICKS

Unlimited levels of undo/redo have been added. You can use standard key commands to execute undo/redo, or work directly from the Edit History window where you'll find a list of all your edits since the project was opened. In this list, you can undo/redo sequential groups of edits by simply clicking where you want to be within the history—very cool.

Offline file, or "file-based" processing, is available. All of your VST and DirectX plug-ins can be used, as well as a handful of stock utilitarian algorithms (like Normalize and Phase Reverse). There is even a dedicated undo/redo function for offline file processing. In the Offline Process History window, you can choose which effect you want removed from the audio file. An effect can be removed from the middle of the history and even replaced with a different effect. (Any element can be removed at any time, even after saving and shutting down the machine.) This is an amazing function that seems tailor-made for sound designers and producers who prefer to work with processed audio files instead of stacks of inserts.

Cubase SX has its own built-in loop-recycling machine, which is strangely reminiscent of Propellerhead's ReCycle. From within the Sample Editor, a loop can be sliced up using markers called Hitpoints. Hitpoints can be dropped into the loop automatically with a sensitivity slider, and they can be individually muted and moved. With the Hitpoints assigned and the bars, beats and time-signature fields filled in, the loop's tempo can be conformed to the project tempo without the user changing pitch or employing time compression/expansion—just like a ReCycle file. Hitpoints are handy to have right in

the program, but don't expect them to replace ReCycle. ReCycle file formats (.REX and .RX2) are still supported.

Surround sound is now implemented for standard formats, including quad, LCRS and 5.1, as well as a couple of 5.1 derivations. The mixer has surround panners available on its channels (see Fig. 3), and third-party effects plug-ins that conform to the standard surround formats are reportedly compatible. Steinberg says that Cubase SX's surround "support goes all the way through the audio path." I take this to mean that surround sound functionality is not simply a feature that has

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been tagged on after the fact, but something that has been written into the very core of the program.

The TrueTape saturation and Apogee UV-22 dithering features are still integral parts of Cubase SX. The UV-22 algorithm has been upgraded to HR specifications.

PLUG-INS OF MANY FLAVORS

All of the original Cubase VST effect plug-ins come stock, and Cubase SX also includes several very cool new effects. (See sidebar, "New Stock Plug-Ins.") My favorites are StepFilter, a filtering effect with an onboard step sequencer that controls the amount of cutoff and resonance; and Vocoder, a vocoder effect whose carrier wave can be controlled by an external sound source, MIDI notes or a combination of the two. Both of these effects are perfect for dance music production and sound-design duties. Most plug-ins have useful presets that, even if you don't like them, are at least a good place from which to start programming your own effect.

It was a long time in coming, and no doubt due in part to some pressure from the competition, but Version 5.1r1 (the last Cubase VST version to be released) finally introduces new stock virtual instruments (the CS40 and JX16 polyphonic synthesizers). Thank goodness, because the Neon, LM-9 and optional VB-1 (which has been posted for free download on Steinberg's Website for ages) were getting pretty stale. Cubase SX adds one more polyphonic soft synth to the pot, the A1. It's powered by Waldorf technology, sounds darn good and has a ton of useful presets. The LM-7, a 12-pad version of the LM-9 drum machine, and the VB-1 with a redesigned face also come stock. Virtual Instrument patch selection has been much improved with the inclusion of a Preset window, complete with a navigation bar that pops up when you click on a track's Inspector program field. Latency will, of course, depend on your soundcard, but setting the US-224 control panel's system latency setting to 256k yielded very playable results.

MIDI effect plug-ins have always made perfect sense to me: insert them on a MIDI track like you would insert an audio effect plug-in on an audio track. MOTU and Cakewalk have had this feature in their digital audio sequencers for some time. I'm happy to report that Cubase SX also sports MIDI effect plug-ins. Up to four plug-ins can be inserted on a track (four can also be used as send effects), and there are 14 stock plug-ins. My personal favorites include Apache 5, a



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very flexible arpeggiator, and Step Designer, a step sequencer that's perfect to control soft synths in order to craft funky stepped patterns.

AND MUCH MORE

With the exception of the MIDI effects plug-ins, the MIDI features remain relatively unchanged. However, there have been some nice improvements in terms of functionality. For example, the Key Editor's interface has been redesigned and now appears less busy, which makes it a much more pleasant editing environment. The Tempo Track editor has been similarly redesigned. Drum maps are easily created and assigned to tracks because they can be used directly through a MIDI track's Inspector. And several MIDI tracks can be quickly armed for recording if the user simply holds down Shift and selects multiple tracks.

Cubase SX has a comprehensive window set memory feature. Window Layouts, as they are called, can be saved, named and instantly recalled via key commands. (Layouts 1 to 9 default to Alt+key-pad 1 to 9.) The ability to save and recall window sets can be a real time-saver, especially if you're used to the old Cubase menus and window organization; use the Window Layouts and avoid hunting and pecking for screens. New access screens include a window that lists all of the Device panels (such as the VST Instrument or VST Send Effects rack) and a Plug-In Information dialog from which you can manage your plug-ins.

Left- and right-clicking in the project

window's timeline to set the loop points (PC only), a convenient function in previous versions of Cubase, has been dropped. Now you can highlight a part and press "P" on your computer keyboard to set the loop points. This is also a convenient way to set loop points, though it may take a minute to get used to if you're stuck on the old way of doing things. (You can also Control-click and Alt-click on the timeline to set the left and right locators, respectively.) The main timecode display of the Transport bar is independent of the timeline's units. This is good because it lets you monitor two different time values simultaneously. (For example, bars+beats in the timeline and SMPTE in the main display.)

TRIPLE SX

There's no way I can cover all of the cool things about Cubase SX in the space available, such as the improved Score features and the built-in Beat Calculator. Suffice to say, Cubase SX is a vast improvement over Cubase VST. It addresses its predecessor's poorly implemented automation and organization problems on a fundamental level, and then adds its own basket of cool tricks to the Cubase equation. The Project and Mixer windows are well-conceived and implemented, and there are lots of useful new dialogs that help make the program a breeze to use. The developers at Steinberg have clearly listened to their users—impressive.

With so many great plug-ins, virtual instruments, VST System Link compatibility, a well-designed interface, lots of professional editing and synchronization features, and a solid build (it only froze up on me once, which isn't bad for Version 1.0.1), it's tough to find anything to complain about with this software. The automation windows can get cluttered, but this is pretty minor when you look at the big picture. If you're a dedicated Cubase user, and even if you aren't—perhaps you're trying to decide which digital audio sequencer you want to invest in—you owe it to yourself to check out this program.

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RØDE NT4

Stereo, Simplified

RØDE has answered the call for a high-quality, midpriced stereo microphone with the introduction of the NT4 (\$899). The NT4 features a pair of small-diaphragm cardioid condenser capsules permanently set in a 90° X/Y configuration; the capsules have gold-sputtered, ½-inch diaphragms, and you can power the mic from 12-volt, 24V and 48V phantom power, or from a 9V battery.

My first thought when I saw the NT4 was that it would be perfect for location recording. Evidently, RØDE was thinking the same way: Besides a sturdy mic clip and foam wind screen, the NT4 comes with two cables that interface with the mic's 5-pin connector: One offers a pair of XLR cables (conveniently marked L and R) and the other has a single ¼-inch plug, which is perfect for plugging into a MiniDisc or portable DAT recorder. In addition, RØDE thoughtfully included a rugged, lightweight, plastic foam-lined case.

I use stereo microphones when convenience and portability are important. However, I prefer to use a pair of mics for stereo work so that I can adjust the spacing to meet the demands of the recording situation. I admit that, at first, it was challenging to look at the capsules and not be able to futz with them. But that's the way it is with stereo mics in this price range. Other than the on/off switch and a light that indicates battery status, the NT4 does not offer any other features—a model of simplicity.

The capsules of the NT4 I tested were well-matched. Their frequency response includes a slight bump of nearly 2.5 dB in the area of 120 to 190 Hz, and between 5 and 7.5 kHz. Then it bumps up 2.5 dB around 11 kHz before dropping 7.5 dB as it reaches 20 kHz. Frightening as that looks in print, the NT4's sound is very good. It had a darker sound than other small-diaphragm condensers to which I compared it (mics from AKG, Neumann and Oktava) but not unpleasantly so. The NT4 handles loud sounds very well, and is rated with a maximum SPL of 143 dB. And with a dynamic range

of 128 dB and self-noise at less than 16 dBA, it's in line with the small-diaphragm mics I favor.

HOME AND AWAY

I took the NT4 on a number of location dates where space and setup time were limited. The first gig required me to document several rehearsals and a performance of a musical theater work. The show featured a male lead, a nine-voice female chorus and a 10-piece instrumental group situated near the wings, stage right.

The first thing I noticed was the NT4's wide stereo spread, which helped capture the singers when they moved to the far sides of the stage. I also noticed how sensitive the NT4 is to position. At one point, the weight of the special XLR cable pulled the back of the mic down and raised the capsules a few degrees. This changed the timbre substantially and led to this discovery: Although the angle of the capsules is fixed, you can change the sound of the NT4 by rotating them (so that one capsule is slightly above the other), and not just by changing proximity and direction, as you would with other mics. I was able to hone in on just the right position, allowing me to get the best blend of voices and instruments.

The next assignment required me to come up with bits of audio vérité for an English radio documentary. For this, I required a portable recording rig. The convenience and sound quality the NT4 provided were perfect for the job. To keep things light, I powered the mic using the 9V battery and recorded direct to CD-R. As you might suspect, the mic was a bit noisier when powered by battery.

Nonetheless, I was very satisfied with the results. The foreground sources (voices, a piano, an espresso machine) sounded rich and natural, while the background details in each environment (the radio in a back room and the ice-cream truck that chose just the right moment to cross the stereo field) were tucked nicely behind.

In the studio, paired with my Langevin



Dual Vocal Combo or the Focusrite pre-amps in my DigiDesign Digi 001, the NT4 gave me smooth and natural recordings of a mandolin, octave guitar and upright piano. Aiming the mic slightly above or below the source further darkened the sound in a nice way and came in very handy while I was recording a Gibson M6 mandolin-shaped octave guitar. The real mandolin, on the other hand, didn't have as much high-frequency zing. By pointing the NT4 directly at the body from a distance of about two feet, I got the instrument's warmth and captured a nice mix of the room, which had hardwood surfaces. To get the best stereo image of the piano with maximum room ambience, I backed the microphone even farther into the room.

In contrast, I couldn't resist the temptation to boost the highs slightly on metallic percussion sources. But when I recorded a live concert of a five-piece jazz group, which included a drummer with plenty of cymbals, the NT4 gave the recording a somewhat mellow quality. The unhyped high end fit the material well, without sacrificing definition.

For well under a grand, the RØDE NT4 is a stereo mic that travels easily, can be powered from a battery and sounds like it costs nearly twice as much. Anyone seriously into stereo recording should give the NT4 a listen.

RØDE Microphones, Box 3279, Torrance, CA 90510-3279; 877/328-7456; fax 310/328-7180; www.rodemic.com. ■

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SLS Pro Studio S8R Monitors

The Ribbon Tweeter Approach

SLS has produced sound reinforcement speakers for more than 25 years, but the Pro Studio S8R is its first foray into the studio monitor market. One look tells you that the S8R is not your ordinary woofer and tweeter in a box. The low-frequency driver has a torpedo-like conical phase plug in place of the usual dust cap, and high frequencies are handled by a planar-ribbon driver, rather than the typical dome tweeter. What's more, the ribbon driver is positioned *below* the woofer.

The 8-inch, cast-frame woofer features a 2-inch voice coil. Its integral phase plug is said to eliminate resonance from air that would normally become trapped beneath a conventional dust cap. It also acts as a heat sink to improve power-handling capabilities and it lowers the mass of the cone for faster transient response and reduced distortion. But the proprietary PRD500 push-pull ribbon driver distinguishes the S8R from the competition. The 5-inch ribbon, which features a neodymium magnet structure, is set within a horn-like, flared metal casting. The "horn" provides 120°x40° (HxV) dispersion, and the entire driver can be rotated (by removing four screws) to ensure correct polar response when the S8Rs are mounted horizontally.

SLS, which pioneered the use of ribbon drivers in touring speakers, makes bold claims to its superiority over conventional dome tweeters. An exhaustive study is available on the company's Website, but the basic argument is that ribbons offer a considerably faster transient response and much greater efficiency for a smoother sound over an extended frequency range. The frequency response is rated as 44 to 20k Hz (± 2.5 dB), yet SLS claims a 6dB/octave roll-off that continues to 40 kHz. The 2.5kHz passive crossover has 12dB/octave HP and 6dB/octave LP slopes. Sensitivity is rated at 90 dB SPL (1 meter, 2.83 volts), with a max continuous SPL of 110 dB @ 1 meter. Power handling is 125 watts RMS, with 500W peaks.

The rear-ported reflex enclosure measures 19x10.5x11.25 inches (HxWxD) and weighs 25 pounds. The cabinet finish is

NeverMar—the same durable black material used on SLS' touring enclosures—and has no grille. (Oak veneer versions are also available.) The enclosure is designed for either vertical or horizontal use. Bracket screws for wall mounting are also provided. Input is via a pair of gold-plated, five-way binding posts that are tied together in parallel with external jumpers, allowing the drivers to be easily bi-wired or biamped without having to open the cabinet. Large through holes on each post accept wires up to 6 gauge (AWG).

I used the S8Rs powered by a Bryston 5B-ST amp in both tracking and mixing applications, as well as to audition a wide variety of audio material. SLS recommends that the ribbons be at ear level, which is why they are positioned below the woofers. At first, I found it nearly impossible to resist turning the S8Rs "upside down," and after a week or so, that's exactly what I did, yielding what were, for me, better results. I also tried positioning them horizontally but wound up switching them back to the vertical position with the ribbons on top.

Much more important than how the monitors are positioned is how the *listener* is positioned. There is a relatively narrow sweet spot where all of the elements come into balance, and even slight shifts from that spot result in *major* changes in sound. Apparently, this is simply a characteristic of ribbon drivers and is to be expected. If you work alone and sit in a more-or-less fixed position, then this shouldn't pose a problem; but if you work with others, then you may find yourself playing musical chairs.

Overall, I very much like the sound of the S8Rs. The ribbon drivers deliver a very smooth and transparent sound, particularly in the frequency range above about 5 kHz. SLS cautions that it may take a while to adjust to the ribbon's less-aggressive sound, as compared to dome tweeters, but I had no such problem. If anything, I found them to have more presence and sizzle around the 2.5kHz crossover point. Here, a simple 2dB cut at 2.5 kHz optimized them for my room.



The bass response was quite adequate for an 8-inch woofer, though it could stand to be more tightly focused. Anyone mixing music with a lot of bottom will probably want to add a subwoofer (SLS makes several models), as is common with many speakers this size.

With the speakers positioned vertically (ribbons on top) and a slight EQ adjustment, the results were uniformly outstanding. The imaging was concise with lots of subtle detail, and delicate sounds such as natural reverb decay (Paul Horn inside the Taj Mahal) were reproduced with great clarity.

The tricky upper-mid and high-frequency sounds of Indonesian gamelons and bells put the ribbons to the test, and they came through with flying colors. Acoustic jazz, bottom-heavy dub, modern rock and electronic music were all rendered accurately, and mixes done on the S8Rs translated well to other speaker systems. Bottom line: These are great speakers and should be seriously considered by anyone looking for monitors in this price range (\$775/each).

SLS Loudspeakers, 3119 S. Scenic, Springfield, MO 65807; 417/883-4549; www.slsloudspeakers.com. ■

Barry Cleveland is a San Francisco-based engineer/producer/recording artist and author.

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Vintech X81 Preamp/EQ

A New Twist on Some Classic Favorites

The Vintech Audio X81 combines a single-channel, Class-A mic preamp, based on the classic Neve 1073 channel module, with an expanded 4-band equalizer that's reminiscent of the Neve 1081 channel module.

The X81 is built in the U.S. and—judging from the individually soldered switches and the hand-wired, gold-plated, 22-position Elma rotary gain switch—is well-constructed at considerable expense. EQ switches are by Electrosch with gold contacts. The new custom-machined, knurled aluminum knobs match the shape and color of the original Marconi winged plastic knobs. I like the bigger metal knobs and companion skirt/collar knobs, because they're much easier to turn and use.

The X81 is painted the same RAF blue-gray color as the old Neves; as with the original 1073, the X81 has separate line and mic transformers and a large output transformer, all made by St. Ives.

Like the 1081, the X81 has four frequency bands. Whereas the 1081 featured peak or shelving EQ on the high/low bands, the X81's LF/HF is shelving-only, although the LH and HF bands on both units offer five switchable frequencies for each band. Another difference is that the X81 lacks a lowpass filter; the 1081 has lowpass and highpass filters.

The X81's lower- and upper-mid EQ frequencies were copied exactly from the 1081, with 10 switchable frequency points per band. Both EQs are *nonconstant Q* designs, and the X81's Q (bandwidth) switches for the LMF and HMF sections range from a broad Q of 1.7 to 7. Engineers who love the 1081's shaping abilities will be right at home here, with ± 16 dB of boost/cut in each EQ section. The mid-bands' narrow high-Q settings are ideal for notching out nasty, troublesome peaks. The X81 has some minor inconsistencies. For example, each band's Off position is a clockwise turn for the HMF/LMF



bands and counterclockwise on the LF/HF sections.

A great feature taken from Vintech's X73 is a 1/4-inch front panel instrument input jack. You can plug a bass guitar (or anything else) directly into this 100k ohm input jack, but be aware that it's active, along with any mic plugged in the rear XLR jack. Other features include a smooth-feeling Clarostat output control, LED output meter, and switches for 48VDC phantom power, phase reverse and global EQ in/out. There are no LEDs to indicate when the preamp section and/or output amp clips. The rear panel has an XLR mic in, line input and line out jacks; a 4-pin XLR jack connects to a beefy external supply that powers up to four Vintech modules.

IN THE STUDIO

At Track Record in North Hollywood, owner Tom Murphy used a beautiful AKG C-12 to mike the studio's Kawai K5 piano. The mic's output was fed to a resistive mult so that I could parallel-feed the X81 and a Neve 1073. Track Record has many Neve 1073 modules (refurbished by Brent Averill Enterprises), as well as a pair of never-touched, truly vintage units. With 50 dB of gain and both EQs switched out, both signal paths produced identical recording levels. Sonically, the X81 had an overall clearer, cleaner, but not brighter sound with a tighter bottom end than the re-capped 1073s.

Feeding the EQ via line-level sources, the X81 "sound" is similar to the 3-band X73, but with more clarity at any frequency. I preferred the X81's greater

top-boost ability when shelving out at 10 or 15 kHz. The 1073 is locked to a 12kHz-only shelf, and I wish that the X81 also had that position. Boosting low frequencies with the X81 sounds like a good modern equalizer: clear and not woolly.

At L.A.FX Studios, owner Dan Vacari tracked a female vocalist with a Neumann M149. Using 35 dB of gain with the EQ switched out and followed by a GML 8900 Dynamic Range Controller, the vocal sounded clear and fat. We liked the X81's sound when pushing low frequencies: There's no other way to characterize it but to call it "ballsy." Lifting 15 kHz offered that airy sound without any stridency or harshness. We also appreciated not hearing clicks or pops when changing frequencies—no matter how high the gain is cranked. The midrange bands are very flexible: Dial in the shape you want and a little EQ is all you usually need, but, of course, more surgical carving is available via the higher Q settings.

A nod to the classic Neve sound, Vintech Audio's X81 is a rugged, modern-sounding unit with an enhanced, comprehensive EQ section. Retail is \$2,350; the power supply is \$225.

Thanks to Tom Murphy, Spencer and AI at Track Record, and Dan Vacari from L.A.FX Studios.

Vintech Audio, 4905 Reagan Ave., Seffner, FL 33584; 813/643-8114 or 877/4-MICPRE; www.vintech-audio.com. ■

Barry Rudolph is an L.A.-based recording engineer. Visit his Website at www.barryrudolph.com.

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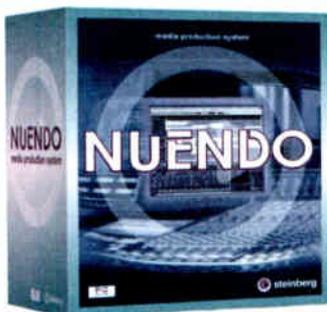
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Emes Owl Speaker System

One-Box Stereo Solution

The Owl Speaker System is an active, two-way studio monitor loudspeaker system that projects a stereo sound image from a single enclosure. This new system allows single-point source monitoring of programs that are mixed in stereo, mono, Dolby Pro Logic, Dolby Digital, DTS, Roland RSS and Q-Sound formats. As an adjunct to your mixing monitoring speakers, the Owl System offers an acoustical way to check your mix's sum (mid or L+R) and difference (side or L-R) components without the speaker angle and distance influences of spaced, left and right monitor speakers—a sonic verification of your audioscope's display. The Owl uses



The Owl System, with optional "acoustic wings."

patents developed by Embracing Sound Experience (ESE) of Stockholm, Sweden, and is manufactured by Emes Studio Monitor Systems in Germany.

THE FACE OF THE OWL SYSTEM

Upon first inspection, I thought that the Owl was just two near-fields stuck together, because, strangely, there are both

left and right powered speaker back panels, each with its own AC connector and power switch; separate dip switches to set input levels and high/low-frequency curves; and individual power amplifier heat sinks. Actually, the Owl is two Emes' Violet HR powered monitors mounted side-by-side in a single cabinet. Each monitor uses two Danish-made Scan

ACOUSTICAL DIFFERENCE VS. ACOUSTICAL MODULATED REPRODUCTION

The idea of stereo sound stage reproduction goes back to the 19th century. In 1931, a method called Acoustical Difference Reproduction (ADR) was developed by Alan Blumlein, who used it to complement his other invention, stereo-vinyl disc cutting. ADR relies on the discrete localization of two loudspeakers to convey realistic stereophonic sound to a large group of people in theaters or concert halls. One immediate problem with wide speaker spacing is the difficulty of producing a strong sum or mono—the phantom center image. This is the *raison d'être* for the center channel in LCRS theater sound or 5.1 surround sound.

ESE posits that ADR in small domestic areas is obsolete, and therefore promotes Acoustical Modulated Reproduction, which also uses M/S reproduction without the angle and distance variables of two widely spaced loudspeakers. With a speaker such as the Owl facing the listener, the sum and difference components modulate each other in the air in front of the two closely spaced drivers. It is thought that because distance, location and speaker angle are now out of the equation, a more accurate picture of the actual stereo recording is presented.

To project M/S audio into the air requires the opposite of an M/S microphone. A stereo M/S microphone has a front-facing cardioid microphone (M or mid) and a side facing, figure-8 microphone (S or side). In speaker parlance, the analogy would be a monopole and a dipole. A monopole speaker radiates sound from one side only—the sound coming from the rear is not allowed to be coupled to the air by way of the enclosure design. A dipole speaker is made with two speakers facing the sides and

wired out-of-phase, creating a null plane that is perpendicular to the axis of the driver's cone/voice coil movement.

M/S SPEAKERS

Aspen Pittman and Drew Daniels used a monopole/dipole speaker arrangement in a patented speaker design for a guitar/key-board amp originally called CPS (Center-Point Stereo), and later renamed SFX for Stereo Field Expansion. (See George Petersen's write-up of SFX in *Mix*, July 1998.) The CPS' dipole was actually two speakers that were bolted together to face each other and then mounted directly behind a single forward-facing monopole speaker. A 2-channel power amp, supplied with M and S components derived (using a special circuit) from a normal stereo signal, was used to drive the monopole and dipole. Later, Fender Musical Instruments licensed Pittman's and Daniels' concept and design for use in the Acoustisonic amp, a self-contained, single-point stereo acoustic, guitar stage amplifier.

While both ESE and SFX systems produce strong sum and difference signals, the advantage of the ESE method is the reproduction of hard-left and -right sound images. For Aspen and Daniels, as designers and purveyors of musical instrument amplifiers, the SFX speaker's inability to reproduce static-left or -right images was not deemed important. Electric instrument musicians originate musical performances and consider their instrument/amp/speaker combination as a single instrument, whereas monitor speaker designers and manufacturers are concerned about accurate and lifelike reproduction.

—Barry Rudolph

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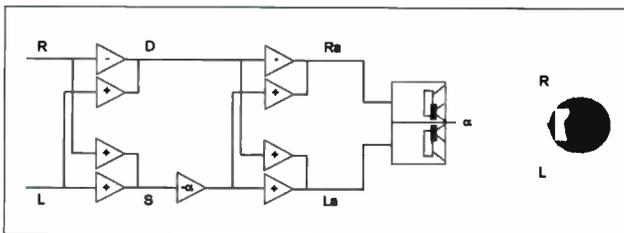
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Speak drivers: a high-frequency, silk-dome driver with 28mm voice coil and an 18cm carbon paper, low-frequency unit. Each enclosure is self-contained using a bass-reflex design and a flush-mounted, 20mm-long biradial horn array in front of each tweeter. This smooth, dual-mouthed horn, with a total width of 180 mm, is said to minimize distortion at the 1.1kHz crossover point. With the LF drivers, the two tweeters are positioned close together on the cabinet's centerline, making the front look like an owl's face. As if to enhance this owl look, a detachable, short, red-colored baffle sticks out of the front panel, thereby bifurcating the two LF units. This "beak" stabilizes the Owl's center imaging.

Frequency response is rated 58 to 20k Hz (± 2 dB), and sensitivity is 90 dB with 1W/1 m at 0.3% THD. Max sensitivity is 107 dB. The Owl will accept most any level/impedance from -10dBv unbalanced to +4dBm balanced, but only XLR connectors are provided—not those cool $\frac{1}{4}$ -inch/XLR Neutriks. The four identical channel power amplifiers (one for each driver) are rated

at 100 watts RMS each (120 watts peak), and each pair of amps has a single switching power supply. These Class-A/B amplifiers are single, large chip circuits using MOSFETs and feature onboard power-up muting. Just below the tweeter is a tri-colored LED status indicator: green is normal, yellow indicates 5% below maximum output and red means to take an ear break.



The ESE matrixing circuit used in the Owl System

The tweeter is further protected by a series thermistor. The electronic crossover uses 12dB/octave Butterworth filters.

The Owl measures 380x380x300 mm (WxHxD), weighs 44.88 pounds, and comes with a pair of 38.1cm-wide clear acrylic "acoustic wings" that attach to both sides of the cabinet with weak magnets, as well as extend the front baffle area as if the speakers were soffit-mounted. This

results in a wider "sweet spot" that is more noticeable when you are listening farther away. Using the wings is optional and a little problematic: They make the speaker system a total width of 45 inches and difficult to fit atop some meter bridges, precluding the use of other near-fields for quick A/Bs. They do look modernistic in a George Jetson way, but because they are not permanently bolted to the cabinets, they tend to fall off easily if bumped; my set now has cracked corners.

HOW THE OWL HOOTS

The patented Embracing Sound System (EMES says that it is the first licensed studio monitor manufacturer to feature this) relies on the left and right speakers positioned as close together as possible and housed in separated volumes of a single box. This careful construction, known as Embracing Sound Source, along with an electronic dematrixing circuit named Embracing Sound Processor, forms the Embracing Sound System. The figure shows a block diagram of this matrix circuit, where the fixed internal parameters/setup are determined by the speakers' physical



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dimensions, including the size and exact placement of the drivers, the beak, the front baffle area and intended listener distance. Not only is the sum signal reduced to compensate for the left- and right-channel acoustical buildup, but the relation between the sum and difference is exactly maintained, making it possible to perceive a 180° sound image directly in front of the cabinet.

The Owl is designed for listening distances of 100 to 350 cm (3 to 11 feet), and I found the sweet spot to be the same size as for similar-sized conventional near-fields. Hard-panned left and right mono sound-source images (no effects and dry) are reduced to points left and right that are (in distance) double the LF drivers' diameter. Imaging is easy to hear and natural-sounding with all sum and difference information intact. The Owl system reproduces all spatial cues and information encoded into your mix without the hype of time/distance/angle differences that are introduced by two-spaced monitor speakers—whether it's created with reverb and effects or already present as found in realistic-sounding acoustical recordings.

IN THE STUDIO

I set up the Owl with wings in three very different listening environments: home, studio and a MIDI-programming room. My initial impressions from both home and the MIDI room were all verified in the studio tests. In the studio after using my main and near-field monitors and then cross-checking my mixes on the Owl, I was immediately able to make corrections in phase-related effects, panning and treatments that sounded great in stereo and summed mono (L+R), but subsequently not as perfect elsewhere. For example, I immediately heard an unbalanced stereo reverb return—too loud on the right—that I had missed on my trusty ol' near-fields. I found that my particular optimal-listening position was close—about 20 to 30 inches—and that I preferred the wings. Old habits die hard, but I could adjust panning on the Owl as easily as with two widely spaced speakers. Unlike conventional monitoring, I could always hear the far-driver set, even though I was sitting closer to the other. This was true when I was listening in the room.

The speakers' sound quality is excellent, with loads of preamp gain for volume levels that will run you out of the control room. My preference was to bump the low frequency (+2 dB @ 50 Hz)

and leave the high frequency flat. One observation: Most DAW users like to have their computer screen directly in front of them with the two stereo speakers on either side. I don't see a way around this and still use the Owl. My cohorts' reactions ran the gamut from great enthusiasm all the way to "What the %?#@%\$%&." However, with the way that the Owl fills the room with stereo sound directly in front of it, all of my cohorts agreed that the Owl is the perfect speaker to mix and play stereo, high-definition television sound with.

The Emes Owl is a completely new

concept in stereo monitoring to grasp and use. It seems and certainly looks strange, until you actually listen and take advantage of this analytical but direct way to monitor, check and verify stereo audio. I found that it was great to aurally "watch" my audioscope's action, and used the Owl as a third monitor after my mains and near-fields to check my work.

MSRP is \$3,499 for the complete Owl Speaker System.

Dist. by X Vision Audio U.S. Ltd., P.O. Box 3140, Boardman, OH 44512; 330/259-0308; fax 330/259-0315; www.xvisionaudio.com. ■

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Snapshot Product Reviews



RADIAL JD-7 INJECTOR

Guitar Signal-Distribution System

Radial is known for its excellent direct boxes. Now, the company takes the concept of the direct box light-years ahead with the JD-7. Priced at \$799, this clever signal-distribution system allows guitar or bass players to connect as many as seven amps or simulators at a time, providing the ultimate in tonal versatility—onstage or in the studio.

The single-rackspace JD-7 can operate as a simple direct box, handling hi-Z instruments (guitars, basses, etc.) or line-level (keys, drum boxes, etc.) sources from front panel ¼-inch jacks or a rear +4dB balanced XLR input. Outputs are numerous, with a line-level XLR out and five ¼-inch outs (to feed amps, etc.). All are Jensen transformer-isolated, with ground lift and phase-reverse switches. Outputs 5 and 6 also have unbalanced ¼-inch effects loop send and return jacks. The ¼-inch outputs 1 and 7 are transformerless, direct-coupled outs—sans phase and lift switches.

The active circuitry is all discrete Class-A, with no ICs or op amps in the audio path. Combined with the Jensen transformer outs, the result is whisper-clean audio. Another nice touch is a rotary Drag control, which optimizes the loading of the guitar pickup to the active front end inputs. Drag can be optimized for a sweet direct sound or, alternatively, it can add some nasty edge for a bit more “character.”

The real fun begins in the studio. Users have the option of laying an ultraclean guitar track down first and then experimenting later with multiple amps/devices—sort of like a Reamp on steroids—or laying down live tracks in real time, feeding many amps/sources simultaneously. In the studio, I liked the former because we only had to use one track in the beginning, and had the option of either printing the combo of four to five amps to tracks or simply feeding them in the studio during the mix to create a “live” stereo submix.

The JD-7 offers enormous flexibility.

We combined a superclean JD-7 direct bass track with routings to a Line 6 Pod and two Fender Bassman tops driving a 4x10 and a 1969 single-15 Tone Ring bottom. Later, we sent dry rhythm and lead guitar performances to a Marshall AVT 275, Tech-21 Trademark 60, Danelectro Piggyback, Fender Deluxe Reverb and a Fender Showman/Tone Ring. There are lots of guitar amp modelers, but blending the signals from five amps was a gas. Best of all, we could experiment with various amp settings, tone, mics and placements without wearing the player out. The tone was so thick that you could cut it with a knife, and the stereo—or surround—possibilities are endless.

On other sessions, connecting sterile-sounding synth tracks to a couple of guitar amps added punch, while a dry organ track routed to an iso'd Marshall and a stereo-miked Leslie had the power of a freight train. This thing is addictive!

Radial Engineering; 604/942-1001; www.radialeng.com.

—George Petersen

KORG PXR4

Pocket 4-Track Recorder

Will the 4-track ever really die? Well, not for the time being. The Korg PXR4 is possibly the most full-featured, portable multitrack to ever hit the market for under \$500. The PXR4 records four tracks (two tracks simultaneously with eight virtual tracks per channel) to 4- to 128MB SmartMedia cards. The unit has an internal mic, ¼-inch low/hi-Z (switchable) input with trim, analog stereo in/out, USB jack and a headphone jack. The front panel has faders for each of the four tracks, master fader, shuttle controls, jog wheel and various controls for audio editing and accessing onboard effects. Other standard features are track cut/copy/paste commands, time expansion/compression, and various drum and tempo patterns.

The PXR4 was an excellent addition to my gig bag on road trips and the perfect

excuse to take my guitar to the park, as it runs from the supplied AC adapter or two AA batteries. The internal drum tracks and surprisingly rich onboard effects (based on Korg's popular Pandora multi-effects line) provide hours of guitar geek bliss. The drum patterns are pretty basic, running the gamut of rock and jazz styles, but are far more enjoyable to play along with than the average click track.

The PXR4 offers three recording resolutions or digital-compression settings with a stated bit depth and sample rate of 16/32 kHz. At the highest setting, I was able to eat up the supplied 16MB SmartMedia card pretty quickly, and the sound quality was about what you'd expect from a portable 16-bit recorder. The lower settings, of course, provided more recording time, and the sound actually reminded me of my first Tascam 4-track cassette. But for sketchpad purposes, any of the recording resolutions were fine. Users can also output their audio as MPEG files via USB: Simply connect the PXR4 to a USB-equipped Mac or PC and the PXR4 shows up as a removable drive from which users can drag files onto their hard drives.

All in all, the PXR4 is an excellent unit for the traveling musician or the perfect stocking-stuffer for that up-and-coming music prodigy. If you already own a decent laptop, your money might be better spent on a USB audio interface, but if all you need is a pocket-sized way to work out your ideas, the PXR4 might be just what you're looking for.

Korg; 516/333-9100; www.korg.com.

—Robert Hanson

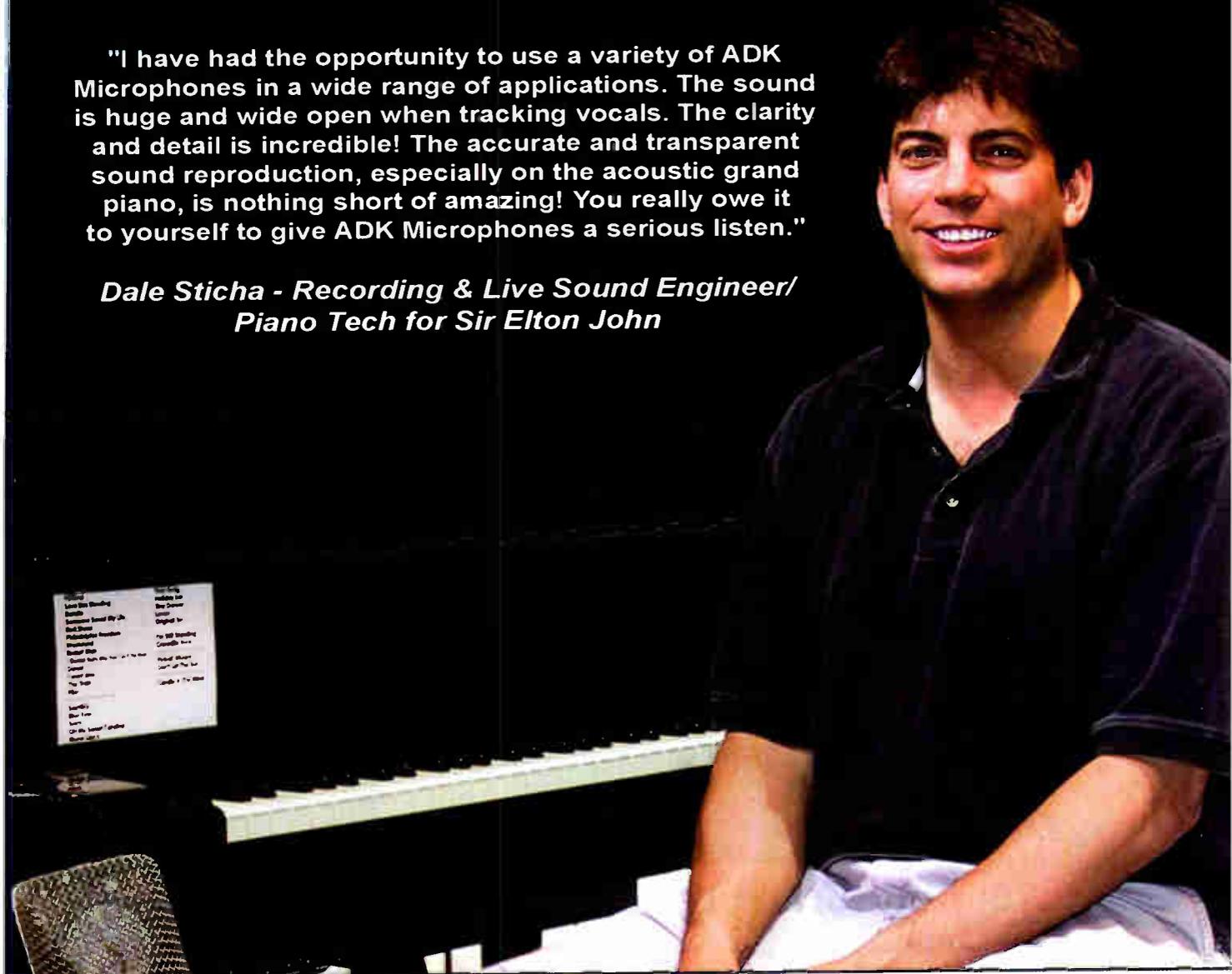


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World Radio History

SENNEHEISER HD280 Pro Stereo Headphones

Sennheiser's HD280 Professionals are comfortable, over-the-ear closed headphones featuring an 8 to 25k Hz response, a sturdy coiled cord that stretches almost 15 feet to reach the ends of the widest consoles, and padded earpieces that swivel 90° for off-the-shoulder, one-eared spot monitoring. They're fairly large, but fold up into themselves for space-saving storage.

The HD280s present a natural sound reproduction, making them a better choice for music, especially as a reference with studio monitors. Their warmth, low distortion and comfort reduce listening fatigue on longer sessions, excellent for recording and broadcast studios. The HD280s offer a tight, toe-tapping low end similar to the Sony MDR-V6, owing partly to the excellent seal of the ear pads, which completely cover all but the largest head-flaps, while also providing over 30 dB of isolation—far more than most in-ear monitors. As a bonus, the HD280's high isolation allows monitoring at lower levels in loud envi-



ronments than most other cans.

The obvious comparisons are with other popular closed models. Either you love or hate the venerable Sony MDR-V6—a fragile live sound darling that's the consumer version of the 7506. If you like the accentuated highs of the V6, try Sennheiser's own under-appreciated HD25, which has more brilliance and is very



rugged. The HD25 has been my favorite to check mixes in IEM applications, where its response matches that of many two-way molds.

Ever had your favorite cans accidentally crunched at a gig? Most engineers have busted several. The 280's resilient plastic parts score high marks for ruggedness. I used the 280 on several tours and lots of sessions where they were stepped on, sat upon and crushed inside

a suitcase, with the worst results simply requiring an ear hinge to be popped back into its muff. If the \$199 list seems high, the reward is that they'll easily outlast others, so outfitting a studio with these can save money in the long run.

Sennheiser; 860/434-9190; www.sennheiserusa.com.

—Mark Frink

PRISM SOUND DREAM AD-2 2-Channel A/D/D Converter

Although it's been around for a couple of years, the stellar Dream AD-2 (\$8,110) deserves another look. The 2-channel AD-2 provides both A/D and digital-to-digital (D/D) processing in 16, 20 and 24-bit word lengths, with four different noise-shaping curves offered with word-length reduction. The unit also offers a mode to encode/decode 24-bit recordings to/from 16-bit recorders. The AD-2 operates internally at 32/44.1/48/88.2/96 kHz and can lock to external wordclock or the signal presented at one

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*All trademarks are the property of their respective owners.

Otari's ND-20 audio distribution system, or the Yamaha DM-2000* console to any and all of the standard digital audio formats in use today (AES, TDIF, SDIF and ADAT).

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of its digital audio input jacks.

Rear panel inputs include L/R analog inputs on XLRs, two AES/EBU connectors on XLRs, three BNCs (one for wordclock input, the other two for either AES/EBU or SDIF-2 audio) and both co-ax and optical S/PDIF ports. With the obvious exception of the analog inputs, the same number and type of jacks are offered in the digital output section. Both single-wire (double-speed) and dual-wire AES formats are supported in A/D and D/D modes at 88.2- and 96kHz rates. The AD-2 can perform digital-format and sample-rate conversions, as well as simultaneously transmit two sig-

nals that have different bit depths, sample rates and data formats via two jacks. The unit's 0dBFS reference can be calibrated to +5 to +28 dBu in 0.5dBu steps.

The AD-2's prodigious 130dB dynamic range (RMS, unweighted) presages the profound depth and stunning sense of realism the unit captures. In A/B tests with my cherished Apogee Rosetta (a far less-expensive unit), the AD-2 sounded noticeably smoother, warmer and more revealing.



The Rosetta produced a tad wider stereo image. Overall, the Dream AD-2 is the best-sounding linear PCM A/D converter I've heard.

Prism Sound; 973/983-9577; www.prismsound.com.

—Michael Cooper

CHECKPOINT DLT-675

Inclo-Matic Laser

CheckPoint—maker of architectural laser tools—has married a precision laser and a digital inclinometer in a rugged, 6.5x1.5-inch, anodized-aluminum chassis that's helpful for live sound speaker adjustments.

If the height of a speaker array is known, then the vertical angles of coverage can easily be measured from the audience before the speakers are hung. Measuring the angle to the bottom box from the front of the listening area and then to the top box from the last row is done by simply pointing the laser and reading the digital readout. Dropping a tape measure from an array's hanging point provides an accurate target, especially when there's no proscenium wall directly behind the point.

The Inclino-Matic Laser is also useful when stacking speakers with known dispersion angles. Coverage can be visualized by placing the tool on top of the speaker and adding the angles above and below the horizontal plane. It's a simple matter to cut some doorstop-shaped wood wedges that create the -6dB-down points of coverage when placed on the top or sides of a particular speaker. I have 15° and 20° wedges for the CQ-2s that I use regularly. This helps visualize frontfill coverage and side-wall reflections—plus clients think that the laser is cool.

The digital inclinometer operates on a 9V battery (I have yet to replace it after a year on the road), and the laser uses two AAA batteries. The DLT-675 can be purchased directly from CheckPoint for \$169.95.

CheckPoint Laser Tools; 310/891-1550; www.checkpoint3d.com.

—Mark Frink ■

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AUDIO EDUCATION PROGRAMS

SCHOOLS, COURSES,
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So, you want a career in the professional audio world, but you don't know where to begin. Whether you're the next hitmaking producer, a potential Oscar-winning editor or a pioneer in creating sonic soundscapes to stream over the Web, you've come to the right place. It's been a year since we last published our directory of audio education programs, and this year includes more schools and programs than ever before. Obviously, we can't tell you which school to attend—the school that is right for you will be the one that fulfills your educational and professional needs and fits within your budget.

Consider the *Mix* 2002 Education Directory as your starting point. After you have perused these listings, we suggest that you contact the schools that interest you for additional information. Then, when you have narrowed your choices, make appointments to visit individual campuses, where administrators and professors can usually put you into contact with former students. It is often a wise idea to find former students who have had both positive and negative experiences to get a true taste of the program.

We hope that our directory serves as a helpful starting point for the beginning of your audio education.

Good luck!

—The Editors

THE SCHOOLS

When using this directory, please note that only North American programs have been included. All of the information presented here was supplied by the schools. Specific programs may change, so contact the school/program for up-to-date information.

EASTERN SCHOOLS

American University

4400 Massachusetts Ave. N.W., Washington, DC 20016-8058 Phone 202/885-2746 Fax 202/885-2723 E-mail benji@american.edu Website www.american.edu/physics Degrees/Certificates Offered: four-year B.S. in Audio Technology. Program and Facilities Description: Housed in the Department of Physics, the Audio Technology program concentrates on the art and science of music and audio production, electronic recording, and computer and electronic systems. The main control room features a 24-track analog studio with hard disk recording capabilities. The electronic music studio has various analog and digital synthesizers, samplers, and is well-equipped to perform a variety of artistic and production functions.



Audio Recording Technology Institute

4525 Vineland Rd., Suite 201, Orlando, FL 32811 Phone 888/543-2784 Fax 407/367-2578 E-mail arti@digital.net Website www.audiocareer.com Degrees/Certificates Offered: forty-five-week Audio Engineering certificate. Program and Facilities Description: Students prepare for employment in the audio-production industry, including music production and sequencing, sound editing for film and TV, sound effects design and mastering. An accredited member of ACCSCT, the emphasis at A.R.T.I. is hands-on training. Studios are well-equipped with everything you need, from Pro Control to SSL Digital. Placement assistance is provided, and financial aid is available to qualified applicants. Class size is limited to six students.



Barton College

Barton College Station, Wilson, NC 27893 Phone 800/345-4973 Fax 919/237-4957 E-mail grose@barton.edu Website www.barton.edu Degrees/Certificates Offered: B.S. in Recording Technology. Program and Facilities Description: Hands-on training in a 32-track digital recording studio and 12-workstation computer music lab. Curriculum includes acoustics, electronic music, sound synthesis, music business management, sound reinforcement, live and studio recording. The studio has a Soundcraft Sapphyre LC console with Optifile Tetra automation; four Tascam DA-88s; Mac with Pro Tools, Sound Designer, Master Tracks Pro 5 and Finale; Kurzweil K2000s with VAST system; Yamaha SY-88; and Roland JV-80. Each workstation in the lab has a Mac with Master Tracks Pro 5 and Finale, and Yamaha SY-35 synth. There is also a Yamaha Disklavier in the lab.

Belmont University Mike Curb School of Music

1900 Belmont Blvd., Nashville, TN 37212-3757 Phone 615/460-5504 Fax 615/460-5516 E-mail hamiltonp@mail.belmont.edu Website www.belmont.edu Degrees/Certificates Offered: Bachelor's of Business Administration with emphasis in Music Business. Program and Facilities Description: Belmont University offers a Music Business program that combines the classroom experience with real-world applications. A full-time faculty, adjunct professors and staff of music business professionals who work full time in the music industry. A 9,000-square-foot Center features two state-of-the-art recording studios and control rooms, iso booths, MIDI-sequencing room, Pro Tools post-production/editing/mastering suite, 16-track Tascam Digital project studio, duplication room, and a studio-equipped classroom and 8-track analog project studio.

Berklee College of Music

1140 Boylston St., Boston, MA 02215 Phone 800/BERKLEE Fax 617/747-2047 E-mail admissions@berklee.edu Website www.berklee.edu Degrees/Certificates Offered: four-year

Bachelor's of Music or four-year Professional Diploma. Program and Facilities Description: Established in 1945, Berklee College of Music is the world's largest independent music college. Over 3,400 students and 460 faculty members interact in an environment designed to provide the most complete learning experience possible, including all of the opportunities and challenges presented by a career in the contemporary music industry. The College offers 12 majors, over 270 ensembles, six recital halls, 300 practice rooms, 12 studio/control rooms, Media Center, current industry technology.

Cayuga Community College

197 Franklin St., Auburn, NY 13021 Phone 315/255-1743 Fax 315/255-2117 E-mail keeler@cayuga-cc.edu Website www.cayuga-cc.edu; www.telcomcayuga.org Degrees/Certificates Offered: two-year A.A.S. in Audio Production, two-year A.A.S. in Telecommunications Technology, two-year A.A.S. in Radio/TV Broadcasting. Concentrations in Video Production, Broadcast Journalism, Digital and Interactive Media, and Electronic Publishing. Program and Facilities Description: Cayuga is a unit of the State University of New York. The college's facilities include a 32-track audio recording studio, FM radio station, television studio and remote truck, and a digital media lab. Industry internships are required. In-state tuition is \$2,600/year. Residential housing is available.

City College of New York

The Sonic Arts Center, Shepard Hall Room #72, West 140th and Convent Ave., New York, NY 10031 Phone 212/650-8288 Fax 212/650-5428 E-mail sonicart@crow.admin.cuny.edu Website <http://sonic.arts.cuny.edu> Degrees/Certificates Offered: four-year Bachelor's of Fine Arts in Music (Audio Technology concentration). Program and Facilities Description: Seven-studio facility including one 32-track studio, four 24-track studios, one sound lab and one isolation room. In addition, two adjacent soundstages for acoustic recording are available. Six hours of lab time per course, per week.



Appalachian State University

Hayes School of Music, Boone, NC 28608 Phone 828/262-3020 Fax 828/262-6446 E-mail music@appstate.edu Website www.music.appstate.edu/recording Degrees/Certificates Offered: four-year Bachelor's of Science in Music Industry Studies. Also Bachelor's of Music in Performance, Education and Music Therapy. Program and Facilities Description: The Music Industry Studies major features a music recording and production concentration designed to offer undergraduate-level training in the principles of music and sound recording and audio post-production. Other degree concentrations prepare students for careers in arts management, promotions, music merchandising and manufacturing. The Walters-Storky-designed recording studio is a 24-track facility with automated digital mixing, multiple editing workstations and industry-standard peripheral equipment. The Broyhill Music Center also includes two performance halls, an opera studio, MIDI studio, computer labs, a music library, rehearsal halls and practice rooms. Off-campus music industry internships contribute to the experience and career preparation students receive at ASU.

Art Institute of Philadelphia

1622 Chestnut St., Philadelphia, PA 19103 Phone 215/567-7080 Fax 215/246-3339.

Finger Lakes Community College

4355 Lakeshore Dr., Canandaigua, NY 14424 Phone 585/394-3500 Fax 585/394-5005 E-mail admissions@snfyllcc.fingerlakes.edu Website www.fingerlakes.edu Degrees/Certificates Offered: two-year A.S. Music Recording Technology degree. Program and Facilities Description: The recording facility contains two recording rooms and a spacious control room. Single instruments to a full symphony orchestra can be accommodated in the 2,000-plus-square-foot recording room. Installed in the control room are a Mackie Digital 8-Bus console and 24 tracks of Tascam DA-88s. Editing and mastering are done on hard disk via Mark of the Unicorn 2408 using Samplitude Studio. Final mixes can be recorded onto DAT, MD or CD-RW.

Five Towns College

305 North Service Rd., Dix Hills, NY 11746 Phone 631/424-7000 Fax 631/424-7008 E-mail admissions@ftc.edu Website www.fivetowns.edu Degrees/Certificates Offered: Bachelor's of Music in Jazz/Commercial Music, with concentrations in performance, composition/songwriting, musical theater, audio recording technology, music business and video music. Bachelor's degree program in Music Education. Bachelor's of Professional Studies (B.P.S.) Degree program in Business Management, with concentrations in audio recording technology, music business, video arts and theater arts. Program and Facilities Description: The College is equipped with eight, 16, 24 and 48-track world-class recording studios, as well as a television-production facility and soundstages of various sizes. The Dix Hills Center for the Performing Arts has been described as "acoustically perfect." The Five Towns College library consists of over 30,000 print and nonprint materials and a significant collection of recorded music.



Full Sail Real World Education, Recording Arts

3300 University Blvd., Winter Park, FL 32792 Phone 800/226-7625 E-mail admissions@fullsail.com Website www.fullsail.com Degrees/Certificates Offered: Associate of Science Degrees in Recording Arts, Show Production and Touring, Film, Game Design and Development, Digital Media and Computer Animation. Program and Facilities Description: Full Sail offers hands-on training in a state-of-the-art, 60-plus-studio multimedia complex, anchored by multiple professional recording studios featuring two Amek 9098is, two SSL 9000 Js, AMS/Neve Capricorn, two Digidesign Pro Control consoles, as well as many others. The Recording Arts curriculum includes courses in multimedia audio, recording and mixing consoles, audio post-production, advanced workstations and session recording. Career-placement assistance is provided, and financial aid is available to those who qualify.



Future Media Concepts

305 E. 47th St., New York, NY 10017 Phone 877/362-8724 Fax 212/888-7531 E-mail info@fmctraining.com Website www.FMCtraining.com Degrees/Certificates Offered: Manufacturer's Certificate of Merit. Courses range from three-day introductory courses to 10-day Master Classes. Program and Facilities Description: Future Media Concept Inc.'s (New York, Boston, Philadelphia, Washington, D.C., Miami and Orlando) premier digital media training center provides a complete range of manufacturer-authorized training in all areas of digital media, including nonlinear editing, sound design, Web design and programming, video streaming, DVD authoring, 3-D animation, compositing and desktop publishing.

Quality is monitored by the software manufacturer to ensure the highest level of training. FMC trainers are certified, award-winning professionals. FMC leads the industry with small class size, state-of-the-art equipment, weekday and weekend flexible schedules, and a 100% satisfaction guarantee. FMC is an authorized training center for Avid, Apple, Softimage, Adobe, Discreet, NewTek, Macromedia, Boris, Sony, Sonic, Quark, DaVinci and Digidesign. Future Media Concepts is currently the exclusive Digidesign-authorized pro school in the northeast. FMC offers the entire range of authorized Pro Tools courses and administers the certification exams leading to the prestigious Pro Tools Operator and Pro Tools expert.



Guilford Technical Community College

Entertainment Technology Program, 601 High Point Rd., Jamestown, NC 27282 Phone 336/334-4822 x2265 Fax 336/819-2038 E-mail dupreet@gtcc.cc.nc.us Website <http://webster.gtcc.cc.nc.us/faculty/et/index.htm> Degrees/Certificates Offered: two-year A.A.S. in Entertainment Technology-Sound Engineering, two-year A.A.S. in Entertainment Technology-Concert Sound & Lighting, two-year A.A.S. in Entertainment Technology-Management, two-year A.A.S. in Entertainment Technology-Performance, and various subject-specific certificates and one-year diplomas. Program and Facilities Description: We currently have three studios featuring both digital and analog equipment where students receive ample "hands-on" time. Consoles include a Sony DMX-R100, Mackie D8B, Soundcraft Ghost and a Yamaha M30#0. We have four Tascam MX-2424 systems for multitrack recording. Our music lab has Mac G4s, Digi 001 interfaces and Roland keyboards. We will be moving into a new facility August 2003 that features five studios and two live performance venues by the Walters-Stork Design Group.



Hampton University

Department of Music, Hampton, VA 23668 Phone 757/727-5237 Fax 757/727-5084 E-mail robert.ransom@hamptonu.edu Degrees/Certificates Offered: four-year B.S. in Music with an emphasis in Music Engineering Technology. Program and Facilities Description: The Music Engineering program is

designed for students who desire a career in audio engineering, music recording, audio equipment design, sound reinforcement, broadcasting, audio sales or studio maintenance. Students can complete this program, including an internship, in four years. Students who are admitted to this program must have an applied instrument, voice, trumpet, strings, etc.



Harris Institute for the Arts

118 Sherbourne St., Toronto, Ontario, Canada M5A 2R2 Phone 416/367-0178 Fax 416/367-5534 E-mail harrisinstitute@rogers.com Website <http://harrisinstitute.com> Degrees/Certificates Offered: one-year diploma. Programs in Recording Arts Management (RAM) and Producing/Engineering Program (PEP). Program and Facilities Description: Eighty-four courses relating to the business, technical and creative aspects of the music industry. Faculty includes 54 music industry leaders. The 16,000-square-foot facility includes Pro Tools in the audio post-production suite, Logic Audio in the MIDI/multitrack suite and 24-track digital multitrack in the music recording control room.



Institute of Audio Research

64 University Place, New York, NY 10003 Phone 212/777-8550; 800/544-2501 Fax 212/677-6549 E-mail iarny@aol.com Website www.audioschool.com Degrees/Certificates Offered: diploma in Audio Recording and Production, plus Bachelor's Degree credit at participating universities and colleges. Program and Facilities Description: Intensive nine-month program exposes the student to every facet of state-of-the-art audio and recording technology. Program features digital audio and digital music production, analog and digital recording and mixing, signal-processing technologies, audio post-production, MIDI applications, music business, digital audio workstation operations. Equipment features Mac-based platform (iMacs and G4s) running on OS 9/10, Pro Tools, Digital Performer, Reason. New all-digital studio with Sony DMX-R100 dual consoles. 18,000-square-foot facility in the heart of Greenwich Village. Professional studio internships and graduate-placement assistance. Licensed by NYS Education Department, approved for veterans training, accredited by ACCSCT. Financial aid for eligible students.

Lebanon Valley College of Pennsylvania

Department of Music, Annville, PA 17003 Phone 717/867-6285 Fax 717/867-6390 E-mail hill@lvc.edu Website www.lvc.edu Degrees/Certificates Offered: four-year Bachelor's of Music in Music Recording Technology and B.S. in Music Business. Program and Facilities Description: LVC combines a strong, traditional music curriculum with industry-related courses and experiences. Studies include traditional and jazz theory, history, performance, studio production techniques, digital audio recording and editing, MIDI, post-pro-

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Miami-Dade Community College

School of Film and Video, 11380 N.W. 27th Ave., Miami, FL 33167 Phone 305/237-1185 Fax 305/237-1367 Website www.mdcc.edu/dfvbeta Degrees/Certificates Offered: Associate Science Degree in Radio, Television, Broadcast Programming; Associate Science Degree in Film Production; Certificate in Television Production; Associate Arts Degree in Mass Communication. Program and Facilities Description: The program is designed for students who intend to seek employment in radio, television and film production. The curriculum provides introductory and advanced courses. It stresses hands-on equipment used in both the radio, television and film laboratories. Students have access to high-end cameras, editing suites and video graphics animation facilities, and complete portfolio-quality production.

McGill University

Faculty of Music, 555 Sherbrooke St. West, Montreal, Quebec, Canada H3A 1E3 Phone 514/398-4535 Fax 514/398-8061 E-mail wieslaw@music.mcgill.ca Website www.music.mcgill.ca/mmt Degrees/Certificates Offered: two-year Master's of Music Degree in Sound Recording; Ph.D. Degree. Program and Facilities Description: The graduate sound recording program combines practical and theoretical training in studio techniques, microphone selection and placement, digital sound processing and related subjects. Also included are technical ear training to improve auditory perception and hands-on experience working with musicians, ranging from solo performers to full symphony orchestras. Three fully equipped control rooms, four performance venues, three post-production editing studios, a separate four-studio suite for electro-acoustic music, multichannel audio research lab and two computer labs.

Middle Tennessee State University

PO Box 21, Murfreesboro, TN 37132 Phone 615/898-2578 Fax 615/898-5682 E-mail record@mtsu.edu Website www.mtsu.edu/~record Degrees/Certificates Offered: Bachelor's of Science in Recording Industry with two emphasis choices: Production and Technology or Music Business. Program and Facilities Description: The curriculum includes 43 courses covering all aspects of the industry. Minor options in Music, Electronics, Business Administration, Entrepreneurship, Marketing, Film Studies, Computer Science, Electro-Acoustics, Theatrical Design, Mass Communication and Entertainment Technology. Facilities include three studios, all with automated consoles and 24-track digital and analog recorders. One studio is equipped with 5.1 surround sound mixing. Facilities also include hard disk/post-production studio, MIDI lab, Tascam digital audio lab, maintenance lab and 5.1-channel screening room.

Musitechnic Educational Services Inc.

1717 Rene-Levesque East, Ste. 440, Montreal, Quebec, Canada H2L 4T3 Phone 514/521-2060 Fax 514/521-5153 E-mail in fo@musitechnic.com Website www.musitechnic.com Degrees/Certificates Offered: Computer-Assisted Sound Design, one year; Attestation of Collegial Studies. Program and Facilities Description: The program is designed to familiarize students with computer-assisted music technology. A thorough exploration of the technical and artistic facets of current hardware and software permits students to create, perform and record artistic projects using the latest technological tools. Moreover,



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One Education Dr., Garden City, NY 11530 Phone 516/572-7446 Fax 516/572-9791 E-mail musoff@sunynassau.edu Website www.sunynassau.edu Degrees/Certificates Offered: one-year certificate in Studio Recording Technology. Program and Facilities Description: This three-semester program is designed to introduce students to music and recording technology, provides a broad perspective of the music industry and acquaints students with musical structures (both intellectually and aurally). Technical skills and internship training will be acquired in a professional recording studio (at an off-campus location). The program is designed for those wishing to establish independent recording studios. It can also prepare students for degree programs that enable them to gain entry-level positions in the recording industry.

New England Institute of Art & Communications

10 Brookline Place West, Brookline, MA 01721 Phone 800/903-4425 E-mail lehmann@au.edu Website www.aine.artinstutes.edu Degrees/Certificates Offered: Associate of Science, two years. Program and Facilities Description: Intense two-year program of to prepare students for jobs in audio production. Courses of study include multitrack recording, live sound reinforcement, studio maintenance, audio-for-video, MIDI, acoustics and music production. Three 24-track studios (SSL 6000, Trident Series 80 5.1, Soundcraft DC 2020), two audio post-production suites, MIDI lab and maintenance workshop. Emphasis on internships and job placement.

New York University

School of Education, Department of Music and Performing Arts Professions, 35 West 4th St., Room 777, New York, NY 10012-1172 Phone 212/998-5422 Fax 212/995-4043 E-mail musictech.grad.info@nyu.edu Website www.education.nyu.edu/music Degrees/Certificates Offered: four-year B.A. in Recording Arts; two-year certificate in Music Business; four-year Bachelor's of Music; two-year Master's of Music in Music Technology. Program and Facilities Description: NYU's premier Music Technology program teaches composers, performers, recording engineers and others to use tools of technology to realize their ideas. The program's breadth supports applications to film scoring, multimedia, computer music, tonmeister studies, interactive performance, and collaborations involving approach supports research and artistic production around the world. Facilities include 12 sophisticated recording and computer music studios. Special programs: Scoring for Film and Media, Tonmeister Studies (summer only) and internships.

Northeastern University

Department of Music, 351 Ryder Hall, Boston, MA 02115 Phone 617/373-2440 Fax 617/373-4129 E-mail ljankian@lynx.neu.edu Website www.music.neu.edu Degrees/Certificates Offered: four-year B.S. in Music Industry; four-year B.S. in Music Technology; four-year B.A. in Music Literature and Performance; four-year B.S. in Multimedia Studies.

NY Institute of Forensic Audio

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thenticity certification, Audio Authenticity certification, Voice Identification. Program and Facilities Description: Fully equipped lab that features the Avid Forensic workstation which enables hands-on experience for all participants. Audio enhancement and authenticity, video enhancement and authenticity, voice identifications are all offered. Evidence procedures, legal questions and courtroom testimony related to the above specialties will be discussed.

NYC College of Technology

Entertainment Technology Department, 300 Jay St., Room V411, Brooklyn, NY 11201 Phone 718/260-5588 Fax 718/260-5591 E-mail _dsmith@nycct.cuny.edu Website www.citytech.cuny.edu/academics/enttech/home.htm Degrees/Certificates Offered: Bachelor's of Technology (four-year full degree) and Certificate in Sound, Lighting, Scenery or Show Control (15 credits). Program and Facilities Description: City Tech's hands-on Entertainment Technology program focuses on sound for live entertainment: concerts, theater, theme parks and corporate events. We feature low tuition and world-class faculty. Our location in the heart of the live entertainment world offers students ample professional opportunities in addition to in-school production work. Our state-of-the-art labs feature \$1.5 million of new equipment, including Apogee Sound, Dataton, EAW, Crest, Crown, Level Control Systems, Mackie, Medialon, Meyer Sound, Richmond Sound Design, Stage Research and TC Electronics.

Ocean County Vocational Technical Schools

Audio Recording for Electronic Media Career & Technical Institute NAWC, Lakehurst, NJ 08733-1125 Phone 732/657-4000 Fax 732/657-4500 E-mail Dbourne@mail.ocvts.org Degrees/Certificates Offered: one- and two-year Audio Engineering certificate. Program and Facilities Description: This program was started three years ago and was offered to high school and post-secondary students—the first one of its kind offered at the high school level in the New Jersey. Four-hundred-fifty hours per year, emphasis on hands-on recording by students. Upgraded program facilities include three control rooms (two 24-track MDM and one hard disk-based). Combined with the new Ocean County Vocational Tech Schools Performing Arts Academy.

Omega Recording Studios School of Applied Recording Arts and Sciences

5609 Fishers Lane, Rockville, MD 20852 Phone 301/230-9100 Fax 301/230-9103 E-mail school@omegastudios.com Website www.omegastudios.com Degrees/Certificates Offered: Five certificate programs nationally accredited by ACCSCT, approved by the Maryland Higher Education Commission and approved for veterans' educational benefits. The school is also an Avid-authorized education center. Program and Facilities Description: The Omega Studios School functions within the four-studio Omega Recording Studios complex, offering five comprehensive programs, including Recording Engineering and Studio Techniques, Electronic Music Synthesizers and MIDI, Sound Reinforcement for Live Performance, Audio Production Techniques (featuring Pro Tools operator certification), and Essentials of Music Business. Call 800/93-OMEGA for more information on class schedules and financing.

Ontario Institute of Audio Recording Technology

502 Newbold St., London, Ontario, Canada N6E 1K6 Phone 519/686-5010 Fax 519/686-0162 E-mail inquiry@oiart.org Website www.oiart.org Degrees/Certificates Offered: one-year, college-level diploma in Audio Recording Technology.



Program and Facilities Description: North America's first and longest-running integrated immersion program (since 1983). A full-time faculty and a 5:1 student/instructor ratio allow well-qualified students from around the world to thrive on creative development while acquiring a genuine skill set. Within five studios equipped with professional-level gear, students learn problem-solving through signal flow, in addition to how and why things work. The 1,300-plus hours are all in-studio with more than 50% dedicated to student hands-on.

Peabody Institute of Johns Hopkins University

1 East Mount Vernon Place, Baltimore, MD 21202 Phone 410/659-8100 x8136 Fax 410/659-8102 E-mail apk@peabody.jhu.edu Website www.peabody.jhu.edu/recording-arts Degrees/Certificates Offered: five-year Bachelor's Degree in Recording Arts, two-year Master's Degree in Audio Recording and Acoustics. Program and Facilities Description: Comprehensive math/science/music-based degrees in recording arts. Fully automated digital facilities. See Website for additional information.

Recording Arts Canada, Ontario

PO Box 11025, 984 Hwy. #8, Stoney Creek, Ontario, Canada L8E 5P9 Phone 888/662-2666 Fax 905/643-7520 E-mail admissions@recordingarts.com Website www.recordingarts.com Degrees/Certificates Offered: one-year Audio Engineering and Multimedia Production diploma. Program and Facilities Description: Recording Arts Canada offers students the opportunity to learn and work in a creative and progressive environment. By studying in one of the best-equipped audio schools, you will learn the skills and technologies about audio, music and multimedia production that professionals use every day. Our internationally renowned facilities feature classic Neve recording consoles. We provide sophisticated technology, quality theoretical instruction and extensive practical activity within a small-group format.

Recording Arts Canada, Quebec

34 Chemin des Ormes, Ste-Anne-des-Lacs, Quebec, Canada J0R 1B0 Phone 514/224-8363 Fax 514/224-8064 Website www.sympatico.ca/inst.enreg Degrees/Certificates Offered: one-year diploma programs in Audio Production, Computer-Assisted Sound Design. Program and Facilities Description: A private college offering two collegiate programs of study in audio production and sound design. School-owned, world-class facilities with three classic Neve consoles and all of the latest digital and multimedia tools from Digidesign, Avid, Focusrite, Adobe, Director, etc. Located in the beautiful Laurentian Mountains, 40 minutes north of Montreal.

SAE Institute of Technology

269 W. 40th Street, 2nd Flr., New York, NY 10018 Phone 212/944-9121 Fax 212/944-9123 E-mail saeny@sae.edu Website www.sae.edu Degrees/Certificates Offered: nine-month/18-month Audio Technology Diploma (full time/part time), nine-month Multimedia Producer Diploma (full time). Program and Facilities Description: SAE Institute of Technology is the largest audio and multimedia institute in the world. Our students have the advantage of over 25 years of audio and



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Website www.selectsound.com Degrees/Certificates Offered: There are six New York State-accredited Recording Technologies programs. Each program is 2 weeks and three credits. Program and Facilities Description: Select Sound Studios is a full-service recording facility specializing in education. The Recording Technologies program has been taught for three decades. Four production rooms offer students the opportunity to work in 24-track analog studios, Pro Tools TDM studios, a MIDI suite and a mastering suite. Topics include the history of recording, physics of sound, studio acoustics, the recording chain, microphone techniques, operation of tape recorders and mixing consoles, and Pro Tools native and TDM systems. The programs are designed to give students hands-on experience. New for this year is a personnel-placement program.

Sheffield Institute for the Recording Arts

13816 Sunnybrook Rd., Phoenix, MD 21131 Phone 800/660-9519; 410/628-7260 Fax 410/628-1977 E-mail institute@sheffieldav.com Website www.sheffieldav.com Degrees/Certificates Offered: certificate approved by Maryland Higher Education Commission. AudioWorks Program: 290 clock hours/full- or part-time Audio Engineering program. VideoWorks Program: 244 clock hours/full- or part-time Video Production program. TechWorks Program: 380 clock hours/full- or part-time Systems Integration, Installation and Maintenance program. Program and Facilities Description: Classes taught at Sheffield Audio/Video Productions, one of the mid-Atlantic region's finest recording and video-facilities. AudioWorks courses include three levels of recording engineering, MIDI, nonlinear digital audio (Pro Tools), live sound/remote recording. VideoWorks courses include camera, lighting, nonlinear digital video (Avid). TechWorks courses include basic electronics, test equipment/signal identification, cable construction, installation, maintenance. Hands-on learning featuring the finest professional equipment such as SSL console and Avid editing systems. Call for brochure/details.

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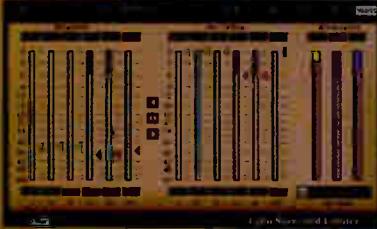
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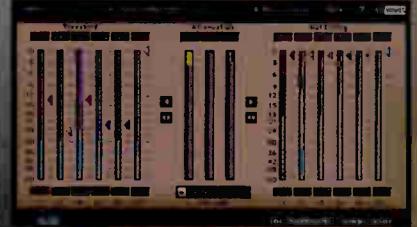
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Audio Education Programs

Eastern Schools



Shenandoah University

1460 University Dr., Winchester, VA 22601 Phone 540/665-5567 Fax 540/665-5402 E-mail goneill@su.edu Website www.su.edu Degrees/Certificates Offered: Bachelor's of Music, Commercial Music emphasis. Program and Facilities Description: Shenandoah University is located in a new state-of-the-art facility featuring an SSL 4000 G Plus console with automation. Students receive hands-on training and experience by recording over 300 concerts, student and faculty recitals, along with internal and external projects every year. In addition to the SSL, we have world-class mic preamps, processing gear and a large selection of professional microphones. Balancing out our program are two MIDI/editing suites where students use software programs such as Pro Tools 24, Cubase VST and Cakewalk Pro Audio.

Southeast Pro Tools Training Center

1926 NE 154th St., North Miami Beach, FL 33162 Phone 888/277-0457 E-mail info@protoolstraining.com Website www.protoolstraining.com Degrees/Certificates Offered: Digidesign Pro Tools Operator Certification-Music, Digidesign Pro Tools Operator Certification-Post-Production, Digidesign Pro Tools Expert Certification-Music, Digidesign Pro Tools Expert Certification-Post-Production. Program and Facilities Description: We are the premier Digidesign-certified pro school with locations in Miami, Nashville and Texas. We offer all levels of Pro Tools training, including Operator and Expert certification. Our facilities are outfitted with Pro Tools HD, Pro Control/Control 24 boards and a host of other pro audio hardware. Our classes are intense and condensed to fit the professional schedule. All classes are taught by Digidesign-certified teachers with significant teaching and engineering experience.

State University of New York College at Fredonia

1146 Mason Hall, Fredonia, NY 14063 Phone 716/673-4634 Fax 716/673-3154 E-mail gottlinger@ait.fredonia.edu Website www.fredonia.edu/som/srt Degrees/Certificates Offered: four-year B.S. in Sound Recording Technology. Program and Facilities Description: Program operated from within the School of Music. Accredited by NASM. Modeled after European Tonmeister training. Competence in playing a musical instrument and in natural sciences must be demonstrated through scheduled audition. High placement rate: Internships at leading facilities are available on a regular basis. Five studios, including 24-track analog and digital facilities, MIDI/sampling labs. Additional classes taught by professionals. Students receive a minimum of 650 hours in studio experience.



Trebas Institute, Ontario

149 College St., Toronto, Ontario, Canada M5T 1P5 Phone 416/966-3066 Website www.trebas.com Degrees/Certificates Offered: one-year diploma programs in Audio Engineering, Recorded Music Production, Music Business Administration, Film/Television Production, New-Media Development and 3-D Animation. B.A. Degree in Sound Technology (two years, following one-year diploma in Audio Engineering) in partnership with the Liverpool Institute for Performing Arts. Admission to B.A. program highly competitive. Program and Facilities Description: Established in 1979 to help students acquire knowledge and develop skills and professionalism for entry into fields of music business, audio, record production, film/TV production, post-production, interactive multimedia and computer animation. Outstanding instructors. High-tech studios and labs. Focus on preparing grads for real-world careers. Government loans. Internships. Lifetime national job search assistance. Grads with major entertainers, studios, companies worldwide. Resource center. Authorized training center for Cubase and Macromedia.



Trebas Institute, Quebec

451 Saint Jean St., Montreal, Quebec, Canada H2Y 2R5 Phone 514/845-4141 Website www.trebas.com Degrees/Certificates Offered: one-year diploma programs in Audio Engineering, Recorded Music Production, Music Business Administration, Film/Television Production, New-Media Development and 3-D Animation. B.A. Degree in Sound Technology (two years, following one-year diploma in Audio Engineering) in partnership with the Liverpool Institute for Performing Arts. Admission to B.A. program highly competitive. Program and Facilities Description: Established in 1979 to help students acquire knowledge and develop skills and professionalism for entry into fields of music business, audio, record production, film/TV production, post-production, interactive multimedia and computer animation. Outstanding instructors. High-tech studios and labs. Focus on preparing grads for real-world careers. Government loans. Internships. Lifetime national job search assistance. Grads with major entertainers, studios, companies worldwide. Resource center. Authorized training center for Cubase and Macromedia. Offered in French or English.

Unity Gain Recording Institute

1953 Ricardo Ave., Fort Myers, FL 33901 Phone 239/332-4246 Fax 239/332-4246 E-mail aiannucci@unitygain.com Website www.unitygain.com Degrees/Certificates Offered: certificate of graduation upon completion of each 48-week program. Program and Facilities Description: The Audio



Recording Comprehensive program and the Advanced Techniques in Audio Recording are two four-level programs that provide over 250 hours of hands-on recording. Class size is limited, providing a semi-private learning environment in two state-of-the-art recording studios. Students record 20 musical acts on analog and digital formats, utilizing MIDI, direct-to-disk recording and CD production. Call or e-mail for a school catalog.

University of Hartford

College of Engineering, 200 Bloomfield Ave., West Hartford, CT 06117 Phone 860/768-4792 Fax 860/768-5073 E-mail celmer@mail.hartford.edu Website uhavx.hartford.edu/acoustics Degrees/Certificates Offered: B.S. Engineering (B.S.E.), B.S. Mechanical Engineering, Optional EE minor. Program and Facilities Description: There are two ways to incorporate acoustics into an undergraduate engineering degree: Acoustics and Music B.S.E. program, which combines an engineering degree program emphasizing acoustics and vibrations with course work at the Hartt School of Music; and the Mechanical Engineering B.S.M.E. with Acoustics concentration program. Graduates have been employed at Bose Loudspeakers, QSC Amplifiers, Steinway & Sons, Lucas Film-THX Sound and numerous acoustical consulting firms or graduate schools in acoustics. Anechoic chamber, B&K dual-channel FFT/RTAs, Modal Analysis/CADP2 software, DAT, portable SLMs, three studios with four, eight and 16-track analog/digital recording, Pro Tools.

University of Maine at Augusta

46 University Dr., Augusta, ME 04330 Phone 207/621-3267 E-mail richard@mail.caps.maine.edu Website www.uma.maine.edu/academics/ukadjazz&contemporarymusic.html Degrees/Certificates Offered: Bachelor's of Music in Jazz and Contemporary Music (audio concentration). Program and Facilities Description: UMA has the only music program in Maine with a state-of-the-art recording studio. Recording commercial music and advertisements is a significant part of the music industry in Maine. Our internships are a student's best link to employment. This concentration integrates the studio into other music concentrations.



University of Massachusetts-Lowell

Sound Recording Technology, One University Ave., Lowell, MA 01854 Phone 978/934-3850 Fax 978/934-3034 E-mail william_moylan@um.edu Website www.uml.edu/dept/music/srt Degrees/Certificates Offered: Bachelor's of Music in Sound Recording Technology. Program and Facilities Description: The primary program prepares students for production-related careers in the recording industry through studies in music, EE, computer science, math and physics, and a minimum of nine courses in the art and technology of recording. SRT minors prepare students for technology-devel-

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University of Memphis

Music Industry Program, 106 Communication Fine Arts Building, Memphis, TN 38152 Phone 901/678-2559 Fax 901/678-5119 E-mail jwcline@memphis.edu Website <http://memphis.music.edu> Degrees/Certificates Offered: Bachelor's of Music in Music Industry with concentrations in Recording Technology, Music Business. Program and Facilities Description: Programs stress thorough understanding of fundamental concepts, yet place equal emphasis on developing student's ability to adapt to new practices, technologies and creative directions. Instructors actively involved in industry. Studio B extensively renovated and now features an AMS/Neve Libra digital console and improved acoustics. Students enjoy generous lab access where hands-on training is stressed. Memphis community offers diverse cultural opportunities, rich internship possibilities. A commitment to personal attention and quality instruction requires enrollment to be limited. NASM accredited.

University of Miami

School of Music, PO Box 248165, Coral Gables, FL 33124 Phone 305/284-2241 Fax 305/284-6475 E-mail kmoses@miami.edu Website www.music.miami.edu Degrees/Certificates Offered: Bachelor's of Music in Music Engineering with minor in Electrical Engineering, Bachelor's of Music in Music Engineering with minor in Computer Science, Master's of Science in Music Engineering. Program and Facilities Description: The Music Engineering program accepts undergraduate musicians who desire careers in music recording, audio engineering, audio equipment hardware and software design, sound reinforcement and broadcasting. By combining music and music engineering studies with a minor in electrical engineering or computer science, students enjoy diverse professional opportunities. Graduate students who have completed their undergraduate electrical engineering degree engage in research in DSP programming, psycho-acoustics and synthesis. Our facilities and faculty are known for their excellence.

University of New Haven

Music and Sound Recording Program, 300 Orange Ave., West Haven, CT 06516 Phone 203/932-7101 Fax 203/931-6097 E-mail mkaloyanides@newhaven.edu Website www.newhaven.edu Degrees/Certificates Offered: four-year B.A. in Music and Sound Recording; four-year B.S. in Music and Sound Recording; four-year B.A. in Music Industry; four-year B.A. in Music; minor in Multimedia Authoring. Program and Facilities Description: The Music and Sound Recording programs instruct students in three interrelated areas: music history, theory and aesthetics; musicianship; and sound recording methodology and technique. Music Industry adds courses in copyright law, contracts, accounting, marketing and management. The Multimedia curriculum integrates graphic design, audio production and video. The new professional recording facility features four, eight, 16 and 40-track studios and workstations, as well as a digital mixing room and multimedia studio.

University of North Carolina at Asheville

Music Department, One University Heights, 024 Lipinsky Hall, CPO #2290, Asheville, NC 28804 Phone 828/251-6432 Fax 828/253-4573 E-mail musica@unca.edu Website www.unca.edu/music Degrees/Certificates Offered: four-year B.S. in Music Technology, four-year B.A. in Music with a concentration in Jazz Studies, B.A. in Music (general music studies). Program and Facilities Description: The UNCA Music Technology



program was established in 1982. The recording facilities include two multitrack studios (both with digital and analog recording equipment), which houses a variety of consoles, microphones, signal processors, Pro Tools workstations, etc. The electronic music laboratory houses various analog and digital synthesizers, samplers, as well as a Moog Therman, etc. Software includes Acid Pro, Phi-Music, Sonar, MAX, Csound, etc., running on PCs and Macs.



University of South Carolina

School of Music, 813 Assembly St., Columbia, SC 29208 Phone 803/576-5639 Fax 803/777-6508 E-mail jfrancis@mozart.sc.edu Website www.music.sc.edu/recording Degrees/Certificates Offered: Bachelor's of Music in Music Engineering technology (under development). Program and Facilities Description: Current curricula includes more than 10 classes in sound recording (pop and classical recording, mixing techniques, workstation editing and audio for video) and music technology (synthesis, signal processing, sequencing and computer music). Facilities include a large recording studio with a 48-input console, 24-track digital recorder and Pro Tools|HD2 workstation. There is also an 18-station computer music lab and two electronic music/MIDI studios equipped with 24-input consoles, 8-track digital recorders and Pro Tools workstations.

Yale School of Drama

PO Box 208244, New Haven, CT 06520-8244 Phone 203/432-8825 Fax 203/432-1596 E-mail david.budries@yale.edu Website www.yale.edu/drama/academics/sound Degrees/Certificates Offered: three-year M.F.A. in Sound Design and one-year engineering internship. Program and Facilities Description: The Sound Design Program trains eligible applicants in the theory and practice of professional sound design. Coursework covers script interpretation, compositional elements of design, introductory sound design, fundamentals of sound and music technology, advanced problem solving, sound delivery systems, advanced digital sound and music technology, design master class and practical design thesis project. Qualified students will have numerous opportunities to design for student and Yale Repertory productions.

CENTRAL SCHOOLS

Alexander Magazine

14071 Stephens, Suite #A-5, Warren, MI 48089 Phone 877/683-1743 E-mail administrator@alexandermagazine.com Website www.alexandermagazine.com Degrees/Certificates Offered: Recording Institute of Detroit Theory completions for

Pro Audio Specialist, Recording Techniques 1 and Associate Recording Engineer Programs, reducing campus attendance requirement by as much as 75%. Program and Facilities Description: Online program with lessons, reference materials, audio demonstrations and interactive quizzes. Online final exams and certification. Many additional advanced-study articles and postings. Free CD-ROM for high-speed study (U.S. only). Worldwide job/intern-placement assistance. Study for Recording Institute of Detroit and other recording programs.

Aspen Music Festival and School

2 Music School Rd., Aspen, CO 81611 Phone 970/925-3254 Fax 970/925-3802 E-mail school@aspenmusic.org Website www.aspen.com/musicfestival Program and Facilities Description: The Edgar Stanton Audio Recording Institute is an intensive four-week, full-time seminar/workshop. The goal is to provide a background in the basics of audio production and prepare students for a career as a recording engineer. A wide range of recording and guest lecturers are noted representatives of the recording and broadcasting industries. The session is limited to 10 students to ensure maximum individual attention.

Audio Engineering Institute

6610 Buffalo Hills, San Antonio, TX 78256-2330 Phone 210/698-9666 Website www.audio-eng.com Degrees/Certificates Offered: basic and advanced Audio Engineering classes, each lasting 10 weeks. Program and Facilities Description: Classes are taught by Gold and Platinum record winner Marius Perron III. Students are trained with part hands-on equipment, part lecture. Basic class covers theory, microphones, consoles, tape recorders, live band recording and mixing. Advanced class covers signal processors, hard disk recording, MIDI, synthesizers and samplers, drum machines and sequencers, audio-for-video, computer-assisted mixing, real-time analysis and studio equipment maintenance. The advanced course is structured around an apprentice engineering program for students interested in working as second engineers at studios in San Antonio.



Central Missouri State University

CMSU Dept. of Music, Hudson 108, Warrensburg, MO 64093 Phone 660/543-4530 Fax 660/543-8271 E-mail honour@cmsu1.cmsu.edu Website www.cmsu.edu/music/musichtechnumindex.htm Degrees/Certificates Offered: four-year Bachelor's of Music in Music Technology. Program and Facilities Description: Music technology at CMSU emphasizes audio engineering and musicianship, with experience on both sides of the microphone! The program stresses hands-on learning with multitrack recording/editing studios and a 12-station computer lab. Internships are required. Class sizes are typically between five and 10 students. One average year of tuition is \$1,918 for Missouri residents, \$3,808 for nonresidents. Financial assistance is available for those who qualify.

Cleveland Institute of Music

11021 East Blvd., Cleveland, OH 44106-1705 Phone 216/791-5000 Fax 216/791-1530 E-mail cimadmission@po.cwru.edu Website www.cim.edu Degrees/Certificates Offered: Bachelor's of Music in Audio Recording as a four-year degree or a double major (along with an instrument or Composition major) in five years. Program and Facilities Description: Courses cover digital audio; DSP/editing systems; audio-for-video post-production, surround sound, CD-ROM and Web-based multimedia; microphone techniques; synthesis/sampling; and acoustics. Equipment in-

cludes Tascam DA-98, Pro Tools, Sonic Solutions, Yamaha O2R digital multitrack recording/mixing; Lexicon, TC Electronic, Yamaha, etc.; DSP; Macintosh and Sony computers; Audio-Technica, Neumann, Sennheiser, Schoeps microphones; Millennia Media preamps. Professional faculty features multiple Grammy winner Jack Renner (Telarc International), Dr. Peter D'Antonio (RPG Diffusor Systems), Thomas Knab and Mark Tessi (CIM and Telarc) and Timothy Callahan. Program emphasizes hands-on experience, music and digital media production.

Columbia College Chicago

600 South Michigan, Chicago, IL 60605-1996 Phone 312/482-9068 Fax 312/482-9083 E-mail bkanter@colum.edu Website www.colum.edu Degrees/Certificates Offered: four-year accredited Bachelor's of Arts degree with a major in Sound Technology. Program and Facilities Description: The Columbia College Chicago Sound Program includes extensive course offerings in the fields of music recording, concert sound reinforcement, sound design for video and film, sound contracting and acoustics. Columbia's Audio Technology Center includes multitrack music and voice-over recording and mix studios, film/video post-production suites, digital audio production suites and classroom laboratories for analog/linear and digital/nonlinear production, audio system analysis, and acoustical design and analysis labs.

DePaul University

School of Music, 804 W. Belden Ave., Chicago, IL 60614 Phone 773/325-7444 Fax 773/325-7263 E-mail rbeacraf@wp.post.depaul.edu Website <http://music.depaul.edu> Degrees/Certificates Offered: four-year Bachelor's of Science degree in Music. Program and Facilities Description: The DePaul Sound Recording Technology program is designed to prepare students for a career in the rapidly expanding audio industry. SRT students take classes in analog and digital microelectronics, com-

puter science and calculus, in addition to the standard undergraduate music curriculum. Recording classes and student practicum take place off campus in a 48-track SSL studio where students have access to state-of-the-art equipment. On campus, students develop their skills at Studio DePaul, a fully digital, 24-track facility featuring video, synthesis and surround sound capabilities.

Elmhurst College

190 Prospect, Elmhurst, IL 60126 Phone 630/617-3500 Fax 630/617-3738 E-mail kevin@elmhurst.edu Degrees/Certificates Offered: B.M. in Music Business, B.S. in Music Business, B.M. in Music Education, B.A. in Music. Program and Facilities Description: Elmhurst College is a nationally accredited institution that offers both a B.S. and a B.M. in Music Business. In addition to classwork in music, business and business of music, students get hands-on industry experience through internships, industry speakers and course tours. Resources include a state-of-the-art 24-track digital studio, courses ranging from music theory to MIDI, recently expanded practice and recital facilities, and an artist faculty of over 50. Industry support is provided in the form of scholarships from trade organizations such as NAMM and NARAS, corporate sponsorship, a student chapter of MEIEA and an intern/job bank.

Grand Valley State University

1 Campus Dr., Allendale, MI 49401 Phone 800/748-0246 Fax 616/895-2000 E-mail go2gvsu@gvsu.edu Website www.gvsu.edu Degrees/Certificates Offered: Electrical Engineering with Music minor. Program and Facilities Description: Grand Valley State University has a unique program for students that have the talent and interest to combine engineering and music. This program has the potential for a career that can span the entire audio and music industries from hardware design and manufacturing to performance.



Houston Community College

1060 West Sam Houston Parkway North, Houston, TX 77043 Phone 713/718-5602 Fax 713/718-5640 E-mail scott.gehman@hccs.edu Website www.nwc.hccs.edu/av Degrees/Certificates Offered: two-year AAS degrees in Audio Recording or Film Production. One-year certificates in Audio Recording, MIDI, Film Production, Film Editing or Scriptwriting. Program and Facilities Description: Unlimited hands-on experience via eight fully equipped studios. Studio A: SSL 4048 G Plus with Ultimate and Recall, processors by UREI, Lexicon, Empirical Labs. Studio B: Pro Tools|24 Mix Plus with Control 24. Studio C: Sony 3036 console, 13 Pro Tools stations with Digital Performer, Korg X5 and JV 101C synths. Studio D and E: Alesis X2 consoles, ADATs. Studio F: 2,100-square-foot film soundstage and movie theater. Studio M: Panasonic DA-7, samples and synthesizers by GigaStudio, Akai, Roland, E-mu, Korg, Oberheim. Studio V: Video editors by Avid, Apple, Fast Systems.

Indiana University

School of Music, Bloomington, IN 47405 Phone 812/855-1087 E-mail kstrauss@indiana.edu Website www.music.indiana.edu/som/audio Degrees/Certificates Offered: Associate

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Audio Education Programs

Central Schools

of Science in Audio Technology, and a Bachelor's of Science in Recording Arts. Program and Facilities Description: As part of their coursework, students record performance of the world-renowned IU School of Music, including symphonic, opera, jazz, chamber music and popular music; and complete over 200 hours of individual project time in the multitrack studio. Advanced students serve as engineers for University-sponsored CD projects (over 40 releases to date). Facilities include four performance halls, recording studios, two DAW suites, 24-track and multitrack studio, two maintenance labs and a computing instruction classroom.

International College of Broadcasting

6 So. Smithville Rd., Dayton, OH 45431 Phone 937/258-

8251 Fax 937/258-8714 Website www.icbroadcasting.com

Degrees/Certificates Offered: Associate Degree program in Applied Science of Communication Arts in Television and Radio, Associate Degree program of Applied Science in Video Production/Recording, Audio Engineer Diploma program in Recording Audio Engineering, Diploma Program Broadcasting I. Program and Facilities Description: ICB is a small, private college. Enrollment invitations are based on prospective students touring the facility and demonstrating commitment and desire to be part of the broadcasting and recording fields. Smaller class sizes ensure more individualized attention. Programs offer combined theory and hands-on training.

Madison Media Institute

2102 Agriculture Dr, Madison, WI 53718 Phone 608/663-2000

Fax 608/442-0141 E-mail mmi@madisonmedia.com Website

www.madisonmedia.com Degrees/Certificates Offered: Associ-

ate of Arts in Recording and Music Technology, Associate of Arts in Multimedia Technology, Video Production diploma. Program and Facilities Description: New education facility with over 19,000 square feet of state-of-the-art classrooms, computer labs and studio space. Low student-to-teacher ratios. Classes taught by industry professionals. Hands-on and classroom experience. Accredited. Placement service. Apply early.

Millikin University

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6300 Fax 217/420-6652 E-mail swidenhofer@mail.millikin.edu Website

www.millikin.edu



Musictech College

19 Exchange St. East, St. Paul, MN 55101 Phone 800/594-

9500 E-mail dsandridge@musictech.com Website

www.musictech.com Degrees/Certificates Offered: two-year As-

sociate of Applied Science (AAS) degree in Recording Technology,

AAS Degree in Music with emphasis in Music Production,

and AAS Degrees in Music Performance, Music Business and

Motion Imaging. One-year Diploma programs in Production,

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Audio Education Programs

Western Schools

Fred N. Thomas Career Education Center

2650 Eliot St., Denver, CO 80211 Phone 303/964-3075 Fax 303/964-3004 Degrees/Certificates Offered: Public high school program. Program and Facilities Description: This is a program for junior and senior high school students in the Denver metro area. There are two courses: Audio 1, beginning fundamentals of sound recording; and Audio 2, an advanced production class in which each student makes a CD of a band or artist. Students have access to a 24-track studio with a good complement of outboard gear and microphones.

University of Cincinnati

Conservatory of Music (CCM), PO Box 210096, Cincinnati, OH 45221-0096 Phone 513/556-5462 Fax 513/556-3399 E-mail Michael.Hooker@uc.edu Website www.uc.edu/www/ccm/tdp Degrees/Certificates Offered: B.F.A. in Theater Design and Production, emphasis in theater sound; M.F.A. in Theater Sound Design. Program and Facilities Description: CCM's sound-design programs encompass a broad array of areas within the performing arts. Coursework includes sound technology and production, theater aesthetics, critical listening, music, digital audio, recording, reinforcement and sound design. CCM offers a diverse season of shows including large musicals, operas, dance and dramas. Facilities include three well-equipped theaters, a sound-design studio, and extensive reinforcement and playback equipment. Entrance is by on-site portfolio review.

University of Colorado, Denver

Campus Box 162, PO Box 173364, Denver, CO 80217/3364 Phone 303/556-2727 Fax 303/556-6612 E-mail rprits@carbon.cudenver.edu Website www.cudenver.edu/cam Degrees/Certificates Offered: two-year Master's of Science in Recording Arts, four-year Bachelor's of Science in Music (major in Recording Arts or Music Industry Studies). Nineteen credits, certificate program in Computer Science. Program and Facilities Description: Master's emphasis in Advanced Recording Arts, Audio Pedagogy or Audio Forensics. Bachelor's emphasis in Technology, Music Business or Music Performance. Facilities use two 24-track analog and two 24-track digital control rooms, five performance studios, theater, concert hall, recital hall. Studies of audio sweetening, surround sound and music production. SPARS member, AES Student Section.

University of Michigan

Dept. of Media and Music Technology, 1100 Baits Dr., Ann Arbor, MI 48109-2085 Phone 734/763-7558 Fax 734/763-5097 E-mail dodyblac@umich.edu Website www.music.umich.edu/departments/pat/index.lasso Degrees/Certificates Offered: Bachelor's of Music, Music Technology; Bachelor's of Fine Arts, Music Technology concentration; Bachelor's of Fine Arts, Media Arts with concentrations in Sonic Arts, Visual Arts or Engineering; Bachelor's of Science in Music, Sound Engineering. Program and Facilities Description: The department seeks to advance the aesthetics of technology-based arts through performance, the development of emerging technologies and research. Collaboration and creativity are components of the interdisciplinary study of music, dance, theater, engineering, art and video.

University of Missouri, Kansas City

4949 Cherry St., Kansas City, MO 64110 Phone 816/235-2964 Fax 816/235-5367 E-mail mardikest@umkc.edu Website www.umkc.edu Degrees/Certificates Offered: Master's in Fine Arts (M.F.A.) in Theater Sound Design. Program and Facilities Description: This three-year training program teaches students to create sound scores for the theater through five main com-

ponents: design—interpretation, collaboration and idea development; technical skills—mastering tools of production with 24-track analog and Pro Tools; history—research, text analysis and dramatic history; production—artistic merging of design, history and technical skills through the experiences of numerous and varied productions; and entrepreneurship—study of the business of the profession and career growth.

University of Nebraska, Lincoln

206 Avery Hall, Lincoln, NE 68588-0511 Phone 402/472-2258 Fax 402/472-4732 E-mail kruno@unlinfo.unl.edu Website www.jet.unl Degrees/Certificates Offered: four-year Bachelor's of Journalism degree in Broadcasting. Program and Facilities Description: The College of Journalism and Mass Communications houses the broadcasting department with audio- and video-production facilities and the University's FM radio station, KRNU. Courses are devoted to audio field and studio production as it relates to broadcast/cable operations and audio/video production careers. Extensive digital audio and video gear.

University of Texas

Department of Radio, Television and Film, CMA 6.118, Austin, TX 78712 Phone 512/471-6695 E-mail vmh@mail.utexas.edu Website www.utexas.edu/coc/rtrf Degrees/Certificates Offered: B.S., M.F.A. and Ph.D. Degrees in Radio, Television and Film. Program and Facilities Description: Please see Website.

University of Wisconsin, Oshkosh

Music Department, Recording Technology Program, Oshkosh, WI 54901 Phone 920/424-4224 Fax 920/424-1226 E-mail messner@uwosh.edu Website www.uwosh.edu Degrees/Certificates Offered: Bachelor's of Music with emphasis in Recording Technology. Program and Facilities Description: Students are trained in a 32-track digital, 16-track analog studio, using a 62-channel Total Audio Concepts console with automation, a wide array of signal-processing gear, full video lock, and multitrack hard disk recording and editing. The studio is also tied to its own MIDI lab. Students entering program must audition on primary instrument for entrance acceptance. The final semester of enrollment is spent as an intern at a professional audio facility, with placement throughout the U.S. and Europe available.

Woodland Studios

Engineer Training Program, 1011 Woodland St., Nashville, TN 37206 Phone 615/262-2222 Fax 615/262-5800 Program and Facilities Description: A unique program that offers intense, hands-on training, including basic electronic classes at Nashville Tech, a variety of weekly seminars with industry leaders such as: Tom Clark, Quantegy Tape; Steve Durr, studio designer; and Fred Hill, Neve guru. We accept four students per year. All students work daily on sessions at the position of assistant engineer, supervised by our engineering staff. Some recent projects have included Tonic, Indigo Girls, Days of the New, Robert Cray, Faith Hill, Patty Loveless, Wynonna, Salt-N-Pepa, Johnny Cash and George Jones.

WESTERN SCHOOLS

Alta Center for Communication Arts

9014 N. 23rd Ave., Suite 1, Phoenix, AZ 85021 Phone 888/729-4954 Fax 602/749-5418 E-mail info@thealtacenter.com Website www.thealtacenter.com Degrees/Certificates Offered: Diploma in Digital Audio Recording, a unique program created specifically for project studio owners/engineers/producers and independent musicians. Program and Facilities Description: Our five-week Digital Audio Recording program is an innovative program designed by an award-winning engineer/producer and founder of The Conservatory of Recording Arts & Sciences. Learn all of the professional techniques for high-quality recording (including DVD mastering and production), utilizing current project studio gear and software. Only eight students per class. The Alta Center also offers a diploma program in Multimedia Production, including Computer Animation, Digital Graphics, Video/Audio Production and Website Development.

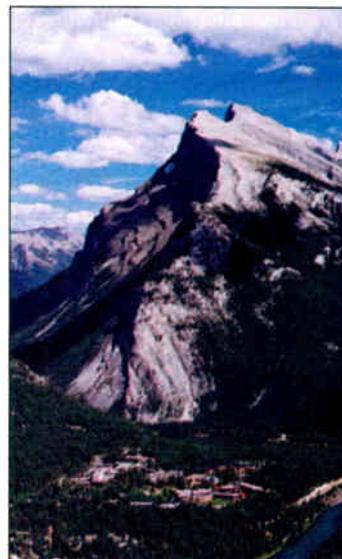


Art Institute of Seattle

Audio Production Department, 2323 Elliott Ave., Seattle, WA 98121-1622 Phone 800/275-2471 Fax 206/269-2471 Website www.ais.edu Degrees/Certificates Offered: two-year Associate of Applied Arts degree in Audio Production. Program and Facilities Description: Program taught by working professionals and consists of (six) 11-week quarters preparing students for entry-level positions with recording studios, post-production houses, multimedia, Web and video-production companies, audio manufacturers and retailers, and AV or live sound reinforcement companies. Facilities consist of four 24-track analog/digital recording studios, a 5.1 surround sound studio, four digital audio workstation rooms, a 25-seat digital audio workstation lab and a 25-seat Pro Tools lab.

Audio Institute of America

Audio Recording School, 814 46th Ave., San Francisco, CA 94115 Phone 415/752-0701 Fax 415/752-0701 E-mail audioint@earthlink.net Website www.audiointstitute.com Degrees/Certificates Offered: Diploma in Recording Engineering. Program and Facilities Description: Home-study course for professional careers and home recording studios. Join our successful working graduates or learn how to build and operate your own home studio. AIA has students in 100 countries around the world. This licensed school specializes in the art of digital and analog recording techniques.



The Banff Centre

Box 1020, Stn. 28, Banff, Alberta, Canada T1L 1H5 Phone 403/762-6180 Fax 403/762-6345 E-mail studios@banffcentre.ca Website www.banffcentre.ca Degrees/Certificates Offered: Audio Assistant and Associate Work/Study programs. One to three terms. Program and Facilities Description: Financial assistance and weekly stipend available. Audio engineers refine their skills in an international, multidisciplinary environment. The audio program runs alongside internationally renowned music programs with prominent faculty and musi-

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cians. Guest audio faculty have included John Eargle, Bob Ludwig, George Massenburg and Dr. Wieslaw Woszczyk. Activities include learning equipment, software and advanced recording techniques, involvement in CD, concert and studio recording, individual research and experimentation, and audio-for-video. Facilities include recital hall with adjoining control room, digital multitrack recording studio, Pro Tools audio-for-video post-production suite, Sonic Solutions editing suite.

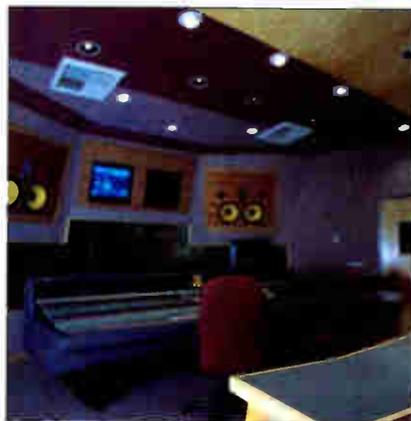
California State University, Chico

Department of Music, Chico, CA 95929-0805 Phone 530/898-5500 Fax 530/898-4082 E-mail kseppanen@oavax.csuchico.edu Website www.csuchico.edu/mus/rccd Degrees/Certificates Offered: four-year B.A. in Music with an option in Recording Arts; four-year B.A. in Music with an option in Music Industry.

California State University, Dominguez Hills

1000 E. Victoria St., Carson, CA 90247 Phone 310/243-3543 E-mail dbradfield@dhvx20.csudh.edu Website http://music1.csudh.edu/Music Degrees/Certificates Offered: four-year B.A. Audio Recording, four-year B.A. Music Technology, certificate Audio Technology. Program and Facilities Description: CSUDH has a fully equipped analog and digital studio in addition to its synthesizer studio. Completely renovated in 1999, the new equipment includes Mackie and Panasonic Digital 5.1

mixing consoles, 48 tracks of DA-98 and ADAT format multitrack recording, Pro Tools and Sonic Solutions DAWs, and hi-res mastering equipment.



Citrus College

1000 W. Foothill Blvd., Glendora, CA 91741 Phone 626/852-8061 Fax 626/852-8063 E-mail info@citrusstudios.com Website www.citrusstudios.com Degrees/Certificates Offered: one-year Vocation certificate in Audio Engineering. Program and Facilities Description: Citrus offers hands-on training in a working studio. The facility centers on two studios with Neve VR and Euphonix CS2000 consoles, with Tascam digital, Studer A827 analog and Pro Tools recorders. Other rooms include and auditorium for live recordings and film scores, a smaller analog studio and a lab with 25 Pro Tools workstations. The curriculum consists of courses in audio engineering, acoustics, live sound, critical listening, digital audio, MIDI and music business.



Conservatory of Recording Arts & Sciences

2300 East Broadway Rd., Tempe, AZ 85282-1707 Phone 800/562-6383 Fax 480/829-1332 E-mail info@crass.org Website www.audiorecordingschool.com Degrees/Certificates Offered: Master Recording Program II. Program and Facilities Description: The MRP-II is a 37-week-long, comprehensive audio engineering program. Classes are limited to 12 students. The Conservatory is the first and most qualified recording school in the world to provide manufacturer certification on Pro Tools. It is also the only program that requires and offers an internship for its students. The curriculum is taught on state-of-the-art gear, including SSL, Neve, Studer, Otari, Focusrite, TC Electronic and Neumann, among others. Financial aid available to those who qualify.

Dallas Sound Lab

School for the Recording Arts, 6305 N. O'Connor Blvd., Suite 119, Irving, TX 75039 Phone 866/498-1122; 971/869-1122 E-mail info@dallas@dallasoundlab.com Website www.dallasoundlab.com Degrees/Certificates Offered: diploma program in Audio Engineering and Studio Techniques, and seminars in Music Business Administration, Audio Engineering for Film and Television Production, and Contemporary Music

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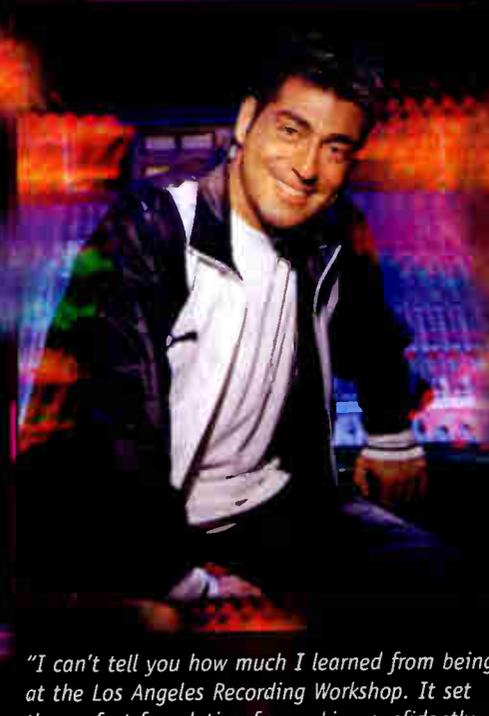
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Audio Education Programs

Western Schools



Theory. Program and Facilities Description: Courses are designed to provide students with extensive "hands-on" training using a powerful list of lab equipment including consoles by SSL, API, Neve, Focusrite, Yamaha and Mackie. Lab sessions are held in the school's 12,000-square-foot multistudio facility. Our instructors are industry professionals who have been chosen for their experience and enthusiasm. Many of our graduates have secured positions in a variety of music/media industries, working with video-production companies, recording studios, television and radio stations, sound reinforcement companies, management agencies and other related media businesses.



Ex'pression Center for New Media

6601 Shellmound St., Emeryville, CA 94608 Phone 510/654-2934 Fax 510/658-3414 E-mail Doreen@xnewmedia.com Website www.expression.edu Degrees/Certificates Offered: 14-month accelerated, total immersion Bachelor's Degree programs in Audio Mixing and Engineering, 3-D Character Animation and Digital Graphic Design. Program and Facilities Description: The Ex'pression Sound Arts Program is uniquely designed to provide students with the knowledge and skills to work in the professional audio community. In addition to sound engineering, students are trained in music theory (reading, writing, composing), acoustics and studio architecture, studio etiquette and psychology, DVD authoring, mastering for 5.1, live sound and even law in music. Students have unparalleled hands-on access to digital and analog studio equipment (e.g., 15-20 sessions at the controls with a live band) and all students are required to do a professional internship. Class sizes are small (capped at 36 in a graduating class) to ensure personalized attention. The program is designed to train students

for careers in music recording engineering, audio post-production for film and television, live sound for theater and concerts, MIDI production, studio design, studio management and DVD authoring. Semesters begin January, March, May, July, September and November of each year. Private financial aid is available to qualified students.

Fullerton College

Music Department, 321 East Chapman Ave., Fullerton, CA 92832-2095 Phone 714/992-7296 Fax 714/992-7327 Website www.fullcoll.edu Degrees/Certificates Offered: A.A. in Music; Certificates in Piano Pedagogy and Recording Production.

KagiMedia.com

903 23rd Ave. S, Seattle, WA 98144 Phone 206/329-7473 E-mail training@kagimedia.com Website <http://kagimedia.com> Degrees/Certificates Offered: self-paced, computer-based training. Program and Facilities Description: Cross-platform, self-paced pro audio training. Each training title is two to 10 hours of high-quality, three to five-minute movies in the popular QuickTime and/or AVI formats. Lessons cover all aspects of configuration, setup and operation of leading software and hardware.

Long Beach City College

4901 East Carson St., Long Beach, CA 90808 Phone 562/938-4309 Fax 562/938-4118 Website www.lbcc.ca.us Degrees/Certificates Offered: A.A. with emphasis in Commercial Music, 10 certificates in Music, Radio or Television—each requires three to five semesters. Program and Facilities Description: LBCC offers job placement, as well as intern positions. Most instructors are active in the professional field. Facilities include seven studios equipped with digital audio and/or analog multitrack, 42 individual MIDI workstations, three camera online video facilities, as well as three offline editing rooms. Studio use is available first semester; all students get hands-on experience during their first semester. Equipment includes ADAT, Fostex DMT, MCI 24-track, Soundcraft, CAD, Sound Workshop, Pro Tools, Music Shop, Vision.



Los Angeles Recording Workshop

5278 Lankershim Blvd., North Hollywood, CA 91601 Phone 818/763-7400 Fax 818/763-7447 Website: www.recordingcareer.com Degrees/Certificates Offered: Nine-hundred-hour Recording Engineer Certificate. Program and Facilities Description: The Los Angeles Recording Workshop is one of the best equipped recording engineer schools on the planet. Our 10 studios include Solid State Logic SL-4000 G-plus, Neve-VR, Pro Tools, five Sony DMX-R100s and the Sony Oxford Digital Console. Financial aid and scholarships are available to those qualified, and dorm housing is also available. Request a school catalog online.

Los Medanos College

2700 East Leland, Pittsburg, CA 94565-5197 Phone 925/439-0200 Fax 925/427-1599 Website www.losmedanos.net Degrees/Certificates Offered: two-year Recording Arts Certificate or Associate Degree. Program and Facilities Description: The most comprehensive community college recording program in the country. Courses in digital and analog multitrack formats, sound reinforcement, jingle production, music business, session producing, employment strategies, MIDI, audio-for-video, digital editing and related subjects. Two well-equipped multitrack studios, 10 MIDI stations.

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Mesa Community College

Studio Recording, 1835 West Southern Ave., Mesa, AZ 85202
Phone 480/461-7273 Fax 480/461-7422 E-mail aseagle@mail.mc.maricopa.edu Website www.mc.maricopa.edu
Degrees/Certificates Offered: Associate of Applied Science degree (ASA) in Music Technology, Studio Recording (approximately two years) or Certificate of Completion (CCL), approximately one year. Program and Facilities Description: Our program includes classes in studio recording, Pro Tools, live sound reinforcement, electronic music (MIDI and digital audio), music business, music theory, electronics and more. Our recording studio has recently taken possession of a Solid State Logic (SSL) recording console. Using digital multitrack recorders, we record with Neumann and AKG microphones and the finest of outboard processing. With a huge two-story studio proper, we're able to record orchestras, big band jazz, choirs and pop music bands.

Mills College

Phone 510/430-2191 Degrees/Certificates Offered: B.A.s can specialize in composition with an emphasis on technology. M.F.A. Degrees in composition can specialize in electronic music and recording media. Program and Facilities Description: Mills College is an undergraduate women's college and a co-educational graduate college. Our studios include 24-track analog (with Dolby SR) and Pro Tools workstation.

MiraCosta College

Music Department, 1 Barnard Dr., Oceanside, CA 92056
Phone 760/757-2121 x6703 E-mail ccoobatis@mcc.miracosta.edu Website www.miracosta.edu/music
Degrees/Certificates Offered: A.A. in Music. Certificates in Recording Arts/Record Production, Computerized Audio Production, Sound Reinforcement, Music Technology and Performance Technician. Program and Facilities Description: We offer programs in commercial music, choral, instrumental and other general transfer-level courses. Two control rooms/studios with digital and analog recording. Pro Tools systems and lots of

state-of-the-art processing equipment. Students are given many opportunities for individual hands-on recording experience. We also have a MIDI/digital recording lab with 25 stations and a Foley lab. Located near the beach in North San Diego County.



Mt. San Jacinto College

1499 North State St., San Jacinto, CA 92583 Phone 909/487-6752 x1577 Fax 909/487-1452 E-mail music@msjc.edu
Degrees/Certificates Offered: Audio Technologies Certificate (18 units), Associate Degree, Audio Technologies. Program and Facilities Description: The MSJC program features both hands-on and theoretical instruction. Plus, the MSJC program uses the same professional equipment as the audio industry with names like Soundcraft, Yamaha, Pro Tools, Lexicon, Otari and QSC. Additionally, we offer both digital and analog recording. The \$2 million facility features five studio floors, three independent control rooms, and computer music lab. California resident enrollment fees are \$11 per unit. Out-of-state fees are higher. Financial aid is available.

Recording Connection

8033 Sunset Blvd., Ste. 4042, Hollywood, CA 90046-2427
Phone 800/295-4433 Fax 310/826-8064 E-mail musicbiz@earthlink.net Website www.recordingconnection.com
Program and Facilities Description: Recording Connection is a 15-year-old accredited program that has a worldwide network of over 5,000 recording studios throughout the United States and Canada. The company signs on new affiliates each month. We provide on-the-job training in major recording studios, record companies, and radio and TV stations. Available in every city or town. Call for free video or CD-ROM.

Sacramento City College

3835 Freepoint Blvd., Sacramento, CA 95822 Phone 916/558-2111 Fax 916/650-2945 E-mail donyng9999@aol.com.

San Diego City College

1313 12th Ave., San Diego, CA 92101 Phone 619/230-2522 Fax 619/338-3518 Website www.sd.ccd.net Program and Facilities Description: See Website.

San Francisco State University

1600 Holloway Ave., San Francisco, CA 94132 Phone 415/338-1787 Website http://beca.sfsu.edu
Degrees/Certificates Offered: Broadcast & Electronic Communication Arts Dept.: B.A. and M.A. in Radio and Television with emphasis in music recording, audio-for-visual media and audio post-production. Music Recording Industry Certificate program offered through College of Extended. www.sfsu.edu. Program and Facilities Description: Fully equipped recording studio with 2-inch analog multitrack, state-of-the-art digital audio workstations and labs for individual work.

Santa Barbara City College

721 Cliff Dr., Santa Barbara, CA 93109-2394 Phone 805/965-0581 Fax 805/963-7222.

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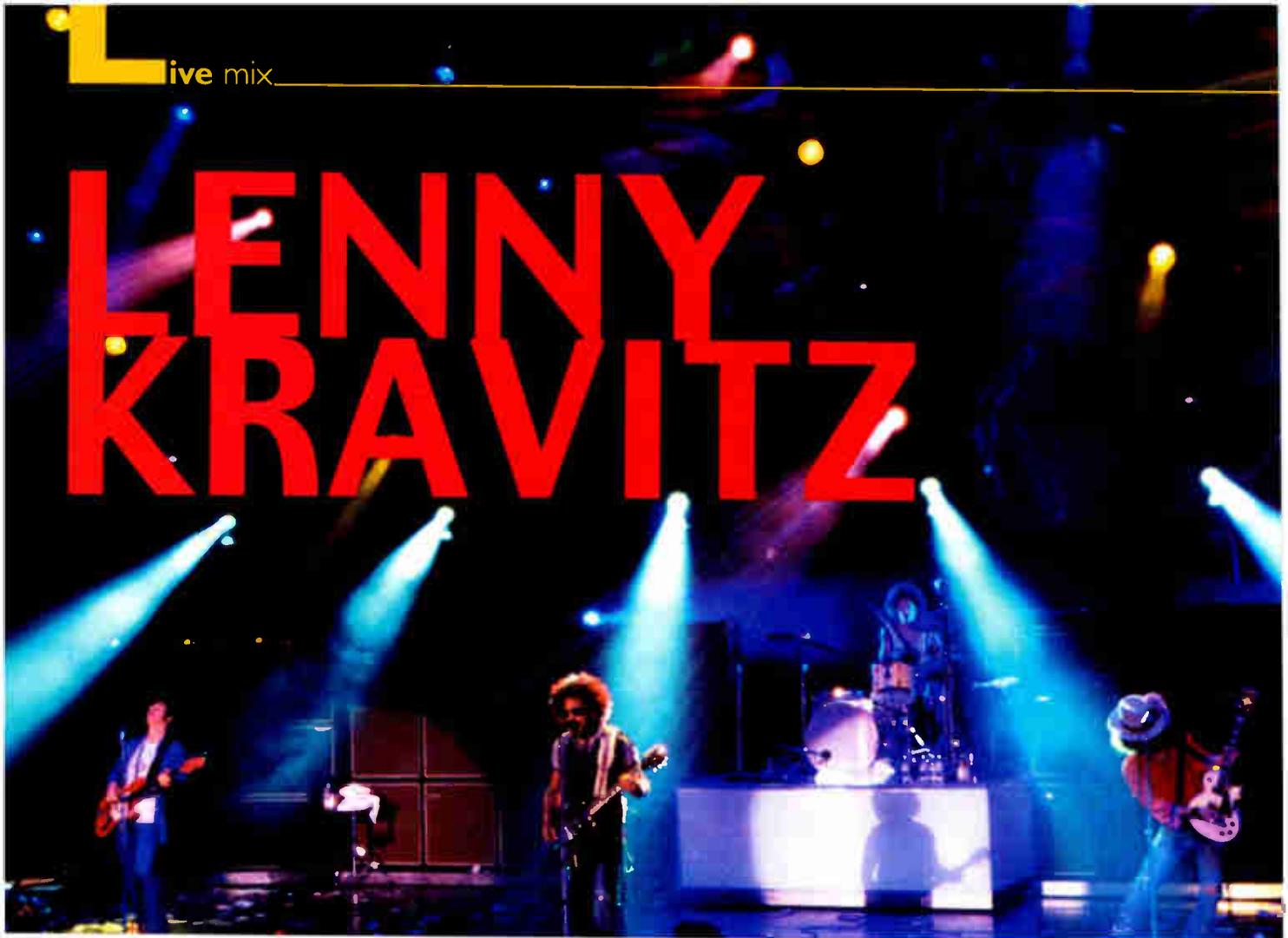
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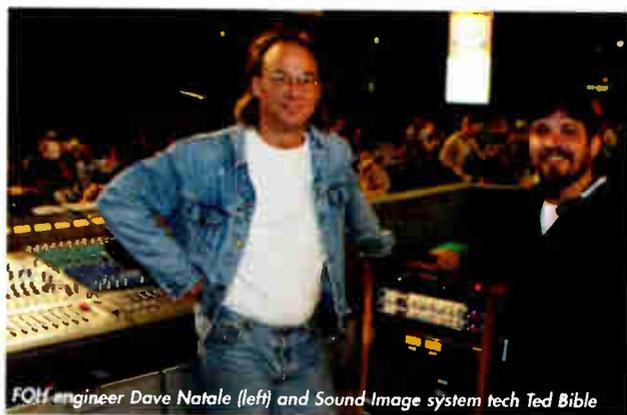
West L.A. Music

LENNY KRAVITZ



It's hard to mistake the beginning of a Lenny Kravitz show. First, there's the afro-haired silhouettes as his four-piece band bounce to their spots onstage, quickly followed by a lighting "special"—a flurry of fake dollar bills imprinted with Kravitz's face showers over the audience. Onstage, monitor engineer Mark Hughes' vintage Conn Dynalevel SPL meter—a circa-1960 device that resembles an illuminated barber's pole—begins to glow red. Within minutes, the sold-out crowd is on its feet, nodding and dancing to Kravitz's trademark sound of crunching guitars, thundering bass runs and smacking drums.

The attitude and stage presence are all rock 'n' roll—sound levels in the house are appropriately loud. Yet, Kravitz's show is controlled, punchy and tight, even at the Shoreline Amphitheater (Mountain View, Calif.), one of the San Francisco Bay Area's several odd-sounding venues, where *Mix* attended a raucous show in late August. Kravitz is notoriously picky about his live sound. (He engineers his own albums and is a vintage-equipment enthusiast.) So, the fact that every solo, drum flourish, bass riff, backing vocal or brass stab is perfectly audible is by no means an accident. The Kravitz show is a finely tuned touring production that relies on quality components, an "old-school" analog signal chain and the talents of an experienced team of sound engineers.



FOH engineer Dave Natale (left) and Sound-Image system tech Ted Bible

ALL PHOTOS BY STEVE JENNINGS

ENDLESS REHEARSALS

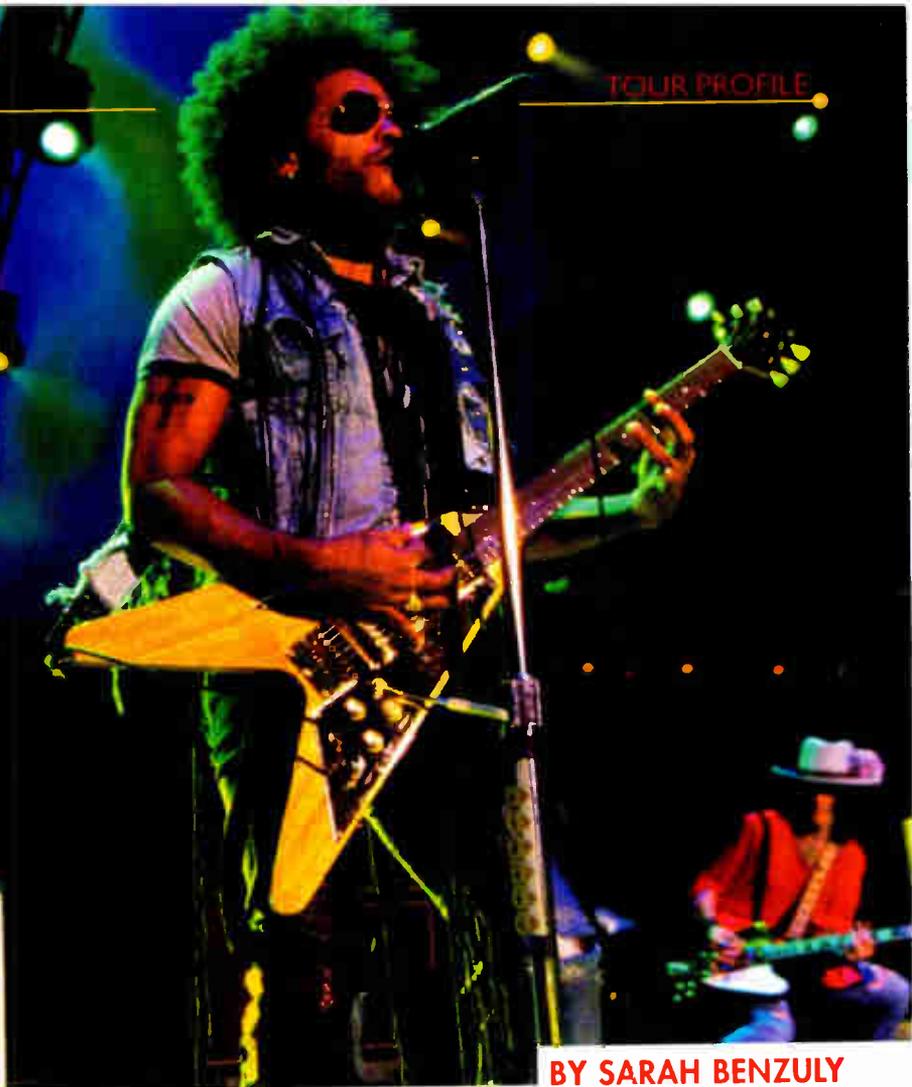
Preparation for the Lenny Live world tour, Kravitz's first in three years, began this past January when rehearsals started in Florida. New at FOH was veteran mixer Dave Natale, longtime engineer for Tina Turner (see *Mix*, August 1997 for a show report) and most recently out with Lionel Richie. "When they were looking for a sound guy, I guess they called all of the sound companies," recalled Natale. "They said, 'Put three names on a piece of paper of who you think



Monitor engineer Mark Hughes and his vintage Conn Dynalevel SPL meter.



ROCK RENAISSANCE MAN FLIES AWAY



BY SARAH BENZULY

we should have mix this tour.' I guess my name came up the most."

In fact, Natale has known production manager Chris "Napalm" Adamson for more than a decade and worked with him closely to fine-tune the sound system's specs. Working from a previous rider, sound system contractor Sound Image (Escondido, Calif.) provided two Midas consoles for FOH and an extensive complement of outboard gear. With Adamson's encouragement, Natale drastically reduced the amount of FOH gear and, by rationalizing the input list, was able to fit everything on a single Yamaha PM4000 console configured with 40 mono and 12 stereo channels.

"I like the Midas XL4, but it's got a computer in it," explains Natale. "If it decides it's not going to work, that's it; it's not going to work. If it didn't have the computer, I'd use it. On the other hand, the Yamaha 4k has never broken on me since the second year it came out. I waited one or two years to see if they all blew

up first and made sure that [Yamaha] got all of the bugs worked out, and I haven't used anything else since. It works every day with absolutely no problems."

With the benefit of more than two months of rehearsal (the tour, designed to promote Kravitz's latest album, *Lenny*, finally kicked off at New York's Hammerstein Ballroom in early May), Natale had ample time to rehearse and perfect all of his console moves. "When I first interviewed for the gig, Lenny asked me if I knew all of the albums," Natale recalls. "He wanted all of the effects and balances reproduced from the records, so I had to sit down and work out how to re-create all of the reverbs, delays and other studio sounds."

For Kravitz's vocal effects, Natale chose three Yamaha SPX-990s, one SPX-990 and a Motion Sound R3/147. One 990 is used as a straight reverb, and the other two are set for delays; the SPX 990 is used for distortion, and the Motion Sound unit is a Leslie speaker simulator.

The rackmount unit actually contains a spinning speaker and multiple microphones. Another three SPX-990s provide band and drum reverbs, plus a slapback delay for drums.

Rather than bring the reverb returns up and down in the mix, Natale has all of the returns "on" all of the time and uses a Yamaha MPC1 MIDI program changer to cycle through the relevant programs. "I just hit 'Up,' 'Up,' 'Down,' 'Next,' 'Next,'" says Natale. "Every song has a program number, so if an effect is not being used on the song, I have the output gain programmed to zero; that way, I don't have to turn stuff up and down." Natale uses much the same method for all 12 guitar inputs—Kravitz has five separate amp/speaker setups, and second guitarist Craig Ross has seven, which they switch among onstage. Because all of the cabinets are close-miked (with Audio-Technica 4050s), leakage into whichever mics are on "standby" is minimal, so Natale leaves all 12 channels active,

goosing the active mics for solos as needed. He keeps track of solo and effects cues on a stack of 5x7 index cards, another retro touch.

LESS IS BEST

In line with his philosophy that simpler is better, Natale mixes direct to the main stereo bus, using the board's VCA section for group trims. Because all of the inputs are in use, Natale routes the band reverb stereo returns to the PM4000's subgroup section, using the remaining stereo subgroup as a premix of Kravitz's effects returns for the monitor mix.

Apart from Kravitz's vocal effects, Natale's use of processing is relatively modest. A second FOH rack holds two Focusrite ISA 110s and a 2-channel Manley Electro-Optical Limiter for Kravitz's lead and spare vocal mics, both Audio-Technica 4054s. The only other dynamic processors that Natale uses are a pair of dbx 160As for the bass DI and bass mic, and two Drawmer DS201 2-channel noise gates. Only three of the four gates are used: one for the kick and one each for rack and floor toms. In stark contrast to

most FOH mixers' effects racks, Natale's two racks look mostly empty, with large areas taken up by blank panels. Though Sound Image also provided an HHB CD recorder/player and a Panasonic DAT machine, Natale hardly uses them. "I just have them in case, but no one in the band ever listens to the DATs of the shows, and we only use the CD player for walk-in music," he notes.

The main P.A. for the tour is a JBL VerTec line array system. During final production rehearsals, Kravitz kept asking for more P.A., with the result that the tour's system is one of the largest VerTec systems on tour—48 VT4889 full-frequency cabinets and 32 VT4880 subwoofers. At Shoreline, the Sound Image crew flew two 15-cabinet arrays for the main L/R system, with 9-cabinet side arrays. The system is powered by 50 Crown Macrotech 5000 amps, while speaker-management functions are performed by five BSS 366 Omni Compact Pros and six BSS Varicurves.

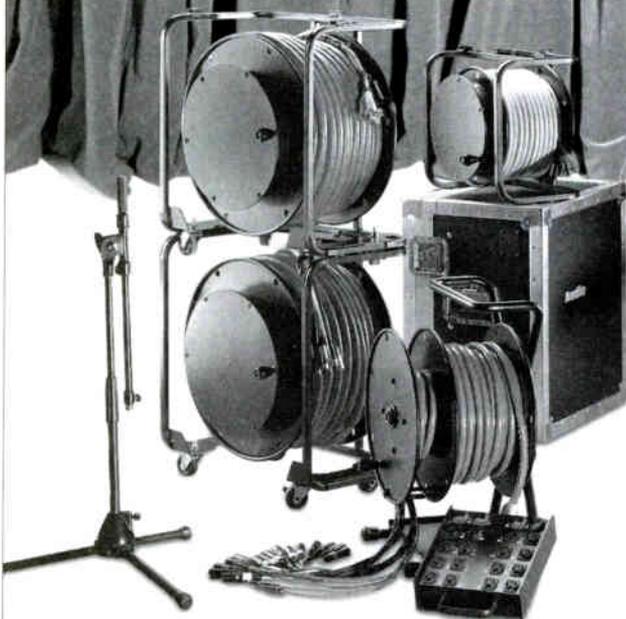
"I love this system," says Ted Bible, system engineer for Sound Image. "This is my fourth tour in a row working with

VerTec, and I'm digging it. It's loud—it moves a lot of air. It looks nice aesthetically, sight lines are great, coverage is great. It goes in and out of a truck wonderfully, stacks excellent. Straight across the board, it's an easy system."

IN-EARS PLUS SIDEFILLS

Onstage, monitor engineer Mark Hughes uses a Midas XL4 with an XL3 extender; like Natale, Hughes prefers to keep the signal flow short and easy to control, without the aid of a computer. "I prefer active mixing; it's fun because it is precise," Hughes says. For Kravitz's vocal, Hughes uses an API mic pre and a Lucas tube compressor/tube EQ. Kravitz and band all wear Future Sonics in-ear monitors (IEMs) driven by either Shure PSM600 or Sennheiser 300 transmitters. To keep Kravitz's in-ear mix consistent with Natale's FOH mix, Hughes takes an effects submix from the FOH PM4000 and adds that mix into Kravitz's IEMs after heavy protection limiting through a BSS DPR-404 4-channel compressor. Hughes also runs a set of sidefills to add low end to the stage.

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LENNY KRAVITZ'S SOUND CREW

Dave Natale: FOH engineer
 Mark Hughes: monitor engineer
 Ted Bible: system tech, Sound Image
 Satoshi Nishimura: P.A. tech, Sound Image
 Greg Hancock: P.A./monitor tech, Sound Image
 Randy Fielitz: stage miking/monitor tech, Sound Image

"The in-ears are really good for the stage sound," comments Natale. "As loud as Lenny plays, if he had to rely on wedge monitors up there, he wouldn't sound nearly as good out front with all of the extra bleed going on."

Though Kravitz sometimes jumps offstage to mingle with his fans, he

prefers not to use a wireless mic, so his excursions into the audience are closely monitored by handlers and stage crew, who make sure his vocal mic and cable return to the stage in one piece. The rest of the stage miking setup is fairly straightforward. Drum mics include a Beyers M88 on kick, a Shure SM57 on the

snare, AKG 414 on hi-hat, Beyer Opus 87s on toms and AKG 414s for overheads. The Leslie cabinet for the B3 is miked with a Sennheiser 421 on the bottom and two Audio-Technica 4051s on top while a wireless ATM 35 handles the occasional sax solo played by Harold Todd. Direct inputs include Kravitz's and Ross' acoustics, which are picked up through repurposed Helios console modules; the Wurlitzer that Ross plays on a few tunes, plus sampled kick and sampled snare inputs, are all captured via BSS DIs.

Though Kravitz's tour schedules are always subject to last-minute changes, fans who catch him on the current outing are sure to hear such crowd-pleasers as "Are You Gonna Go My Way," a fantastic remake of the Guess Who's "American Woman" (from the soundtrack to *Austin Powers: The Spy Who Shagged Me*) and "Fly Away" performed with precision and enthusiasm. As monitor engineer Hughes puts it, "It's nice to work for someone who gives sound priority." ■

Sarah Benzuly is Mix's associate editor.

—FROM PAGE 64, NFL FILMS PRESENTS!

wonder room, Studio A is the crown jewel of NFL Films. The natural light streaming in through the geometric windows has already elicited praise from musicians. The Argentinean mesquite floors and blond-wood ceiling and walls lend comfort and richness. The five custom-designed mic panels make for smooth and quick setup. And the sound of the space, while still being experimented with, is accurate and true.

"The idea of the curved exterior wall with different-sized windows worked from within the room and as part of the architecture," Traub says. "Determining the right window sizing and organization was partially inspired by the unforgettable imagery of Le Corbusier's Ron Champ Cathedral in France, where windows are cut out of masonry wall at different heights and sizes to allow sunlight to react to the interior spaces differently depending on the time of day. Large-scale wood frames were then added to the openings to enhance the diffusion on that side of the room. The giant 14-foot corner window was an element we promised Jerry early on. As he works in the control room, he can look out beyond the studio

and see the building landscape and the background of wetland trees. It's quite a view!"

Inside the control room, which must pull triple-duty on tracking, mixing and re-recording dates, sits an 80-in SSL 9000 J Series console with an NFL Films custom scoring panel. There are 72 channels of Fairlight QDC, 64 channels of Pro Tools, a Studer analog 24-track and DLP projection, with source switching among multiple video formats. Monitoring is through PMC BB5 mains powered by Bryston 7B and 4B amps. NFL Films had made the switch to Bryston power about eight years back. The PMCs are new, and either BB5s or IB1s now sit in all rooms, with the smaller speakers and all video displays on monitor lifts.

"The decision on the PMCs was mine," Mahler admits, with a nod to the Genelecs that many of his mixers were used to. "I had visited a lot of Berger-designed rooms, and when I got to Hank Williams' place in FNashville [MasterMix], I said, 'I want those!' I'd never heard anything like them."

IT JUST KEEPS GOING

The preceding has been a grand overview of what it takes to build such a large and

technically proficient facility. And this discussion doesn't even include the video end of the operation, which dwarfs the audio side and includes a modern film lab, six telecine bays and a 60-seat Avid plant on a Unity server, with 7 terabytes of storage. It also has some of the best camera operators and producers in the business.

Suffice it to say, this is an organization that does things right. NFL Films has brought home 82 Emmy Awards since 1965, 12 of them in audio and music. The League shoots more film than any organization in the U.S., and it has a foot in hi-def production. Now they have a facility that mirrors their product and sets the standard for production techniques in the digital age.

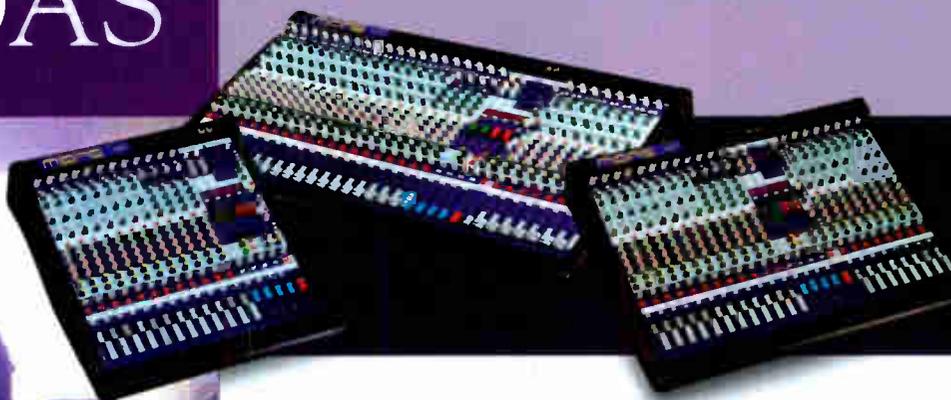
Because he drove the project and signed the checks, the last word goes to COO Barry Wolper: "It was certainly the project of a lifetime. We know how special this place is. We know that we've accomplished something extraordinary here. We're proud of the sport and the League and the organization, and we're grateful to have the opportunity to contribute to the success of the League for the next quarter-century—long after we're gone." ■

Tom Kenny is the editor of Mix.

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Marvin Sutton, FOH engineer, Morgan Sound
Faith Hill/Tim McGraw



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Jamie Rio, Technical Reviewer, Gig Magazine
Blue Barrel Jazz and Blues Festival

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Marty Wentz, FOH Engineer
9-piece showband, “Which Doctor”

“I’ve dreamed of something like this, and now Midas has come through with its Venice series.”

Etienne Lemery, Technical Reviewer, SONO Mag World Edition

“This is an outstanding console! We’ve had it jammed to the max and it performs wonderfully! Truly a MIDAS!”

Jack Haffamier, Manager, Nelson Sound
Pasadena Pops/Wayne Newton/Jay Leno at Bally’s Events Center

“Keeping the show within budget. Saving the sound. Truly fantastic!”

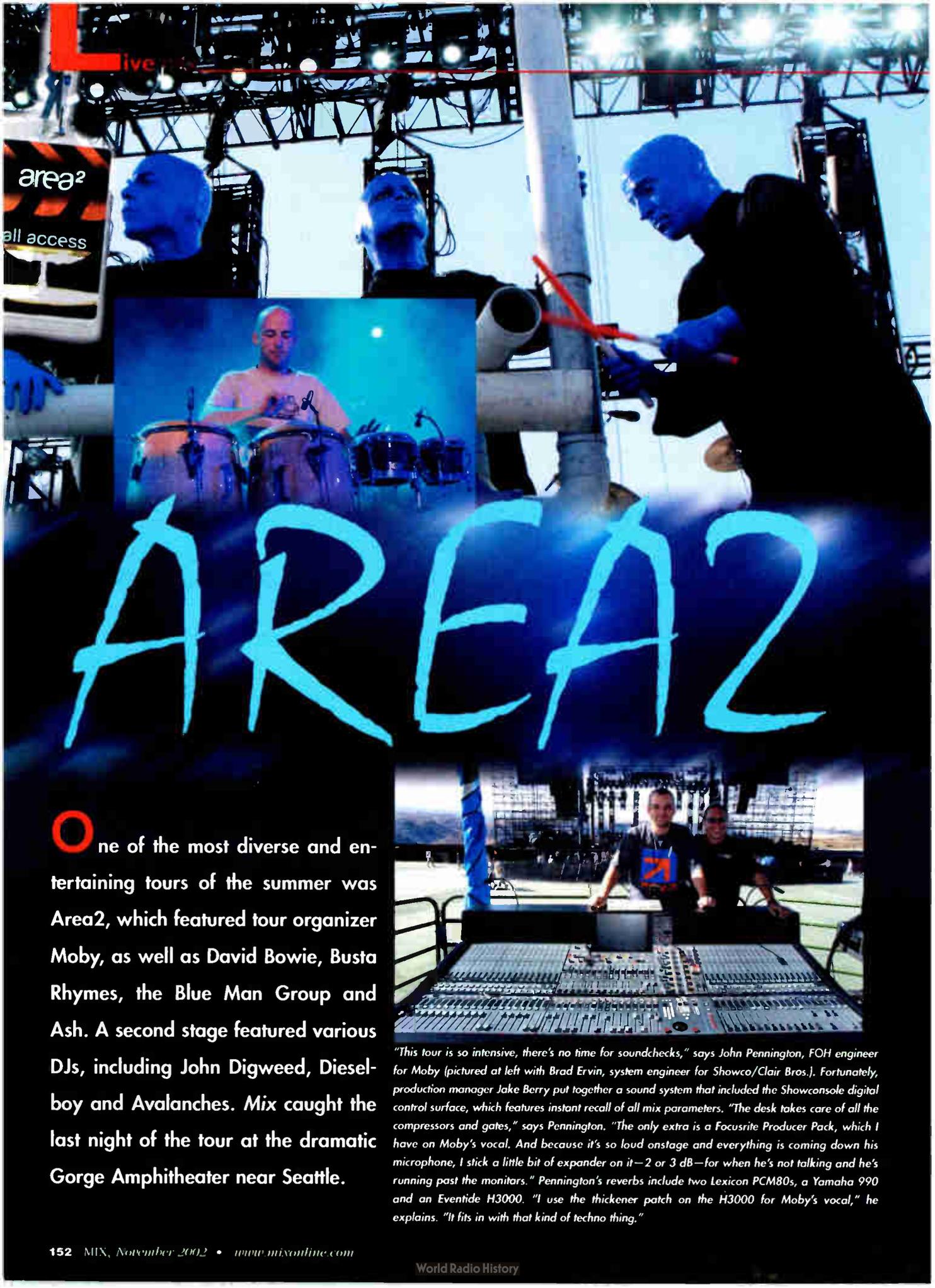
Robbie McGrath
Peter Yorn/Weezer US Tour

“This is the money! I had every single hole at the back of the Venice 320 filled with all the toys like Summits, Focusrite® and Drawmers®. I was running three sends back to stage for monitors, two for effects and the last for subs. DI outs to Pro Tools®. I was maxxed out, and it seemed to like it. I did too!”

Cristiano Avigni, FOH Engineer
Abenaa

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One of the most diverse and entertaining tours of the summer was Area2, which featured tour organizer Moby, as well as David Bowie, Busta Rhymes, the Blue Man Group and Ash. A second stage featured various DJs, including John Digweed, Dieselboy and Avalanches. *Mix* caught the last night of the tour at the dramatic Gorge Amphitheater near Seattle.



"This tour is so intensive, there's no time for soundchecks," says John Pennington, FOH engineer for Moby (pictured at left with Brad Ervin, system engineer for Showco/Clair Bros.). Fortunately, production manager Jake Berry put together a sound system that included the Showconsole digital control surface, which features instant recall of all mix parameters. "The desk takes care of all the compressors and gates," says Pennington. "The only extra is a Focusrite Producer Pack, which I have on Moby's vocal. And because it's so loud onstage and everything is coming down his microphone, I stick a little bit of expander on it—2 or 3 dB—for when he's not talking and he's running past the monitors." Pennington's reverbs include two Lexicon PCM80s, a Yamaha 990 and an Eventide H3000. "I use the thickener patch on the H3000 for Moby's vocal," he explains. "It fits in with that kind of techno thing."

PHOTOS AND TEXT BY STEVE JENNINGS

BOWIE



L-R: Josh Sadd, monitor tech for Moby; Tim Fraleigh, monitor tech from Firehouse Productions (Bowie); Michael Prowda, monitor engineer for Bowie; Drew Consalvo, monitor engineer for Moby.

Drew Consalvo, Moby's monitor engineer, has been using the Midas Heritage 3000 console for several years. "I really accept no substitute," he notes. "I love the way that desk sounds, the preamps, the EQ section. It's a great console." Three of the bandmembers use in-ear monitors (IEMs), either Shure PSM 600 or 700 systems. For Moby's wedge monitors, Consalvo uses a Shure DFR11EQ computer-controlled digital equalizer. "It's like having a second mixer," he notes. "I basically use it to get rid of the hot spots in the monitor speaker response, and then once I've put in all of my filters, I can then tailor it to sound musical."

All of Bowie's musicians use in-ear monitor systems, and monitor engineer Michael Prowda mixes for them on a Paragon II, "a fantastic monitor-console. I'm also very pleased with the Sennheiser EW 300 Series in-ear systems," says Prowda, who routes each of the eight in-ear mixes through an Aphex Dominator before the wireless input stage. Bowie sings into a Shure Beta 58A, while backing singers use Beta 87Cs. The other mics onstage are a combination of Shure, Sennheiser and Audio-Technica models.



Pete Keppler, FOH engineer for David Bowie, mixes on a Yamaha PM-1D supplied by Firehouse Productions, which also supplied Bowie's monitor rig. "I'm still relatively new to the desk—I've done about 15 shows on it—but I love it," says Keppler, who makes good use of the PM-1D's ability to store mix parameters on flashcard memory. "So every show, I can update little things and store different scenes for different songs. The other thing I like is it's got eight onboard effects processors; for David's voice, I'm using a doubler program that I built in the PM-1D." Keppler also used the PM-1D's onboard processors for all drum reverbs and vocal delays, relying on two TC Electronic M3000s for additional onboard effects.

Clair Bros. supplied 10 full-range Clair I-4s on each side, supplemented with I-4B bass cabinets in the main hang. Additional I-4s were used as "wing" speakers, and modified S-4s provided additional sub bass.



New Sound Reinforcement Products



E-V RE510 HANDHELD MIC

Electro-Voice (www.electrovoice.com) offers the RE510, a super-cardioid, handheld condenser mic, which features broad bandwidth, low distortion and wide dynamic range. A low-frequency roll-off switch (securely located beneath the integral windscreen) tailors the RE510's response to compensate for proximity effect. Designed to handle high SPLs, the RE510 is equally suited for vocals or miking guitar amps, cymbals or kick drums. Additional features include a Warm Grip handle for reduced handling noise, a multistage pop filter and a Memraflex™ grille. The RE510 is also available in a wireless head version to use with E-V's RE-1 wireless system.

D&B AUDIOTECHNIK LINE ARRAY MODULE

D&B Audiotechnik (www.dbaudio.com) has completed final testing of the C3 line array module, a long-throw extension to the D&B C4 system. The C3 loudspeaker is a horn-loaded design that's both vertically and horizontally arrayable, and offers the same 35° horizontal dispersion (above 900 Hz) as a C4, but with a 5° vertical-HF dispersion per cabinet. The total frequency range of the vertical-curved coherent wave front of a C3 column depends on the column's overall length. Driven by a D&B P1200A main-frame amp in two-way active mode, the C3 can produce max SPLs of 143 dB.



MARTIN AUDIO AMPS

Martin Audio (www.martin-audio.com) expands its MA range of power amps with the MA1.3 (650 watts into 4 ohms stereo), the MA1.6 (840 watts into 4 ohms stereo), the MA2.8 (1,400 watts into 4 ohms stereo) and the MA4.2 (2,100 watts into 4 ohms stereo). A new Minimum Load switch in the MA1.6, MA2.8 and MA4.2 models allows users to match the output power to the loudspeaker impedance. Other new features include an efficient copper-cooling system, advanced protection circuits, clip limiters and a high power-to-weight ratio.



KLARK TEKNIK HELIX DIGITAL EQ

Klark Teknik's (www.klarktechnik.com) Helix DN9340 is a dual-channel digital audio EQ in a two-rackspace package. The intuitive, simple-to-operate unit offers five main functions, including dual 31-band graphic EQ, dual 12-filter fully parametric EQ, dynamic or "Threshold-Dependent" EQ, four configurable filters per channel and configurable delay of up to 1 second per channel. When suitably connected and programmed, the Helix DN9340 also interfaces with Midas Heritage and Legend consoles via an Auto-Solo function that brings up the relevant channel or bus in the Helix control surface, allowing instant access to all of the Helix functions. Up to 64 channels of Helix can be interconnected via the rear panel RS-232 connection using RS-485 standard microphone cables.

GEPSCO DIGITAL MULTIPAIR

Gepco International Inc. (www.gepco.com) has expanded the 5526GFC Series of 110-ohm digital audio multipair cables to include the 24-pair 552-624GFC. Rated UL-type CM, 552624GFC features 110-ohm impedance, low jitter and attenuation, ease of termination and flexibility. Pair construction consists of two stranded, 26-gauge conductors, foam polypropylene insulation, 100% foil shield with drain wire, and a color-coded and alphanumerically numbered PVC jacket. Each pair also features a non-conductive polyethylene rod that maintains the impedance, lowers the capacitance and provides structural integrity. Gepco's GEP-FLEX outer jacket offers superior abrasion resistance, durability and flexibility at all temperatures.



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BRUCE SPRINGSTEEN & THE E STREET BAND



PHOTOS: STEVE JENNINGS

Bruce Springsteen and the E Street Band are out on tour to support their latest album *The Rising*. The first leg of the tour runs until mid-December, with more dates to come next year. As usual, Audio Analysts is supplying the main P.A. for the tour: 80 JBL VerTec line array cabinets flown in a 360° configuration, plus 32 VerTec subwoofers. The various P.A. zones are fed via eight matrix outputs from a Yamaha PM-1D digital console, which FOH engineer John R. Cooper uses to mix about 60 inputs from the stage. Cooper makes use of the PM-1D's onboard DSP for most of his dynamics control and delay effects, but he also uses a Midas XL42 preamp/EQ, a BSS-901 and a Summit DCL-200 on Springsteen's vocal channel. Vocal mics are all Audix OM-3s. "This is one of the first major tours I'm aware of that is using all digital consoles," notes Cooper; two more PM-1Ds are being used to mix monitors.

—Steve Jennings



John R. Cooper

NOTES FROM THE ROAD

The Rolling Stones are again relying on Chicago-based dB Sound and XTA processors. The Stones' P.A. system, designed by dB Sound president Harry Witz, features 32 XTA DP226 units used as crossovers. Witz and dB Sound worked closely with XTA to develop the exclusive DP Series Array Control software feature, which allows for the recall of hundreds of settings... Delicate Productions of Camarillo, CA, debuted its new MartinAudio W8L line array system at the 2002 KROQ Weenie Roast. Delicate Productions set up a total of 40 W8L cabinets: 24 in the front-facing L/R array and eight each in the side arrays. Sub-bass power was supplied by 24 BSX cabinets, and the split turntable stage was well-stocked with LE700 monitor wedges. Held at the Verizon Amphitheater in Irvine, CA, the Weenie Roast featured performances by System of a Down, Moby, Papa Roach, Jimmy Eat World, The Strokes, Puddle of Mudd and Rob Zombie, among others.

INSTALLATION NEWS

The Little Nashville Opry, Indiana's premier country music venue, has installed a 56-channel Soundcraft SM20 monitor console. "With the SM20, we can now stage up to 15 powered mixes, plus a cue wedge and five more in-ear monitor mixes," says Little Nashville Opry monitor engineer Gary Weidner. "And nearly every visiting monitor engineer has worked on a Soundcraft at one time or another; there's very little learning curve to run the SM20." The venue operates a 39-week performance schedule from March through November, and has staged more than 3,000 shows, including country music legends Waylon Jennings, Merle Haggard, Conway Twitty and Wayne Newton... Midas distributors in Finland, Oy Hedcom, recently supplied a 52-input Midas Legend 3000 to the Crazy Reindeer, a 1,500-capacity live venue club way above the Arctic Circle in Lapland. The installation, completed late last year, also includes a Nexo Alpha E sound system. ■



KID ROCK ON EVOLUTION WIRELESS

Independent monitor engineer Doug Deems picked the Sennheiser Evolution Wireless 500 Series microphone and the Evolution Wireless 300 IEM in-ear monitor systems for Kid Rock and his Twisted Brown Trucker Band, who are out on a three-month tour with Aerosmith. The Evolution 300 IEM Series features eight tunable presets, and all Evolution wireless systems feature True Diversity receivers, a new HDX Compander System and an alphanumeric display to monitor frequency and RF signal strength. Each transmitter is powered by a 9-volt battery, and is compatible with all of the Series' receivers.

A-T MICS AT MTV AWARDS SHOW

Audio-Technica mics were once again ubiquitous at the annual MTV Video Music Awards (VMAs), held August 29 at Radio City Music Hall in New York. A-T mics used during the show included the AT4054 handheld cardioid capacitor for vocals; the new Artist Elite AE3000 large-diaphragm, side-address, cardioid condenser for rack and floor toms; AE5100 large-diaphragm cardioid condensers on hi-hat and ride cymbals; and the ATM-23HE on snare drum and AT4050s on drum overheads. Firehouse Productions supplied the sound system.

SENNHEISER AND ATI STAR WITH CHER

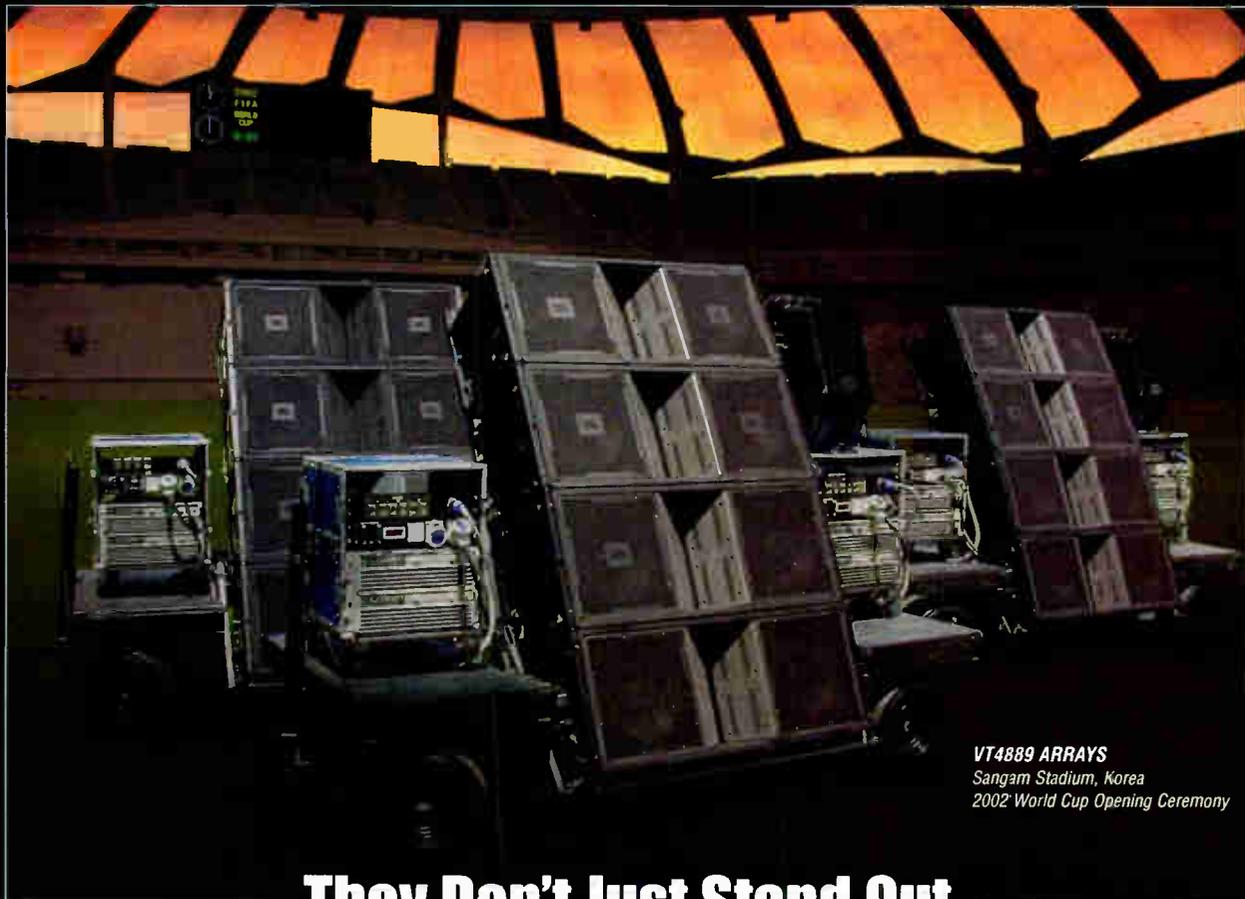
For Cher's Living Proof farewell tour, monitor mixer George Barnes picked a Sennheiser SKM 5000 handheld wireless vocal mic. For in-ear monitors (IEMs), Barnes specified the Sennheiser 3000 Series IEMs with custom-designed Future Sonics Ear Monitors with MG4 drivers; Barnes created 10 separate in-ear mixes on an ATI Paragon II monitor console. "The ATI is totally suited for in-ear mixing, because the console's audio quality is incredible," says Barnes. "The Paragon was the only choice."



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787 mm x 559 mm x 686 mm (31" x 22" x 27")
55 kg (120 lb)

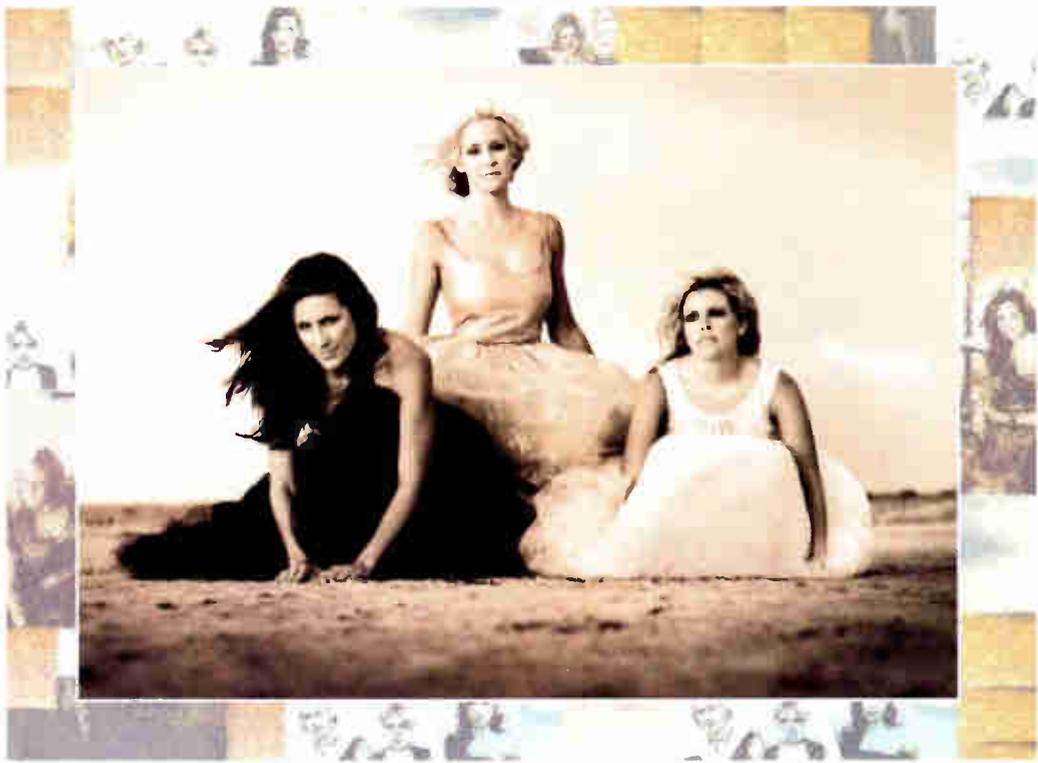


PHOTO: JAMES MINCJIN

From left, Emily Robison, Martie Maguire and Natalie Maines

THE DIXIE CHICKS COME "HOME" TO BLUEGRASS

by Elianne Halbersberg

Deciding on a career was never an issue for Dixie Chicks lead vocalist Natalie Maines. Her father, renowned pedal steel player and producer Lloyd Maines, recalls, "My wife and I got a call one evening from Natalie's second grade teacher saying, 'I've got to tell you something Natalie did.' They were in math class and Natalie raised her hand and said, 'Miss So-and-so, I won't need to know this.' The teacher said, 'Oh really? Why is that?' And Natalie said, 'Because I'm going to be a star!'"

It was a prescient observation. Maines, fiddle player/vocalist Martie Maguire and multi-instrumentalist/vocalist Emily Robison, who plays banjo, dobro and acoustic guitar, are the only female group in music history to sell over 10 million copies of each of their first two albums: the 1998 *Wide Open Spaces*, and its follow-up, *Fly!* With 14 chart hits and five Number One singles,

the Dixie Chicks' three-part harmonies and pleasing blend of traditional and contemporary country have filled a musical void in radio's wasteland. But, while the operative rule in Nashville is to never fix what isn't broken, the Chicks threw caution to the wind with their new album, *Home*. They ditched pristine Music Row studios for the peace and quiet of Austin, Texas' Cedar Creek, separated from their production team—Paul Worley and Blake Chancey—in favor of Lloyd Maines, and opted for a bluegrass-flavored acoustic album, bringing in Grammy-winning engineer Gary Paczosa (Alison Krauss, Dolly Parton, Nickel Creek).

As if musical transitions weren't enough, the Chicks were without a record label during the making of *Home* and in the midst of a lawsuit against Sony Records over royalties the group alleged that they were owed. The matter was settled, and *Home* was released on the Chicks' new Sony imprint, Wide Open Records. In the meantime, however, being free agents allowed the trio to make the record that they wanted.

Home began as a set of demos, and what appears on the CD isn't far from the original ideas. "[The Chicks] called and said they'd written songs and were thinking about experimenting with an acoustic approach—no electric instruments, no drums, upright bass," says Lloyd Maines, who also played pedal steel on the

—CONTINUED ON PAGE 166



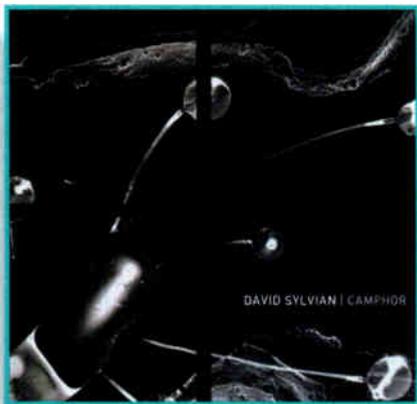
DAVID SYLVIAN

THE ARTSY ROCKER
LOOKS BACK WITH TWO PROJECTS

by Chris J. Walker

It might sound like lofty elitism to proclaim that British singer/songwriter David Sylvian's music functions on a higher level than many other artists'. But there's no disputing that his sonic sensibilities are far removed from what average rock/pop listeners gravitate toward. With his affinity for both western and Far Eastern styles, and his deft interweaving of themes relating to searching and discovery, existentialism and spiritual philosophies with progressive and ambient musical textures, he creates an intoxicating and heady brew. His reputation as an artful experimentalist has been further cemented by collaborations throughout his solo career with such idiosyncratic illuminati as Robert Fripp, Ryuichi Sakamoto, Bill Nelson, Jon Hassell, Holger Czukay, Bill Frisell and Kenny Wheeler. It's no wonder that he's become a cult figure for a certain segment of high-brow listeners.

Since his days as the frontman for the British glam-pop group, Japan—circa mid-'70s to early '80s—Sylvian has never been



a chart-topping sensation. But he's had a solid solo career, with many twists and turns, and has built a devoted international following along the way. And now, with his 21-year relationship with Virgin



PHOTO: INGRID CHAVEZ ©WORLDWIDE PRESS

Records concluding, the singer/guitarist/keyboardist has released two separate collections of his past work—*Damage* and *Camphor*—which show some of the scope of his particular brand of musical genius.

The two sets provide contrasting views of this very private and enigmatic musician, who's also a photographer, filmmaker and artist. Neither can be classified as "best of" CDs. *Damage* was initially released in Europe as a limited-edition album in 1994. It contains live performances from his 1993 tour with King Crimson's frontman/guitarist Robert Fripp in 1993. But Sylvian says that he was never happy with the live recording's mix, so he took advantage of the opportunity to fashion it more to his liking and re-release it. He also included the track "Jean the Birdman" as an alternate to "Darshan," and repackaged the set with engaging new artwork from Shinro Ohtake. *Camphor*, on the other hand, is a two-CD set of Sylvian's often ethereal instrumental work, with tracks dating back to his early solo releases, as well as including a couple of unreleased pieces.

"It's all retrospective work for me," Sylvian says from his home in New Hamp-

shire. "Ever since I finished the *Dead Bees* album [1999], I've been working on past material. So it's been a bit of a strange time for me, because I actually don't spend that much time reviewing the work that I've done. Once I'm finished, I basically part ways with it and very rarely go back to check it out again. There's been a lot of frustration involved with being just focused on this material, but at the same time, there were some positive aspects. Especially with the *Everything & Nothing* project [a two-CD anthology project released a couple of years ago], I was able to go back and complete things that would have otherwise wasted away in Virgin's library. I enjoyed doing that aspect of the work, and also to have a second crack at certain pieces that I felt warranted a second or third attempt. But overall, I'd much rather be working on new material than going through things from the past. But it's been necessary."

The original mixing of *Damage* was done by Fripp in 1994, with Sylvian absent from the process. Sylvian emphasizes that he thoroughly enjoyed touring and working with Fripp, and he even credits

—CONTINUED ON PAGE 170

KING FLOYD'S "GROOVE ME"

by Blair Jackson

All it takes is one spin of King Floyd's classic 1970 hit "Groove Me" to appreciate that the New Orleans soul singer was a great talent, with some of the same qualities as obvious influences such as Otis Redding, Jackie Wilson and James Brown. Yet today, he is all but forgotten by the public at large. He came onto the scene a little late to have the impact of the big Stax (and Motown) singers, and his sound was perhaps a tad dated for a black music scene that was rushing headlong toward social and political relevance at the dawn of the '70s. Still, he made his small mark, and to this day, he is revered by rabid fans of southern soul music. And he's certainly not the first New Orleans artist to achieve greater regional than national success; in fact, that seems to be endemic to the region.

King Floyd III was born in New Orleans in 1945 and raised in the nearby suburb of Kenner. Before he'd even hit his teens, he dreamed of becoming a singer and immersed himself in the New Orleans music scene, hanging with the likes of Willie Tee and Earl King, while admiring local heroes such as Ernie K. Doe and Irma Thomas. While still in his mid-teens, he occasionally gigged with the house band at the Sho Bar on Bourbon Street, but his career was interrupted by a two-year stint in the military. When he got out in 1963, he moved to New York and then to Los Angeles in hopes of making it as a singer and songwriter. The L.A. trip did result in his first album, *A Man in Love*, produced by another transplanted New Orleans musician—Harold Batiste—and featuring several songs Floyd wrote with Mac Rebennack (Dr. John). The album didn't cause much of a stir, however, and by 1969, Floyd had moved back to New Orleans and took a job at the post office to support his wife and daughter.

Around the same time Floyd was returning to New Orleans, Tommy Couch, Mitchell Malouf and Wolf Stephenson were building a new recording studio in Jackson, Miss., a city equidistant from Memphis and New Orleans. Couch and Stephenson had booked R&B acts for fraternity parties at the University of Mississippi and then, with Malouf, decided to branch out into recording R&B, forming Malaco (from *Makouf* and *Couch*) Productions along the way. They modeled their studio operation—Malaco



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Studios—after the thriving Muscle Shoals scene, hiring a "house band" to work on most of their records.

"There was nothing fancy about the studio," says Stephenson, who, along with Couch, still works at Malaco more than 30 years later. "I think the building itself was built in the '40s. At different times, it had been a mechanic shop, a casket warehouse, a manufacturing facility for those little concrete statues you see in people's front yards, a tile distributor, a warehouse for empty Pepsi-Cola cases...but it had been empty for a while before we got there."

The main room is about 20 by 30 feet with a 10-foot ceiling. In 1969, the studio was equipped with an 8-track Scully recorder ("Because Muscle Shoals had one just like it," Stephenson says.) and a custom console built by Southwest equipment luminary Ron Newdell. The mic selection was limited but high-quality: "The best, and the ones we used the most, was a sequentially numbered pair of Neumann U67 tube mics," Stephenson says. "We also had some other Neumanns—a KM 84 and a couple of KM 86s. Then we also had some Electro-Voice 664s, probably a couple of Shures, a couple of AKGs—not a real wide spectrum, but pretty good ones. Of course, at that time, we didn't know that the U67 would turn out to be one of the better microphones of all time. In fact, I'm still using those same ones; they still sound great."

How did King Floyd come to work at Malaco? "The key to all of this was the great New Orleans arranger and producer Wardell Quezergue," says Couch. "About six months before that session for 'Groove Me,' Wardell came up here looking for an outlet to record some groups in; he brought a group up called The Unemployed—and I think they're *still* unemployed!" he adds with a laugh. "Anyway, we did three or four sides and actually leased them to Atlantic. Then, four or five months later, Wardell said that he had four other groups he wanted to record two songs each on. So he came up by himself, he used our rhythm section, and we recorded eight songs over the next few days—two on King Floyd, two on a group called The Barons, two on a girl group called Bonnie & Sheila and two on Jean Knight.



issue 30

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XL 9000
K · SERIES

XL IS WORLD WIDE SUCCESS

Global takeup for XL	2/3/4/7/8
MT Production for Tokyo	5
6th Aysis Air is Plus for Videotime	5
MT born to run	8
Avant Plus in Mexico	8

FRONT COVER

First XL rooms completed at

Top Larrabee West, West Hollywood

Bottom left The Hit Factory, New York City

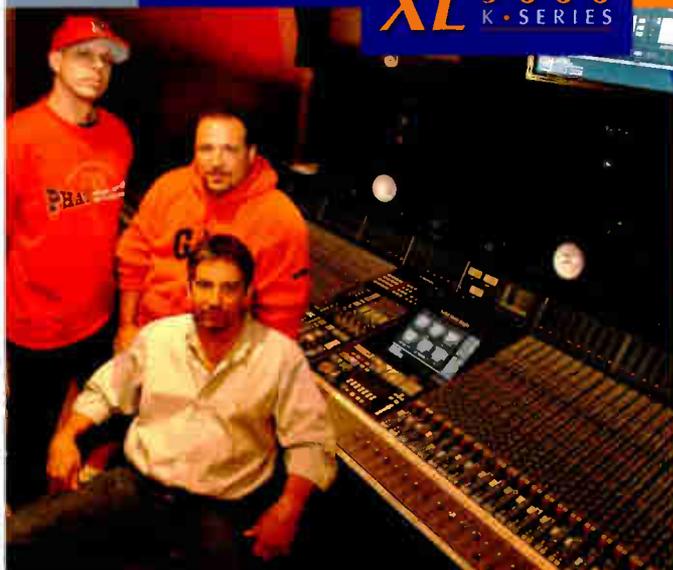
Bottom right MG Sound, Vienna

The Pursuit of Excellence

Solid State Logic's XL 9000 K Series SuperAnalogue™ Console is fast becoming the new benchmark for audio excellence. With more than 20 sales world wide since its March introduction, the XL is SSL's most successful new product introduction of all time.

Discerning studios across the globe have welcomed the advanced features embodied in the XL, like the stunningly fast new K Series control processor providing advanced functionality and unparalleled levels of studio integration; the innovative surround sound panning toolset and sonic performance that exceeds even the latest high-resolution audio formats. Above all though, it is the sound of the XL, with SSL's purest SuperAnalogue™ signal path to date, which never fails to impress.

XL 9000 K-SERIES



▲ Pictured taking a break from a busy LeAnn Rimes session are producers Gregg Pagani (far left standing) and Pete Amato (also standing) with Rob Chiarelli (seated).

XL Larrabee West, West Hollywood

XL for Men in Black II

Top producer/mixer Rob Chiarelli has been turning out powerhouse projects on the XL installed in Studio A at the newly renovated Larrabee West in West Hollywood, CA. The maiden voyage of the console included such projects as Will Smith's solo album and title song for the film 'Men In Black II,' K-Ci & JoJo, LeAnn Rimes and international recording artist Laura Pausini. The XL's superior sound quality and exceptional performance greatly impressed Chiarelli.

"I have been working on SSL consoles for most of my career," says Chiarelli. "When Kevin Mills, the owner of Larrabee, told me about the XL, I jumped on the chance to work on it. The console's design, sound quality and speed is nothing short of inspiring."

"The speed of the XL computer is so superior to other consoles," explains Chiarelli. "When you are working on a project, it is very important to not let technology get in the way of creativity. The XL allows me to save mix changes really quickly, so when the artist wants something, I can simply save where I am and not blow the artistic flow. For example, when Will or LeAnn want to try a few things out, I just hit save and it doesn't interrupt the session. The XL is awesome."

XL Angel Mountain, Bethlehem

Angel Mountain Studios' new XL will be installed in a newly designed Studio A, responding to the growing demand for 5.1 mixing environments.

"When we sat down to discuss the expansion of the facility, we had to find a formula that took into consideration the two areas of our business," says Gary Sloyer, owner of Angel Mountain. "We designed the facility from the ground up to be 5.1 in all the control rooms and that led us to purchasing the XL. We are located between New York City and Philadelphia and we went the extra mile in our design and equipment purchases to attract clients from both markets." The result is a "Glorious Studio A," according to Sloyer, that compliments the other six rooms in the facility, enhancing the workflow and addressing SACD and DVD-A release formats.



▲ (l-r) David Bendeth and Ray Bardani at The Hit Factory

XL The Hit Factory, New York City

Elvis returns on XL

The Hit Factory, with facilities in New York and Miami, has purchased two XL consoles for Studio 6 and Studio 7 in its main headquarters in New York City. With an ongoing 18-year relationship with SSL involving 24 consoles, The Hit Factory has successfully recorded the royalty of Rock, Pop, R&B and Hip-Hop music.

Troy Germano, CEO of The Hit Factory asserts, "XL is the 'J' Series on steroids - we're confident the console will keep us at the forefront of the business and allow us to address the new surround delivery formats for our clients."

No sooner installed, the XL was at work in Studio 7 for David Bendeth, producer, and Ray Bardani, engineer, working on BMG/RCA's massive compilation of the anniversary of Elvis Presley's 30 most popular songs, 'Elvis 30 No.1 Hits'. The songs were mixed from the original masters from the 1950s to the 1970s, redone in stereo and mixed in surround on the XL.



▲ Pictured behind the XL console are (l-r) Nicole Bradley Culak, RBE designer; Fred Paragano, engineer/owner of Paragon Studios; Russ Plushner, president of SSL North America; Russ Berger, RBDG president; Don Wyrshba, SSL senior vice president; Dave Malekpour, president of Pro Audio Design

XL Paragon Studios, Nashville

'Keeps us ahead of the curve'

Paragon Studios, which opened its doors this summer, is bringing the glory days of analogue into the 21st century with its new XL. The console is being used for both tracking and mixing in the new studio, which is the first 'from the ground up' facility to open in Nashville in recent years.

While shopping for a new console, studio owner Fred Paragano investigated the XL and was instantly impressed its sonic quality - so impressed, in fact, that he immediately placed an order. It's a decision he doesn't regret. "I feel like I've been missing something all these years," Paragano said. "The XL console brought analogue warmth and integrity back to my sound while retaining the technological advances to keep me ahead of the curve."

Orchestral sessions for Kenny Loggins' new album, produced by Grammy Award-winning producer/songwriter Tommy Simms, were among the first sessions held in the room.

XL Planet Kingdom, Tokyo

Introduction to Japan

The XL is a steady hand of work in Japan. Following the first installation in the country by Seismic Tokyo studio Planet Kingdom in early June.

Situated in the heart of Roppongi, the liveliest part of the city, and home to many of the country's leading studios, Planet Kingdom, an all-SSL studio, has long been associated with some of the leading acts in Japanese pop music. Indeed, the studio is a firm favourite of singer/composer Tatsuro Yamashita, one of the most influential and successful Japanese artists for more than a quarter of a century.

The 80-channel XL console at Planet Kingdom is installed in the Neptune Room where the large 5.1 surround control area was used at the venue for a recent gig that needed to SSL to introduce the new console to the country's recording community.



▲ Olympic Studios, studio 1

XL Olympic Studios, London

First XL in the UK

Olympic Studios, the South West London recording facility situated in Barnes, has installed a Solid State Logic 80-channel XL 9000 K Senes SuperAnalogue™ Console in studio 1. With the installation of the first XL in the UK, the studio is fully equipped to offer both stereo and 5.1 surround sound recording and mixing.

Commenting on the advantages of the new XL console, Siobhan Paine, Studio Manager at Olympic Studios, said: "The idea is not to compromise on the recording and mixing stereo work that we already do, but to complement it with the option of 5.1 surround. The new setup allows the studio to offer greater client flexibility and to meet the increasing demand for DVD-A and SACD work."

Designed by Sam Toyashima, the recently refurbished Studio 1 has one of the largest live areas and control rooms in London. Artists including Paul Weller, Spanish orchestral group Presuntos Implicados and producer Narada Michael Walden (who is purposely travelling from the USA in order to use the desk) are already booked to use the studio following the installation.

The studio handles a wide range of high calibre projects from album recording and mixing to film and TV scores, and recent projects include Massive Attack, Westlife, Def Leppard, Craig David, Shirley Bassey, Sum 41, Oasis, James Last and Badly Drawn Boy.

The installation of the new XL is part of a large EMI investment in the facility. Both a new Genelec 5.1 monitoring system and a TC Electronics M6000 effects unit have also been installed in studio 1.

XL PLUS XXX Studios, Paris

Ask Claude Sahakian why he opted for the XL for his internationally respected studios in Paris, and his reply is unequivocal.

"Establishing and maintaining a world class facility like PLUS XXX Studios means keeping ahead – and to stay at the head you need to invest. In order to attract some of the world's most successful talent, it's important to provide cutting-edge technology in a comfortable and creative environment."

"The XL is a natural evolution of the UK, one of the world's most sought-after consoles, and one that has enjoyed considerable popularity in Studio 2. With the XL we are embracing the increasing significance of new higher resolution audio formats to our clients – as well as the continued importance of surround sound. We have invested heavily in SSL equipment in the past and that has paid off, both in terms of repeat business and by attracting new clients. PLUS XXX Studios will always be home to the world's most important artists and consoles."

▲ Claude Sahakian, PLUS XXX Studios, Paris



XL Sing Sing, Melbourne

'The best analogue console in the world'

Sing Sing Studios of Melbourne, Australia, is one of the country's largest music recording studios. Originally formed 20 years ago by co-owners Kaj Dahlstrom and Phil Butson, the studio operates out of two facilities in the Richmond and South Yarra districts of Melbourne.

In addition to working with the best of local talent, Sing Sing has regularly played host to a plethora of such internationally successful artists as Nick Cave, Kylie, Rhianna, Mariah Carey and her. Fast, currently Studio 5, a new 5.1 room, is nearing completion at the studio's main complex in Richmond – soon to be home to the first XL console in the Southern Hemisphere.

Butson asserts that the studio's selection of the XL was straightforward. "We chose the XL console simply because we felt it is the best analogue console in the world. The combination of unsurpassed audio quality and innovative surround sound tools will enable us to consolidate our position as one of the leading recording and mixing facilities in Australia."



▲ Studio Mega, Studio A

XL Studio Mega, Paris

'Love at first sight'

The largest XL in Europe – 96-channels in a four-wing configuration – has recently been installed by Studio Mega of Suresnes, France. The XL is the centrepiece of Studio A's 90 square-metre control room, the premier studio in the facility's four-room, all-SSL facility. With an international clientele including Lenny Kravitz, Celine Dion, Sting, Roger Waters, Bryan Adams and Elton John, together with movie credits encompassing many box office hits such as the musical comedies 'Ten Commandments' and 'Romeo and Juliet,' Mega can justifiably be regarded as one of Europe's most successful and forward-looking studios.

Thierry Rogee, manager of Studio Mega was convinced that, with two M™ Plus digital multitrack consoles and an existing SL 9080 J Series Console, his clients could enjoy the best of both the analogue and digital worlds, but when he saw the XL, "It really was love at first sight," he maintains.

"The new HS computer, which we enjoy in our MT Plus studios, is a familiar and much appreciated asset and the sound quality of the 9K is an industry benchmark. To improve on this was a fantastic feat from SSL's engineering team but I have no doubt that they have succeeded. As for the innovative 5.1 mixing tools - that's 'icing on the cake!'"



XL 9000
K-SERIES

▲ The 96-channel XL console at Pacificue Recording Studios

XL Pacificue Recording Studios, North Hollywood

FIRST 96-CHANNEL XL IN THE U.S.

Pacificue Recording Studios, a premiere west coast recording facility, is now home to the first 96-channel XL in the U.S., installed in a move seen by owners Joe, Ken and Vic Deranteriasian as the next logical step to take for their popular studio.

According to Joe, Ken and Vic, they anticipate that clients from existing J studios will seek to work on the XL once they find out the new console is available. "There are 30+ other J Series consoles in LA, so there are potentially a lot of people out there who will begin working on a J Series and might want to finish on the XL because

it's that much more advanced," says Ken. "We strongly believe the XL will bring us success beyond our expectations."

Pacificue Recording Studios has hosted a long line of hits from some of the top recording acts in the business including Britney Spears, Destiny's Child, Will Smith and Natalie Cole, to name a few. Recently, renowned producer/engineer Dexter Simmons worked at Pacificue, engineering the second album by R&B sensation Tank.



New BBC mobile makes festival debut

A brand new OB vehicle, commissioned by BBC Radio Resources on behalf of BBC Radio & Music, made its debut appearance at the world-renowned Glastonbury Festival at the end of June. Dubbed 'Sound 1,' the new truck is equipped to cover the largest live music events, from rock and pop festivals to classical concerts, and is fitted with a 48-channel SL 9000 J Series SuperAnalogue™ Console. Specifications for the coachbuilding and technical fit-out were prepared by a team from BBC Technology Professional Solutions.

The new OB vehicle is a 14m x 2.5m trailer, divided into three compartments: an apparatus area for power supplies, a mixing area housing two consoles, and a recording area for multitracks, DATs, CD-Rs and communications equipment. The mixing area is equipped with the SL 9048 J Series Console fitted with 8-channel surround monitoring, together with a 32-channel submixer that will be used at large venues.

Last year, the BBC installed a 72-channel SL 9000 J Series Console in its fully refurbished Golders Green Hippodrome and the choice of the same console for the new OB vehicle will provide the necessary familiarity for operational staff who work at both venues. For live music applications, it was also felt that SSL's ergonomic control surface provided the most satisfactory solution.

Having led the broadcast coverage of The Glastonbury Festival since 1986, the BBC transmitted more than 30 hours of music on BBC2 and BBC Choice this year. The Sound 1 mobile was used to provide sound for all TV and Radio broadcasts from the Main Stage, including live headline performances on Radio 1.



The BBC's new Sound 1 mobile is equipped to cover the largest live music events. At the Glastonbury Festival this summer, the OB broadcast live performances from leading artists including Coldplay, Badly Drawn Boy, Roger Waters and Rod Stewart.

TBS reopens Studio 1

WITH MT PRODUCTION

Tokyo Broadcasting System (TBS), one of Japan's leading commercial broadcasters, has re-opened Studio 1 at its Broadcast Production Centre in TBS Square in the Akasaka district of Tokyo.

The refurbished Studio 1, a specialised facility for radio production with a large area acoustically optimised for recording large-scale music entertainment shows and live broadcasting, now features SSL's MT Production Digital Multitrack Console (MTP) at the heart of operations in the control room.

The 32-fader, 64-channel MTP replaces an SL 5000 Series analogue console which has seen many years service at TBS, where it was similarly used on-air and for recording.

According to SSL Japan's General Manager Takeo Asano, the selection of the MTP was unanimous. "TBS Radio needed large-scale production capability and demanded high audio quality. The staff all decided that, when migrating to digital, the MTP was the natural and perfect successor to the SL 5000 Series."

The first task for the new console on the day of reopening was the recording of a special studio session of popular Japanese singer/composer Ami Ozaki and her band.

◀ The MTP in Studio 1, Tokyo Broadcast System



Tom Jones tracked

Wyclef Jean, artist and producer, and Jerry Wonda, producer, together known as The Refugee Camp, recently tracked vocals for the new Tom Jones album at Chalice Studios in Los Angeles on the facility's Solid State Logic SL 9000 J Series SuperAnalogue™ Console. Jean and Wonda recorded the entire album at their own studio, Platinum Studios in New York, on their SL 9000 J console. They are currently mixing the new Carlos Santana song on the J Series at Platinum. The duo also recently purchased SSL's new XL 9000 K Series SuperAnalogue™ Console, which will be installed in their second room later this year. Wonda said he purchased the XL because he wanted the 'best' gear in their new studio.

▼ Pictured at Chalice Studios at the SL 9000 J are [l-r] Wonda and Jean.



Sixth Aysis Air for Italy's Videotime

Italian TV Production company Videotime is a subsidiary of Silvio Berlusconi's Mediaset Group and the production arm for the group's three channels, Canale 5, Italia 1 and Retequattro.

In the summer, Videotime installed its sixth Aysis Air Digital Broadcast Console – supplied in the recently introduced 'Plus' configuration – for one of the company's two facilities in Milan. The Aysis Air Plus, like the five before it, was specified with a 32-fader control surface with 24 mono and eight stereo channels.

As one of Europe's most profitable broadcast operations, Mediaset and its production arms have long been advocates of digital technology, which it has implemented at all stages of the production chain. Videotime's Technical Director, Roberto Baroni explains, "In the late eighties we were operating five SSL 5000 Series analogue broadcast consoles, but in the nineties we were already planning our transition to digital. When the Aysis Air was introduced in 1997 we installed one of the first consoles in Europe – and our operators quickly appreciated that SSL had worked hard to keep the control surface as familiar and easy to use as its analogue predecessor. "Over the last five years the consoles have proved themselves to be very reliable and flexible enough to be used on a wide range of programming across our three broadcast channels. About 60% of our output is live."

The Group's production area is equipped with the most up to date digital technology and includes 19 TV studios, 89 edit suites, 21 graphics production areas and 38 OB units – as well as 10 regional broadcast centres.



▲ Aysis Air Plus

NFL FILMS FIELDS SSL LINE-UP

NFL FILMS HAS REALISED AN IMMENSE FOUR AND A HALF YEAR TASK IN JUNE THIS YEAR, BRINGING ALL ITS PRODUCTION AND POST PRODUCTION OPERATIONS TOGETHER IN A SINGLE 200,000 SQUARE FOOT MEGA-FACILITY IN MT. LAUREL, NEW JERSEY. OF UTMOST IMPORTANCE WAS BUILDING THE DIFFERENT AUDIO STUDIOS TO MATCH THE INCREDIBLY DEMANDING PRODUCTION SCHEDULE THAT INCLUDES 400 HOURS OF PROGRAMMING EACH YEAR ON ALL THE MAJOR NETWORKS, PLUS HBO, ESPN AND THE HISTORY CHANNEL. NFL FILMS DECIDED TO FIELD AN ALL-SSL LINE UP FOR THE LARGE FORMAT STUDIOS, MAKING IT ONE OF THE MOST ADVANCED AND CAPABLE RECORD/MIX FACILITIES IN THE WORLD.

"When you build a championship football team, you go out and find the best player for each position," says Jerry Mahler, vice president of audio for NFL Films. "Our console roster reflects this approach offering different SSL consoles, each playing a different role in our production chain. We now have six recording studios, three music edit rooms, two scoring rooms and one large dubbing stage."

Studio A, the main scoring stage, features an SL 9000 J Series SuperAnalogue™ Console. This room primarily handles the orchestral output of the two staff composers and recently recording a 72-piece orchestra performing the soundtrack for the show 'Hard Knocks.' Mahler and company chose the 9000 J for this room because of the very appealing sound of the console.

A 48-fader Avant Digital Post and Film Console, which is able to access 192 channels, fills the position in the dubbing stage, Studio D. "We decided to choose digital for this room to match the digital throughput of our new video facility," Mahler explains. "The Avant performs the complex and certainly hectic job of completing the myriad shows we produce for the NFL. Studio D is constantly operating on a tight schedule and the automation and performance of the console is testament to the Avant's design and the SSL team." The six-week series

'Hard Knocks,' a trailer for Lowes Theater and a project for Sony Epic were recently posted in this room.

The future mix room, Studio C, features the SSL Axiom MT Digital Multitrack Console. Again the superior sound combined with the powerful automation and digital throughput capabilities of the console made it the right choice for the position. Studio B features an SL 8000 console and Studio S offers an SL 6000 that services the sound stage.

"We believe that we have one of the finest audio production facilities in the world and went to great lengths to match the right console with the right room," states Mahler. "SSL consistently delivers high-quality, industry-leading products. For the NFL Films audio team, all the primary players are from SSL and that makes us a big winner."

Since 1964, NFL Films has revolutionised the way America watches football and set the standard in sports film making. Along the way, NFL Films has scooped an incredible 82 Emmy awards. In the new facility, it will continue to operate as one of the last great, self-contained 'Hollywood' studios by producing and distributing more than 400 hours of new NFL programming across broadcast and cable networks. NFL.com, home videos, DVDs and CD-ROMs.

▶ The control room of the main scoring stage at NFL Films houses an SL 9000 J Series SuperAnalogue™ Console



SSL INTRODUCED A NUMBER OF INNOVATIVE PRODUCT ENHANCEMENTS at the 113th AES Convention in Los Angeles.

SSL'S TEC-AWARD WINNING 956 FILM SCORING SYSTEM IS NOW INTEGRATED WITH THE COMPANY'S FLAGSHIP XL CONSOLE TO DELIVER THE ADVANTAGES OF THE NEW CONSOLE'S SUPERIOR SONIC PERFORMANCE IN AN APPLICATION-SPECIFIC CONFIGURATION. OTHER BENEFITS INCLUDE ENHANCEMENTS TO THE PERFORMANCE AND DISPLAY OF THE XL'S REGIONAL FADER TRIM FUNCTION, AND NEW TOTAL RECALL™ AND FADERS DISPLAY FEATURES.

Smaller, more powerful MT Production

SSL's successful MT Production Console has powerful new features that further enhance its capability in mobile truck and other compact studio applications. Virtual Bays allow control surfaces as small as 16-fader versions to access all 96 in-line channels from the surround listening sweet spot, while new third-party integration tools permit control and viewing of external workstations from the console's centre section.

NEW AVANT PLUS SP (Shortform Post)

Solice State Logic's new Avant Plus SP is a compact configuration Avant console package, designed specifically for short form post applications. New control surface features allow up to 192 mix inputs to be controlled from a 16-fader console while new interface options allow control of external workstations. Combined with Avant's integrated non-linear automation and comprehensive surround monitoring, the SP package is designed to produce commercials with ease, yet still cope with drama scale productions when the opportunity arises.

MT Plus for Magyar Radio

Hungarian national and regional broadcaster Magyar Radio, is to install SSL's MT Plus Digital Multitrack Console in Studio 22 in its Budapest broadcasting centre. The 32-fader, 64-channel MT Plus is scheduled for delivery in November when it will be employed on a variety of tasks ranging from music recording and mixing to film scoring and live broadcasting.

Studio 22 has a large 280 square metre live area that has long played host to Hungary's world-renowned orchestras, chamber music ensembles and choirs. Significantly, Studio 22 also serves as the scoring stage for the Budapest Film Orchestra – which draws on a pool of talent from three of the most successful orchestras in the capital: the National Philharmonic, the State Opera Orchestra and the Festival Orchestra. The many projects scored at Studio 22 in recent years for both theatrical and TV release include 'Young Indiana Jones Chronicles,' 'Catherine the Great' and 'Mulan.'

The ability of MT Plus to cope with a varied workload was an important factor in the broadcaster's decision as Magyar Radio's Technical Director Laszlo Suto explains. "We sought a flexible solution that could address the diversity of our studio requirements. With such a distinguished history in orchestral music, sonic integrity was also naturally important. When we experienced the powerful digital automation advantages incorporated within MT Plus – and listened to the sound – we were convinced that this console provided the most appropriate solution, both for today and for our future needs."



NEW STUDIOS IN JAKARTA

Based in the Indonesian capital, Jakarta, PT Aquarius is the studio arm of leading Indonesian record label Aquarius Musikindo. Two newly-completed studios at the facility have recently been equipped with SL 4000 G Series Consoles. The first, for the larger of the two rooms, is an SL 4056 G+ Special Edition which will be primarily used for music recording while a smaller SL 4040 G+ will fill the mixing role in the second studio.

The studio works on a diverse range of musical genres from progressive rock and pop bands like Dewa, Discus and Glay to traditional music. With more than 6,000 inhabited islands in the Indonesian archipelago, there is a tremendous musical variety within the region.



XL 9000
K • SERIES

◀ MG Sound, Vienna (l-r) co-owner/producer Ludwig Coss, Studio Manager Eva Böhm, and co-owner/chief engineer Martin Böhm with the new XL

XL MG Sound, Vienna - XL ROLLS OUT THE STONES

Immediately following its public European debut at the AES Convention in Munich, the XL console was swiftly en route to Vienna and its first European installation at leading Austrian studio, MG Sound.

The exceptional audio quality of XL was quickly appreciated by MG Sound's co-owner/chief engineer Martin Böhm who asserts, "The XL's sonic warmth and purity, rock solid automation, and speed of operation sets a new standard in recording. This new generation console is perfect for our purposes."

Located in the historic centre of old Vienna, the production team at MG Sound has considerable expertise in major pop and classical projects, working with a galaxy of international talent

including U2's Bono & The Edge, Whitney Houston, Marianne Faithfull, Scorpions, Jose Carreras, Placido Domingo and George Massenburg. "Top artists and clients demand quality on an international level," maintains MG Sound's co-owner/producer Ludwig Coss. "SSL is the world-wide standard and our investments have paid off in more ways than just providing technical excellence."

No sooner installed, the XL was revved up for mixing and mastering 'Let it Bleed' – a TV documentary on the 40-year success story of The Rolling Stones for production company DoRo. The documentary was screened on leading arts channel ARTE in the summer. A video and DVD release is in the pipeline.

AVANT PLUS

MAKES WAVES IN MEXICO

New Art Sound Studio, part of New Art Digital in Mexico, is excited about the recent installation of Solid State Logic's Avant Plus Digital Console for Film and Post in the facility. After completing the technical installation and THX certification in July 2002, the Avant has been used on work for Leo Burnett and Javier Vale & Asociados advertising agencies, and feature films such as 'Monica y el Profesor' and 'El Ultimo Evangelio,' all done in 5.1 surround sound.

"The Avant is very flexible, reliable and intuitive," says Rodrigo Ortiz-Parraga at New Art Sound. "Everyone that has seen the room has been very impressed. The acoustics and sound are excellent, and the Avant console is a pleasure to work with."

The benefits of working with a digital console have added to the flexibility of Avant. The recall of all the parameters – mix settings, automation, I/O settings, monitor matrix and routing – allows the user to jump from one project to the next with ease.

"We can work on several projects without having to reconfigure the console every time we have a different client coming back for changes or revisions," says Ortiz-Parraga. "Now we can fit more projects in the room and increase the efficiency of the studio."

Sheffield: born to run

The MT Digital Multitrack Console in Sheffield's 48-foot remote audio truck



The crew from Sheffield Remote Productions of Asbury, New Jersey, felt like they were in their 'Glory Days' working with an MT Digital Multitrack Console for Bruce Springsteen's concert in Asbury, and appearance on 'The Today Show.'

Sheffield's audio and video remote trucks are well established in the broadcast and recording industries with over 20 years of remote experience. The ultimate in comfort and versatility, Sheffield's 48-foot Remote Audio truck is one of the world's

finest mobile recording studios. The 30-foot control room features ten-foot ceilings, lead lined walls and sand filled floors, with the 96-channel MT Digital console at its heart.

"The MT console is unparalleled," Van Horn said. "It's been a great asset to us and I look forward to more success with the MT on future projects."

Recent projects for Sheffield's Remote Audio truck include a DVD and MTV special for Jimmy Eat World taped in Washington D.C., a DVD and TV special for Usher recorded in Orlando, and a live broadcast from Baltimore, for MTV featuring The Hives.

Studio Atlantis

Studio Atlantis in Hollywood, has experienced a rising tide of success with its recently installed 80-channel Solid State Logic SL 9000 J Series SuperAnalogue™ Console. The console, located in Studio Atlantis' newly opened Studio A, has recently been used for many high-profile projects, including Mariah Carey's debut album for Def Jam Records (featuring Jay-Z), Jimmy Eat World's cover of Prodigy's 'Firestarter', and the debut album of rock progeny Aimee Osbourne.



82S6QNEW

XL

NHK, Tokyo



The national broadcasting station of Japan, Nippon Hoso Kyokai (NHK) has installed an XL 9056 K Series Console in its large-scale production venue, NHK Hall.

On New Year's Eve, Japan's consistent programme of choice is 'The Battle of The Songs' featuring live performances of the major pop hits of the year. The upcoming programme at the end of this year will be broadcast in surround sound using the new XL.

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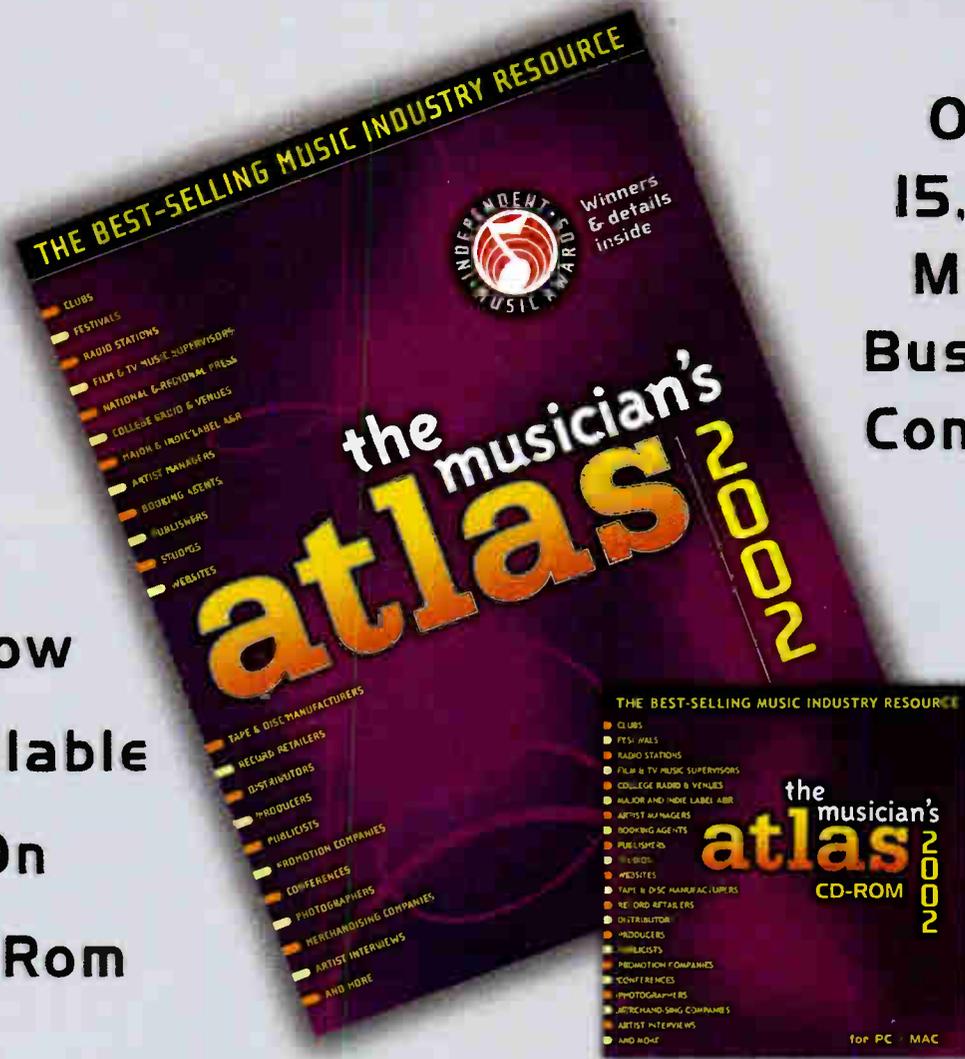
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led it himself with Quezergue.

The band on the ultrafunky, slightly reggae-ish "Groove Me" consisted of Quezergue on Hammond B-3 (miked top and bottom on the Leslie, says Stephenson, who engineered with Couch); Jerry Puckett on guitar (a single mic on his amp); Vernie Robbins on bass (a mic on the amp mixed with the direct signal—Muscle Shoals-style); James Stroud—now a successful Nashville producer—substituting for Malaco's regular session drummer; and the Chimneyville Brass, a loose group of the hottest local horn players. The drum

miking scheme was also derived from Muscle Shoals, Stephenson notes: "They would use a 67 about 18 or 20 inches above the snare drum, put one mic in the bass drum and a couple of other mics on the top, like a KM-84, and that was about it. You had to be a fairly attentive drummer to play that setup, because there was that big fat Neumann sitting right there in front of you, but it sounded great. Roger Hawkins [of the Muscle Shoals rhythm section] is a real master working with that setup." In all, the session for "Groove Me" was just five tracks of instruments (drums

and horns were on one track each) and Floyd's vocal on a sixth track.

On the day Floyd and the other singers were brought up to add their parts—May 17, 1970—Floyd eschewed the school bus and drove up alone, but his car broke down on the way and he was several hours late. When he finally arrived, there wasn't much time left. "We cut two tunes," Floyd told an interviewer. "What Our Love Needs" took three takes, and 'Groove Me' only took one. I was out of there in 30 minutes."

Actually, "What Our Love Needs" was the unanimous choice to be the A-side of the single: "We were positive it was going to be the hit," Couch says. "We even put real strings on it, we were so sure." However, attempts to lease the two songs to Stax or Atlantic were unsuccessful, so the Malaco gang put it out themselves on their own Chimneyville imprint. "What Our Love Needs" did get some regional radio attention, but it was the B-side, "Groove Me," that eventually took off and exploded nationally. When it was already a regional sensation, Atlantic picked up the distribution of the single, and the record made it all the way to Number One on the R&B charts and to Number 6 on the pop charts, much to the shock and delight of everyone at Chimneyville/Malaco. The single earned a Gold certification on Christmas Day, 1970.

Floyd had a number of other R&B hits for Chimneyville over the next few years, including "Baby Let Me Kiss You," "Got to Have Your Lovin'," "Woman Don't Go Astray" and "Body English." But he never quite duplicated the initial success of "Groove Me," and by the late '70s, it seemed as though the ever-shifting styles of R&B had left him behind. He's been in and out of the music business ever since.

For Malaco Studios, "Groove Me" was just the beginning: "It really changed things for us," Stephenson says. "It brought us a lot more work in the studio and brought us a lot more recognition. It helped us establish our credentials." Another song from those May '70 sessions—Jean Knight's "Mr. Big Stuff"—reached Number One on the R&B singles chart in 1971, and through the years since, both the studio and the various record labels connected to it have thrived by recording top local and national blues, R&B, jazz, and both black and white gospel acts. A couple of years ago, to celebrate its 30th anniversary, Malaco released a six-CD compilation—called *The Last Soul Company*—highlighting the best sides by King Floyd,

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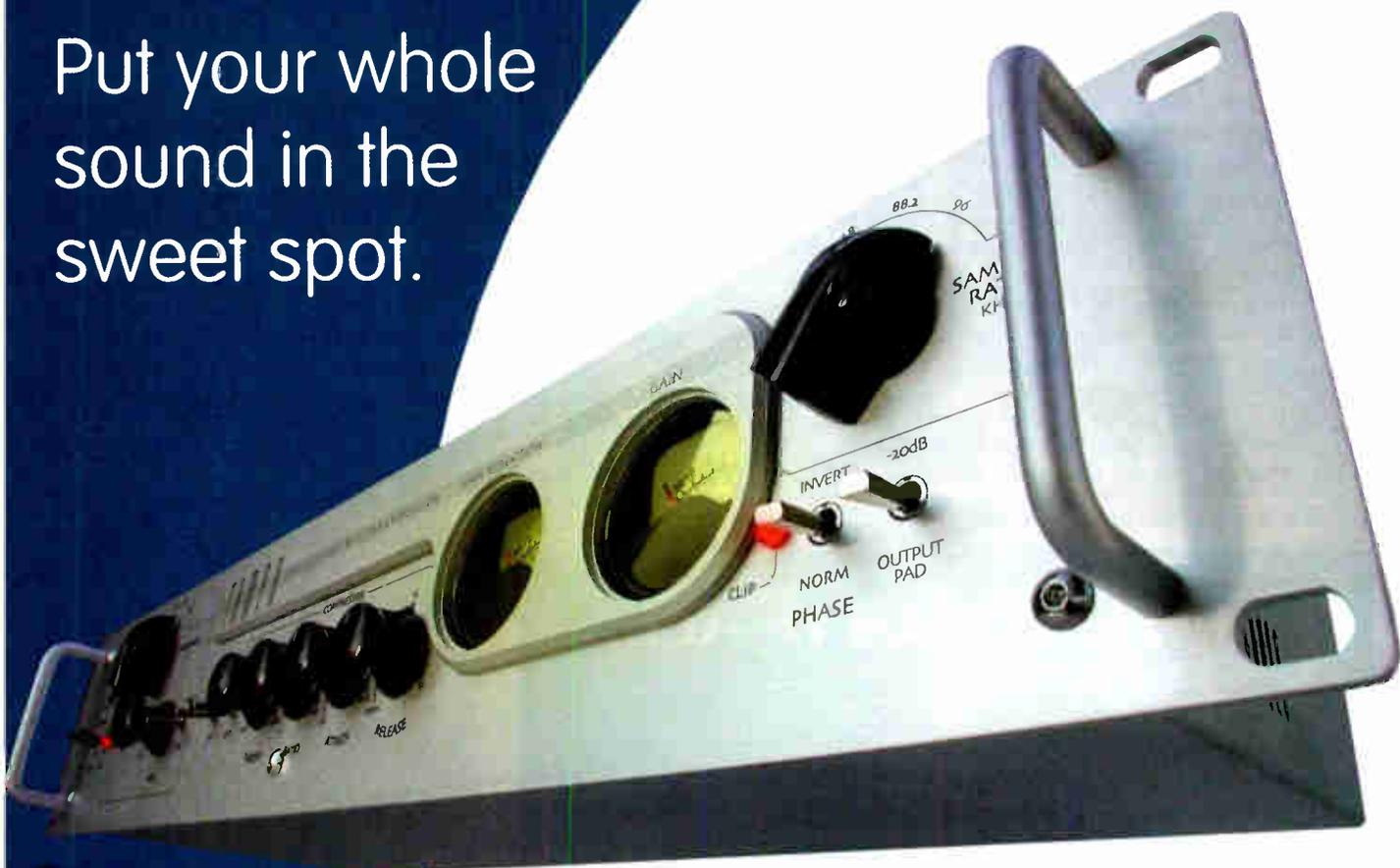


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the Sony C800G on upright bass. I really don't know what the 'Nashville method' of making records is. Whether I am working in Ireland, Austin, L.A. or Nashville, it is pretty much all the same: cut great songs and catch good tone, then mix until everyone is happy.

"[The Chicks'] approach is relaxed but very focused. Our days were not long, but I worked my ass off because even after you wear one of them out, there are always two others that are fresh and raring to go.

"If I need to be great at anything, it would be that I better understand the tone

and emotion that the player is trying to get across for that particular song. The girls work really hard on parts and solos, and they critique and coach each other in a really constructive way."

Home's bare-bones approach emphasizes all sides of the Dixie Chicks. Their passion for bluegrass lends itself perfectly to their interpretation of Stevie Nicks' "Landslide." Maguire's and Robison's lightning-fast licks take the spotlight in the instrumental "Lil Jack Slade" with Maines on rhythm guitar. The trio's furious energy is captured wonderfully in the lyri-

cally lightweight "White Trash Wedding."

Maines' vocals are impeccable on every track, but the standout session, according to her father, was the Radney Foster song "Godspeed." "I'm a musician first, and Martie and Emily totally slay me with the way they play," he says. "So the instrumental tracks were great; the hot picking. But in the second group of six, we recorded 'Godspeed.' Natalie said she would like to try to sing it front to end in one take and get into the emotion of the song. So we formed an isolation spot for her, lit candles, created an atmosphere. It was late at night, and it's a very stark track. Emily sang harmony, Martie played viola, we had an upright bass and a snare. There are no drums on this album, just a snare with brushes on one song. Natalie absolutely amazed everyone with her voice. It was a totally emotional moment. We just tried to create the ambience for it to happen, and we pretty much cut it in one take. It's one of her best vocal performances of all 12." The primary lead vocal mic on the sessions was a Sony C800G; backups were recorded using Neumann M269s.

Whether cutting something as purely entertaining as "White Trash Wedding" or as poignant as "Godspeed," Maines' approach to production never changes—he strives for both sonic and emotional results. "It was a total combination on every song, even on 'White Trash Wedding,'" he says. "When we play that thing live—we did two shows, in Nashville and L.A.—I feel like we're playing a rock 'n' roll song because it's so high energy. It's not a deep subject, but coming out of the speakers, you can tell there's rock 'n' roll energy, and we're just wrung out after playing it. We have to take a breath and regain energy for the next song. So if it's 'White Trash Wedding' or 'Top of the World,' which is a very deep subject matter, I have one thing in mind: make every instrument sound as good as it can sound. Although 'White Trash Wedding' does not emit any emotional thing, you still have to be emotional with it, and whether it's that aggressiveness or the subtle sadness of 'Top of the World,' you try to keep things sonically right. If I have to choose, I'll keep going with emotion. Mistakes, gaffes, goofs: Unless they disrupt the flow of the song, and if it's not an overt blunder, sometimes it can add to the situation. I played in enough blues situations and with Joe Ely for many years, and the greatest moments onstage came when something went a little awry and finding your place was the moment of the night.

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I'm not one who thinks everything has to be pinpoint perfect, because perfect can be a little boring."

Despite all of the changes and departures that *Home* represents for the Dixie Chicks, Lloyd Maines is the one who really took a flying leap; last year, he was still a diehard analog man. "Actually, that's what I thought until I heard the 24/96 high resolution," he says. "It sounds like we A/B'd stuff, because the first time we came in, we laid stuff down in analog, and then we did the same stuff in digital and everyone picked digital. Before, analog was a warmer format, but now they've developed digital converters to where you don't lose the warmth. I listened to the up-right bass through the board and after the fact, and it sounds the same. At home, I probably won't go to computer because I don't like staring at a screen. But the Tascam 2424 digital hard drive makes you think you're working in analog because it has fast-forward, rewind and pause, so ultimately, I might get that for the house.

"I had done some things in Pro Tools, some projects at other studios. A lot of people are hanging on to their analog preference, but after working with Nu-

endo and with Pro Tools, it's the way to go. If you lack warmth, you can always run the mix through a high-quality stereo compressor. But it's such a great medium to record to, especially when it comes to editing, moving things, punch-ins. Analog is so time-consuming. I don't mind that, but digital has improved to where it sounds as good, if not better."

With the Chicks' audience estimated at 60% under the age of 25—despite the fact that the group usually writes and selects songs dealing with decidedly adult subject matter—Natalie Maines agrees that *Home*, while retaining the trio's identity, was a calculated risk in terms of airplay. Still, the album's first single, "Long Time Gone," was an immediate radio add and instant hit, with "Landslide" ready to follow in its footsteps.

"We've always had a bluegrass feel because of Martie's and Emily's instruments," she says, "but we *never* made an album by listening to what's on the radio. To be honest, we don't really listen much to radio, and if we did, we would want to do what other people *weren't* doing. We don't sound like anyone else, and that makes longevity. You don't want to be

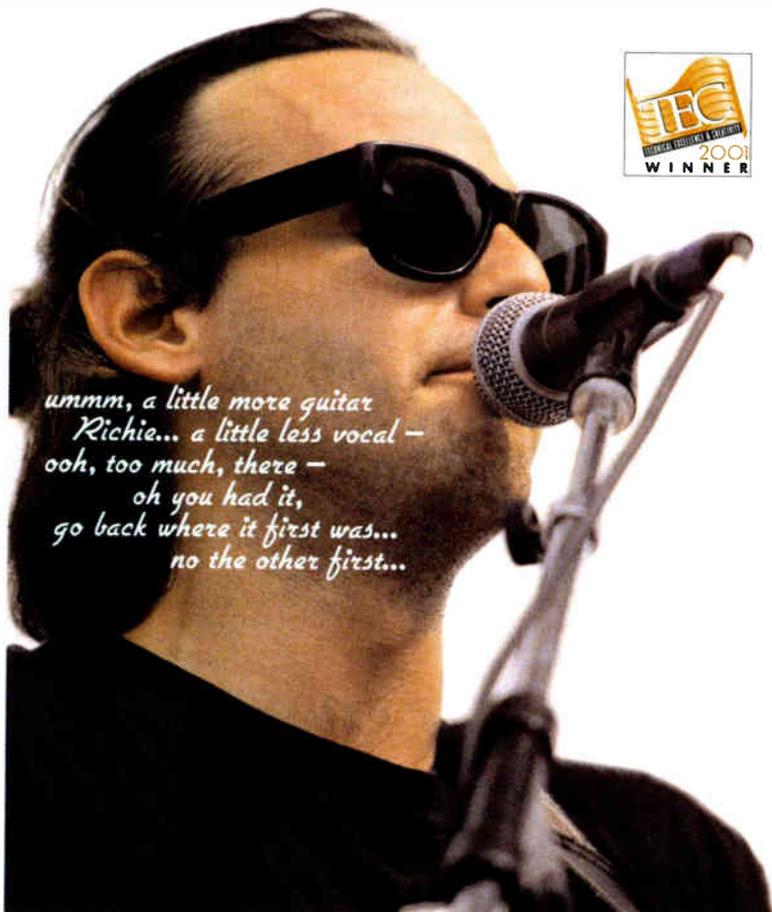
compared to others or have them compared to you because it's bad for everyone. We planned on making strictly a bluegrass album, and when we started arranging and choosing songs, that's not where we went. We love where we went even more, and the bonus is that it turned out to be radio-friendly." ■

DAVID SYLVIAN

FROM PAGE 159

the guitarist with helping him overcome his reluctance to perform. But he says that their working methods sometimes conflicted in the studio, with Fripp constantly striving for a certain somewhat rigid level of perfection, and Sylvian preferring to remain flexible and weigh many options. "Robert had the first crack [at *Damage*]," Sylvian says, "so this is my turn with the same material. Also, it's *mine* and I didn't feel the need to go back and consult him."

The actual work of reworking *Camphor* and *Damage* involved long periods of cleaning up and touching up the old



*ummm, a little more guitar
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oh you had it,
go back where it first was...
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masters using Pro Tools and stacks of outboard gear. Through the guidance of his engineer of 10 years, Dave Kent (whom he met while they were both living in Minneapolis; Kent was working for Prince at Paisley Park), Sylvian has become quite proficient with Pro Tools. "Dave basically educated me in Pro Tools," Sylvian says. "It's totally intuitive for me, and I thoroughly enjoy working with it. That was a godsend and allowed me to work entirely alone when need be. Particularly when doing vocals, I enjoy working in isolation."

Because he had rarely listened to his past work through the years, Sylvian says that when he delved into the old selections for *Campbor*, he was surprised to find out how minimal they were in comparison to his newer material. Many of them used fewer than 24 tracks, in contrast to recent pieces that are twice that and more. Still, he says, "The richness in textures and quality was all still there. I often go overboard and run over 64 tracks and not think anything of it. So it was interesting to go back to these 24-track analog tapes and realize that maybe we only used 15 or 20 of the original tracks and yet the pieces stood up well and sounded full-blooded."

Sylvian says that he was also caught off-guard by the power and spirit of many of the old tracks. "It was the emotional impact of being drawn back into particular times and places," he notes. "That was quite strange and intense, and I wasn't prepared for that as I reconnected with the older material."

Engineer Kent says that he has come to greatly respect the artistic process that Sylvian puts himself through in the studio. "He gets personally involved," the Wisconsin native says from his home studio in the Sonoma Valley region of California. (Sylvian previously lived there, too, and just recently relocated to the Northeast.) "And he will be his own worst critic. When you take into consideration the caliber he's trying to achieve, I think that works well for him. I don't think another person would be able to communicate that to him as well as he can do that with himself. All in all, the level of musicianship and the people that he works with are astounding."

Back in '93, when Sylvian and Fripp toured together, Kent mixed the shows. Unlike most studio engineers, he also does concert work, regularly going on the road with Sylvian. "It's exciting for me to know the music so intimately to begin with," Kent comments, "and to then pres-

ent it in such a fashion that it represents maybe not exactly what was on the record in a different environment every day. From more of an aesthetic standpoint, the most difficult thing is that David sings very quietly. So the loudest thing in the mix is basically the quietest thing on the stage."

Kent felt that unlike the concerts it was drawn from, *Damage* was dynamically lacking. Sylvian agreed, but just the same, it took the engineer close to two years to convince him to consider re-releasing it. "We felt there were better tracks on the [ADAT] tapes and we could

do a superior job," Kent recalls. "And I feel like we did that with the re-editing and everything. It definitely was more involved than *Campbor*."

"Because David's catalog is so extensive, putting the material together for *Campbor* was kind of a chore. Essentially, we came up with his most personal compositions from a lot of different records. I felt that it's important, because it re-introduces that material to a public that might not otherwise have been exposed to it. From a technical standpoint, it came down to picking out selections, remaster-

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ing them and getting the whole thing down to 72 minutes.”

Throughout his tenure with Sylvian, Kent has set up and operated studios for him in Minneapolis, Sonoma Valley and presently in New Hampshire. Like many engineers today, he likes to put his emphasis on matching the music with good-sounding preamps and other outboard gear, rather than obsessing on the recording medium. “I try to use as much outboard gear as possible,” he says. “I use Earthworks and Summit mic preamps, and I just used the Millennia 8-channel unit. That’s the kind of front end I like to maintain, and then I use the Pro Tools to play and store the material. I’ll still always use my 480L, H3000 and a couple of PCM90s. I still like to try to keep the tube compressors in the chain as much as I can. But as far as density is concerned, we always try to get the sound we want to work with as close to what we want it to be ultimately.”

With the revamped versions on *Damage* and *Camphor*, it was actually the opposite, with Sylvian and Kent stripping away elements, especially various reverbs and delays Sylvian felt sounded somewhat dated—more appropriate to the ’80s

(when they were recorded) than to today. “My most recent work is devoid of effects of one kind or another,” Sylvian stresses, “so I tried to bring [some of the selections] into the present time in that respect.” Also, he says, he wanted to find the core of those songs. In the case of *Damage*, he also re-performed a few vocal lines that he was dissatisfied with.

His retrospective period now behind him, Sylvian now has many enticing directions to consider, including touring solo, working with his brother (drummer Steve Jensen, who was in Japan and recently toured with him), soundtrack work, more one-off projects with other musicians or just getting back to his first love—songwriting.

Whatever possibility he finally decides on, one goal is paramount: “It has to excite me.” ■

Cool Spins, FROM PAGE 162

that the majors have joined the party. Universal Music Jazz France jumps in with *Moffou*, an infectious, melodic, upbeat collection by Salif Keita, Malian-born but now one of Paris’

favorite adopted sons. Despite the 17 musicians and army of backing vocalists, the production is simple and elegant, sometimes spare, with light fingering on a variety of strings—acoustic and electric guitar (stunning work by Djelly Moussa Kouyate), luth, n’goni, e-bow. But center-stage is the unique, high-register vocal of Keita, at once intimate and open, soulful in a playful manner. Listen to “Madan,” a dance-ready blend of melodic chaos, followed by the childlike fable of “Katonon”: a wonderful daily double. Perfect for a Sunday morning or this winter’s vacation to the Keys.

Producers: Salif Keita, Jean Lamoot, Freddy Zerbib. Engineer: Timour Cardenas. Studios: Paris, not available. Mastering: Not available. —Tom Kenny

The Ramones: *Pleasant Dreams* (Sire)

It’s sad to say, but authentic punk rock is largely a thing of the past. Sure, there are still a few good bands belting it out, yet nothing comes close to touching the simple brilliance of The Ramones. Thankfully, we have albums like the recently reissued 1981 album *Pleasant Dreams* to remind us what “one-two-three-four” should really sound like. The reissue contains seven previously unreleased bonus tracks

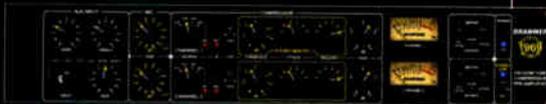
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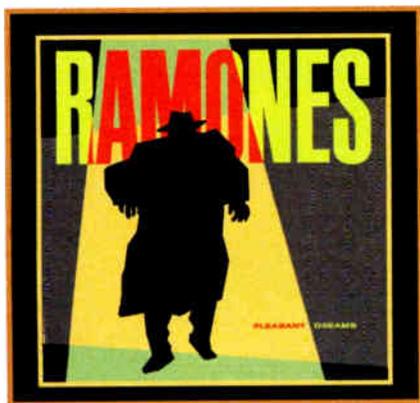


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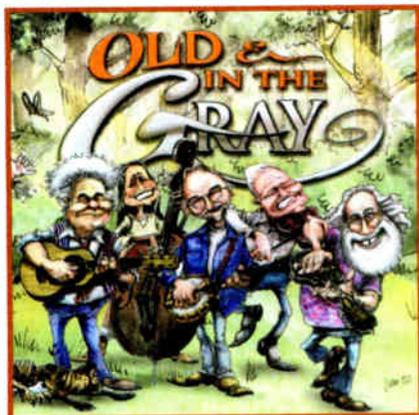
(recorded during January-February 1981 at Daily Planet in New York) with VIP guests including Debbie Harry, and Kate Pierson and Cindy Wilson from The B-52's. The liner notes are packed with recording memories, band drama, cool photos and a Dee Dee Ramone tribute. The CD itself sounds amazing, with punk anthems like "The KKK Took My Baby Away" and "You Sound Like You're Sick" battling their way through three chords of madness. It's no wonder The Ramones were the first punks inducted into the Rock and Roll Hall of Fame.

Producers: Graham Gouldman and Ed Staunim. Engineers: Lincoln Y. Clapp, Harvey Goldberg, Chris Nagle and Keith Bessey. Studios: Media Sound (NYC), Strawberry Studio North (Stockport, England), Daily Planet (New York), Strawberry Studio North (Dorking, England).

—Natale Verdone

Old & In the Gray (Acoustic Disc)

Back in 1975, David Grisman, Jerry Garcia, Peter Rowan, John Kahn and Vassar Clements shook up the bluegrass world with the release of *Old & In the Way*, a live album that combined classic bluegrass tunes with a Rolling Stones cover, a dooper anthem by Rowan and more; basically, it was hippie bluegrass—loose-limbed but still hot and well-played. That album became one of the best-selling albums ever in the genre and spawned two more live CDs, though the group only existed for a few months in



1973 and '74. Now, Garcia and Kahn are dead, but Grisman has reformed the group with the fine singer and banjo player Herb Pedersen filling in for Garcia and bassist Bryn Bright replacing Kahn. The formula nearly 30 years later is the same—a few bluegrass and old-timey nuggets by the likes of Bill Monroe, Carter Stanley, Don Reno and Jim Davis and Ira Louvin; some more modern tunes by Rowan, John Hartford and Townes Van Zandt ("Pancho and Lefty"—always a good choice); and, yes, a Rolling Stones cover—wait till you hear them tear through "Honky Tonk Women"! Rowan and Pedersen handle most of the lead vocals,

and both are fine, expressive singers; the group harmonies are also excellent. Mandolinist Grisman and fiddler Clements take most of the leads, though the jamming is kept to a minimum. *Old & In the Gray* may lack a little of the humor and devil-may-care attitude of its '70s predecessors (except for the title and the cover art), but it's still a very strong collection of songs that span an incredible range of folk music styles.

Producer: David Grisman. Engineer: Larry Cumings. Studio: Dawg Studios (Mill Valley, CA). Mastering: Paul Stubblebine.

—Blair Jackson ■

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L.A. GRAPEVINE

by Maureen Droney

The street construction that has plagued the Hollywood stretch of Santa Monica Boulevard for several years is finally complete. Much to the relief of such area businesses as Warner Hollywood Studios, the landmark Formosa Café and the eastern branch of Westlake Audio (the other branch that houses Studios A and B is on Beverly a couple of miles to the west), they're now situated on a broad and easy-to-navigate thoroughfare. Meanwhile—perhaps inspired by the neighborhood's upgrade—



VP of recording Steve Burdick inside Studio E at Westlake Audio.

Westlake/Santa Monica has been undergoing some construction of its own.

With five studios and a busy pro audio sales business (including the Westlake speaker lines) housed under one roof, the complex has always bustled. "Our Beverly location is very quiet," comments VP of recording Steve Burdick. "Here at Santa Monica, there's a lot more activity, which some clients like to be around and some don't. We recently relocated our technical services shop to an adjacent building, and that's now made this building much more appealing to those who don't like as much activity.

The old shop area is now a lounge for Studio E."

Several projects have kept the joint jumpin' in 2002: A renovation of Studio E, completed in May, included a complete cosmetic makeover and the installation of a 72-input SSL 9000 J Series console. Now, a combination of dark-walnut speaker cabinets, new lighting and carpet, a 43-inch Sony Plasma flat-panel computer screen and a ton of new gear including Pro Tools HD has re-energized E, which, since its upgrade, has been playing host to such luminaries as producer Walter AfanasiEFF and ex-A&R exec/bass player-turned-TV star Randy Jackson.

Another big change at the facility is that the technical services department, which supports the studio and retail businesses and provides outside equipment repair, has moved into its own self-contained area. Service customers no longer enter through the studios, and the real estate that formerly housed Westlake's large roster of bench techs has been redesigned as client lounges.

Studio D, considered Westlake's signature studio, has been left almost untouched by the changes at the facility. D, originally built for Michael Jackson sessions with input from Jackson, Quincy Jones and Bruce Swedien, still has an expansive control room fitted with a John Musgrave-modified, 72-input Neve VR with Flying Fader automation. The skylit main recording room, used for tracking, overdubs and up to 40-piece orchestral sessions, still features wood floors and a drum riser backed by a choice of mirrors or curtains. D has long been a favorite for its private entrance and three lounges, one now outfitted with a treadmill and other workout gear, compliments of Missy Elliot who booked D for much of 2001 recording her solo project and cuts for the *Moulin Rouge* soundtrack.

Studio C, which also boasts skylights in both its control and tracking rooms, as well as variable surface walls that allow tailoring of the tracking room's sonics, is also fitted with an SSL 9072 J Series desk.

—CONTINUED ON PAGE 180

NASHVILLE SKYLINE

by Rick Clark

Last year, I happened to catch King Crimson playing at one of the local venues, a place called 12th & Porter. As someone who bought the band's first album, *In the Court of the Crimson King*, in 1969, I never realized that, when I moved to Nashville seven years ago, I would have ample opportunities to see them play in town. But it turns out that Crimson lead singer and guitarist Adrian Belew lives on the town's outskirts. The last time I saw them play was in 1972, warming up for Foghat during their Lark's Tongues in Aspic tour. Now that was a bizarre billing!

When I was recently informed that King Crimson was going to be recording in town at The Tracking Room, I made it a point to touch base with Belew and producer Machine about making the album. I caught up with the two at Belew's home studio, StudioBelew, where they were doing various instrumental and vocal overdubs for what will be a full-length album and an EP on the Sanctuary label.

"Robert [Fripp] and I have been writing the music for this for over two years. It is more guitar riff-type music. I can't describe what we are doing now other than to say it's kind of a heavy metal rock band kind of approach. We've turned into a rock band," Belew says with a laugh. "Someone came up with a name for this type of music, and that is 'nuovo metal.' Don't ask me where it came from, but it might be the title of the record."

Of course, expecting King Crimson to do a run-of-the-mill-sounding rock album or EP is just about incomprehensible. For starters, the title track of the EP, "Happy With What You Have to Be Happy With," is predominately performed in 11/8, as is another song called "Facts of Life." "I was just getting comfortable with playing fives and sevens, and we skipped all the way to 11," muses Belew. "What happened to nine?"

A number of the songs performed the night I saw them last year were new com-

positions being tested out, including the wildly dynamic, bolero-like show opener called "Dangerous Curves," another instrumental called "Electric" and a track called "Response to Stimuli," which morphed into "Facts of Life."

"We did our basic tracks over at The Tracking Room," says Machine. "It is a very good studio, and they have all of these really creative, great-sounding rooms. They have this Rock Room and this very John Bonham-sounding wood room, and the main room sounded very good, too. We had all of the outboard gear we could've possibly ever needed and an 9000 SSL."

During the sessions at The Tracking Room, Machine had "40 inputs all at once when tracking basics. Pat [Mastelotto, drummer] had nearly 30 just by himself with all of his acoustic and electronics. This isn't even counting all of the other little breakbeat kits and African world music-type drums he had set up in the various other rooms sprawled all over Emerald Studios."

For further overdubs, the band worked at Belew's home facility, which houses a Neotek Elan 48-channel console, 32 tracks of ADAT and a Mac G4.

—CONTINUED ON PAGE 181

NEW YORK METRO

by Paul Verna

Question: How many artists record and mix "professional"-sounding albums at home in rooms so small that the studios can be vacuumed with a Dust-Buster? **Answer:** Too many to count.

Question: Who among these recording-savvy artists can pull off a home-spun project that features Paul Shaffer, Sebastian Bach, Richie Havens, Ace Frehley and Brian Wilson, among others? **Answer:** Anton Fig.

Best-known as the house drummer for *The Late Show With David Letterman*, Fig is also a multifaceted songwriter, producer and engineer who has been chipping away at a solo album in between his TV and session commitments. (He recently played drums on Warren Zevon's Artemis Records release *My Ride's Here*). Along the way, the well-connected Fig asked some of his



Musician/producer/engineer Anton Fig twiddles the knobs on his Yamaha O2R at his Planula studio.

most famous friends if they would contribute their talents to his album.

And many did, as evidenced by the 46 headshots in the booklet for Fig's CD, appropriately titled *Figments*. Given equal billing, the artists are discreetly identified by their first name and last initial: Brian W, Ace F, Richie H, Al K (for Kooper), Richie S (Sambora), Randy B (Breckler). The list goes on.

"I'd say 92 percent of the record was done here at home," says Fig. Given the small size of his Manhattan apartment and the presence of that urban phenomenon known as "neighbors," the artist had to go outside to record his drum parts. For

—CONTINUED ON PAGE 182



A view inside The Tracking Room from behind King Crimson's Pat Mastelotto's drum kit.

SESSIONS & STUDIO NEWS

NORTHEAST

Inside Studio C at Avatar (NYC), Sheryl Crow and the Dixie Chicks recorded a new version of Fleetwood Mac's "Landslide," with Crow producing and arranging the effort. Bob Brockman engineered with assistance from Aya Takemura and Peter Doris. Also at Avatar, producer Phil Ramone and artist Peter Dinklage spent some time cutting tracks with engineers Eric Schilling, Frank Fillipetti and Elliot Scheiner. The second engineer was Takemura...George Clinton stopped by Nu-Media NY (NYC) last August to put some vocal touches on artist GTO's new single, "Used to Be." Artist Maya Azucena is also working on some new material at Nu-Media NY...Jimmy Eat World recently cut a live session for Y100 radio at Indre Studios (Philadelphia). And as always, house engineer Michael Comstock manned the console. The band also stuck around to record a track for an upcoming compilation with Comstock and second engineer Matthew Milner. Snoop Dogg and The Neptunes stopped in at Sound on Sound's (NYC) Studio C to track and mix with engineer Brian Gardener. Teen pop princess Jessica Simpson was also in Studio C working with engineers Rob Fusari and Earl Cohen.

NORTHWEST

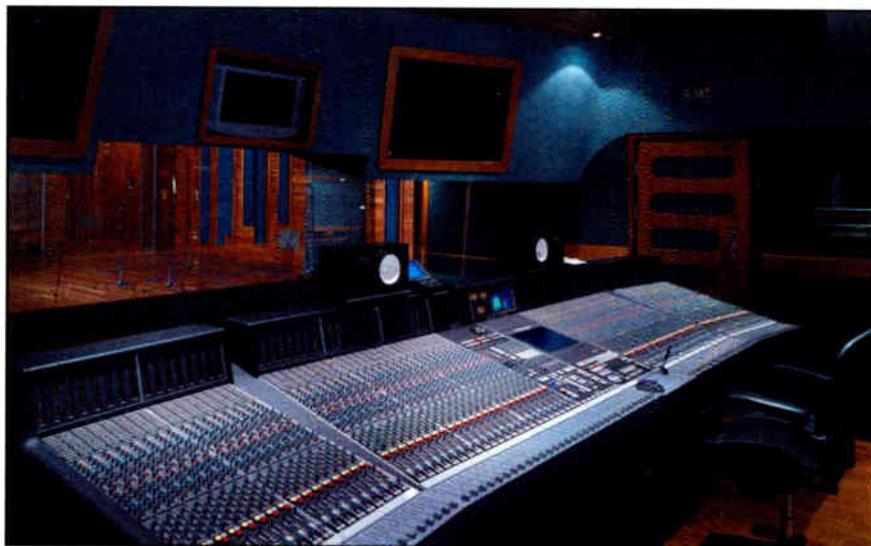
The Goo-Goo Dolls stopped in at Studio D (Sausalito, CA) to work on a new project with Digidesign. Rhett Lawrence was tapped to produce the effort, with Joel Jaffe on-hand to engineer.

SOUTHEAST

Producer Greg Rike (Backstreet Boys, Deep Purple) is working on a new album with the Highland Elias Band at GRP Studios and Post (Altamonte Springs, FL).

MIDWEST

Artist Robert Kramer spent several months at Ibob Digital Studios in (Deerfield, IL) working on his next album, *An Uncomplicated Man*. Guest musicians in-



The recently upgraded Studio 1 inside Olympic Studios in southwest London.

cluded drummer Ron Karpman (The Flock) and Napoleon Murphy Brock on tenor sax and vocals. Karpman is also serving as executive producer on the project.

record two days of live performances at Seattle's Chop Suey club. Brett Eliason, the band's live sound engineer, Le Mobile chief engineer Charlie Bouis and freelance Pro Tools engineer John Bur-

ton tracked the sessions that were recorded in sync with the 35mm film. James Frost directed the video, and the single is the first song off of the band's forthcoming Sony release, *Riot Act*.

STUDIO NEWS

Olympic Studios (London) recently installed an 80-input SSL XL 9000 K Console. The new console was installed in Studio 1, which is now equipped to offer both stereo and 5.1 surround sound recording and mixing. ■



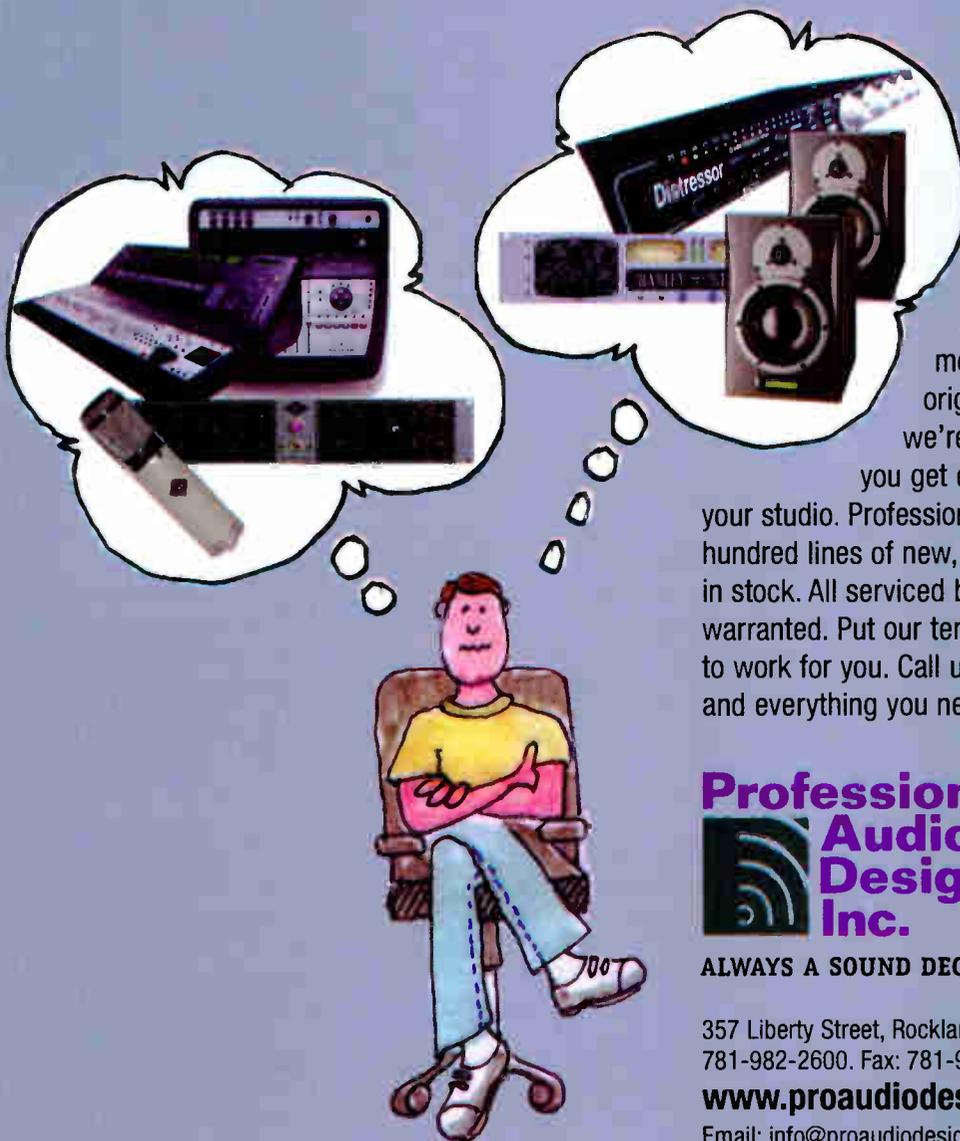
Shawn during the Pearl Jam video shoot for "I Am Mine" are (L to R) stogie techs Ian Charbonneau and Ted Barela, Eddie Vedder, engineer Brett Eliason and chief engineer Charlie Bouis.

SOUTHERN CALIFORNIA

Pearl Jam recently began work on their first full-fledged music video in almost a decade for the track "I Am Mine." The band tapped Le Mobile (Vista, CA) to

Please submit your sessions and studio news for "Coast to Coast" to Robert Hanson. Submissions can be sent via e-mail to RHanson@primediabusiness.com. Photo submissions (JPEG at 300 dpi) are always encouraged, and please include the name(s) of the artists, producers and engineers on the project, and the location of the studio.

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L.A. GRAPEVINE FROM PAGE 176

C is a favorite of veteran engineer Humberto Gatica, an SSL 9k maven, who has done numerous projects with Celine Dion. For the most recent Dion recording, Studio C's tracking room was transformed into a living room, complete with a cozy multimedia area outfitted with couches, soft lighting and a semi-formal dining area.

"It is pretty nice," Burdick admits, settling onto a couch and surveying the decor. "At first, it seemed strange to me—having living room furniture in a tracking room—but really, most of what we do in C is vocals and mixing, so it works out great. Everybody likes it so we've kept it. On the days where we need to do full tracking, we just take out the furniture."

It's obvious that creature comforts have become a priority at Westlake. Another small TV/computer lounge is also part of the Studio C suite, and plans are in the works for the entire back area of the facility to become a large atrium-style lobby and game lounge. Burdick, who started with Westlake Studios as a runner in 1986, definitely sees changes in the kind of amenities that have become important to clients. "There are so many more things you have to pay attention to," he comments. "Beside lots of lounge space, there are new client-service priorities. People aren't using production coordinators as much, so we do a lot more management kinds of tasks for our clients. Booking manager Charity Lomax and I really work as a team with them to make things happen."

Along with the major sessions booked in the three main studios, its two small production rooms also generate buzz at Westlake. Production 1 is generally used for vocals and guitars by the budget-conscious, although in 2001, Sheila E recorded most of her latest CD—including percussion parts—in 1. The console in 1 is a 36-in Sony MXP-3000 modified with eight API mic pre's and eight API EQs, which, according to Burdick, is "no hassle and sounds good: it's perfect for this room. We thought of putting in a digital board, but for these purposes, people don't want to work multilayer; they want to just come in, push the accelerator and take off."

Production 2 is a digital audio edit bay that serves two masters: the sales group and the studio. "Sales does demos in here," explains Burdick, "including the twice-weekly sessions that Tom Brown from Digidesign puts on. We also do editing, transfers and Pro Tools work, as well as, on a daily basis, backups and hard

drive maintenance."

A perk for some clients at Westlake/Santa Monica is the proximity to the sales department, which provides, of course, access to the newest in equipment, from speakers and workstations to microphones and consoles. "Some of our clients are gearheads who really love that aspect," Burdick notes. "They can talk to the sales people and get turned on to the latest and greatest."

In addition to Celine Dion, projects at



A man can never have too much reverb: Front Page Recorders owner Biff Vincent.

Westlake during recent months have included Wilco, Rod Stewart, LeAnn Rimes with Desmond Child producing, Child and Cathy Dennis producing *American Idol* Kelly Clarkson, Josh Groban with producer David Foster, Randy Jackson producing Mariah Carey, Justin Timberlake with producer Timbaland, Liz Phair with producer Michael Penn and Rick Rubin producing Palo Alto.

The Brand Avenue area of Glendale is full of little shops and unique restaurants and still retains a bit of old-fashioned, small-town vibe. Not far away, Front Page Recorders has also been busy upgrading and now boasts an SSL 9080 J Series, a Euphonix System 5 and a Euphonix CS3000. Owner Biff Vincent and studio manager Diana Nitz walked me through the facility's recent changes.

"Studio A is basically a new room," states Vincent, "although we didn't change the fundamental structure. The studios here were built incredibly well, back in the early '70s, for Yamaha R&D. You couldn't afford to do today what they did, in terms of solidity and isolation, to build something from the ground up with this kind of quality. It's just too expensive to do that kind of construction now. So

Bruce says

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Bruce Swedien
(Grammy winner, Jennifer Lopez, Michael Jackson, Quincy Jones, Duke Ellington, Count Basie)

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what we did was, we gutted it on the inside and while we were at it—since we've been doing a lot of movies in the past couple of years—we rebuilt it for 5.1."

George Augspurger originally designed Studio A's control room, which houses the 80-input SSL 9k; the new update was by Carl Yanchar of Wave:Space. Studios A, B and C are now fitted with a custom 5.1 main Augspurger monitor system built by Wave:Space. A's control room also has new textured-ceramic slate floors and a 40-inch Sony LCD flat-screen monitor. The tracking room was also redone cosmetically and a third more reflective iso room was added.

Studio B, which two years ago installed L.A.'s second Euphonix System 5 console, has been developing a scoring clientele, hosting such composers as Ed Shearmur, Nick Glennie Smith and John Powell and films such as *Shrek*, *Charlie's Angels*, *Blue Streak*, *The New Guy* and *We Were Soldiers*.

"The guys that know it love the System 5," Vincent comments. "It's big—140 inputs—it's got really great 5.1 capabilities, and everything is automated. Film people are basically all-digital, so they like the fact that their program goes in digital and doesn't get messed with again. And they love the ease of it—it's incredibly simple to set up for multiformats. You can do at the same time your 5.1, your stereo and all of your stems, with up to 48 outputs available at once. It's an amazing console, which is why you find it at Lucas' Skywalker Ranch, Soundeluxe Toronto—top-of-the-line places. It really is the best thing out there."

With a 9k for rock, pop and R&B clients like Beck, Korn, Lit and Natalie Imbruglia, and a System 5 for film customers, Vincent feels that he is positioned to cover all of the bases. His third room holds a Euphonix CS3000 used this year for, among other projects, Chris Fogel's mixes of Alanis Morissette's chart-topping *Under Rug Swept*. Similar to what Westlake Studios did for Celine Dion, Front Page turned the tracking room into a lounge for the duration of Morissette's mixes.

Vincent, who started in the business with a home studio and then moved to a commercial facility, has dug in for the long haul. Observing the current trend for producers to do much of their projects at home, he offers some perspective: "For my first 10 years, I had a place in a house," he says with a laugh. "And I can tell you, having a studio in your house is like owning a boat: The happiest day in your life is when you get it, and the next happiest day in your life is when you sell it!"

Studio manager Nitz adds, "We've

been lucky at Front Page to have so many different kinds of clients, from Bone Thugs-N-Harmony, who mixed their *Thug World Order* album on the 9k, to Joe Strummer from The Clash, who was in writing for the Academy Award-nominated movie *Black Hawk Down*. Joe's quote about our studio was, 'Good vibe, good studio—we don't find this everywhere. We know it is rare. We arrived defeated and we emerged victorious!' We try hard to take good care of our clients, so it's really great to get that kind of feedback." ■

Got L.A. news? E-mail MsMDK@aol.com.

"Adrian has a great home studio with big windows and a large garden right outside," says Machine. "I've got my stuff in here, and I'm going through RADAR for my A/D that goes Lightpipe into ADAT Bridges to my Pro Tools drive with Logic as my front end. I've always been a Logic guy since I was a kid. From a song perspective, Logic is perfect for songwriters. It looks like a song, it is linear like a song. As a sequencer, it is the ultimate.

"All guitars were recorded with their clean DI for the purpose of re-amping and sound designing for later," Machine continues. "I use the PCP Box by Little Labs

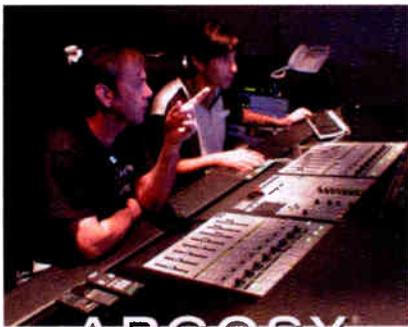
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for my guitar splitting and re-amping. From here, I'm flying out to Pat's [Mastelotto] three-car garage with my Logic and sequencer, and we are going to be editing and stacking all sorts of drums and adding other samples and beat boxes. After we go through it all with a fine-tooth comb, we'll come back here and mix at Emerald on their SSL 4000."

While Machine and I were talking about what he used for the sessions, he enthusiastically shared his latest speaker discovery, NHT Monitors.

"I heard these monitors in Australia and was blown away with them," he recalls. "It has been a while since I found a speaker that is as great as these are. They don't over-glorify or hype the sound like some other speakers. You really can picture the image and it is a really tight image. When I listen to mixes of people I admire, like Andy Wallace or Tom Lord-Alge, their work sounds great on NS-10s. I will admit that things that sound good on an NS-10 usually translate well to other speaker systems, but I just can't start my

started in the '60s and is still pushing the boundaries and creating engaging new music, he stated, "Our fans expect us to constantly move into new territories. Even though there is a thread through it all that is undeniably King Crimson—and you can tell a King Crimson song pretty quickly [laughs]—we have made a lot of changes from record to record. I think that is one of the things that keep me really happy in the band. You have to come up with things that you haven't previously done." ■

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NEW YORK METRO FROM PAGE 177

those, he chose Avatar's massive Studio A, working with fellow South African engineer Kevin Shirley, who later mixed a couple of the album's tracks at the Hit Factory. Other tracks recorded outside of Fig's studio—which he calls Planula—included Wilson's vocals, which were done in Los Angeles.

Those exceptions notwithstanding, Fig and engineer Weld toiled away at the artist's studio. They worked on a Pro Tools | MIX24 system loaded with plug-ins, ultimately running Version 5.1 after incrementally upgrading from Version 3.0. Save for the occasional rental, only one mic and preamp were used: a Neumann TLM-193 and a Focusrite Voicebox. Signals were routed from two Digi-design 888|24 interfaces to a Yamaha 02R, which was used more as a monitor than as a mixer.

With so many stars parading through his apartment over the past couple of years, I asked Fig if there were any highlights of his overdub sessions. "When Richie Havens rolled in with his guitars and his jewelry, it was quite an event," recalls Fig, who, while growing up in Cape Town, was greatly influenced by Havens' storied *Woodstock* performance. "He had an authoritative, commanding vocal presence. My wife had gone out to dinner with some friends and she was telling them, 'I've got Richie Havens in my bedroom!' It was one of those 'pinch me' moments."



*Schoolhouse Rocks. British band Antiprism tracked its upcoming album, *Made in the USA*, at Schoolhouse Studios in Manhattan. Shown at the session, standing from left, are guitarist Claire Product, engineer Tim Hatfield, producer/vocalist Alex Kane, drummer Simon Gonk and keyboardist Milena Yum. Seated is studio owner Anthony Esposito, who served as producer/engineer on the project.*

mixes with NS-10s. For me, these NHTs are the ultimate solution. They actually translate perfectly with NS-10s. You can start your mix on them without being annoyed, and when you flip to the NS-10s later on, they make the NS-10s actually sound good."

When I remarked to Belew that King Crimson is one of the few bands who

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The art, gear and approach to making music have changed dramatically over the past decades. What is the state of the art today and what are you expected to know in the studio? We have gathered five of today's esteemed recording producers and engineers to discuss how they got their start and what they look for in the studio today.

Desmond Child, DJ Muggs, Roger Nichols, Alan Parsons and Eric Schilling will discuss media requirements, proper professional tools vs. consumer equipment as well as the myriad of formats in current digital workstations along with what you really need to know on your first session date to project completion. They will also share a few of their practical tips for everyday success in the studio environment.

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Now that *Figments* is done, the artist is co-writing and co-producing a project with singer/songwriter Blondie Chaplin; Fig is also working on projects by guitarist Oz Noy and members of Paul Simon's band. The self-released *Figments* is available through Fig's Website, www.antonfig.com.

School's in. Schoolhouse Studios harkens back to a time when a group of guys could take a rehearsal room, buy a decent tape deck and console, and turn it into a recording facility. A time when computers weren't part of a studio's equipment mix. A time when rates were dictated by starving artists' budgets, instead of the other way around. A time when the DIY ethic ruled the day. A time when there was such a thing as a mid-sized studio.

Located "somewhere between Hell and Chelsea," in the words of proprietor Anthony Esposito, Schoolhouse recently celebrated its 10th year as a rehearsal/recording studio catering to punk, hard rock and metal acts such as The Misfits, Joan Jett and D Generation.

The studio just added a 32-input Neve 8048, complementing its Studer 2-inch 24-track, Studer half-inch, and an arsenal of vintage analog gear that includes processors by Tube-Tech, Avalon, Empirical Labs, UREI, Drawmer, Summit and other top names.

Schoolhouse recently hosted The Misfits, whose album was produced by Marky Ramone and Jerry Only and engineered by Tim Hatfield and Esposito; guest musicians included Dez Cadena from Black Flag, Jimmy Destri from Blondie and Ronnie Spector. Also, the British band Antiprism tracked its upcoming release, *Made in the USA*, at Schoolhouse prior to embarking on Ozzfest's European leg. That album was produced by Alex Kane and Esposito and engineered by Esposito and Hatfield.

"We only have a couple of rules," says Esposito half-jokingly. "We don't do any recordings that don't have guitar on them, and we have to like the clients."

If Schoolhouse's clientele seems like a big, happy family, it's because Esposito—a musician who used to play bass in Lynch Mob—runs the place more like an artists' hangout than a commercial facility. "I'm probably the worst businessman in the world," he says. "My first question to clients is, 'What's your budget?' I ask them that before I tell them my rate."

Schoolhouse's "book" rate is a negotiable \$50/hour or \$500/day. (A lockout is 24 hours, not 10 or 12 hours, as is the norm in many studios.) Not bad for a 32-

channel Neve, a healthy assortment of mics, preamps and processors, and a 1,200-square-foot open space that doubles as the control room and tracking room. "We believe all bands deserve a good signal path, so we keep our rates incredibly cheap," says Esposito.

Has Schoolhouse made the leap to Pro Tools as seemingly every other studio has? Not yet. "We have Pro Tools on request," says Esposito, "but most of our clients don't want Pro Tools. They want fat analog. And they don't need automation to mix."

Someday, Schoolhouse may suc-

cumb to the same market trends that have forced other studios to go digital or die. For now, though, Esposito revels in the old, funky vibe that he has built, and his clients applaud him for keeping the faith. And, if current trends continue and more bands who embody the stripped-down, late '70s, New York City sound like The Strokes and Interpol keep making waves in the music press, business at Schoolhouse Studio might go from great to booming. ■

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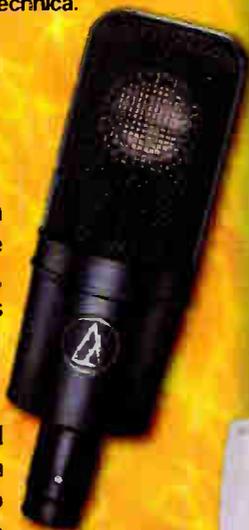
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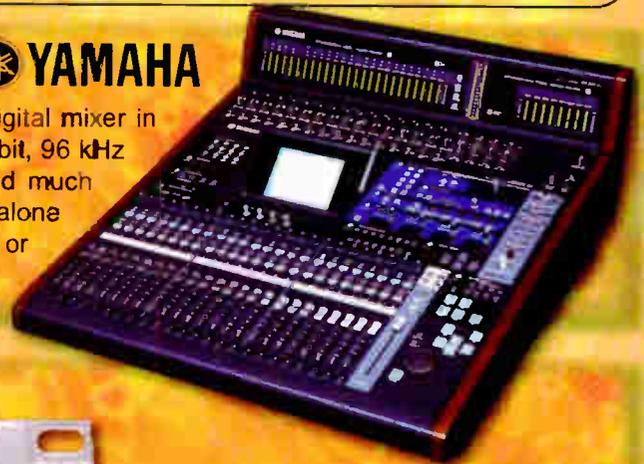
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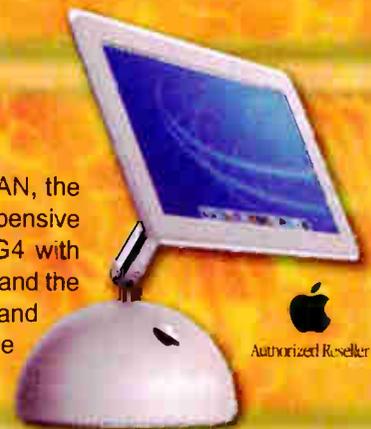
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ADK	www.adkmic.com	113	KDS USA	www.cdoarchive.com	45
Advanced Micro Devices	www.amd.com	5	KRK Systems	www.krksys.com	53
AKG Acoustics (C 3000 B)	www.akgusa.com	61	L & M Music	www.lmmusic.com	210
AKG Acoustics (C 900)	www.akgusa.com	77	Lawson, Inc.	www.lawsonmicrophones.com	101
Alesis (HD24)	www.alesis.com	109	Lexicon	www.lexicon.com	57
Antares	www.antarestech.com	63	Los Angeles Recording Workshop	www.recordingcareer.com	139
Apogee Electronics	www.apogeedigital.com	81	Mackie (Mackie Control)	www.mackie.com	23
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Audio-Technica	www.audio-technica.com	4	M-Audio	www.m-audio.com	165
Audix	www.audixusa.com	163	Merging Technologies	www.merging.com	79
Auralex	www.auralex.com	100	Mesa Boogie	www.mesaboogie.com	74-75
Aviom	www.aviominc.com	2	MOTU	www.motu.com	80
B&H Photo-Video	www.bhphotovideo.com	211	Musician's Atlas	www.musiciansatlas.com	161
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Broadcast Supply Worldwide	www.bswusa.com	103	Musitech College	www.musitech.com	131
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Burlington	www.burlington-av.com	36	Otari	www.otari.com	114
Caig Laboratories	www.caig.com	173	Presonus	www.presonus.com	65
Carvin	www.carvin.com	155	Primer Technology	www.primertechnology.com	169
Conservatory of Recording			Professional Audio Design	www.usedssl.com	73
Arts & Sciences	www.audiorecordingschool.com	142	Professional Audio Design	www.proaudiodesign.com	179
Crest Audio	www.crestaudio.com	33	Quantegy	www.quantegy.com	85
dbx Professional Products	www.dbxpro.com	19	Radial	www.radialeng.com	67
Denon	www.denon.com	180	Recording Workshop	www.recordingworkshop.com	122
Digidesign	www.digidesign.com	35	RØDE Microphones	www.rodemicrophones.com	87
Disc Makers	www.discmakers.com	116	Royer Labs	www.royerlabs.com	180
Dolby Labs Inc.	www.dolby.com	118	Sabine	www.sabine.com	84
Domatic	www.domatic.com	140	SADiE Inc.	www.sadie.com	17
DPA Microphones	www.dpamicrophones.com	32	SAE Institute of Technology	www.sae.edu	123
Dreamhire	www.dreamhire.com	142	SAE Institute of Technology	www.sae.edu	182
Eastern Acoustic Works	www.eaw.com	149	Samson	www.samsontech.com	55
Emagic	www.emagic.de	43	Schoeps	www.schoeps.de	36
Empirical Labs	www.empiricalabs.com	121	Sekaku	www.sekaku.com.tw	167
Eventide	www.eventide.com	37	Sennheiser	www.sennheiserusa.com	164
EVI Audio/Helix	www.klarktechnik.com	31	SFSU Downtown Center	www.cel.sfsu.edu	140
EVI Audio (RE-1)	www.electrovoice.com	51	Sheffield Institute	www.sheffielddav.com	126
EVI Audio/Venice	www.electrovoice.com	151	Shure (KSM44)	www.shure.com	21
Ex'pression Center for New Media	www.expression.edu	137	Solid State Logic Ltd.	www.solid-state-logic.com	1
Five Towns College	www.fivetowns.edu	126	Sonic Foundry	www.sonicfoundry.com	143
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Full Sail	www.fullsail.com	129	Steinberg	www.nuendo.com	107
Furman Sound	www.furmansound.com	170	Studer	www.studer.ch	47
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Hafler	www.hafler.com	166	Sweetwater Sound	www.sweetwater.com	25
Hannay Reels	www.hannay.com	148	Sweetwater Sound	www.sweetwater.com	186-187
Harris Institute for the Arts	www.harrisinstitute.com	120	Sweetwater Sound	www.sweetwater.com	212-213
HHB (Fatman)	www.hhbusa.com	22	Sweetwater Sound	www.sweetwater.com	214-215
HHB (TLAudio)	www.hhbusa.com	110	Switchcraft	www.switchcraft.com	93
innovaSON	www.innovason.com	183	Tannoy North America Inc.	www.tannoy.com	3

ADVERTISER	WEBSITE	PAGE
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TerraSonde	www.terrafonde.com	72
The Toy Specialists	www.toyspecialists.com	86
TransAmerica Audio Group	www.transaudiogroup.com	172
Universal Audio	www.uaudio.com	69
University of Memphis	http://music.memphis.edu	132
Waves Ltd.	www.waves.com	127
West L.A. Music	www.westlamusic.com	144-145
Westlake Audio	www.westlakeaudio.com	181
X Vision Audio	www.xvisionaudio.com	97
Yamaha (DM2000)	www.yamaha.com/proaudio	115
Yamaha (O2R96)	www.yamaha.com/proaudio	133
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Crystal Clear Sound	www.crystalclearcds.com	198
D.W. Fearn	www.dwfearn.com	194
Digital Domain	www.digido.com	197
Dupco	www.dupco.com	191
Lonely Records	www.lonelyrecords.com	193
Mac Solutions	www.macsolutions.com	198
Marathon Computer	www.marathoncomputer.com	194
Markertek	www.markertek.com	198
Marquette Audio Labs	www.marquetteaudiolabs.com	197
Media Services	www.mediaomaha.com	196
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Neato	www.neato.com	192
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Rainbo Records	www.rainborecords.com	198
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—FROM PAGE 22, I SING

artist's interpretation of what each word and each note mean—that you feel. The character of the notes, the microtremors on certain words, the way a world-class tenor can modulate those long notes to express emotion—this is what makes it connect. The performer tells you by how he moves harmonics and frequencies within each note that he has been there himself, that he understands.

I won't even start on opera.

This, and everything that I have mentioned before, is real singing. Perfection, flat, sharp, hit and miss—it's all singing.

ENTER THE DRAGON

So, what the hell happened? Is it all Cher's fault, or does the blame lie on the shoulders of those evil companies that offered up the heartless apple? Or maybe it's our fault for even considering cheating.

Now, I certainly understand the need to make product for the 13-year-old girl market. And I understand that you need to strike while the iron is hot and record 30 CDs in 10 weeks to cash in on your hard-earned spot on the charts. I get that these acts sell better if they are a certain age, have a certain body style and certainly if they reveal it. And I even get that it is a lot to ask that they be able to actually sing as well. Too much to ask in most cases. So enter the dragon...

We, the Recording Industry, do solemnly swear to accept with open arms and deafened ears any technology that can fix any problem that needs fixing, no matter what the cost, financially or musically.

NOTES! AIN'T THEY A PITCH?

Well, apparently not. Eons ago, MIDI offered us the rotten apple of timing correction. I used it, and then I hand-entered what I considered to be "better" timing errors than I had originally recorded. This allowed me to play beyond my real ability and fix it later. But then metaphors got *really* mixed. The rotting MIDI apple continued to decompose our compositions by offering 20 kinds of pitch quantization. But we were still only talking rotten fruit here; nobody actually took synth tracks seriously, and perfect pitch and timing were pretty much the norm.

Then I guess the dragon smelled the rotting apple and flew in for the kill. *Audio* pitch correction appeared in the

Edens of AES and NAMM. I listened to them with the same sickened amusement that one might feel as they slow down to look at a traffic accident. A sort of shameful, horrified curiosity—like when you watch *The Anna Nicole Show*.

At first, these software plug-ins sucked so much that they could only be used for novelty effects—mercifully. Cher's producers happily cashed in on this by using obviously quantized vocal-pitch alteration as just that: a freak effect.

But that, unfortunately, awakened

So, now 13 year olds have as much music
as daddy's money can buy, and they are growing up
thinking that humans actually sound like that when they
reach for a high note: faintly metallic, a little hollow,
stagnant. Reedy, thin, cold. Soulless, sterile, inhuman.

other performers and engineers to the idea that they could fix-it-in-the-mix rather than go for a re-take when it came to off-tuned vocals. Sure, many were already cheating, but it was still only a fringe problem.

Then, while the recording industry was salivating at the concept of cheating instead of making the damned singer hit the notes, digital pitch deception got to the point where they only sucked the life and soul out of the vocal, and so was deemed okay to use.

So, now 13-year-olds have as much music as daddy's money can buy, and they are growing up thinking that humans actually sound like that when they reach for a high note: faintly metallic, a little hollow, stagnant. Reedy, thin, cold. Soulless, sterile, inhuman. Formants and harmonics acting in disturbing ways that they just can't in nature.

And have you heard these plug-ins on strings? Or horns, piano or even guitar? I have, and I feel like that old public service announcement where the Native American sheds a tear for the polluted land. I mourn the loss of real vocals, the sound of a singer actually going for the notes; and I mourn the loss of honesty, of knowing that if I hear a guy reach and hit, that he actually *did* reach for that note and hit it.

Special effects are fine, and a little editing is certainly not a problem. We have all chuckled over war stories of some

guy we had a month ago who needed 30 punches to get through a three-minute song.

But now it is normal to cross-edit 50 takes to get a collection of usable words and syllables with your shiny new DAW. Hell, I design DAWs; I'm as much of a perpetrator as anyone, maybe even more. But I will throw it all out and start over if I have more than 10 crossfades on a lead vocal at the end of the day, and I have *never* used any form of digital pitch correction.

I don't know if it's the sound or the morality, but I can't do it. I lose a little business from talent who can't hit the notes any other way, but people sing with human voices in my dreams.

ON THE ROAD AGAIN

Ah, yes. There's this: What do people who use this technology on their vocals do live? Well, that's an easy one—not much. They sure as hell can't let the audience hear their actual voices, and the complexities of assuring the desired "correction" is a bit spooky during live performances.

So it looks like we may have already unleashed Audio Armageddon upon ourselves, throwing the entire world forever back into the Milli Vanilli age where what you see is what you get, but what you hear was recorded in L.A. three months before.

This has me listening to a lot more hardcore jazz. These people seem to be the last hold-outs, the final creators of real music, the Keepers of the Flame.

I still buy a lot of rock and blues, but as soon as I hear an alien sing a note that the artist on the cover couldn't hit, my coaster collection grows by one.

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—FROM PAGE 26, THE RIGHT STUFF

talk about insurance, taxes, zoning and getting along with your neighbors," he says. "A lot of the students are really surprised at how much is involved. Some who were dead-set on having their own place will decide to freelance or work for someone else."

During their last semester, students are required to produce an album. "We put no stylistic restrictions on it—it just has to be good music that's well-recorded," Metcalfe says. "The emphasis at Hartt is on classical and jazz, although, obviously, a lot of the students want to do rock 'n' roll. We have had some great recordings come in for senior projects that ranged from rock and jazz to Celtic and classical."

WELCOME BACK STUDENTS

The MPT program is small—only about 40 students—and it's competitive: In any given year, about one-third of the program's applicants are accepted. Most of the students come from the northeast, although other parts of the country are represented, too. Not all of the students who enter each year stay with it. "The biggest loss is between the freshman and sophomore years," explains Metcalfe. "Some students come in with a *Behind the Music* understanding of the music business, and they get here and see it's not all like that. We do a pretty good job of weeding them out at the interview stage, but some get in. Also, sometimes the electronics and math courses will trip them up. So we'll typically admit 10 or 12 students as freshmen, but by the time they are juniors, there are eight or 10 left. If they decide not to continue with our program, it's relatively easy for them to go into another major within the Hartt School, since they have all of the theory classes and ensembles from the beginning, or elsewhere in the University of Hartford."

When they're finished, students receive a Bachelor of Music. Then what? "We encourage the idea that when they graduate, they can go into business for themselves and open their own small studio," says Metcalfe. "Our studios are designed more on the 'project studio'-sized model than the 'mega-studio' model. It allows us to have more studios for the students to work in rather than one multi-million-dollar studio that everyone needs to share. It's also much more likely to be the type of facility they'll be working in when they graduate. Most of the big studios don't even have staff engineers anymore. All of our majors are musicians, and

many of them are interested in writing and recording their own music, as well as working with other artists.

"A lot of students are inspired by this 'entrepreneurial' small-studio model," he continues. "A few graduates are opening their own studios. Matthew [Girard, quoted at the beginning of the column] is working for Parsons Audio, which is helping him make contacts in the Boston area and allows him to freelance during evenings and weekends. Another grad is a Pro Tools tech at a major sound-for-picture studio in New York. Another is a sound engineer at the Yale Theater. A couple have set up and

I was able to take what
I had learned and figure
things out. I'd never
seen this equipment before,
but I could take what I
knew and apply it.

—Matthew Girard,

Class of 2000,

on his first job out of school

own commercial facilities, one of which I rent occasionally for sessions. A few go to graduate school. Some will teach their instrument or audio as a sideline while building their audio career. Most are working in audio at some level, even if they consider their current jobs to be just a stepping stone toward their ultimate goal of performing or producing."

A LOOK AT THE FACILITIES

If you're looking for the *big* studio at Hartt, you won't find it. There's no 20-foot-long SSL or Trident console or walls full of processing gear or even any 24-track analog decks.

"When David started the program," says Metcalfe, "he figured he could either pool all of his resources and put together one studio that was really incredible, or he could build several project-type stu-



Studio B was recently remodeled, including installation of a Sony DMX-R100 console and Mackie HR-824 surround monitoring.

dios. He chose the latter, which makes a lot of sense, considering that's the part of the industry that's really growing. That's the kind of facility where the students are going to be working, either in their own place or someone else's."

The studios represent a good cross-section of the modern recording industry. Studio A is centered around a pair of cascaded Yamaha 02R consoles, along with two Tascam DA-88 tape decks, a Tascam MX-2424 hard disk recorder and a Digidesign Pro Tools | 24 MIXPlus running on a 450MHz Mac G3. All of the computers in every studio also host Mark of the Unicorn's Digital Performer audio and MIDI-sequencing software, with a collection of software samplers and synths. In Studio A, there is a rack of Lexicon reverbs, a pair of UREI LA-4s and even an ancient Sound Workshop spring reverb. Built-in monitors are JBL 4430s, and Genelec 1031APs serve the near-field. There are eight channels of Millennia Media mic preamps alongside a healthy mic collection, including everything from Neumann U87s to Shure SM57s, which, of course, can be used in all of the studios.

The studio overlooks Bliss rehearsal hall, the school's primary practice space for large ensembles. The hall is 58x40 feet with a 19-foot ceiling and architectural features—nonperpendicular and "sawtooth-shaped" walls—that make it an excellent recording space. Audio and video lines tie the rooms together.

Studio B went through the most recent upgrade. It has a Sony DMX-R100 console (which is what Matthew Girard was griping about, because he never got to play with it!) and surround monitoring, thanks to five Mackie HR824s. There's another pair of DA-88s and another Mac G3 with a Pro Tools | 24 MIXPlus system. Studio C is a "bare-bones" room: It has an older Mac with a Pro Tools III system and a pair

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of Genelec 1031APs. These three studios are tied together with audio, video and Ethernet lines, and Metcalfe is also considering networking the Pro Tools systems with Rorke Fibre Channel.

The computer lab can be found in Studio D, which has five workstations and is also used for theory practice. Each station houses a Mac with Pro Tools, Digital Performer, Finale, and the same MIDI hardware and software as the other studios, as well as music education programs like Music Ace and Practica Musica and a Kurzweil PC88 keyboard. All of the stations are connected to a Mackie 1604 console and a pair of JBL 4412s.

Finally, there's the booth at Millard Auditorium, a 428-seat performance space with a full orchestra pit that hosts symphonies, chamber music concerts, solo recitals and lectures. A Mackie 2408 console handles the mixing, and there are a Tascam DA-38 tape deck and a CD301 MkII CD recorder, a Panasonic DAT, and a Mac G3 with Pro Tools Project and the usual MIDI suspects. Monitoring is handled by a pair of Mackie HR824s. For important recordings or projects that require more tracks, the Tascam MX-2424 can be brought in.

RELATED PROGRAMS

In addition to the MPT program, the University of Hartford has two other programs that are focused on audio. In the Ward College of Engineering, there's a Bachelor of Science degree in Audio Engineering Technology, which began around the same time as MPT. It prepares students for the technical and support side of the recording industry. "It's not a music degree," explains Metcalfe, "although they do get some music theory and ear training and have the option of some MIDI courses. They get a lot more electronics courses than do MPT students. All of the electronics courses that MPT students take are at Ward, and sound technology courses that the Audio Engineering Technology students take are in our studios." The Ward College has its own 200-square-foot recording space and a control room equipped with a 24-channel Soundcraft Spirit board, three ADATs and an Ensoniq Paris workstation.

There are also two acoustics programs offered by the College of Engineering—the only undergraduate acoustics programs in the country, according to Metcalfe—that predate the others by a few years. One is a major program in Acoustics and Music: Students receive a Bachelor of

Science in Engineering while also enrolled in performance, theory and recording courses at the Hartt School. The other is a concentration in acoustics for mechanical engineering students. The programs train students to design studio spaces, performance venues, loudspeakers and musical instruments, for careers in noise control, environmental acoustics, hearing loss and hearing aid design, and similar fields.

OUT IN THE REAL WORLD

So how does the Music Production and Technology program at the Hartt School prepare students for the real world? Pretty well, according to at least one of its graduates. "When I did my first internship," says Girard, Class of 2000, "it was in a big studio in Boston with an analog board. When I went in there, I thought, 'I don't know a thing about this.' But then I realized I did know. I was able to take what I had learned and figure things out. I'd never seen this equipment before, but I could take what I knew and apply it. I also knew how to coil cable and take care of equipment, and that was very helpful. And knowing Pro Tools was a real plus—I could help out on that system right away." Girard is now a Pro Tools specialist at Parsons Audio.

He has high praise for the size and flexibility of the program: "It was a very small group of us, and that was great. We worked together all of the time. The other music students were grateful that we were there because we'd record their concerts or their bands. And at any time of the day or night, you could always find a studio that's open. The gear might not have been as sophisticated as at some other schools, but the availability was a real plus. I did a lot of recording on my own, not for class, since the studios were open and I had the keys. It gave me a chance to try things out that we weren't necessarily doing in class.

"The music classes were really important. Just as important as learning how to use the gear and make sounds is understanding what it is you're recording."

Any complaints? "What would be great would be to make the program six years [long]. There's so much to learn. I wouldn't have minded staying in school an extra couple of years." This must mean that Hartt is doing something right. After all, when was the last time you heard a young person say *that*? ■

Paul Lehrman is back in school again and is somewhat disconcerted that everyone thinks he's the teacher.

The Professional's Source



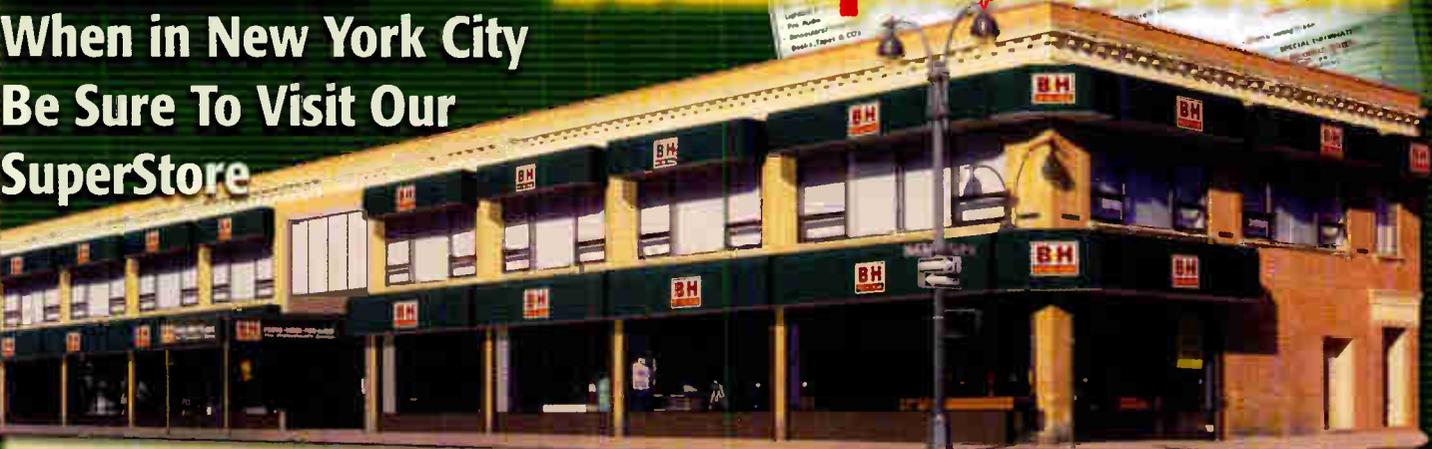
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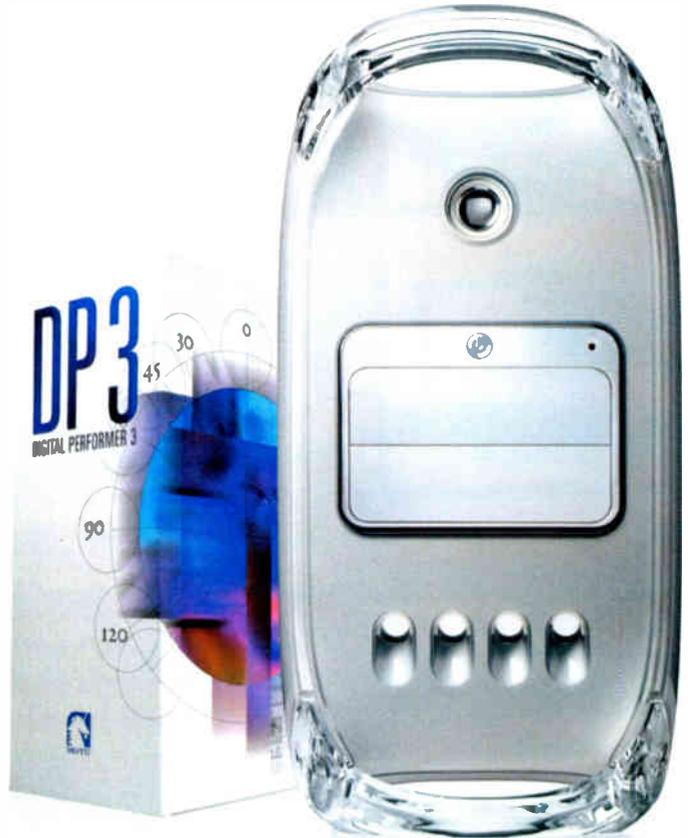
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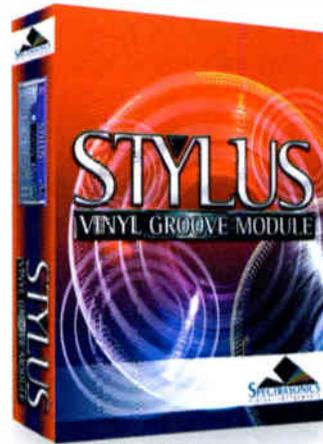
Waves 3.5 is native processing in full glory.



Spectrasonics Stylus

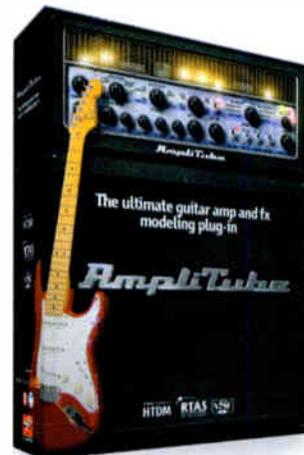
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THE MOTU 2408mk3 NATIVE STUDIO...

Mackie UAD-1 Powered Plug-ins

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Teletronix LA-2A Leveling Amplifier

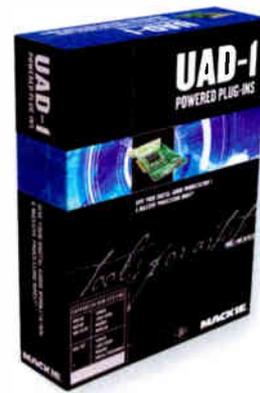
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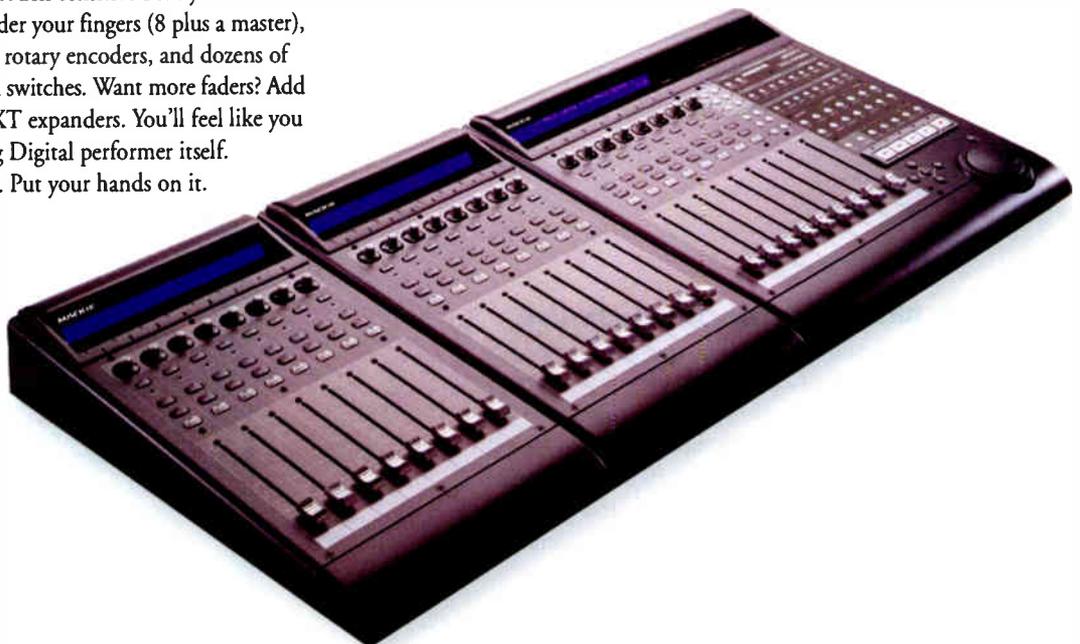
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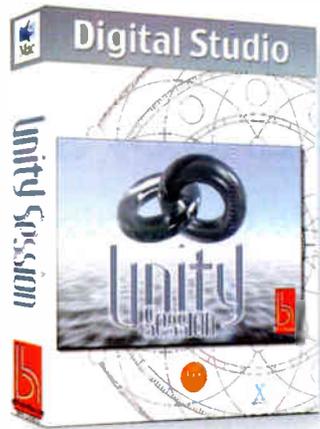
Mackie Control for DP3

Designed in direct collaboration between Mackie and MOTU, the new Mackie Control automated control surface puts nine touch-sensitive Penny & Giles automated faders under your fingers (8 plus a master), 8 motion-sensitive rotary encoders, and dozens of custom-programmed switches. Want more faders? Add 8-channel Control XT expanders. You'll feel like you are touching Digital Performer itself. Go ahead. Put your hands on it.



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Emagic EXS24 Software Sampler

The REX File Connection

Emagic's EXS24 is the software sampler of choice for Logic aficionados. The program has the ability to load and automatically keymap batches of samples (any files stored as .AIFF, .WAV and SDII) and includes loads of sound-sculpting parameters (most of which can be automated). Its feature set has recently been improved in Logic Audio Version 5.x. One particularly powerful addition is its support of the Propellerhead ReCycle REX file format, which can now be imported into the EXS24 as painlessly as auto-mapping a batch of standard audio files.

EXS24's REX support is distinct from Logic's REX support. While tempo control of a REX loop can be achieved by either dragging it onto an audio track in the Arrange window or opening it within an instrument in the EXS24, this second option gives you a higher degree of control over the loop's slices. For example, from the EXS24 Instrument Editor, you can treat each slice as an individual sample, providing control over the sample's pitch, volume and triggering (like reverse or one-shot). Because an imported REX loop becomes an actual sampler instrument, it's a breeze to replay the loop from your MIDI controller and add cool EXS24 envelope and filtering effects.

FRESHLY SLICED LOOPS

Importing a REX file is simple. Open the EXS24 Instrument Editor and, from the ReCycle Convert menu, choose "Slice loop and make new instrument." A new instrument is automatically created, and the loop's slices are mapped chromatically beginning at C1. You can also add a REX file slice to an existing instrument. Select "Slice loop and add samples to current instrument" to have the slices mapped chromatically starting from the first available key. With 128 notes available for samples, there's plenty of room in a single instrument for several sliced loops.

The REX loop's associated MIDI performance file (the MIDI beat map) can be extracted at the same time you import the



The EXS24 software breathes new life into Recycled grooves.

samples with the "Extract sequence and make new instrument" command. The MIDI performance is automatically dropped into your selected track in the Arrange window at the playbar's current position. When you add a REX file to an existing instrument with the "Extract sequence and add samples to current instrument" command, the MIDI performance for a loop is intelligently transposed. That is, the first note of the MIDI performance lines up with the loop's first slice. I filled up an instrument with almost six ReCycled loops, for a total of 124 slices, and in each case, the MIDI file's Transpose function worked flawlessly.

If you have already turned a REX file into an EXS24 instrument but accidentally misplaced the loop's MIDI performance (for example, you deleted it from your Arrange window), there's even a command for this situation. With the instrument loaded into the EXS24, simply press the sampler's Edit key and, from the EXS24 Instrument Editor, select "Extract sequence from ReCycle instrument." This function pulls the sequence right out of the EXS24 instrument; there's no need to locate or even have the original REX file. As with other "Extract sequence" commands, the MIDI performance is automatically placed in your Arrange window.

REX, MEET TDM

Until recently, using a ReCycled loop in your TDM session was a multistep process. You either transmitted a ReCycled loop to an external sampler or imported all of a loop's slices to an internal software sampler (such as Soft SampleCell or Bit-headz's Unity DS-1 connected to your TDM mixer through Digidesign's Direct-Connect extension). However, the EXS24

can be connected to a TDM mixer by way of Emagic's optional ESB/TDM System Extension Software. This extension allows the EXS24 to be instantiated in the first insert of the aux channels of a TDM mixer within Logic Audio. Or, if you prefer to work in Pro Tools, up to eight channels of Logic Audio's native mixer can be piped to Pro Tools' mixer.

ANY WAY YOU SLICE IT

Because a ReCycled loop's beats are just individual samples being triggered by its MIDI performance file, not only can the loop's tempo be freely adjusted, so can its groove. For example, the MIDI performance can be quantized to affect the loop's feel. Using Logic Audio's "Make groove template" command, you can also extract a loop's MIDI performance groove to use as a groove template. Apply the groove template to MIDI performances of other ReCycled loops to get loops (which wouldn't normally work with one another) to groove together.

Combine the ReCycle program with the EXS24's REX support, and you have an amazingly powerful time-correction tool kit. On more than one occasion, I've extracted a sloppily played bass line, looped it, ReCycled it, loaded it back into my session as an EXS24 instrument and quantized its performance to the song's kick or drum loop. To make the transfer between ReCycle and the EXS24 a piece of cake, the EXS24 even has commands to import ReCycle's clipboard, meaning that there's no need to even save your ReCycled loop to disk. ■

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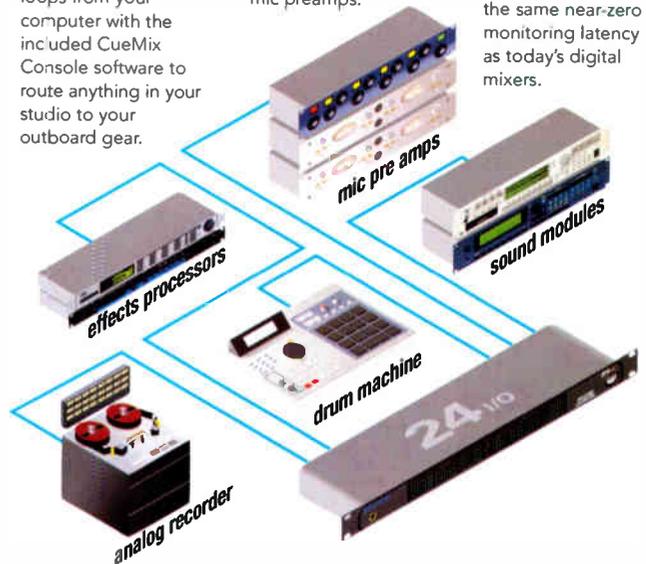
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