

MIX

FILM SOUND SPECIAL

**Dialog Editing on
"The Firm"**

**Scoring in the
Project Studio**

PROFESSIONAL RECORDING · SOUND AND MUSIC PRODUCTION

**Directory:
Southern California,
Southwest and
Hawaii Studios**

THE DEAD
AND STING
ON THE ROAD



**Recording
the Music of
"The Wild West"**



The ADAT Group™

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FOSTEX TIME LINE

AMPEX ALE

Technology is changing the music industry day by day. But, change without focus and compatibility delivers only chaos. Where should you turn?

The ADAT Group. Composed of a diverse group of manufacturers who have delivered extraordinarily focused products to the music industry, their products are successful because they shape technology into an extension of your creative personality.

Now, as members of the ADAT Developer's Program, they all agree on one thing: the technology of ADAT.

As a digital multitrack format. As a way of harnessing the incredible power of digital audio to make all the products of the ADAT Group work together as a compatible system.

In this day of leapfrog technology, the last place you want to be is on the bottom. Over 15,000 ADAT customers worldwide have chosen to stay on top. More than all other digital multitrack owners combined. To keep them there, The ADAT Group keeps pulling out all the stops. Making it safe for you to leap.

The ADAT Group - Focus on Compatibility™

For more information on The ADAT Group and the ADAT Developer's Program call 1-800-525-3747
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The ADAT Group™

World Radio History
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G PLUS CONSOLE SYSTEMS



3.5" disk drives allow the use of low cost, high capacity disks for mix data storage



Audio phase scope provides permanent display of amplitude and phase relationship of left and right stereo signals



Wireless talkback system uses a PCM encoded infra-red handset



G Plus consoles additionally provide:

- 3.5IN DISK DRIVES
 - SSL'S OWN LINEAR CRYSTAL, OXYGEN-FREE CABLE
 - AUDIO PHASE SCOPE
 - WIRELESS TALKBACK SYSTEM
 - AUTOMATED SOLO
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 - G SERIES OR E SERIES EQUALISERS
 - ENHANCED GROUP AND MAIN MIX AMPS
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 - CUE STEREO NORMALLING
 - LED METER ILLUMINATION
 - BUFFERED MAIN OUTPUT DISTRIBUTION
 - SECOND MINI SPEAKER OUTPUT
 - GROUP CROSS-NORMALLING
 - BLACK TRIM STRIPS
- On consoles of 72 channels or over:*
- A FULLY-CONNECTORISED REMOTE PATCHBAY BECOMES A NON-CHARGEABLE OPTION

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This is real life. The frog won't turn into a prince and his voice won't sound like Diana Ross — at Brüel & Kjaer capturing reality is what we're all about.

Today's studios are full of good sounding microphones but, fortunately, we are not one of them. With Brüel & Kjaer you are the artist. We supply you with a blank canvas and you get to add the colors, not us.

The B&K 4000 series offers 6 different condenser mics, featuring true omni or cardioid pickup which can be passively and accurately altered by our exclusive *acoustic pressure equalizer* (APE) adaptor. They're available in both 48 Volt Phantom or 130 Volt powered versions offering unmatched 168dB dynamic range for the most demanding snare drum crack to the subtlest details of nature's acoustical ensembles.

IF YOU'RE SERIOUS ABOUT YOUR REFERENCE RECORDINGS:

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Introducing Dyaxis II™ Studer's 2nd generation digital workstation delivers real-time DSP power, unlimited channel capacity and immediate interchange between projects, in a modular multitrack system. Stack up to six 8-track systems for 48 tracks of simultaneous playback. Work with individual processors off-line, then combine all 48 tracks for final assembly.

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PROFESSIONAL RECORDING • SOUND AND MUSIC PRODUCTION

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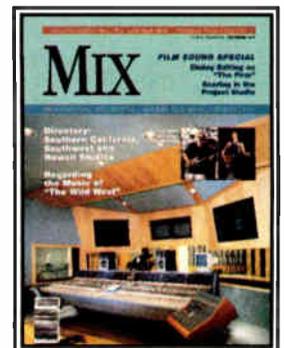
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Cover: Hollywood's Andora Studios is one of L.A.'s hottest new rooms and a member of the World Studio Group. Andora owner Doug Parry conceived and supervised the floor plan and acoustical treatment of the new facility. Featured equipment includes a Neve VR-72 console in the tracking room and a modified Neve 8078A console in the mix room, Genelec 1035A main monitors in both rooms, and two Studer A800 24-track recorders. Photo: Derek Rath.



With over 20,000 ADATs already in use all over the world, Alesis has made more digital multitrack tape recorders

TEC AWARD WINNER
Voted Recording Product of the Year and Best Recording Device: Storage Technology.

takes to make the best-selling digital multitrack. The Alesis ADAT™ Digital Audio Recorder's sound quality, simple accurate synchronization capability (ADAT Synchronization Interface), fiber-optic digital interface (ADAT MultiChannel Optical Digital Interface), and wide range of peripherals available now, give ADAT owners the creative flexibility they need.



The Alesis AI-1™ ADAT to AES/EBU and S/PDIF Digital Interface with sample rate converter lets you transfer audio digitally to or from the ADAT system and external units such as DATs, CDs, and other digital recording formats.



The Alesis AI-2™ Multi-Purpose Audio/Video Synchronization Interface by TimeLine (the leader in synchronization products) connects ADAT to the world of video, film and multi-media production using SMPTE, 9 pin and TimeLine Lynx control protocols.

Focus on Compatibility™

Its revolutionary impact on the recording industry has made ADAT the de facto standard in digital multitrack. The enormous number of ADAT users worldwide, the fact that Postex has licensed the ADAT format for their own digital recorder, and the growing list of leading companies focusing on industry compatibility by becoming members of The ADAT Group™, all mean that when you choose ADAT, you're compatible with a vast array of music and audio equipment, now and in the future. And, you're supported by a network of professionally trained Authorized ADAT Service Centers worldwide.



The ADAT Format – made for multitrack

ADAT records eight tracks of 16-bit linear, 48 kHz sample rate audio, with no data compression "tricks" or channel sharing. We chose Super VHS® (S-VHS®) tape as a foundation, then designed ADAT's data structure and heads specifically for the rough-and-tumble, back-and-forth, punch-in-and-out environment of multitrack recording. To make sure that recording one track wouldn't disturb any other track, we divided each helical scan into



An 8 track, 8mm recorder's helical scan: there are only four audio data blocks, forcing each track to share a block with another.



An ADAT's helical scan: ADAT tracks are safely separated into 8 discrete data blocks. (Both vertical dimensions enlarged for clarity)

And with good reason. Alesis was founded on digital technology, so we know what it

eight separate data blocks. Some digital recorders combine data from two different channels into the same data block on tape, which means that each time you record a track, another track must be read into a buffer and actually re-recorded even though it is in "safe" mode.



The 8 track, 8mm helical scan format risks introducing errors into "safe" tracks each and every time you press record.



The ADAT format records each track discretely, as all professional multitrack recorders should.

Bigger is Safer

Microscopic contaminants in the studio aren't just probable, they're statistically inevitable. If the format can't overcome them, they'll cause mistracking, noise, distortion, even total muting of the audio. Formats smaller than S-VHS are more vulnerable to contaminants, dropout, and misalignment, especially when exchanging tapes between machines. One 8mm digital format attempts to squeeze the same amount of sound into one-tenth the tape area that ADAT does. ADAT's S-VHS tape offers more total surface area to meet the demands of digital recording, and its wider 100 micron tracks are five times less vulnerable to being derailed by dust. Because even though technology makes it possible to make formats smaller and smaller, dust stays the same size.



Comparison of tape areas for 1 second of audio: ADAT (1.211 mm²) and the 8 track, 8mm helical scan format (133 mm²).

Actual microscopic comparison of the ADAT tape format and the 8 track, 8mm helical scan format (enlarged approximately 100 times).



ADAT's wide 100-micron tracks offer an extra margin of safety for digital audio.



The 8mm's 20-micron tracks squeeze more data into the same area, with little room for error.

than any other company. More than Sony. More than Mitsubishi. More than Yamaha, Akai, and Tascam combined.

More than just a tape recorder— The ADAT System

ADAT, when combined with the BRC™ Master Remote Control, is a complete digital recording and digital editing system with features that no other recorder, analog or digital, can match. The BRC is a full-function autolocator and MIDI/SMPTE time code chase-lock synchronizer. Plus, it controls digital copying between ADATs, like a disk-based recorder, but much simpler to use.

The ADAT MultiChannel Optical Digital Interface digitally transmits up to eight ADAT channels at once over a single fiber optic cable to any track on any ADAT in the system without repatching, all in the digital domain. Now you can "fly in" that perfect vocal part to multiple locations in seconds, with absolutely no generation loss. And our new QuadraSynth™ keyboard has an ADAT digital interface so you can record it without ever leaving the digital domain.

A fiber optic cable for digital connection is included with every ADAT.



The BRC Master Remote Control, shown with optional RMB™ Remote Master Bridge, supercharges your ADAT System by adding SMPTE and MIDI synchronization, storable autolocation points, copy and paste digital editing and more.

ADAT/BRC digitally stores important session notes

Instead of scribbling notes on cumbersome studio track sheets, the BRC lets you store 400 autolocation points, 20 Song start points, punch in and out points, MIDI tempo maps, SMPTE offsets, and more in the two-minute data header of the ADAT tape. The BRC's alphanumeric display lets you name each cue point and song. It even has a handy built-in list of 16 standard cue point names you can edit.



Unlike analog autolocators, the BRC can recall 460 points, storable on each ADAT tape for later recall, so you can keep your mind on the project instead of having to remember minutes, seconds and frames.

The ADAT Worldwide Network

Thousands of ADAT Worldwide Network™ multitrack recording group members are reaping the benefits of choosing The ADAT System. As WWN members, they are able to collaborate and exchange ADAT tapes with other talented musicians, producers, composers and engineers throughout the world. Alesis is proud that so many creative people worldwide are using this American-made product, making ADAT the most popular digital multitrack tape recorder in history. The recording professionals below don't endorse ADAT, they use it every day. Their credentials speak for themselves. Visit your Authorized ADAT dealer and see what the new standard in digital multitrack recording can do for you.



Dave Rouze
Technical engineer for Larry Carlton, currently using ADAT to record all Larry's live concerts. 2 ADATs and a BRC.



Jay Graydon
Two time Grammy Award winning (twelve nominations) producer, engineer, writer, and guitarist. 4 ADATs and a BRC.



Owen Bradley
Country Music Hall of Famer. Producer of many legendary country music artists. 9 ADATs and a BRC.



Francis Buckley
One of the top dance and pop engineers in Hollywood. 4 ADATs and a BRC.



Web Staunton
Grammy-nominated chief engineer and studio owner. 3 ADATs and a BRC.



Mick Guzauski
L.A.'s leading platinum madison engineer. 4 ADATs and a BRC.



Andy Hilton
Owner and Chairman of the largest pro-audio equipment-for-hire company in the U.K. and Europe. Plenty of ADATs.



Ray Benson
One of country music's hottest producer/arranger/writers. 3 ADATs and a BRC.



Tom Size
Has engineered and mixed a wide range of music from rock to legendary jazz. 3 ADATs and a BRC.



Russell Brower
Two Emmys (eight nominations), Sound designer and producer for film, television and major theme parks. 2 ADATs and a BRC.



Tim Wilson
Consultant and system designer for leading recording artists and songwriters. Has installed more ADATs than he remembers.

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world radio history

FROM THE EDITOR

The last time we took a close look at the L.A. studio scene, this recording Mecca was embroiled in a battle between legitimate recording operations and a new crop of outlaw studios that were defying the local building codes, tax structures, insurance requirements and, generally, business ethics. The emerging project or private-use studios certainly were making their impact on the overall business climate, but these personal rooms were not the problem. In fact, the "mothership" studios were in the process of developing productive relationships with these home and private operations, often providing clients a chance to begin their projects at home and finish them in the big studios.

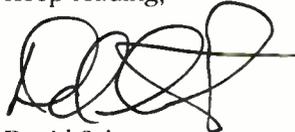
The problem was really one of illegal businesses competing unfairly with those studios that played by the rules, most of which required considerable expense to stay in the good graces of the government. In response, several of the major players formed the Hollywood Association of Recording Professionals to address the problems presented by these outlaw studios. While HARP, per se, couldn't do much more than provide a forum for the issues, the L.A. zoning board finally became aggressive in ferreting out the problem studios.

Today, HARP is for the most part inactive, except for the occasional lunch or meeting to put heads together on common concerns. Many of the illegal studios are gone or have converted one way or the other into fair play. And, happily, business has begun to pick up a bit. In fact, while last year's L.A. studio owners' forum turned up little more than doom and gloom, this time around we see many more success stories.

As Chris Stone reports in this month's "The Operator," while there are fewer large studios operating in L.A. today than there were last year at this time, and while the prices for studio time have not risen since then, business is up as much as 20% for many of the survivors. To what do they attribute this growth? Comments such as "I found my niche and expanded it," "I cut costs so I can make more money doing less business" and "bad times are when expansion makes the most sense—prices are lower," reflect common themes.

I particularly liked the approach of Ocean Way's Alan Sides, who gave away one of his trade secrets: "When everyone else goes left, I go right!" Refusing to follow the crowd has placed Alan in the top ranks of the world's studio entrepreneurs. Attitudes like Alan's reflect that nontraditional spirit that gave rise to our industry and made an important place for the independent studio in the development of our musical culture.

Keep reading,



David Schwartz
Editor-in-Chief

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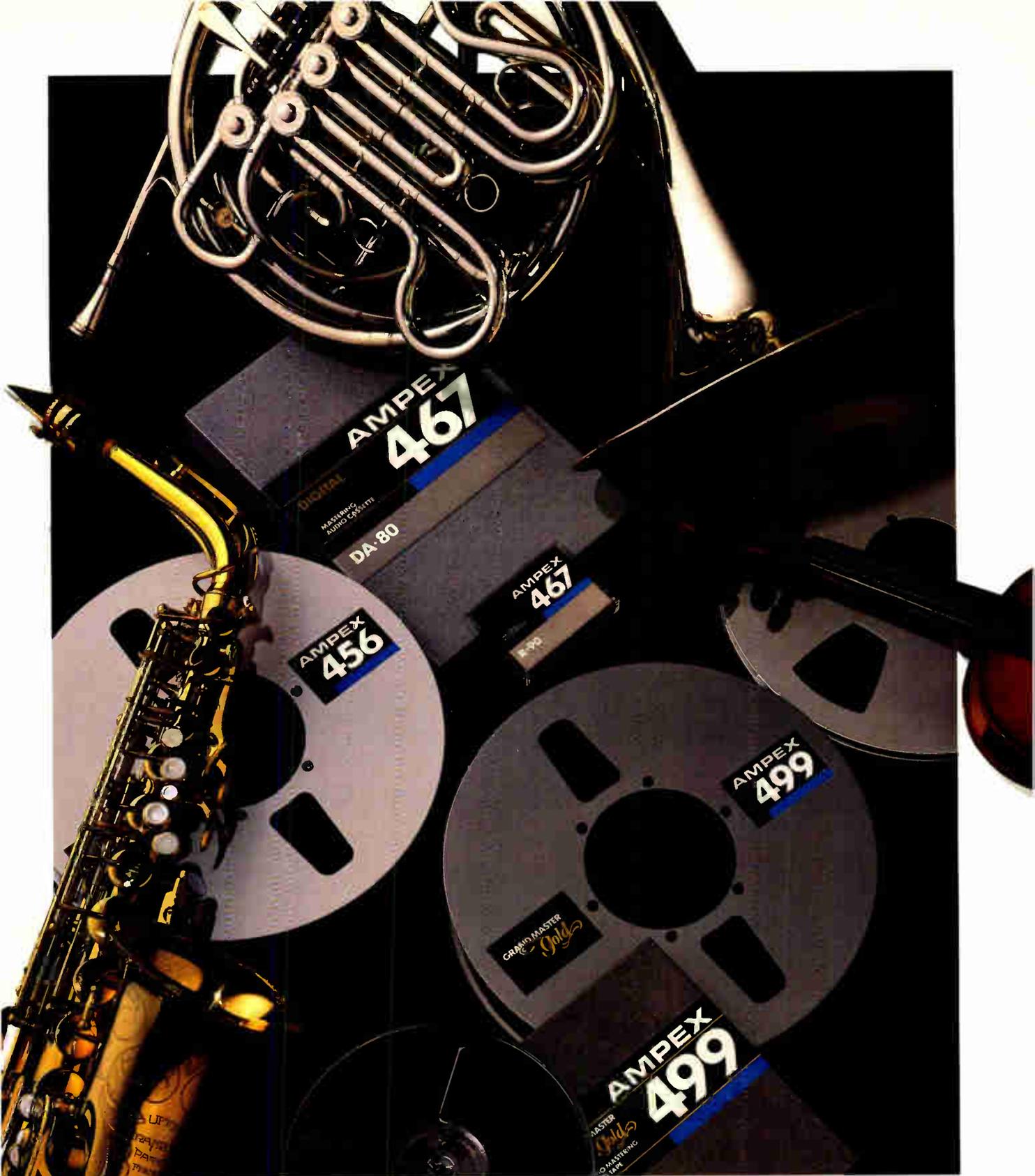
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Founded in 1977 by
David Schwartz and Penny Riker Jacob



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*More records go gold on Ampex than on
all other tapes combined.*



AMPEX

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The Serious

THE TASCAM DA-88 THE DIGITAL MULTITRACK DECK FOR SERIOUS PRODUCTION

It's true. The first machine designed specifically for low cost digital multitrack production is now available. And it comes to you from the world multitrack leader, TASCAM. It's simply the most advanced, well thought out and heavy duty digital 8-track deck you can buy. The best part is, it's incredibly affordable.

The DA-88 is built for production. The integrity of TASCAM's design is evident in every facet of the deck. From its look and feel — to its exceptional sound, unsurpassed features and expansion capability.

GOES FASTER, LASTS LONGER AND TAKES A BEATING

While we admit that it's an elegant looking machine, it's tough to see its finest asset. The tape transport. Designed and manufactured by TASCAM specifically for the DA-88, it's fast, accurate and solid. And that's what counts in production — in personal studios, project studios or in those demanding high-end facilities.

You'll notice it uses superior Hi 8mm tape, giving you a full 108 minutes of record time. What's more,

the transport is lightning fast and yet so quiet you'll barely hear it blaze through a tape.

We didn't stop there. Because production environments are notorious for constant, if not abusive, shuttling, punching, 24-hour operation — you get the idea — the transport was designed and built to take a beating.

Even more impressive is the transport's responsiveness. Take a look at the front panel. Notice the shuttle wheel? Turn it just a bit and the tape moves at one fourth the normal play speed. Turn it all the way and it flies at 8 times faster. Do it all night if you want. It's quick, smooth and it's precise. Need to get to a location quickly? Accurately? Shuttle a bit and you're there. The location is easily viewed on the DA-88's 8-digit absolute time display — in hours, minutes, seconds and frames. With the optional SY-88 sync card it displays timecode and offset, too.

YOU ALREADY KNOW HOW TO OPERATE IT

Unlike other digital multitrack decks, the DA-88 works logically and is simple to operate. Like your analog deck. All functions are familiar and easily operated from the front of the deck.

Adding the optional SY-88 synchronizer card is as easy as changing a Nintendo® cartridge. With it you're SMPTE and MIDI compatible. And no matter how many DA-88s you have locked up, you need only one sync card. Other optional accessories include AES/EBU and SDIF2 digital interfaces allowing the digital audio signal to be converted for direct-digital interfacing with digital consoles, signal processors and recording equipment.



s Machine



Take punching-in and out, for example. You have three easy ways to do it. You can punch-in and out of single tracks on the fly. Just hit the track button at the punch-in point. Hit it again to punch-out. You can use the optional foot switch, if you like.

Or, for multiple tracks, simply select the track numbers you want to punch, push play, and when you're ready, hit record to punch-in, play to punch-out.

Finally, for those frame accurate punch-ins, you've got auto punch-in and out. In this mode you can rehearse your part prior to committing it to tape.

No matter which way you choose, your punch-in and out is seamless and glitch free due to TASCAM's sophisticated variable digital crossfade technology.

That's not all, you also can set your pitch ($\pm 6\%$), sample rates (44.1 or 48K), as well as crossfade and track delay times. All from the front of the DA-88.

COMPLETE SYNCHRONICITY

There's more. Add the optional SY-88 synchronizer card to just one of your DA-88s and you've got full SMPTE/EBU chase synchronization. The best part is, you can record time-code without sacrificing one of your audio tracks. You also get video sync input, an RS-422 port to allow control of the DA-88 from a video editor, and MIDI ports for MIDI machine control.

A DIGITAL RECORDING SYSTEM THAT GROWS WITH YOU

The DA-88 is truly part of a digital recording system. Start with 8 tracks today — add more tomorrow.



Adding tracks is as simple as adding machines — up to 16 for a total of 128 tracks. They interconnect with one simple cable, and no matter how many DA-88s you have, they'll all lock up in less than 2 seconds.

Controlling multiple machines is made simple with the optional RC-848 remote. With it you can auto locate and catch 99 cue points on the fly. It comes complete with shuttle wheel, jog dial, RS-422 and parallel ports, and it controls other digital and analog machines, too.

LISTEN TO THE REST

Of course, the sound quality is stunning. With a flat frequency response from 20Hz to 20kHz and dynamic range greater than 92dB, it delivers the performance you expect in digital recording.

So get to your authorized TASCAM dealer now. Check it out. Touch it. And listen to it. Once you do you'll know why the TASCAM DA-88 is the serious machine for digital production. The TASCAM DA-88 is the choice of studios worldwide. And at only \$4,499, it should be your choice.



TASCAM

Take advantage of our experience.

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CURRENT

FIRST NASHVILLE NAMM A SUCCESS

The summer National Association of Music Merchants show took place at Nashville's Convention Center on July 17-18, and, compared with the anemic summer shows of the last few years, it looked like an only slightly smaller version of Anaheim in January. Participation was up sharply from last year; NAMM's Paul Lonnegren expected to top 10,000 attendees, more than double last year's Atlantic City show. And there were 270 exhibitors, up about 40 from last year. It's almost certain that NAMM will hold next year's summer show in Nashville. For its part, the city went all out to rope NAMM, including the arrangement of a live concert in the District area.

While the exposition is still decidedly MI, pro and project studio products were mixed in with the guitars and drums. Eventide announced its new DSP4000 Ultra-Harmonizer, which allows users to build custom effects algorithms. The unit is expected to ship during the summer and list for \$4,995.

Zoom showed several new products, including an updated version of its 9030 processor, the 9050, which has functioned as a sort of ultimate 60-second project studio DI box. Gating and N/R has been added. The new 9300 signal processor features a memory card capability. Peter Rodgers of Zoom acknowledged that such products, like MIDI itself, have had a tough time convincing the pro market of their viability. "Studios are locked in to the

products' association with guitar players," he said. "And the signal processing market is crowded. But both MI and pro signal processing manufacturers are now focusing on higher-quality dedicated units rather than multieffects units, and that's going to help studios see what's best based on performance, not past associations."

Lyrus Inc. debuted the G-Vox, a MIDI guitar interface for computers, allowing notation and storage as MIDI files for later editing and playback. It will list for \$400.

Acoustical Solutions' Michael Binns said that sales of his acoustical treatment products have remained split between the pro and MI market for years. The big change, he said, is that, "music stores are getting hipper to the acoustical needs of the project and home studio markets they now find themselves serving. It's become apparent to more home studio people that they need to deal with acoustical treatment."

TEC AWARDS TO EXPAND EDUCATION AID

In an effort to expand the amount of funding for students of audio arts and sciences, proceeds of the 1993 TEC Awards will be divided as follows: 20% to SPARS for its student assistance and other educational programs; 15% to scholarship endowments established by past nominees and winners of the TEC Award for recording/school program; and 10% to the AES Educational Foundation. The TEC Award for schools will be discontinued under the new allocation.

The remaining 55% of the proceeds will be distributed to organizations dedicated to hearing education and the prevention of deafness.

The Ninth Annual TEC Awards will be held in New York City on October 8, during the AES Convention. Call Karen Dunn at (510) 939-6149 for ticket information. ■

Korg introduced three new workstation keyboards, including the X3—a low-cost system based on the 01W family—with a 16-track sequencer with 32,000-note capacity, 32 voices and a DOS-compatible disk drive. Korg also entered the pure computer realm with the Audio Gallery, a multimedia music system with its own sequencing and start-up software, 32-voice sound module and interface cable. The system works on either Mac or IBM.

Finally, one welcome trend is that computer-based products, which had often been grouped together on the peripheries of the show floor, have now fully integrated with other mainstream product presentations. The new ghetto inhabitant is karaoke systems, which had a strong, if fringe-like, presence at the show. And if you don't think they have pro audio connections, ask any of the several studios in New York and Nashville that have had karaoke recording sessions as a big part of their client base for the last two years, or any of the duplicators who've been running them off by the millions.

—Dan Daley

SONY DEVELOPS MINIDISC DATA STANDARDS

Sony Corp. has developed standards for MD Data, a new compact, high-capacity data storage format for personal computer applications that is based on the audio MiniDisc specs.

The company is aiming to make inroads into the floppy disk market, bank-

—CONTINUED ON PAGE 16

H 910



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Thanks to our new Apogee-clock-equipped SMPTE Slave Driver; Pro Tools 2.0 delivers ultra high-fidelity, ultra low-jitter, ultra-easy digital synchronization in playback and record, complete with varispeed.

faster, and more accurate VU metering. Improved MIDI sequencing and control. Extensive undo commands. In fact, Pro Tools 2.0 has dozens of new features, and scores of enhancements, for audio post, music, and broadcast production applications.

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you'll notice is that 2.0 combines full-featured recording, mixing, signal processing, automation, along with advanced waveform and event editing — all in one, easy-to-use, integrated program.

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Are you a Pro Tools owner who has been holding your breath as you read this ad? All registered owners will be offered a 2.0 Upgrade Kit, including software, new manuals, and an instructional video. All for just \$49. So breathe easily.

There's Much More To Come. We've become the industry leader by responding to the needs of the people who use digital audio. And by listening carefully to people like you, we have a clear vision of what a professional digital studio should offer.

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Lower system prices now apply to 8-channel, 12-channel, and 16-channel Pro Tools systems. Four-channel Expansion Kits now also cost less. See your Authorized Digidesign Pro Tools Dealer for details. While all Pro Tools systems include built-in "trigger sync" for playback, the optional Digidesign SMPTE Slave Driver delivers the highest-fidelity record and playback sync. (call us for the details). DENIT uses Digidesign's optional Sound Designer II™ software, which runs with any Pro Tools system. *A US\$49 Upgrade Kit cost applies to residents of the US and Canada, and includes shipping. Internationally, the cost is just US\$69, including express shipping. Pro Tools owners must be registered directly with Digidesign to be eligible to receive the Upgrade Kit. © 1993 Digidesign. All rights reserved.

backed up by the best customer support in the entire industry. It's no coincidence that all of this describes Pro Tools 2.0, perfectly.

A Vision To Share. We believe that a truly professional digital audio workstation should have a truly open architecture.

By "open," we mean that you should be allowed to add software-based power when you need it. (DINR™ our amazing Digidesign Intelligent Noise Reduction™ system, is the first of many forthcoming Digidesign software "plug-ins.")

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And by open, we actually believe that your professional digital studio



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should allow you to integrate hardware and software from a variety of manufacturers, and not just us. Which is why, in 1993, we are releasing the remarkable Digidesign TDM Digital Audio Bus™

systems will be easily and affordably upgradable to be totally compatible with the Digidesign TDM Digital Audio Bus.

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Make Pro Tools 2.0 Your Reality. Thanks for taking a few minutes to read what we had to say. Hopefully, we've helped you understand better the depth of our commitment to the people who use Pro Tools today, and will be using it tomorrow.

So while we call it Pro Tools 2.0, you might call it exactly what you need. And if so, perhaps your next call should be to us.

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INDUSTRY NOTES

Dennis M. Houlihan was named president of Roland Corporation U.S. (Los Angeles). The appointment follows Roland Corp. Japan's recent acquisition of Roland U.S. During his career, Houlihan has been active in domestic and international sales and marketing, product design and development, and dealer and consumer promotions...Leonardo Systems Inc. (Hudson, MA), the company that recently reincarnated the Adams-Smith line under a licensing agreement from Stypher Corp., has formally acquired the rights to manufacture and sell Adams-Smith synchronization products...Carver Corp. (Lynnwood, WA) and subsidiary U.S. Sound restructured their sales and marketing departments. As director of sales and marketing for U.S. Sound, Will Lewis will concentrate exclusively on the subsidiary's products. Steve Payne was named director of sales and marketing for Carver Professional...TGI North America (Kitchener, ON), North American distributor of Tannoy monitors and Bruel & Kjaer mics, appointed Image Marketing as its new Southern California representative...Some new sales representatives for BBE (Huntington Beach, CA): Venture Sales is the company's new rep in Alabama, Georgia, Mississippi, North Carolina, South Carolina, Tennessee and panhandle Florida; Jamm Distributing Inc. handles BBE in Michigan; and C/K Sales and Marketing is the company's new rep in Connecticut, New Hampshire, Maine, Massachusetts, Rhode Island and Vermont...Philip N. Sanders joined acoustical consulting firm Charles M. Salter Associates Inc. (San Francisco)...Eastern Acoustic Works (Whitinsville, MA) appointed Tammy Baxendale to the position of senior accountant. EAW also hired PCM Marketing as its Northern California sales rep...Re-

source Seven (San Marcos, TX) is a new communications consulting, design and installation firm. The company was put together by former Pran Inc. and Joiner-Rose Group personnel, including principals David Joiner and Ed Wood...Two hires at Sabine Musical Manufacturing Co. Inc. (Gainesville, FL): Rob Rothschild is director of sales and marketing, and Nancy Haynes is communications director...Chas Smith is Digidesign's (Menlo Park, CA) new managing director for sales in the UK...Trident Audio has moved and expanded its sales and technical staff, with the addition of Steve Trunnell to the sales team. The new 6,000-square-foot facility is located at 3091 N. Lima St., Burbank, CA 91504.; phone (818) 972-1050; fax (818) 972-1058...Portland, OR's New Media Magic, a multimedia design and production company, hired Taurin Mills as director of technology...Paul Gazarian joined QSC's (Costa Mesa, CA) sales team as sales manager, Eastern region. His territory encompasses all states east of the Mississippi, as well as Minnesota and North and South Dakota...Replitech International-Munich is a new European seminar and trade show aimed at duplicators and replicators of magnetic and optical media. It has been set for April 12-14, 1994, at the Sheraton Munich Hotel and Towers. For more information, contact ITA at (212) 643-0620...The second annual Parsons Audio Conference will take place at Parsons Audio in Wellesley, MA, September 20-24. Many manufacturers are slated to participate in exhibits and discussions focusing on current developments in digital audio, consoles, studio monitoring and acoustics, MIDI, and test and measurement. For more information, call Parsons at (617) 431-8708. ■

—FROM PAGE 12, CURRENT

ing that consumers' need to add graphic as well as audio information to documents created on a PC will make the format's 140MB storage capacity appealing. While MO discs are currently being used to meet these needs for workstations, Sony hopes that factors including system size, cost and ease-of-use will make MD Data products widely accepted.

CONFERENCE NEWS

The theme of next month's 95th AES convention in New York (October 7-10 at the Javits Convention Center) is "Audio in the Age of Multimedia." Convention chair Leonard Feldman says that the theme was chosen because, "It's becoming impossible to consider audio as its own specialty...the convention theme places audio in the context of many new and emerging integrated technologies." Call (212) 661-8528 for more information.

Media Summit '93, a conference focusing on trends, developments and business opportunities in the new media marketplace of digital technology, will be held in New York October 19-21. Call (203) 352-8302 for more information.

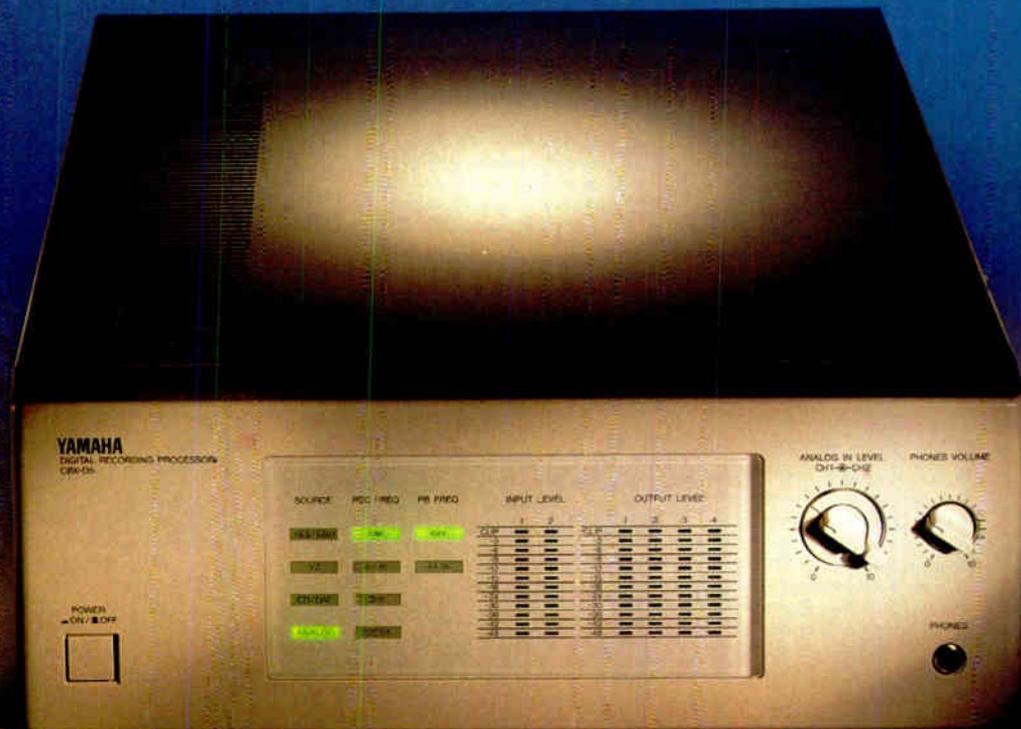
Finally, the National Sound and Communications Association is sponsoring a business conference at Amelia Island Plantation, Fla., from January 20-23, 1994. Contact the NSCA at (800) 446-6722.

CORRECTIONS

In the July Independent Engineers and Producers Directory, Richard Mathis' company is Pyrenees Productions.

Also, in the June "Post Notes & Products" section, we reported that Alan Ett Music composed the theme for the CBS series *How'd They Do That*. In fact, Ett has provided the music for the series' episodes, while Cory Lerios and John D'Andrea composed the show's theme. We regret the errors. ■

Digital Recording for Computers in the Real World.



If you're thinking about hard disk recording, you've probably heard that you'll need to buy a bigger, faster computer, with more slots and accelerators, that will end up costing you a whole bunch of money.

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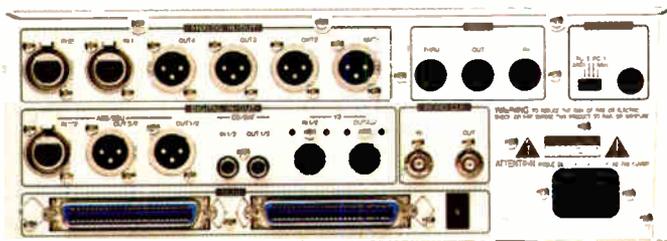
The new Yamaha CBX-D5 Digital Recording Processor, developed in cooperation with premier hardware and software designers throughout the world, can be immediately interfaced with the most popular and affordable computers being used today. This impressive list includes Atari (ST, TT, and the new Falcon), Apple Macintosh (SE30, all II models, Quadras, and PowerBooks), IBM PS2, and even clones running Microsoft Windows 3.1.

The CBX-D5 system was designed to let your computer compute and your storage devices store while the CBX-D5 handles the processor-intensive work. The CBX-D5 controls digital multi-track recording, analog-to-digital and digital-to-analog conversions, digital audio routing, digital signal processing and digital equalization, digital inputs and outputs in all standard formats, word clock synchronization, MIDI, and much more.



Cooperative design input from companies such as Mark of the Unicorn, DynaTek, and Steinberg made this all possible. The CBX-D5's modular format also provides a logical upgrade path with the ability to add more tracks, more storage, and more computing power without disrupting, scrapping, or obsoleting the rest of the system.

See the Yamaha CBX-D5 Digital Recording Processor in action at your local Yamaha Dealer or call 1-800-932-0001, extension 500 for more information.



detail of back panel



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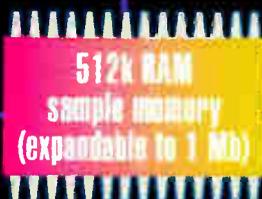
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World Radio History

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The new DPM 4 features a massive 10Mb set of on-board ROM samples selected from the renowned Prosonus™, McGill™, and Northstar™ sample libraries. With double the polyphony (32-voice), 512k of sample RAM (expandable to 1 Mb), a 9-track, 40,000 note sequencer, and much more, the DPM 4 runs rings around anything in its class (or price range). And to top it all off, any DPM 3 can be upgraded to DPM 4 specifications with a simple conversion kit.

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World Radio History

by Ken C. Pohlmann

SURF OR DIE!

Kinsky vaulted over the low parapet, landing heavily on the flagstones below. Drachmann followed a split second later, slipping when he hit the wet stones, going down to one knee. He was up in an instant, right behind Kinsky. They could both hear shouts and alarm sirens coming from the compound behind them. Then someone hit the lights, changing night into day as they crossed the open parade ground. Both men redoubled their efforts, Kinsky clutching the leather satchel that Sangel had just died for. They reached the roadway, and Kinsky dove into the thick hedge, tucking as he tumbled down the embankment. Drachmann hesitated as automatic weapon fire shredded the foliage before him, then hurled himself into the newly cut passage. Both men hit the sand running, frantically following the beach, searching for the launch. They found it a moment later, with Giro's mutilated body slumped in the bow and a hole hacked into the stern, the fierce breakers already pounding the wreck into pieces.

Kinsky uttered a rare epithet, looking up into the night sky. Drachmann growled and pointed out to sea—there, just a kilometer out, was the sub's conning tower, and safety. El Presidente's bodyguards emerged onto the beach, spied them and started running forward like wolves to lambs. Drachmann looked around—a barbed wire perimeter caged them. Then Kinsky spotted, absurdly, a pair of Stewarts leaning against the wire. He grabbed a board and pushed himself out into the breakers, paddling rapidly. Drachmann hesitated, caught in uncertainty. Kinsky twisted around and shouted to his partner, his



ILLUSTRATION: MICHAEL BARTALOS

Serious Automation

CS2000

Digital Control Studio System

The new CS2000 digital control studio system from Euphonix leads the industry in computer aided mix management. With the powerful Version 2.0 software the CS2000 incorporates features that take it beyond any other system on the market.

Screen based interactive graphics supplement the controls and indication on the console surface. Intuitive displays provide the engineer with instant feedback on session and mix status.

The system includes SnapShot Recall™, for instantly resetting everything on the console, and an updated Total Automation™ mixing package.

Total Automation has many new and innovative features. Playback a mix and all console settings are instantly recalled together with the dynamic automation. Over 99 levels of undo are instantly available to the engineer in the form of mix passes.

The new template software allows the engineer to pre-set the level of automation for every control on the console. Those familiar with conventional systems can simply start by automating lower faders and mutes, moving on to upper fader, pan, aux send, and input gain automation when the session demands it.

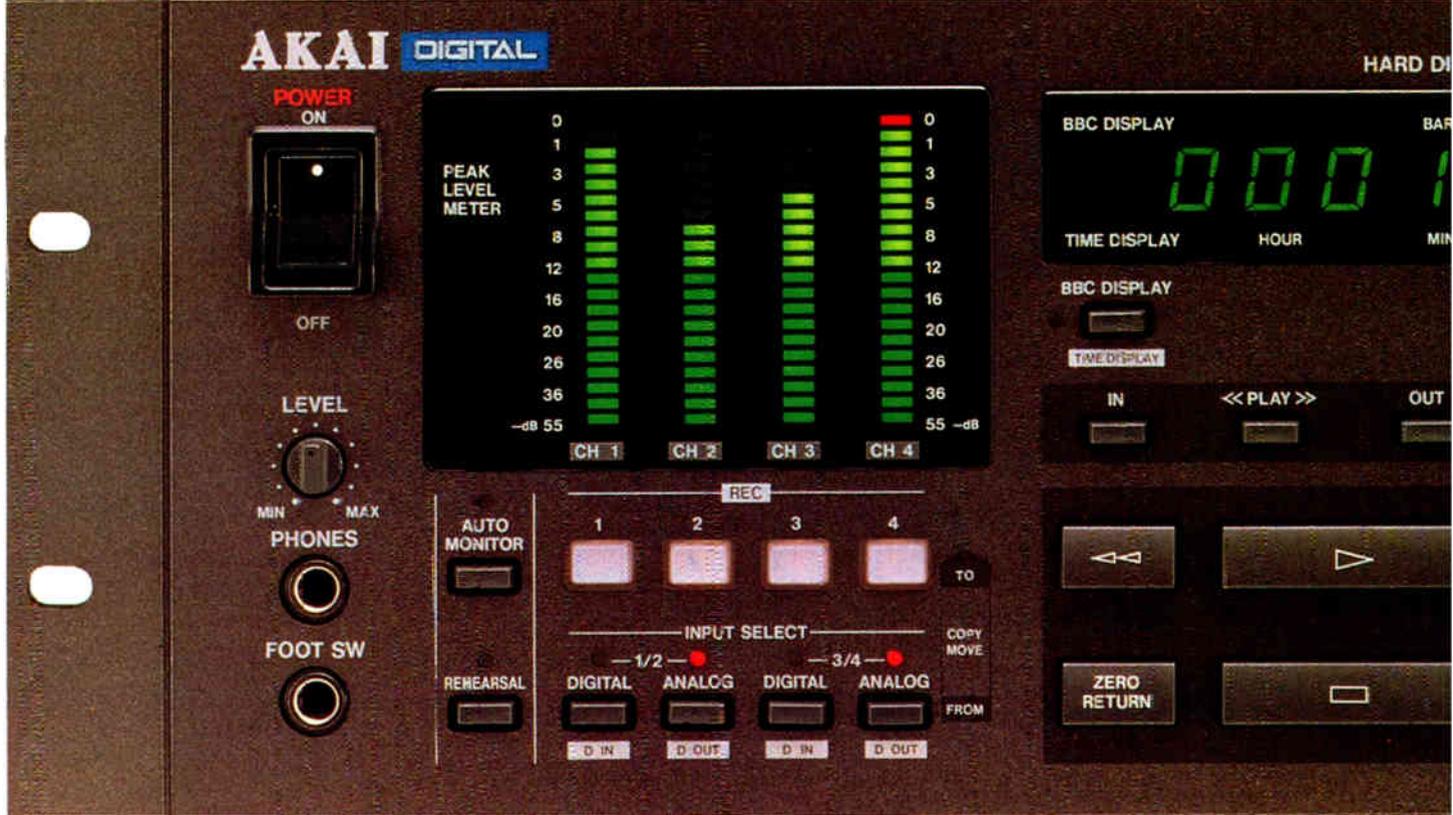
For total control and creative flexibility, no other system competes with the CS2000.

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Ten Reasons Why You Should Cho

1. TAPELESS EDITING The DR4d can simultaneously record 4 tracks directly to standard SCSI-compatible hard disks, not tape. Tape recorders which use a cassette format (VHS, 8mm, etc.) have a huge problem: without at least two machines, you can't edit. But even a single DR4d allows random access editing that tape recorders just can't offer. Move, Copy, Insert, Copy + Insert, Move + Insert, Erase, and Delete with ease. Edit with complete confidence, because if you try an edit but change your mind, the Undo function will instantly restore the previous arrangement. It's a breeze to copy any part of a track and paste it anywhere on any track, even with a specified number of repeats. Or perhaps use the Insert commands to instantly slide track data in time against other tracks. This editing power encourages experimentation, and thus, your creativity! Imagine it. Do it.

2. NO WAITING Another problem with tape is the time required to physically move from one point on the tape to another. Concentrating on your music is what's important, not waiting for tape to shuttle back and forth. Never again waste such precious time: the DR4d allows you to instantly move to 108 different locations. Set up repeat sections, jam along with your tracks, then drop into record to capture it all while it's still immediate, fresh.

3. JOG/SHUTTLE Another cool DR4d advantage is the ability to offer scrubbing of audio, like "reel-rocking" on analog decks - only with much better quality. Our Jog/Shuttle wheel lets you scrub through the audio at various speeds, forwards or backwards. So finding precise editing points is only as complicated as using your ears.

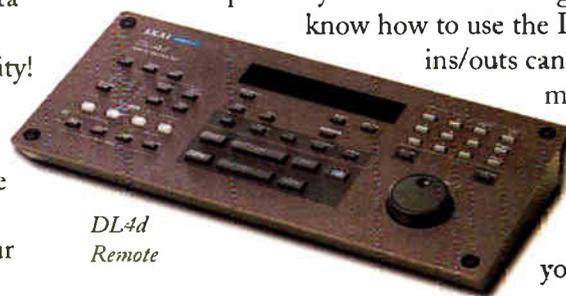
4. FAMILIAR OPERATION One concept we *did* want to carry over from tape recorders is the user interface. Friendly, tape machine-style controls make the DR4d by far the easiest hard disk recorder to use. With dedicated buttons for Play, Stop, Rewind, Fast Forward, and so on, what could be simpler? If you've used an analog deck, then you know how to use the DR4d. Punch-

ins/outs can be performed

manually or

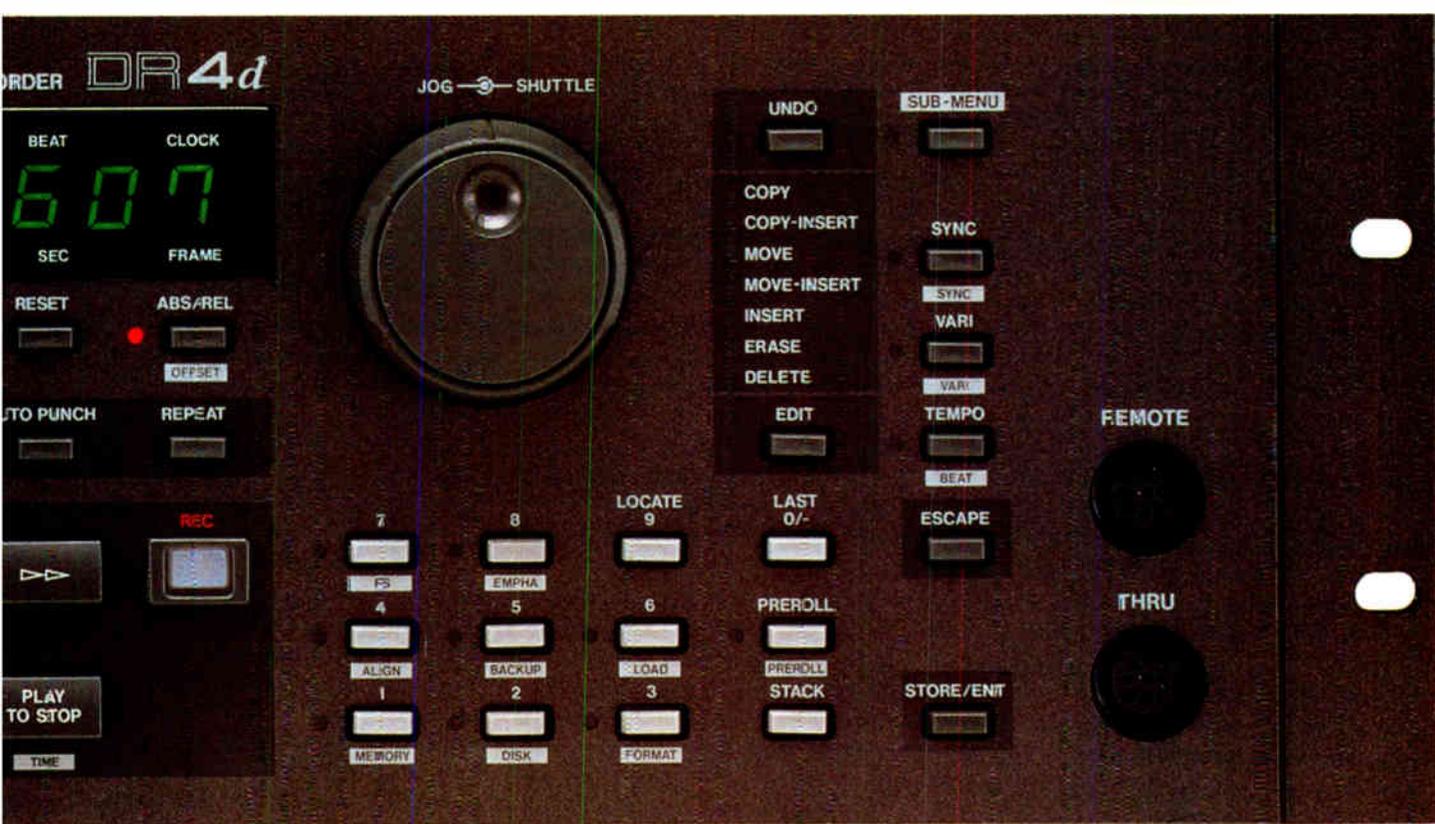
automatically from the front panel, or via footswitch. Like

you'd expect.



DL4d
Remote

5. EXPANDABILITY Up to four DR4ds can be chained together to create a 16-track system, simply by plugging an optional cable between units! And the optional DL4d Remote makes it a snap to



Use the DR4d Hard Disk Recorder

control all of them. An optional, factory-installed 200 MB internal hard disk offers 32 track minutes of recording right out of the box. The DR4d can handle up to seven hard disks and supports seamless overflow recording across multiple disks. With enough disk storage space, you can actually record on all four tracks for an incredible 24 hours!

6. EXCELLENT CONNECTIONS Four balanced TRS 1/4" Input and Output jacks, easily switchable between -10 and +4 dBu levels, simplify interfacing with any type of console. The DR4d's pair of digital I/O ports allow communication with other digital devices in the form of both XLR and RCA connectors (AES/EBU or Type II selectable), as well as provide DAT backup. And then there's the supplied SCSI port for access to external hard disk drives. Just plug and play!

7. YOU'VE GOT OPTIONS And affordable ones, at that. For digital access to all four channels simultaneously, the IB110D provides the two additional AES/EBU ports. For SMPTE timecode applications (slave or master), the IB112T is installed in seconds. The IB113M interface gives you MIDI In, Out, and Thru, and the IB111S is a second SCSI port which will allow connection to computers for visual waveform editing and magnetooptical drives for data backup.

8. DEDICATED DESIGN The DR4d is a dedicated digital audio product, rather than an add-in board for a computer. It's a tool designed for a single purpose: to record and edit audio precisely, effortlessly, and affordably. We think you'll agree that it succeeds on all counts beautifully.

9. SOUND QUALITY The DR4d contains Akai's own advanced digital technology, including super-clean 18-bit 64x oversampling A/Ds and advanced single-bit 8x oversampling D/A converters with 18-bit resolution. Industry standard sample rates include 48, 44.1, and 32kHz. In short, the quality is superb and with a full 96dB dynamic range, you can rest assured of always sounding your best.

10. \$1995.00 Simply put, the DR4d is the best value in digital recording today. For the first time, the nucleus of a professional quality 4-track hard disk recording system can be yours for only \$1995.00! Just add internal or external hard disks, and you're ready to use our latest masterpiece for creating your next masterpiece.

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voice strong against the ocean's roar. "Drachmann! Surf or die!"

The 19th century was the age of sea power. Strong seafaring nations such as Great Britain ruled the world through their sailors and prospered from the economic riches brought there in trading ships. Great canvas sails with intricate rigging pushed the ships across open ocean. The invention of steam technology suddenly changed all that. Masts were cut away at the deck, steam engines were dropped into the hold, and sailors

were laid off. The balance of power shifted to other nations. Clipper ships made a brief bid to reclaim the industry from steam, but their fast speed was offset by small capacity, and they simply served to emphasize the triumph of steam over canvas. Today, most "sailors" have never seen a mizzen.

In the 19th century almost half of all houses in the U.S. contained an upright or grand piano. It was the center of family entertainment and interaction. Thomas Edison invented the phonograph in 1877. People stopped making music and simply start-

ed listening to it.

LucasArts Entertainment Company announced that its Rebel Assault interactive action game based on the Star Wars trilogy will contain original film clips, 3-D-rendered graphics and full speech, and will be released on the CD-I, PC CD-ROM and Sega CD platforms.

In the 1950s several U.S. companies made tape recorders and mixers and sold them to professional studios. Record companies bought time from the professional studios and made records to sell to music lovers. Music lovers loved to buy the records and take them home, to listen to their favorite artists, and to play their records for their friends.

Annual sales of home information equipment will pass the \$10 billion mark in 1993 and surpass the combined sales of audio equipment in 1994.

According to Ken Pohlmann, "Sales of audio-only consumer electronics will deteriorate. Any future consumer audio technology will have to contain elements of multimedia, interactivity and gameplay. People who resist that idea will grow old and die, and the resistance will die with them, just as resistance to the Edison phonograph died."

Nearly 100% of all U.S. households now contain at least one color television.

3DO Company's stock was priced at \$15 a share in its initial public offering, but traders pushed the price to \$20.25 later that day.

At the beginning of the 20th century, silent motion pictures were a hugely popular form of entertainment. In major cities, several theaters employed hundreds of musicians in theater orchestras to perform the film score for each showing. When technology permitted the film score and dialog to be recorded once, and simply replayed at each showing, tens of thousands of musicians were laid off. Newspapers routinely carried stories of unemployed musicians who had committed suicide.

Factory dollar sales of separate audio components decreased from \$1.9 billion in 1990 to \$1.5 billion (estimated) in 1993. Dollar sales of home computers (selling for less than \$1,250) increased from \$3.8 billion in 1990 to \$4.9 billion (estimated) in 1993.

Todd Rundgren-Interactive, known as TR-I, represents that performer's redefinition as an interactive artist.

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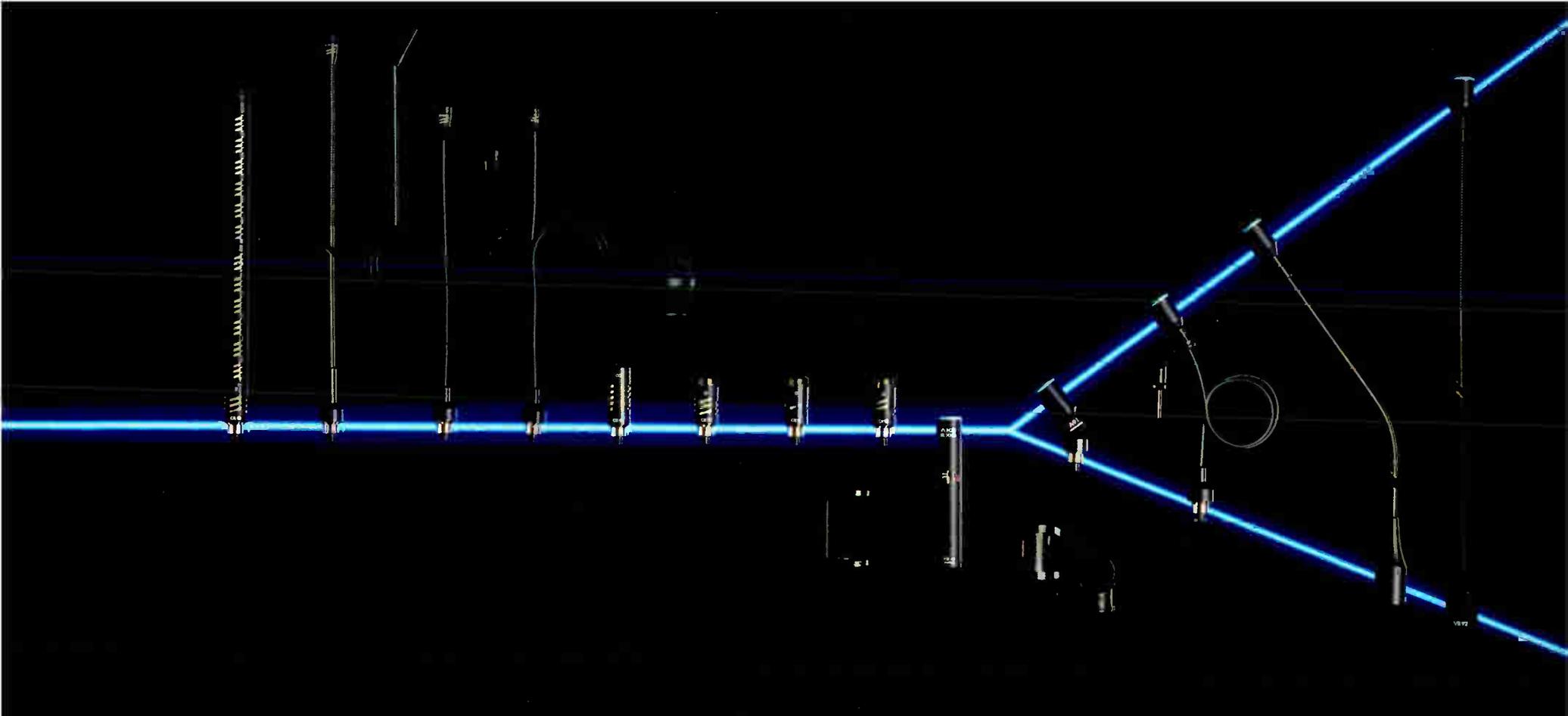
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His first interactive album, *No World Order*, contains a four-hour musical database representing countless variations of the album. For example, users can control tempo and mood, choose a thick or thin mix, or a mix without vocals. According to Rundgren, "Users would have to play the CD-I disc for 24 hours a day, seven days a week well into the next millennium in order to hear the same version of a song twice."

More than a third of American households have a video game; in 1992 the video game industry grossed \$5.3 billion, surpassing ticket sales revenue at movie theater box offices.

Before World War II, dictionaries defined "computer" as someone who performed calculations. Corporations employed thousands of computers to do accounting and other computation. During the War, the army's urgent need to solve ballistics and other problems stimulated the development of the first electronic computer. An army study predicted that, over time, as many as six computers would be needed in the U.S. Today, com-

puters are not hired; they are purchased. Dictionaries have revised their definitions.

Today's suicide rate equals that which occurred during the Great Depression.

Peter Gabriel, U2, Edgar Winter, David Bowie, Thomas Dolby, Prince, The Residents, Billy Idol, Cindy Barron, Motley Crue, Devo, Michael Milken and Michael Jackson are all working on multimedia or interactive creative works. Madonna has funded an interactive music company.

DirecTV, a subsidiary of Hughes Electronics, has announced a direct-to-home broadcast delivery system for the contiguous U.S., using a pair of new HS601 satellites each with 16 120-watt transponders, located at 101 degrees West longitude. Consumers will buy an 18-inch diameter RCA dish and receiver for \$700, which will permit access to 150 channels including a pay-per-view video library. The service will go online in April 1994.

One primitive native tribe, after pondering the satellite dish and television set suddenly placed among their thatched huts, invented a name for the technology that conjured im-

ages and sounds from thin air; they call it The Big Ghost.

The 21st century is 88 months away.

Drachmann looked at his partner, already 50 meters away, kneeling on the board that tossed him majestically from wave to wave. Slung across his back, wet with saltwater, was the satchel, the one with the disks inside. The presidential guard was much nearer, he could see facial features; they were no longer an anonymous menace, they were simply men, men who would eagerly kill him in the next moment. He turned to look at the barbed wire—even in the dark, instantly recognizing it as standard Soviet issue—now rusting away. Then Kinsky was gone from sight, lost in the black ocean. The men drew nearer, much nearer, now aiming their weapons. He turned to lay his hand on the board, caressing its smooth, wet curves. There was still time. He could escape, he could live. From the boiling black ocean came a tiny voice. "Drachmann! Surf or die!" ■

Ken Poblmann urges you to surf The Big Ghost.

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PRO STANDARD DIGITAL AUDIO SERIES

by Stephen St.Croix



DREAM ON... OR, ART TU BRUTE?

It's that time of the month again. I'm irritable, easily upset, and everybody's smart enough to stay away from me. The sun is shining, and I want to go to the beach, but I can't...I know that it will all be over soon, but it *feels* like it will never be finished. Some months are better than others, but this month is pretty bad. You see, I'm late. Late enough that there have been worried phone calls, unspoken tensions. Late enough that people around me have become quiet, concerned. Yes, it's that time. Time, once again, to write my column.

I had a dream just half an hour ago in which I was sitting in my brother's house with Keith Richards

and some friends. I had just told Keith (or "Keef" as he introduced himself) that I had once lived in the Glendower Hotel in London's South Kensington area, and he had responded by saying that he too had lived there and was telling us all some stories about his experiences there.

As he began, I noticed that there was a set of MDR-V6 earphones, a Zoom and a Steinberger to my right on the couch. In that strange magical way that dreams have of simply ignoring any and all details that could make the plot line impossible, Keith, who was sitting to my immediate left, was totally oblivious of this. As much as I wanted to hear Keith's sto-

ILLUSTRATION AD MCCAULEY


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display allows fast save/recall: four 'soft keys' access display sub-menu options and there's full Password Protection.

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World Radio History
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After all, our shameless vendetta against smeared sonics leads us to the highly unreasonable length of phase-correlating every audio stage. We're the crazed console crafters who — in our unstoppable desire to eliminate RFI and other noise — starground every circuit on every console, with the aid of a custom-welded steel chassis.

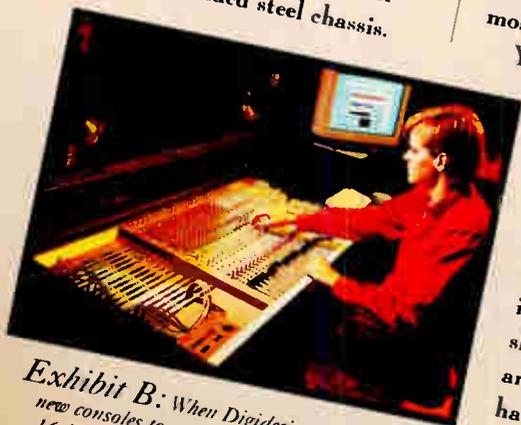


Exhibit B: When Digidesign was judging new consoles to use with their own 20- and 16-bit digital recording & editing systems, they knew the board would have to be good. Very good. And quiet. Very quiet. Their verdict? The D&R Orion.

D&R handcrafts consoles for recording, live sound, theatre, post-production and broadcast. Whether you own a world-class facility or a serious project studio, there's a D&R for your needs and budget.

And yes, we're the ones responsible for "high-def" EQs, floating subgroups, and other pioneering features which show so little regard for ordinary designs.

While overcoming the challenges of physics and the temptations of mediocrity, our unreasonable standards deliver what many consider to be the best consoles on the market. At the most reasonable prices.

You might think life could be lonely when you're guilty of a passionate pursuit for perfection. But along the way, we've met thousands of others who understand our intolerance for anything short of excellence. They are the thousands who have asked us to handcraft them a D&R.

So if you've been accused of ridiculously high standards for your work, let us reassure you



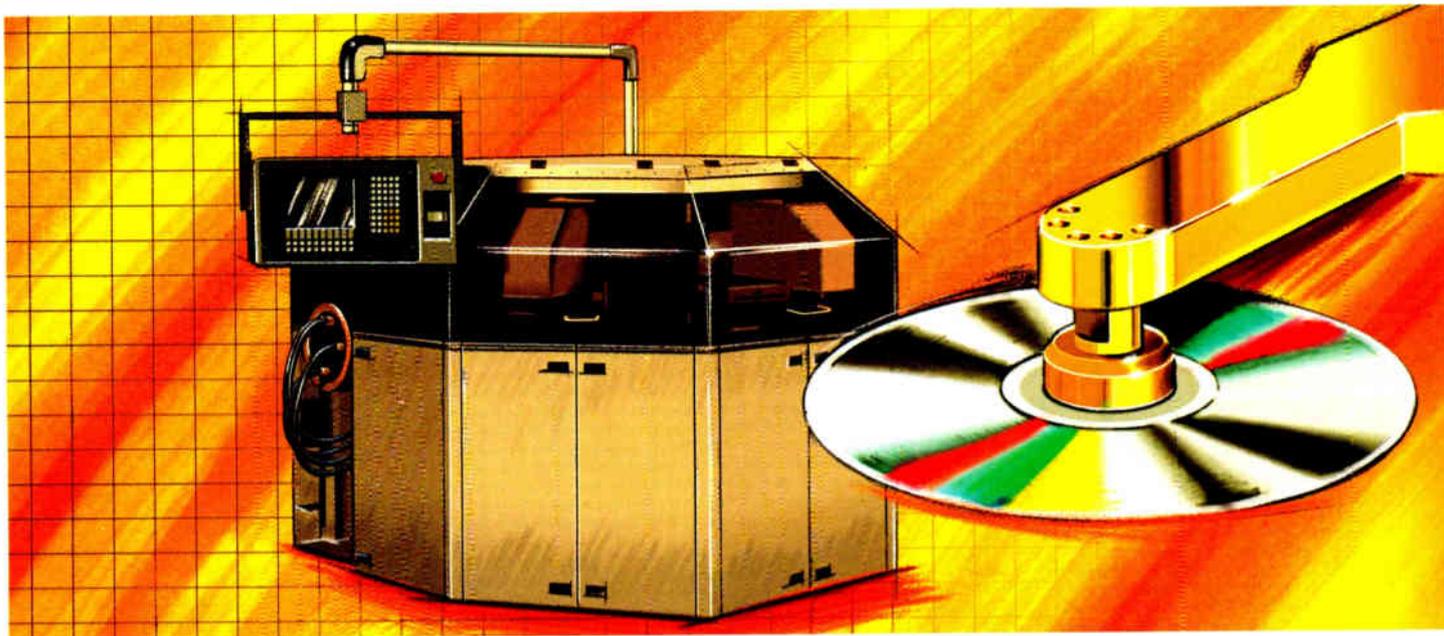
Exhibit A: To find evidence of our remorseless commitment to sonic integrity, look no further than the new D&R Triton. Its transparency, flexibility, and unparalleled support put it in the same league as our flagship, the D&R Avalon.

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CD manufacturers with an eye for price/performance ratios just cannot ignore the Monoliner MK IV from market leader ODME. As a result of a completely new design this system is superior in speed, flexibility, reliability and user-friendliness, and -just as important-

profitability. The Monoliner MK IV is state-of-the-art in terms of speed. But the concept also excels in yield, utilization, uptime (>95%), capacity (output >6 million CDs a year), and floor space requirements (footprint 9.5 sq. mtrs.). Flexibility is another of the key benefits of the Monoliner MK IV. The system is available with a variety of injection moulding equipment. When used with a vertical injection moulder, ODME can also supply a rapid-action sliding mould, to speed up stamper changes considerably. The flexibility of the Monoliner MK IV also allows the

A NEW TURNING POINT IN CD-MANUFACTURING

customer a choice in printing and packaging systems. Thanks to the easily accessible construction, the equipment ensures easy servicing and maintenance. But the main feature is profitability. The Monoliner MK IV is the absolute winner in terms of the lowest price per manufactured CD. This applies to large series as well as to smaller ones (e.g. 200 discs). Stamper exchange is literally a matter of seconds with the Monoliner MK IV. There is no exaggeration in calling ODME's Monoliner MK IV the secret of successful CD manufacturing! ODME supplies all necessary equipment for mastering, electroforming, quality control, printing, and packaging. It is therefore clear that the combined force of market leader ODME and its Monoliner MK IV means a real "turnaround" for the entire CD manufacturing arena.

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the sound from a low-flying jet. The kick and bass are making little ripples in my ginger ale and a giant ripple in my gut. How did I get into this situation? I don't *know* these songs! What the hell am I going to do?

Didn't all of us originally get into all this for the art?

There is less than ten minutes left. The band is getting ready, and I'm just sitting there, trying not to fall over. Boy, I would give *anything* to be standing up in front of a classroom in my underwear.

So my ego pulls me, and my fear of failure pushes me. It will be like that until the day I die. This seems to work, but only if the ego part is satisfied by the creation of excellent recordings or live performances: art.

RE-ANALYSIS

The creation of art—a type of art that is created with technology—is by nature complex and requires not only the natural sense of creative balance,

considerable skill and experience, but an educated functional understanding of the several technologies needed to make it happen. From singer to solderer, we are all a part of this.

Didn't each of us originally get into all this for the art? We were players who expanded into engineering

or producing, or we were interested in film. In any case, we wanted to try our hands at the process of producing a high-quality final product, a product that would be *art*.

FURTHER RE-ANALYSIS

What tools are we using to make this type of art?

A friend who I only talk to once a year (one of the most impressive golden ears I know) called me last night to tell me that digital sucks. He went on to tell me about his experiences with little workstations, big workstations and digital multitrack recorders, and how he was giving up

and returning to 15 ips analog with Dolby SR.

He told me how he had tried all the cool toys, how he had asked trusted associates what they thought of the Furbisher 22 and the Clyde 2000. He tried the solid-gold, braided mic cable from Tiffany's; he tried

the Desert Eagle in .44 mag with dual Magna-Ports. He put the newest Goodyear Z-rated racing tires on his Ruf Porsche Targa. He studied the theoretical technologies behind each new piece of gear. He talked to others who had done the same. He compared notes, he listened. He got the results he was looking for: better specs, faster transients, radically increased signal-to-noise ratios. He got less phase shift, lower distortion. Better transient responses. Sharper. Brighter. Flatter. Tighter groupings, less muzzle flip, better cornering.

But he lost the *emotional* content. When he listened to the final work, it was fine. It was great...but he just

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didn't have the desire to listen to it again. He also noticed this on music he bought. Some albums made him want to listen to them again and again, while others, from the same artists, with improved, all-DDD hypertechnology, left him cold. He said they sounded fine, but he simply had no desire to listen to them again.

REMEMBERING A PREVIOUS RE-ANALYSIS

This is an area that I have written about many times, and it was cer-

tainly a major theme in my Sweden interview.

SO WHAT'S THE ANSWER?

He stopped playing the numbers game and decided to listen. Now he goes by his *ears*. (Radical and novel concept, isn't it?) His attitude on digital is unfortunate, but I understand it. It is unfortunate, because we are all going to be recording and editing digitally some time soon. It is necessary for survival. On the other hand, I understand his feelings; I agree that there is almost no digital gear out there today that actually *sounds*

good. It is flat, quiet and powerful, but it still can't make music like 15 ips 1/2-track with SR. Soon maybe, but not right now.

MO' BETTA ANALYSIS: HAVING TROUBLE WITH REALITY?

Reality has a little edge: you know, "cold, hard reality." Maybe the edge that digital gives you is the *wrong* edge. Or just maybe—and I know this approaches blasphemy—maybe digital works great. Maybe it's amazingly accurate; let's pretend it's even almost as accurate as salespeople say. Then what we hear from our DDD tunes is reality: cold, hard reality.

Then we don't like it. Think about it. Videotape is reality in that it has very high resolution, no motion blur and all the other cold, crisp unforgiving characteristics that we know. The newest ENG cameras and recording technologies are incredible. But shoot something on tape, and shoot the same on film, show both to audiences, and though they may prefer the crisp, cold accuracy of the tape for news or technical details, they will prefer the old soft, nonlinear, grainy film for entertainment.

DRIVING THE POINT HOME

New high-tech Japanese pocket rockets (multicylinder, 24-valve, variable-cam, 12,000 rpm motorcycles) certainly do everything right. They are cold, accurate and fast beyond anything you can imagine. They approach perfection. I hate them.

Harleys are old, clunky, amazingly big and slow, *still* leak oil, vibrate your hands and feet to sleep within 100 miles, and corner about as well as the Love Boat. They have nothing to do with present-day reality. I love them. They have soul.

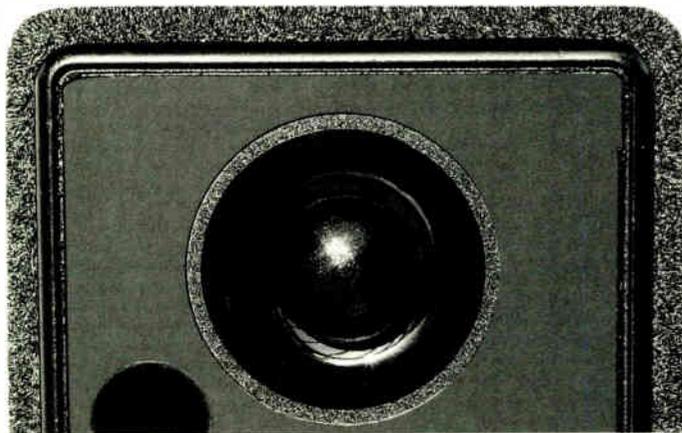
The people at Harley woke up a few years ago and put modern technology to work in hidden areas like the electrical system, to make the bikes, well, actually *run*. Old bikes with a little help from new tech: the best of both worlds.

OKAY, HOME AT LAST

Analog is analog. But I need digital. So I guess I need the best that digital has to offer along with the best that analog has to offer—yeah, that's it! New tech with a little of that old tech soul. Do I hear it coming? ■

Stephen St. Croix is...aw, come on. You know by now.

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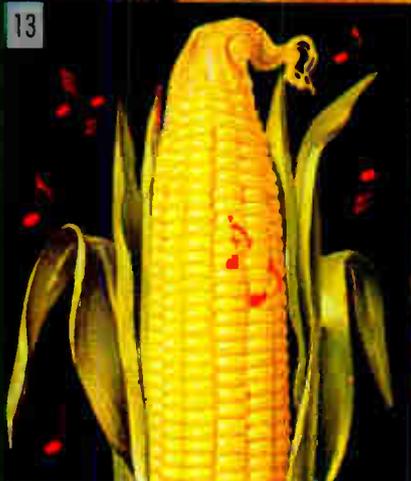
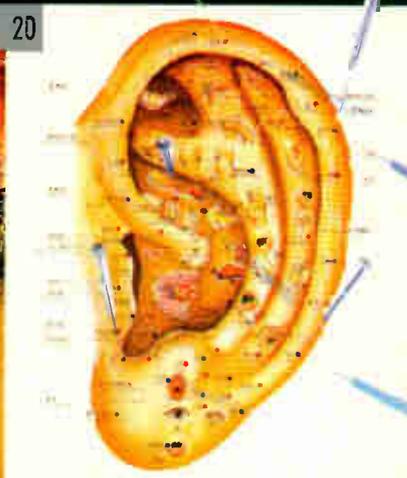
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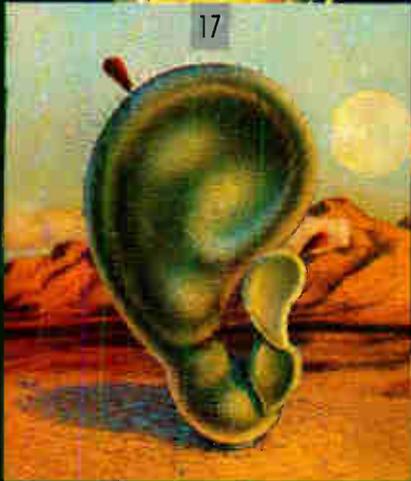
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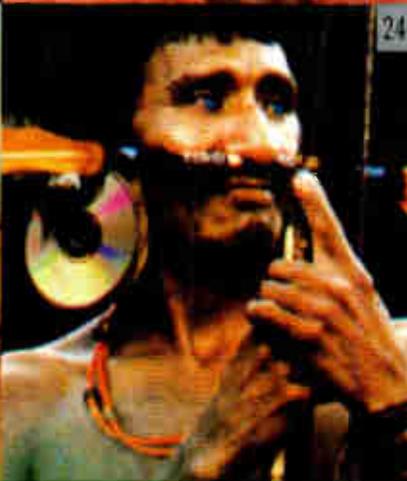
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17



24

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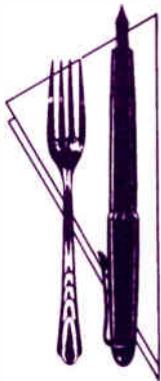
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by Mr. Bonzai

LUNCHING WITH THE LORDS

THE LORD-ALGE BROTHERS



I was introduced to Chris Lord-Alge recently at the Record Plant, and he suggested we get together with his brothers Tom and Jeff. What an honor, I thought, and the studio graciously supplied the china, linen, champagne and candelabra appropriate for a meeting with the royalty of recording. To understand the stature of these Lords, check out some selected credits:

Chris Lord-Alge, a Grammy nominee, has mixed/recorded and/or produced Tina Turner, Poison, Stevie Nicks, Lindsey Buckingham, Joe Cocker, Eddie Money, Roxette, Rod Stewart, Bruce Hornsby, Keith Richards, Johnny Clegg, The Bangles, Hall & Oates, James Brown, David Bowie, Madonna, Mick Jagger and... you get the picture.

Tom Lord-Alge has mixed/recorded and/or produced Steve Winwood

(and won Grammys for *Back in the High Life* and *Roll With It*), Peter Gabriel, Foreigner, Johnny Clegg, Rick Astley, Billy Joel, Belinda Carlisle, Heart, Chicago, Hall & Oates, Roger Waters, REO Speedwagon, Spandau Ballet, Jeff Beck, Robbie Nevil, Paul Young, Billy Idol, Pat Benatar plus lots more.

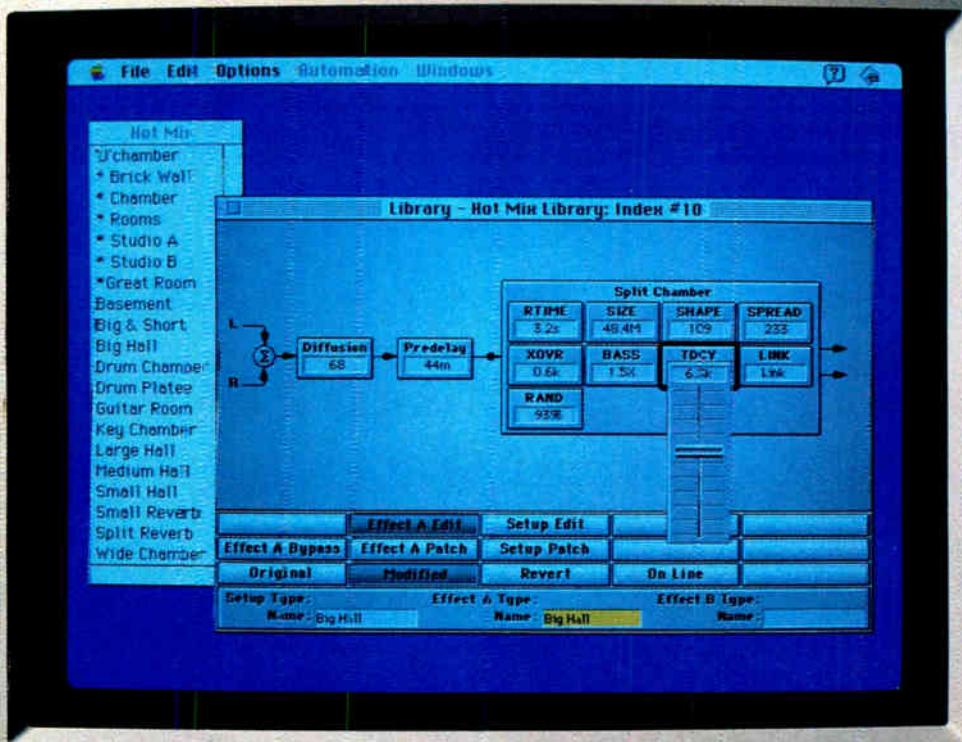
And late bloomer Jeff Lord-Alge has had his engineer/mix hands on Charlie Sexton, Oingo Boingo, Devo, Depeche Mode, Whitney Houston, Freddie Mercury and others.

The Lord-Alges are well-known for their heavyweight egos, but if anyone has the right to be loud and proud, these boys do. They are also known for their ability to take tapes recorded by virtually anyone and polish them into hits. The remix virtuoso is a relatively new breed in the studio world, and you are about to

In the atrium lounge at the Record Plant (from left) Ed Cherney serves Mr. Bonzai, Tom, Jeff and Chris Lord-Alge.



PHOTO: RICHARDE AARON



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read some rather hot comments about this competitive niche of the industry. Imagine streetwise Jersey accents to get the full flavor of this "Lunching with the Lords."

Bonzai: Do the three of you get together very often?

Chris: Yeah, we get together to play pinball sometimes.

Bonzai: Have the three of you ever worked together on one project?

Jeff: We did *Back in the High Life* together. Chris, you started it, and then I assisted Tom on the rest of it.

Bonzai: Tom, was that project your first big claim to fame?

Tom: Yes, it helped to mold my career a bit. We had a mutual friend named Robby Kilgore, a keyboard player who was doing some programming for Steve Winwood. They were working at the Power Station, and Robby suggested to Steve that he come up to Unique Recording where Chris, Jeff and I were staff engineers. He said the studio had a lot of keyboards, plus these hot, young engineers.

Chris: I was real busy mixing, and I worked on the project for the first few days, and then Jeff took over. I was too busy to work on the overdubs, and then Tommy took over.

Tom: I got the gig, but I couldn't work for the first couple of days because I was producing a band called OMD, which was actually my first hit. So Chris started it, and then I took over and stayed with it for eight months with Jeff.

Bonzai: Could you have guessed that it would be such a major success?

Tom: I had no idea that it would take off like it did. When we finished, and all the mixes were done, I realized the caliber of the record but had no idea that it would go through the roof.

Jeff: There was something about that record, though—the chemistry of the crew, Steve himself, Russ Titelman—we just clicked.

Bonzai: Who is the oldest?

Chris: I am, 34.

Tom: I'm 31.

Jeff: I'm 33.

Bonzai: Jeff, you were training as a computer scientist?

Jeff: Yes, I was a rocket scientist. Actually, before that, Tommy and I used to roadie for this band called Back to Earth.

Tom: I did sound.

Jeff: And I did lights and drove the truck. Chris was already working in the studios and had a band that Tommy did live sound for.

Bonzai: And Chris, you were a drummer to start with?

Chris: Yeah, a drummer, and in my first band I was guitar and keyboard player. This was back in '78.

Jeff: So, I was doing lights for the band, and Tommy went off to work with Chris in the studio. I thought I would like to have a regular life one of these days, so I went off to computer school—big mistake. Actually, it came in handy when the automat-

Give us the toys, and we
will play with them. We
take the manual and throw
it in the garbage and turn
the knobs until it blows up.

ed boards really started hitting the scene, and I could understand how the operating systems worked and the concept of controlling analog with digital.

So I worked for IBM for about a year as a systems test technician on the big mainframe computers that run the missile defense systems and all the government installations. It was very sterile, uninspiring—I thought I was gonna die. I called Tommy and told him I had made the biggest mistake of my life. I had left the one thing that really made me happy, which was music. Tommy came over to my house, made me pack a bag, dragged me out and threw me in his car and said I was coming with him. And I started working as his assistant over at Unique [Recording, in NYC].

Bonzai: Let's jump to the present. Chris, is the Tina Turner record your most recent producer/engineer project?

Chris: Yes, it was for the movie of her life story [*What's Love Got to Do With It?*]. We re-recorded all her classic hits, all live right here at the Record Plant—"Proud Mary," "Rock Me Baby"—for the movie and the soundtrack. I co-produced with Tina and her manager, Roger Davies, who also acted as an overseer to make

sure that everything went well. I've worked with a number of his clients: Joe Cocker, Sade, Tony Joe White.

We cut three new songs with Tina, and she is just a pleasure to work with. Everything happens really fast. You don't even have a chance to breathe when you work with Tina Turner. She comes out to the mic, and it's one take, and every time it's great. The band is the same, and there is no pain involved, but you have to be really hot at what you're doing. You can't make a mistake, because these people don't want to do it again. They've got the juice, and this is a band she's toured with for a while. Right after that, I did a solo album with John Miles, the main guitar player in the band.

Bonzai: Weren't you recently in the studio with Don Was?

Chris: Right now I'm mixing Felix Cavaliere's album, which he co-produced with Don. Felix is a *great* guy, so it's been a lot of fun.

Bonzai: Tom, what's new with you?

Tom: I mixed a track for Bruce Hornsby, and I've just come back from six weeks in Europe where I mixed a record for Rick Astley at the new AIR Studios, which are great—built into a converted church. I worked up in the mix room with an 80-input winged SSL 8000, with Dynaudio monitors, which sounded great. The room has a window, so you get daylight.

Bonzai: Jeff, you're the least known of the Lord-Alge brothers.

Jeff: I like it that way. [Laughs] With Tommy and Chris, I don't feel any competition, I'm just going at my own pace. Right now, I'm working with an artist named Rick Miller over at Hank Senecola's new O'Henry Studios on a vintage 64-input API console with Flying Faders automation. Amazing experience for me, being such an SSL sorta guy. Hard to get used to not having a gate and a compressor and the Super Stealth EQ in each channel, but hearing the signal path so undegraded and so clearly really made a believer out of me. And the record is one of the best-sounding records I've mixed.

I work a lot with Julian Raymond, a staff producer over at Hollywood Records, who also has his own production company. As a team, we develop new bands and take them around to get them deals. I do the engineering and mixing, and sometimes my brothers get involved. And I've just done some work with Kim

Bullard, who used to be in Poco.

Bonzai: Is it sometimes hard to distinguish between the engineering and producing roles?

Jeff: When you're in the hot seat and you're working with a producer who isn't intimidated by your input, you're almost always stepping over the line. It's important that the producer keeps an open mind, because the engineer is taking the responsibility for the overall sonic quality of the record and may offer suggestions that will get a better performance out of the artist or get a better recording. If I feel that my suggestions might be intimidating to the producer, I'll say, "Tell me if I'm putting on the producer hat too much." Normally, it's appreciated.

Bonzai: Which one of you has the most power over your career?

Chris: Me.

Tom: Me.

Jeff: Me.

Chris: You can pick and choose the gigs you want to work on, and that's the most important thing. It's important that you work on a project in

which you can make a difference. That's the most fun, and that's what takes all those years to get to. And you'll stick your neck out every time. That's the attitude. Let's take a shot.

I go after the big guys. It's a very competitive field. And if we make one slip-up, there are 20 guys waiting to jump into that chair and take over. That's what keeps it exciting, but they don't have a shot, because we're not goin' down.

Bonzai: Any secrets for staying on top?

Chris: Never lose your cool. Always be aggressive, and no matter how much they put in front of you to do, you nail it. Blow them away. You have to deal with the artist, the producer, the label and the manager. If you can make everyone happy with one shot, you never have a problem. If you start hearing, "He did okay, but let's get somebody else to mix it," you are out of the game. You have to hit a home run every time, every single time.

Bonzai: How do you stay on top of the changing technology?

Chris: Give us the toys, and we will play with them. We take the manual

and throw it in the garbage and turn the knobs until it blows up.

Bonzai: Any new toys you like?

Jeff: Actually, I think a lot of the new recording gear is redundant. We're into finding old vintage gear that sounds great.

Chris: There are so many whiz-bang boxes that are really cheap, do a million things at once and just don't sound any better than the originals. I'd rather have them invent a \$20,000 reverb that is just a great reverb. Or a \$20,000 delay unit that is phenomenal, rather than another \$200 multi-box. So many things are being made for the consumers—how about making something really great for the mixers?

Jeff: Something that does one thing, and does it really well will get used. Make it simple and easy to run.

Tom: I think the multiboxes do so many things, but unfortunately a lot of them don't do any one thing well enough. I've been using the Yamaha SPX-1000, and I just use it for stereo drum samples. And I have the Little Lab Sample Switcher, so you can switch between two samples without getting that machine gun effect on

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drum fills. I use that because it's a stereo sampler that's reasonably priced and sounds good. The unit has reverbs and delays, harmonization that I never use.

Chris: I still use a 15-year-old Sony reverb because it still sounds good today. And they've made new ones that sound absolutely horrible. Guys that make this gear don't use it half the time.

Bonzai: Do you have to carry all this stuff around with you?

Chris: I tend to camp in one place to mix most of the time, so I leave the pieces I own there: my reverb, my own Ultra-harmonizer, a couple of old tube limiters.

Jeff: I carry an SSL limiter with me everywhere I go.

Tom: That's my limiter, Jeff.

Jeff: Thank you, Tom. And I use it all the time. I won't do a session without that thing plugged into the stereo bus. It's a great-sounding unit, and when you are in the studio you have to make that song sound like a record every time.

Chris: Every play of the tape.

Jeff: And it has to sound amazing. There's no, "I'm just getting the mix

together." You better have it together every time the artist listens, so that they stay jazzed about the song and inspired to do great work.

Tom: Also, this is done so that you will mix the record. I never understand how some of the tapes I get to mix, in my opinion, sound a bit *naf* [British slang term]. How did you know the song was done and finished? How did you know it was time to mix it? You put the faders up to listen and the EQ on the drums is butchered. You need to record with a mix in mind.

When I record, I am mixing as I work and thinking about the mix. I am EQing, compressing the way I want it. I am confident in the amount I use. Every time you play that tape, it should sound like it's almost mixed, so that the producers and the artists know when to stop the overdubs. Otherwise, they may keep going to make up for the fact that the drums don't sound good, or the bass is a bit dodgy. You need to record with mixing in mind.

Bonzai: Does it get physical when you have to take a tape and make some mix sense out of it?

Chris: Sometimes you have to be "Audio Maid."

Tom: You gotta get in there and clean it up. I get tapes that are recorded well, and I get tapes that aren't. The ones that I find challenging are the ones that are butchered. There are great engineers out there, but unfortunately there are too many bad ones. There are a lot of guys out there who cannot record live drums.

Bonzai: How do you get a good drum sound?

Tom: What I've found in the tapes that I mix is that often the drums sound dull. I attribute that not to the monitoring, but because they put reverb on the drums while they are EQing them. The engineer puts a mic up and immediately goes for the reverb before the EQ. What happens is that you get a sense of brightness from the reverb, and I would rather have a more natural drum sound. When I set up drums, I don't put any reverb on them. I get them to sound the way I like them, as bright as I want them, without any reverb. And then, later, the reverb complements the sound instead of hiding the fact that the drum sound stinks.

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SEPTEMBER 1993, MIX 41

On vocals, you find a lot of guys who aren't careful enough with the vocal comping and the vocal punching: breaths, words, bad punches. All the time. You turn up the vocal and the loudest thing in the track and I hear punches left and right.

Bonzai: How do you clean up bad punches?

Chris: I get vocal comps with the levels all over the place, bad punches. You have to EQ it and compress it to the point where it just smears over it. Sometimes there is nothing you can really do, except jazz it up as much as possible so it's hidden.

Jeff: Sometimes you have to take more than one channel of that same vocal and change the EQ from the spot where they punched in five weeks later.

Chris: I've had to re-comp it at times. That's when you get mad. The comp has distortion and is unusable, so I have to find where it came from and go find the missing pieces. Sometimes you get a project where there is no vocal comp, because the track sheet is hieroglyphics.

Tom: Let's not even get into track sheets...

Chris: The worst thing about mixing, aside from bad-sounding recordings, is getting track sheets that make no sense. They're not notated properly; there are no tempos written down. You'll have four or five vocals, and it's not written what happened or how they did it. No notes. You feel like the engineer didn't care who got the tape next. You have to get their mix to figure out what the hell was done with the vocal.

Jeff: Some guys do shit like that on purpose, thinking that they are assuring themselves the job as mixer. Instead, they are never going to work again. When you get a tape like that and look at those sheets, you say, "Who cut *this*? Who made this monstrosity?" The client knows. The best thing to do if you want to score the mix is do a great job all the way through, and be thoroughly professional. Make sure the track sheets are notated properly and let them give it to another mix engineer. I don't have as many credentials as Chris and Tommy, so I have to knock their socks off with the rough mix.

Tom: Getting back to the track sheets, I don't think that it's done intentionally. I think with mileage in the seat,

and more projects under the belt, you learn that you should really notate everything and that the tape should be tidy. All too often, I get tapes where the vocal comp was recorded on the old click track or old guitar track, and they didn't spend the five minutes to wipe the track completely clean before putting the comp on. I just mixed a track where in between some vocal lines there was a cowbell that used to be the click track.

As far as tips for engineers: You are in control of the recording process. Producers and artists look at you and rely on your knowledge. So spend the five minutes, clean the track, take the time to make it perfect. Make your tapes clean, notate the track sheets properly, and you won't be embarrassed if somebody else gets the tape to mix. I have almost felt like I should call some of these guys and ask them what they were thinking about when they made the tapes. I understand the pressure in the studio, but producers and artists will respect you more if you come up with clean tapes that can be played without having to do mutes everywhere. The drop-ins should be knob-on-the-money. My name goes on that tape, and God forbid somebody else should mix it, but I want them to go, "This tape sounds great—and it's clean." I will stay an hour after the session to make sure it's clean and clear.

Jeff: Tommy used to tell me, "Don't let 'em rush you. Take your time to set it up." And I think it was Chris who told me, "If you don't have time to do it right, you will never have time to do it over again."

Bonzai: Isn't there another brother?

Chris: Yes, Mark, but he isn't involved in the music business. He sells jukeboxes; he's in the vending business. Our father, Frank Alge, was in the field of jukeboxes, pinball machines, cigarette machines. This was back in the days when jukeboxes were the way you got your record heard. And our mother was a performing musician who went by the name of Vivian Lord. She's still performing, and she's also a professor of jazz at William Paterson College in New Jersey.

This whole career stems from my mother back in 1975, with her friends coming over and recording music. They were always jamming at the house, and I was taking the equipment down to the basement and recording my friends. Finally, she said, "What am I going to do with him? I

better get him a job at a studio." She took me over to H&L Records, which is a studio in Englewood Cliffs, New Jersey, and I worked for [producers] Hugo & Luigi and assisted under Steve Jerome. She would drive 25 miles every day, drop me off in the morning and pick me up at two the next morning, seven days a week, for two or three years. I was too young to have a car at that time. She really was the one who got me involved in the business.

Then after I became an engineer, I thought I needed a name—Alge just didn't fly. We needed something with a little style to it. So, I took my mother's stage name, slammed a hyphen in there and came up with Lord-Alge.

Bonzai: For a long time I was under the impression that you were English gentlemen.

Jeff: Oh, we are, but we spent so much time in New Jersey...

Tom: I've met clients for the first time who expected a "stately English Gentleman," and instead they get an aggressive...

Jeff: Street thug.

Bonzai: Are you guys still learning?

Chris: Absolutely.

Jeff: And when we get together, we are jazzed to swap stories and tell each other what we've discovered.

Bonzai: Any advice for the youngsters who'd someday like to fill your shoes?

Jeff: Work hard, play hard.

Chris: Find the best studio in town and fight your way in. Get a job, whether you're pushing a broom or cleaning the toilets, and work your way up from there. Don't be scared to take a chance on anything. The only way you are going to learn is by watching the best at what they do.

Tom: Recording schools can't teach you how to hear, how to mix. They can only teach you how the equipment runs. I learned in the studio, under the pressure. Deal with the people, sit in the chair. You sink or swim. You don't learn until you're put under that pressure, and you learn from someone who is great. Music is hell.

Chris: We just try to make it a little more...

Jeff: Heavenly. ■

Mr. Bonzai was truly the funniest of his siblings, but he was often relegated to the unsavory role of straight man to his brothers Gummo and Zeppo.

Prime Of My Life

Engineers

Keith Rose
Bruce Weeden

Producer

Nick Martinelli

Artist

Phyllis Hyman

Studio

Criteria Recording Studios

**"Boomerang"
Soundtrack**

Engineers

Jim "Z" Zumpano
Darin Prindle
Steve Schwartzberg

Phil Tan

John Rogers

Producers

L.A. Reid

Babyface

Daryl Simmons

Dallas Austin

Artists

TLC

Toni Braxton

H.P.M.

Debra Killings

Studios

Doppler Studios

Studio LaCoCo

My Mind Is Made Up

Engineers

Shawn Moeller

Joe Neil

Larry Goode

Producer

Jerry Peters

Artists

Rev. Milton Brunson
& The Thompson
Community Singers

Studios

Doppler Studios
Sam's Tape Truck

Live In Detroit

Engineers

Jerry Masters

Mike Iacopelli

Producers

Frank Williams

Rudolph Stanfield

Artist

Rev. James Moore

Studio

Muscle Shoals Sound
Studios

**"The Bodyguard"
Soundtrack**

Engineers

David Reitzas

Matt Rohr

Marc "Elvis" Reyburn

David Frazer

Marc DeSisto

Acar S. Key

Manny Lacarrubba

Dana Jon Chappelle

Producers

David Foster

Narada Michael Walden

Danny Kortchmar

Robert Clivilles

David Cole

Walter Afanasieff

Artists

Whitney Houston / Various

Studios

Encore Studios

Louis Biancaniello Studios

Tarpan Studios

The Plant Recording Studio

Skyline Studios

Ocean Way Studios

"Singles" Soundtrack

Engineer

Howie Weinberg

Artists

Various

Studio

Masterdisk Corporation

Bobby

Engineers

Jim "Z" Zumpano

John Rogers

Neal Pogue

Thom Kidd

Matt Still

Kevin Parker

Phil Tan

Ted Malia

Producers

L.A. Reid

Babyface

Daryl Simmons

Artist

Bobby Brown

Studios

Studio LaCoCo

Bosstown Studios

Silneta

Engineers

Moogie Canazio

Jorge Gordanga

Producer

Max Pierre

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Chief White Mountain from the "Indians" segment of the 10 hour mini-series of *The Wild West*. The overall photo of the train and trestle illustrates how "Dreamers & Wayfarers" believed the rails could join East to West, wilderness to opportunity.

In the months since the popular and critically acclaimed television mini-series *The Wild West* aired originally, the project has taken on a life of its own. Home video sales have been brisk, the series' music producer, John McEuen, has filmed a one-hour cable special called *The Music of the Wild West*, a soundtrack album has been released, and the series is scheduled to be aired again in October. In this article, Rohyn Flans looks at the painstaking process of recording music for the mini-series.

"I have friends I haven't even used yet," John McEuen used to joke during his solo performances following his departure from

the Nitty Gritty Dirt Band. He can't say that anymore. While producing the music for ten hours of the Warner Bros. television show *The Wild West*, McEuen "used" just about everyone he knew. In fact, what began as an assignment for three hours of music grew to six once executives heard what McEuen had in mind to accompany the 5,000 pictures and Jack Lemmon's narration. (In comparison, PBS's *The Civil War* used 1,200 photos.) For McEuen, it was the equivalent of making six or seven albums in a three-month period.

So he called on many of his longtime recording associates to help capture the 450 cues of 98 musicians in studios in 15 cities,

SCORING THE WILD WEST

Music Music Music

BY ROBYN FLANS

"Townsppeople" (one of the mini-series segments), used to conveniences of the East, depended heavily on western general stores for their everyday needs.



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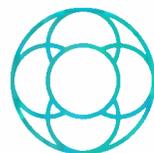
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T H E C A P R I C O R N



World Radio History





Narrator of the series, Jack Lemon. Right: John McEuen laying down some fiddle music for the series. He wrote a portion of the music and played on 70% of it.



the middle of a forest, a hotel basement bar in Deadwood, S.D., and a couple of churches. Industry contemporaries such as Gary Morris, Crystal Gayle, Michael Murphy, Pam Tillis and Marty Stuart worked on the project as a labor of love.

"It wasn't difficult getting the mandolin orchestra excited about playing on a Gary Morris track," understates McEuen, who wrote a portion of the music and played on 70% of it. "In turn, I could go to Gary and

The fascination with the gunfighter's legacy of part hero, part villain, is explored in the mini-series segment titled, "Gunfighters."

say, 'I'd like to have you sing the definitive version of 'Shenendoah' as it might have been done in 1885, with a mandolin orchestra backing you.' He said, 'I'll do it!'

"I think it's interesting that music done in 1892 is being handled digitally in 1992," McEuen continues, explaining that one way period authenticity was handled was by the use of pre-1900 instruments. Arrangements and playing techniques were other considerations: "Many times when the actual melody of the song comes up it will be played by several instruments in unison, because there were no P.A. systems back then. We tried to record in a lot of open-room situations, some with higher ceilings, so it wouldn't sound like we were recording with a bunch of dividers in a studio. There's a sound you get from an over-acoustically stuffed studio that wouldn't have existed in the Elks Lodge of 1891, or in someone's living room where people would play.

"One challenge was working with some people who were green to the studio," McEuen adds, speaking particularly of his experience in Wichi-

ta, Kansas. "One girl had never worn headphones before, but if we had used Nashville musicians it would have been too slick. The girl who played the mandolin almost always played with downstrokes. There were three women on the session, and I felt that was important because a high percentage of the music of this era was played by women. It seemed right to record some of the music that was written there. 'Home on the Range' was written in Kansas in 1875."

The unanimous complaint/chal-





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lence of all the engineers stemmed from the fact that the recording was done piecemeal in a variety of locations, yielding a myriad of diverse elements.

"Some of the machines weren't set up quite as exact as they might be," says Nashville's Scott Martin, who coincidentally was one of the Dirt Band's booking agents in the '70s and ended up on these sessions after having lost touch with McEuen over the years. "We were usually able to work around it by recording things that were too hot onto another track and bringing the level down. Some of the levels printed through to the adjoining tracks. I then took the piece and put it on another track and erased all the other tracks around it so it wouldn't continue to cause problems.

"Most of the tapes John brought in were pretty close. Some of them didn't sound great, but then he wasn't using all straight studio musicians, which is really part of the charm. It was nice to be able to work on a project where the sound quality was not the only consideration. In a situation like this, you get to stretch and use stuff that you would not normally put on a record.

"There were times when John would take stuff that he liked the feel of, that I, as a recording engineer, would probably say, 'We can make it sound better than that,'" Martin adds. "He'd say, 'I like the way it sounds, it's authentic.' In cases like that, I tried to give him both options, which is why we would use different room sounds and interesting mic placements. Instead of getting a real full sound on the instrument, we would go more for a mix with the room mics, which in most cases you wouldn't want to do. When you start using a lot of microphones on a single sound source you tend to throw it out of phase, because the microphone is 12 feet away and the sound reaches it at a later time."

The recording of the main theme, plus 25 minutes of music with a 27-piece orchestra at Masterlink (owned by Al Jolson Jr.) in Nashville presented some difficulties, according to Martin.

"We wanted to take the rhythm track of that theme and, for a variation of the theme, have an acoustic guitar playing the lead line," he says. "Then we wanted to try one with

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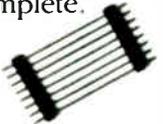


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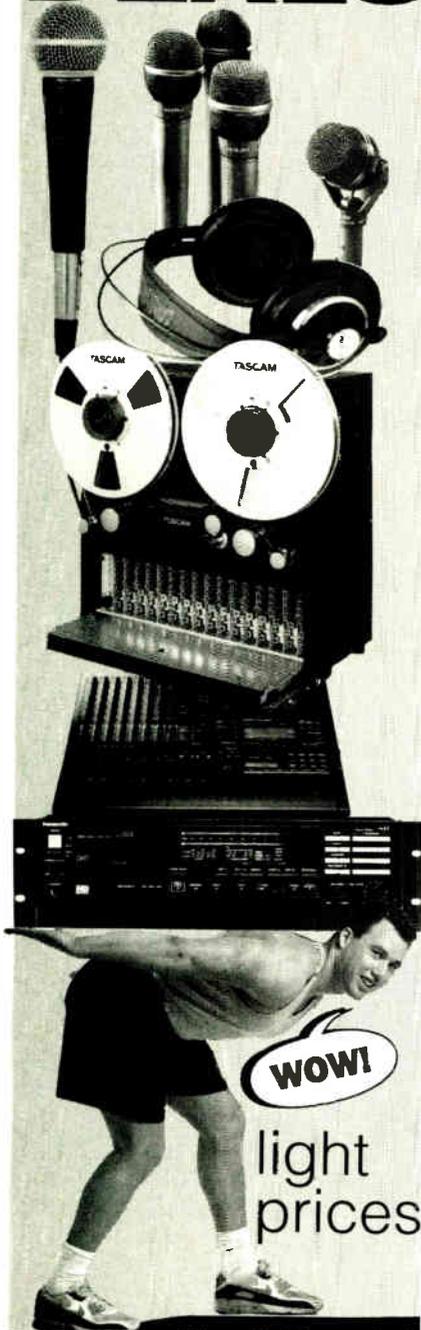
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banjo and then a fiddle. That meant I had to record everything separately so we could drop out the horns when we wanted the guitar to take it, or we could drop out the strings and get the acoustic instruments like banjo. With only 24 tracks, we quickly ran out. We had to do some creative recording and combine certain things that we knew would be playing at the same time.

"I was only able to use four tracks for drums," he continues. "I mixed all the toms, the overheads and hi-hats to a stereo pair and then left the kick and snare on their own track. I hate doing that, but it was essential. We had 12 strings and two cellos. The strings had two, and sometimes three, different parts, so I put them all on a stereo pair—the first strings on one side, the second strings in the middle and the third part on the other side so I could kind of control it. On some passes I had to put the cellos in there with them, and if I wanted to raise the cello, I had to do it with EQ. Fortunately, we didn't have to do that, but it was about taking extra time to make sure it was mixed right as it was going down, because we didn't have the luxury of having everything separate."

Bob Abeyta at Salt Lake City's L.A. East agrees that maintaining continuity was the tricky part of this project. "The biggest problem was in maintaining proper tape levels with so many different brands of tape and reference levels," he says. "We'd have to adjust for that. I'd have to bring the tracks up, and anything else that was being added to it would have to be brought up in relative balance. I'd have to record on the tape in relative balance of what we were hearing previously," explains Abeyta, who recorded a 25-voice choir in the "Chapel" of the 100-year-old converted Mormon church. "The Chapel definitely has a sound of its own."

The recording of the Desert String Band was done with everyone miked in a circle, playing and singing simultaneously. "For that I used a stereo technique—two microphones and a couple of solo instruments that I miked individually—on the guitar and the mandolin. Then I used an AKG 414 for the vocals. I relied primarily on the stereo pair for the whole group to get that kind of ensemble sound and then spot-miking the solo instruments

with various Neumann microphones. You could hear a lot of ambient sound of the room, and it sounds like they were all sitting in a cabin, playing."

Mike Denecke, whose association with McEuen dates back to his engineering of "Mr. Bojangles" in 1970 was assigned to record the Americus Brass Band at Little Bridges Auditorium in Clairmont, Calif.

"I had a digital Nagra with four inputs and two Neumann KM84 microphones and two KM81R microphones," he says, "which I used on separate tracks, straight into the machine. We set up a boom above the brass ensemble, which was in a semicircle, and I just miked them with two overhead stereo mics (the KM84s) split about seven inches, aimed left and right, about ten feet above the stage to the right of the conductor. Then I had one of the KM81s in the back aimed toward the snare drum, and the other was back in the hall just to get room tone.

"The recorder is Nagra's version of a high-quality professional DAT machine," he says. "It's more robust, it's a stronger format, and the tape speed is at least twice as fast as the DAT. The track width is twice as thick, and it's designed for archival recording. Right now, if you do DAT recording, you get these 20-bit converters, and we're taking that information and feeding it into the DAT machine, which is maxed out at 16 bits. The extra four bits of resolution are lost. With the Nagra-D, if you have a 20-bit converter and feed that into the digital input, you're recording all 20 bits. That gives you a much wider dynamic range, so the soft things won't get lost in the mud, and you can record a little cooler and not get any distortion. It's a great machine. It's much, much quieter."

For the location recording, Tim Cooney, C.A.S., also used a Nagra-D, along with his self-designed mixing panel. Compared to his usual work on such films as *Cliffhanger* and *Die Hard 2*, Cooney says this project was an easy assignment, that even his recording of the Lakota Indians in the middle of a forest was fairly controlled.

"We were close to a road, so to reject the noise I used a Sennheiser 816, which is basically a shotgun mic," says Cooney, a longtime friend of McEuen's. "I used that for the vocals, and then I used a Schoeps

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strictly for the drums. Schoeps is great for controlled situations. It has great tone quality, it makes dialog sound great, but it has very little noise rejection. Because of where we were, it had its own natural echo that was really haunting. The only thing that was hard was we had children singing as well, and it was a little difficult balancing their voices against the men who were singing and pounding on the huge drum, which echoed through the woods.”

His other assignment was the recording of Hans Olson in the basement bar of the reputedly haunted Bullock Hotel in Deadwood, S.D. He then went to Aspen Studios in Carpinteria, Calif. with McEuen to assist a little on the mixing.

“I always try to mix it perfect and give it to a dubbing mixer mixed as flat and clean as possible. If they want to add scratches to it or knock out the bass to make it sound more trebly, like the music back then, they have that control.”

“The sheer quantity of cues was a challenge in mixing,” states Jim McMahon, the mixing engineer. “Plus, we did a lot of overdubbing.

John’s well-known for wanting to add a new banjo part at four in the morning. We’d be in the middle of mixing something, and he’d decide he’d want to cut a new banjo part.

“During a lot of the recording, we used outboard mic preamps made by Brent Averill,” McMahon continues. “We got the banjo sound we did by using a tube 47 with an RCA 77DX on the back, and a Brent Averill mic preamp along with a [dbx] 160 compressor. We must have gone through 30 microphones trying to find the right plunky sound. The banjo is difficult to capture on record.”

“For a lot of the mixes, I sent the reverb for the lead instrument or the vocals precompressor, meaning the signal got to the reverb before it went to the compressor. That was really a cool effect that was used on Elvis’ vocals. We used it on some of the banjo stuff and on Crystal Gayle’s vocal on ‘Barbara Allen.’ In fact, on that one, I sent it pre-reverb and pre-de-esser.”

One problem was that there just wasn’t always enough time to get level, he complains with a laugh. “With the brass band, there was a

quick tuning-up session, and then it was on to the 20-something pieces they were going to record. If we hadn’t been recording at +9, I think I would have ended up running into some tape hiss problems, although I don’t like to hit that hard unless I have to. Something interesting that I noticed was that on a lot of the tapes that came from Nashville, the meters would hit -5 a good part of the time. I started to notice that there really wasn’t a hiss problem, and it really sounded nice.

“One of the biggest helps I had was the console,” McMahon says of the Neve 8038, restored by Averill. “The equalizers are so smooth. One-half of the equalizers are 1073s, and one-half are 1073As. I ended up using mainly the EMT 140 plate.

“There really was no way to mix a lot of the songs to be compatible for album, also,” he continues, stressing that there will be a remix for CD. “There are just things dynamically or mono-compatibility-wise that I felt we had to compromise for television.”

Everything was mixed down to ½-inch with Dolby SR on an ATR-104

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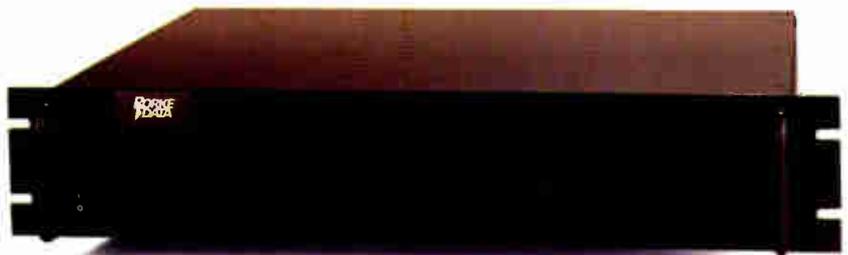
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and then transferred into the Spectral Synthesis AudioEngine. As an interesting footnote, McEuen says he is thankful to Fabian Forte, who worked on the TV production team, for suggesting music supervisor Jack Allocco. Allocco, in turn, recommended Brian Mendelsohn, who spent seven eight-hour sessions just transferring existing mixes into the computer and logging it all.

"It had to be uniform so we would be able to find it on the dubbing stage," Mendelsohn explains. "John might record a version of a song with a brass band one day in Nashville on one format, and then a month later do some Irish jig rendition with another ensemble elsewhere in the country. Then I'd get a choral version recorded in Salt Lake City, and they were all different levels, lengths and speeds. All of that needed to be logged so that, if we needed to move it faster or slower, we'd know where our starting bases were."

Mendelsohn, a great advocate of the Spectral system, explains, "Besides being able to edit and do cut-and-paste functions, which are standard, you are able to compress or expand the time of an audio file. In the case of music, you might have a cue that goes a minute-and-a-half, and rather than doing any edits you just want it to slow down a little, stay in the same key and take a minute and forty-five. You can squeeze or stretch things out."

"My unique inherited problem by being last in the chain was that it wasn't until days before the mix that a final edited video with the narration in place was provided. We literally had about an 18-hour window to prepare each of the shows to match the dub deadlines. The recordings were supposed to be made to picture, or with picture known. Often it turned out to not be the case. There were several edit revisions, and meantime, the air date didn't move. So it was like a one-sided accordion, squishing down on us."

None of it seemed to phase McEuen, however, who said, "It was wonderfully chaotic, just like the times we were trying to capture. I feel like I was doing what Edison would have done had he had the same equipment." ■

Robyn Flans is a frequent contributor to Mix who lives in Southern California.

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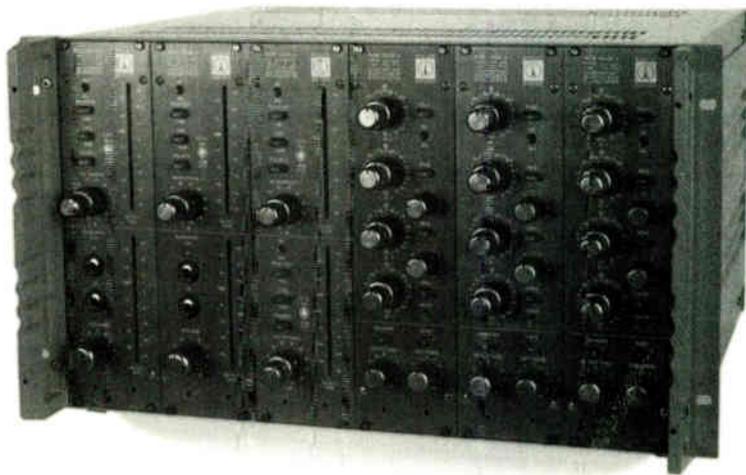
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Digital Synchronization

How to Avoid the Pitfalls When Setting up an All-Digital Audio Facility

As more and more of us are discovering, digital technology can both enhance and extend our audio creativity. Digital audio workstations and random-access editors allow outstanding audio quality to be retained through multiple generations, while enabling sample-accurate editing and processing. But if they are to provide reliable, trouble-free operation, digital systems need to be set up carefully, especially if they need to clock to video and/or time code.

Of primary importance is a Master Synchronization Reference. For relatively simple data transfers—such as a single DAT machine recording the output from a PC-based editing system—the DAT's internal digital clock circuit can lock up to an incoming bitstream. By decoding the Sync Blocks of an AES/EBU or S/PDIF-format digital input, a DAT machine's master clock can be slewed within a well-defined acceptance window to match the source sampling rate; a dedicated word-clock input can serve the same purpose.

Life becomes more complicated, however, when we add more components to our digital production studio—outboard signal processors, for example, or a second workstation that's networked via digital I/Os to a series of DAT machines.

BY
MEL
LAMBERT

RELIABLE SYNCHRONIZATION SOURCES

For trouble-free digital synchronization, we need to follow Golden Rule Number 1: *For reliable sample-accurate synchronization, all digital audio devices should share a common clock source.*

In terms of sync resolution, Table 1 includes some of the reference signals we might encounter in a typical production studio, with their frequency and jitter performance. The concept here, of course, is to select the most reliable source we can as Master Clock and have each designated slave lock its internal clock to the same reference.

As will be readily appreciated, because of their enhanced jitter/accuracy specification, either a House-Video Reference or an AES-11 Digital Audio Reference Signal provide the best sync sources.

ENSURING FREQUENCY AND PHASE SYNC

Whatever synchronization source you choose, make sure that it is implemented carefully and consistently. We are attempting to achieve frequency *and* phase synchronization; the source/destination sampling rates need to be equal (within a very tight ppm tolerance), and each bit of information begins coincidentally. Frequency synchronization ensures

that bits arrive at the correct intervals, while phase synchronization ensures that each digital word matches at source and destination.

In this way, all bitstreams can be combined within digital mixers or workstations, processed through digital equalizers, limiters, compressors and other outboard hardware, and then recorded to tape, hard disk and optical media. Just so long as all components in a digital facility are fully frequency-synchronous and locked to the output of a highly accurate master clock source, interconnecting the equipment should be an easy procedure.

PHASE-ACCURATE SYNCHRONIZATION

Having established a common frequency source, we are halfway toward our goal of simple, reliable synchronization between source and destination. Of equal importance is Phase Lock, which implies that Sample Edges, Channel Status Block edges and Video Sync edges occur *simultaneously*.

But a noninteger relationship normally exists between these signals. At a sampling rate of 44.1 kHz, 1,471.47 (44,100.00/29.97) samples occur per NTSC video frame; at 48 kHz there are 1,601.60 samples/frame (48,000.00/29.97). Sample edges will now only align every ten

frames at a sampling rate of 44.1 kHz, and once every 100 frames at 48 kHz. When a system claims to be sample-accurate, this anomaly can pose real problems. (European, PAL-based video systems don't exhibit such problems. The 44.1kHz and 48kHz sampling rates offer an identical number of samples per PAL video frame; 1,764 and 1,920, respectively.)

More importantly, the channel status blocks in both AES3 and consumer digital I/Os are 192 samples long and often contain vital information, including stereo/2-channel flags, source/destination labels, time-of-day data and more. If two differ-

ent, but sample-synchronous, signals need to be mixed together, information may be lost if the individual channel status sequences are not phase-synchronous.

Unfortunately, at a sampling rate of 44.1 kHz, sample clock, channel status and NTSC color-time video sync only coincide approximately every 20 minutes, making it difficult—if not impossible—to achieve exact synchronization among all three signals.

DIGITAL SYNCHRONIZATION SUMMARIZED

• Frequency and Time Lock are not identical and need to be established

with two different masters.

• Choose a Frequency Master—either an AES11 or house video—so that the source is accurate, jitter-free and always present. Lock all equipment to the master in all operational modes.

• Carefully choose the Master Source of Time Sync; most modern equipment can be set up to function as either a master or a slave for frequency *and* time code lock. When using SMPTE or MIDI Time Code, ensure that it's locked to video house sync and that any slave devices use video edges for absolute time sync. ■

Mel Lambert is a senior editor at Mix.

SIGNAL FORMAT	FREQUENCY STABILITY	JITTER PERFORMANCE
AES3-1992/IEC 958 Type I	10 ⁻⁵ ppm	Very good
S/P DIF/CP-340/IEC 958 Type II	10 ⁻³ to 10 ⁻⁵ ppm	Variable
AES-11 Digital Audio Reference Signal	10 ⁻⁵ or 10 ⁻⁶ ppm	Excellent
NTSC-format Video	3x10 ⁻⁶ ppm	Excellent
PAL-format Video	2x10 ⁻⁷ ppm	Excellent
Film sync reference	10 ⁻³ ppm	Poor
SMPTE Time Code (LTC/VITC)	NA	Variable; normally poor
MIDI Time Code (MTC)	NA	Variable; normally poor
Analog tape recorder	Variable	Variable; normally poor

TABLE 1: Signal formats and their frequency stability/jitter performance

TABLE 2: Sample rate and corresponding frame rates

SAMPLE RATE		FRAME RATE (FPS)		
(kHz/s)	30	29.97	25	24
48.000	1,600.00	1,601.60	1,920.00	2,000.00
47.952	1,598.40	1,600.00	1,918.08	1,998.00
44.100	1,470.00	1,471.47	1,764.00	1,837.50
44.056	1,468.53	1,470.00	1,762.23	1,835.66
32.000	1,066.66	1,067.73	1,280.00	1,333.33

by Dan Daley

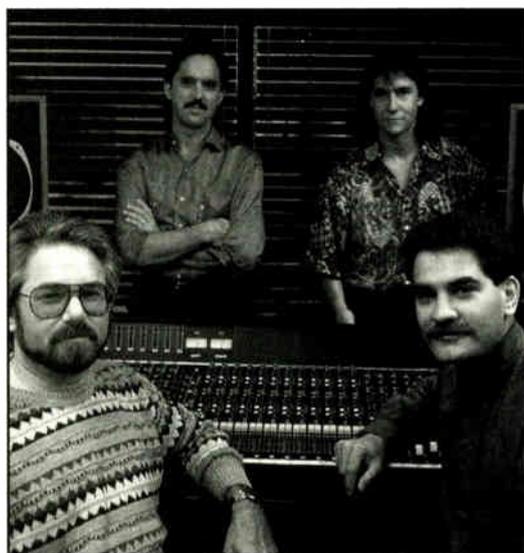
SCORING IN THE PROJECTS

When Dimitri Tiomkin, the dean of American film composers in the '50s, scored the epic *Spartacus*, he had at his command the best arrangers, copyists and orchestral musicians Tinseltown had to offer, and the largest, most well-equipped recording studios in Hollywood to hold them. And no SMPTE time code. It wasn't invented yet.

When Eric Guthrie, 24-year-old Austin, Texas, biology major and part-time musician and composer, set out to score his first film, he did it in his apartment with a Tascam 488 8-track cassette recorder, a Mac Classic II running Opcode Vision and Galaxy, and a few synths. And no SMPTE time code, because the director didn't understand the concept.

I have no idea what the

budget for *Spartacus* was. However, at \$7,300, it seems certain that the budget for *El Mariachi*, a breakthrough first film from young Texan Robert Rodriguez, might not have



Clockwise from top left: Scott Liggett, Ken Donovan, Shane McMartin and Alan Ett of Alan Ett Music

PHOTO: ROB JORDAN

Below: Chris Knudson (left) and Eric Guthrie in the cramped apartment MIDI studio where the *El Mariachi* soundtrack was recorded



been enough to pay for coffee on the *Spartacus* set. That \$7,300 isn't the music budget—that's for the entire movie. (*El Mariachi* generated a bidding war in Hollywood, with Sony-owned Columbia Pictures winning out. Prior to release, Columbia poured five times the film's budget into spiffing up the audio and converting to THX standards. But that's another story.)

Guthrie's experience with *El Mariachi* illustrates the inroads project studios have made into the realm of scoring for film and video, and it shouldn't surprise anyone who's been following the trend. A combination of lower audio and



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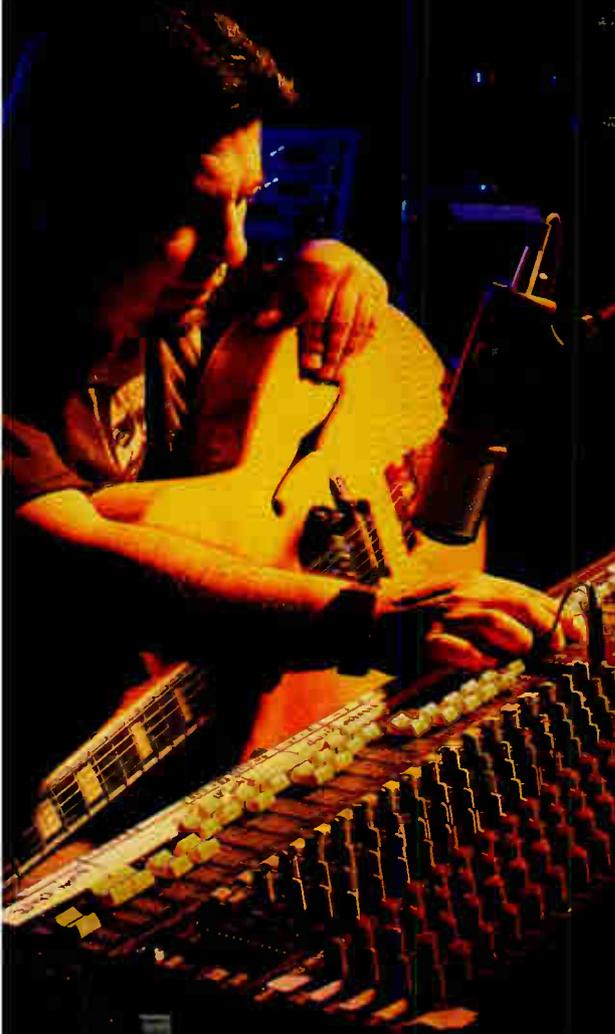
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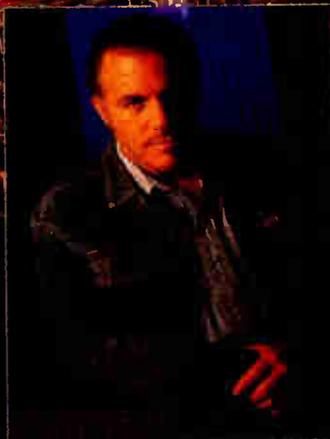
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technology that you can use at home. In fact, we only go into big studios for final mixdowns — and in the case of movie sound tracks, the CR-1604s are often better suited to handling the whole job in our own studio."



ABOVE:
Cesar Rosas (electric and acoustic guitars) mans the Mackies during a session in Los Lobos' garage studio.



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Album mixing/engineering: Gatlin Brothers, Michael Tomlinson, Colorblind James Experience, Garry Morris, Wendy Maharry; Currently co-writing with Katey Sagal for an upcoming Virgin album; and pre-producing his own group, Chamber of Poets.

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overall budgets for picture and the very nature of project studios—cost-effective workstation environments tailored to the tastes of the artists hired to do the scoring—is being viewed by producers, directors and production companies as the perfect solution for belt-tightened times.

Scoring is a natural for project studios; their owner/operator/artists were for the most part brought into professional audio as musicians and are intimately familiar with MIDI as a platform to eliminate the need for some of the more expensive aspects of scoring—an orchestra and large recording room, for instance. And time code, it seems.

Guthrie picked up his compositional chops through voracious reading on the topic and watching lots of movies. (He cites Peter Gabriel's scoring of *The Last Temptation of Christ* as a specific influence, and Pat Metheny and Lyle Mays as general compositional ones.) Guthrie says the time code issue illustrates just how versatile even the sparsest project studio can be.

SMPTC time code is standard issue on feature films and video productions. However, filmmaker Rodriguez was unfamiliar with the concept of TC, so he nixed its use by Guthrie. Such a move by a Hollywood director might result in a paralyzing power tiff played out over cellular phones from Burbank to Malibu. In Guthrie's case, he simply used visual cues to create the movie's score instead. "Robert wanted to fit the music to the picture himself," says Guthrie. "So I wound up doing several versions of every piece of music for the movie with different lengths and mixes, all by sight against picture off a VCR."

Guthrie's experience, it should be remembered, is singular. If you're considering moving into the scoring game and aren't planning to use time code while composing, get in touch with the post facility that will ultimately handle the project as early as you can to see what its requirements are.

HAVE SYNTH, WILL SCORE

Guthrie's self-described moody, brooding musical pieces were either triggered from the sequencer to a Korg Wavestation, Yamaha TG-77 and Ensoniq SQR, and recorded directly to DAT, or they were recorded in layers

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onto a Tascam 488. For effects, Guthrie used only a single piece of out-board gear: an Alesis Quadraverb. "Wherever there were lots of parts and there might have been polyphony problems or mixing problems in the sequencer, or highly percussive tracks that needed a lot of distinction in the mix, we went to the multitrack," Guthrie says. "I suppose not having time code gave us an extra track."

Like many of his somewhat more upscale cohorts, Guthrie used a combination of techniques, all of which both reflect the technology's effects and transcend them. During shooting, Rodriguez would call his composer from the film's Mexican locations and describe the feel of whatever scene had been shot that day. There was no overnighting of dailies on this shoot. Guthrie, assisted by Chris Knudson, would then compose on his Roland A30 MIDI controller keyboard from his imagination.

"Sometimes we'd get lucky, and we'd get a whole scene that had been cut and sent to me on VHS to compose to," Guthrie says of the other approach he used. Finally, he sometimes scored to snippets of scenes that Rodriguez hadn't found either the muse or the money to edit yet. "That gave me the scene's feel but not its length. As a result, I had to cut lots of differently timed versions."

Beyond simply music, Guthrie also cut some effects tracks as part of the score. In one instance, some George Romero-esque screaming was sampled into an Ensoniq EPS and then pulled way back in the mix and highly effected.

DAT was the final delivery format for the soundtrack, but initially Guthrie only had limited access to a DAT deck. So the earliest versions were often sent over on a metal analog cassette. If you've ever tried to handle the finances for a college frat party, you begin to comprehend the logistics of trying to score a movie under similar circumstances. "Only after Columbia went for the picture and we got into their studios did we have regular access to DAT," says Guthrie.

"It's not really primitive, though," he adds in retrospect. "Not if you know how to use the equipment. The Korg Wavestation has great sounds and is very quiet. If you go straight to DAT, you're staying all-digital and



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While Guthrie is an extreme example of how much can be done with relatively little, he is an indication of where things are going. "There's very little scoring being done at commercial studios anymore because of lower budgets," asserts Alan Ett, owner of an eponymously named music production company and project studio in Burbank. He has used the studio to score music for broadcast and industrial programming.

"There was a recent article in the *L.A. Times* about the decline of the dramatic series on TV in favor of reality-based shows because [the latter] are cheaper to make," he says. "The audio budgets suffer along with everything else because the music is then typically painted with a much broader brush." Ett agrees that project studios are perfect for this sort of thing.

Musical mood changes aren't nearly as subtle and don't occur as often

in reality-based programming, and there are large libraries out there to draw from. Many project rooms have even created their own libraries for ongoing series. And that in turn makes the project even more streamlined. "More movies are being scored in project studios for the same reason that more of them are being posted in Canada: It costs less," Ett adds.

"The job of the editor is becoming nonexistent, because it's now my job to deliver the show's music edited to time," says Ett. "The music has to be prepared for layback, and that used to be the editor's job."

Ett uses three Digidesign Pro Tools stations of varying track configurations through two Mac Quadras and one Centris 650. (He also has a Soundcraft 600 console and a pair of Soundcraft Spirit desks.) "The Pro Tools systems are easy and fast to lock," he explains. "And considering the speed at which you have to turn things around, that's how it has to be."

Ett also notes that more is expected of audio suppliers for picture scoring—it's not just music anymore. "They're looking more for sound effects, too," he says. "Now, on something like

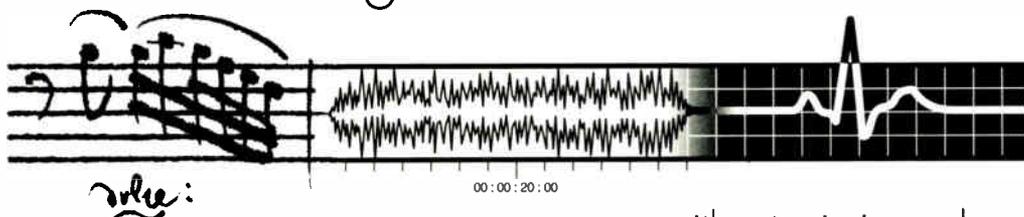
Pro Tools, what used to be a score has become the sound design."

The methodology for both Ett and Guthrie is remarkably similar to that used by their predecessors. As Ett points out, it's the technology that's changed, and it's drastically affecting traditional roles within the scoring community. "I can have [the equivalent of] a full orchestra up and running in 30 minutes," Ett says matter-of-factly. "But I don't need an orchestra. And I don't need a copyist or a leader. I'm creating on the fly, and the technology doesn't get in the way of that. But it is changing the nature of the business for people."

On the other hand, there's no reason for panic, as long as those who want to play the game can adapt to changing rules. "The business comes in from all over, not just Hollywood," Ett explains, pointing out that there will soon be close to 500 cable channels out there, all needing audio for their pictures. "There's plenty of work for commercial studios and project studios," he says. "And let's face it: If all you have is an acoustic guitar and a cassette deck and someone really wants you to score their film, you'll

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score that film."

Television scorer Cliff Downes, owner of North Beach project studio located out behind his house in Nashville, concurs that probably three-quarters or more of the scoring going on is now done outside of commercial facilities. Downes scored for the long-running soap *Santa Barbara*, and his experience reflects the fact that project studio scorers regularly interface with traditional recording studios on more than music-only projects. Downes would travel to California to do the additional recording and laybacks after composing and recording at home, using a Mac-based sequencer and Kurzweil MPC. The common ground is time code.

"SMPTE is usually on the tape someplace," Downes says, noting that it's not always necessary for scores in the compositional stage. "The clients will specify how they want the finals delivered, but more often than not it's on DAT, with or without time code.

"Time code is essential if there are hits at certain points in a scene," he explains. "But there's just as much free-flying stuff, if not more. With *Santa Barbara*, they'd usually request five-, ten- or 15-second cues, which were often variations of a recurring melody or theme on the show. Those sorts of things are stored in the sequencer and just varied according to the needs of each episode. I'd often take the cues from variations on a song in the show."

So time code is often a tangential issue in the compositional process as well as for much of the recording process. If a final tape is going to be slaved off onto another multitrack and striped later, the type or use of time code is purely dependent upon the preferences of the composer. That reduces the entire issue of project studio scoring to the one fundamental: talent. And that's the real core of project studios in the first place. The technology has simply allowed more people to become more innovative on a broader range of audio undertakings. Take away their respective tools, and the only real difference between Dimitri Tiomkin and Eric Guthrie is one of them has a biology degree. ■

Dan Daley is Mix's East Coast Editor. He can think of at least a dozen other connotations for the term "score."



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Hollywood Goes Country

MUSIC RECORDING FOR *THE THING CALLED LOVE*

Every few years the mainstream music industry “re-discovers” country music, and the greatest beneficiary is usually the city of Nashville. Just look at what’s happened there in the wake of Garth, Wynonna and Billy Ray: Record companies have opened or expanded Nashville offices, and numerous L.A. and New York session musi-

River Phoenix onstage at the set for the Bluebird Cafe

cians have settled there, at least for part of the year. Engineer Roger Nichols even bought a house outside of town, and new facilities have opened in and around Music Row.

Then the film industry took notice, 18 years after Robert Altman released the definitive insider look at the town they call Music City.

Paramount Pictures’ *The Thing Called Love*, released in August, is a singer-songwriter love story centered around the legendary Bluebird Cafe, launchpad for a thousand hits. River Phoenix and Dermot Mulroney play the male leads; Samantha Mathis and Sandra Bullock star in the principal female

—CONTINUED ON PAGE 71

FACILITY SPOTLIGHT

Beverly Hills Video Group

Audio 1 at Beverly Hills Video Group has been up for about a year-and-a-half now. Audio 2 has been up about six months. Both are booked solid, mostly with television and commercial work, according to chief audio engineer Tom Orsi. In fact, the facility is new enough and busy enough that there hasn’t even been an opening party yet.

Inside the 16,000-square-foot facility are four video bays, two audio bays (18x20 feet), a voice-over booth, a 100-foot soundstage, three Avid systems, a Composium, telecine, film cleaning—all transfers are han-

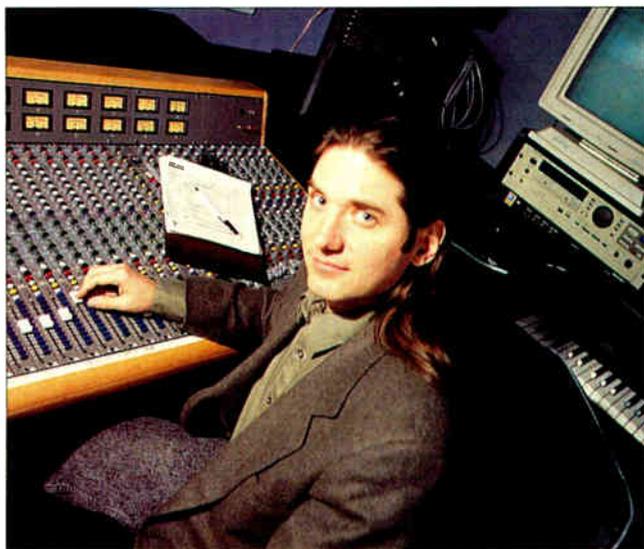
dled in-house—and a production truck. Okay, the truck stays outside.

“You come up with the idea, and we’ll go out and shoot it, edit it, mix it, and you walk out with a finished master,” Orsi says. “And we’ll do it as fast as technically possible.”

The equipment at BHVG reflects an interesting blend

of the old and the new. Audio 1 has a Trident 75 console, 36x24, modified by Chas Slivera at Westlake Audio to give it a “rounder” sound. There’s a modified Sony JH-24 recorder with Dolby SR/A and outboard gear ranging from “very old” Moog

—CONTINUED ON PAGE 71



Tom Orsi: chief engineer at Beverly Hills Video Group

Todd AO Tackles The Firm

DIALOG EDITING AND THE FILMEDL PROCESS

Todd AO/Glen Glenn Sound is buzzing these days. In early spring, the mix team for *Last of the Mobicans* brought home an Academy Award for Best Sound, achieving industrywide recognition for creative excellence. Then, in early summer, *The Firm*, Paramount's \$50 million thriller starring Tom Cruise—cut and mixed at Todd—knocked *Jurassic Park* from Number One at the box office.

Not that box office matters all that much to a post house, but it's nice to work on a big-budget, high-profile feature now and then. The untold story of *The Firm*, however, is how this facility, perhaps the largest audio post facility in the world, made the conversion to digital dialog editing. Once the material came in, it didn't touch tape or film until the premix.

Granted, talented people have been cutting dialog on workstations for years. But few have edited an 18-reel, two-and-a-half-hour feature, loaded with dialog, in five weeks. At Todd AO, the process was made possible by the implementation of the proprietary FilmEDL system, a means of generating an edit decision list from a 35mm work track that was then imported into the Fairlight MFX 2 for editing.

"The first thing you have to understand is what you can do with time code discontinuities on film," says John Haeny, director of editorial technology at Todd



PHOTO: FRANCIS DUHAMEL

AO and the supervising sound effects editor on *The Firm*. "You have to understand what a clever idea it was to put time code on the film, cut the film up any way you want, and have a system that's able to read those time code discontinuities and give you a source-in, source-out number related to a continuous stream of time code that then gives you the location of every cut. Those are the bare bones of an edit decision list.

"In production audio, when you have an EDL, you automate the loading process," he adds. "No longer is that time-consuming. We found that we could read an EDL from the picture editor's work track, auto-load and auto-assemble one film reel on an average of two hours. It took one editor about eight days to [load and assemble] all 18 reels of dialog for *The Firm*. In a conventional 35mm process, it would have taken one person with an assistant, we figured, between 36 and 50 days.

"On *The Firm* we were

Above: Tom Cruise and Jeanne Tripplehorn as husband and wife in *The Firm*
Right: (clockwise from top left): director of editorial technology John Haeny and dialog editors Adam Sawelson, Gary Lewis, Matthew Sawelson and David Beadle.



PHOTO: KES MORTON

able to auto-load and auto-assemble between 95 percent and 99 percent of the audio required for every reel," Haeny continues, "and all of it was plus or minus one perf in terms of sync. In addition, the FilmEDL picked up all kinds of material that wasn't on the manual cut sheets, presenting it to the editors with an additional three seconds before and after so that they could manipulate the edit point."

In principle, the FilmEDL system is not new. Similar technologies have existed in Europe and Australia for years, according to Haeny, and Hollywood facilities have been working on custom systems for a few

years now. But when a major post house like Todd AO takes the plunge, on one of the most anticipated big-budget films of the year, it tends to legitimize for the entire community what a lot of facilities have been working on individually.

In the FilmEDL system, it doesn't matter how the dialog is recorded in the field—with or without time code, on DAT, mono Nagra, digital Nagra, neopilot, whatever—as long as Todd AO handles the daily transfers. *The Firm* was recorded with a StellaVox StellaDat (minus the time code option; the company has since gone

—CONTINUED ON PAGE 72



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—FROM PAGE 68, *TIE THING CALLED LOVE*

roles. The film was edited and mixed on mag, conventionally. What's most interesting about the project is how the music came together. After all, this is a music movie, and it's the evolution of the songwriters' talent that advances the plot.

Steven Soles, whose background includes an early '70s stint in the much-heralded Alpha Band, tours with Bob Dylan and Elvis Costello, and numerous film credits as composer, music producer and music supervisor, served as executive music consultant on the film, a nondescript title that does not do justice to the work he put in.

Soles' initial job was to "work with the talent," meaning that he had to take actors and turn them into country music wannabes. Bullock had natural talent, he says; Mathis learned to play guitar from scratch; Mulrone is a cellist, and Phoenix has toured with an alternative rock band.

Paramount, meanwhile, commissioned dozens of Nashville songwriters to compose original material—some of it raw and some of it quite developed, depending on where the song was to appear and who was going to sing it. Rodney Crowell wrote a couple of songs for Phoenix, as did Randy Erata. Phoenix even wrote two, one of which, "Texas State of Mind," appears in the film.

Guitars were omnipresent on the set, and vocal coaching took place daily. Ironically, much of the actual material was recorded in L.A. studios before production, and two Southern California studios—Westlake and Music Grinder—actually appear in the "recording studio" scenes in the film, with Westlake standing in for a Nashville facility and Music Grinder for an Austin, Texas, facility where the River Phoenix character goes to record an album. Some prerecords were handled during the shoot, sometimes the day before a scene, or, in one case, the morning of a scene.

"We got the call on a Tuesday that we had to record on a Wednesday to shoot Thursday," Soles explains. "On Wednesday we went into Sunset Sound with one song chosen out of three to be recorded. Then Mark Roswell, the music supervisor, called from the set with [director] Peter Bogdanovich, and they

gave me another song to record. We recorded that night after the actors finished shooting for the day. The next morning we went in to Music Grinder at 6 a.m. for River to do one of his songs.

"At two in the afternoon we went over to Westlake for the other two songs that were to be shot there," he continues. "When we arrived, we found out that the director wanted to re-record one of the songs to speed up the tempo. So we quickly did that, in one take, just before they shot the scene. We were in a recording studio, so it was all set to go. Then River and Samantha sang live to a Nagra playback, transferred immediately from the 24-track. It was extremely under-the-gun—when you have the producers and everybody breathing down your neck. We did it all, and it took 20 minutes. We were like speed demons compared to the way film works. But for them, that 20 minutes felt like five hours."

It was just as well that they essentially had to record live; Soles' intention all along was to capture a spontaneous feel to be true to the story. He hired session musicians he'd worked with before (John Jorgensen, Denny Fengheiser, Skip Edwards and Jimmy Insell formed the core), and he booked comfortable, known facilities. The big measure of consistency proved to be production sound mixer Jim Webb, who handled playback on the set and recording of live vocals, and engineer Larry Hirsch, who handled all the prerecords and mixing.

Eighty percent of the original music in the film was recorded and mixed at Capitol Studio B. The recording studio sequences were recorded at Sunset Sound, some overdub sessions took place at Ocean Way, and some of Phoenix's vocals were laid down at Kiva West. As in the actual film, they used a Neumann UM70 on guitar and a Shure SM87 condenser on vocals.

In the film, viewers will notice three distinct settings: the recording studio, the barn dance and the Bluebird Cafe. Everything was recorded "very, very dry," according to Soles, so that consistency could be maintained within each environment and the mixers could add ambience, such as the sound of a small P.A., to smooth out any problems.

Playback on the set was handled by Jim Webb and his stereo Nagra with

SMPTÉ. Webb also recorded everything that was going on live for backup and variation, concentrating on the vocals. In Phoenix's case, Webb recorded to ADAT, and with another actor he recorded directly to an Ampex 8-track 1-inch machine. As it turned out, they went with the prerecorded vocals about 90% of the time.

Everything was recorded to Ampex 499 at 30 ips, mixed to analog 6-track surround, Dolby SR, and edited on mag. "Larry [Hirsch] is just great," Soles raves. "He and I go for a more organic, creamy kind of sound. We like that big bass and guitars that sound friendly. And mag has a terrific sound for big, fat tracks. Originally, I recommended that we do everything digitally, but I was vetoed. We did drop some things down to digital for some tricky edits, and I'm a big proponent of the combination. But until digital can get me that low-end sound..."

A soundtrack album will be released by Giant Records, though Soles says that with all the source (Johnny Cash, Hank Williams and the like, as background music) and original material they gathered and cut, it could easily be a double- or triple-album. There is no score in the film.

"We wanted a spontaneous, live feel, because a lot of what we're seeing in the film is people embarking on songwriting for the first time," Soles says. "They haven't gotten where they are going to get necessarily. But we can see within the span of the film itself how quickly everyone learns. They become more adroit with their particular talents. We were always trying to be as true to the spirit of the songwriters as possible—in the selection of the songs, in getting the actors' input, in making Nashville be glad to embrace this film. That was our ultimate goal." ■

—FROM PAGE 68, *BEVERLY HILLS VIDEO*

parametrics and Furman Sound EQs to the more recent boxes. The room includes 64 MIDI channels, SampleCell 2, SampleCell 1, and the centerpiece, Pro Tools 2.02.

"The thing that's amazing about Pro Tools 2.02 that even the very expensive workstations don't do," Orsi says, "is save volumes and pans to each sample. I did 24 one-minute commercials in about five hours by

—CONTINUED ON PAGE 72

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—FROM PAGE 71, BEVERLY HILLS VIDEO

simply cutting and pasting. I never had to reset the automation in the new place. It was too easy."

The late-night TV show *Dangerous Curves* was a weekly staple at BHVG until David Letterman moved over to CBS. Orsi worked on it every weekend, while also putting together 43 minutes—shot MOS—of *Air Combat 2* for the A&E network.

"Typically in post, you work in analog on your 24-track, then mix to two tracks and somebody lays it down to one-inch," Orsi says. "I mixed live to D2—simultaneous stereo and M&E mix to 1, 2, 3 and 4—and a composite 24-track. CBS still wants it on 24-track as a safety to put in a warehouse somewhere. [The advantage of mixing] to D2 is that the first time it hit the cardboard speakers was in your living room. You could stay digital with the Pro Tools AES/EBU.

"I did all the Foley in StudioVision with SampleCell," he continues. "Then I would export that as a MIDI file, put it on the desktop, import it as a MIDI file into Pro Tools, drag it to the 59/50 position, and lo and behold, everything laid down for 44

minutes. That's just with StudioVision. Use any of the other programs and they don't resolve their MIDI. [MOTU *Digital Performer* apparently does as well—eds.] But in StudioVision, MIDI is resolved with the TimeLine MicroLynx. Thirteen episodes, rock-solid every time."

It should be mentioned that Orsi set up a partnership to handle the Keith Stafford collection of sound effects (masters from such films as *Shane*, all the Hitchcock films and *The Ten Commandments*). Orsi is in the process of transferring the 35mm mag to CD and DAT. His hook, he says, is do you want the real flashbulb from *Rear Window*?

There's plenty going on at BHVG, and a lot to look forward to in the future. They'll soon have a multimedia production room online, and a long-term project involves the setup of a computer matrix to triangulate and track camera movements so that animation can be entered after the fact. The BHVG approach is to take this type of motion-control system and make it mobile. "Technically, we're set," Orsi says. "We have the launch-pad." ■

—FROM PAGE 69, THE FIRM

out of business), and transfers were handled at Todd AO East in New York City, supervised by Bobby Chafalas. Original time code and a digital intermaster, essentially a time code DAT that was used for the auto-load into the Fairlights, were created simultaneously during the transfer of the 35mm dailies, and time code was recorded to the balance stripe of the film for the picture editor to work with.

"You can go out and buy this black box off the shelf," Haeny explains, "but God bless you if you can figure out how you're resolving your film recorder, how you're resolving your playback DAT machine, how you're resolving your recording DAT machine, what you do when you read that EDL, what you do when you auto-load materials, where you pull down, where you don't pull down, and how you manage the overall throughput...I won't go into that. We paid dearly for that information."

On to the Fairlight MFX 2. At the time *The Firm* was in production, the four dialog editors had little or no experience on hard disk editing systems

because, so far, Todd AO has held off on the purchase of any digital audio workstation. There are many technological and business reasons for that decision: They use DAWs but haven't purchased any. So Matt Sawelson, his brother Adam, Gary Lewis and David Beadle were sequestered in various editing rooms for an intensive five-week training period.

The irony is that much of their training took place on another hard disk system, which Todd AO had on hand. Near the end of the training, Haeny introduced them to the Fairlight, and the editors agreed that unless the MFX 2 "knocked their socks off," they weren't about to abandon ship. After half an hour, the decision was made to lease the Fairlights required for *The Firm*.

Two main features of the Fairlight attracted Haeny and the editors. The first was its user interface, by all accounts straightforward and intuitive to film people. The second was its implementation of magneto-optical technology, allowing for what Haeny calls (with deference to Otari) a "plug and play" environment.

Auto-loading went directly to

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MO, editing took place on the 1-gigabyte Tahiti II drives (backed up to hard disk at the end of each day), and the dialog predub went directly from the MO platters to SR-encoded 35mm film—all-digital from the dailies to the predub. Plenty of “trap doors” and protection were built into the plan to protect the integrity of the project, but they were never needed. “The project was accomplished as planned, with only minor variations,” Haeny stated. “I wouldn’t say that we were surprised, because we had tested the system. But we were certainly pleased.” Eighteen reels of dialog—including all the original material, an O track, all the assemblies, various newly recorded lines—all fit on nine MO platters. Fixes took place on the stage, and the mixers didn’t even have time to break for coffee.

Much of a dialog editor’s job is cleaning up the picture editor’s work track. Bill Steinkamp edited *The Firm*, and he has a reputation for constructing words from multiple takes. The dialog editor’s job is then to smooth out the track for the mixer on the dub stage. Individual editors spoke of the Fairlight’s two jog/scrub functions and the clean crossfades. All would have liked audio faders, a feature that Fairlight is working on.

“I had an exterior scene in front of the Washington Monument in Washington, D.C.,” says senior dialog editor Matthew Sawelson. “Tom [Cruise] and the head of the Justice Department are sitting on a bench in the middle of a snowfield. They’re talking for maybe 600 feet [of film]—five and a half minutes—sometimes very intimately. Frequently, Bill [Steinkamp] creates words that weren’t originally spoken, or the actors unintentionally overlap each other. It’s my job to figure out what Bill has done, improve on it if I can, and re-create the dialog tracks for the stage from original material. Add to that the normal ambience of a city—cars, buses, jets—playing under the dialog, and you have created a big challenge.

“I also did reel 15, the climactic chase scene,” he continues, “which had the highest ratio of edits per foot: quick cuts, a lot of phone stuff back and forth, two ends of a conversation, carrying stuff over for futz. For making those types of edits—onscreen and offscreen—the Fairlight can be a dream. As long as you have the timing of the line right, you

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decide where you want to make the split, and it's just a matter of clipping the tail and popping it to another track, which you have designated for futz. It's real easy compared to our conventional method."

Slipping tracks, certainly not unique to the Fairlight system, also made it easier for Gary Lewis to work on a difficult sprinkler scene where Tom Cruise first learns of his colleagues' deaths and is talking with another lawyer in the backyard.

"All of Tom's angles had no sprinklers," Lewis explains. "Then when Bill edited, he stuck together different words with different sprinkler ambiences mixed in. So when I needed to attach sprinkler ambiences—and the sprinklers were miked real well; you heard the slap of its rotation, cceh, cceh, ccech—it was easy to zoom in and actually see the individual hits. The angle that stopped, that was abruptly cut off and needed to be extended or smoothed out, was easy to find. Then just find some clean sprinkler, put it on another track, sync it up, then mix it back into that one track and make a nice extension on it.

You can slip individual cuts on a track, or you can slip the whole track."

Adam Sawelson describes his most challenging scenes: "In reel 12 there's a phone conversation between Abby [Jeanne Tripplehorn], where she runs to the phone and has a conversation with another woman. Abby's breathing heavily, because she ran. But when they cut to the other character, there were no breaths. I had to find a bunch of takes of breaths that made sense and were in sync with her on-camera breathing, so that she would exhale and go off-camera, then inhale. I recorded in a bunch of takes of breaths and pieced them together. The Fairlight allowed me to literally take an inhale, an exhale, an inhale, an exhale, and place them exactly in terms of pacing and duration.

"Another example, and this goes back to Bill Steinkamp cutting in pieces from different takes, where sometimes there's an overlap problem, was the word 'way,'" Adam adds. "At the end of the way, the 'a' part, there was an overlap of another character that I had to get rid of.

So you have to find an 'a' sound from somewhere else. I found the 'a' sound and found where it was supposed to go within an 80th of a frame—which is how small the scrub function is—so literally on the first try I placed the other 'a' in and fixed it. That would be a fairly complicated process even on our electronic system."

There's no magic here, just good, clean, careful editing by seasoned dialog editors. The Fairlight's ultimate strength came in the auto-load, auto-assembly from the digital intermaster created in the FilmEDL system. According to Matt Sawelson, to locate additional material the editors only had to source-back—that is, return to the original dailies—approximately 20% of the time. That meant that 80% of the material that went to the stage came from the auto-assemble.

"I questioned the wherewithal of taking such a big step on such a big film," Sawelson says, "but in retrospect, what John Haeny kept reinforcing is that this is the best litmus test. You rise to it and make it work." ■

Tom Kenny is a Mix associate editor.

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NEW PRODUCTS FOR FILM/VIDEO SOUND



OTARI CONCEPT I

The Concept I from Otari (Foster City, CA) is a new mid-priced, digitally controlled audio console for music and production. The unit features symmetrical dual-path module architecture with 24-track buses and 10 auxiliary buses. Both paths in each module have their own 4-band equalization and 100mm fader, and each individual path offers full dynamic fader and mute automation, allowing 64, 80 or 96 simultaneous automated mix channels with full EQ in the 32-, 40- and 48-module mainframes that are available. All audio routing is digitally controlled, allowing instant recall of setups and snapshot automation of all module routing functions. List price for the 64-channel configuration is under \$55,000.

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GRAHAM-PATTEN D/ESAM UPGRADES

New enhancements for Graham-Patten's (Grass Valley, CA) D/ESAM series of digital audio suite mixers include an audio delay function and processing loop module for the D/ESAM 800 for up to 9.9 NTSC or PAL frames of audio delay on 16 channels, and seven frames of delay for each Virtual Machine. This plug-in Processing Loop Module card also provides two pairs of AES



digital outputs and four AES input channels. Processing loops are assignable to selected inputs; all loops are post-delay and post-EQ, but pre-channel fader.

Circle #192 on Reader Service Card

VIDEO FOR PRO TOOLS

Digidesign (Menlo Park, CA) unveiled a major software upgrade to Pro Tools, its best-selling professional audio workstation. The new feature allows users to spot effects, dialog and music directly in sync with digitized video, eliminating the need for extraneous video decks and sync devices. Video can be captured with one of several third-party cards and is viewed on the Macintosh screen along with the Pro Tools window or via the video card on a separate monitor. The random-access video syncs even during audio scrubbing, for complete SMPTE sync under all conditions.

Circle #193 on Reader Service Card

STUDER TASFC-20 FREQUENCY CONVERTER

Studer/Editech (Menlo Park, CA) announced the TASFC-20 sampling frequency converter for applications such as digital layback to DVTR, transfers from DAT to CD and maintenance of digital quality during varispeed operations. The TASFC-20 adjusts to both input and output rates and automatically tracks varispeed sources and destinations. Fixed output frequencies (32, 11.1 and 18.0 kHz) can be selected with stability conforming to an AES11 Grade 2 reference signal. The 1U processor provides 22-bit processing with output redithering selectable for 16-, 18- or 20-bit digital connections; AES/EBU, S/PDIF and optical I/O ports are all provided.

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SONY WIRELESS SYNTHESIZED MICS

Sony's WRR-810A and WRR-860A wireless UHF synthesized microphone receivers offer clear-channel, low-power operation and Betacam compatibility for ENG and EFP applications. The WRR-810A receiver supports 94 selectable frequencies in the largely vacant 68 and 69 TV channel range; its specific channel plan is pre-programmed for simultaneous multichannel use.



The high-end WRR-860A has the features of the 810A and incorporates a new Surface Acoustic Wave filter for first IF stage filtering, plus space diversity reception. A large front-panel display provides self-diagnostics and indicators for RF level, A/B diversity switching and battery power. The units retail at \$1,125 and \$5,500, respectively.

by Paul Potyen

DIGITAL WORLD 1993

RECONFIGURING THE FUTURE

R

eflecting the trends in the disparate industries it was formed to promote, the fourth Digital World Conference, held at the Beverly Hilton Hotel June 23-26, revealed a significant evolution of its own. Organized by Seybold Seminars, Digital World '93 brought together some of the most powerful and creative forces in the computer, consumer electronics, telecommunications, entertainment and publishing industries to debate the future of the digital media playing field. Having attended all three previous conferences, I was immediately struck by one particular fact: I had to stand in a long registration line. The Beverly Hilton was indeed swarming with conference attendees. More than 1,000 participated in this year's conference, and almost 7,000 additional visitors spent time with exhibitors like Apple, Avid, Eastman Kodak and dozens of other organizations in the demo center. The total attendance was more than double 1992's.

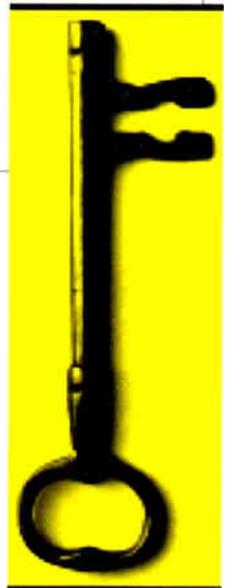
The increased attendance may be one of the most obvious manifestations of the growing awareness of the convergence that digital technology is engendering (the June *Digital Media* report listed more than 300 media alliances that have recently taken place, most of them in the last few months), but it was by no means the only one. Whereas a hot topic of discussion during the first two conferences, held in '90 and '91, was whether multimedia is a legitimate industry, significant breakthroughs in digital video technology last year

changed all that. Demos of real products, in the workshops and the demo center, shifted the discussion to other topics. This year's center stage was held by Interactive Television.

Most media strategists agree that

Most media strategists agree that CD-ROM (and, for that matter, CD-Audio) are interim vehicles for delivering digital media to the mass consumer market. Once a high-speed digital communications infrastructure is built, people will have access to information—from videos and music to a staggering array of shopping, e-mail, education and other digital products—through a “smart” box connected to their TVs and sound systems.

CD-ROM (and, for that matter, CD-Audio) are interim vehicles for delivering digital media to the mass consumer market. Once a high-speed digital communications infrastructure is built, people will have access to information—from videos and music to a staggering array of shopping, e-mail, education and other digital products—through a “smart” box connected to their TVs and sound systems. This delivery system of the future (Craig Mundie, head of Advanced



CHIP SHOTS

TURTLE BEACH

TAHITI DIGITAL AUDIO CARD

Tahiti, a 16-bit audio card for recording and playback on Windows PC computers, was scheduled to begin shipping in August from Turtle Beach Systems (York, PA). The card uses a Motorola 56001 DSP chip and a proprietary buffering system for smooth recording and playback. Tahiti is priced at \$399.

Circle #201 on Reader Service Card



E-MU SYSTEMS

SOUNDENGINE MUSIC MODULE

E-mu Systems (Scotts Valley, CA) is shipping SoundEngine, a General MIDI desktop sound module for the Macintosh platform. Designed for computer users and home hobbyists who use MIDI music file playback and composition, SoundEngine Music Module features 384 CD-quality sounds, including General MIDI level one sounds, the ability to play up to 32 different sounds simultaneously, built-in reverb, and serial-to-MIDI data conversion. The module is offered with Opcode Systems' Edit One editor/librarian



software and EZ Vision sequencing software, and is priced at \$595.

Circle #202 on Reader Service Card

COMMODORE AMIGA

SCSI CONTROLLER CARD

Commodore Business Machines Inc. (West Chester, PA) introduced the A4091 controller card for the Amiga 3000 and 4000 Series computers. The full-size auto-booting card supports up to seven SCSI devices, such as large-capacity hard drives, CD-ROM drives and tape backup devices, and is designed with an integrated 3.5-inch drive mount. A Buster chip Revision K, AmigaDOS 2.04 or higher and supported processor cards are required for use with Amiga 3000 and 4000 systems. Suggested retail price is \$379.

Circle #203 on Reader Service Card

XYMOX SYSTEMS

MYRIAD FACILITY MANAGER

Version 11.0 of Myriad Facility Manager is the latest update of Xymox Systems' (Granada Hills, CA) teleproduction facility business automation software. New features include duplication, advanced bidding and time clock modules; enhanced billing capabilities; automatic creation of labels for multiple shipping destinations; and many others.

Circle #204 on Reader Service Card

KOSS COMPUTER SPEAKERS

The HD/6 Amplified Computer Speakers are Koss Corporation's (Milwaukee, WI) solution to high-quality stereo audio playback from PCs. Retailing at \$100, the speakers feature magnetically shielded 4-inch drivers that deliver a frequency response of 50 to 20k Hz. A "sleep mode" feature senses when audio material is not present and draws less current. It can be used with a 6V power supply or with four "C" batteries. Also

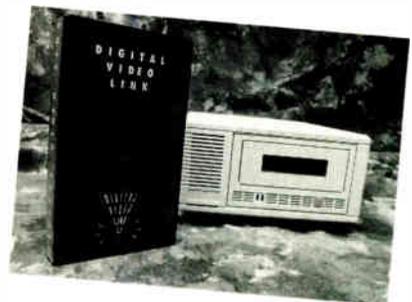
available from Koss is the COM/10 Computer Speaker Hanger, which is designed to maximize work space.

Circle #205 on Reader Service Card

PASSPORT PRODUCER PRO

Passport Designs (Half Moon Bay, CA) was scheduled to be shipping a professional version of its Producer time-based media integration software for the Macintosh by press time. Producer Pro uses the same intuitive interface as the original version but allows the user to create interactive—rather than linear—presentations. Other enhancements include control of laserdiscs and MIDI Machine Control, incorporation of path-based animation, and expanded SMPTE support. Recommended configuration of Producer Pro, which retails for \$1,495, is a Mac Quadra with 12MB of RAM.

Circle #206 on Reader Service Card



MAE SOFTWARE

DIGITAL VIDEO LINK

Digital Video Link is a software system from Mae Software (Toronto, Ontario) that allows Macintosh animators and multimedia publishers to output standard Macintosh file formats to broadcast-quality digital or analog tape. DBL works in combination with Exabyte 8mm tape drive and Abekas Digital Disk Recorders, and is capable of transferring broadcast-quality images onto a Macintosh.

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Consumer Technology at Microsoft, predicts a switched two-way interactive system to 20 million homes within five years) poses some interesting questions: Will there be agreement on a single standard? What services do people want? How do you ensure that this system is secure from theft and vandalism? How do you compensate the creators of such a widely variable blend of digital information? What role will advertising play? How do you maintain the privacy of consumers in an interactive system?

Keynote speaker John Sculley, who recently stepped down as CEO of Apple Computer to head that company's integrated media efforts, showed Apple's vision of the interface and features of the future ITV. Dubbed EZTV, the Apple design uses a modified remote controller to navigate a well-designed, intuitive interface for a complex system of services, including easy channel identification and program listings info, customizable save options for frequently used services, and a set of full-featured program record options. Also demonstrated was a working prototype of Newton, the hand-held Personal Information Manager scheduled to be available by the end of this year.

Bob Carberry of IBM's Fireworks Division presented another version of the interactive interface of the future—one that was reminiscent of Apple's Knowledge Navigator demonstration of several years ago, but with creepy, expressionless cardboard-cutout animations of people using an "In Touch" interface. The system is being considered for in-flight use on a major U.S. air carrier, with screens built into the seatbacks, allowing interpassenger game playing, letter writing, shopping services and other features.

ITV WARS

Spokesmen for Midwestern Bell parent company Ameritech and Philadelphia-based cable TV giant Comcast argued the advantages of their respective systems for carrying the new digital information to homes and industry. And Mitch Kapur, founder of Lotus Development and now a staunch advocate for freedom and fairness in electronic communications, spoke on the state of the technology and the dangers that lie ahead. His vision encompasses a hybrid network of fiber-optic cable, coaxial cable and

copper wire, developed by the private sector rather than the government. In the near future, Kapur expects the driving force to be the public's need for movies on-demand in the home. Government policy will play a major role in determining the

dependent on hardware. One of the conference's most entertaining speakers, Goldhaber controlled an interactive 3-D demo using a stock Intel-based computer and a preliminary version of ScriptX software from a 3-foot joystick. The presenta-

The June *Digital Media* report listed more than 300 media alliances that have recently taken place, an indication of the convergence that digital technology is engendering.

nature of this system, whether it's a broadcast model, which breeds mediocrity and passivity on one extreme, or a democratic, decentralized Internet-like model on the other.

ITV will be a reality very soon for some American guinea pigs. Viacom Cable is pouring its considerable resources into a project in Castro Valley, Calif., that is scheduled to be in operation sometime next year. Meanwhile, Time Warner is conducting a similar experiment with its customers in Orlando, Fla. The participating companies expect subscriber feedback from these experiments to provide valuable information in planning a nationwide system. Attendees got first-hand reports from the architects of these projects.

And in one of the more heated sessions, Kaleida Labs' Nat Goldhaber, Microsoft's Craig Mundie, Hewlett-Packard's Robert Frankenberg, and Gaston Bastiaens of Apple faced off with their strategies, predictions and intended roles for the coming generation of ITV technologies and products. Here, as in the closing session, Microsoft was attacked by the others for its plan to force some version of its Windows operating environment on the world. Frankenberg presented HP's version of a set-top box, a futuristic-looking device with a port for VHS tape-sized, plug-in modules. Modules would contain additional software to augment the basic firmware in the box, so that more complex games and products could be run.

Goldhaber, whose cross-platform ScriptX multimedia scripting language is the progeny of an agreement forged between Apple and IBM a year ago, effectively argued for an open standard that is not de-

pendent on hardware. One of the conference's most entertaining speakers, Goldhaber controlled an interactive 3-D demo using a stock Intel-based computer and a preliminary version of ScriptX software from a 3-foot joystick. The presenta-

TECHNOFILM DIRECTORS PANEL

Paramount, Warner and other Hollywood players are also jockeying for a piece of the emerging interactive industry. It remains to be seen whether the most popular content will come from the current crop of creative directors and producers, or whether a new group will sprout up from silicon-based grass roots somewhere else. In one of the most entertaining and enlightening sessions, computer effects whiz Mike Backes (*Total Recall*, *Jurassic Park*) joined film producer Gale Anne Hurd (*Aliens*, *Terminator 2: Judgment Day*), and directors James Cameron (*Terminator 1 and 2*, *The Abyss*) and John Badham (*Point of No Return*, *War Games*, *Blue Thunder*) in a discussion of how digital technology is affecting filmmaking. Backes showed how Virtus WalkThrough software is saving producers big money by creating and modifying scenes on a PC prior to rolling film. Cameron praised the

THE BYTE BEAT

flexibility of digital animation, saying that traditional stop-frame animation is "a dead art form" and predicting the next frontier to be virtual actors—a comment that provoked some lively discussion.

All participants agreed that interactive branching feature films would never be more than a spin-off product from the big-budget, linear feature film. If Robert Bell of San Francisco State's Multimedia Studies Program (see "The Byte Beat," February '93) is right in his belief that Hollywood's creative people are not going to make the transition from

conventional to interactive films in large numbers, the panelists' comments seemed to bear that out. Meanwhile the big movie companies are placing bets on interactive entertainment, and it appears that a new generation of creative people is ready to meet whatever demand arises.

IN OTHER NEWS

A session on Virtual Reality and Location-Based Entertainment included (among others) musician/composer/producer Thomas Dolby, who discussed his view of how music could be incorporated into an interactive experience by creating a set of sepa-

rate cues, which are triggered by single events and combined in a unique way as a function of a particular path through an interactive production. Dolby has formed HeadSpace, an L.A.-based company, to create music-oriented interactive products.

Other changes in the conference from previous years included the institution of "The Creative Cafe," a place for creative professionals to meet and discuss issues of interest in new and interactive media. The audience was encouraged to participate in loosely structured discussions covering such topics as "What the Creative, Business and High-Tech Communities Need to Know About Each Other" and "What Do People Want from Interactivity?" And a Saturday session was included for the first time in the Digital World Conference; the general subject was on content-related issues and provided some of the most exciting moments in the four-day event. Among the speakers were Steve Nelson, producer of an upcoming CD-ROM featuring Peter Gabriel (see "Peter Gabriel's Explora," *Mix*, July '93), and Allee Willis, award-winning songwriter, filmmaker, artist, set designer and writer.

It was once again a conference full of surprises, delights and occasional misfires, presented by an impressive lineup of heavyweights and attended by the people who are shaping the future of media production. And the audience for this conference is growing as fast as the industry itself: Having outgrown the Beverly Hilton environs, next year's Digital World Conference will move to the Los Angeles Convention Center. In addition, Seybold Seminars and Cunningham Communication Inc., under the sponsorship of Motorola, will concurrently present the Interactive Media Festival, an international competition celebrating interactive media and art.

It's clear that we are witnessing the beginning of a new, expanding industry, and there is still a lot to be sorted out. And perhaps the first order of business, according to John Papanek, editor-in-chief of Time-Life Inc., is to "get a noun, and get a verb," that will adequately describe the experience of interactive media. Suggestions anyone? ■

Paul Potyen is an associate editor of Mix and enjoys byting discs.

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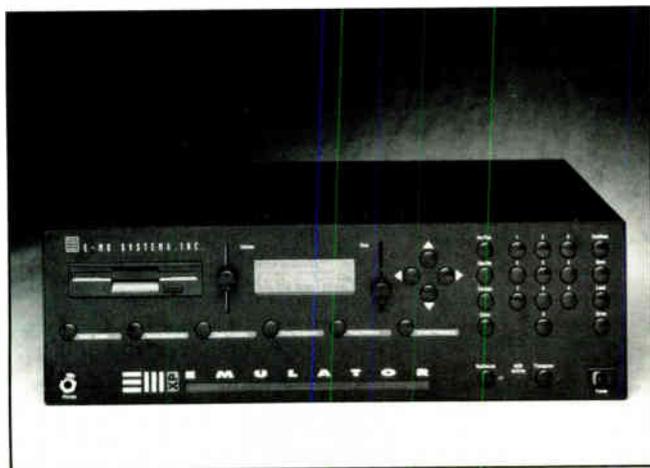
E-MU EMULATOR IIIXS

In the beginning, the Great Spirit of Sampling said, "Let there be light," and there was Fairlight. But it cost a bloody fortune. So did Synclavier. Then along came the little upstart company that heralded the age of microprocessors in musical instruments in the first place, bearing a "low-cost" sampler that was priced way down in the low five figures. That sampler was the Emulator I, and it did as much to enhance the current omnipresence and availability of sampling as Sequential Circuits' Prophet-5 did for programmable synthesizers. As the market matured, E-mu grew beyond making low-end

through innovation (like its pioneering use of Mu-law companded A/D conversion on the Emulator II) is carried on in the EIII XS with constant sampling-rate playback. The primary benefits to the user are the lack of aliasing (technically, reconstruction) artifacts when transposing over a wide ± 5 octave range, and ease of implementing digital I/O.

Our review model was an EIII XS Turbo, the "S" meaning that it was equipped with stereo sampling (the EIII XP has no analog inputs), and the "Turbo" translating to 32 MB of RAM and an onboard 120MB SCSI hard disk.

Let's take a few moments to discuss the critical issue of audio input and output facilities. (It should go without saying that the rear panel contains MIDI In, Out and Thru connectors.) The 1/2-inch TRS (balanced) analog inputs feed a 64-times over-sampling sigma-delta A/D converter,



samplers to produce high-end machines like the original Emulator III and the mid-priced Emax line.

So the Emulator III XS has a long and distinguished lineage, which shows in several of the best ways. First, its good manners: The logical and intuitive operating system has remained intact in its essential structure since the Emulator II. Such consistency means that anyone who has ever used an E-mu sampler can jump right into using the EIII XS. Second, E-mu's heritage of obtaining high sonic quality



while the 18-bit D/A converter exits through balanced XLR connectors (pin 3 hot—groan!) and balanced 1/2-inch phone jacks. The stereo submix outputs are a good addition for professionals, with each channel having its own TRS (balanced) output—no

TRS stereo jacks requiring splitters here. As with earlier Emulators, the EIIIXS automatically sums submixes into the main mix when nothing is plugged into a submix's output jacks and removes them from the main mix when there is. A headphone jack simplifies monitoring even when digital output is selected.

Digital input and output are also available on XLRs. The output is switched via software between AES/EBU and S/PDIF, but both use the XLR connectors on the back panel. This is a curious compromise: S/PDIF is referred to in the software as AES/EBU Consumer, an incorrect name for an interface that has a host of correct ones to choose from, and the XLR connectors on which it appears also violate the S/PDIF (to use the most common name) standard, which defines either RCA phono or optical connectors. Fortunately, a simple XLR-to-RCA adapter will make it easy to interface to your other S/PDIF gear, as long as you make sure the adapter uses good cable and is well-manufactured to avoid bad solder joints or other sloppiness that could cause data errors.

I can't call this or the analog XLR polarity choice a major problem. But it does reinforce the fact that, even with standards in place (there is an IEC standard defining pin 2 of an XLR connector as the hot pin, and the XLRs for the EIIIXS's AES/EBU interface are wired pin 2 hot), manufacturers will do what their circumstances dictate as convenient; so you have to stay on your toes.

Aside from analog and digital I/O, the EIIIXS also includes SCSI as a means of moving audio, primarily for communicating with mass storage devices and/or a personal computer. Starting with the former, creating and accessing sample libraries are essential to having and using a sampler. The EIIIXS reflects E-mu's awareness of this: Large hard disks (fixed and removable), CD-ROM drives and MO drives can all be strung onto the SCSI chain.

The 3.5-inch floppy disk drive on the EIIIXS's front panel is used for downloading new operating system software as it is released. There is also an RS-422 connector labeled Serial Port Digital Interface. The connection diagram does not show this hooked up to anything, and, indeed,

these ports generally are used only for the manufacturer's in-house development, so don't hold your breath looking for another usable computer interface. It probably wouldn't be as useful as SCSI, anyway.

Because the EIIIXS is compatible with the entire EIII sound library, there are more than 20 CD-ROMs to provide many gigabytes in EIII format from various manufacturers. And included with the EIIIXS is a CD-ROM with 60 banks of sounds. Since the internal 120MB disk can only store fifteen 8-megabyte banks (it comes loaded with several of the banks from the CD-ROM), it's likely that any EIIIXS seeing regular use will need external storage to supplement it. Another option is to skip the 120MB disk and invest the bucks you save toward a larger internal SCSI disk.

In addition to E-mu, other companies offering EIII CD-ROM sample disks include East-West Communications (Los Angeles), InVision (Scotts

Valley, Calif.), Northstar (Portland, Ore.) and Q Up Arts (Aptos, Calif.).

that can work with the EIIIXS. Both Passport's Alchemy and Digidesign's Sound Designer II are available for sample editing and conversion, while E-mu has released a \$295 software package for remote control and library assistance. The remote-control package is pretty much a literal representation of the front panel, except that it adds some amount of convenience in things such as pull-down menus in place of a few keystrokes. Of course, the remote-control software also makes it unnecessary to have the unit itself within arm's reach (an important consideration in heavily equipped or machine room-oriented facilities).

The library assistance aspect is extremely useful in searching through and auditioning tracks from massive sound libraries whose splendid girth can make locating the right sound a laborious task. The software can catalog any disk on the SCSI bus, then store the information in a file, allow the catalog to be searched and candidates to be auditioned.

The EIIIXS's front panel is managed from six buttons that select functional modules. Each module has about ten submodules, many of which have several pages. Only the Master Special submodule requires a third-level submodule. This is one of the big reasons the Emulator operating system is so quick and friendly. In addition to the module buttons and basics like volume and data sliders, cursor, increment/decrement and number buttons, there are a handful of dedicated function buttons. E-mu's experience with programmable instruments is evident here. A well-thought-out selection of single-function controls is provided: Load, Save, Drive Select, Enter, Escape (an unusual and welcome addition) and Audition buttons. This last is of special note, as the latest software allows this button to audition sounds directly from disk without having to load them first.

The Emulators designate a sound file as a Sample, which is processed as desired, then assigned to a keyboard zone. An entire keyboard setup of assigned samples is a preset, and a collection of presets is a bank. Samples, zones and presets can be stored and loaded independent of banks. Presets also include collective setup information like MIDI channel, mode and controller assignments.

The Sample Setup submodule of-

**The most striking
thing about the EIIIXS
is its unassailable
sound quality—clean
and about as warm as
I've heard digital
audio sound.**

Valley, Calif.), Northstar (Portland, Ore.) and Q Up Arts (Aptos, Calif.).

Connecting the EIIIXS to a personal computer or another member of the EIII family presents the somewhat sticky problem of having two masters in what is supposed to be a single-master system. Since Emulators have been hooked up to Macintoshes since the EII, E-mu has addressed this need with a special arbitration feature in the SCSI implementation. Using this "two-master" configuration requires a certain order of devices in the SCSI chain, but this is easy to accomplish, and the feature seems to work well.

Once you connect your Macintosh, there are several applications



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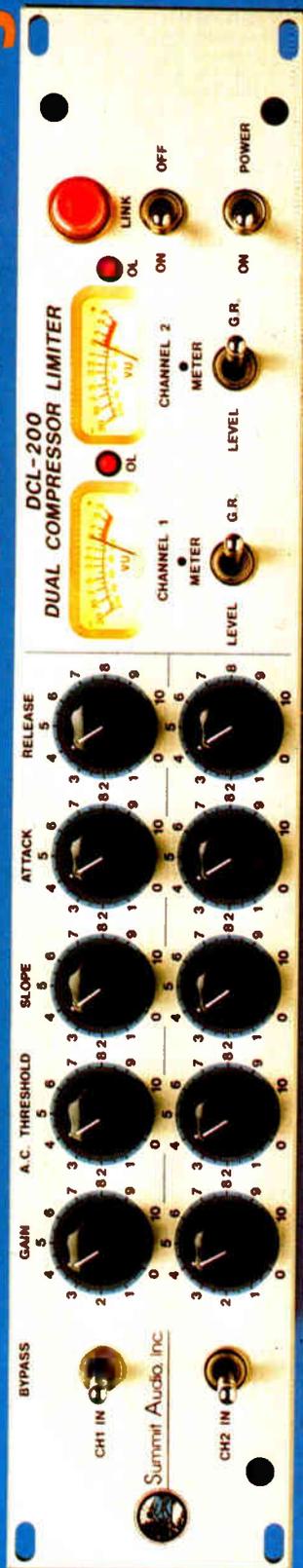
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fers the convenience of telling the EIIIXS to perform truncation, normalization or placement automatically, immediately after taking a sample. Since these are almost always the first three things one deals with after recording, automating them is a good idea. In fact, normalizing is easier to do here than in the Gain Change submodule later on, where normalizing is done by manually setting the gain to the displayed suggested value.

The EIIIXS's sample-processing power rates somewhat higher than rudimentary but well below extensive. Cut and paste, reverse playback, gain change, fade in and fade out, and sample start are pretty much the extent of it. There are a few exceptional features, though, such as the ability to paste with crossfading, and scrubbing (actually, shuttling) of samples via a pitch wheel of a MIDI controller. The latter is where the constant sampling rate yields another big win: The audio quality of the scrub feature is very high across a wide range of playback speeds; low scrub quality makes it nearly impossible to hear fine detail, which is the very reason for scrubbing in the first place. However, there is no graphic waveform editing either in the EIIIXS or the remote software; you'll have to use Alchemy or Sound Designer II for that.

Unlike earlier generations, the EIIIXS has all-digital "resonant VCFs" and "VCAs" (of course, they are no longer voltage-controlled, but the term is familiar to most users). These sound quite good, with no perceivable artifacts from filter sweeps. Modulation capabilities are adequate. Five-stage envelopes are workable (although more would be useful in cases of sustained notes made up of several layered, enveloped samples), but I really wish there were more than one LFO per channel.

Sampling with the EIIIXS couldn't get much simpler: Select the source and set levels with the "VU" meters in the Sample Setup submodule, along with any of the automatic options, then arm or force sampling. If you wish to take another sample using the same setup parameters, it is not necessary to set them again, just deactivate and reactivate the Sample Management module (to indicate that you want to keep the pre-

vious sample and make a new one), and arm sampling. This makes it very fast to make multiple samples in succession.

After recording, the sample can be assigned with Place Sample by defining it as primary or secondary, the key on which the sample will play at original pitch, then the high and low limits of the zone. Assigning a sample as primary or secondary is the simplest method of setting up crossfading or switching, which can be done by velocity or position. Then processing is applied as needed and the process repeated until you have a preset you like. Stack mode lets several presets be placed on a single key. Along with assigning primary and secondary samples, this is the easiest way to layer sounds on the EIIIXS.

Multitimbral operation is something one expects from most electronic instruments nowadays, and the EIIIXS achieves this with Multimode, in which a separate Preset can be assigned to each MIDI channel. The EIIIXS has 32 polyphonic voices, meaning that up to 32 samples can sound at one time. However, assigning primary and secondary samples uses up two channels, and stacking uses even more. In many cases, the channel limitation is not a big problem, but it is easier than you think to gobble up 32 channels if you layer samples and presets and then switch on Multimode. You can use MIDI Overflow mode to spill extra voice requests to another EIIIXS or other instrument, however.

When working in Multimode, the process of going through each preset to adjust levels relative to those in other MIDI channels would be tedious. However, a MIDI Mix function simplifies this by collecting level, pan and output channel assignments for each MIDI channel into one screen that can override settings in other areas. It is also possible to control the level and pan settings from an external MIDI fader box or other controller.

I used the EIIIXS for flying some instrumental parts around in a recording, sequencing a demo project and just plain fun. On the latter, I sampled myself banging on pots, pans and other household items (there actually was a bank of this type of sound on one of the CD-ROMs), then played them back from an Octapad. The most striking thing in my explo-

Jon Anderson says "Yes" to Audio-Technica 40-Series microphones.

Jon Anderson is one of the most innovative of today's leading musicians. Co-creator of the seminal rock group Yes, his music has proven both popular and on the leading edge of musical thought. His current project is *Power of Silence*, an album for Geffen Records recorded primarily at his fully-equipped personal studio.

For this project Jon and his engineer Ron Wasserman used both the AT4033 and AT4051 cardioid microphones. Both were quite impressed by their ease of use. Ron Wasserman noted that Jon required almost no EQ to get exactly the sound he wanted, and that setup was much faster than with other studio microphones. In fact he said it almost seemed that the AT4033 would "automatically adjust" to whatever the situation required without "boominess" or need for compression.

This capability fit right in with Jon Anderson's desire to work very quickly, and to avoid talent "burnout" during

repeated tests and takes. Jon has used many vocal mikes in his career, but he found the AT4033 remarkably clean despite high sound pressure levels and noted that "I could really get on it!" Ron also remarked on the amazing "clarity" and "unbelievably clean high end" of the AT4033 compared to his previous favorite microphones.

The microphones were used for many tracks including percussion, reeds, harp, acoustic guitar, and even a Bosendorfer grand piano. It was the consistently accurate response of the A-T 40-Series microphones to every challenge that made them so useful to both Jon Anderson and Ron Wasserman.

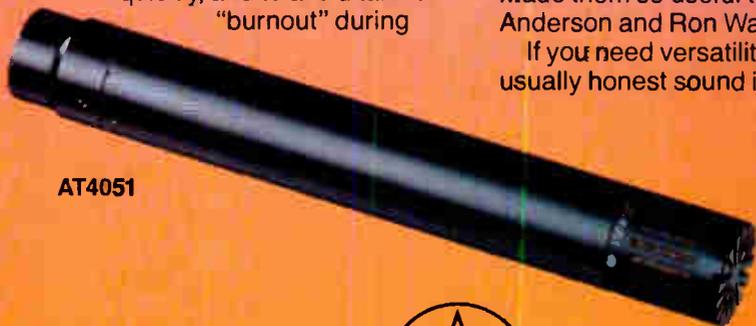
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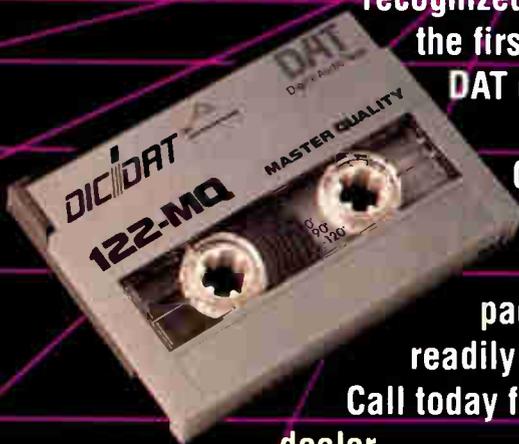
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rations was the EIIIXS's unassailable audio quality. This thing is not only clean, but it's about as warm as I've heard digital audio sound. I also enjoyed the luxury of 32 MB of RAM. It allowed me to happily bash in the kitchen for well over a minute (I had memory to go longer but didn't need to), then extract individual clanks. You just can't have too much memory (even if the name does read "E-three-excess").

The lack of sophisticated processing was not a major problem during my evaluation period, but I would miss it over the long run. Of course, E-mu may decide to add more functions in the future. In fact, by the time you read this the EIIIXS will be able to read Akai S1000/1100 disks (including both samples and *all* parameter data via SCSI). Although the manual seems complete and well-organized, I did encounter a few problems locating specific information. The Table of Contents is organized primarily by module and submodule, so one must refer to the index to find a topic. I was surprised that some topics as basic as sample rate had no entry in the index. What's more, there was apparently a last-minute revision to some of the text that didn't make it to the TOC and index: A number of page references were off by a few pages.

Priced from \$3,995 (the top-end model we tested, with sampling, 32 MB RAM and internal 120MB HDD is \$6,995), the EIIIXS provides extremely high audio quality, ease of use, flexible storage capabilities and a large existing library. It falls a bit shy of the features one would hope to find on a top-shelf sampler, but that can be overcome if you have sample-editing software or a hard disk recording system that offers those functions. If having all the bells and whistles is what you're looking for, the EIIIXS may not fulfill all your expectations, but if you need easy, beautiful-sounding sampling, and lots of it, you couldn't do any better than the EIIIXS.

E-mu Systems Inc.; 1600 Green Hills Rd., Scotts Valley, CA 95066; (408) 438-1921. ■

Larry the O performs, produces, engineers, and writes for his company, Toys in The Attic, and makes the best cafe mochas in San Francisco.



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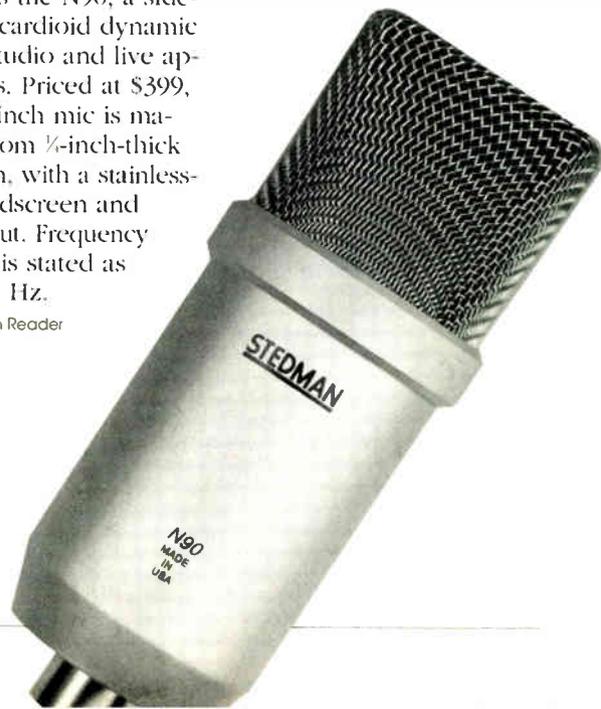
Solo Electronics (Hayward, CA) debuts the H500, a three-way, mid-field studio monitor priced at \$2,480 per pair. The H500s combine two 8-inch polypropylene bass drivers, 1-inch titanium tweeter, 2-inch titanium-diaphragm compression driver and wide-dispersion exponential wood horn in a compact 24x15x17-inch, 70-pound ported enclosure. Inside the cherry-wood-veneer cabinet is a 14-component crossover with Cardas multigauge internal wiring, Solen capacitors, Lynk resistors and air core inductors. Specs include a sensitivity of 96 dB (1W/1m) and a frequency response of 45-27k Hz (± 3 dB).

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STEDMAN N90 MIC

Stedman Corp. (Richland, MD) offers the N90, a side-address, cardioid dynamic mic for studio and live applications. Priced at \$399, the 5.75-inch mic is machined from $\frac{1}{8}$ -inch-thick aluminum, with a stainless-steel windscreen and XLR output. Frequency response is stated as 35 to 19k Hz.

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NTI EQUALIZERS

Night Technologies International (Encino, CA) unveiled a line of analog equalizers that are said to combine high transient response, negligible phase shift and low-noise performance. Not intended to replace parametric or other specialized units, the NTI equalizers are designed for general applications where a change in the overall sound is required. A series of wide, overlapping bands are controlled in steps ranging from 0.25 to 3.0 dB per step, allowing radical or minute tonal changes. Three versions are available: 1.5x7-inch console retrofit modules; a 7-inch-tall rack assembly housing up to eight EQ modules, with front $\frac{1}{2}$ -inch and TT connectors and rear XLRs; and a remote power supply that powers up to 24 modules in a desktop configuration.

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SPECTRAL PRISMA

Prisma™ from Spectral Synthesis (Woodinville, WA) is a disk-based multi-track digital audio system running under Windows using a single-board AT peripheral with Spectral's Prismatic™ software. The system allows recording and/or playback of up to 12 tracks of simultaneous audio with real-time, digital domain mixing, EQ, patching, and SMPTE sync to video, black burst or any LTC source. Priced from \$3,995, Prisma uses dual 24-bit, 40MHz DSP chips and communicates digitally in 2, 4 or 8 channels to AES/EBU, S/PDIF and Spectral-compatible devices. Minimum system requirement is a 386-25 CPU with 4MB RAM; a 486-33 is recommended to support animation in the Windows environment. Four- and 8-channel A/D and D/A converters are optional.

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3M CD-RECORDABLE DISCS

3M (St. Paul, MN) debuts 63- and 74-minute discs for Orange Book II CD recorders. Each disc is labeled for identification without damaging the media; optional custom-labeling services inscribe company logos, text and graphics in up to five different color schemes. Storage capacities are 550 MB and 650 MB, respectively.

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HANNA-BARBERA SFX

Sound Ideas (Richmond Hill, Ontario) offers the Hanna-Barbera Library, a four-CD set of sound effects from legendary cartoon shows such as *The Flintstones*, *Huckleberry Hound*, *The Jetsons*, *The Smurfs* and more. The 2,200 sounds in the collection were digitally remastered with state-of-the-art noise reduction techniques.

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GOLD LINE MULTI-SEND

Designed for recording or live stage use is the Multi-Send personal mix and headphone system from Gold Line (West Redding, CT). The device has three inputs and three "thru" outputs, so any incoming signals are passed through unaffected to any other



units in the chain. This offers each performer control of a personal mix, while leaving the monitor/cue mix unchanged. Multi-Send has selectable mono and stereo modes with balanced or unbalanced operation, along with two headphone outputs and a 1/4-inch line level out for feeding stage monitors. Retail is \$349.

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TASCAM CD-401MKII

Tascam (Montebello, CA) introduces the CD-401MKII, which adds "cue to music" and pitch control to the current CD-401 rack-mount CD player. As with the original unit, the CD-401MKII features fader start, auto cue, pitch control, digital output and XLR balanced and RCA unbalanced outputs. Retail is \$849.

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SAMSON UHF SYNTH SERIES

This new multichannel wireless mic system from Samson (Hicksville, NY) offers an RF level display so users can select the clearest frequency in crowded RF environments, with 74 frequencies offered (11 available for simultaneous use). The units are available in single- and dual-receiver formats and feature dbx noise reduction; a variety of hand-held, lavalier and headset mics are available.

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MARANTZ CD-R NEWS

Marantz Professional (Aurora, IL) has reduced the retail price of its CDR-600 compact disc recorder to \$3,500. A new model, the \$4,000 CDR-610, adds a hard-wired remote control, true AES/EBU digital I/O, balanced analog I/O and a cascade function for using multiple units in a duplication chain. Current CDR-600 owners can upgrade their machines to CDR-610 for \$400, and Marantz is now offering 63-minute CD blanks to registered CDR-600/CDR-610 owners for \$15 per disc.

Circle #235 on Reader Service Card

SOUND TRAX PC-CONNECTION

From Sound Trax Studios (Burbank, CA) comes PC-Connection, a hardware/software system that offers the ability to control Fostex or Alesis ADAT digital recorders via an IBM-compatible computer. When combined with a 386 (or higher) computer and a MIDI/SMPTE card (Music Quest's low-cost MSQ-32 is recommended), the system duplicates many of the Alesis BRC functions and adds features such as CMX list auto assembly; onscreen listing of cues, punch-points and autolocation addresses; sound effects and music library archiving; 8255-based editing and control system ports; and a port for connecting Fostex synchronizers, such as the 4035. A Mac version is planned for later this year.

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SYSTEM 4 AUTOMATION

Distributed by Trident USA (Tarzana, CA) is System 4, a high-performance console automation system for new installations or retrofit applications. System 4 uses a rack-mount processor and IBM-compatible computer with high-resolution VGA graphics to control up to 48 channels (96 channels optional) with your choice of VCAs or Penny & Giles moving faders. Features include 4,096-step fader resolution, independent editing and programming of mutes, SMPTE/VITC reader, integrated tape machine autolocator, and extensive onscreen merge/edit/cut/paste editing of the automation data.

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SAMSON HEADPHONE AMP

Priced at \$169, the Q5 from Samson Technologies (Hicksville, NY) is a 5-output stereo headphone amp for broadcast or studio use. Each of the five independent amplifiers produces 350 mW of power (at 160 ohms), and the unit features individual and master volume controls, mono/stereo switching and a stereo link for daisy-chaining multiple Q5 units.

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ALESIS MASTER RACK

Alesis (Los Angeles) debuts the Master Studio Rack Case, a 32-inch-high rack with casters and a slant front. Available accessories include a five-rack-space shelf designed to hold up to 14 VHS tapes (such as ADAT master tapes), a four-space locking security cover with hinged lid and a lockable, four-space rack "vault" for holding accessories, tools, etc.

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HHB DAT TAPE

New from HHB (distributed by Independent Audio of Portland, ME) is the HHB DAT Series of studio and broadcast DAT tapes in 15-, 30-, 48-, 62-, 92- and 122-minute lengths. Housed in a distinctive purple shell, the tapes include an adhesive labeling system that conforms to APRS and SPARS guidelines and features a rated 15-year minimum archive life.

Circle #240 on Reader Service Card



SONY DATSTATION

Sony Pro Audio (Park Ridge, NJ) introduced the PCM-E7700 DATStation, a transportable, dual-deck system for DAT editing applications. The system—which can also double as a DAT duplicator—features nondestructive editing, a choice of manual editing or automated assembly operations from an imported edit decision list, an electro-luminescent status screen, analog and digital inputs and digital level adjustment. Unlike workstations, the PCM-E7700 requires no real-time uploading or downloading, and projects can be interrupted or resumed at any time.



PURKHEISER TUBE PREAMP/COMPRESSOR

From Purkheiser Electronics (Akron, OH) comes the CA-1, a single-channel mic preamp/compressor featuring a hand-wired vacuum tube (12AX7/7025) design, +48VDC phantom power, selectable 2:1/3:1/4:1 compression ratios, -20dB pad,

line/mic input switching and passive highpass filtering. The two-rack-space unit also has a large, illuminated VU meter that can be switched to display input, output or compression. Price is \$1,499.

Circle #241 on Reader Service Card

HOT OFF THE SHELF

Vintage Sound released **Johnny C's Vintage and Custom Snare Samples**, an audio CD containing 797 samples from 33 snare drums built between 1922 and 1992. (505) 523-0337... Gepeco expanded its line of breakout boxes, cable assemblies, stage boxes and custom panels with two-space, **aluminum rack-mount boxes**. (312) 733-9555 or (800) 966-0069... Now available is a full line of high-quality **Neutrik audio transformers** for line-level, audio input and microphone applications, with PCB and free-wire types available. Mu-metal shielding is optional. (908) 901-9488... Sorbothane Inc., in conjunction with Audio Quest, is marketing **anti-vibration mounts for audio equipment**. The small, circular isolators fit under the feet of most audio gear (CD players, tape

machines, turntables, etc.) and dissipate unwanted vibrations at the source. (216) 678-9444... The CS5389 from Crystal Semiconductor is a **stereo 18-bit delta-sigma analog-to-digital converter chip** in a 28-pin DIP package, with 107 dB S/N performance. (512) 445-7222... The **Atlas/Soundolier Performer Series TL34-3E** is a black-finished, three-piece tripod microphone stand with a height-adjustment range from 26 to 63 inches, which is ideal for seated performers or low applications such as miking drums or guitar amps. Available at your dealer or call (800) 876-7337... Tektronix's new brochure "**EMC Management Solutions—Affordable and Effective**" outlines EMI regulations worldwide, sources and nature of EMI signals, with specific information on measurement solutions. For a free copy, call (800) 426-2200, ext. 181. ■



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by George Petersen

PRODUCT

CRITIQUES AND COMMENTS

MICROTECH GEFELL UM92S TUBE MICROPHONE

A couple years ago, the pro audio community rediscovered the microphones from East German manufacturer Microtech Gefell. Nicknamed the “Perestroika microphone,” the Microtech UM70 combined an M7 large-diaphragm, dual-membrane capsule (similar to that used on the classic Neumann U47) with a FET input stage. Priced from \$1,150, the UM70 quickly garnered a large and appreciative audience of studio and broadcast users throughout the western world.

The designers at Microtech Gefell were proud of the UM70’s low-noise, hybrid amplifier design and were somewhat surprised when G Prime—the mic’s U.S. distributors—asked the company to build a microphone based on vacuum tube electronics. After all, Gefell had discontinued its line of tube mics a few years ago in favor of its higher-performance solid-state designs. But the Americans persisted, with the result being the UM92S, a three-pattern design that combines the M7 capsule with triode-based electronics.

Microtech Gefell has been building the M7 capsule continuously since 1943. Each capsule is meticulously assembled using a 10µm to 12µm PVC diaphragm that is individually cast by hand on a glass plate and later attached to the backplate with lacquer. The backplate has 153 hand-drilled holes. It’s a labor-intensive process that is modernized only by the state-of-the-art machinery used for the process of gold-sputtering the diaphragm.

The construction is absolutely top-notch throughout. The electronics within the mic are cleanly laid out, and little bits of attention to detail, such as the gold-plated Tuchel connectors and the shock-absorbing ring around the UM92S’ (American made!) 6AB4/EC92 triode tube, are indica-

tions that the mic is designed for years (if not decades) of use. A clever piece of engineering is a small piece of clear tubing that fits over the tip of the tube at one end and a tiny screw at the other, to ensure that the



tube stays securely in place. It’s simple—yet elegant—and does the job.

The UM92S system includes the mic, removeable foam windscreen, power supply, 10-meter (33-foot) mic-to-PS cable with 7-pin Tuchel con-

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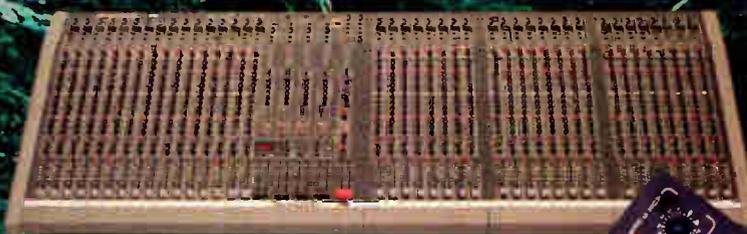
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nectors and EA 92 suspension. Beautifully constructed of welded brass, the latter provides both effective isolation from vibration as well as an extremely secure means of supporting the mic. One nice touch is the fact that the mic screws into the shockmount making the dreaded "mic-drops-to-floor" scenario a virtual impossibility. The entire package is priced at \$2,495, with a flightcase as the only available option. By the way, the UM92S is available in matte black or satin nickel finishes.

Setup is easy. The 10-meter cable connects the 7.5-inch mic body to the power supply, which has a standard 3-pin XLR-M output jack. A detachable IEC cable connects the power supply to any 100-240 VAC outlet. The power supply's front panel has a three-position switch for selecting a cardioid, figure-8 or omnidirectional pickup pattern. Unless your facility just happens to have 7-pin Tuchel snakes from the studio to the control room, you'll probably have to forget about remotely controlling mic patterns while you monitor in the control room. However, I found the remote control to be quite useful for changing from cardioid to omni patterns when the UM92S was used as a distance mic, suspended 15 feet in the air. You can't do that with a U47!

With the mic set up, the next question is how does the mic sound? The UM92S sounds very similar to the UM70—although certainly warmer and a bit smoother—yet with the same rising HF presence peaks that can help improve the intelligibility of a lead vocal or bring a nice breathy quality to background vocals. The mic has a pronounced proximity boost in the cardioid position. Unlike the UM70, the UM92S has no onboard LF roll-off. (No real loss: to my ears, the UM70's -10 dB at 60Hz roll-off is too

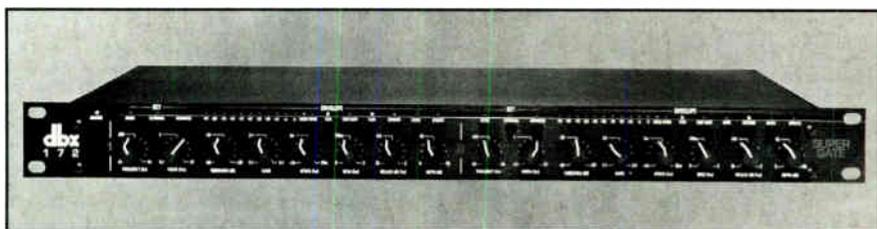
powerful breath pops.

Over a period of months, I used the UM92S on a variety of sessions: pop and rock vocals, instruments and radio voice-overs. As with all mics, the UM92S's suitability on any particular gig depended on the vocalist. The first test was a male rock/funk vocalist who was very loud and had no vocal technique whatsoever. The UM92S didn't fit the bill on this guy, but an EV RE20 was perfect. Other sessions with the UM92S were far more successful, and I eventually discovered that female vocalists sounded better in the omni position, while male singers (and voice-over talent of both sexes) preferred the cardioid pattern.

On high-SPL instruments—such as sax and solo trumpet—it's best to give a reasonable amount of distance between the mic and the instrument, as the mic handles a maximum SPL in the 120dB range and has no attenuating pad. Besides, horns always sound best when you can avoid the mic-inside-bell approach and give them some air. Having experienced the UM92S' rounded, smooth effect on solo horns, I can surmise that a pair of these mics would be ideal for horn or string ensembles. These sometimes tend toward harshness, and a pair of UM92Ss would be just the thing to even out some of the rough edges.

Overall, the Microtech Gefell UM92S is a wonderful combination of old-world design combined with a state-of-the-art application of vacuum tube technology. The finish and construction of the mic, shock-mount and electronics are first-rate, and at \$2,495, the package is reasonable when compared to the prices commanded by most vintage models. Anyone seeking a versatile, high-performance studio mic should check this one out.

Distributed by G Prime Limited, 1790 Broadway, Eighth Floor, New York, NY, 10019; (212) 765-3415.



extreme in many studio applications.) The removable foam wind-screen included with the UM92S is effective at silencing all but the most

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the company is well-known for its noise reduction systems, the dbx name has also become synonymous with quality dynamics processors, particularly with units such as the 165A compressor limiter, which for years has been a staple of studio and touring racks worldwide. A more recent offering—unveiled at last year's AES convention in San Francisco—is the dbx 172 SuperGate, which brings a host of innovative approaches to the science of noise gating.

Housed in a single-rackspace chassis, the 172 is a dual mono (and stereo linkable) unit providing gating, downward expansion or ducking functions. Inputs and outputs are electronically balanced +24dBu XLR-type, while key inputs are balanced 1/4-inch TRS jacks (unbalanced operation is also possible). Each channel includes independent threshold, ratio, attack, hold, release and depth (0 to 90 dB) controls, along with 13-segment LED gain reduction meter, 24dB/octave voltage controlled key filter with frequency and bandwidth controls, key monitor, hard-wired bypass and TCM™ switch.

The latter is an acronym for Transient Capture Mode™ an analog circuit that inserts a negligible 300µs (0.3-millisecond) delay into the signal path, thus allowing the 172's detector to anticipate the arrival of a transient signal. Under TCM control, the 172 can open the gate "before" the audio arrives, thus providing instantaneous attack times without chopping the leading edge of transients.

The 172 also offers a unique One-Shot™ mode, where the amount of time the gate stays open (from zero to three seconds, as defined by the Hold control) actually begins on the rising edge of the signal when the input level goes above threshold and will stay open for that preset amount of hold time, unless the signal lasts longer than the hold time. OneShot allows the user to create precise "windows" for transients such as drum hits, regardless of changes in loudness.

The unit has an internal power supply with detachable AC cord and can be switched to operate at 115 or 230 VAC, which should be appreciated by the traveling engineer. Also on the back panel is a small sliding ground lift switch, which could very easily be bumped into the wrong po-

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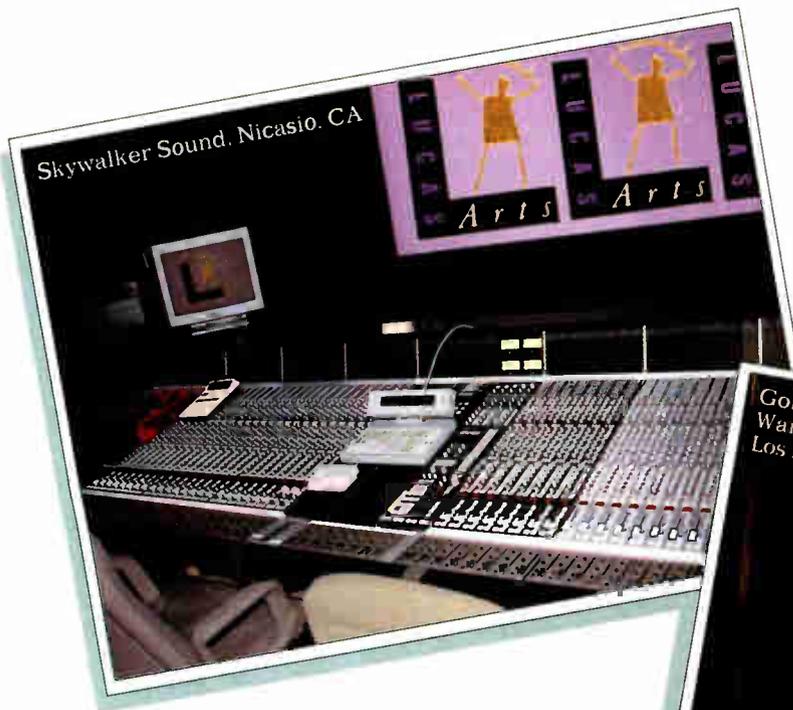
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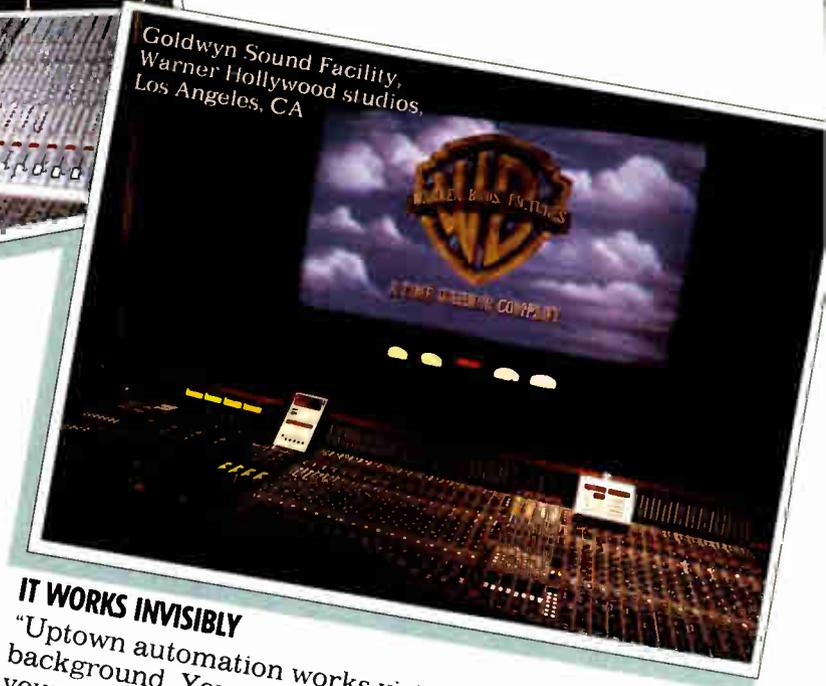


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sition, especially if you're reaching into the back of a rack to make connections (however, a small piece of gaffer's tape cured the problem). There is no AC power switch, although from the looks of the packed front panel it appears that dbx simply ran out of room and had to forego this particular feature.

Despite the unit's complexity, the 172 is fairly straightforward in operation: The front panel is cleanly laid out, and ten status LEDs on each channel let you know what's happening at a glance.

One of my first tests for the 172 was cleaning up headphone bleed on some vocal tracks. On this particular project, the producer wanted an a capella mix of one of the choruses in a hard rock song. Unfortunately, we were already at the mix stage, and the vocals were originally tracked using nonsealed headphones, which bled into the vocal mic. I like using such open air headphones, because they provide a more natural sound to the vocalist, and when mixing, any small amount of bleed just blends in with the rest of the track.

In this case, the TCM function really saved the day, yielding silence between phrases without lopping off the beginnings of the words. The gating effect is about as close to instantaneous as one could wish for, and the delay is imperceptible—that is, unless a 0.0003-second delay (the equivalent of a 1/6400-note anticipation) is musically significant to your compositions.

On the usual studio gating or expansion chores, such as cleaning up guitar amp and bass buzzes, isolating tom-toms, etc., the 172 proved to be more than able. Although ducking is not an essential operation in most studios, I do a lot of voice-over and radio spot production and appreciated the 172's smooth action in this area.

Operation is simple, and after a few minutes, you'll be able to pull off all kinds of slick tricks. Perhaps the coolest of these involve the 172's key filters, which use a 4-pole (24dB/octave design). Such filters allow narrow-band (half-octave) control, and with the key filters' sweepable 60 to 6k Hz center-frequency range, the combination is versatile enough to handle almost any frequency-selective functions. Of course, if you need more radical key shaping you can al-

ways use any other equalizer before the key input. Taking the hi-hat bleed out of the snare track—or vice versa—is no problem, and the same applies to handling the old cymbals-into-tom-mics dilemma. When the key filter function is combined with the OneShot and TCM features, the 172 really shines.

The user manual is well-written and complete, including full operation instructions, hints on typical applications and three pages of schematics. Documentation is one area where manufacturers often cut corners, but dbx has done a fine job

with the 172's manual.

The 172's audio performance was exemplary, with a 20 to 40kHz frequency response that measured flat to within ± 0.2 dB, thus exceeding its stated ± 0.5 20 to 20k Hz spec by a wide margin. Total harmonic distortion (at 1 kHz) measured out to be 0.025%, insignificantly higher than the unit's 0.02% 1kHz THD specification. Overall, the 172 seemed to be transparent, with virtually no pumping or breathing artifacts when the unit is properly set up.

The 172 is a winner all around. Though its \$869 price is obviously a

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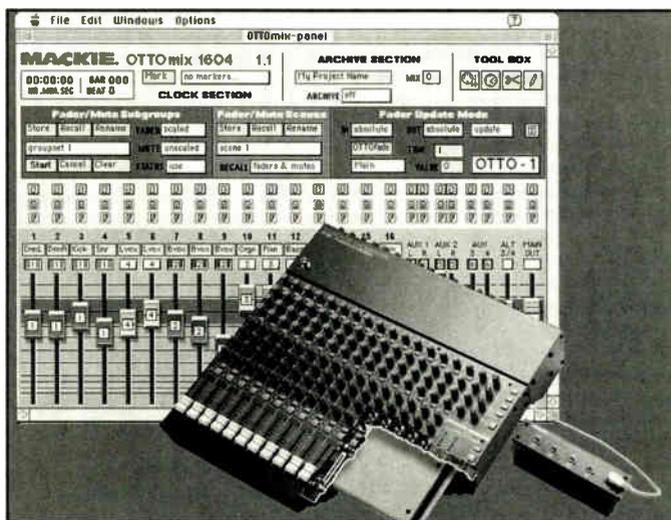
AUDITIONS

lot more than the typical \$400 quad gates that everybody seems to offer, the 172's combination of instantaneous gating, versatile features and stellar audio specs should appeal to the serious recording, sound reinforcement or broadcast production professional.

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sequencer), and Snapshot (used to save the current VCA levels into on-board nonvolatile memory recalled by MIDI patch change signals 0 to 79). Each has an LED indicator. A one-space rack-mount adapter is included.

Macintosh users will also find OTTOmix, a Mac program that provides a "virtual mixer" on the computer screen and quite sophisticated time code-based automation of the gain cell. In order to use the program, you will need a MIDI interface for the Mac,



The OTTO-1604 system includes Macintosh control software and an electronic package that mounts inside the mixer.

MACKIE DESIGNS OTTO-1604 AUTOMATION by Dave Tosti-Lane

The Mackie Designs CR-1604 mixer has proven to be a solid performer in our theater effects studio at Cornish College in Seattle. During the last year, I've come to rely on the quality of the unit and have been intrigued with the idea of integrating its control with our computer audio applications.

The OTTO-1604 is a hardware module for the CR-1604 comprising a Voltage Controlled Amplifier array (called a "gain cell") that assumes control of the fader level for all 16 input channels, the master output level, the four auxiliary returns and the alt. $\frac{3}{4}$ output. The gain cell connects via a supplied cable and mini-DIN connectors to an External Control Module for connection to a MIDI interface.

In addition to the MIDI in, out and thru connections, the external module includes four momentary contact switches: Bypass (disengages the OTTO from the 1604), Mute (mutes all of the VCAs in the unit), Learn (used to "teach" the unit how to "understand" the control signals from a

and to use the automation, you'll need to provide either MIDI time code or MIDI beat clocks for sync.

Mackie provides a very complete instruction manual, and the hardware modifications are a breeze for just about anyone who can distinguish a screwdriver from an orange. Total time required for the job is about 35 minutes.

Installing the software on a Mac adds folders containing the OTTOmix program, a Test Projects folder with sample projects (a Project is the master file designation for OTTOmix automation data) and Apple's MIDI Manager for using OTTO with Mac-based sequencers. When connecting to an external MIDI Time Code source, such as the Midiman Mac Syncman I used, or working from a tape striped with time code, you can simply connect your MIDI device to the Mac's printer or modem ports and configure OTTOmix to read the ports directly.

Some notes on computer hardware: It's possible to use a basic Mac (such as an LC or a Classic II) with OTTO to build snapshot libraries of mixer settings, which are exported to the memory of the external unit for

recall (triggered by an external MIDI controller), but real-time automation using these machines is not really practical. I tested the OTTOmix on a Mac IIci, which worked well with a single OTTO (the software can control up to three mixers) for both snapshot recording and for real-time automation. The biggest drawback with the IIci is slow screen redraw, and the usual solutions to improve graphics speed will be effective with OTTOmix. Mackie has included a way to set the display into a hybrid color/B&W display so that the main faders display in black and white while everything else remains in color. For heavy use with multiple OTTOs, a faster machine is highly recommended.

While the OTTOmix software is provided only for the Mac, OTTO is not limited to the Macintosh platform, as system control is via MIDI continuous controllers and note on/off, and patch change commands for snapshot recall. Otto can be controlled by any MIDI sequencer software on any platform. Development kits are in the hands of many sequencer vendors, and given the popularity of the Mackie product line, I rather expect to see the OTTO directly supported by most.

Operation of OTTO and OTTOmix is intuitive. The external module connects to the mixer using a supplied mini-DIN cable, and a single MIDI cord connects the module's MIDI in to the MIDI out of your interface device. On the CR-1604, all 16 input faders, the left and right main output faders and the aux. return controls are placed in the detented unity position. Start the OTTOmix software, and the 1604 will be under computer control. You can override computer control by pressing the external unit's Bypass button; an LED lights until you press the Bypass button again to restore control. The Mute button operates in a similar fashion to mute the entire console—its LED glows steadily if activated by the Hardware button and blinks if the software activates a channel mute.

A virtual switch on the screen puts the OTTOmix software in Update mode, and as soon as you feed time code to the MIDI port, the software begins recording the mixer operations. It is important to note that these mixer changes are made on-screen, as OTTOmix has no way of recording physical moves of the

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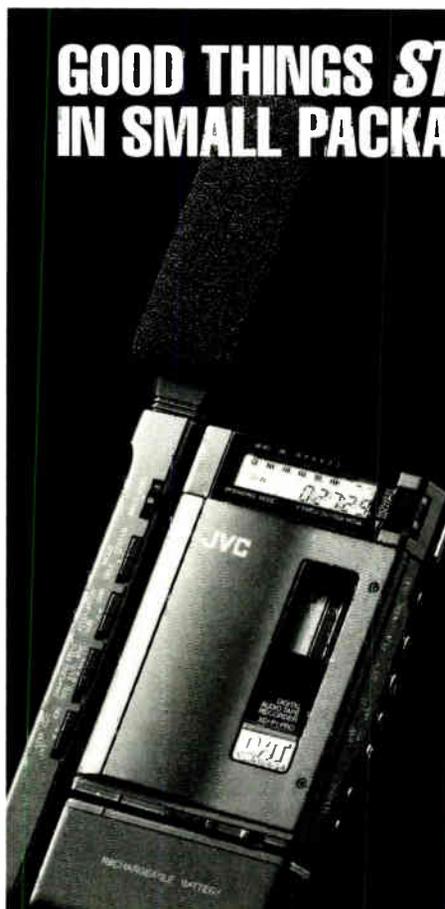
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1604's faders, which must remain at the unity position for OTTO to work accurately. Though the 1604 faders are not involved in sending control data to OTTO, they are still fully functional and can be used to override any automation level except full off/mute.

I liked OTTOmix's ability to combine faders in any number of subgroups so any number of faders can operate as one, with fader subgroups recorded and recalled as needed. Mutes can also be grouped, or used

in a unique Solo mode, where selecting any of the grouped channels mutes all other channels in that group. The operation of the mutes is completely pop-free.

When you play back the tape with time code, OTTOmix syncs immediately to begin playing back the automation. If you engage Touch Record Faders and Touch Record Mutes, you can use the mouse to make changes that are recorded in the session. If you wish, OTTOmix can keep archive copies of each pass, so you can recall that "almost perfect" take you did two hours ago. A Rehearse

mode allows auditioning changes before actually committing them to a session.

My impressions of the OTTO-1604 combination were almost entirely positive, and I found the folks at Mackie Designs extremely receptive to suggestions and comments. While I was doing the evaluation, I noticed one OTTO user who posted a query about a software problem to the very responsive Mackie section on the CompuServe MIDIFORUM. In less than 24 hours, not only was a fix e-mailed to the user, but an announcement was made on the public forum with a patch available to all users. The Mackie team exhibits a clear sense of pride in craftsmanship at every level.

In listening tests, I found the unit to be squeaky clean—I could identify no noise added by any of the actions of the gain cell. If anything, the automated fades seemed smoother than manual ones, and the addition of automated timed fades was a welcome touch.

One small quibble is that the unit's main stereo output is not split for separate left and right control. This wouldn't be a serious problem in a recording situation, but in live playback, such as theater applications, the inability to separately control the left and right channel can be a liability. It would be nice to add VCA control for each channel's aux sends, but by the time you add 64 additional VCAs (4x16), the cost of the OTTO would more than double. If you also insisted on automated EQ and panpots, the thing would require over 200 VCAs, which would price it well out of reach of its primary market.

With a retail price of \$849 (a 1604 mixer with OTTO installed is \$1,998), OTTO is certain to enhance Mackie Designs' already exceptional reputation of high-quality gear at a remarkable price point. Given the added functionality, it's hard to imagine buying a 1604 today without OTTO, but the ease of installation will allow the budget-conscious to phase in the automation (OTTOmation?) of their facility.

Mackie Designs, 20205 144th Avenue NE, Woodinville, WA, 98072; (800) 258-6883, (206) 487-4333. ■

Dave Tosti-Lane is a theatrical sound designer and the chair of the Performance Production Department at Cornish College of the Arts in Seattle.

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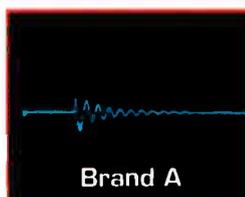
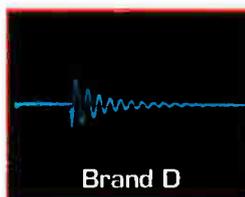
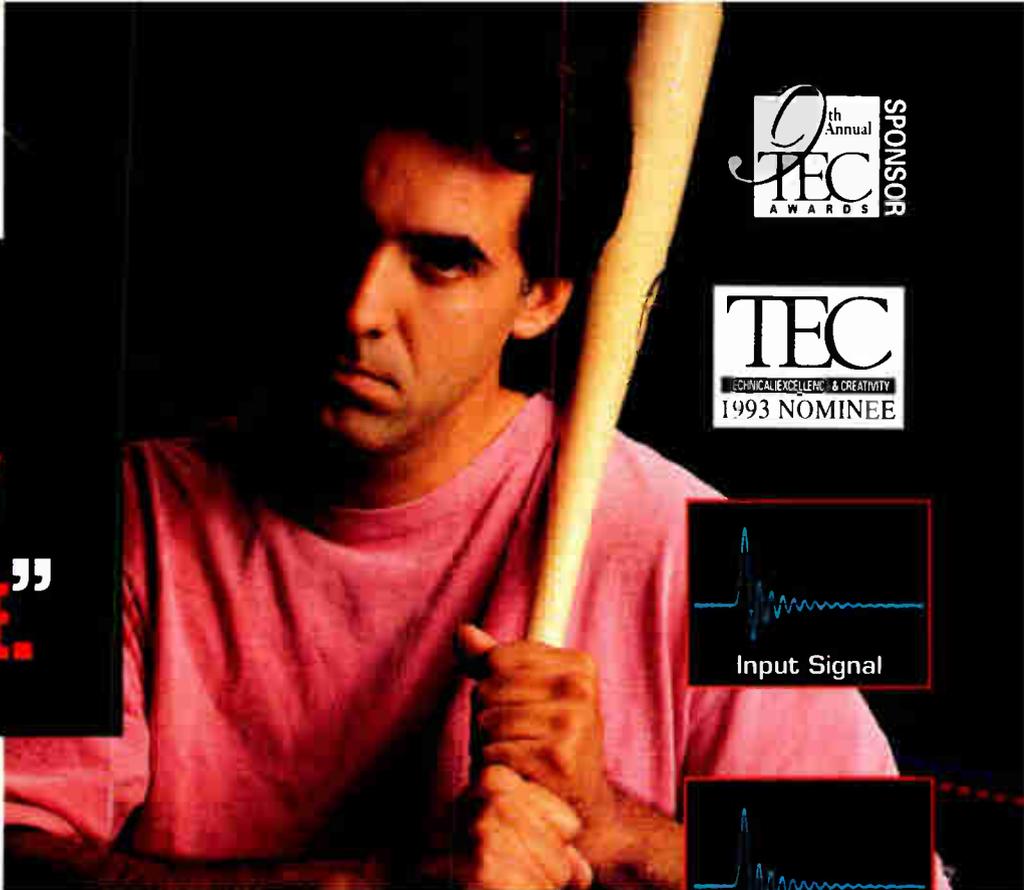
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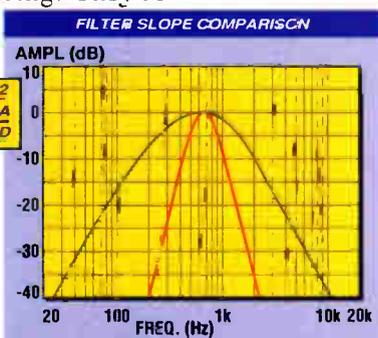
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by Paul Tingen

CONTROL ROOM RECORDING

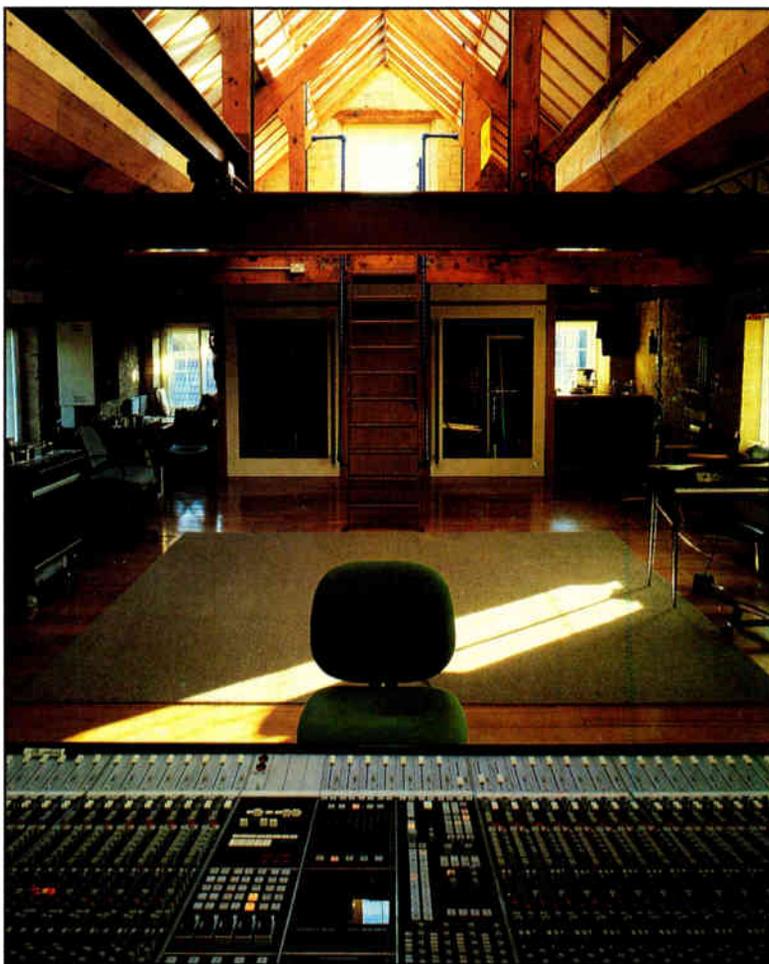
INTEGRATED RECORDING ROOMS VS. SEPARATE SPACES FOR ARTISTS

Despite radical developments in studio gear and recording attitudes over the past 30 years, studio design has not changed significantly in at least one respect: Control room and recording areas are still strictly separated for acoustical and technological convenience. In the '50s and '60s there was a strong separation between the producers and engineers, and the artists. A musician's place was in the recording area, not in the control room.

The late '60s and '70s heralded the emancipation of artists. They gained control of their careers and music in new ways, and this democratization of the recording process dissolved the sharp dividing lines between producers/engineers and artists, with the latter spending more and more time in the control room.

The rise of MIDI during the '80s drew even more artists into the control room. It was also during this decade that some of the features of studio design began to change. The dark, cramped basements that were the norm in the '70s disappeared. Control rooms became larger, and natural daylight shined in.

But these changes in size and aesthetics did not alter fundamentally the basic premises on which studios were built. With few notable exceptions control rooms and recording



areas remained separate, despite the fact that artists often complain about studios. "They are notoriously uninspirational places," according to solo artist David Sylvian. In fact, many artists have eschewed conventional studios in favor of either recording at home, or renting a house or a chateau in which producers install the necessary equipment. Daniel Lanois has become one of the better-known exponents of this method of work-

**Real World
Studios**

The Church Studios

One of the most beautiful and unusual recording facilities in England is The Church Studios, a renovated stone church on a hill in suburban North London. Complete with stained-glass windows and high, arched ceilings, The Church was purchased and refurbished a few years ago by the Eurythmics, who had leased a room there to write and record, and saw the building's potential.

Today the facility includes two rooms: Studio A, with a Neil Grant-designed control room, featuring RPG Diffusors and Boxer monitoring system; and Studio B, which extends the length and breadth of the building. The latter offers a striking contrast to the original bare, wooden floors, and includes heavy beams with two compact isolation booths and a playing area large enough for an orchestra.

Other equipment offered by The Church includes an SSL 4000 G Series 56-channel and Amek G2520 custom 48-channel consoles; Otari MTR90 MkII ½-inch and



½-inch multitrack tape machines; and ATC SCM100A, Yamaha NS-10M, Auratone and AR Rockpartners monitors. The facility's recent clients in-

clude Bob Dylan, Erasure, Suzanne Vega, the Jesus & Mary Chain, Bryan Ferry and Elvis Costello with the Brodsky Quartet. ■

ing, saying that "a good performance equals a good mix—separation is only of secondary importance." He's proven the point in his work with U2, recording in many unusual locations as well as at his Kingsway Stu-

dios in New Orleans. There, an API desk is tucked in a corner of the large living room: where the musicians set up and play.

There are other studios whose first priority is to accommodate the artist, rather than the engineer, and they have almost invariably been built by artists themselves. One successful example is former Roxy Music guitarist Phil Manzanera's Gallery Studios, built southwest of London in 1981. Located in a former coach house, the facility features a control room measuring a respectable 32 feet by 32 feet, with a 13-foot ceiling. A large, raised stage-like platform behind the mixing desk is where musicians can hang out and play.

Manzanera comments, "I decided that the control room had to be big, because we musicians spend most of our time in studios in the control room. In the early '80s that kind of thinking was unusual. When we started working with Roxy here on the albums *Flesh & Blood* and *Avalon*, we developed a way of working that grew out of this studio and the way the control room was built. We stopped working in the recording area and wrote everything in the control room. The control room really became like a big instrument that we used: Instrument X."

Since then, many large control rooms have been built, both by artists (like Genesis, whose control room for *The Farm* measures 30 feet by 25 feet) and in commercial facilities. Puk Studios in Denmark, designed in 1986 by Andy Munro, is an example of an internationally renowned studio where two large control rooms are set up for live per-



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formance. Measuring about 950 square feet each, they also feature raised platforms behind the mixing console.

In all of these cases, however, the studio still features separate live rooms, with musicians and technicians separated by the glass as they have been for decades. The reasons for this are obvious from an engineer's point of view: The glass gives the engineer more control over the sound because monitoring is possible while the musicians are playing; better separation between instruments can be achieved using various live rooms and separate recording booths; and, of course, there's no danger of feedback between microphones and monitor speakers.

But with all aspects of the recording process becoming more and more integrated, and with a new emphasis on live performance and direct communication, is this separation really a good idea? For MIDI recording, a large control room suffices, but is there a case to be made to do away with the glass altogether for live music, too? Lanois obviously thinks so. And Sting and Hugh Padgham recorded *Ten Summoner's Tales* in the former's house in West England, situating an SSL and the whole band in the 30-foot by 20-foot dining room.

Producer Rupert Hine has just built a luxurious studio in the south of Spain called El Cortijo, where everything is geared toward accommodating artists. A huge living-room-like control room is set up for live recording, with views across the Mediterranean toward Africa, a rotating desk, plus "a la carte" equipment—a choice of five different desks and all kinds of outboard equipment. Says Hine, "It's absolutely ridiculous that recording studios are still being built based on the same premises they have been for several decades. Any studios coming on the market have to be based on new, forward thinking, with much more flexible parameters."

There are two additional European studios that have taken the everything-in-one-room principle to the extreme. One is Peter Gabriel's Real World Studios in Bath, England; the other is Can Studios in Cologne, Germany. The big room at Real World, measuring 50 feet by 50 feet with a majestic view across an artificial lake and a U-shaped, 80-channel SSL, has

sparked the imagination of many.

The relatively unknown Can Studios is located in a former cinema hall, acquired by the legendary avant-garde band Can, of which Holger Czukay was a member. For a decade, the band recorded all of its work in this amazing space, which is 2,624 feet square with 21-foot ceilings, making it one of the largest control rooms in the world. After the group disbanded in the early '80s, Can Studios turned commercial. Today it sports a custom-made Michael Zahl desk and 48 tracks of Dolby SR.

Can Studios owners Ren Tinner

We stopped working in the recording area and wrote everything in the control room.

The control room really became like a big instrument that we used: Instrument X.

—Phil Manzanera

and Holger Czukay have between them more than three decades of experience working in a single gigantic space, and they are clearly converts, arguing that direct communication means more excitement and better music. Tinner, who's also the resident engineer, says, "When I work in another studio, I'm easily bored with the situation. Nothing happens; there's no communication. It's like going to the office: them there and us here, and you don't really talk unless you press down a button."

And Czukay, an artist with a wide cult following across Europe, adds, "Working like this means that everybody is equally involved in the working process. It means that it's impossible that somebody will make a telephone call or start talking to a neighbor while other people are playing. To see that happening in the control room when you're a musician playing in the recording area is the most disgusting and music-killing thing."

David Sylvian, once lead singer of Japan and now a respected solo artist in Europe, has recorded two albums at Can Studios with Czukay, *Plight & Premonition* (1988) and *Flux & Mutability* (1989). He comments, "I think that for a musician it's much

more natural to have control room and studio integrated. There's something reassuring about it. Isolation can sometimes really get you. There's a communication problem, and that has always been very frustrating for musicians. So when there are no barriers between you and the engineer and producer, it's a major advantage."

It was this kind of thinking that inspired Gabriel to build Real World, and engineer David Bottrill comments, "I prefer working this way. There is never a problem of, 'Oh, the band is starting, should I be hitting record?' or 'Did they like that take?' There are a lot of things that you don't have to say, and that's irreplaceable." Like Tinner and Czukay, Bottrill asserts that problems of separation, monitoring and feedback aren't insurmountable. The last major project he recorded in Real World's big room was Gabriel's *US*, and the musicians had so much gear that they completely filled the floorspace. Separation was achieved by placing guitar and bass amps and the drums in separate booths and "DI-ing" Gabriel's equipment, with the only spill coming from Gabriel's vocal mic.

When working with acoustic bands, Bottrill goes for a different approach: "If it's a very sensitive over-dub, I'll generally wear headphones. I don't mind that. I have a pair of headphones that I know and trust, and I really use them as a sort of PFL bus, to be able to hear the instrument by itself and make sure that things are sounding okay and that I'm recording the right thing onto the right track. Occasionally, we'll set up a little booth or screen for acoustic separation, and I've gotten really good at keeping monitoring feedback down with a number of tricks, like rolling off certain frequencies."

Guitarist, composer and producer Michael Brook (Youssou N'Dour, Khaled, Margaret O'Hara), like Bottrill a Canadian living in the UK, worked in the big room during the 1992 Real World Recording Week. He feels positive about his experience, but remarks, "You don't know what exactly is going to tape. But all that means is that you have to record a little bit of the sound and play it back. So it's not a horrible problem. Separation or feedback wasn't a big problem because of the diffusing and damping acoustics, the large distances between the players and the usage of some acoustic screens. Also,



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INTERNATIONAL UPDATE

you feel the air and the light are good, and you don't get this closed-in, fatigued feeling."

Brook's last point is echoed by American producer Stephen Hague (Pet Shop Boys, Robbie Robertson), who worked for five months on New Order's *Republic* album at Real World. Apart from some vocals, little live recording was done in the control room, but, says Hague, "As a whole, I find the Real World setup very enchanting, with all the daylight and the water. It's very conducive to work. And there's lots of room for pacing!"

Hague recently applied the everything-in-the-same-large-room concept to a rehearsal barn at Bearsville Studios in New York, where he recorded new artist Andrew Wyatt and brought in the recording equipment for the project. He says, "It's nice being in the same space as the performers. It certainly gives a different atmosphere than looking at people through a piece of glass. It's better in some ways, but also a little slower, because it's more difficult to check what you're recording as you go along. This setup is fun while it's happening, but not something I would do by choice. I certainly prefer for the desk not to be in the same room as the band. It's hard to push that as a major creative advantage."

George Martin takes a negative view. From his brand-new, multimillion-dollar Air Lyndhurst complex, he asserts, "If something becomes too big, it's not very good to work in. Peter Gabriel has done a wonderful job at Real World, but I'm not sure his control room is right, because the size of it must affect the monitoring." Not surprisingly, the control rooms at Air Lyndhurst are all designed in a relatively traditional way, only slightly large by today's standards.

Martin argues that doing away with the glass altogether is something that simply "doesn't work. Sly Stone tried it with his San Francisco home studio in the early '70s. The idea was laudable, but it wasn't very practical, and it failed. If you want to achieve really good sound, you need a detachment between the producer and the monitors on one hand and the actual sounds themselves on the other. It's up to the producer to make sure that he doesn't lose contact with the people on the other

side of the glass."

Others beg to differ. Andy Munro, who designed Puk Studios, says, "Obviously there are limitations, but you just have to be very careful about how you set up the acoustics and the monitoring. Large rooms are extremely disadvantageous for mixing, because it's very difficult to get rid of the big room feel in a big room. My advice to anyone thinking of doing it this way is to keep the room's acoustics damped and maintain a lot of control over the sound."

Munro adds that many of the private studios he designs for artists are "one-room setups," but doubts that it will catch on in a big way. On the other hand, both Bottrill and Sylvian assert that they are extremely interested in seeing more studios designed this way. Manzanera and Czuka agree. Brook also would like to see more of this kind of studio emerge, though he doesn't think an enormous control room would have to be a primary factor in his decision to record there.

Still, one wonders why it's mainly the artists who are so unequivocally enthusiastic and the recording professionals who are more skeptical. Are producers and engineers simply being practical and down to earth, or is this a battle between art and technological requirements, started by artists in the '60s, that has yet to be won? ■

Paul Tingen is a writer and musician based in the UK.

BITS AND PIECES

UNITED KINGDOM

Digidesign opened a London sales office. Wendy Butler is the company's new sales rep for the entire UK. The new office is at 220 Sandycombe Rd., Kew, Surrey TW9 2EQ, England; phone, 81-332-7632...CTS Studios was the site of the London Philharmonic's recording of music for the Sylvester Stallone film *Cliffhanger*. The soundtrack was composed by Trevor Jones (*Arachnophobia*, *Last of the Mobicans*) and engineered by John Richards...Hazel Simpson is Digital Audio Research's new commercial director...Dolby Labs' new European headquarters at Wootton Bassett was formally opened by Princess Anne this spring. The new facil-

ity is responsible for the company's European operations...At London's Prince of Wales Theater, the musical comedy *City of Angels* used **Autograph Sound Recording** and a DAR SoundStation system; for one scene Autograph used the SoundStation to devise a way for actors to learn to speak backward...Daimon Hall, **Broadcast Electronics'** sales manager for Europe, Africa and the Middle East, relocated from Quincy, IL, to Eastbourne, England, to facilitate better communication with customers and representatives in his territory's time zones...**The Studio** is a new London-based international pro audio sales and marketing firm currently representing DynaudioAcoustics monitors, Chameleon power amplifiers and the acoustic consulting firm of Munro Associates; phone, 71-497-8737...London's **HHB Communications Ltd.** hired four additional service technicians: Mike Gallavan, Andrew Silk, James Gott and Jim Gross...Roger Clemo, former European sales manager for Neve Electronics started his own firm called **Sound-Link**. The company, in Cambridge, offers sales and marketing communications support, surveys and tender translation services to U.S. pro audio manufacturers...Now available from APRS, *The Handbook of UK Recording and Duplicating 1993* provides key information on APRS members, plus a reference section and editorial features. The Handbook has a new updatable format. To order a copy, send \$15 to APRS Ltd., 2 Windsor Sq., Silver St., Reading, Berks RG1 2TH.

EUROPE

VTM, Belgium, the country's only commercial TV network, purchased an SSL ScreenSound, SoundNet and an SL 4024 G Series console as part of an effort to revitalize its post-production facilities...Premastering company Digipro purchased its second DAR SoundStation system to cope with growing demands of sound-restoration operations in its Brussels studios...Galaxy Studios in Belgium ordered a pair of Genelec 1035A monitors. Genelec monitors were also ordered by XXX, Paris (1035As), Sweden's TV-2 (1038As) and the recording studio at the School for the Performing Arts in Finland (1038As)...Dusseldorf-based Voss Aktiengesellschaft TV-Ateliers installed an SSL Scenaria...API appointed Dr. Henry Krol of SI International its new Pol-

ish distributor...**Digital Audio Research** introduced two new products at the Berlin AES show: The SoundStation Delta is a range of multichannel digital audio production systems; the Sabre is an 8-channel, optical disc-based workstation. DAR reports its first Sabre sale was made to Norway's Norsk Film Studio...**Ferrofluids Corp.** of Nashua, NH, named Scott Bowden international sales manager for its fluids technology division. Bowden will oversee the sale of audio ferrofluids to loudspeaker engineers and manufacturers in Asia, Europe, Canada and South America...

Aarburg, Switzerland's Gamma Recording hosted the recording of Swiss saxophonist Markus Kuhna's first solo album, due out this summer...Studer Dyaxis II systems were used to make hard disk recordings of daily live transmissions from Billy Graham's Pro Christ '93 last March. This project used the largest satellite network since the Barcelona Olympic Games.

CANADA

The Canadian Broadcasting Corporation purchased a Neve VR72 and a VRM48 (mobile) console, both with



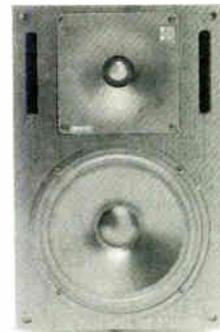
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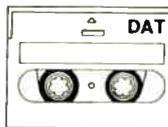
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Flying Faders. The VR72 will be installed in the CBC's television performance studios at the new Canadian Broadcasting Centre in downtown Toronto. The VRM48 will become part of the CBC's Radio Production Centre group...Telex Communications named Applied Electronics Ltd. its Canadian distributor for the RTS by Telex range of intercom systems...Mark IV Audio of Gananoque, Ontario, appointed Rod Marsh its director of sales and marketing, and Michelle Wing its central region sales manager...The Sascom Marketing Group was appointed Canadian distributor for Qusted studio monitors.

AUSTRALIA

El Segundo, CA-based ESE appointed EAV Technology the exclusive Australian distributor of its Master Clock systems, time code products, desktop video accessories and audio/video distribution amps...dbx Professional Products named Syntec International its Australian distributor.

ASIA

Hitokuchi-Zaka Studios of Tokyo opened Studio 3. Designed by Harris Grant Associates, the new room features the first AMS Neve Capricorn digital console in the Far East...Appo Sound Studios in Tokyo ordered a 64-channel Legacy Series console with Flying Faders from API Audio Products (Springfield, VA)...KonTech Systems Ltd., Hong Kong, acquired rights to import Micro Technology Unlimited's digital audio workstations into China. The company recently delivered a MicroSound Tabletop system to PolyGram Hong Kong...API appointed Henry Dienn its new Japanese distributor...Korean Broadcasting Systems ordered two Harrison Series Ten B consoles...Japanese national broadcaster NHK will install an SSL 8000 Multiformat Production System; the console will be used for live broadcast and off-air recording of music and educational programs...dbx Professional Products has a new Chinese distributor: Tom Lee Music Company of Hong Kong will represent dbx in Honk Kong, the People's Republic of China and Macau...Tokyo-based record label Japan Creations purchased a Soundtracs In-Line 3632 console with Tracmix automation, supplied by Soundtracs' Japanese distributor, MTC Japan. ■

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by David (Rudy) Trubitt

SOUND CHECK



Above: dB Sound's EV MT-4 rig is pictured at the Alpine Valley Music Theater in Troy, WI. Below: Greg Price is mixing house for Poison's current tour.

SUMMER TOURS, PART III

Following its purchase of the assets of Tasco Sound Ltd. U.S. last winter, A-1 Audio (Hollywood, Calif.) seems to have successfully merged the equipment and client base of the two operations, if their current workload is any indication. "We are probably busier than we've ever been," says A-1's president, Al Siniscal.

The company's Arena Division, with its large store of EAW cabinets, has been out with Chicago and Leonard Cohen (both with sound and lights), Vince Neil, Terence Trent D'Arby, Motley Crüe, Barry Manilow, the Disney Symphonic Fantasy and Glenn Frey (lights only).

A-1's Broadway Division has been equally busy with *Joseph and the Amaz-*

ing Technicolor Dreamcoat, *Tommy* in Manhattan (in conjunction with Mask Sound), *Tommy Tune Tonight*, *Forever Plaid* in L.A., and *Starlight Express* at the Las Vegas Hilton. Other Vegas work includes Engelbert Humperdinck, Paul Anka, Johnny Mathis, Ann-Margret, Shirley Maclaine and Wayne Newton.

A-1 also has a ten-year lease on a 23,000-square-foot aircraft hangar in Santa Monica for production rehearsals. The above-mentioned Chicago, Cohen, Frey, Manilow and Disney tours were all launched from this facility. Last but not least, A-1 provided services for Duran Duran's live satellite simulcast staged at a Tower Records store. The event was broadcast to other Tower stores and Hard Rock Cafes worldwide.

dB Sound (Des Plaines, Ill.) is currently out with a number of acts, among them Living Colour,

—CONTINUED ON PAGE 118



PHOTOS: RUDY ARIAS

New Blockbuster Pavilion

About 60 miles east of L.A., nestled in the San Bernardino Mountains, is the brand-new **Glen Helen Blockbuster Pavilion**. This \$15 million shed sits within the 1,250-acre Glen Helen Regional Park, on the site previously used by the Us Festivals. The venue, which opened in July, has 10,500 fixed seats with room for another

10,000 on the lawn. However, after expansion of a nearby freeway interchange is complete, capacity will swell to 65,000 concert-goers. This will put the venue in the running for stadium tours that might otherwise play the Rose Bowl, Dodger Stadium or Anaheim Stadium. First shows included Poison, Lynyrd Skynyrd and Def Leppard.

two KF-300s. QSC power amps, Klark-Teknik equalizers and delays, and Aphex limiters are used in each chain. This long-throw/short-throw tower will allow lawn fill to be tailored to the size of a particular audience, according to Dan Ollila of Valley Sound Electronic Systems (Chino, CA), the system installer. Additional gear will be added

Right: Artist's conception of the completed Glen Helen Blockbuster Pavilion



Below: A delay tower under construction, showing EAW KF850s and 300s (rigging hardware and installation by ATM Flyware)



The Pavilion's stage is 100 feet wide, 68 feet deep and 48 feet high. The flying grid is rated at 105 tons, and most acts will choose to fly their P.A., says production manager Nick Kotos. However, there are two 40x15-foot stage wings that can be used for stacked sound, or as staging areas. Loading docks are said to accommodate five 18-wheelers simultaneously.

The venue's lawn system is designed around the current 16,000+ capacity. Four towers are across the lawn around the 200-foot mark. Each is equipped with an independent short- and long-throw Eastern Acoustic Works loudspeaker system. Each tower holds two KF-850s and

when the audience size jumps to stadium capacities.

Controlling levels is always an issue for outdoor facilities, although the problem is unlikely to be a significant one for this venue, because of its nonresidential setting. The closest neighbors are about a mile away, and the lawn system and sound walls are expected to keep matters in hand. The facility's location within a park, which includes fish-stocked lakes and picnic areas, should offer added incentive to patrons, who can enjoy the great outdoors before the show. Blockbuster already is operating two amphitheaters, located in Phoenix, Ariz., and Charlotte, N.C. —*Rudy Trubitt*

Why you should buy an FBX to do nothing to your sound.

By Doran Oster, President, Sabine Musical Mfg. Co.

Until the invention of the Sabine FBX Feedback Exterminator, engineers had no practical alternative for controlling feedback other than the 1/3-octave graphic EQ — a 35-year-old technology.

"What's wrong with EQs?" Nothing — if you need to "shape your sound". On the other hand, if you're using an EQ to eliminate feedback, you may as well think of it as a "sound sponge". In fact, EQs "soak up" a lot more sound than you might realize. Practical experience proves that EQ filters are much too wide for chasing feedback and end up muting the program.

Here's why: 1/3-octave EQ filters are actually one full octave wide! Think about this: If the filters were only 1/3 octave wide, there would be no filtering

Wouldn't it be great if your EQ filters could be ten times narrower? Then they could eliminate feedback without a perceptible change in the sound. What if you could get more gain before feedback? Well, the Sabine FBX does all that — and the FBX's fully digital adaptive filters do it automatically!

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culates the frequency of the feedback and, in less than a second, places a very narrow digital filter



The Sabine FBX-900

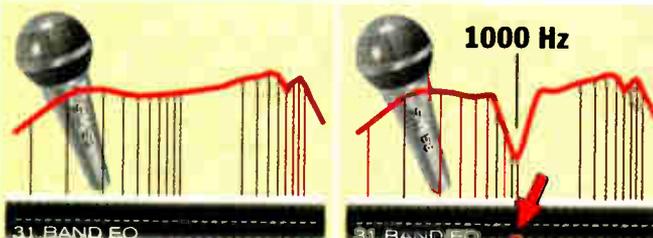
(ten times narrower than a 1/3 octave EQ and up to 20 dB deep) directly on the resonating frequency. **The FBX automatically eliminates feedback without muting the sound. And you get more gain before feedback.** Think of the FBX as an EQ with 20,000 sliders run by 1,000 top-notch engineers. It's just that simple.

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Make us prove it — call Sabine to arrange a demonstration of the FBX Feedback Exterminator.

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FEEDBACK EXTERMINATOR

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Are all sound professionals crazy to use EQs to control feedback? No — up until Sabine invented the FBX, there was no practical alternative. Parametric EQs have narrow filters but are too slow and cumbersome for live sound.

Moving even a single EQ slider ruins your frequency response! They cause phase shifting, and drift with temperature. Pitch and phase shifters ruin the sound and can't be seriously considered.

between the fixed sliders. I'm not just talking about cheap EQs — even the best EQs share this problem. **In fact, if you pull your 1000 Hz slider down 12 dB, it actually removes 46% of the power going to your speakers between 500 and 2,000 Hz!** Pull two or three sliders, and you wipe out the overtones of your voice, causing you to sound nasal and your monitors to sound muddy.

Which brings us back to the new Sabine FBX Feedback Exterminator, the only option that really works. Put it just before the power amp in the audio chain, and it automatically senses feedback. Then it automatically cal-

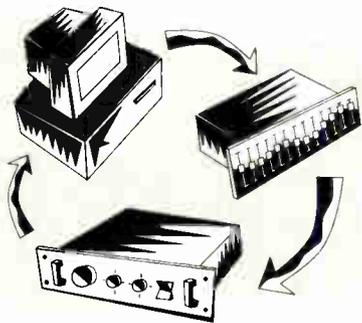


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COMPUTER CONTROL CONCEPTS

by Bob Moses

THIS MONTH: DSP OBJECTS

In past months, we've discussed computer control as it relates to traditional audio equipment. The sound systems in our examples contained a number of familiar audio boxes—amps, EQs, mixers, etc.—with a computer to provide system management and the human interface. Each audio box is tied to the network through a special connector (RS-422, RS-485, fiber-optic, etc.), and audio connections between boxes are provided through traditional analog connectors (XLR, phono, etc.). This system model is used today by MIDI, MediaLink, IQ, NexSys, MINDNET and so on. It is also the model that the AES SC-10 subcommittee is using to design its network.

However, there is a new beast lurking on the horizon: DSP. Digital Signal Processing, itself, is not new. Today we enjoy DSP-based effects processors, signal processors, recording and editing devices, even mixers. However, in most cases these DSP boxes are really just digital versions of traditional analog boxes. Sure, a few extra bells and whistles are thrown in—automatic parameter adjustment, memories, and so on—but



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we're basically doing the same old thing with these boxes.

Eventually, DSP will completely change the face of audio systems. Devices such as graphic equalizers, mixers, compressor/limiters and so on, will become completely software-based. Today, these devices are hardware-based. The functionality of each is built into a single box (except for modular "mainframe" systems and multi-effects units, but we'll ignore those for now). Once audio processing "devices" are implemented in DSP software, there will be no need for all the functions of a given "device" to exist in the same box. A network of distributed generic DSP processors could implement a "device" by spreading the software functions among several boxes. For example, the filters in a "graphic equalizer" could be implemented by using several DSP processors. A network carrying digital audio and control information would tie them together so they'd appear to be one virtual box.

Why would we choose to implement a device this way? Isn't one box more economical than several? Not necessarily. By prying open the box and distributing the functions, we can choose what we really want to spend our processing power on. If you only need to EQ a few frequencies, the unused processing power (which would be wasted on all the EQ bands set to 0 dB) could be re-allocated to something else, like compression. This "software modularity" allows us to implement only the processing functions the system needs at the moment. Nothing is wasted on unused functions.

This is very powerful: We just dissolved the boundaries between boxes and provided a framework in which we can share processing resources over the network. As the

sophistication of processing algorithms grows, this will become more and more important.

Imagine you're running a live show. A surprise vocalist appears, requiring another channel of compression. With a traditional system, you'd simply patch in an unused compressor channel (analog or digital). But what if you're out of compressors? With shared DSP, you'd have another option. Let's say the trumpet player is laying out on this tune. A quick check on the trumpet channel shows an EQ DSP "device" in the signal path. Since there's no trumpet playing, the DSP power being used on that EQ can be temporarily reassigned to the guest vocal input, *but used for compression instead*. Audio processing power can "float" around the network, allowing you to squeeze the maximum from the available DSP resources, making the system potentially more, not less, economical.

So, how could this be implemented in the SC-10 object-based system? As we learned last month, objects are things that receive or transmit messages, and optionally perform some kind of audio (or other) function. Up to now we've thought of objects as level controls, EQ bands and push-buttons. But a DSP algorithm could also be an object. The algorithm receives messages (in this case, a continuous stream of digital audio samples). Likewise, the algorithm transmits an uninterrupted flow of digital audio output samples (messages). All that's needed is enough network bandwidth (at least 10 Mbps) to carry a few channels of digital audio. This will be considered by the SC-10 committee later in the year. In the meantime, at least one computer control company—Lone Wolf—is promising to include digital audio streams in their network (MediaLink) as soon as they can implement the hardware.

What this means for audio systems is that we'll probably end up with one mammoth networked-DSP pool that imple-

ments all required audio-processing functions (algorithm objects). If you run out of DSP power, add another DSP to the network. Companies that manufacture hardware today will eventually become software vendors. Want that killer new hyperkinetic, oral spatial receptor? Just buy the algorithm on disk and pop it into the network. Does your buddy across town have a killer EQ algorithm that you want to use on one channel of your mix? Connect your network

to his via a modem link and route your audio through his processor.

Of course, much of this is hype and vapor right now. But many cutting-edge signal processing manufacturers are looking in this direction. One thing is for sure: Systems are going to change dramatically. ■

Bob Moses is a senior digital engineer at Rane Corporation and a longtime member of the AES SC-10 effort.



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—FROM PAGE 112, SOUND CHECK

touring with Lee Popa at FOH, Bill Shapell on monitors and dB's Corey Stone as crew chief for the theater tour. EV MT-4 and MT-2 speakers, K-T EQs and a Midas XL-3 monitor console are the gear highlights. dB is also fielding Poison and Damn Yankees in stadiums and sheds. At the house Gamble EX console is Greg Price driving a Crest-powered MT-4 P.A. A Crown-powered EV FS-212 Midas XL-3 mon-

itor system is also used. And by the time you read this dB will be well underway with Aerosmith in stadiums with what promises to be the largest MT-4/MT-2 system ever.

NEWS FLASHES

Craig Jansen of Acoustic Dimensions (Dallas, TX) recently designed a portable sound system for the National Hot-Rod Association. Supplied by

Dodge/Carroll Electronics (Topeka, KS), the system comprises six Crown MA-2400 amplifiers and 20 custom EAW cabinets...Malaysia's Cahaya Audio Lighting Sdn. Bhd. has taken delivery of a 40-box speaker system from Australian manufacturer ARX. The system is made up of 20 212 Concert Series mid-high pack and 20 925 dual 15-inch low-frequency cabinets. ARX SS1200VC amps drive the system, which was used first on the "Dataram Merdeka" concert held in the center of Kuala Lumpur. Other dates by Cahaya Audio included a Hammer stadium gig and Engelbert Humperdinck at the K.L. Hilton ballroom...Adamson loudspeakers comprise a four-way system installed in Central Park's Summerstage in New York City. Acts scheduled to perform in this year's series include Los Lobos, 10,000 Maniacs, the Neville Brothers and They Might Be Giants...Canada's Rocky Mountain Sound took a 68-box Adamson rig on the road with Steven Curtis Chapman, playing venues ranging from 5,000 to 20,000 seats. The box count was increased to 90 for a Seattle show, where recording for a live album took place...Audio Dynamics (Mexico City) recently took possession of a new Adamson rig, including 16 MH225s, 16 B218s and 13 AFM212 floor monitors...Hardesty Technology Group designed and installed a Crown IQ computer-controlled sound system in the First Baptist Church in Eugene, OR. (Gary Hardesty is now director of JBL's System Group.) The church, built in 1926, seats 770 and is a very live room. The new system includes three JBL SR4732 speakers, each with a 2385A horn and 2246H driver mounted on top. Crown CT-400s and CT-800 amplifiers are located in the church's attic and can be controlled and monitored from a PC located at the mix position. As an extra bonus, an attic ventilation system can be remotely turned on or off via IQ by hitting the computer keyboard's space bar. ■

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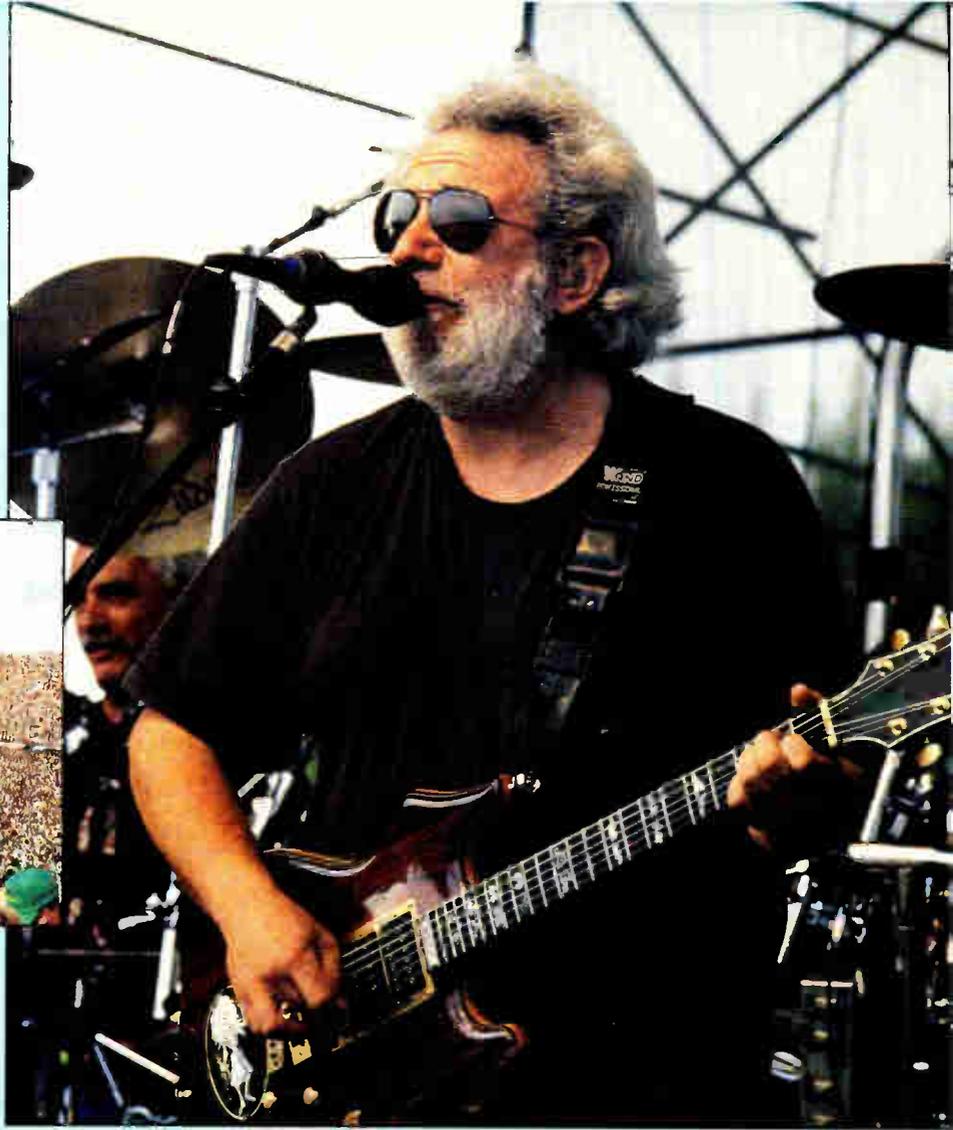
With all we've put into it, you'd expect Century GT to cost more than other consoles in its class. Well, you're in for a very pleasant surprise when you contact your Crest Consoles' dealer.

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Las Vegas Silver Bowl,
May 16, 1993

SOUND COMPANY

Ultra Sound

DEAD ENGINEERS

Dan Healy (senior
engineer/mixer) and Harry
Popick (monitors)

ULTRA CREW

Don Pearson, Uwe Willenbacher,
Michael Brady, Glen Carrier,
Howard Danchik, Michael
Shawn Healy

by David (Rudy) Trubitt

The Grateful Dead and *who?* I suspect my reaction was similar to most upon hearing about one of this summer's more interesting joint ventures. This combination might have been unthinkable in the early '80s when the Dead and The Police seemed to represent opposite poles of the music and pop-cultural spectrum. However, a decade later, the pairing makes musical sense. While Sting's band does not go in for the extended jams the Dead are fa-

mous for, both groups share an improvisational approach, as well as a substantial older audience. So, it was with anticipation that I and tens of thousands of others made our way to Las Vegas' Silver Bowl stadium, the first site of the bill's 13 combined performances.

Ultra Sound (San Rafael, Calif.), the Dead's longtime supplier of choice, continues to provide sound for their touring needs. The main loudspeaker system is a Grateful Dead/Ultra Sound hybrid, based on Meyer Sound Labs cabinets. The cur-

PHOTO: JAY BLAISEBERG



HARRY POPICK, MONITOR ENGINEER, AND DON PEARSON, ULTRA SOUND PRESIDENT



DAN HEALY, SENIOR ENGINEER/MIXER FOR THE GRATEFUL DEAD

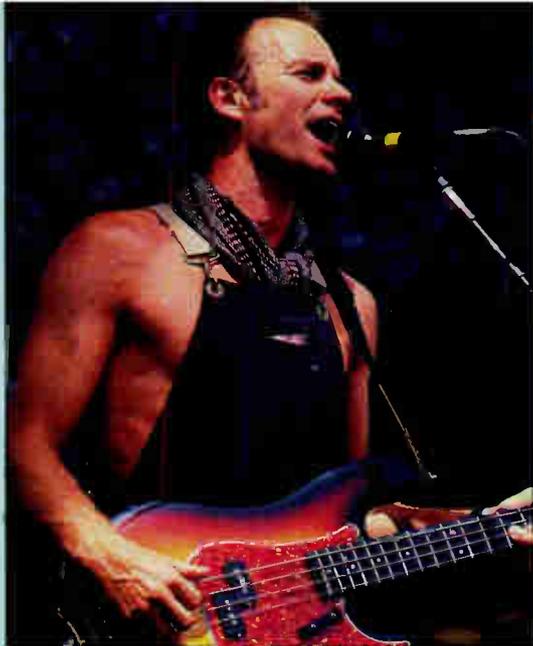
rent equipment manifest includes 96 modified MSL-3s and 32 double 18-inch subs. Twelve sections of forklift-mounted, modified MSL-10s are used for delayed sound reinforcement, and a dozen modified UPAs hidden under the stage provide center fill. Crest amplifiers are used throughout.

Over the years, the Dead/Ultra team has worked to tame the acoustics of the large venues the Dead frequent. "Dan Healy [who has mixed the Dead since the '60s] and I have been working for a long time with the B&K analyzer," explains Ultra

Sound's president Don Pearson. Healy describes this tool, in conjunction with very specific equalization, as being able to remove the sound of the room from the listening environment.

Loudspeakers are positioned for coverage, rather than to avoid acoustical problems. "If there is a real bad reflective area, it'll show up during the equalization process and we'll deal with it there," says Pearson. "The spectrum analyzer shows the narrow-band resonances of the room. Almost all ring nodes are narrow—

—CONTINUED ON PAGE 123



SOUND COMPANY

Clair Brothers

CREW

Mike Keating (house mix), Tomo Herrmann (monitor mix), C.J. Patterson (system engineer), Cliff Downey, Matt Dean (techs)

Besides the 13 tandem dates with the Dead, Sting has been out on an extensive tour of his own. In addition to summer sheds, the band has played everything from multiple nights in small theaters to arenas to European festivals. Clair Brothers has fielded a 48-box S4 system similar to that provided for Sting's last tour. However, for the double-billed shows, Sting used the Grateful Dead's system for everything except for house mix and stage monitor gear.

"Even though this is a four-piece band," explains Clair system engineer C.J. Patterson, "we all know that can turn into a lot of channels. With the Sting show, all of a sudden you'll have Branford [Marsalis] show up and play sax. Or you'll have Andy Summers come out and play guitar. You never know. So we have these scenarios worked out. There is a spare monitor mix with two places to plug it in. There are already mics sitting around. You've got to have all those things covered, or somebody will catch you."

On stage, "The idea is to make

—CONTINUED ON PAGE 122

—FROM PAGE 121, STING

the set change as painless as possible," continues Patterson. "Everything is loomed on stage, with disconnects everywhere. There's a harness that picks up all the monitor lines on the front and another snake that picks up everything along the back." Each player has his own little riser. "It's like an island of keyboards, an island of drums, an island of percussion. Each riser rolls away. So we can set up in the wings, wire it and mike it. When it rolls into place, we drag the snake across the back and hook it up."

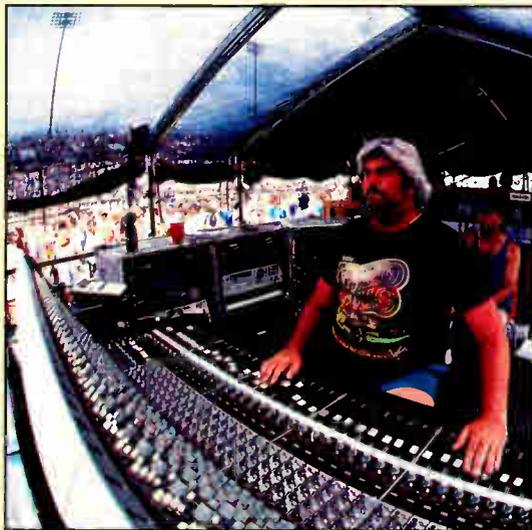
Patterson is no stranger to the Dead crew. Between '76 and '81, the Dead used rental companies, including Clair. "I toured with them for a period way back then," he says. "Previous contact always makes for an easier interfacing of equipment and personnel. In a situation where you're trying to interface a lot of high-end gear, it's the little things that can trip you up. This has been a fairly easy situation to adapt to, since we're both professional operations. After a few discussions of how the two companies view their grounding and power scheme, it was pretty easy to play the ballgame."

At the house mix position is Mike Keating, whose previous gigs include Bruce Springsteen and .38 Special. The stereo feed from his custom Clair Brothers console is routed to a patch point on a sub-master of the Dead's main Gamble EX. Sting's FOH gear is set up and broken down each day to keep sightlines open for the Dead's crew.

This is Keating's first Sting tour; the last one was mixed by Dave Kob. "Respecting Dave the way I do," says Keating, "I took the approach that if it's not broken, don't fix it." Keating notes that Kob's and his own approach are similar, so he didn't have to make any special attempt to match another mixer's style. "I go for a really whole, large sound, without the ear-holding bit. I don't like the 'ripping' frequencies."

The band's uncluttered arrangements certainly lend themselves to

an open, clear mix. "Musical space is a sound person's best friend in a show," says Keating. "It lets your show develop like breathing. It has dynamics, things go up, things come down. You can hear subtleties. It's not just *beat, beat, beat* continuously. Sting hired his band because of their ad-libbing abilities, and that's what he wants from everybody. He didn't want me to be a 'diet' mixer, as he put it. He wants people who have spontaneity."



Mike Keating, house mix engineer for Sting

During his set, Sting scats the occasional off-mic phrase, with good results. "That's got a lot to do with that AKG 535 microphone," Keating explains. "He's used it for the past several tours, and he likes it a lot. I like it too, but our monitor guy Tomo has come to not like it. It's a condenser, and if you blow air into the diaphragm, it actually closes the mic off for a second."

"I have a Summit tube limiter on Sting's vocal," Keating adds, "which is a very nice unit. But if he starts singing soft or starts really eating the microphone, I still have to ride that. It would be nice to set it and leave it, but I haven't figured out an optimum approach for that yet."

Keating takes a DI from the bass and mixes it with a feed from Sting's Alembic tube preamp. "It makes a good combination," he explains. "I tend to use more of the warm bottom end from the preamp and dial up the midrange bite and attack on the DI. Both of them are limited with a dbx 160 at about a 4:1 ratio. Nothing fancy, just something knocking the peaks down."

His approach to effects is straightforward. "I don't like to complicate things," he says. "I go with a couple effects on the drums—I have a gated sound and an open, ambient sound. Since the Clair console only has four effects buses, I feed both reverbs off one send and just mix the returns depending on whether I want a ballad-type snare or the produced, gated deal."

One effect that stood out in the set was a very spacious, deep reverb on nylon-string guitar. Keating processes the guitar with an Eventide H3000 harmonizer and returns the slightly pitch-shifted signal to the main mix. The pitched return is also sent to a Yamaha SPX 1000 set for a large reverb. "That gives it the 3-D space," he says.

Running monitors is Tom Herrmann. Sting had been using Future-sonics Ear Monitors for a number of months, including his last *Saturday Night Live* appearance, where they were clearly visible to the observant viewer.

However, Sting has since returned to wedges, Clair Brothers 12AMs to be specific. "With ear monitors, Sting just felt very disconnected," explains Herrmann. "I don't know whether I did a really bad job with the ear monitors or I do a really good job with wedges!" Herrmann runs nine or ten monitor mixes from a Ramsa WRS-840. The total number of wedges is slightly down from the previous tour, and stage level is not a problem.

Sting's set was very well-received by the Dead's Vegas audience, a feeling that is apparently mutual. "He likes the fact that he can change his set around," says Keating. "It's the same people at all the shows, and they don't want to hear the same songs. They really want to hear the man's repertoire." In addition to material from his latest disc, Sting reached back into the Police's catalog of tunes, as well as some interesting covers: "Purple Haze," "Penny Lane," "A Day in the Life" and "Blackbird" all made appearances during the three Vegas gigs. Some of the covers were first times for Keating, who enjoyed the opportunity to work the unfamiliar material.

All in all, Sting and the Dead were a fine combination. As Keating puts it, "Sting loves it, and that's the bottom line." ■

—FROM PAGE 121, THE GRATEFUL DEAD

one-tenth octave or smaller is very typical." By notching these frequencies with parametric equalizers, the system is prevented from exciting the problem bands.

"While the majority of the industry feels that you should EQ each side [of the P.A.] individually," cautions Healy, "we discovered that doing that destroyed the stereo image." Noise samples are made with both sides of the P.A. on, providing what Healy calls a "macrocosmic" curve of the entire P.A. and room as a system, rather than a microcosm of each side individually. The analyzer is then used to ensure that the left-right filter responses track each other within ¼ dB.

The equalizers used in the process began life as Meyer CP-10 parametrics, but since have been heavily modified, including replacement of the internal supply with an external one, lowering the noise floor of the input section and converting the boost-cut filters to cut-only circuits offering 28 dB of attenuation at bandwidths less than one-tenth octave.

"Once the band gets on stage and people are in here, there are [additional] EQ changes," explains assistant engineer Uwe Willenbacher. By tracking EQ differences between empty halls and the end of each show, Healy and Willenbacher found they were consistently removing a few unexpected frequencies and adjusted their target curve for an empty room accordingly.

"We also try to track temperature and humidity changes and see how that affects the sound," Willenbacher adds, "so we can predict more than just the normal things." This latest area of research explores the effects of ambient temperature on the loud-speaker cabinets themselves. "I've known it was happening for years," explains Healy, "but on this tour, I've been able to chart and log enough data to show a temperature vs. resonant curve for all these cabinets." Often, systems are noised the evening before a show, perhaps as late as midnight, with temperatures in the 50s and 60s. However, show-time in an outdoor stadium could see the mercury reach 90°. "We found a small change in the subs, but as much as a five to ten percent increase in resonant frequency with temperature on the wooden 12-inch segment of the MSL-3," says Healy.

The effect is not particular to MSLs—he notes that other cabinets are likely subject to the same phenomena.

The newest part of the Dead's sound is their stage monitor system. Currently, each bandmember is evaluating one of several manufacturer's in-the-ear monitors. Harry Popick handles the front line while Michael Brady mixes monitors for the Dead's two drummers on a separate console. Ultra Sound's Don Pearson is on hand to help keep both stations running smoothly.

Each front-line bandmember uses half a Dead/Ultra-modified Gamble

EX house board with ten extra line inputs dedicated to their own independent stereo monitor mix. Each mic or line input goes into the first half of one of the boards. Then, the mic preamp-out/record-out patch point feeds a mult. These drive the other half of the first board and a multipin interconnect cable, which is split to the two halves of the second Gamble. Excessive loading of the microphones is thus avoided, as each mic is split only once—to one monitor board and the house console.

Although this dual monitor console setup provides four stereo mixes

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on the main faders, there's no single master level for each input. "I have to be scanning to make sure everything stays where it belongs," Popick explains. "In an emergency, I can go to the input [of the first half of the first console] and tweak the mic pre-amp gain, unless it's a line level feed, in which case I'd turn it off if something was really wrong."

A stereo drum premix and separate kick, snare and hat are also returned to the two Gamble consoles from the drum monitor console. Finally, each mix also ends up in the console matrix. "If somebody wants to hear [Jerry] Garcia's mix, you can turn it up in the matrix," adds Pearson.

Console outputs feed compressor/limiters, linked for stereo operation. These provide hearing protection and prevent overmodulation of the wireless transmitters. At present, only guitarist Bob Weir and several crew technicians are wireless. The remaining bandmembers run their ear pieces hard-wired, driven by Crest power amplifiers. Amp outputs are routed to a snake containing 18 pairs of 18-gauge wire, which links distribution boxes spread about the stage. Plugging into the appropriate connector brings up each musician's stereo monitor mix.

At first, each player wore a small belt pack with a passive volume attenuator to set overall level. Though convenient, this was the source of some difficulty, says Pearson. "It's hard to find a 1k ohm stereo log taper potentiometer that can take the current from the output of the power amp." The nonlinearity of the pots they used made one part of the range sound better than another. Further, says monitor mixer Harry Popick, "I couldn't tell how loud or soft anyone might have their gain. That influences the way they're listening—for instance, how much or little of the room can they hear?"

These problems were solved by using digitally controlled VCAs to control amp input levels, rather than the passive attenuation of amp outputs. The VCAs also display their operating levels for the mixer's benefit, and the band's belt-worn potentiometers no longer carry high-current audio, just a low-current control voltage.

Playing with the in-the-ear monitors required something of a settling-in period. Last spring Healy noted

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Facilities Broadcast Audiophiles Recording Studios Mastering Facilities Broadcast

that, as with normal headphones, isolation from the outside world can be problematic (see Sting sidebar). "It's much harder to judge overall loudness in the earphones. Also, things like compression and limiting become really critical. We have peak limiters as a safety device, and some people in our scene have limiting and tons of compression in their guitar sounds. Those things together make it a little harder when you're inside the world of earphones."

However, Healy continues, "As a musician, you stand a better chance of hearing what you want, because you're subjected to fewer things outside your own mix. For the first time, you get to determine, pretty much, all of what you hear. That's got to put you in a better mood for playing."

"I think it's dramatically improved the vocals," adds Pearson. "To me, the harmonies are so much better and so much clearer. Plus, all the general background roar in the P.A.—all the leakage from the monitors into the microphones—is gone." Healy agrees that vocal intonation has improved but cautions that the larger dynamic range offered by in-the-ear monitoring allows the musicians to sing softer but still hear themselves in the phones. However, this more dynamic vocal phrasing doesn't necessarily translate to those listening over speakers, i.e., the audience.

"Ultimately," says house mixer Dan Healy, "I see [in-the-ear monitoring] as good and bad for all of us—the audience, the band and myself. Not having instrument speakers up there is wonderful [the only remaining instrument speaker is a Leslie in an isolation case]. If I shut off my sound system, you don't hear a thing except for the drummers. It opened one aspect of sound reinforcement to the theoretical optimum that you dream about. However, it also opens other aspects that are going to require further research."

So, with all this equipment in place, what actually goes on during the monitor mix of a show? The band has experimented with systems that let them mix themselves in the past. However, at present only bassist Phil Lesh participates in his own mix, walking over to operate his section of the monitor consoles during the show. Popick is hands-on for the remaining front-line players. "I'm on

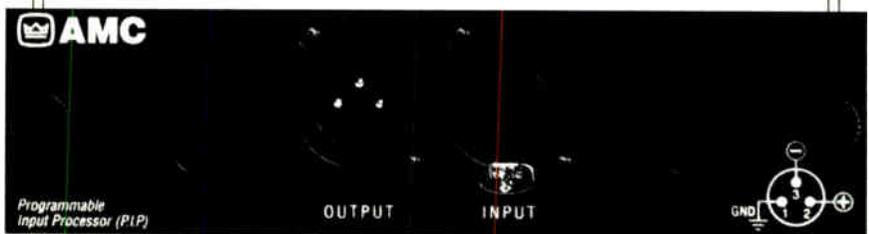
the consoles, and Don is there to make sure everything is working," explains Popick. "As soon as you stop listening to do something or repair something, somebody wants something."

Ever-changing musical arrangements make mixing the Grateful Dead an improvisation itself. "A lot of it is with Garcia's mix," explains Popick. "If the guys are laying back or just playing quietly but intensely, I may have to keep the mix up. And I find it helps. For instance, if I'm watching Jerry and they're playing certain passages and I kick up the

guitar and the keyboards in each ear, I do notice that he'll dig it; he seems to enjoy it. They're playing with him, he can hear it *right there*. I'm guessing from a musical standpoint, 'Is this what he wants?' Sometimes I've done it, and he'll say, 'Hey there's too much this or that,' but sometimes I know I'm right, because I do it and it seems to have a positive reaction."

"You have to understand, I'm perpetually dissatisfied," explains Healy as the topic of vocal mics is raised. "About twice a year, I go through The Great Microphone Hunt. We've gone back to brands we used before,

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which are pretty good-sounding mics. We tried the B&Ks, which are good mics, but because musicians are used to the bass tilt-up when you get inside the pattern of a cardioid mic, the fact that they're condensers causes them to pop and bottom out the diaphragm. That causes them to intermittently shut off."

His Gamble EX console has a special 4-pole low-cut filter installed by Jim Gamble. "I can make the popping go away without making the voices sound thin," he explains. "But the instant that it's popping, white noise is coming out of it. So even

though you don't perceive it as a pop, there is a severe disturbance in the quality of sound."

On the other hand, Healy continues, "The problem with dynamic microphones is they tend to have high and low frequency problems. First, there's always a resonant frequency in the diaphragm that's not quite high enough to sound good—typically 3 to 5 kHz, (some mics are as high as 10 kHz). The other problem is that they tend to not have real good low end—most of them have transformers built into them to keep reactance off the diaphragm. I've got

some that I [run transformerless] into the mic preamp of the board. That helps, but I'd like to see a dynamic with a small enough diaphragm that the resonant frequency is above the annoying part of the human vocal spectrum—say 10 to 20 kHz. But the problem is that the efficiency would go way down, because you're not capturing enough total SPL to get enough voltage out of it.

"Also," Healy continues, "I'd want something designed specifically for singing, not announcing or anything else. Microphone manufacturers are disinclined to make a mic they can't advertise as usable on everything. I'd rather see sax mics and vocal mics and drum mics. We already have a variety of multipurpose mics. Why doesn't someone come out with a whole line of mics designed to sound good on specific instruments? I know what to do to a mic to make it sound good on sax. Why not build it in?"

But regardless of the technology used in the journey, the goal remains unchanged. "You start with the sound system," says Healy. "The next thing is the room the system's in. You work on that until the band steps on stage. Then you make whatever modifications you have to when the band begins to play. Finally, when the audience is in and the show begins, that's the fourth level of what you have to deal with.

"Philosophically, my job is to erase everything between the audience and the band," he says. "You shouldn't be aware that you're in a sports arena listening through a sound system; you're just there with the band. It's a lot of work, and it certainly doesn't happen every time. But that makes the Grateful Dead a spectator sport, because when you *do* get there, it's so groovy that it's worth going a bunch of nights that fall short. So, our audience is rooting for us as much as they're listening. They aren't witnesses, they're participants. And frequently it reaches the sublime.

"Down through the years," Healy concludes, "I've had the outrageous good fortune of working with the finest and most creative minds anywhere. The potential success of every show is a product of all of us working together. The entire endeavor is a team effort." ■

David (Rudy) Trubitt is a freelance writer and audio person living in the San Francisco Bay Area.

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CLAIR BROTHERS R-2DP LOUSPEAKERS

Originally designed for Walt Disney World, the R-2DP from Clair Brothers (Lititz, PA) is a two-way passive loudspeaker system for indoor or outdoor use. A 150-watt, 2-inch compression driver coupled to a rotatable 60x40-degree constant directivity horn reproduces highs, while mid-bass and lows down to 50 Hz are provided by a 300-watt, 12-inch woofer. Available are mounting and connector options, weather-resistant treatment, active or passive crossovers and internal 70-volt transformer; list is \$2,255.

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RAMSA DIGITAL MULTIPROCESSOR

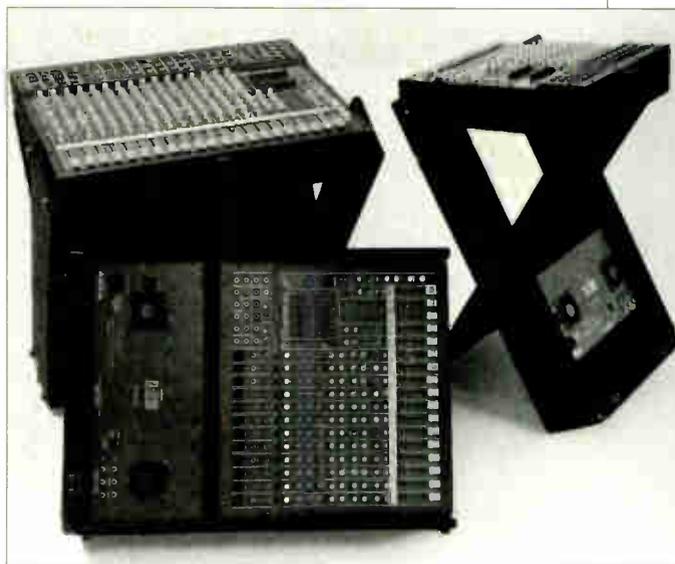
The Ramsa WZ-DM30, from Panasonic Pro Audio (Cypress, CA) is a 1-input/4-output digital multiprocessor consisting of compressor/limiters, a graphic equalizer, a four-way crossover and a 4-band parametric equalizer. Large LCD and jog/shuttle dials simplify operation, while all controllable parameters can be stored in 16 event memories for instant retrieval; MIDI allows external program-change control. The 20-bit digital floating A/D converter and MASH™ DAC provide a typical dynamic range of 110 dB.



FENDER PX POWERED MIXERS

Available in 8-, 12- and 16-channel configurations, the PX Series from Fender (Scottsdale, AZ) combine a studio-quality mixing console with built-in digital reverb, a dual 9-band graphic EQ and two pro power amps (150 watts/channel into four ohms for 8-channel units and 250 W/ch into four ohms for 12-/16-channel units). The mixers also include Deltacomp™ clip protection and a road case with a protective cover that folds out to become a stand.

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BROSS IN-EAR MONITOR AMP

Designed for use with in-the-ear monitors is the RC-2000 stereo headphone amp from Bross Audio Designs (Nashville, TN). The amp features left/right XLR inputs, mono switch, signal present/clip LEDs and stereo XLR outputs. The belt pack interfaces with the amp via a standard microphone cable (included) and has a female XLR input, signal indicators, volume control and a mini-headphone jack. Retail is \$425; custom ear monitors are optional.

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SOUNDTECH PANORAMIC MIXERS

SoundTech (Vernon Hills, IL) is shipping its Panoramic mixers, designed by former Trident designer John Oram. Priced from \$2,399, the S Series mixers are offered in 4- and 8-bus configurations, with 16 to 32 channels. An Analog Devices integrated circuit in the front end of each channel is said to provide sound quality previously unavailable in this price range. Other features include 3-band, midsweep EQ with high/lowpass filters, simultaneous line and tape mixing on a channel and separate mono out for driving subwoofers.

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WHITE INSTRUMENTS 4700

White Instruments announces the first non-Crown component on the Crown IQ 2000 bus. The 4700IQ and 4700-2IQ are digitally controlled mono and stereo dual 1/3-octave equalizers, built around the popular 4700/4700-2 equalizers and providing full-screen adjustment and monitoring via the IQ 2000 system.

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World Radio HStudio Photos by Ed Freeman

RECORD PLANT

RECORDING STUDIOS

25 YEARS OF HITS

BY DAVID PATRICK GOGGIN

The Record Plant is celebrating a modern recording milestone—a *quarter century* of hits, from the first sessions with Hendrix, Zappa, Traffic and Velvet Underground to today's chart toppers by artists ranging from Guns N' Roses, Red Hot Chili Peppers, Stone Temple Pilots and Black Crowes to Barbra Streisand, Mariah Carey and Michael Bolton. The heroes have worked and played here, and if only those soundproofed walls could talk...

Way back on March 13, 1968, a new recording concept was launched in New York City, and the Record Plant was booked solid for three months in

advance, much to the delight and surprise of its young owners. It was only a few months earlier that Chris Stone, national sales manager for Revlon, had wandered into a drab, one-room studio

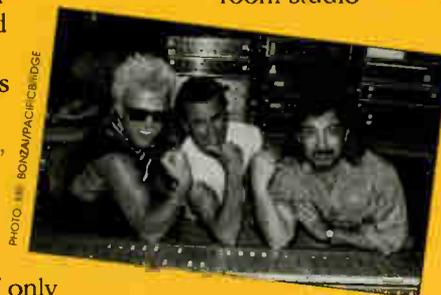


Above: 1982, Chris Stone and Stevie Wonder, who liked Record Plant so much that he booked three years in the '70s



Chris Stone is in front of the Los Angeles Record Plant, circa 1973

Right: Bonnie Raitt and Don Was in pre-production for *Luck of the Draw*, 1990

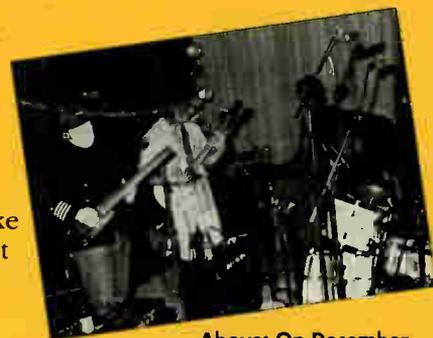


Left: Charmed Life sessions with Billy Idol, producer Keith Forsey and engineer Tommy Vicari, 1989

overlooking Times Square to visit a new friend of his, engineer Gary Kellgren. Curious about this secret world of music, Stone had to step around artists like Hendrix, or move out of the way while the wunderkind Frank Zappa worked with Kellgren at the board.

Stone discovered that Kellgren was doing everything from engineer-

—CONTINUED ON PAGE 135



Above: On December 18, 1985, "The Last Jam" at the Third Street studios: Pictured are Stephen Stills, Joe Walsh and Al Kooper, who joined Jim Keltner, Joe Vitale and hundreds of veteran Record Plant alumni.



Left: Producer David Foster (center) with Grammy Award-winning engineer Dave Reitzas (right), during recording sessions with Color Me Badd, 1993

Current Studio Photos by Ed Freeman



Top left: View from Neve II's spacious recording area, into the main control room. The doorway to the left leads into a voice-over booth and then to the main Studio Suite entrance. Above the control room is a private artist lounge. The room features a 35-foot sloping ceiling, and includes a pair of custom-designed, isolated closets for guitar, bass and keyboard amplifiers.

Top middle: Record Plant's new SSL 1 features a 96-input Solid State Logic SL-8000 G-Series console, one of the largest ever to be installed in an audio facility. Prince was the first artist to use Record Plant's new flagship room.

Large overall photo: Neve I houses a 96-input Neve VRSP Legend console with GML Moving Fader automation plus recall, and features a

unique combination of user panels for both music-scoring and post-production/mix-to-picture sessions. The room is set up to handle mixed-media production and mix-to-picture utilizing Dolby Stereo and Surround-Sound techniques.

Top right: Record Plant's large and spacious atrium is lit by a lofty, multi-angled skylight that admits plenty of natural light into the area. A centrally located client service desk is staffed around the clock to take food orders, arrange rides or offer other services. Complete with trees, fountain and client conveniences, including jacuzzi, billiards, coffee bar and other amenities, the atrium has become the facility's "Town Square," where artists, engineers and producers relax and interact in a creative and colorful environment.

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Here's to the next 25 years!
 Dave Reitzas, David Foster

AND

MIDAS WELL

RECORD PLANT

RECORDING STUDIOS

CELEBRATES A NEW ERA WITH \$4 MILLION EXPANSION

BY TOM JOHNSON



A new chapter in the long and eventful history of the Los Angeles Record Plant began in January of this year, with the completion of an ambitious, \$4 million upgrade that transformed the historic studio into a stylish, luxurious '90s workplace.

The expansion more than doubles Record Plant's studio and client areas, adding a large new indoor atrium, two new state-of-the-art studios and a new digital processing/MIDI/overdub suite to its two original studios. The Phase II project was completed under the supervision of architect Peter Grueneisen from L.A.-based design firm studio bau:ton.

This five-star ambience is a key element in the operating philosophy of Record Plant's new owner, Rick Stevens. In many ways, Stevens' approach echoes the thinking behind the original L.A. Record Plant, offering a hip alternative to the stodgy label-owned studios and aging Hollywood independents of the day.

When Stevens acquired the Record Plant in June of 1991, he became the proud owner of two fine Tom Hidley-designed studios. "But it became obvious that a major renovation was in order," Stevens says. "You couldn't just buy this place, upgrade the service and expect the Record Plant name to mean what it meant ten years ago. Right from the start, our business plan was not just to acquire the Record Plant but also to implement the now-completed improvements."

Walk in the front door of the Record Plant and you find yourself



1993, 25th Anniversary Celebrations: Former owner Chris Stone gives successor Rick Stevens a framed invitation to the opening of the first studios in 1968.

staring down a long central corridor that bisects the building. In days gone by, that long, dark hallway imparted a dismal "institutional" feel to the Sycamore Avenue Record Plant. Now daylight beckons from the end of the corridor, warmly inviting the visitor inside.

Architect Peter Grueneisen responded to Stevens' idea by raising the existing roof in the rear portion of the building and installing a lofty, multiangled skylight made of steel supports with large panels of clear glass to admit plentiful natural light. This crystalline vault is complete with trees, fountain and client conveniences, including a Jacuzzi, billiards, coffee bar, TV/video game room and other amenities—all realized in studio bau:ton's uncluttered, contemporary style.

Centrally located is a granite-topped client service desk, which is staffed around the clock by Record Plant's famed Client Service Directors, who are ready to take food orders, arrange rides or offer any other type of service that might be provided by a concierge or desk

—CONTINUED ON PAGE 143

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Here's To
The Next
25...

Michael Bolton

25 YEARS OF HITS 1968 to 1993

1968: Gary Kellgren and Chris Stone launch Record Plant in New York City. First session—Jimi Hendrix's *Electric Ladyland*. First big mix session—*Woodstock* soundtrack. First remote—*Concert for Bangladesh*.

1960s: Hendrix, Zappa, Buddy Miles, Velvet Underground, Traffic and Vanilla Fudge record in the Record Plant's living-room environment on then-radical 12-track equipment.

1969: Record Plant L.A. opens. Tracks increase from 12 to 16!

1970s: Record Plant becomes legendary for nonstop hit recordings, wild lifestyles and technological leaps. The Eagles' *Hotel California*, Stevie Wonder's *Talking Book*, *Innervisions*, *Songs in the Key of Life*, John Lennon's *Rock 'n' Roll*, Fleetwood Mac's *Fleetwood Mac & Rumours*, Wings' *London Town* and more are recorded there! Record Plant becomes the world's first studio to go 24-track and, later, 32-track digital.

1974: John Lennon & Paul McCartney play together for the last time in an all-night jam session.

1977: Co-founder Gary Kellgren tragically drowns in his swimming pool.

1978: Fire destroys Record Plant Studio C.

1980: Sausalito Record Plant sold. Co-founder Chris Stone concentrates Record Plant activity around its Hollywood base.

1980s: Record Plant remains in the forefront as recording technology evolves. Another decade of hits by Bruce Springsteen, Tears for Fears, Chicago, REO Speedwagon, Heart, Whitesnake, Billy Idol, Rod Stewart, Motley Crüe, Tubes and more. Record Plant scoring stages L and M open on the Paramount Pictures lot, Hollywood.

1985-1986: Record Plant's Third Street facility closes with famous Superstar Jam. Record Plant re-opens at its current Sycamore Avenue location, Hollywood, in the former Radio Recorders Annex—a historic studio where Elvis Presley recorded.

1987: Chrysalis Studio Group, headed by Beatles producer George Martin, buys Record Plant.

1991: Bruce Springsteen and Guns N' Roses are asked to leave the legendary Lady of Rock, as Chrysalis decides to sell Record Plant. Veteran music executive Rick Stevens saves the famed studio, committing the resources necessary to make it number one again.

1992: A multimillion dollar upgrade adds a pair of new state-of-the-art studios and digital editing/MIDI/overdub suite. The five-room complex is complemented by a dramatic new indoor atrium, complete with Jacuzzi, billiards, coffee bar and other amenities.

1993: Record Plant is once again on top as the world's premier recording facility name...Guns N' Roses, Prince, Michael Bolton, Barbra Streisand, Michael Jackson, Pearl Jam, Red Hot Chili Peppers all make music there. Record Plant is nominated for a coveted TEC award in the recording studio category. The honor is especially significant as it is Record Plant's 25th birthday year! ■

—FROM PAGE 130, 25 YEARS OF HITS
ing the recording sessions to sweeping the floors—all for a cheesy \$200 a week. With a Masters in marketing from UCLA, Stone didn't think Kellgren was marketing his talents well enough. He took a look at the books and found that the little studio was billing five grand a week, and after a meeting with the boss, Kellgren's salary jumped to a thousand a week. Stone and Kellgren became better friends.

1993: Vince Neil (right) in Record Plant's Neve I control room, working on tracking and overdub dates with guitarist Steve Stevens for The Vince Neil Band.



beautiful—I want to live here.' The concept has proven itself in the hits that have been made in these studios for all these years, not to mention the billions in dollars that have been generated."

True to this new studio concept, Record Plant offered the creature comforts of a stylish home and the best technology available, a motif that continues to this day. Among the innovations was the "jukebox," now known as a monitor mixer,

Kellgren had a passionate vision of what a rock 'n' roll studio ought to be. What he hoped for was like a hotel, but a homey place where you would be taken care of while you created your masterpiece. Stone recalls, "When we started Record Plant, recording studios were like hospitals: fluorescent lights, white walls and concrete floors. We turned the recording studio into a living room. The best and greatest compliment that any artist who came to work with us could make was, 'My God, this is



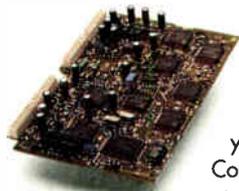
1985: Studio A, Working on Down and Out in Beverly Hills. (L to R): Little Richard, engineer Michael Braunstein, associate producer Geoffrey Taylor, and Richard's nephew Charles Fard.



VP/Studio Manager Rose Mann booking time back in 1983.

PHOTO: MR. BONZA/PACIFICBRIDGE

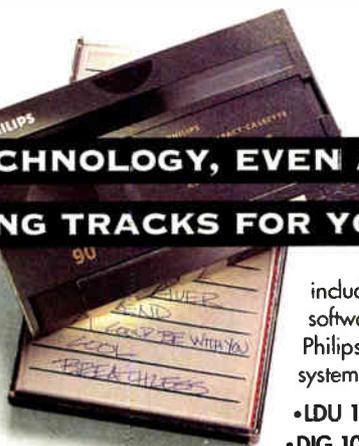
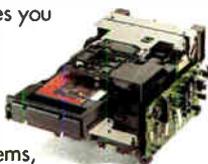
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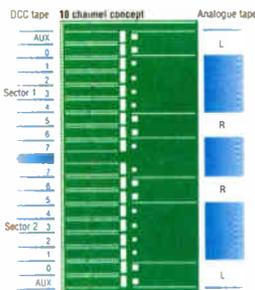
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Record Plant alumni Andy Johns and Ron Nevison in the '70s



PHOTO: JEFFREY MAYER

which Kellgren built to keep producers busy while he got on with the engineering. He also is credited with improvising with some masking tape and tape machine motors to pioneer the "flanger," the U.S. version of the Beatles' A.T.D. (Automatic Tape Doubling) for that memorable psychedelic sound.

There are tales told by the campfire, where rock mythology is discussed, that say the atmosphere created in that first studio and the ones to follow was so close to a fine hotel that one of rock's most memorable songs was written to immortalize that special state-of-mind. One look around the living room environment, one listen to the cutting-edge 12-track equipment and it was hard to get Hendrix, Zappa, Buddy Miles and Vanilla Fudge to leave. Luckily, the party was being recorded.

It's safe to surmise that no other "facility" has ever lent so much of a creative edge to the works of art at hand. The first album cut at Record Plant was Hendrix's *Electric Ladyland*. The first big mix session was *Woodstock*, and the first remote job was *The Concert for Bangladesh*. Not bad for a start, and with business booming for two years, the partners decided it was time to open another studio on the West Coast.

If Hollywood needed a little more premiere hooplah, the Los Angeles Record Plant rose to the occasion with the opening ceremonies on Third Street, December 4, 1969. The superstars were invited, and the invitation was a brick with names silk-screened onto the surface. At the door guests were met by a tuxedo-clad bricklayer, who built the autographed lobby wall as the evening progressed.

Stone had discovered an enterprising young speaker designer, Tom Hidley, who was invited to

STUDIO PROFILES OF RECORD PLANT'S FIVE TECHNOLOGICALLY ADVANCED STUDIOS

STUDIO	CONSOLE	INFO
SSL I	96-input SSL 8000 "G" Series with Ultimotion	Perhaps the world's greatest SSL mix room! SSL I features one of the largest SSL boards on the planet and is a studio "suite" with a directly accessible and luxurious private lounge, bathroom and kitchenette, for maximum privacy.
SSL II	72-input SSL 4000 "G" Series	This famous Hidley-designed room has been the mixing site for classic hits from Black Crowes, Red Hot Chili Peppers, Prince and Bruce Springsteen.
Neve I	96-input Neve VRSP Legend with GML automation and recall	One of the largest Neve consoles in the world in a dream mix and tracking suite designed by studio bau:ton. Directly accessible private lounge overlooks the Record Plant atrium.
Neve II	60-input Neve V60	Record Plant's famed tracking room has recorded some of the greatest rock tracks of the decade. Slash's favorite guitar room includes the tracking room and "super-live" room.
Mini-Plant	36-input custom API/DeMedio console	This newest Record Plant studio is a state-of-the-art MIDI, digital editing and overdub studio, employing computer-based digital audio processing. A showcase for the new technology with a classic console for warmth in a room designed for clients who seek quality at the right price.

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1974: (L to R) Studio owners Chris Stone and Gary Kellgren, with Van Morrison, Stu Levine and Bob Krasnow, now chairman of Elektra Records.

handle the acoustics in the new facility and also became the chief technician. The tracks increased from 12 to 16, and within a year the studio boasted the first 24-track in the world, a \$40,000 machine designed by Hidley and built by MCI's Jeep Hamed. The music biz was thriving, and clients like the Rolling Stones, Linda Ronstadt, Three Dog Night and Fleetwood Mac started calling Record Plant home. Stevie Wonder locked out Studio B for a few years while he cut *Talking Book*, *Innervisions*, *Songs in the Key of Life* and *Fulfillingness' First Finale*. Record Plant became well-known for its nonstop hit recording and wild home life, as well as for technological leaps, including the first digital 32-track, the still-respected 3M M81 Digital Mastering System.

A third Record Plant opened in Sausalito in 1972, and shortly afterward Stone and Kellgren sold the New York facility. Studio C in L.A. was completed in 1974, and the hit parade continued with artists such as Sly Stone, Quincy Jones, Poco, REO Speedwagon, Diana Ross, Alice Cooper, America, the Allman Brothers, Iron Butterfly and Crosby, Stills & Nash. By 1977, Donna Summer, Eddie Money, Rod Stewart, The Tubes and The Eagles were all camping out at Record Plant.

The soaring success of the studio was marred by two tragedies. In 1977, Gary Kellgren drowned in his swimming pool, and a short-circuit torched Studio C on January 10, 1978. The economy put an end to some of the more flamboyant excesses in the music business, and as the industry turned its eyes to a more businesslike approach, so, too, did the Record Plant. Sausalito was sold in 1980, with the full focus turning to Los Angeles. The studio

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had a momentum of its own, a fleet of remote trucks, and it continued to expand its L.A. base of operations. In 1982, Record Plant leased Glen Glenn stages M and L on the Paramount Pictures movie lot. While the studios on Third Street continued making Gold, Record Plant's Paramount studios scored with blockbuster soundtrack hits like *Footloose*, *Urban Cowboy*, *Star Trek*, *Annie*, *48 Hours* and *An Officer and a Gentleman*.

By December 1985, the operation had outgrown its "groovy" facilities on Third Street, and the studios celebrated with "The Last Jam," an all-night party with hundreds of Record Plant veterans. In January 1986 the new facility opened at 1032 Sycamore Avenue, on the site of the Radio Recorders "Annex," a landmark studio where artists such as Elvis and Satchmo had worked. The historical vibe, comfort, high technology and versatility of the new studios attracted top producers, and the studios continued as a haven for the biggest names in music. In late 1987 Stone sold half the operation to Chrysalis and then remained until 1989, when he sold the remaining 50%.

Without a strong figurehead, the studio was sort of on cruise control

until it was purchased by Rick Stevens. Stevens and his longtime associates, Wall Street investment bankers Tom Kirch and Michael Beder, acquired Record Plant from Chrysalis in June 1991. Formerly president/CEO of the Summa Music Group publishing firm, with its own hit-making recording studios, Stevens is a music industry veteran with experience in top-level artist management and as the worldwide head of A&R for PolyGram, one of the major international record conglomerates.

In order to return Record Plant to the very top, Stevens decided that the studio would have to come up with the '90s version of Gary Kellgren's service-oriented formula of the studio as hotel/living room. "Kellgren was right. The artist will produce his masterpiece if he is left in a creative, comfortable, magical environment," says Stevens. "I firmly believe that is why such a disproportionate number of the greatest records of the modern music era have come from this studio."

Armed with this philosophy and the goal of making Record Plant number one again, Stevens and his associates committed the resources to fulfill that dream. As a result, a new chapter in the colorful saga of

A Selected Discography of Record Plant Hits

.....

Aerosmith: *Live Bootleg*; **Black Crowes:** *Southern Harmony Musical Companion*; **Michael Bolton:** *Time, Love and Tenderness, Timeless—The Classics*; **Boston:** *Boston*; **Edie Brickell & New Bohemians:** *Shooting Rubberbands at the Stars*; **Mariah Carey:** various; **Chicago:** 16, 17, 18; **Crosby Stills & Nash:** various LP tracks; **Danzig:** *Danzig*; **Def Leppard:** *Last Action Hero* soundtrack; **Eagles:** *Desperado, Hotel California*; **Fleetwood Mac:** *Fleetwood Mac, Rumours*; **Dan Fogelberg:** *Souvenirs*; **Guns N' Roses:** *Lies, Use Your Illusion I & II*; **Heart:** *Heart*; **Whitney Houston:** *The Bodyguard* soundtrack; **Janet Jackson:** *Janet*; **Jefferson**

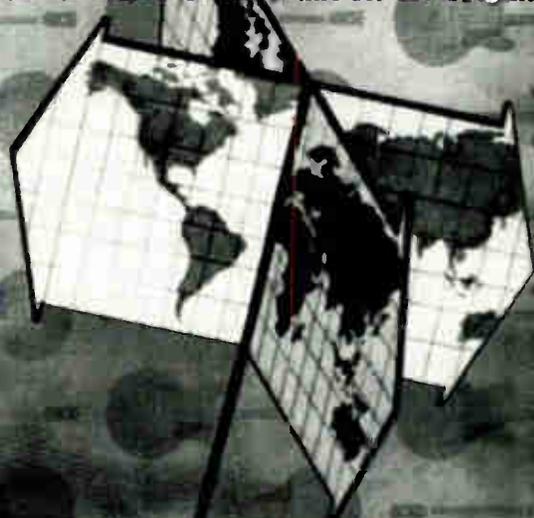
Starship: *Freedom at Point Zero*; **Billy Idol:** *Charmed Life*; **Michael Jackson:** *Dangerous*; **Mick Jagger:** *Wandering Spirit*; **Rick James:** *Street Songs*; **John Lennon:** *Rock and Roll*; **Eddie Money:** *Eddie Money*; **Morrissey:** *Live*; **Motley Crue:** *Theater of Pain*; **Pearl Jam:** *Ten*; **Poco:** *Poco*; **Prince:** *Diamonds and Pearls*; **Bonnie Raitt:** *Nick of Time*; **Red Hot Chili Peppers:** *Blood, Sugar, Sex, Majik*; **Bruce Springsteen:** *Lucky Town*; **Rod Stewart:** *Foolish Behavior*; **Barbra Streisand:** *Back to Broadway, Yentl*; **Terence Trent D'Arby:** *Symphony or Damn*; **Tina Turner:** *What's Love Got to Do With It* soundtrack; **Twisted Sister:** *Stay Hungry*; **Ugly Kid Joe:** *America's Least Wanted*; **Joe Walsh:** *Barnstorm, How Ya Doin'*; **Whitesnake:** *Slip of the Tongue*; **Stevie Wonder:** *Innervisions, Songs in the Key of Life, Talking Book*. ■

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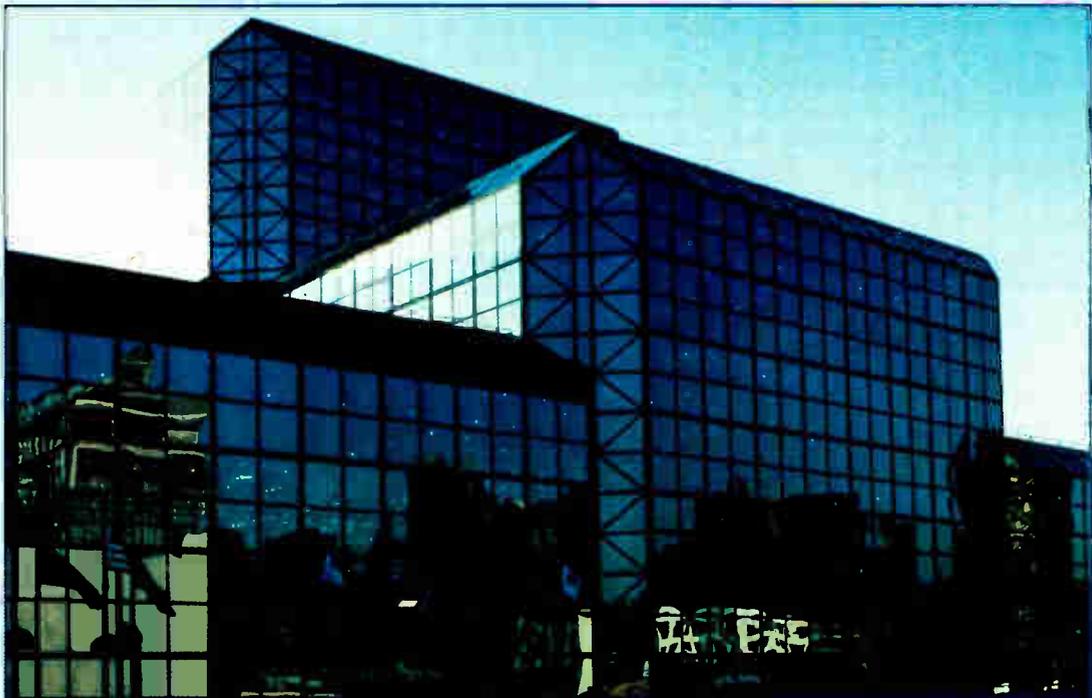
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Science emphasizes detached observation, objectivity, and logical deduction, but most who come away from the AES 95th and New York City this fall will find themselves feeling anything but detached — the combined dynamics of this city and this event simply won't allow it.

the Record Plant began in January of this year with the completion of an ambitious, four-million dollar upgrade to the facility and the realization of a two-year plan to put together the most service-oriented staff in the industry.

The expansion more than doubled the client areas of the Record Plant building, adding a large new general sector, two new state-of-the-art studios and a new digital editing/MIDI/overdub suite to the existing two studios. Walk in the front door of the new Record Plant and daylight radiates from the newly completed atrium at the end of the long central corridor. This atrium, complete with trees, fountain and client conveniences such as jacuzzi, billiards, coffee bar and other amenities, has become the "town square" of the Record Plant where top artists, engineers and producers relax and interact in the creative and colorful environment. In keeping with Record Plant's record of technological leadership, the new studios are equipped with two of the largest and most-advanced recording consoles ever installed.

Created under the supervision of architect Peter Grueneisen of the award-winning studio bau:ton, the upgrade has transformed the historic studio into a stylish, luxurious '90s workplace.

Starting with the original concept that made it the world's premier recording studio, Record Plant remains true to form with the retooled 1993 formula for continuing historic creativity. The legend is alive with the music of Prince, Pearl Jam, Janet Jackson, Tina Turner, Mick Jagger, Michael Jackson, Coverdale & Page, Steve Vai, Vince Neil, Bonnie Raitt, Whitney Houston, Bobby Brown, Seal, Celine Dion, Damn Yankees, Boyz II Men, Divinyls, Ugly Kid Joe, En Vogue, Steve Perry, Skid Row, Paul Westerberg, plus the emerging stars of tomorrow. Nominated for the TEC Award as "Recording Studio of the Year," the honor is especially significant during Record Plant's 25th Anniversary. ■

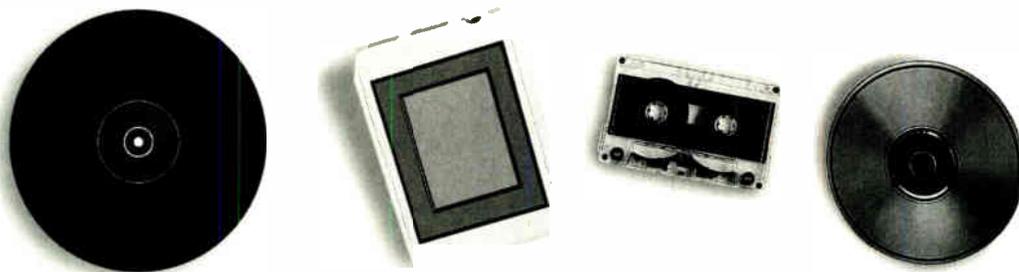
Many thanks to Ruth A. Robinson and Alan di Perna for historical resources.

—FROM PAGE 132, RECORD PLANT EXPANDS clerk at a smart hotel.

But the real heart of this common lounge area is its large Jacuzzi pool. It is enclosed by dramatically sloping glass walls fitted with mini blinds that can be drawn for privacy. "The Jacuzzi at the old Record Plant was somewhat a symbol of the place," says Grueneisen. "Rick wanted to bring that back."

An important design objective was to turn each of the new studios into a completely self-contained workspace, each incorporating a private lounge equipped with a kitchenette and bathroom. This way, projects could proceed in complete isolation from other activities around the studio complex. Grueneisen adds that the new Record Plant operates on a "two-tiered lounge concept." Clients can stay in their private studio lounges—"their own little kingdom," as the architect puts it—or come into the atrium area to mingle with people working on other projects.

The Record Plant's four studios are located along a corridor that leads to the atrium lounge. One of the original studios, Neve II, is



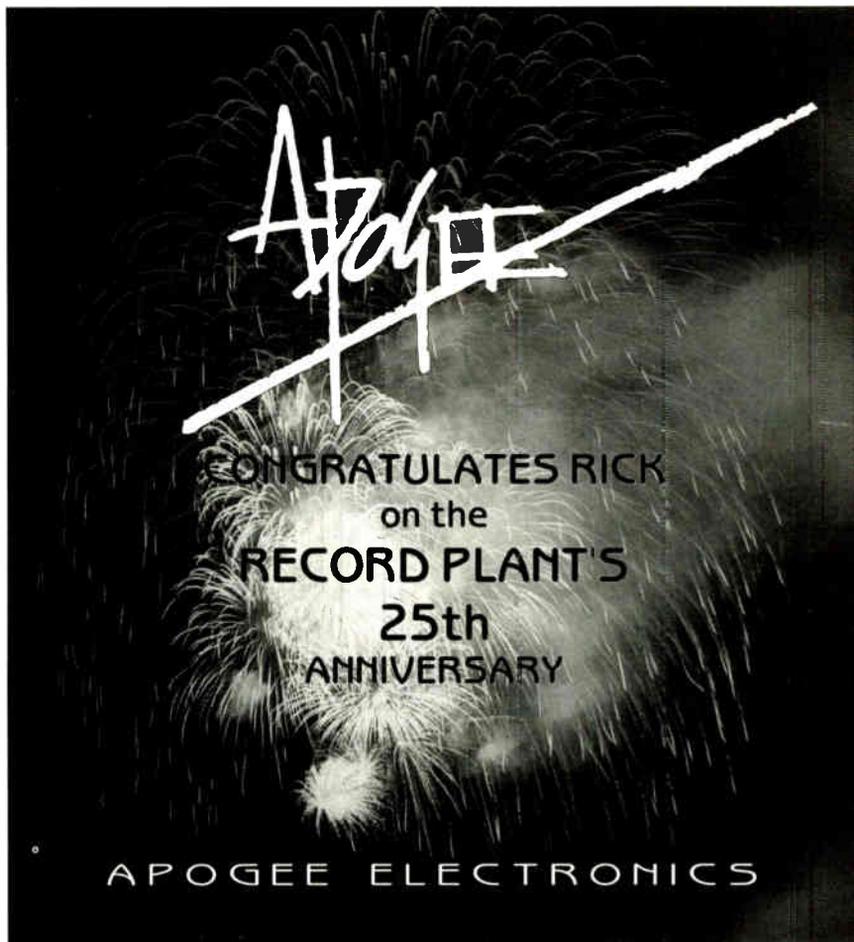
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equipped with a 60-input Neve V Series console with GML automation and a custom film-monitor module. Neve II contains the facility's largest recording area, a 40x35-foot space with 25-foot ceilings.

The other Tom Hidley room, SSL II, is equipped with a 72-input SSL G Series console with G Series automation computer and a combination of E and G Series EQ modules. SSL II and Neve II control rooms feature 25-inch video monitors and projection TV systems for the tracking rooms.

SSL I, the Plant's new mix/over-dub suite, was the first of the two new studios to be completed. Prince was the room's inaugural client. The centerpiece of the new mix suite is a 96-input SSL SL-8000 G Series console with Ultimotion, one of the largest SSL consoles ever installed in an audio facility.

Neve I, the Record Plant's second new room, was designed to accommodate a wide variety of tracking, scoring and mixing projects, and features a 96-input VRSP Legend with GML automation—one of the largest Neve consoles ever installed.

Neve I opened in January of this year with producer David Foster and superstar Barbra Streisand as its first clients. The studio's tracking space comprises a 25x40-foot room with a sloping ceiling that reaches a height of 35 feet. Room acoustics are fairly live.

Although, as its name implies, the Record Plant is primarily a record house, it is also equipped with mix-to-video facilities for record clients who might need to provide special mixes of their music for film soundtracks, videos and so on.

The last and latest component to the 25th Anniversary expansion is a new digital processing/MIDI/over-dub suite that has just come online. Dubbed the Mini-Plant, this studio features the latest digital processing software and hardware from Digidesign and Sonic Solutions, Mac Quadra 950 computers, and multiple 21-inch color computer monitors, as well as an outstanding array of MIDI instruments, sequencing software and sample libraries. From CD pre-mastering to digital editing and processing to MIDI-based recording and computer-based audio-for-picture applications, the new Mini-Plant is a showcase for the new digital technologies.



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by Iain Blair

PETE ANDERSON

THE SONG DOCTOR

Life works in mysterious ways, as Detroit-born guitarist Pete Anderson knows only too well. Growing up in Motown with just one aim—to play the blues—Anderson instead ended up becoming a highly successful producer and arranger, as well as the guiding light behind country star Dwight Yoakam. His sixth collaboration with Yoakam, *This Time*, is already both a big commercial hit and a critical success, but like Yoakam, the 44-year-old Anderson is not exactly a traditional Nashville figure.

Since producing Yoakam's debut album, *Guitars, Cadillacs, Etc.* back

in 1986, Anderson has worked with an eclectic group of artists and racked up an impressive list of credits that include *Short, Sharp, Shocked* and *Captain Swing* for Michelle Shocked, *Forbidden Places* for the Meat Puppets and *Beautiful Mess* for Thelonus Monster. Now the successful producer is working both sides of the studio again. He's currently

finishing up his debut solo album, and he's about to launch his own label, Little Dog Records.

Mix: What were your musical influences growing up?

Anderson: I first got inspired to play guitar after seeing Elvis Presley on the *Ed Sullivan Show*, and then I got into Bob Dylan and all his inspirations. That's when I first discovered blues and Muddy Waters, and at that point, Detroit was still a great blues town, because all the Chicago guys like Muddy and James Cotton would come and play.

Mix: Were you into country?

Anderson: Not really. My father was from the South so we heard it around the house, artists like Hank Williams



PHOTO: JOHN SCARPATI

Sr. and Eddie Arnold. My dad was a big fan, so the music was always in my head, and today I still feel that cultural thread all over America and Canada, and even in Britain.

Mix: How did you end up in L.A.?

Anderson: When I was 18 I started traveling a lot. Then I began splitting

Dwight Yoakam (left) and Pete Anderson

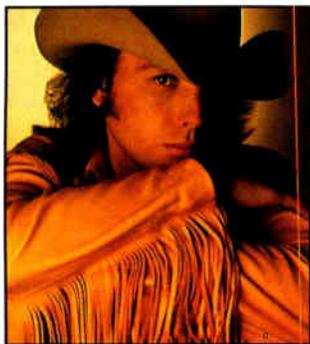


PHOTO: KIP LOTT

my time between Phoenix and Detroit. I had a couple of bands, and I was playing blues, but there wasn't anywhere to go in the local scene, so the logical choice was L.A. I moved there with our bass player in 1972. We knew absolutely no one, and we slept in his VW bus in Venice until we moved to Hollywood and started making the rounds.

Mix: How did you become involved in production?

Anderson: Because I wasn't a great songwriter or a singer, my place in bands tended to be the arranger, the guy who knew how to fix a song. So I started studying popular music and arrangement, and seeing what worked and why, and I came up with "The

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Before I was a musician, I was a serious listener. I really tried to get inside each record I heard, and that's stayed with me. I'm not an engineer/producer or a technical producer, I'm a musician/producer—what I bring to a project are my skills as an arranger, musician and songwriter. I'm a good song doctor and a decent cowriter, and that's all part of my package. **Mix:** Looking at your credits, it's interesting to note that most of your records have been made with songwriters.

Anderson: I've certainly had my main success with those kinds of artists, and I naturally gravitate toward them. I'm always in awe of great songwriters, and I'm fortunate enough

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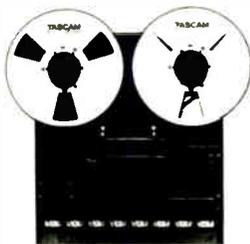
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to have been around some really good ones. Dwight Yoakam is a perfect example.

Mix: How did you two first hook up?

Anderson: Just playing bars and clubs. We had a mutual friend. Dwight needed a guitar player, and the gig paid \$40, so I said yes. He did a lot of his own songs, and I started really listening to the lyrics, and even though he was very young and I don't think he'd really found his voice or his character, I could tell the composition was great. He was writing in a Brave Old World that no one really ventures in—stuff that could have been sung in the '50s and '60s by the greats—the kind of songs that I consider to be true country music.

Mix: So what did you bring to the partnership?

Anderson: In his case it's a pretty classic arrangement. Some of the areas might overlap now, but when we met we had nothing to lose. We were both broke, and there were no ulterior motives. Luckily I didn't have a huge ego as a songwriter, so we

were never in competition. He didn't have what I have, and vice versa. He was a great singer, a great songwriter and developing as a performer. I had arranging and production skills, and, musically, I could flesh out his ideas and color them in. Dwight's fairly illiterate musically, so I could articulate that for him, and when we got in the studio I could be an interpreter. A lot of times, depending on an artist's experience, I am an interpreter, and I walk that line between the technical side and the musical side.

I've spent so much time in studios that I know how to get what an artist wants. So if they say, "I want a warmer sound" or "I'd like a real bright, spacious feel," I can take these vague terms and translate that to an engineer. And often you can have a very talented engineer who's musically out of touch with the artist.

Mix: Do you work with a regular engineer?

Anderson: I try to use the same team. Dusty Wakeman has worked with me on nearly all the projects, and now we work on more of a producer/associate producer basis. That keeps me a lot fresher, because I

don't have to stay in the room. I get it started to where I want it, and then I can leave and come back with a new perspective. I also work with Peter Doell at Capitol, and I've also worked with my wife, Judy Clapp. She mixed Blue Rodeo and the Meat Puppets. It's almost as scary as teaching your wife to drive—mixing a record—but we get on pretty good.

Mix: Where did you record the first Dwight Yoakam album?

Anderson: We actually had three or four aborted efforts at making it. It started as an EP, and we borrowed \$5,000 from a friend of Dwight's and maxed out his Visa card. We started at Track, which used to be Magnolia Sound, and made a sort of deal that went wrong, and we ended up erasing all the tracks. That happened a couple more times before we finally went to Excalibur Sound in the Valley where we used this rock 'n' roll engineer, Brian Levy, who'd never done country before. That suited us fine, because we didn't want any preconceived ideas about what a country record should sound like. We then mixed the four tracks at Hit City West, from midnight until 8 a.m.,

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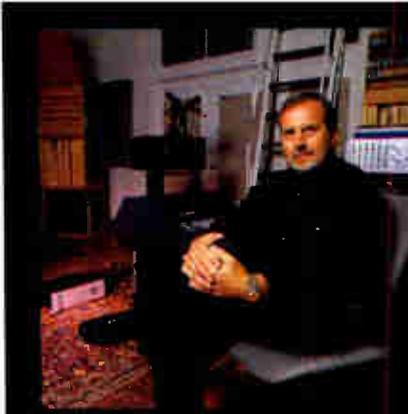
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and it went out independently. Later, when he got signed by Warners and we got some money, we kept those original tracks and mixes and then cut four new tracks, including the title song, at Capitol Studio B using Neve and Studer gear. And that's where we did his second album, *Hillbilly Deluxe*, again using Dusty Wakeman, and it's been the same every album since.

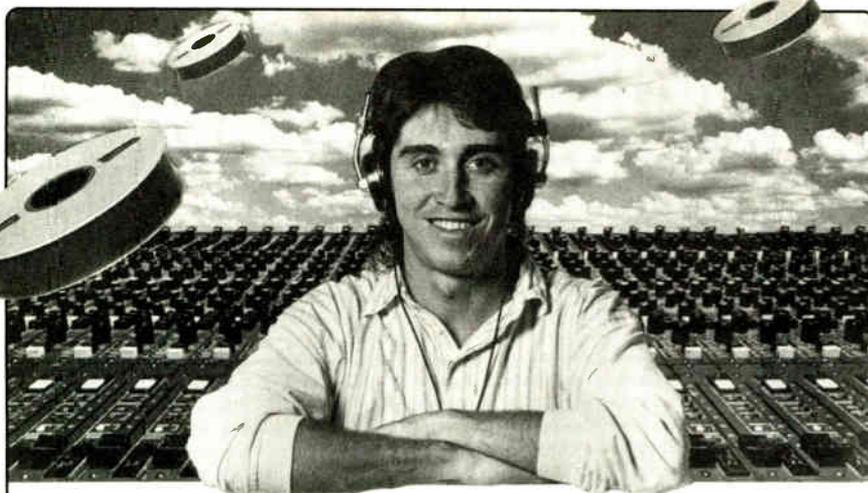
Mix: I notice that 1988's *Buenas Noches From a Lonely Room* was the only one to be recorded digitally. Why was that?

Anderson: Since *Hillbilly Deluxe*, I'd left the road and made a lot of records, and I wanted to bring all that technical knowledge to Dwight. We recorded on a Mitsubishi 32-track, and I liked the idea of having more tracks, not for more music but just for more space. I wanted to make the most hi-fi record I could that would also complement what Dwight was doing at the time. Oddly enough, we mixed it analog in Studio C, but everything was tracked digitally.

Mix: After that you went back to analog. Were you unhappy with the result?

Anderson: I found that I went through a major change right after that record. I went on to do *Short, Sharp, Shocked* for Michelle Shocked, and David Leonard mixed it, and he had a completely different approach. I was into this Bob Clearmountain world of total hi-fi—Technicolor, big screen—while David, who'd been a friend for years, was the total opposite. We recorded and mixed the album in just 12 days. Five days into it, he became available to mix. So I started giving him tracks, and we mixed at Larrabee and places I'd never even been to, because he was really into SSL, which I'd never really used.

Anyway, when I heard his first mix, I was in total shock and actually thought I'd made a big mistake. I was thinking, "This is delicate folk music," and instead it was pounding you in the face with Fairchild compressors as it clawed its way out of the speakers. It turned my whole world around. It was also a case of approaching recording and mixing with an ear for car radio, and that's something else I started talking to David about: the fact that you could



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shooting match. I toured with her in Britain, and it was a sellout every night, but they just couldn't break it over here.

Mix: You also produced *Forbidden Places* for the Meat Puppets.

Anderson: I love that band, and I've always wanted to work with them. We opened for them once way back before we had a deal, so I jumped at the chance to produce them. I did them at Capitol in 15 days straight, and then my wife mixed them at Soundcastle on SSL.

Mix: Tell us about your new label, Little Dog Records.

Anderson: I've always been in on the ground floor with a lot of artists and been unable to get them a record deal and function through that whole process, so I wanted to be able to sign artists and follow their careers much more than just producing an album or two. It's actually something I've been putting off for the last few years, so it was long overdue.

Mix: What's your first project?

Anderson: I've already signed an artist, Anthony Crawford, who lives in Tennessee and who worked with Neil Young for four years. He's a very talented singer/songwriter—not country—and we just finished his first album, which I recorded and mixed at Mad Dog. It should be out this summer. That'll be the first release.

Mix: Where do you want to take the label musically?

Anderson: I see it as being a very hands-on, boutique operation where I'll always be involved in the production to some extent. Right now I'm geared toward singer/songwriters, because I love great writers. I'm also planning to record my own solo album over the summer while we tour, so it's pretty exciting.

Mix: What is your overall philosophy of producing?

Anderson: I think the most important ingredient is the song. I don't think it's worth rolling tape until that's right. So it's all pre-production. The studio is like opening night: "Let's make it happen and capture the excitement." But you can't get to that point without all the rehearsal and preparation first. ■

L.A.-based Iain Blair is a contributing editor of Mix.

by Chris Stone

L.A. CRANKS UP THE MUSIC IN '93

Just a year ago in these pages was a sad article spelling out the doom and gloom of the audio recording business in L.A. I am happy to report that the patient is much better. The problems were the general economic downturn, the riots, lower box office and CD sales, and the resulting high unemployment. Business has now turned around for the survivors, even though there are fewer studios operating today than in September 1992, and prices are equal to or lower than they were a year ago.

We spoke to ten L.A.-area operators, from the large "motherships" such as Conway, A&M Studios and the expanded Record Plant (which celebrates its 25th anniversary in this issue), to audio post-production companies, tape duplication operators, pro audio dealers and studio builders. All are excited about the up-to-20% increase in business this year, and several are expanding their facilities and/or purchasing new equipment.

When asked the secret of survival and success in a down market, the owners' answers were not a surprise: "the loyalty of my staff," "I found my niche and expanded it," "I cut costs so I can make more money doing less business," "we listen to the client and take care of what they need," "bad times are when expansion makes the most sense—prices are lower." All agree that those hurt most have been the middle-market facilities, which are being pressed by the "motherships" on one side and the "satellites" on the other.

Jim Pace of Audio Intervisual Design, a technically sophisticated L.A. pro audio company whose business will be up 15% over last year, believes that "L.A. is still the place. Even though movie and record musics are flat, the breadth and scope of services, particularly in multimedia and other high-

tech areas, is unchallenged by any other domestic markets. There are still large installations opening here that require and offer a high level of technical expertise coupled with practical knowledge, which is not available in most other markets."

George Newburn, who is partners with Peter Grueneisen and Peter Maurer in the award-winning acoustic design firm studio bau:ton, says, "Business is steadily growing for us in Los Angeles. It's evenly distributed between the artist-oriented project studios, for clients such as Bill Bottrell and Peter Frampton, to large installations such as Record Plant, Post Logic and NRG. The entire industry seems to be expanding in a diversified way to accommodate new areas of musical growth. Artists still consistently return to L.A. for all types of

L.A. is humming again! Ten L.A.-area operators report an up-to-20% increase in business this year, and several are expanding their facilities and/or purchasing new equipment.

work. We are currently in preparation for many new L.A. studios, so this year is up, and '94 looks better than ever."

Miles Christensen of Post Logic, a leading audio post facility, says business will be up 15% this year but that next year is still an unknown. He thinks L.A. is gaining post-production market share from ancillary markets



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because of the expertise. "In order to survive and grow in L.A., a facility is going to have to be full-service," he says. He seems to have almost the identical problems and solutions as the recording studios here.

Guy Costa of Quadim Corporation, located in the L.A. suburb of Westlake Village, has expanded from an original real-time-only cassette business to include brokering of high-speed duplication and CD manufacturing. In addition, Costa has installed an editing/control room suite that has allowed him "to reach the point of critical mass.

"Our cassette and CD mastering have significantly expanded our client base and given us additional revenue sources for our core business of real-time duplication," Costa says. "The increase in project studios has brought us additional business for specialized, small-run duplication of tapes and CDs, and I expect that trend to continue, especially for local talent."

According to Alan Sides, owner of Ocean Way and Record One, which together have seven rooms and are committed to opening more in Nashville very soon, "The secret to my success is that when everyone else goes left, I go right; it has worked for us!" What he means is that when others sell, he buys (and always makes a profit later). Sides has one of the finest collections of vintage equipment I know of. He is therefore able to provide superior services to mainstream acts at very reasonable rates in a great number of rooms, all equipped with excellent-sounding equipment.

According to Sides, "Last year was our best year yet. This year I have no complaints, because we primarily record mainstream acts and have been relatively unaffected by changes in the economy. Also, a great number of our clients have home studios, and they use us for services they do not have. We have accepted the fact that this is the trend, and we provide unique services to this new client group."

Shelly Yakus, one of the finest audio engineers in the world, and his studio manager Mark Harvey boast, "Mastering at A&M is booming!" What this really means is that they were willing to take a chance when they saw an opportunity in a down market to expand their business and

it worked. The A&M facility is up 20% this year.

Having some experience with the operation of Record Plant, I asked owner Rick Stevens why he had just spent \$4 million for two new recording suites in a down market? His response was very '90s, crisp and confident: "For the great stars, the highest level of technical capability, equipment and service is still more important than price alone. These stars need a place to record, and we want to make sure it is Record Plant."

The Rogue of Hollywood, Buddy Brundo, is one of the most shrewd and candid studio owners. Conway, his audio sculpture, is the garden studio of L.A. "If they don't know you at Conway, you probably aren't big in this business," the saying goes. Brundo is "cautiously optimistic" about the state of recording. He has no debt and is "keeping a low profile, waiting to see what happens next." His loyal clientele and international reputation have kept the recession at arm's length, and business will be slightly up this year.

Brundo is optimistic about the future of L.A. "I worked hard to help elect our new mayor," he says. "I think the city is happening. If the city happens, Conway will continue to happen. I think it is the best place in the world for our kind of people to live and work."

Doug Parry, owner of Hollywood's Andora Studios, recently opened a Neve 8078A mix room (room 2) at his one-year-old facility to rave reviews. Also owner of Rack Attack rentals and the now-shuttered Smoke-tree Studios, Parry is a seasoned L.A. studio veteran. He feels that "L.A. is still on top; we just had to come down to reality. I'm looking for continuing upward economic improvement and plenty of business for the good guys, like Andora!"

The bottom line: L.A. is humming again! Bill Dooley at Brooklyn Recording says it best: "Our business is up 20% this year because we sound great, have dedicated people who live to please our clients, and a reasonable price. What's better than that?" Nothing, Bill, and that is why L.A. is still the world's leading market for professional audio recording. ■

Chris Stone, a former studio owner, is president of the World Studio Group, an international studio booking agency.

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by Philip De Lancie

REPLITECH '93

FROM "NEW KID" TO "MUST" EVENT

In 1992, conference producer Knowledge Industry Publications tested the waters for a dedicated trade show serving the duplication and replication industries. At the time, Replitech was the new kid on the block in the conference/exhibition game. The need for such a forum, evident from the enthusiastic response to last year's show, has been highlighted by the increase of both exhibitors and attendees for 1993. In just one year, Replitech apparently has established itself as a "must" event.

Like last year's show, Replitech '93, held June 15-17 in Santa Clara, Calif., was both a conference and an exhibition. Conference sessions were held in the morning, with the exhibition opening midday. The conference sessions on the second and third days were broken into four dis-

crete tracks, one each for the duplication of audio cassettes, videotapes, optical discs and floppy diskettes. In this month's column, we will be looking at some of the general news and issues surrounding Replitech; next month, we will cover more specifics on new manufacturing gear at the show.

INFORMATION VS. COMMERCE

In years past, perhaps the main forum for the exchange of technical information on audio cassette duplication was the ITA "How and Why" seminars. After Replitech's smashing debut in 1992, however, the ITA decided that the market could not support both events. So the seminars were discontinued, and the ITA became a Replitech cosponsor.

The ITA move is not without its downside. While the "How and Why"

Philips hopes its new DCC portable will boost the format's appeal.



seminars were focused on duplication, Replitech covers a broader range of topics—and tries to do so in half the time (morning seminars only). And with four tracks running concurrently, those of us who are limited to one corporeal manifestation were constantly forced to choose which session to attend. Also, because Replitech is so much larger than the seminars were, the overall effect is naturally more impersonal.

For the manufacturers in attendance, however, whatever limitations Replitech has as a conference are far outweighed by the fact that it is also an exhibition. If the "How and Why" section was a forum for information, Replitech is a place for commerce. There is no substitute for being able to demonstrate a working piece of gear to a prospective client on the exhibition floor. It is that element that made Replitech so attractive that the ITA decided to switch rather than fight.

AES EXODUS?

Replitech's appeal as an exhibition is likely to be felt not only by the ITA but by the AES as well. Duplication and replication gear makers, with their down-to-earth manufacturing orientation, have long felt out of place at the studio-dominated AES shows. Replitech, with more serious buyers and fewer hip hucksters of high-end hype, offers a long-awaited alternative.

In an informal and totally unscientific sampling of trade show sentiment, three out of three big name duplication vendors said that Replitech's success had encouraged them to scale back their AES presence this year. Jim Williams, head of Gauss and ElectroSound (collectively the world's largest duplication gear suppliers), said he plans to take no exhibition space at all at the New York convention. With everyone more or less waiting to see what the other guy plans to do, Williams' move could trigger an exodus from 1994's AES.

The AES, meanwhile, has apparently heard the grumbling. Working in concert with the trade magazine *One to One*, the group plans dedicated exhibition areas and expanded seminar sessions for duplication and replication at future conventions. The changes will begin to be evident at the New York show but won't be fully implemented until the European

AES in Amsterdam in the winter of 1994. A 1994 European Replitech is also planned for Munich, April 12-14.

DISTRIBUTION MODELS

One of the advantages of combining in one show the four topic areas represented in Replitech's conference program is the chance to step back and look at common trends affecting prerecorded media in general. General sessions on the first morning covered some of these developments, present and projected.

One hot topic was the advent of interactive networks and how such electronic distribution might affect physical distribution on tape or disc. Bob Pfannkuch of Telefuture Partners said of the new technologies: "If you see them as a threat, they will be a threat. If you see them as an opportunity, they will be an opportunity." He also reminded the audience that old technologies tend to respond to the challenge of newer ones with improvements and innovations that tend to extend their lifespan.

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TAPE & DISC

Adding to the anti-alarmist sentiment was Dick Kelly of Cambridge Associates, who described some research his company undertook to predict the impact of cable-TV Pay-Per-View on conventional video rental. In comparing electronic vs. physical distribution, the study has implications for audio media as well.

The study found that PPV—widely seen as the precursor of video on demand—was unlikely to have much impact on the sale and rental of pre-recorded video until at least 1996. Though PPV offers consumers greater convenience, tape still has advantages in the areas of price, control and selection.

Kelly predicted that sell-through prices for prerecorded films would continue to fall, especially as digital compression techniques make Full Motion Video a reality on CDs, which are cheaper to produce than VHS tapes. Meanwhile, the huge installation and operation costs associated with getting new fiber-optic networks into consumers' homes will keep average PPV prices above \$4 per event. So with sell-through prices at \$10 to \$15 retail, prerecorded movies will continue to be attractive to consumers long after the new megachannel cable networks come online.

Kelly didn't say so explicitly, but it would stand to reason that a similar analysis would apply as well to proposed Pay-Per-Listen systems vs. pre-recorded music. And with so many CD and cassette machines installed in homes, cars and portable systems, it does seem unlikely that the physical model of prerecorded audio distribution will whither away anytime soon. In addition, the apparent ongoing growth of spoken word—a market now estimated by speaker Jim Reising of Nightingale Conant as "conservatively twice the size of the music cassette market"—would tend to further complicate and slow down any effort to shift to a brand-new type of program distribution. For the foreseeable future then, the new super networks will supplement rather than replace traditional entertainment software sales.

DCC

The difficulties involved in forcing a major market transition, even between formats within the existing distribution model, were illustrated at Replitech by a general lack of enthusiasm about

either of the new audio formats now on the market. The jury is still out on MiniDisc, which was generally seen as attractive but unlikely to be a major force in the music market for the time being. DCC, meanwhile, is widely viewed as a goner already.

Philips was doing its best to keep the DCC ball rolling. The company held a press conference to announce several developments that could have been significant had they come against a backdrop of promising consumer response. Philips' spokesman Koos Middeljans told the assembled journalists that the pilot phase of the launch was now complete, and a new phase had begun. One aspect of the new phase is Philips' loosening its tight grip on the sale of DCC duplication gear, creating a more open market in which other interested manufacturers like Lyrec and Gauss are more free to design and sell equipment.

Another area is in the implementation of the ITTS text that is part of the DCC specification. Work is now complete on a graphics mode that will allow display of Japanese and Korean characters, which Middeljans described as a step toward the goal of allowing one release of a title to be sold worldwide. (ITTS can support up to seven different languages on the same cassette.) Middeljans also showed a small interface plug that will allow the text to be displayed on IBM PC-compatible computers as well as RGB monitors, which he said are more common in the home in Europe than in the U.S. ITTS display on regular TV sets is apparently some way off.

Probably most important to Philips' effort to breathe new life into the launch is the planned shipment of DCC portables in August. Given Philips' positioning of DCC as the logical next step for the cassette, the portable makes far more sense than the home hi-fi components that have been on the market since last fall. But with the portable list priced at over \$500, the format will likely still have little luck reaching its target demographic.

Yet another element of the Philips strategy is to try to bring the artistic community onto the DCC bandwagon. So the company has been trying to establish the format's credentials as a high-fidelity medium.

The encoding of audio into the PASC compression scheme developed by Philips for DCC is normally a conversion from 16-bit linear PCM. But PASC is not limited to using a 16-bit

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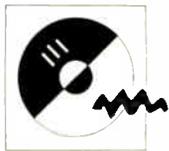
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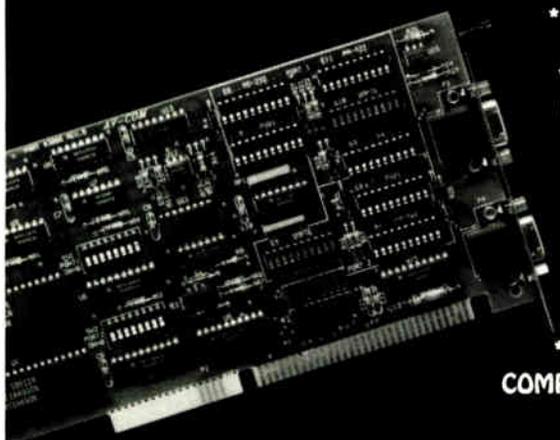
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source as a starting point. Working with Decca in London, Philips has been converting to PASC from 20-bit masters. The result, according to Middeijans, is DCC playback equivalent to at least 18-bit linear PCM—in other words, better than CD quality.

To get the news of this improved fidelity out to artists and producers, Philips decided to move beyond the current mastering situation, in which premastering is handled by only a few facilities, most at duplication plants far from creative centers. So premastering, mastering and QC checking gear will be installed at five U.S. mastering houses: Masterdisk in N.Y., Georgetown and Masterfonics in Nashville, and Futuredisc and Ocean View in L.A.

Given the lackluster response to DCC so far, one wonders how far the mastering houses will go to get the expensive DCC equipment. According to Doug Levine, president of Masterdisk, the deal involves “very little downside potential” for his company. If the market does not materialize, Levine says he can return the gear to Philips and get most of his investment back. But before he made the commitment, Levine says, he carefully studied Philips’ plans, and he believes that with the introduction of the portable, DCC has a good chance.

Right or wrong, Levine seemed to be in the minority at Replitech. Addressing the audio duplication conference track, Keith Thomas of Capitol/EMI’s Jacksonville, Ill. plant, one of three first-generation DCC plants in the U.S., gave a painful account of the many frustrations encountered in getting the duplication system to perform satisfactorily. He went on to say that most of the bugs have been worked out but that the plant has been nearly idle since the initial launch pipeline was filled months ago.

BASF’s Terry O’Kelly corroborated this view by telling *Mix* that little had changed since March, when the three U.S. plants were using only a pallet or so each per month of BASF’s DCC duplicating stock. It appears then, that unless the Philips strategy begins to pay off soon, DCC’s first post-launch Replitech may have been its last. ■

Philip De Lancie is a mastering engineer at Fantasy Studios in Berkeley, Calif.

Tape & Disc News

CD-R MAKES INROADS AT CD PLANTS

A survey of CD-manufacturing plants conducted by Marantz Professional Products reveals that five plants now accept CD-Rs in lieu of PCM-1630 format tapes as masters for glass mastering of CDs. The five are Digital Audio Disc Corporation, WEA Manufacturing, KAO Optical (American Helix), Nimbus Manufacturing and 3M Corporation (which specializes in CD-ROM replication).

According to the Marantz announcement, several additional plants are "in the process of acquiring the appropriate hardware and software" to cut glass masters from CD-Rs. While current equipment requires that the entire contents of the CD-R be recorded in one uninterrupted pass, Marantz reports that DAAC is working on a system that allows mastering from "multisession" CD-Rs (start/stop recordings).

Marantz, which is part of Philips, is a leading maker of stand-alone CD-R recorders, which are now available for as little as \$3,500. The company says it is "continuing a dialog with CD plants to help CD-R become widely accepted as the mastering medium of choice."

The current standard for CD masters, Sony's videotape-based PCM-1630 format, is widely seen as expensive and somewhat unreliable, especially for long-term storage of masters. Sony is introducing a new proprietary format, the PCM-9000, based on 1.3-Gigabyte magneto-optical discs (see "Tape & Disc," June 1993).

GAUSS, CONCEPT DESIGN INK TWO PACTS

Gauss and Concept Design have entered into two agreements for the co-development and marketing of audio duplication gear. One deal involves the marketing by Gauss of Concept Design products, including the CD 9000 and 9002 loaders and the DAAD R² digital bin, in worldwide markets outside of North and South America. A second agreement involves joint development of the MAX digital bin for analog cassette and

DCC duplication. MAX combines bin technology from Concept Design with interface and slave control features from Gauss (MAX will be covered in greater detail in the October "Tape & Disc").

AMPEX READIES MEDIA CORP. SALE

Ampex Incorporated (Redwood City, Calif.) decided to sell a majority share of ownership in Ampex Recording Media Corporation, which manufactures and markets Ampex tape. The company also announced a major reorganization involving the formation of two tape sales units, Ampex Media International and Ampex Media Europe. According to Ampex, the change should have little effect on customers.

SPLICES

TDK (Port Washington, NY) introduced 74-minute (680MB) CD-R discs for recording CD-Audio or CD-ROM. The CD-W12EL carries a suggested list price of \$80 each. The company also introduced 60- and 90-minute blank DCCs, and a new videotape designed for duplication with Sprinter-type contact printing machines...Shape Inc. emerged from Chapter 11 bankruptcy after 4½ years...JRF Magnetic Sciences (Greendell, NJ) is now offering replacement heads for Nakamichi in-cassette duplicating decks...Gauss (Sun Valley, CA) sold high-speed duping gear to expanding operations at Sony Music in Mexico and the DJ Standard Group in Thailand. Sister company Electro Sound made sales of systems to Mexico's Paramusica and El Salvador's Supersonido...Versadyne of Campbell, CA, sold additional 1500 Series slaves to Davkore in Mountain View, CA...Saki Magnetics announced the signing of a long-term agreement that commits Capitol EMI Music in Jacksonville, IL, to the purchase of replacement heads for the plant's Gauss duplicating slaves. Saki also appointed English firm dBm Limited as its exclusive representative for continental Europe, Africa and the Middle East...Technicolor Video Services purchased 3744 SVO-960 real-time video decks and 24 HSP-800 Sprinter high-speed video systems from Sony...The TMD Consortium (made up of BASF, DIC, Du Pont, Otari, SKC and TDK) announced a major expansion of marketing efforts to promote TMD high-speed video duplication. ■

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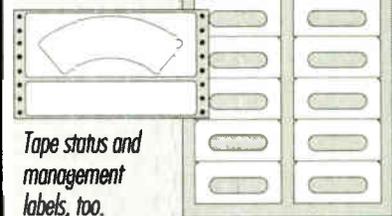
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C O A S T

L.A. GRAPEVINE

by Fred Jones

Hollywood's Music Grinder Studios has been the happening place lately. Not only have there been lots of equipment changes, it was one of the locations for the filming of a movie recently. Director Peter Bogdanovich brought River Phoenix and the rest of the crew to Music Grinder to film "recording studio" scenes and prerecord songs for Paramount Pictures' *The Thing Called Love*—a musical love story based on the Nashville studio and club scene. [See this month's "Post Script" for more on the film.]

But enough about show business, let's get on with studio business. First of all, the engineering staff at Music

—CONTINUED ON PAGE 165

Director Peter Bogdanovich takes a look at River Phoenix in Music Grinder Studios, Hollywood. Music Grinder doubles for an Austin, Texas, facility in the "recording studio" scenes of Paramount Pictures' *The Thing Called Love*, released in late August.



SESSION SPOTLIGHT

SPECIAL EFX "PLAY" AT SKYLINE
by Jeff Forlenza

Percussionist George Jinda and guitarist Chieli Minucci are accomplished players of world-influenced instrumental music. They also are known as Special EFX, and their new album, *Play*, on the JVC Music label, was recorded and mixed at Skyline Studios in NYC. Engineer, co-producer and Skyline part-owner Paul Wickliffe captured the sessions from the SSL G Series console in Skyline's Studio 3.



At Skyline Studios in NYC (L to R) percussionist George Jinda, engineer Paul Wickliffe and guitarist Chieli Minucci

Wickliffe explains his microphone placement for the percussion-rich sessions. "I simply put my ear all around the instrument and try to find a sweet spot," he explains. "That's where I want to put the microphone. In that sense, percussion is not really different from any other instrument except that the attack is much more intense, so placement of the microphone is even more crucial for capturing that attack and not losing the musicality of the instrument.

I use several B&K mics, because they're the only ones that can handle the initial attack."

Wickliffe prefers 3M 996 analog tape for recording Minucci's and Jinda's polyrhythmic playing. "Overall, this music has a very bright sound because of all the highly pitched percussion, like shakers," he says. "For drums and percussion, analog makes all the difference in the world. I've been using the 3M 996 tape because of the additional headroom. So, I combine the B&K mics with the 3M 996 analog tape, and I get the perfect canvas for recording this kind of music."

This Brazilian/Caribbean-flavored instrumental music is also fun. Hence the title. But Special EFX are serious players, and their previous releases have rallied for environmental causes and other global issues.

"This record was just fun to make," guitarist Minucci explains. "As the music evolved, the end product turned out to be very high-energy. We try not to take ourselves too seriously, and I think this record will expose our lighter side." ■

C O A S T

STUDIO SPOTLIGHT

HOUSTON'S DIGITAL SERVICES by Iain Blair

"Without sounding presumptuous, I like to think of us as a kind of Record Plant of the Southwest," says John



PHOTO: ROGER TAUSZ

At Digital Services: (standing L to R) Phil Owen of The Skatenigs, engineer/producer Mike Dean of Rap-A-Lot Records, DS owner John Moran, Billy Gibbons of ZZ Top, DS engineer Cody Coe and Lance Moulder of the Skatenigs; (seated L to R) Scarface of the Geto Boys and Billy Jackson of The Skatenigs

Moran, owner and president of Houston-based Digital Services Recording, his 13-year-old company. "We've been working in digital for a long, long time, and we do everything from feature film and television post-production to opera, classical and rap."

Digital Services offers its clients six specialized post rooms in addition to its mobile facility. Room A is equipped with an SSL; Room B is the mastering room; Room C is the ScreenSound room, and there is also a Sonic Solutions room with a Sonic Station. "We also have a huge soundstage where ZZ Top is currently rehearsing," Moran adds, "and at the other end of the spectrum, we have

a classical hall where we do all the radio production every week for the Houston Symphony."

To underscore his company's diversity and range, Moran notes that The Geto Boys digitally recorded, mixed and mastered their most recent hit album, *Till Death Us Do Part*, at Digital Services, while the mobile unit recently recorded all-digital productions of *Aida* and *The Barber of Seville* for the Houston Grand Opera using Tascam DA-30 DAT machines.

But digital capability isn't the secret of Moran's success. It's more along the strategy that made Record Plant famous—diversity. "We've just had our best year ever," Moran crows. "I think it's because we're so diversified." ■



PHOTO: JIM CARROLL

NY METRO REPORT

by Dan Daley

Perry Margouleff, luthier, guitarist and general-purpose audio raconteur-about-town in New York, has opened Pie Studios on a former studio site in Glen Cove, L.I. The advantage is vintage, says Margouleff, whose studio sports an old—and very discrete—40-input Neve 8078, formerly part of EMI Studios in Australia, with 32 monitor

—CONTINUED ON PAGE 165

Chaka Khan and her producer/bassist Gary Haase at Platinum Island Studios (NYC) working on Khan's upcoming Warners CD and a remake of the Hendrix classic "One Rainy Wish"

SESSIONS & STUDIO NEWS

by Jeff Forlenza

SOUTHERN CALIFORNIA

Legendary '70s act War were at Ground Control Studios, Santa Monica, working on an album project for Avenue Records with producer Jerry Goldstein and engineer Larry Getz... Fourplay—the talented aggregate of Lee Ritenour, Bob James, Harvey Mason and Nathan East—completed their second self-produced album for Warner Bros. at Hollywood's Sunset Sound. Don Murray engineered the jazz project with assistance from Mike Kloster and Mike Piersante... At Convent Recording in Beverly Hills, Bonnie Raitt was working on demos with producer Don Was and engineer Ed Cherney for a new album, ...Def American artists The Jayhawks were at Hollywood Sound Recorders mixing their latest album with producer George Drakoulias and engineer Dave Bianco...

NORTHEAST

Lady rapper LeShaun checked into

Quantum Sound Studios (Jersey City, NJ) to work with producer Eric Menal, engineer Dave Ellinwood and assistant Anthony Stivala on her latest Tommy Boy Records release... Organist Lonnie Smith was recording at Sound Designers Studio (NYC) with his trio, featuring John Abercrombie on guitar and Marvin Smith on drums. The jazz sessions were recorded by engineer Jerome Fox and assistant Dan Tramon... Rapper KRS-One was at Manhattan's D&D Recording working on his upcoming album and producing Front Page artist Simone. KRS-One worked with engineer Norty Cotto and assistant Luc Allen... Alternative songstress Aimee Mann (formerly of 'Til Tuesday) recorded her solo debut on Imago Records at Normandy Sound (Warren, RI) with producer Jon Brion and engineers Mike Denneen and Phil Greene...

NORTH CENTRAL

Jimmy Dolan, president of Streeterville Studios in Chicago, reports some recent sessions: Koko Taylor was working on her latest for Alligator Records, with Dave Axelbaum engineering and

Alligator founder Bruce Iglauer producing. Buddy Guy and Buddy Miles worked with producer Eddie Kramer on some tracks for the Jimi Hendrix tribute on Warners, including a version of "Voodoo Chile"... Vancouver's Mushroom Studios had Spirit of the West in recording their latest album, *Faith Lift*, with producer Michael Phillip Wojewoda and assistant Brian Chanpong...

SOUTHWEST

Country blues guitarist Steve James recorded his debut on Antone's Records, *Two Track Mind*, at Bee Creek Studios (Spicewood, TX) and Tim Stanton Audio in Austin, TX. James self-produced the rootsy blues project, and engineer Spencer Starnes captured the presence of James' guitars—live-to-2-track, of course... Acoustic rock band Gypsy Trees completed their debut album for Loony Bin Records at Planet Dallas Studios with producer Randal Brewer and engineer Rick Rooney...

NORTHWEST

Pearl Jam was mixing tunes for their newest Epic release, due out this

the word is out.

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month, at *Bad Animals/Seattle* on the SSL 4064G with producer Brendan O'Brien...Queen Ida laid down vocal tracks for her upcoming GNP/Crescendo release at Music Annex Recording Studios in Menlo Park, CA. Doug Dayson engineered the contemporary zydeco rock...At *Different Fur Recording* in San Francisco, Thomas Dolby and Eric Gullichson were recording, mixing and videotaping the *Turtle Island String Quartet*. Dolby and Gullichson produced the jazz/classical ensemble for a virtual reality project, while Howard Johnston engineered and Mark Slagle assisted...

SOUTHEAST

Cajun combo *Beausoleil* recorded and mixed their latest Rhino release, *La Danse de La Vie*, at *Bias Recording* in Springfield, VA, with producer John Jennings and engineer Bob Dawson...Riding the success of their single "Whoomp! (There It Is)," rap group *Tag Team* completed recording their new Belmark Records release at *Mcmix Production Services* in Smyrna, GA. Steve Gibson produced, and Don McKinzie engineered...

STUDIO NEWS

Naked Zoo recording studio relocat-

ed from Tacoma, WA, to Seattle. Along with the relocation comes an Otari Series 54 console with Diskmix automation for Studio A, which also features a large 30x50-foot recording space...Atlanta-based R&B artist *Keith Sweat* recently constructed a personal studio complete with an SSL 4048 G Series console. Sweat is using the new facility for his upcoming album as well as production projects for various artists...Manhattan's *House of Hits* recording studio recently opened with a Neve VR60 Legend console and studio design by chief engineers Vince Traina and Blaise Castellano. ■

—FROM PAGE 162, L.A. GRAPEVINE

Grinder has expanded its 48-input Neve 8108 console and turned it into a 64-input with 48 buses. This will make it the largest 8108 in the world. "We decided to extend our current desk and keep the famous 'warm Neve' sound while accommodating our customers' demand for more inputs," says owner Ron Filecia.

Enlarging the console was not an easy task, due to the fact that the largest frame ever made by Neve for this console was a 56-input version. "We purchased a complete console just so that we could use the parts and the frame," Filecia explains.

After searching high and low, they found an 8108 that had been installed originally in Studio D at Wally Heider's in L.A. "The customization of this board was a very arduous task that required a great amount of re-design, rewiring, custom paint matching and *patience!*" says Gary Skardina, who led the project. The board is now online in Studio B, and you are invited to come hear it.

Also in Hollywood, CMS Digital sold Artisan Sound to new owners who are now in the process of remodeling. I have been informed by Gene Shively of CMS that the mastering portion of Artisan is still in operation and has been moved to CMS's main offices in Pasadena.

"We decided to concentrate on our core business of digital equipment rentals and CD mastering instead of spreading ourselves thin and trying to run a studio," Shively says. "It also made good business sense to have one really nice facility, instead of being in Pasadena and Hollywood and trying to move

things back and forth."

During the move of the Artisan mastering equipment, CMS took advantage of the chance to update the monitoring in the mastering room, so they rebuilt the front wall to house Tannoy SMG-1000 speakers with Perreux amplifiers, using Monster Cable throughout. Steve Brandon of Brandon Productions performed all the work.

CMS is also famous in the Los Angeles area for producing the now famous Studio Menu, and the newest version (which has been completely updated) is now available. In case you are unfamiliar with the Menu, it is a very convenient reference guide of the recording industry in Los Angeles, with listings for most of the recording studios, cartage and rental companies, and various support services all arranged in a menu-style format. If you want a copy, you must be a qualified recording professional and you must put your request in writing to CMS Digital, 182 S. Raymond Ave., Pasadena, CA 91105.

I recently had a nice chat with my old friend Don Schlegel over at Soundabout Studios in Van Nuys. It seems that Don has moved from his post at SSI to lead Soundabout as general manager. Rodolfo Cruz (Soundabout owner) says he is excited about the addition of Schlegel and has decided to make use of his vast experience in the world of post-production and commercial production by expanding the services of Soundabout.

To this end, Soundabout added 1-inch and ½-inch video interlock capabilities, a digital workstation, and a full complement of MIDI and dig-

ital effects gear. "We also offer the client the ability to go directly to CD via the workstation," Schlegel explains, "so the client can send a spot directly to the station with the highest fidelity possible."

Speaking of new faces at new places...Waves Sound Recorders, Hollywood's award-winning post-production house, recently added senior mixer Jay Shilliday to its roster of talent. Shilliday comes to Waves from San Francisco's Focused Audio and prior to that Chicago's Streeterville Studios. Shilliday is well-known for his sound design work on TV spots for MTV, Nike and Porsche, and he looks forward to putting Waves' new D2 and control room renovation to good use. ■

—FROM PAGE 163, N.Y. METRO REPORT

channels of API 550 EQs. Tape decks are a pair of Studer A800s. Margouloff has also collected a large array of tube mics and limiters over the years. Even the name of the studio is an homage to the old Eel Pie Studios of London.

While he wanted the studio for his own projects, Margouloff feels that a vintage room is economically viable, despite a tough climate for single-room facilities. "There are a lot of bands out there who want to get back to the sound that made things great in the first place," he says. "It's the Abbey Road premise: a great acoustic space and great, discrete electronics. It appeals to the purist, but there's a lot more of them out there."

After a rocky start when financing fell through, Sound On Sound is on a fast track with its new studio up-

stairs from its original room. Studio B was expected to go online in August with a new SSL G-Plus 64-input console with Ultimation and Total Recall. A Studer digital 48-track deck is also up there. The John Storyk-designed studio will start with overdub and mix work as its new recording room is finished. Meanwhile, according to owner Dave Amlin, Studio A's Neve VR-60 has been upgraded to a VR Legend with the addition of new mix bus cards and improved panel venting.

Bill Cavanaugh, late of Sync Sound, has switched home base to Howard Schwartz Recording, where

he has his own suite with a new Synclavier/PostPro combination. According to Schwartz, a former analog room at his facility was rebuilt for digital, with a Sony PCM-3324 multi-track and Sony console, as well as a D2 video deck and time code DAT.

Other Sync Sound alumni, Jonathan Porath, John Purcell and Al Hale, are now on staff at Sound One, New York's largest film audio facility, which is in the midst of a \$4 million audio expansion aimed at new audio markets. Hale is now chief engineer/designer at Sound One; Porath will have one of the new studios coming online this fall,

and Purcell will be in charge of two new audio editing suites, with four more to be added this winter.

According to Jeremy Koch, president of Sound One, the expansion is aimed at new markets for the future. "We're now doing a lot of long-format work, such as feature films," he says. "We're looking toward working with shorter formats, such as theme parks, virtual reality and cable television. This expansion is a conservative jump into digital audio and these new markets." The new rooms will have Neve V Series consoles and Sony storage systems. A Sonic Solutions system will also be accessible by all rooms.

Former Record Plant (New York) owner Roy Cicala recently designed and converted a mobile truck to a stationary control room for John Hanti's SST Inc. showcase/rehearsal room in Weehawken, N.J. Cicala made the suggestion after the truck's motor burned out. The body was lifted onto the loading dock, and air conditioning and other systems were added. Cicala put in a stack of his personal equipment from the old Record Plant, as well as 24-track analog and 24-track Alesis ADAT. "It's great sound and it's cheap," boasts Cicala. "We can do 48-track recording for around \$1 a track!"

Sync Sound has some personnel changes as well, according to co-owner Bill Marino: Former Photomag engineer Ed Delauter has come on as chief engineer, and Tony Pipitone is the new AudioFile editor. Also, Sync Sound recently installed an AMS Logic 2 console in its renovated Studio B, the largest digital mixing console in North America, according to Marino.

Urban music producers Alan George and Fred McFarlane opened Home Boy Studios on W. 53rd Street to meet their own needs, but wound up sharing time with outside clients, including Color Me Badd, Madonna and Martha Washington. But the chart success of Robin S's "Show Me Love," which they produced, means they'll be booking more time at their own studio, as well as enhancing its mix capabilities. The current Harrison MR-3 will likely give way to an SSL, according to McFarlane, and two more Tascam DA-88 digital 8-tracks are coming to augment the one now in use. McFarlane will be using those decks to float between home and Home Boy. ■

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• Fast SCSI 2 - transfers data up to 10 MB per second	2.0 GB	C3009	2155	2255
• Full 5 Year Factory Warranty	2.4 GB	C3010	2365	2465
• No thermal recalibration interruptions				
• Very low dBA - great for the studio				

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5 GB HP 35480A - 4 mm	1319
2 GB Exabyte 8205 - .25"	1675
2 GB Exabyte 8505 - .25"	2629

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- 170** Arkansas
- 170** Southern California
- 184** Hawaii
- 184** Nevada
- 185** New Mexico
- 185** Oklahoma
- 185** Texas
- 189** Mexico

Recently opened in Tempe is Phase Four Studios, Arizona's largest recording facility. The studio features a Neve VR 72-input console with Studer analog and Mitsubishi digital recorders. Phase Four president Jon Harris enlisted industry veterans Buddy Brundo and Geordie Hormel to aid in the design and construction of the world-class facility. In addition to the recording space, Phase Four has a performing arts center and art gallery. Photo: Stocker & Hinze.

Upcoming Directory Deadlines: Mastering, Pressing and Tape Duplication Facilities: **September 8, 1993**; Remote Recording/Sound Reinforcement: **October 8, 1993**; Recording Schools and Programs: **November 8, 1993**

Mix listings procedure: Every month, *Mix* mails questionnaires to recording studios and/or other vital facilities and services for the recording, sound and video production industries. There is a nominal charge to list a Bold-face Listing (name, address, contact) and an Extended Listing (equipment, credits, specialization and photo or logo). If you would like to be listed in a *Mix* Directory, write or call the *Mix* Directories Department, 6400 Hollis Street #12, Emeryville, CA 94608; toll free 800-344-LIST!



Southern California and Southwest RECORDING STUDIOS

"...it was essential that she be on the freeway by ten o'clock. Not somewhere on Hollywood Boulevard, not on her way to the freeway, but actually on the freeway. If she was not she lost the day's rhythm, its precariously imposed momentum. Once she was on the freeway and had maneuvered her way into the fast lane she turned on the radio at high volume and she drove. She drove the San Diego to the Harbor, the Harbor up to the Hollywood, the Hollywood to the Golden State, the Santa Monica, the Santa Ana, the Pasadena, the Ventura. She drove it as a riverman runs a river, every day more attuned to its currents, its deceptions, and just as a riverman feels the pull of the rapids in the lull between sleeping and waking, so Maria lay at night in the still of Beverly Hills and saw the great signs soar overhead at seventy miles an hour."

—Joan Didion

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Information in the following directory section is based on questionnaires mailed earlier this year and was supplied by those facilities listed. *Mix* claims no responsibility for the accuracy of this information. Personnel, equipment, locations and rates may change, so please verify critical information with the companies directly.

ARIZONA

AAZTEC RECORDING AND TAPE DUPING

 1110 E. Missouri Ave., Ste. 400; Phoenix, AZ 85014; (602) 279-0808; FAX: (602) 277-6552. Owner: Ron Briskman. Manager: Tracey Held.

ANTHEM RECORDING

 16602 N. 36th Dr.; Phoenix, AZ 85023; (602) 252-5044. Owner: Billy Spoon. Manager: Billy Spoon, Craig Quist.



APACHE TRACKS

APACHE TRACKS STUDIO
Tempe, AZ

APACHE TRACKS STUDIO

 1006 E. Guadalupe Rd.; Tempe, AZ 85283; (602) 345-7557; FAX: (602) 345-9145. Owner: Michael Riddle, Jerry Davis. Manager: Jerry Davis. Engineers: Jerry Davis, Scott Nowak, Clarke Rigsby. Dimensions: Studio 16'x28', control room 18'x24', isolation booth

11'x16'. **Mixing Consoles:** Neve VRP-48 w/Recall & Flying Fader automation. **Audio Recorders:** Otari DTR-9001I 32-track w/Apogee filters, Otari MX-70 16-track 1", Otari MX-5050B II 2-track 1/4", Akai A-DAM 12-track, (3) Panasonic SV-3700 DAT, Panasonic SV-250 portable DAT, Tascam 122 MkII cassette. **Yamaha YPDR601** CD recorder. **Digital Audio Workstations:** Compaq 386/Turtle Beach Systems digital mastering system. **Monitors:** Genelec 1031A, Tannoy SRM-12B, JBL Control 5. **Other Major Equipment:** Adams-Smith Zeta-3 w/remote, dbx Type I 18 ch., Lexicon Model 300, Lexicon Model 200, Lexicon Super Prime Time, (2) Yamaha SPX1000, Yamaha SPX90, GML dual mic. preamp, Studio Technologies dual mic. preamp, Apogee AD-500 converter, Apogee DA-1000E converter, Summit Audio DLC200 tube comp., (2) Valley People M610 2-ch. comp., (4) dbx 165 comp., BBE 802 processor, AEA MS-38 M-S Matrix, Mac II Quadra 950/Opcode Studio 5 w/Vision MIDI system, Intelix stereo headphone mix matrix, Intelix RM 8/2R0 remote headphone mixer, mics include: (2) AKG C-12 tube, AKG The Tube, AKG C-414B-ULS, (2) AKG C-460, AKG D-112, Beyer M500, Beyer M160, Beyer M130, (2) EV RE20, (3) Micro-Tech UM70S, Neumann U49 tube, Neumann U67 tube, (2) Neumann USM69 stereo, (2) Neumann KM84, Neumann U87, (2) Neumann U89, (2) Sennheiser MD-441, (4) Sennheiser MD-421, Shure SM7, (2) Shure SM57, (2) Shure Beta 57; **Extended Equipment Description:** Yamaha S400B studio grand piano, Yamaha DX7 II, Yamaha TX416, Roland D-50, Roland JD-800, Kurzweil 1000-PX, Kurzweil 250-RMX, E-mu Emulator II, E-mu SP 1200, E-mu Proteus I, Alesis D-4, Waldorf Microwave, MiniMoog, Hohner D-6 clavinet, Hammond B-3 w/Leslie 122, (9) Martin 6 & 12-string acoustic guitars, Martin acoustic bass guitar. **Specialization & Credits:** Rugged, yet refined. Wild, yet one with the surroundings. That's the Native American spirit. And that's the spirit of Apache Tracks Studio. Apache Tracks blends the latest recording technologies into a warm, southwestern environment of muted earthtones

—LISTING CONTINUED TOP OF NEXT COLUMN

—LISTING CONTINUED FROM PREVIOUS COLUMN

colors, handcrafted oak woodwork and natural stone accents. Acoustically diffuse recording spaces and the visual continuity provided between isolated rooms preserve a sense of musical ensemble that brings out the best in traditional live performance recording sessions. Each artist even has a remote mixer to independently control their headphone mix. For tracking, sweetening or mix-down of audio for compact disc, video or film, look to us. Apache Tracks, where technology and the creative spirit become one.

BPL'S BANJO BRASS STUDIOS



8088 N. 15th Ave.; Phoenix, AZ 85021; (602) 870-0351. Owner: Bruce P. Leland. Manager: Shirley Leland.

THE CAVERN RECORDING STUDIOS



3305 N. Dodge Blvd.; Tucson, AZ 85716; (602) 881-1212; FAX: call first. Owner: Bill Cashman. Manager: Bill Cashman.

CEREUS RECORDING



1733 E. McKellips, Ste. #107; Tempe, AZ 85281; (602) 990-8163. Owner: Allen Moore. Manager: Dianne Moore.



CHATON RECORDINGS
Scottsdale, AZ

CHATON RECORDINGS



5625 E. Nauni Valley Dr.; Scottsdale, AZ 85253; (602) 991-2802; FAX: (602) 951-8167. Owner: Ed and Marie Ravenscroft. Manager: Lori R. Geare. Engineers: Otto D'Agno, Steve Escallier, Andy Seagle. Dimensions: Room 1: studio 13'x24', control room 13'x24'. Room 2: studio 13'x15'. Room 3: studio 20'x20', control room 15'x18'. Remote truck: control room 8'x15'. Mixing Consoles: Otari Series 54 w/52 moving faders. Audio Recorders: Otari DTR 900 32-track digital, Otari MTR-9011 24-track, Otari MTR-90 16/24-track, (2) Otari MTR-10C 2-track w/center track SMPTE, (2) Otari MTR-12, (2) Otari MX-5050B, (2) Sony PCM-51 2-track digital, (6) Tascam DA-30 R-DAT, (10) Tascam 122MKII cassette. Digital Audio Workstations: Digidesign Pro Tools, Digidesign SOUND Designer, Macintosh IIFX w/20" color monitor, Kurzweil 250R/MX, (4) E-mu Emulator II, Emax, Proteus, SPX, (2) Roland D550, Super JX-S550 & HD, Kawai K1. Monitors: Tannoy FSM, (2) Tannoy LGM, (2) Tannoy PBM 6.5, (3) Yamaha NS-10M, (2) Auratone. Other Major Equipment: (54) Dolby SR noise reduction channels, DiskMix Diskmix 3 w/52 channels moving faders, (4) Adams-Smith Zeta-3, (4) Hafler Trans Nova 9500 power amplifiers, Lexicon 480L w/LARC, Lexicon 224X w/LARC, (8) Lexicon PCM42, (8) Lexicon PCM70, (8) Lexicon 50, Summit Audio stereo tube compressor, Summit Audio stereo tube mic preamp, (10) various dbx compressors, (6) various JUREI compressors, BBE Sonic Maximizers, (4) Yamaha SPX9011, (2) Eventide H3000 SE, (2) Eventide H910, Drawmer 1960 tube compressor, (2) Drawmer DS 201, Audio Design Research F769X-R Vocal Stressor, (4) TC Electronics TC2240 EQ, (2) Baldwin grand pianos, Yamaha KX88 MIDI Driver w/weighted keys. Specialization & Credits: Located just outside Scottsdale, Arizona, Chaton Recordings is shaded by famous Camelback Mountain and completely surrounded by the serene desert beauty of Paradise Valley. A host of southwestern amenities and resorts are close by for the convenience of our clients and guests as they receive the finest in state-of-the-art audio services. Chaton's full staff of experienced professionals provide for regular and preventive maintenance, keeping down-time to an absolute minimum so creativity and production flow with ease. For availability, rates or equipment/services update call Lori at (602) 991-2802. Credits: Paul McCartney, Lyle Lovett, Glen Campbell, Doc Severinson, Sepultura, Judas Priest, Alice Cooper, Lynch Mob, Gin Blossoms, Dan Fogelberg, Randy Travis, George Strait, Pat Metheny, Joey DeFrancesco, Dave Brubeck, Cece Peniston, Malika, Phil Ramone, Little Joe Hernandez, Johnny Rodriguez, John Gary, Charlie Byrd, Louie Bellson, James Galway, Itzhak Perlman, Fisher-Price, ABC Network, Don Bluth Productions.

DESIGN NINE AUDIO



1234 W. Manhattan Dr.; Tempe, AZ 85282; (602) 967-6564. Owner: John Kelly. Manager: Ken Tucker.

Thank You

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Chris Huston, Scott Berdell, Tom Jenny, Vince Wells, Dave Hadler,
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Eric Clapton, Chris Isaak, Melissa Manchester, Kenny Loggins,
Carol King, Barry Manilow, Sergio Mendez, Warner Records,
Michael Omartian, Dolly Parton, Ringo Starr, Wendy & Lisa,
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MUDSHARK RECORDING STUDIO



7055 N. Chambers Dr.; Flagstaff, AZ 86001; (602) 774-7533.
Owner: Phil Gall. Manager: Phil Gall.

PRODUCTION MASTERS INC. (PMI)



834 N. 7th Ave.; Phoenix, AZ 85007; (602) 254-1600; FAX: (602) 495-9949. Owner: David Case. Manager: Emil Miller.



SCOTTSDALE CONFERENCE RESORT
Scottsdale, AZ

SCOTTSDALE CONFERENCE RESORT



7700 E. McCormick Pkwy.; Scottsdale, AZ 85258; (602) 596-7690;
FAX: (602) 596-7424. Owner: Scottsdale Conference Resort. Manager:
Martin Dempsey, Mike Floor. Engineers: Martin Dempsey, Mike Floor,
Terry Baker, Jason Conway. Dimensions: Studio 21'x26', control room
20'x18'. Mixing Consoles: TAC Scorpion 24x16, TAC Scorpion 16x8,
Soundcraft 600 16x8, Tascam M4 8x4. Audio Recorders: Otari MX-70
16-track, Otari MTR-12 2-track w/center-track time code, Otari 5050
MkIII 2-track, Otari 5050B 4-track, (2) TEAC 3440 4-track, (2) Tascam
122, Panasonic DAT, Tascam 234 4-track, Tascam 133 3-track, Moni-
tors: (2) JBL 4430, (2) Tannoy SRM-12B, (8) JBL 4401, (2) Auratone
SC. Other Major Equipment: (8) dbx 150X Type I, (2) Adams-Smith
2600 synch, Adams-Smith LTC writer, Adams-Smith reader, Lexicon
PCM42, Yamaha REV7, Eventide H949, (3) Yamaha SPX90, Lexicon
200, (3) Galax noise gate, (3) dbx 166 comp/limiter, Symetrix 522,
Scamp rack, Aphex II Aural Exciter, Studio Technologies AN-Z stereo
simulator, (20) dbx 903 comp/limiter, (3) Klark-Teknik DN360 graphic
EQ, (4) dbx 904 parametric EQ, dbx 902 de-esser, (3) Rane 10-band EQ,
(6) Crest 3000, (2) Steinway 6'6" grand piano, Grass Valley 16001L
switcher, Grass Valley OPM-100 digital effects processor, Grass Valley
model 100 switcher, Convergence 204 editor, Sony BVU-950 recorder,
Sony BVU-920 DT recorder, (3) JVC CR-850U recorder, (3) Sony 5850
recorder, Quantafont QC6-500 graphic, Ikegami HL 79 OAL camera,
Ikegami ITC-730 camera, (3) Sony DXC-M7 camera, (30) multi-image
projections, 7-watt Argon laser system, complete darkroom. Special-
ization & Credits: Specializing in original music composition, commer-
cial production, audio/visual soundtracks, post-production audio-for-
video and voice-over production. Also complete video production and
industrial multi-image staging. Located in a luxurious resort setting with
golf, tennis, complete health spa and fitness center and easy access to
Sunbelt activities.

TEMPEST RECORDING



PO Box 1007; Tempe, AZ 85281; (602) 968-9506. Owner: Clarke
Rigsby, Andy Baade. Manager: Andy Baade.

VINTAGE RECORDERS



4831 N. 11 St./PO Box 17010; Phoenix, AZ 85014; (602) 241-0667;
FAX: (602) 241-0645. Owner: Billy Moss, Chuck Holder. Engineers:
Howard Dresdan, Paula Wolak, Clarke Rigsby, Billy Moss, Chuck Hold-
er. Dimensions: Room 1: studio 24'x14', control room 21'x17'. Room
2: studio 24'x22', control room 19'x14'. Room 3: studio 9'x10', control
room 14'x10'. Mixing Consoles: SSL 4040 E/G 32-loaded "G" elec-
tronics & computer automation; Trident "B" Range 28x16x24, Studer

180-080 16x8x16, Neve 5104-16 Baby V, Quad Eight Westar 36x24,
Neve 6-ch. submixer, Neve 8301 discrete 10x2. Audio Recorders: Sony
3324 24-track digital, Studer A-827 w/TLS 4000 sync 24-track analog,
3M 79 24-track, Mitsubishi X-80, Ampex ATR-104 2-track 1/2"
& 1/4"-1/2" 4-track, Studer AB10 w/center time code, Panasonic SV-
3700 DAT, Yamaha C-300 cassette. Monitors: George Augspurger cus-
tom, twin TAD 15"/JBL 2450J, John Meyers 833, Klien/Hummel 096,
Westlake BBSM-6, Yamaha NS-10, Electro-Voice Sentry 100A. Other
Major Equipment: (2) Quantec QRS room simulator, (2) AMS DMX-15-
80, AMS RMX-16, Yamaha REV-1 reverb, (3) Eventide H910 Harmoniz-
er, EMT 240 & 140 plate reverb; Lexicon 200 reverb, Lexicon PCM70,
Lexicon Prime Time DDL, (2) Pultec EPO-1 tube EQ, (2) Pultec EQH-2
tube EQ, (2) ITI (Massenburg) ME-230 EQ, Trident (Cherokee) "A"
Range discrete mic/EQ, Trident "B" Range discrete mic/EQ, Orban 672A
EQ, (6) Calrec discrete mic/EQ, (2) Aengus EQ, Klien/Hummel UE-1000
tube EQ, (2) Teletronics LA-2 (4) dbx 165 comp., (3) dbx 160/1, (4)
Aphex CX-1, (2) API 525 discrete comp, (5) Neve stereo comp/limiter,
(2) Valley People Dynamite, Drawmer DS-201 gate, (2) dbx 902 de-
esser, (3) AKG C-12, (2) AKG 414, (4) AKG 451/2, Telefunken ELA-M
250, Neumann U47 tube, Neumann U47 FET, (4) Neumann M49B, (2)
Neumann U67, (6) Neumann KM64, (3) Neumann U87, (2) Neumann
U89, (6) RCA ribbon mic, (2) Sony C-500, (4) Sony C-37a. Extended
Equipment Description: Yamaha C7 7'4" grand piano, Hammond B3
organ w/Leslie 122, (2) Forat F-16 samplers, Kurzweil K-2000, Gretsch
drum kit dbl bass, 6 toms, assorted vintage guitars/basses and snare
drums, Marshall Superhead 100W w/4x12, Ampeg B-15N, Roland S-
550, JVC 6650-U 3/4" video deck. Specialization & Credits: Stevie
Nicks, Fleetwood Mac, Mick Fleetwood, Bob Welch, Joey DeFrancisco,
Lynch Mob, Scared Rich, Evening Shade, Beach Boys, Grateful Dead,
Bob Dylan, Up with People, Tina Turner dance remix, Southwest Insti-
tute of Recording Schools programs.

ARKANSAS

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100 N. Rodney Parham Rd., Ste. 1B (PO Box 5686, Little Rock,
AR 72215-5686) Little Rock, AR 72205; (501) 224-1111; FAX:
(501) 224-3329. Owner: Dick Marendt, Clyde Snider. Manager:
Clyde Snider.

CRYSTAL RECORDING STUDIOS



2307 Brandon Rd.; Benton, AR 72015; (501) 847-8215. Owner:
Ray and Karen Brooks. Manager: Ray Brooks.

WATERMELON WASTELAND STUDIO



PO Box 1535; Hope, AR 71801; (501) 777-8458; FAX: (501) 777-
3311. Owner: Jim Perry.

SOUTHERN CALIFORNIA

A&M RECORDING AND MASTERING



1416 N. La Brea Ave.; Los Angeles, CA 90028; (213) 469-5181;
FAX: (213) 856-2712. Owner: PolyGram N.V. Manager: Mark Har-
vey.

A & R RECORDING SERVICES



71906 Hwy. 111; Rancho Mirage, CA 92270; (619) 346-0075; FAX:
(619) 346-0075. Owner: Scott Seely. Manager: Scott Seely.

A TO Z STUDIOS



680 Arrow Hwy.; La Verne, CA 91750; (909) 599-1301; FAX: (909)
592-9888. Owner: Richard Zahniser. Manager: Ann Thomas.

ACROSS THE TRACKS PRODUCTIONS



PO Box 2612; Garden Grove, CA 92640; (714) 636-3780; FAX:
(714) 636-3780. Owner: Brad & Jodi Clark. Manager: Jodi Clark.

ADAMOS RECORDING



5811 Westminster Blvd.; Westminster, CA 92683; (714) 897-
8886. Owner: Jerry Adamowicz. Manager: Jerry Adamowicz.

AIRE L.A. STUDIOS INC.



1019 S. Central Ave.; Glendale, CA 91204; (818) 500-0230; FAX:
(818) 240-1463. Owner: Aire L.A. Inc. Manager: Eve Glabman.

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ALPHA STUDIOS



4720 W. Magnolia Blvd.; Burbank, CA 91505; (818) 506-7443; FAX: (818) 506-4369. Owner: Alpha Studios Inc. Manager: Gary Brandt. **Specialization & Credits:** Alpha Studios, built from the ground up by and for music industry professionals, continues its successful 15 years of service. Studio A is proving to delight all who have chosen to work on projects in this comfortable, well-tuned environment. The equipment is top-quality and well-maintained. Of special note is the AMS CALREC UA 8000 console. This desk pleases the most discriminating mixers for sonic quality, ease of operation, flexibility and features. The console automation is the SSL G Series studio computer. Studio B is set up for the budget-conscious. With a small 10'x22' booth, it is great for overdubs. The 12'x17' control room includes a custom API 32'x24' console and a Studer 827 24-track. Recent satisfied clients include: Michael Wagener, Ted Templeman, Lee Herschberg, Paul Brown with projects from: SHAI, I!-D-Extreme, Bullet Boys, Tia Carera, Marc Bonilla, Warrant, Dokken, Kiki Ebsen and Pia Zadora.

AMERICAN RECORDING CO.



22301 Mulholland Hwy.; Calabasas, CA 91302; (818) 223-8030; FAX: (818) 223-8034. Owner: Richard Podolor. Manager: Bill Cooper.



ANDORA STUDIOS
Hollywood, CA

ANDORA STUDIOS



3249 Cahrenga Blvd. W.; Hollywood, CA 90068-1301; (213) 851-1244; FAX: (213) 851-8604. Owner: D. Parry. Manager: D. Parry. Engineers: Bino Espinoza, Elaine Anderson. Dimensions: Room 1: studio 40'x43' (23' ceilings), control room 22'x28'; Room 2: control room 24'x30'. **Mixing Consoles:** Neve VR-72 w/GML automation and recall, Custom Neve 8078A w/ GML automation. **Audio Recorders:** (2) Studer 827 24-track, (2) Studer A-800 24-track, (2) Ampex ATR-100 2-track, (2) Studer 827 2-track w/center time code, (4) Panasonic SV-3700 DAT. **Digital Audio Workstations:** DAWN 8-track system Monitors: (4) Genelec 1035 (main monitors—both rooms), (4) Genelec 1031 A self-powered two-way, Yamaha NS-10M. **Other Major Equipment:** Dolby SR 24-channel, Dolby SR 363 4-channel, (2) AMS 1580S delay/harmonizer, (2) AMS RMX-16 digital reverb, (6) Aphex 612 dual gate, (2) API 550A EQ, (2) 560B graphic EQ, (6) API 550A EQ, (4) Drawmer DS-201 dual gate, (2) Drawmer DL-241 limiters, (2) dbx 160 compressor/limiter, (2) dbx 160X compressor/limiter, EMT 251 w/250 proms, (2) EMT 140TS stereo plates (Martec amps), (2) Eventide H3000SE harmonizer, (2) Eventide H-949 harmonizer, (2) Eventide SP-2016 effects processor, Focusrite ISA-115 EQ/mic pre, (2) Focusrite ISA-131 dynamics, (3) GML 8200 stereo parametric EQ, GML stereo limiter, (2) Lang PEQ-2 EQ, (2) Lexicon 480L digital reverb, Lexicon 224XL digital reverb, (3) Lexicon PCM-70 digital reverb, (4) PCM-42 digital delay, (32) Neve 1473 three-band EQ and mic preamps, (2) Neve 33609 stereo compressor/limiter, Neve 2254/E stereo compressor/limiter, Publ-

son Infernal 90, (2) Pultec EQP-1 A3 tube EQ, Pultec EQH-2 tube EQ, Pultec EQP-1 tube EQ, (2) Quantec QRS room simulator, (2) Quantec XL effects processor, (3) T.C. 2290 digital delay (32 sec.), (2) T.C. 1210 processor, Teletronix LA-2A tube limiter, (3) Tube Tech CL-1A tube limiter, (4) UREI 1176LN compressor/limiter, (4) UREI LA-3A compressor/limiter. **Extended Equipment Description:** (2) UREI 964 digital metronome, (3) Yamaha SPX-1000 effects processor, (2) Yamaha SPX-90 effects processor. Microphones: AKG, Beyer, Electro-Voice, Neumann, RCA, Sony, Shure, Sennheiser and Telefunken. Direct boxes: (2) Demeter "Tube" direct box, Camera Fat Box, Jensens, Countryman. Keyboards: Steinway 7'3" grand, Mason Hamlin 7'3" grand, Hammond B3 Leslie 122, synths (over 50). **Specialization & Credits:** 48-track recording and mix facilities, featuring a Neve VR-72 with recall and a custom Neve 8078A. Private lounge with office, huge kitchen, dressing room and bath overlooking the main studio below. Have you heard a pair of Genelec 1035As through a Neve console lately? These folks have: Al Jarreau, Arif Mardin, B.B. Chung King, Barry Manilow, Carole King, Cheap Trick, Chris Isaak, Don Grusin, Don Was, Earth, Wind & Fire, Ed Cherney, Eric Jacobson, Foreigner, George Massenburg, Hugh Padgham, Humberto Gatica, James Ingram, Jermaine Jackson, Jody Watley, Johnny Mathis, Kenny Loggins, Lionel Richie, Marcus Miller, Matraca Berg, Maurice White, Melissa Manchester, Mi Phi Me, Mick Jones, Dieta Adams, Dilvia Newton-John, Paula Abdul, Ray Charles, Richard Perry, Ringo Starr, Rogers Nichols, Snuffly Walden, Taylor Dayne, Ted Templeman, Terence Trent Darby, the GRP All Star Band, The Imposters, Tia Carrera, Toots Thielman, Veronique Sanson, Walter Becker. PS: Thank you Smoketree.

ASHWOOD PRODUCTIONS



1205 N. Redgum Suite H; Anaheim, CA 92806; (714) 632-3000. Owner: Barry Wood/Steven Rothrock. Manager: Ken Reeves.

ASSOCIATED PRODUCTION MUSIC



6255 Sunset Blvd., Ste. 820; Hollywood, CA 90028; (213) 461-3211; FAX: (213) 461-9102. Owner: APM. Manager: Georgia Robertson.

AUDIO CASSETTE DUPLICATOR CO.



12426-1/2 Ventura Blvd.; Studio City, CA 91604; (818) 762-2232; FAX: (818) 508-8077. Owner: Steve Katz/Steve Mitchell.

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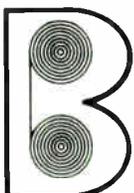
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THE AUDIO SUITE
Glendale, CA

THE AUDIO SUITE



1110-A W. Glenoaks Blvd.; Glendale, CA 91202; (818) 241-9090.
Owner: Eric Sclar. Manager: Kevin Lange.

A-Z PRODUCTIONS INC.



812 Seward St.; Hollywood, CA 90038; (213) 466-1083; FAX: (213) 466-9773. Owner: Alonso Zevallos. Manager: Monica Zevallos.

BANDWEST RECORDING STUDIOS



1911 Belmor Lane; Anaheim, CA 92805; (714) 634-9016; FAX: (714) 938-5058. Owner: Todd Cashman. Manager: Scott Ragotskie. Engineers: Scott Ragotskie, chief engineer; Tim Lindholm, 2nd engineer. Dimensions: Room 1: studio 20'x25', control 18'x18'. Mixing Consoles: Soundcraft Sapphire 36-input 72 mix. Audio Recorders: Sony PCM 3324-S dash format, Dtari MX 5050, (2) Nakamichi MR 2 cassette, (2) Panasonic SV 3700 DAT. Monitors: (2) UREI 813 C, (2) Yamaha NS-10M. Other Major Equipment: Eventide H3500 DFX harmonizer, (2) Sony DPS R7 reverb, (2) Yamaha SPX 1000 multi-effects, Yamaha SPX900 multi-effects, Aphex 9000 series rack-comp/limiter/gate, (2) dbx 166 comp/limiter/gate, BBE 802, Rane SP15 parametric EQ, (2) Yamaha Q2031 graphic EQ, Sony CDP compact disc, Crown PSA 2 power amp, Crown DC300 power amp, Ramsa WR1200 power amp, AKG The Tube, (2) AKG 414, (2) AKG 460, (4) Sennheiser 421, Neumann U87, (20) studio mics.

BAZZBO PRODUCTIONS



680 Arrow Hwy.; La Verne, CA 91750; (714) 592-6271; FAX: (714) 592-9888. Owner: Tim Jaquette, Bob Somma.

BLUE MOON STUDIO



28205 Agoura Rd.; Agoura Hills, CA 91301; (818) 889-8920; FAX: (818) 889-1208. Owner: Joe Vannelli. Manager: Diane Ricci.

BROOKLYN RECORDING STUDIO



8000 Beverly Blvd.; Los Angeles, CA 90048; (213) 655-9200; FAX: (213) 852-1505. Owner: Freddy De Mann. Manager: Bill Dooley. Engineers: Bill Dooley, Tom Banghart, Ronnie Rivera, Rick Staker. Dimensions: Studio: 30'x27', control room 27'x25'. Mixing Consoles: Neve 8078, GML Series 2000 56-channel automation system. Audio Recorders: Dtari MTR-90 MkIII, Ampex ATR-102 1/2" or 1/4", Ampex ATR-104 4-track 1/2", (2) Panasonic 3700 DAT, (2) Sony 850-ES. Monitors: (2) Control room mains custom-enclosed w/TAD components, (2) Yamaha NS-10M, (2) KRK 7000. Other Major Equipment: (2) Teletronix LA-2A, (2) Fairchild 660, (2) Pultec EQP1A3, (4) Pultec EQH2, GML 8220 parametric EQ, Demeter VTMP 2A tube mic preamp, (2) UREI 1176, (4) dbx 160XT, (4) Drawmer DS-201 dual gate, Eventide H3000SE, Lexi-

—LISTING CONTINUED TOP OF NEXT COLUMN



BROOKLYN RECORDING STUDIO
Los Angeles, CA

con 300, EMT 140 tube reverb plate, AMS RMX-15, AMS DMX-16, Yamaha REV1, Yamaha REV5, Yamaha REV7, Lexicon 224, Lexicon Prime Time, (2) Roland SDE-3000.

WALLY BURR RECORDING



1126 Hollywood Way, Ste. 203; Burbank, CA 91505; (818) 845-0500. Owner: Wally Burr. Manager: Ellen Burr.

CANYON STUDIOS



14954 Tullipland Ave.; Canyon Country, CA 91351; (805) 251-7509; FAX: (805) 251-7509. Owner: Mark Evans. Manager: Gay Evans.



CAPITOL RECORDING STUDIOS
Hollywood, CA

CAPITOL RECORDING STUDIOS



1750 N. Vine St.; Hollywood, CA 90028; (213) 871-5001; FAX: (213) 871-5058. Owner: Thorn-EMI. Manager: Paula Salvatore. Engineers: Peter Doell, Leslie Ann Jones, Charlie Paakkari, Bill Smith. Dimensions: Room A: studio 47'x44', control room 25'x25', Room B: studio 33'x31', control room 22'x20'. Room C: studio 10'x6', control room 20'x24'. Mixing Consoles: Neve VR 60x48 w/Flying Fader automation & Film Mix module, Neve VR 72x48 w/Flying Fader automation & Film module, Neve 8068 32x24 w/Necam automation, Studer 900 12x4, (2) Sony 1105-k 8x2 digital, (2) Sony MXP-2000. Audio Recorders: (4) Studer A827 24-track, Studer A800 24-track, Mitsubishi X880 32-track w/Apogee filters, (12) Ampex ATR 102 1/2" & 1/4", (2) Ampex ATR 104 4-track or 3-track playback 1/2", (9) Sony DMR-4000/1630 2-track, Panasonic SV-3500, Panasonic SV-3700, Yamaha C300 cassette, Aiwa 660, Aiwa 770 cassette. Digital Audio Workstations: (3) Sonic Solutions. Monitors: TAD designed by Vincent Van Haalf, Yamaha NS-10M, Auratone. Other Major Equipment: Dolby A, Dolby SR, TimeLine LYNX synchronizer modules/controller, house sync, (8) live echo chambers (world-famous), (3) EMT 140, EMT 250, (2) Lexicon PCM60, (2) Lexicon Super Prime Time, (2) AMS RMX16, (2) AMS DMX15, (3) Yamaha SPX1200, (4) Yamaha SPX90II, (4) Yamaha REV7, (6) Roland SDE-3000, Roland SRV-2000, Roland R-880, TC 2290, Eventide 3000 SE Ultra-Harmonizer, Kepex 11 gate, Drawmer gate, dbx 902, 903, 904, (7) Pultec EQ, (4) LA-2A limiter, (8) UREI 1176 limiter, (4) UREI LA-3A limiter, Neve stereo compressor, SSL stereo compressor, (2) Neve mastering compressor pairs, outboard Neve modules: (5) 32074, (5) 31081, (8) 31105, over 200 microphones including classic Neumann & AKG, Yamaha 9' piano, Steinway 7' piano, Hammond B-3 organ w/ (2) Leslies, Marshall 4x12, Wurliizer 145B electric piano, Fender Rhodes 73. Specialization & Credits: At approximately 1,400 sq. ft., Studio A features 2 isolation booths. Expansion of Studio A into Studio B is possible by opening isolation partitions. The control rooms of Studio A and C incorporate MIDI, video and computer distribution as well as ultraloud capacitance audio wiring, high-power cue and 8-channel self mix cue. Record credits include Richard Marx, Gloria Estefan, Aaron Neville, Dwight Yoakam, BeBe & CeCe Winans, Sheena Easton, Natalie Cole, Diane Schur, Dave Grusin, Alice in Chains. Film score credits include *Addams Family*, *Aladdin*, *For the Boys*, *Glenngary, Glen Ross*; *White Men Can't Jump*, *Prince of Tides*, *Honeymoon in Vegas*. We are a full-service facility, offering analog and digital mastering, CD prep, and Sonic Solutions hard disc editing, video playback-to-picture.

CARDINAL RECORDING



623 Calle Tulipan; Thousand Oaks, CA 91360; (805) 493-2718.
Owner: Tom Boyce, Matt Schaffer. Manager: Tom Boyce, Matt Schaffer.

CHACE PRODUCTIONS INC.



201 S. Victory Blvd.; Burbank, CA 91502-2349; (818) 842-8346; FAX: (818) 842-8353. Owner: Robert Heiber. Manager: Allan Falk. Specialization & Credits: Audio for video, film and broadcast utilizing unique and proprietary equipment. Chace Surround Stereo™ patented process that creates true directional stereo with surround. No license fee required. Over 500 features now playing in C.S.S.™ including: *Gone With the Wind*, *Yellow Submarine*, *Rocky Horror Picture Show*, *The Ten Commandments*. Chace Optical Sound Processor™ for negative optical soundtrack transfers for less than the cost of a track print. NoNoise® audio repair system to denoise, deackle, depop in stereo or mono. Digital audio editing suites for ADR and Foley recording; airline and television version cut-downs; music and effects track construction even from composite sources. Custom transfer facilities for 32 audio formats, sync and speed conversions, laybacks to video masters in 1" C and D-2 NTSC and 1" C PAL. When your audio doesn't work...we do. Chace 4-Audio.

CHEROKEE RECORDING STUDIO



751 N. Fairfax; Los Angeles, CA 90046; (213) 653-3412; FAX: (213) 653-3546. Owner: The Robbs. Manager: Susan Donaldson. Dimensions: Room 1: studio 32'x52', control room 32'x14'. Room 2: studio 13'10'x14', control room 43'x15. Room 3: studio 23'x16', control room 12'9'x32'. Room 4: studio 12'x16', control room 12'x16'. Mixing Consoles: Neve 8128 48x32 GML automated, Neve 8108 56x48 GML automated, Trident 'A' Range 36x24, SSL G series 4064 w/Total Recall, Cherokee's CRS custom-built 48x24. Audio Recorders: (2) Mitsubishi 850, (5) Dtari MTR-90, Studer A80 Mk IV 24-track, Otari MX-80 32-track, (4) Otari MTR-12, (2) Studer A80 2-track, Studer A80 Mk IV 4-track. Monitors: Yamaha NS-10M, Tannoy Gold, Fostex RM 865, JBL 4311, Toa 312ME, Tri-amped Augsburg JBL systems in all rooms. Other Major Equipment: Lynx synchronizers, EMT 250, EMT 140, Neumann various, AKG various, Sennheiser various, Shure various, Sony various, Vega various, Beyer various, RCA various, Altec various, Crown PZM, UREI 1176LN, Pultec EQP 1A, Pultec MEQ 5, Inronics 201, Lexicon 200, Lexicon PCM70, Drawmer DS 201, TC Electronic 2290, Lang PEQ-2, dbx 160, dbx 165A, dbx 162, Trident CB 9066, Spectronics 610, Eventide H949, AMS DMX 15-805, AMS RMX-16, GML DGC Series 2 compressor, GML EQ 8200, Kepex TR 804, Publison DHM 89 B2.

CLEAR LAKE AUDIO



10520 Burbank Blvd.; N. Hollywood, CA 91601; (818) 762-0707; FAX: (818) 762-0256. Owner: Brian Levi. Manager: Brian Levi.



CONTROL CENTER
Los Angeles, CA

CONTROL CENTER



128 N. Western Ave.; Los Angeles, CA 90004; (213) 462-4300. Owner: Aseley Otten, Rick Novak. Manager: Aseley Otten, Rick Novak, Ralph Stanfield. Engineers: Dan Nebenzal, Aseley Otten, Rick Novak, Frank Blue Sposato, Spike Marlin. Dimensions: Room 1: studio 18'x24', control room 12'x16'. Room 2: studio 7'x12'. Mixing Consoles: API custom 32x16x24 w/550A and 560 EQ. Audio Recorders: Studer A80 Mk IV 24-track, Ampex ATR-102 2-track, Sony DTC-75 ES DAT, Sony TC-K950 ES cassette. Monitors: Tannoy 15X, JBL 4312, Auratone 5C. Other Major Equipment: Lexicon 200, Roland SRV-2000, Roland SDE-3000, Lexicon PCM70, Yamaha REV7, Yamaha SPX90, Eventide H910, (2) UREI 1176LN, (2) dbx 161, (2) Valley People Dyna-Mite, (4) Valley People Gate, (2) dbx 166, MXR DDL, Hill DX 3000, BGW 750, BGW 250, Crown D-75, (2) Neumann U87, AKG The Tube, AKG 414. Specialization & Credits: Clients include Los Lobos, Earth, Wind & Fire, Louie, Louie, John Mayall, Gene Clark, Long Ryders, Green on Red, Dream Syndicate, Textones, Tool, The Mullfs, Greta, Rappin' Duke, Heavy Traffic, Malice, Pat Boone, King Solomon Burke, Holland-Dozier-Holland, John Adams, Heavy Traffic, Taxi, Jimmy Haskell, PolyGram, A&M, Warner Bros., MCA, Atlantic, Dunhill, Rhino, Slash, Enigma, Bug, Demon, Down Thera, Martika, Animal Logic, etc.

CORNERSTONE RECORDERS



9626 Larline Ave., Ste. K; Chatsworth, CA 91311; (818) 341-1358; FAX: (818) 341-1330. Owner: Preferred Sound Inc. Manager: Matthew Spindel. Engineers: Matthew Spindel, Richard Hasal, Scott Campbell. Dimensions: Studio 30'x25', control room 25'x25'. Mixing Consoles: Neve VR-60 w/Flying Fader automation. Audio Recorders: Studer 820 24-track, Otari MTR-90II 24-track, Studer A80 VD 2-track, Ampex ATR-104 4-track 1/2", Studer A810 2-track, Panasonic 3500 DAT. Monitors: TAD TSM-1B, Yamaha NS-10M, Smithline, Auratone. Other Major Equipment: AMS RMX-16 digital reverb, AMS 1580S DDL, Lexicon 480L digital reverb 3.0 software, EMT 140 plate, EMT 240 Gold Foil, Yamaha REV5, Yamaha REV7, (4) Yamaha SPX90, Roland SRV-2000, Roland SDE-3000, Eventide H3000, (2) TC Electronic 2290 32-sec. sampling, (2) Lexicon PCM70, (3) dbx 165 comp/lim., (2) UREI 1176 comp/lim., (2) Summit Audio comp/lim., Summit Audio stereo EQ, Summit Audio stereo mic pre, BBE 812 Aural Exciter, Dolby 301.

CPU WEST STUDIO



5796 Martin Rd., Irwindale, CA 91706; (818) 969-6881; FAX: (818) 969-8403. Owner: Cassette Productions Unlimited. Manager: John Giali.

CREATIVE MEDIA



11105 Knott Ave., Ste. G; Cypress, CA 90630; (714) 892-9469. Owner: Tim Keenan. Manager: Linda Keenan. Specialization & Credits: Creative Media has been providing professional media recording for over 23 years. Our specialty is voice recording and the production involved in audio-for-video, AV soundtracks and spots. Our facility features two control rooms, audio sweetening for video and a comfortable environment. We provide production music and sound effects, assistance in casting voice talent, multilingual narrations, dialog replacement and the talent behind the board to bring your script to life. We serve as a sound-support service for independent producers and corporate staff producers throughout Southern California. Extras include FAX and photocopier, phone-patch capability and duplication in any analog tape format. Clients include TRW, Disneyland, Allergan, Pacificare Health Systems. Engineers: Ed Berger & Dan Pavelin.

CRYSTAL-SOUND RECORDING STUDIOS



1014 North Vine St., Hollywood, CA 90038; (213) 466-6453; FAX: (213) 466-7143. Owner: Andrew Berliner.

DEVONSHIRE RECORDING STUDIOS



10729 Magnolia Blvd., N. Hollywood, CA 91601; (818) 985-1945; FAX: (818) 985-9915. Owner: David K. Mancini. Manager: Kelle Creamer. Dimensions: Room 1: studio 20'x30', control room 20'x26'. Room 3: studio 30'x45', control room 26'x20'. Room 4: studio 15'x24', control room 15'x24'; Room 5: studio 15'x20', control room 15'x15'. Mixing Consoles: Neve V-3 60-in w/GML automation, Neve VR 72-in w/GML automation, Neve V3 36-in w/Necam 96, Neve 8128 56-in w/Flying Faders, Neve 8232 32-in w/Necam 96. Audio Recorders: (3) Otari MTR-90 Mark 2 24-track, (5) Studer 827 24-track, (2) Otari MTR-20 4-track, Ampex ATR 100 2-track 1/2" or 1/4", Studer A820 2-track 1/2" or 1/4", Studer A80 2-track 1/2", (4) Panasonic SV-3500 DAT, (2) Nakamichi MR-1 cassette, (2) Sony TC-WR730 cassette, (2) Yamaha C300 cassette. Digital Audio Workstations: Pro Tools 4-track, Sound Tools, WaveFrame. Monitors: (2) Boulder 500, (4) Phase Linear 400, (2) Carver PM-1.5, (6) George Augspurger custom w/TAD TL1603/4001 White EQ & crossover, (8) Tannoy 10", 12" & 8". Other Major Equipment: (3) Lexicon 480L, (3) Eventide H3000 SE, (3) Eventide 2016, (3) AMS RMX, (4) Adams-Smith Z6000 w/controller synchronization, (5) Lynx synchronization, Pro Tools 4-track system, outboard gear & microphones too extensive to list, 4,000-cubic-ft. echo chamber, (5) Dolby A, (2) Dolby SR, (45) BVU 800 3/4", Hammond B-3 w/Leslie, (3) Yamaha grand piano, Roland JD 800 MIDI keyboard, Ensoniq SQ1 MIDI keyboard, Roland U-20 MIDI keyboard, MIDI Moog. Specialization & Credits: Roger Waters new album *Amused to Death*, Ozzy Osbourne *No More Tears*, Tom Petty *Full Moon Fever*, Cher *Heart of Stone* just to name a few albums of recent release. Whitney Houston, Lionel Richie, Infectious Grooves etc. Soundtracks include *Beaches*, *Torch Song Trilogy*, *Talk Radio*, *Out for Justice*, *The Marrying Man*, etc. Also extended post-production credits for TV animation such as *GI Joe*, *Bill & Ted's Excellent Adventure*, *Captain Planet*.

DIGIPREP INC.



1425 N. Cole Pl., Hollywood, CA 90028; (213) 461-1709; FAX: (213) 461-8890. Manager: Warren Salyer.

DOBER RECORDING STUDIO



2425 Cranston Dr., Ste. 31; Escondido, CA 92025; (619) 738-8851. Owner: Beresford Sinclair. Manager: Armando Sinclair.

TURN TO PAGE 171 FOR AN EXPLANATION OF RECORDING SERVICE SYMBOLS.



ECHO SOUND RECORDING
Los Angeles, CA

ECHO SOUND RECORDING



2900 Los Feliz Blvd., Los Angeles, CA 90039; (213) 662-5291. Manager: Mike Williamson. Dimensions: Room 1: studio 18'x18',

control room 20'x18'. Room 2: studio 26'x27', control room 18'x16'. Mixing Consoles: Trident 80C w/Moving Faders 32x24x24, Trident Vector 32x32x32, Yamaha DMP7 8x2 submixer, Otari/Diskmix ARMS III automation. Audio Recorders: (2) Studer A827 24-track, Sony/MCI JH-24 24-track, Otari MTR-12 2-track 1/2", Sony APR-5003 2-track 1/4", Fostex B-16D 16-track, Sony PCM-2500 DAT, Panasonic SV-3500 DAT, (2) Nakamichi MR-1 cassette, TEAC A3440 4-track. Monitors: (2) Yamaha NS-10M, JBL 4330, Westlake BBSM-4, Westlake BBSM-15, JBL 4311. Other Major Equipment: Lexicon 480L, AMS 15-80S, Eventide H3000 S Ultra-Harmonizer, TC Electronic TC 2290, (2) Yamaha REV5 digital effects processor, Yamaha REV7, (2) Eventide H949 Harmonizer, (8) Yamaha SPX90, Yamaha SPX90 II, (2) Aphex Aural Exciter, (3) Orban 622B parametric EQ, Aphex Dominator limiter, (5) dbx 160X comp/limiter, Lexicon Super Prime Time, Micro Lynx, (6) dbx 160, Akai MPC60, Korg M-1, dbx 160, UREI/Teletronix LA-2A comp/limiter, API 3124 mic preamp 4-ch., API 5502 2-ch EQ, (4) Galax noise gate, Roland SDE-3000 DDL, dbx 906 flanger, SMPTE Time Window Eventide Omnipressor comp/limiter, Neumann U87, (2) Neumann TLM170, (2) AKG C-414 condenser mic, (3) AKG C-460 condenser mic, AKG The Tube, (8) Sennheiser MD-421, Linn 9000 digital drum/sequencer, Emulator II digital keyboard/sampler, Roland D-50 Linear synthesizer keyboard, (2) Sennheiser MD-409, Crest 7001 power amp, Crest FA800, (2) Crest 4000, Mac Plus w/Mark of the Unicorn Performer, Yamaha

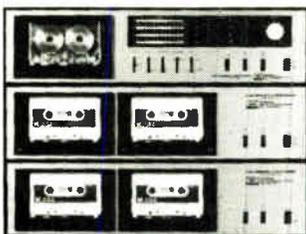
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—LISTING CONTINUED FROM PREVIOUS PAGE

TX816 8 MIDI modules, Schaffer & Son grand piano. Specialization & Credits: Echo Sound provides you with professional-quality, cost-efficient recording services. Studio B features the Trident 80C console with 32 channels of DiskMix Arms III moving fader console automation and Studer A827, 24-track recorder. We have provided recording services for Capitol Records, Warner Bros., Qwest, Soundlab, Atlantic Records, PolyGram, Mercury Records, Ice Cube, D.J. Pooh, YoYo, Charo, St. Ides commercials, King T, Street Knowledge Production, Brand Nubian, Pharcyde, Jade, Funkdoobiest and many more various independents and commercial projects. Our services include 24- & 48-track production and automation mix-down facilities with a wide array of outboard and signal processing gear. Recording services include our professional, experienced staff of recording engineers, serious about customer satisfaction. The MIDI production facility offers the producer, arranger and songwriter Performer sequencing and a selection of MIDI sound sources complete with 16-track or 24-track recorder, console and outboard effects, in-house arranging and production services.

ELDORADO RECORDING STUDIO

R24
6553 Sunset Blvd.; Hollywood, CA 90028; (213) 467-6151; FAX: (213) 467-5780. Owner: Gary Gunton. Manager: Gary Gunton.



ELUMBA RECORDING STUDIO
Hollywood, CA

ELUMBA RECORDING STUDIO

R4B D32 &
1538 N. Cahuenga Blvd.; Hollywood, CA 90028; (213) 461-4515; FAX: (213) 461-4622. Owner: Marie Josephine Dabany. Manager: Jo Keita. Engineers: Lori Fumar. Mixing Consoles: Solid State Logic 6056 w/G Series computer. Audio Recorders: (2) Studer A800 MkIII 24-track, Studer A820 2-track, Ampex ATR-102 2-track, Panasonic 3700 DAT player, Mitsubishi X-850 32-track, (2) Studer 710 cassette deck. Monitors: (2) Yamaha NS-10M, (2) Augsperger custom design w/TAD, (2) Auratone 5C, JBL 4430. Other Major Equipment: (2) TimeLine Lynx, (3) Bryston 4B amp, (3) Bryston 3B amp, Crown D150A amp, Crown D150, Perreux 6000B amp, AMS RMX, AMS DMX, Lexicon 480L, Lexicon PCM70, Lexicon Prime Time II, Publison Internal machine 90, TC Electronic 1210, Eventide 2016, Eventide H3000 Ultra-Harmonizer, (2) Yamaha SPX90, (2) Yamaha REV7, Roland SDE-3000, EMT 162 plate, Eventide 910 Harmonizer, (6) API 550A EQ, (2) API 560B EQ, Sontec 250C dual parametric EQ, (2) dbx 905 parametric EQ, Orban 622 dual parametric EQ, (2) dbx 165 compressor, (2) dbx 160X compressor/limiter, (2) Inovonics 201 compressor, (2) Summit Audio tube limiter, Teletronix LA-2A, Aphex Studio Dominator, Drawmer DS-201 dual gate, (2) Valley People Kepex II, Barcus-Berry 802, Dynatronics FS-1 cyclosonic panner, Aphex Exciter Type C.

ENCORE RECORDING STUDIOS INC.

R4B
721 S. Glenwood Pl.; Burbank, CA 91506; (818) 842-8300; FAX: (818) 842-6095. Manager: Darryl Caseine.

ENDEAVOR: AUDIO PRODUCTION

R4B D32 &
2015 Commodore Rd.; Newport Beach, CA 92660; (714) 548-3648. Owner: Jack Littleton. Manager: Jack Littleton.

THE ENTERPRISE

R4B D48
4620 W. Magnolia Blvd.; Burbank, CA 91505; (818) 505-6000; FAX: (818) 505-6006. Owner: Craig Huxley. Manager: Thom Brown. Dimensions: Room 1 studio 30'x35', control 25'x30'. Room 2 control 25'x30'. Room 3 studio 20'x50', control 20'x25'. Room 4 control 15'x20'. Mixing Consoles: Neve VR72 w/Flying Faders, SSL 4000 80-channel G computer, SSL 8000 80-channel G computer with Ultimotion, SSL 8000 96-channel G computer with Ultimotion. Audio Recorders: (8) Studer A-820 24-track w/Dolby cord cage, (2) Studer A-827 24-track, (12) Sony 3348 48-track w/upgrades, meterbridge. Digital Audio Workstations: MED 16-track direct-to-disk. Monitors: Meyer HDI, Tannoy 10", Tannoy 12", (6) NS-10M, (2) Westlake 2-way 8", Genelec 2-way 8".

ENTOURAGE STUDIOS

R24 D2
11115 Magnolia Blvd., N. Hollywood, CA 91601; (818) 505-0001; FAX: (818) 761-7956. Owner: Guy Paonessa. Dimensions: Room 1: studio 37'x25', control room 26'x25'. Room 2: studio 13'x28', control room 26'x25'. Mixing Consoles: (2) Harrison C Series 32x32. Audio Recorders: (2) Studer A80 MkIII 24-track, Studer A80 1/2" 4-track, (3) Studer A80 1/4" 2-track, Panasonic SV-3700, Panasonic SV-3900, (4) Yamaha C300 cassette. Monitors: (4) UREI 813, (6) Yamaha NS-10M, (6) Auratone 5C. Other Major Equipment: Dolby M16 24-ch. Type A rack, (2) Lynx synchronization modules, JVC CR-600U 3/4" video recorder, Lexicon 224XL digital reverb, (2) Lexicon PCM70 digital reverb, Eventide H3000 Ultra-Harmonizer, (4) EMT 140 plate reverb, Kepex II rack w/(4) gates, (2) Gain Brain, (2) Maxi-Q; (8) UREI 1176 compressor, (2) Teletronix LA-2A tube limiter, (4) UREI LA-4 peak limiter, Perreux and Haller monitor amp, microphones: (5) AKG 414, (4) AKG 451, (5) Neumann U87, (3) Neumann 47 FET, (2) Stephen Paul-modified U87, Stephen Paul-modified 47 FET, (2) Neumann KM84; (2) Yamaha pianos, 9' and 6'.

FANFARE STUDIOS

R24 D32
div. Rondel Audio Enterprises Inc.; 120 E. Main St.; El Cajon, CA 92020; (619) 447-2555; FAX: (619) 447-5571. Owner: Ron Compton. Manager: Carol Compton. Dimensions: Studio 25'x30', control room 17'x20', iso rooms 10'x12' and 7'x7'. Mixing Consoles: MCI 636 40x36 full mixing automation. Audio Recorders: MCI JH-24 24-track (2"), MCI JH-16 16-track (2"), (4) Alesis ADAT digital multitracks (32-chan) w/BRC, MCI JH-100 2-track, (2) Ampex 440B 2/4 tracks & full track, (2) Tascam DA30 stereo DAT, (2) Alwa AD-F810 cassette. Digital Audio Workstations: Digidesign Sound Tools w/Sound Designer II, Macintosh IIfx and Sample LEQ. Monitors: (4) JBL 4330 (bi-amped w/1/3 octave EQ), (2) Digital Designs near-field, (2) Yamaha NS-10M near-field. Other Major Equipment: EMT SJ-140 acoustic stereo plate, Lexicon 224 digital reverb, Ensoniq DP/4A, Alesis Quadrever, (3) Yamaha REV7, (3) Yamaha SPX90, (2) Digitech DSP-128, Adams-Smith Zeta-3, (2) Dolby A-361, Roland SN 550 digital noise eliminator, (4) Furman QN-4A noise gate, (2) dbx 165 compressor, (4) UREI LA-3A, UREI 1176 LN limiter, (2) dbx 166 compressors, (2) BBE Sonic Maximizers, (12) Neumann mics: (4) U87, (4) KM86, KM84, KM88, U47 tube, (6) AKG mics: 814, 202E, 119 (over 50 mics to choose), (2) Emax II w/complete library, (2) Sony 3/4" broadcast video machines, Yamaha C7 conservatory grand piano.

FIESTA SOUND

R24
1655 S. Compton Ave.; Los Angeles, CA 90021; (213) 748-2665; FAX: (213) 748-5388. Owner: R.G. Robeson. Manager: Rick Robeson. Engineers: Octavio Villa, Victor Flores, Salvador Sandoval. Dimensions: Studio 30x60 plus isolation rooms, control room 25x15. Mixing Consoles: MCI 428 32x24. Audio Recorders: MCI 32-track, MCI 2-track, Otari 2-track. Monitors: JBL 4333 Other Major Equipment: Lexicon 200 digital reverb, Eventide H969 Harmonizer, Lexicon DDL, Master-Room III echo, Yamaha REV7, Yamaha SPX90, UREI graphic EQ, 31-band EQ, Dolby, UREI 1176, dbx 160 compressor/limiter, Orban 424 comp/limiter, Crown DC-300, Neumann U87, Neumann KM84, AKG C-452, AKG C-414, Sennheiser MD-421, Shure SM57, Shure SM7, Sony ECM-33F, EV RE20, Steinway 6' grand piano, Fender Rhodes electric piano, D-6 clavinet, ARP Omni, ARP Odyssey synth, Fender Twin Reverb amp, Steinway grand.

"FOR THE RECORD" RECORDING STUDIO

R24
833 W. Collins; Orange, CA 92667; (714) 771-1410. Owner: Eric Gartner. Manager: Eric Gartner.

FORTY-FOUR ONE

D3
110 W. Alameda Ave.; Burbank, CA 90027; (818) 953-5193; FAX: (818) 953-8996. Owner: Joe Privitelli, Brad Aaron.

4TH STREET RECORDING

R24
1211 4th St.; Santa Monica, CA 90401; (310) 395-9114; FAX: (310) 394-7772. Owner: Jim Wirt.

FOX FIRE RECORDING

R24 D2 &
16760 Stagg St. #210; Van Nuys, CA 91406; (818) 787-4843. Owner: Rudi Ekstein. Manager: Rudi Ekstein.

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GILLETTE RECORDING SERVICES



255 N. El Cielo Rd., Ste. 466; Palm Springs, CA 92262; (619) 323-6073. Owner: Richard Brown Jr. Manager: Deb Barnes.

GOLDMINE RECORDING



1393 Callens Rd.; Ventura, CA 93003; (805) 644-8341; FAX: (805) 644-1822. Owner: Goldmine Productions. Manager: Jeff Cowan. Engineers: Mick Young, Jeff Cowan, Tracy Kahanamoku, John Morris. Dimensions: Studio 66'x26', control room 18'x16'. Mixing Consoles: Neotec Series II 28x24 w/Jensen 990. Audio Recorders: Otari MTR-90 24-track, Tascam TSR-8 8-track, Otari 5050-B 2-track, Technics 1506 2-track, Panasonic SV-3500. (2) Aiwa F770 cassette decks. Monitors: (2) UREI 813, (2) Westlake BSM-6, (2) Yamaha NS-10, (2) Genelec 1031A. Other Major Equipment: (2) Yamaha REVS, Yamaha SPX90II, TC Electronic 1280 DDL, Korg DRV-3000, Ensoniq DP/4, (10) Neumann various, (6) Sennheiser various, (6) AKG 414, (4) AKG 451 (2) RCA 44A, RCA 77D, (2) UREI LA-2A limiters, (2) dbx 161, (4) Valley People noise gate, (4) Omni Craft noise gates, (2) Hafler DH-500 power amps, Fostex 600 power amp, Phase Linear 700 B power amp, Yamaha C7 grand piano, JVC 3/4" U-matic video.

GRANMA'S WAREHOUSE



355 Glendale Blvd.; Los Angeles, CA 90026; (213) 484-8844; FAX: (213) 483-4445. Owner: Andrew Bush. Manager: Andrew Bush. Engineers: Andrew Bush Dimensions: Room 1: 19'x22', control 15'x19'. Mixing Consoles: Allen and Heath Spectrum 24x16. Audio Recorders: Tascam ATR-60 1" 16, Panasonic SV-3700 DAT. Monitors: Tannoy System 12, Tannoy PBM-8, Auratone Soundcubes. Other Major Equipment: (2) AKG 460, AKG 535, (2) Micro-Tech UM-70 Geffell, Neumann U67, Milab DC-96B, Sennheiser 441, (3) Sennheiser 421, Summit Audio EOP-200 tube EQ, Summit Audio TLA-100 tube compressor, Neve 1066 mic preamps, Drawmer DL241, Klark-Teknik DN780, (2) Lexicon LXP-15, Mac SE/30 w/8 MB RAM, JVC BR-8600 1/2" video deck, Fostex 4030 synchronizer, Kurzweil K-2000, Mason and Hamlin BB 7' grand piano, Lexicon PCM60, Roland R-5 drum machine.

GRANITE RECORDING



326-1/2 N. La Cienega Blvd.; Los Angeles, CA 90048; (310) 659-8565. Owner: Brian Carney. Manager: Jim Bailey.

GROUP IV RECORDING INC.



1541 N. Wilcox Ave.; Hollywood, CA 90028; (213) 466-6444; FAX: (213) 466-6714. Owner: Angel L. Balestier. Manager: Lisa Burrows.

HALLMARK PRODUCTIONS



31320 Via Colinas, Ste. 118; Westlake Village, CA 91362; (818) 991-4857; FAX: (818) 707-2693. Owner: Steve Hallmark. Manager: Steve Hallmark. Engineers: Steve Hallmark, various independents. Dimensions: Room 1: studio 10'x11', control room 14'x17'. Room 2: studio 10'x14'. Video/editing suite: 10'x12'. Mixing Consoles: Soundcraft 2400 28x24x24. Audio Recorders: Otari MX-80 24-track, Otari 5050 BII 2-track, MCI/Sony JH-110 1/2" 2-track/4-track 1/4" 2-track, (2) Panasonic SV-3500 DAT, Yamaha C300 cassette, Yamaha C200 cassette. Digital Audio Workstations: Apple Mac Ili w/Sound Accel., Digidesign Pro Tools (4-track), Micropolis ext. 650 meg. hard drive/int. 105 meg., Pacific CD-ROM/88 meg. removable hard drive, Digidesign Sample Cell II w/32 meg. ROM, Mark of the Unicorn Digital Performer, (2) Mark of the Unicorn MIDI Time Piece. Monitors: JBL 4411, Yamaha NS-10M, Tannoy NFM-8, Auratone 5C. Other Major Equipment: Adams-Smith Zeta-3B w/ remote, Lexicon PMC70, Yamaha REV7, (2) Yamaha SPX90II, (2) Alesis Quadraverb, (2) Roland SDE-3000 DDL, Roland R-880 RVB, (2) Barcus-Berry BBE 202R, J.L. Cooper Fadermaster/Mixmaster automation, (2) dbx 166 comp/lim/gate, (2) dbx 160X comp., (2) dbx 563 noise reduction, (2) Neve 31106 mic pre/EQ, Summit Audio stereo tube compressor, (2) Symetrix 155 comp/lim/gate, (2) Symetrix quad noise gate, mics: AKG, Neumann, Shure, EV, Sennheiser, Sony; amps: Hafler, Crown; Time Commander Garfield, J.L. Cooper MSB 16/20 MIDI patch bay, Korg M1R, Korg Wavestation A/D, Korg O1 R/W, Yamaha TX816, Yamaha TX802, Roland MKS-20 Pro module, (2) Roland D-550 module, Roland MKS-80 w/programmer, Roland A-80 keyboard controller, Oberheim DPX-1 sample player, Oberheim Matrix 1000, Roland Octapad MIDI controller, E-mu ProCussion, E-mu Proteus I, (3) E-mu Proteus II, E-mu Proteus World, Kurzweil PX1000, Sequential Circuits VS rack-mount, Panasonic AG6300 1/2" VCR, Sony 25" video monitor, Sony VO-5800 3/4" VCR.

JACK HAYES CREATIVE/INTERSTAR



PO Box 12143; La Jolla, CA 92059; (619) 229-8307; FAX: (619) 229-8908. Owner: Jack Hayes.

HOLLYWOOD LANDMARK STUDIOS



6525 Sunset Blvd.; Hollywood, CA 90028; (213) 957-2265; FAX: (213) 957-2265. Owner: Chris Clayton. Manager: Mat Hernandez.

INTERSOUND INC.



8746 Sunset Blvd.; Los Angeles, CA 90069; (310) 652-3741; FAX: (310) 854-7290. Owner: Ahmed Agrama. Manager: Kent Harrison Hayes, exec. VP.

JAMLAND STUDIOS



10988 Noble Ave.; Mission Hills, CA 91345; (818) 361-2224.

J.E. SOUND PROD. AND ENTERTAINMENT



1680 Sycamore Ave.; Hollywood, CA 90028; (213) 462-4385. Owner: John E. Goodenough. Manager: John E. Goodenough. Specialization & Credits: Our studio is the finest in Los Angeles. We feature the finest in recording equipment, microphones and outboard

equipment. We are located in a beautiful 3,000-sq.-ft. facility in Hollywood. The facility includes a wonderful scoring, ADR, music and video stage. Albums, demos and SMPTE interlock for 1/2" & 3/4" video lock-up is just a part of the services available. Some of our credits are A&M, Arista, Capitol, Andy Williams, Black Flag, Geffen, H.B. Barnum, Hearst Entertainment, Prince Valiant Productions, Propaganda Films, Redd Kross, Time Life Books, Rick Springfield, Walter Scharf, Israeli Symphony, Warner Brothers Records, Welk Music Group, John Densmore, Tin Star, International Fine Arts Expo, Dom Delouise, Gary Owens, Vavoline Industrial Show. Atlantic, and so many more. We invite you to tour our studio so we may personally acquaint you with the professional equipment and services available for your productions. Please call us if you have any questions concerning our services.

KOISC MASTERING STUDIOS



6550 Sunset Blvd.; Hollywood, CA 90028; (213) 466-1323; FAX: (213) 466-7237. Owner: Kearsy Century Corp. Manager: Julie Kruger.

KINGSOUND STUDIOS



7635 Fulton Ave.; N. Hollywood, CA 91605; (818) 764-4580.

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TURN TO PAGE 171 FOR AN EXPLANATION OF RECORDING SERVICE SYMBOLS.



—LISTING CONTINUED FROM PREVIOUS PAGE

Owner: Eddie King. **Manager:** Kara E. Rea. **Engineers:** Eddie King, Steve Cormier, Rob Ruscoe. **Dimensions:** Room 1: studio 40'x24', control room 27'x19'. Room 2: control room 13'x11'. **Mixing Consoles:** Neve V3-48 w/Flying Fader. **Audio Recorders:** Studer A827 24-track 2", Ampex ATR-102 1/2" & 1/4", Otari MTR-10, Otari MX-5050B, (2) Panasonic SV-3500 DAT, (2) Nakamichi MR-1, (2) Akai GX-8. **Digital Audio Workstations:** Studer Dyaxis. **Monitors:** King-sound custom 2-way/tri-amp main, Yamaha NS-10M, Yamaha NS-10M studio, Auratone 5C. **Other Major Equipment:** Lexicon 480L, Lexicon PCM70, Lexicon PCM41, Lexicon LXP5, Yamaha SPX900, Yamaha SPX90, Roland SDE-3000, Summit TLA-100, (2) dbx 165, GML 8200 EQ, (4) API 550A EQ, (4) API 550B EQ, (2) Valley People Gain Brain, Valley People Kexep II, Drawmer DS-201, Aphex Aural Exciter Type III, Brooke-Siren DPR-402, Yamaha C5 piano, Bryston 4B, 3B & 2B.

KRCA-TV CH. 62



1813 Victory Pl., Burbank, CA 91504; (818) 563-5722; FAX: (818) 972-2694. **Owner:** KRCA-TV. **Mixing Consoles:** Sony MXP-3036. **Audio Recorders:** (4) Alesis ADAT 32-track w/BRC remote, Sony PCM-7030 2-track DAT, TEAC A-7300 2-track analog, Yamaha C300 cassette. **Digital Audio Workstations:** 3 **Monitors:** Lakeside Associates custom 2-way monitors, Yamaha NS-10M studio. **Other Major Equipment:** Eventide H300 SE, Lexicon 300, Ensoniq DP4, BBE 822A, (2) Aphex effect racks—(2) Aural Exciters, (2) expanders/gates, (2) Expressors, (3) parametric EQ, (3) Dominator II; (2) dbx 902 de-esser, UREI LA-22, 360 Systems Digi Cart, Hafler Pro 2400 monitor amp. **Specialization & Credits:** The KRCA facility includes two fully equipped state-of-the-art video studios featuring BTS LDK 91 cameras; Sony BCB-75, BVU-920, BVU-950 and BVH-2000 video tape recorders; Grass Valley 300 and 250 switchers; access-automated lighting systems by Entertainment Technology; Pinacle digital video effects units and Delta Quanta character generators with logo compose and video graphics touch-up. Both studios are interfaced with the audio room via a central equipment room making KRCA the finest facility for live music television production.

LARRABEE NORTH



4162 Lankershim; Universal City, CA 91602; (818) 753-0717; FAX: (818) 753-8046.

LARRABEE SOUND



8811 Santa Monica Blvd.; W. Hollywood, CA 90069; (310) 657-6750; FAX: (310) 659-1717. **Owner:** Kevin Mills. **Manager:** Kevin Mills. **Mixing Consoles:** SSL G 80-input, (2) SSL G 72-input, SSL E 68-input w/G computer. **Audio Recorders:** (4) Studer A800 24-track, (6) Studer A827 2-track, Mitsubishi X-850, (2) Sony 3324.

MAD DOG STUDIOS INC.



1717 Lincoln Blvd.; Venice, CA 90291; (310) 306-0950; FAX: (310) 578-1190. **Owner:** Dusty Wakeman, Michael Dumas. **Manager:** Connie Hill.



MAD HATTER STUDIOS
Los Angeles, CA

—SEE LISTING TOP OF NEXT COLUMN

MAD HATTER STUDIOS



2635 Griffith Park Blvd.; Los Angeles, CA 90039; (213) 664-5766; FAX: (213) 660-9967. **Owner:** Chick Corea. **Manager:** Mark Francovich. **Engineers:** Bernie Kirsh, Larry Mah, Darren Mora, Robert Read, Mick Stern. **Dimensions:** Studio 38'x26', control room 18'x22'. **Mixing Consoles:** Neve 8078 40 mic input, 72 line input w/GML moving fader automation. **Audio Recorders:** Studer A800 MkIII 24-track, Studer A80 24-track (optional 16-track headstack), (2) Studer A80 2-track 1/2" & 1/4", Otari MTR-12II 4-track, Panasonic SV-3500 DAT, (2) Aiwa ADF-810 cassette. **Monitors:** Vincent Van Haaf system w/TAD components, (2) Tannoy SRM-10B, (2) Yamaha NS-10M, (2) Auratone 5C. **Other Major Equipment:** (2) EMT 140 reverb plate, EMT 240 Gold Foil reverb plate, Lexicon 480L digital reverb, Lexicon 224XL digital reverb, Lexicon Super Prime Time digital delay, Lexicon Prime Time digital delay, AMS DMX 15-80S digital delay, Eventide 949 Harmonizer, Roland SRV-2000 digital reverb, (2) dbx 160X comp/limiter, (2) Teltronix LA-2A comp/limiter, (2) UREI 1176 comp/limiter, Sontec stereo parametric equalizer, (3) Klark-Teknik 31-band graphic equalizer, (4) API 550A equalizer, (2) Drawmer dual noise gate, (4) Valley People Kexep II noise gate, Electraspace dual noise gate, (4) Yamaha SPX90II multi-effects processor, Valley People DSP de-esser, BBE Sonic Maximizer 822, Aphex Expressor comp/limiter, JVC CR-6000 3/4" video deck, (2) TimeLine Lynx synth, NEC 26" video monitor, Toshiba 19" video monitor, Steinway 9' Hamburg concert grand piano, Bosendorfer 9' concert grand w/Forte MIDI mod., (2) Neumann U67, Neumann M45, (4) Neumann U87, Neumann KM84, (2) AKG C-12A, (2) AKG C-12, (5) AKG 414, AKG D-12E, (8) Schoeps MK5, (6) Sennheiser MD-421, (5) Shure SM57, (2) Sanken SV-32. **Specialization & Credits:** "The building of Mad Hatter Studios is the realization of a place where musicians could make music in a free, easy atmosphere. Our technical concept is clarity of sound. Our musical concept is the artist's vision realized."—Chick Corea. Our clients include: Paul McCartney, Prince, ToTo, Chick Corea, Jennifer Warnes, Chaka Kahn, Robert Palmer, Clare Fischer, Mark Isham, Paula Abdul, Natalie Cole, Wayne Shorter, Yellow Jackets, Pebbles, LeVert, Vanilla Ice, Los Lobos, Tara Kemp and many more. Major motion picture soundtracks *Batman*, *Teenage Mutant Ninja Turtles*, *Little Man Tate*, *Surrender*, *The Principal*, *Nightmare on Elm Street*, *School Daze*, *Jackknife* and more. Television and our commercials: *Thirtysomething*, *Quantum Leap*, *Shannon's Deal*, *Civil Wars*, *Home Improvement*, *Anything for Laughs*, *Miami Vice*, *Budweiser*, *Lexus*, *Coors*, *Colgate*, *McDonalds*, *Gatorade*, *Stridex*, *Nissan*, etc.

MAGNETIC MEDIA PRODUCTIONS



N. Hollywood, CA; (818) 985-3996; FAX: (213) 851-4324. **Owner:** Douglas Masla. **Engineers:** Doug Masla, various independents, Conrad Gleich, Rob Sweet, Joe G. **Dimensions:** Room 1: control room 17'x19'. **Mixing Consoles:** Speck M72 72-input console w/32 channels of MegaMix automation, (2) Yamaha DMP7, Roland M480. **Audio Recorders:** Akai A-DAM 12-track. **Digital Audio Workstations:** Digidesign Pro Tools 8-track system, Digidesign Sound Tools 2-track mastering system, Emulator III 8 megabytes workstation. **Monitors:** KRK 9000 reference, KRK 1203 near-field, KRK close-field. **Other Major Equipment:** Roland R-880 reverb, Roland E-660 digital EQ, VP70; Roland SN-550 digital noise reduction, Eventide H3000 SE, 910 Harmonizer; Lexicon PCM70, Lexicon PCM42, TC Electronic 2290 w/60 sec. memory mod. delay, Kurzweil K2000 sampler, Korg Wavestation, (3) Digidesign 8 meg Sample Cell, Digidesign 32 meg Sample Cell2, Ensoniq VFX-SO, (2) Lexicon LXP1, Panasonic SV3700 DAT, Aiwa Excellia, JVC BR-7700 Pro VHS video, Adams-Smith Zeta-3 w/remote sync, Yamaha C1 MIDI computer, Valley People Kexep II, Rain Brain II, Maxi Q II, Roland Vocoter, Macintosh IIX computer.



MARTECH/MARTINSOUND
Alhambra, CA

MARTECH/MARTINSOUND

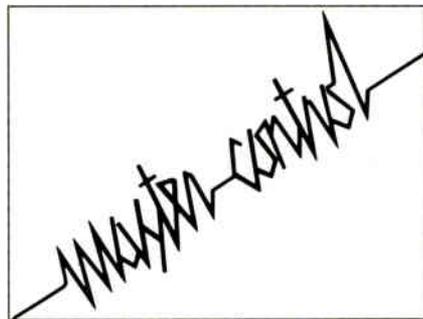


1151 W. Valley Blvd.; Alhambra, CA 91803-2493; (818) 281-3555; FAX: (818) 284-3092. **Owner:** A.J. Martinson II. **Manager:** Shawn Micheal. **Engineers:** Toby Foster, Shawn Michael, Dan Blessinger. **Independents welcome.** **Dimensions:** Room 1: studio 47'x45', control room 28'x18", machine room 16'x10"; Room 2: studio 23'x14", control room 14'x13". **Mixing Consoles:** Neve VRP60 w/Recall, Flying Faders & transport control, MCI JH416. **Audio Recorders:** Mitsubishi X-880, (2) Sony/MCI JH-24, (5) Ampex ATR-104 & 102 1/2" & 1/4", Panasonic 3700 DAT, (3) Aiwa F770 cassette. **Monitors:** Custom bi-amped TAD



MARTECH/MARTINSOUND
Alhambra, CA

LCRS system, UREI 813, Meyer Sound Labs HD-1, Yamaha NS-10M. **Other Major Equipment:** Dolby A 24-track, Dolby A 4-track, Dolby A 2-track, (3) TimeLine Lynx, (4) EMT 140 stereo w/MARTECH Electronics, AMS RMX-16, (2) Yamaha REV7, (2) Yamaha SPX90, (2) DeltaLab DL-2, (2) DeltaLab ADM1024, (2) Sontec 250, (2) Trident CB9066, (4) Aphex EQF-2, (2) Delta Graph EQ-10, (4) Teltronix LA-2A, (4) Teltronix LA-3A, (2) Universal Audio 175-B, (2) Universal Audio 1176LN (mod.), (2) Valley People Kexep II, (50+) vintage tube and ribbon mics by AKG, Neumann, Telefunken, RCA, Sony & more; (30+) FET and dynamic mics by AKG, Neumann, Sennheiser, Shure; (3) Bryston active crossover, (3) Bryston 4B, Bryston Boulder 500, (3) Hafler 500, Marantz 240, (2) Crown 300A, Crown D150, Yamaha 7' grand piano, Steinway 7' grand piano, Sony VO-5800 3/4" U-matic (time code mod.), (2) Panasonic DT-2700MS video monitor, Sony KV-2795R video monitor, Sony KX-1901A video monitor, digital metronome, Silent Clock.



MASTER CONTROL
Burbank, CA

MASTER CONTROL



3401 W. Burbank Blvd.; Burbank, CA 91505; (818) 842-0800; FAX: (818) 842-0858. **Owner:** Aseley Otten. **Manager:** Ron Corbett. **Engineers:** Independents. **Dimensions:** Room 1: 58'x24', control room 20'x24'. **Mixing Consoles:** Solid State Logic 4048 E 52x32 w/G Series computer & Total Recall. **Audio Recorders:** Studer A827 24-track, Studer A60 VU-K1 III 24-track, Studer A80 RC MkII 2-track 1/4" & 1/2", Ampex ATR-104 2-track (1/2" & 1/4") 4-track (1/2"), Panasonic SV-3500 R-DAT, Panasonic SV-3900 R-DAT, Studer A710 cassette. **Monitors:** JBL 4311, Tannoy SRM-12B, Yamaha NS-10M, Yamaha NS-10M w/McNair crossover, Auratone 5C, Westlake BBSM-4, George Augsburger custom w/TAD components. **Other Major Equipment:** Lexicon 224XL, Lexicon 200, Lexicon PCM70, (10) Pultec EQ and mic pre, AMS RMX-16, AMS DMX-15-80, (2) Yamaha REV7, (2) Eventide 949, (2) Eventide H3000, Neve 1063 12x4 console, (2) Roland SDE-3000, (8) Trident A Range EQ, Dolby 363 SR or A 2-ch. noise reduction, (2) TimeLine Lynx, UREI LA-2A, (2) UREI 1176, (2) dbx 160X, (2) dbx 160, (4) API 550 & 560, (2) CBS Audimax limiter. **Specialization & Credits:** Toad the Wet Sprocket, The Pixies, Dramarama, Goo Goo Dolls, Dinosaur Jr., Supreme Love Gods, Frank Black, Devo, Sattiva Love Box, The Verlaines, Melissa Ferrick, Mary's Danish, John Mayall, R.E.M.

METAPHASE I RECORDING



11300 Harland St. Studio G; N. Hollywood, CA 91605-6309; (213) 658-0039; FAX: (818) 505-1811. **Owner:** Drew Daniels. **Manager:** Andrew Eband. **Specialization & Credits:** With credits from almost every major label, our Studio A features an inspiring 360-degree encompassing L.A. movie studios and distant snowcapped mountains. Or our mobile configuration will relocate anywhere in North America for the ultimate in digital tracking and pre-production. Choose from our remote beachfront location, ski-mountain retreat or ocean yacht. Or, let us come to you!

METRONOME RECORDING STUDIO



16661 Ventura Blvd. Suite 120; Encino, CA 91436; (818) 990-4444; FAX: (818) 905-1883. **Owner:** Morteza Barjesten. **Manager:** Jacqueline Stander.

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B30905

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A. **Corporate Management**—President, owner, other manager, etc.

B. **Technical & Engineering**—Engineer, mixer, editor, design, etc.

C. **Production & Direction**—Producer, director, etc.

D. **Sales & Administrative**—Sales rep, account executive, etc.

E. **Other** (please specify): _____

2. Please enter the ONE three-digit code from the business activities listed in question 3 below that BEST describes your MAIN business activity:

3. Please check ALL business activities that currently apply to your professional audio industry work:

RECORDING/PRODUCTION FACILITY

- A01 2-4 Tracks
- A02 8-16 Tracks
- A03 24+ Tracks
- A04 Digital Recording
- A05 Remote Truck
- A06 MIDI/Music Production

SOUND REINFORCEMENT

B08 Sound Reinforcement

VIDEO/FILM

- C10 Production Co.
- C11 Post-Production Co.
- C12 Remote Truck
- C13 Multi-Image Production
- C14 Videotape Duplication

EQUIPMENT MANUFACTURING

- D17 Audio Equipment
- D18 Music Equipment
- D19 Video Equipment

DUPLICATION/DISC MFG.

- E20 CD Manufacturing
- E21 Tape Duplication
- E22 Mastering Only
- E23 Other (please specify): _____

ACOUSTICS/DESIGN CONSULTANT

F26 Acoustics/Design Consultant

SOUND/VIDEO CONTRACTOR

F27 Sound/Video Contractor

BROADCAST PRODUCTION

- G30 Radio Station
- G31 TV Station
- G32 Other (please specify): _____

MEDIA

- H35 Ad Agency
- H36 Magazines/Newspapers/Books

RECORD COMPANY

J39 Record Company

INDEPENDENTS

- K42 Audio Producer
- K43 Audio Engineer/Technician
- K44 Video Producer/Director
- K45 Video Editor/Technician

EDUCATIONAL

L48 Music/Recording School or Program

INSTITUTIONAL

- L47 Corporate Facility
- L49 Trade Association
- L50 Government

RETAIL/RENTAL/MFG. REP

- M51 Audio/Music
- M52 Video/Film
- M53 Rep/Sales

INDUSTRY RELATED

- N55 Musician/Artist/Composer
- N56 Artist Management/Booking
- N57 Music Publisher
- N58 Student
- N59 Other (please specify): _____

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B. **Technical & Engineering**—Engineer, mixer, editor, design, etc.

C. **Production & Direction**—Producer, director, etc.

D. **Sales & Administrative**—Sales rep, account executive, etc.

E. **Other** (please specify): _____

2. Please enter the ONE three-digit code from the business activities listed in question 3 below that BEST describes your MAIN business activity:

3. Please check ALL business activities that currently apply to your professional audio industry work:

RECORDING/PRODUCTION FACILITY

- A01 2-4 Tracks
- A02 8-16 Tracks
- A03 24+ Tracks
- A04 Digital Recording
- A05 Remote Truck
- A06 MIDI/Music Production

SOUND REINFORCEMENT

B08 Sound Reinforcement

VIDEO/FILM

- C10 Production Co.
- C11 Post-Production Co.
- C12 Remote Truck
- C13 Multi-Image Production
- C14 Videotape Duplication

EQUIPMENT MANUFACTURING

- D17 Audio Equipment
- D18 Music Equipment
- D19 Video Equipment

DUPLICATION/DISC MFG.

- E20 CD Manufacturing
- E21 Tape Duplication
- E22 Mastering Only
- E23 Other (please specify): _____

ACOUSTICS/DESIGN CONSULTANT

F26 Acoustics/Design Consultant

SOUND/VIDEO CONTRACTOR

F27 Sound/Video Contractor

BROADCAST PRODUCTION

- G30 Radio Station
- G31 TV Station
- G32 Other (please specify): _____

MEDIA

- H35 Ad Agency
- H36 Magazines/Newspapers/Books

RECORD COMPANY

J39 Record Company

INDEPENDENTS

- K42 Audio Producer
- K43 Audio Engineer/Technician
- K44 Video Producer/Director
- K45 Video Editor/Technician

EDUCATIONAL

L48 Music/Recording School or Program

INSTITUTIONAL

- L47 Corporate Facility
- L49 Trade Association
- L50 Government

RETAIL/RENTAL/MFG. REP

- M51 Audio/Music
- M52 Video/Film
- M53 Rep/Sales

INDUSTRY RELATED

- N55 Musician/Artist/Composer
- N56 Artist Management/Booking
- N57 Music Publisher
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- N59 Other (please specify): _____

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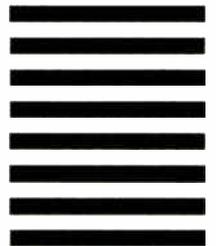
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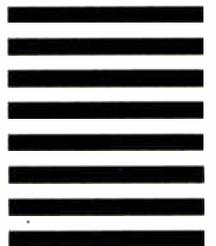
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MIXING LAB



11542 Knott Ave., #9; Garden Grove, CA 92641; (714) 373-0141; FAX: (714) 660-3899. Manager: Thom Roy. Dimensions: Room 1: studio 22'x35', control room 25'x30'. Mixing Consoles: Trident Vector 48 input w/Moving Fader automation. Audio Recorders: MCI/Sony JH-24, Otari MTR-12, (3) Panasonic 3500 DAT. Monitors: (4) Westlake BBSM-15, (2) Westlake BBSM-6, (6) Yamaha NS-10. Other Major Equipment: AMS reverb, AMS delay, Lexicon 480L, Lexicon PCM70, Lexicon 200, TC 2290, Eventide H3000 SE, (2) Yamaha SPX90 II, (2) Lexicon PCM42, (6) Aphex gate, (6) Kexep II, (3) UREI LA-3A, (2) UREI 1176, (2) dbx 165, Summit Audio tube limiter, Aphex Big Bottom, dbx subharmonic generator, Adams-Smith Zeta-3 sync, Yamaha C7 piano, Hafler Pro 5000 monitor amp.

MUSIC BOX RECORDING STUDIOS



1146 N. Western Ave., Hollywood, CA 90029; (213) 462-7761. Owner: Mike Wolf. Manager: Michael Agostinelli. Engineers: Mike Wolf, Mike Kramer, Keenah, Ronnie Sage. Dimensions: Studio 38'x15', control room 20'x15'. Mixing Consoles: Trident 80-B 30x24x24 (58-input on remix). Audio Recorders: Studer A80 MkIV 24-track, Studer A80 MkIV 2-track, Studer A710 cassette, Panasonic 3500 R-DAT, Panasonic 3700 R-DAT. Monitors: (2) UREI 813B time-aligned, (2) Yamaha NS-10, (2) Tannoy PBM 6.5. Other Major Equipment: Dolby A M16 NR 24-track, Ecoplate III (mod), Lexicon 200, (2) Lexicon PCM60, (2) Roland SRV-2000 (mod), (3) Roland SDE-1000 (mod), Eventide H3000 S, (2) Universal Audio 1176LN, (2) dbx 161X, Drawmer DS-201, Lexicon Prime Time, Neumann U-67, Neumann U-87, (2) AKG 414EB, (6) AKG 456E, (4) Sennheiser MD-421, Crown DC300, BBE 802, Akai S900, Yamaha C7 grand piano.

MUSIC GRINDER STUDIO



5540 Hollywood Blvd., Hollywood, CA 90028; (213) 957-2996; FAX: (213) 464-8770. Owner: Ron Filecia, Gary Skardina. Manager: Ron Filecia.



NRG RECORDING SERVICES
N. Hollywood, CA

NRG RECORDING SERVICES



11128 Waddington St., N. Hollywood, CA 91601; (800) 760-7841; FAX: (818) 760-7930. Owner: Jay Baumgardner. Manager: Daniel Clements. Engineers: Wade Norton, Aaron Connor. Dimensions: Room 1: studio 30'x40', control 22'x24'; Room 2: studio 12'x14', control 20'x22'. Mixing Consoles: Neve 8068 48-input w/Flying Faders, Neve 8058 28-input, Neve Melbourne 12-input Audio Recorders: Studer A827 24-track, Otari MTR 100 24-track, (2) Ampex ATR-100 2-track 1/2" & 1/4", Otari MTR 20, (2) Panasonic SV 3700 DAT, (4) Yamaha C300 cassette. Monitors: 2 pair TAD custom main speakers, 2 pair Yamaha NS-10, Tannoy SGM 10 "Gold", Genelec 1031A, Sony 27" video monitor. Other Major Equipment: Lexicon 480L, Eventide H3000 SE, AMS DMX 15-80S, AMS RMX-16, (2) TC Electronic 2290, EMT 140 plate, Dolby 301, (2) AKG C-12, (4) AKG C414, AKG D112, (2) AKG C451, (2) AKG C452, (2) Neumann KM 54, (2) Neumann KM 84, Neumann KM 86, (2) Neumann M49, (3) Neumann U47, (3) Neumann U47 FET, (4) Neumann U67, (2) Neumann U87, Neumann TLM170, (2) Shure SM7, (7) Shure BETA 57, (8) Shure SM57, (4) Shure SM58, (6) Shure SM81, (3) Sennheiser 441, (10) Sennheiser 421, (2) Pultec EQP1A3, Massenburg 8200, (2) Avalon E5, (6) Neve 33264. Extended Equipment Description: (2) UREI 1176, (2) Timeline Lynx, (4) Aphex 612 stereo gates, Lexicon PCM70, Lexicon LXP-15, (8) dbx 160X, (2) dbx 160, (2) dbx 902 de-esser, (2) Teletronix LA-2, (2) Roland SDE-3000, Roland Dimension D, (2) Yamaha C7 piano, Hammond B-3, (3) Marshall "Plexy" 100 W, (2) Marshall '66 4x12, Ampeg B18, Fender '59 Stratocaster, Fender '59 P-bass, Gibson '60 J45 Acoustic, Gibson '75 Les Paul, Fender "Blackface" Fender Twin reverb, (2) Wendle Jr. drum sampler/trigger, Forat F16 sampler.

OASIS STUDIOS



3003 Vine St., Riverside, CA 92507; (909) 275-9788. Owner: Jimmy Mac. Manager: Paul Dexter.

 TURN TO PAGE 171 FOR AN EXPLANATION OF RECORDING SERVICE SYMBOLS.



O'HENRY SOUND STUDIOS
Burbank, CA

O'HENRY SOUND STUDIOS



4200 W. Magnolia; Burbank, CA 91505; (818) 563-4200; FAX: (818) 842-5763. Owner: Hank and Jackie Sanicola. Manager: Greg Curtis. Engineers: Richard Landers, Brett Swain, Jeff Shannon. Dimensions: Room 1: studio 50'x42', control 34'x23'; Room 2: studio 30'x20', control 34'x23'. Mixing Consoles: 64x16x20 Custom API 10 aux sends and 4-band (550B) EQ w/Flying Faders, Custom Trident 48x24 8 aux sends w/Flying Faders. Audio Recorders: (3) Studer A827 24-track, (2) MCI/Sony JH-24 24-track, (2) Ampex ATR-104 w/ 1/2" 4-track and 1/2" 2-track, Ampex ATR-102 w/ 1/4" 2-track, (3) Panasonic SV-3700 DAT. Monitors: Custom TAD/Brylston, Yamaha NS-10M, Yamaha NS-10M studio, Tannoy SGM 10B. Other Major Equipment: Lynx, Dolby 363, EMT 140 plates w/Martech electronics, Steinway 1936B grand piano, Yamaha DC7 F II grand piano w/Disklavier, AMS RMX-16, AMS DMX-15, Lexicon 480L, Lexicon 224XL, Lexicon Prime Time II, Neve 33609, Neve 8078 mic pre, Neve 1272 mic pre, Eventide SP2016, Eventide H3500, Eventide H3000, Eventide H949, Eventide Ilangor, UREI 1176, UREI LA-4A, UREI LA-3A, UREI LA-2A, dbx 160, dbx 160x, dbx 903 S, dbx 165A, Aphex compellor, Aphex 612 gate, Drawmer DS201, Valley People Keyplex II, GML 8200 mic pre's, API 550A, API 550B, API 560, API 525, API 312 mic pre, Inovonics 201, TC Electronics 2290, Lang PEQ-2, Pultec EQP 1A3, Yamaha SPX90, Yamaha REV7, Yamaha REV-1, Roland SDE 3000, Roland SRV 2000, Roland SDE 1000, Boulder mic pre, Fairchild 670 stereo limiter, Forat F16 w/ 8 modules, Ensoniq DP4. Mics: Neumann U87, Neumann U67, Neumann U47, Neumann M49, Neumann KM84, Neumann KM54, AKG C12, C24, C414, C12A, C451, D12E, Telefunken 251, Telefunken 250, Sony C500, C55P, C37A, Shure SM57, Shure SM7, Sennheiser MD 421, MD 441, Audio Technica ATM-25, MicroTech UM 70, MicroTech M94, MicroTech M70, Electro-Voice RE 20. Specialization & Credits: Located in the tranquil safety of Burbank, five minutes from major airport access and ten minutes from Hollywood, O'Henry blends the world-class quality of its audiophile equipment and staff with the creature comforts of its home-style environment. Oversized control rooms provide enough space for either the largest synthesizer rigs or playback parities. Studio A offers a tracking space large enough to comfortably record 38 strings, while the smaller size of the tracking/overdub Studio B provides a more intimate setting. Our superb microphone selection provides the perfect complement to either room. The Spanish hacienda-like structure provides full kitchen facilities with soda fountain and cappuccino maker, cable television, pool table and private lounges for producers and artists. The beautifully landscaped private garden courtyard allows clients to take full advantage of the year-round beautiful California weather. The perfect blend of world-class recording facilities and attention to our clients.



OLIVE STREET DIGITAL POST
Burbank, CA

OLIVE STREET DIGITAL POST



2311 West Olive Ave., Burbank, CA 91506; (818) 559-1417; FAX: (818) 559-1412. Owner: Steven Mitchell Applebaum. Manager: Trip Brock. Engineers: Stan Ross (Goldstar), Steven Mitchell Applebaum, Trip Brock. Dimensions: Room 1: studio 24'x14', control 23'x14'. Mixing Consoles: Trident TSM-40 w/ Melquist automation. Audio Recorders: Otari MTR-90 II, Sony digital 48-track available—

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extra charge. Sculley 2-track 1/4", Panasonic 3900 DAT, Panasonic 3500 DAT. **Digital Audio Workstations:** Pro Tools 8-track direct-to-disk. **Monitors:** Tannoy DMT 215 bi-amped w/2 Bryston 4B's, KRK-9000 w/Audire Forte. **Other Major Equipment:** Lexicon 300, Lexicon 200, Lexicon PCM-70 (modified), Yamaha SPX900, Korg A2, (2) dbx 165A, (2) dbx 166, dbx 172 Super Gate, dbx 160XT, UREI 1176LN, ADA MP-1, Rockman guitar amp, Sony 9850 3/4" video deck, Sony 32" monitor, TimeLine Microlynx (all options) synchronizer, Korg Wave Station A/D, (2) Sample Cell cards, Hollywood Edge CD-ROM for Sample Cell, Yamaha DX-7 w/E1, Emulator II+. **Specialization & Credits:** Professional Pro Tools 8-track digital audio editing for film and music, plus vintage Trident TSM-40 sound. Currently the only TSM-40 in L.A.

OPUS I MOBILE RECORDING



PO Box 4523; Santa Barbara, CA 93140; (805) 687-6301. Owner: Barbara Hirsch.

PACIFIC RECORDING STUDIOS



10616 Magnolia Blvd.; N. Hollywood, CA 91601; (818) 761-8042; FAX: (818) 761-9277. Owner: Vasken Inc. Manager: Joe Deranterasian. Engineers: Ken Deranterasian, Randy Long, Gary Dobbens, Jeff "Woody" Woodruff. **Dimensions:** Room 1: studio 35'x30', control room 25'x25'. Room 2: studio 21'x20', control room 25'x25'. **Mixing Consoles:** Neve VR72 72-input w/Flying Fader automation, Trident 80B 32-input. **Audio Recorders:** (2) Studer A820 24-track, Studer A827 24-track, Studer A820 2-track 1/2", Otari MTR-12 2-track 1/2", Otari MTR-12 2-track 1/4", (2) Nakamichi MR-1 cassette, (3) Studer/Revox A721 cassette, (2) Panasonic SV-3500 DAT, Panasonic SV-3700 DAT. **Monitors:** JBL 4435, custom TAD, Tannoy SGM-10B, Yamaha NS-10. **Other Major Equipment:** (7) API preamp/EQ, (4) Neve 1073 preamp/EQ, (2) Focusrite preamp/EQ, (8) Drawmer 201 noise gate, Neve compressor, Summit Audio program EQ, Teletronix LA-2A, Lexicon 480L, Lexicon 224XL, AMS RMX-16, AMS DMX-1580, (3) Eventide H3000, Eventide 2016, (3) TC Electronic 2290, (3) Lexicon PCM70, (2) Lexicon PCM42, (4) Roland SRV-2000, (2) Roland SDE-3000, (2) Yamaha SPX900, (2) Yamaha SPX90 II, Yamaha REV7, Lexicon Prime Time, GML 8200 EQ, GML 8900 comp., (6) 902 de-esser, (4) UREI 1176, (10) dbx 160X.

PARAMOUNT RECORDING



6245 Santa Monica Blvd.; Los Angeles, CA 90038; (213) 465-4000; FAX: (213) 469-1905. Owner: Michael Kerns, Adam Beilenson. Manager: Michael Kerns, Adam Beilenson.

PENGUIN RECORDING



PO Box 91332; Pasadena, CA 91109-1332; (213) 259-8612; FAX: (213) 259-8612. Owner: John Strother. Manager: Rose Landauer.

POWERHOUSE MULTIMEDIA



19347 Londellus St.; Northridge, CA 91324; (818) 993-4778; FAX: (818) 993-3575. Owner: Paul and Jeff Stillman. Manager: Paul and Jeff Stillman.

PREMORE INC.



5130 Klump Ave.; North Hollywood, CA 91601; (818) 506-7714; FAX: (818) 980-9750. Owner: John Huseman. Manager: Robert Perry. Engineers: Paul Feenstra **Dimensions:** Room 1: studio 28'x42', control 20'x20'. Room 2: studio 7'x14', control 21'x18'. **Mixing Consoles:** Neotek Elite 40-input, API 40-input. **Audio Recorders:** (2) Sony 3324 digital 24-track, Otari MTR-90 analog 24-track, Studer A800 analog 24-track. **Digital Audio Workstations:** Digidesign Sound Tools. **Other Major Equipment:** (2) CMX 340 editors, (2) Sony D2 video, Sony PCM 2830 digital 1", Akai S1000 digital sampler, Akai S1100 digital sampler.

PRESENT TIME RECORDERS



4029 W. Burbank Blvd.; Burbank, CA 91505; (818) 842-5506. Owner: Bob Wurster. Manager: Bob Wurster. **Dimensions:** Studio 38'x18', con-

—LISTING CONTINUED FROM PREVIOUS COLUMN

rol room 23'x18'. **Mixing Consoles:** Harrison 3624. **Audio Recorders:** MCI JH-24 16/24-track, MCI 110B-2 2-track, Panasonic 3900 DAT, (2) Nakamichi cassette, Mark of the Unicorn MIDI Time Piece. **Digital Audio Workstations:** Mac SE30 computer w/Visions, Akai S1000 sampler, Korg M-1 keyboard, Alesis D4 keyboard, Sony CD player. **Monitors:** (2) Altec 604ES, (2) Tannoy 6.5, (2) Yamaha NS-10M. **Other Major Equipment:** Yamaha C-3 piano, Lexicon 300, Lexicon PCM70, Lexicon LXP-15, Lexicon PCM60, Yamaha SPX900, Symetrix stereo gate, (2) Allison Research gate, Quad GT-4A gate, UREI 1176, (2) dbx 161, dbx 166, Barcus-Berry 822 Sonic Maximizer, Aphex B, Aphex C, Orban 622 parametric EQ stereo, Orban 621 parametric EQ stereo, dbx de-esser, Neumann U-47 tube, Sony C-37A tube, (2) Neumann U87, AKG 414, (2) Equitecs 452, (2) AKG 353, AKG 421, Sennheiser 416, Sennheiser RE20, Electro-Voice SM57, (7) Shure, (4) Stewart direct boxes, (12) line transformer, (10) Koss headphones.

QUAD TECK DIGITAL



4007 W. 6th St.; Los Angeles, CA 90020; (213) 383-2155.

RECORD PLANT
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Hollywood, CA

RECORD PLANT



1032 N. Sycamore Ave.; Hollywood, CA 90038; (213) 993-9300; FAX: (213) 466-8835. Owner: Rick Stevens, VP/studio mgr. Manager: Rose Mann. Engineers: Kyle Bess, Craig Brock, Bill Leonard, Mike Reiter. **Dimensions:** Neve 1: studio 24'x34', control room 24'x21'. Neve 2: studio 40'x35', control room 30'x23'. SSL 1: control room 24'x22'. SSL 2: studio 14'x22', control room 30'x23'. **Mixing Consoles:** SSL 8096 96-input G Series w/Ultimation, SSL 4072 72-input G Series, Neve VRSP Legend 96-input w/GML automation, Neve V 60-input w/GML automation, custom API-DeMedio 36-input. **Audio Recorders:** Studer A800 multitrack, Studer A820 2-track, Ampex ATR 102 & 104, Sony PCM3348, Mitsubishi X-880 digital multitrack. **Monitors:** Custom George Augspurger and custom Hidley w/TAD components, various near-fields including KRK, Tannoy, Meyer, Auratone; all rooms include center speakers and surround speakers for film LCRS monitoring. **Other Major Equipment:** Each Record Plant studio has a wide selection of outboard equipment ranging from the latest digital processors to rare and vintage tube gear! One of the world's largest mic collections is available to clients, and the "Mini-Plant" additionally offers a full range of MIDI equipment and digital editing facilities with state-of-the-art Macintosh Quadra computers, Pro Tools and Sonic Solutions software available. **Specialization & Credits:** For 25 years the legendary Record Plant has been the recording site for some of the greatest hits and Grammy award winners from Jimi Hendrix to the Eagles to current hits by Prince, Michael Bolton, Mariah Carey, Red Hot Chili Peppers, Black Crowes, Janet Jackson and Barbra Streisand. Record Plant features five studios: (2) SSL (96- and 72-input consoles) and (2) Neve (96- and 60-input consoles) both with large tracking rooms. The new "Mini-Plant" is a cost-effective venue for MIDI, digital editing and overdubs. Record Plant's client service and facilities are the talk of the industry including an indoor atrium with Jacuzzi, billiards, coffee bar and exercise equipment. Of course all Record Plant studios offer luxurious private client lounges, the world's finest client service and full-time tech support! Director of Booking: Carol Davis. Director, Technical & Engineering: Art Kelm.

RECORD WAY STUDIOS



15713 Romar St.; North Hills, CA 91343; (818) 893-0258; FAX: call first. Owner: Dave Morse.

RED ZONE STUDIOS INC.



623 S. Glenwood Pl.; Burbank, CA 91506; (818) 955-8030; FAX: (818) 955-9346. Owner: Denis Degher. Manager: Candace Corn.

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ROLLTOP STUDIO

PO Box 17203; San Diego, CA 92177; (619) 571-5031. Owner: Tim Coffman. Manager: Tim Coffman.

ROTUNO RASCAL RECORDING

7343 Jamieson Ave.; Reseda, CA 91335; (818) 881-3327. Owner: Dave Pearlman. Manager: Dave Pearlman.



RUMBO RECORDERS
Canoga Park, CA

RUMBO RECORDERS

20215 Saticoy St.; Canoga Park, CA 91306; (818) 709-8080; FAX: (818) 709-4072. Owner: Daryl Dragon, Toni Tennille. Manager: Vicky Camblin. Engineers: Cory Baker, Shawn Borman, Dick Kaneshiro, Andy Udoff. Dimensions: Room 1: studio 58'x38', control room 28'x25'. Room 2: studio 38'x33', control room 26'x22'. Room 3: studio 25'x20', control room 25'x20'. Mixing Consoles: Neve V-60 w/Flying Fader 60-input, Trident Series 80C 40-input, Trident Series 80 32-input. Audio Recorders: (2) Studer A827 24-track, (3) Otari MTR-90 24-track, Studer A820 2-track, (3) Ampex ATR 104 2/4-track, (3) Tascam DA-30 DAT, (2) Studer A721 cassette, (4) Tascam 122 MkII cassette. Monitors: (2) Custom box w/TAD components, Fostex box w/TAD components, (8) Yamaha NS-10. Other Major Equipment: (3) GML stereo EQ, (4) GML mic preamp, (4) TimeLine Lynx. Specialization & Credits: Rumbo has always maintained a client base made up primarily of record companies working on album projects. With its huge main room and four oversized isolation booths, Studio A (Neve-Studer) is ideal for tracking. The Neve V-Series Console with Flying Faders Automation makes Studio A perfect for mixing as well. Studio B (Trident-Otari) remains a very popular recording room because of its great sound and reasonable lockout rate. With its history of hit rock albums, Studio B has become well-known in the music industry. The latest addition to Rumbo, Studio C (Trident-Otari), offers a comfortable solution for long-term overdub projects. Recent artists include: Mr. Big, Melissa Manchester, Tom Petty, Smitherens, Kiss, Damn Yankees, Lynch Mob, Poison, Spinal Tap, Guns 'N Roses, Megadeth, Barry Manilow, Toni Tennille, Bruce Hornsby, Vince Neil, Suicidal Tendencies and many others.

RUSK SOUND STUDIOS

1556 N. La Brea Ave.; Hollywood, CA 90028; (213) 462-6477. Manager: Elton Ahi.

SATURN SOUND

2940 W. Burbank Blvd.; Burbank, CA 91505; (818) 841-2001; FAX: (818) 841-1965. Manager: Jane Scobie.



SKIP SAYLOR RECORDING
Los Angeles, CA

—SEE LISTING TOP OF NEXT COLUMN

SKIP SAYLOR RECORDING

506 N. Larchmont Ave.; Los Angeles, CA 90004; (213) 467-3515; FAX: (213) 467-4636. Owner: Skip Saylor. Manager: Skip Saylor. Engineers: Gregg Hinnen—technical director; Aaron Miller, Louie Teran, Mike Ging, Eric Flickinger, Kahne Krause. Dimensions: Room 1: iso booth 10'x9', control room 22'x17'. Room 2: studio 21'x16', control room 19'x17'. Mixing Consoles: SSL 4080 G w/Total Recall 80 inputs w/E & G Series EQ, G Series computer. Real World Cue matrix system for a total of ten echo sends per channel (six w/Total Recall, four computer controlled). API 32x64 w/Necam moving fader automation. Audio Recorders: (3) Studer A800 24-track, (4) Ampex ATR-102, (2) Ampex ATR-104, digital 32- or 48-track machines available on request, (4) Nakamichi MR-1, Studer A-727, (3) Panasonic SV-3700 DAT, Pygmy AD-1 A/D converter. Monitors: TAD, Yamaha NS-10, Auratone Sound Cube. Other Major Equipment: (3) TimeLine Lynx, Lexicon 480L, Lexicon 224XL, (4) Lexicon PCM70, AMS RMX-16, Eventide SP2016, Yamaha REV-1, (3) Yamaha REV5, (2) Yamaha REV7, (5) Yamaha SPX90, (2) EMT 140 plate, AMS 15 80S 9.2 sec, (3) TC Electronic 2290 32 sec. stereo sampling, Akai S1000, Lexicon Super Prime Time, (2) Lexicon Prime Time II, Forat F-16 8-ch. digital sampler w/hard disk, full library, (2) Eventide H3000 w/SE & VAI update and stereo sampling, (2) Eventide 949, Eventide 910, GML 8200 parametric EQ, (2) Focusrite EQ, (6) Neve 1073 EQ, (2) Neve 31105 step EQ, (10) Neve V-Series EQ, (11) API 550 EQ, (4) Pultec EQ, BSS DPR-901 dynamic EQ, Neve 33609 stereo limiter/compressor, (3) Teletronix LA-2A, (5) UREI 1176, (4) Drawmer 201, Drawmer M500, Neumann U67, AKG C-12, (5) AKG 414, (2) AKG C-452, Neumann U87, Neumann TLM170, Yamaha grand piano. Specialization & Credits: Clients include Michael Jackson, Guns 'N Roses, k.d. lang, Def Leppard, DJ Quick, Bell Bi DeVoe, Paula Abdul, Megadeth, Max Norman, Brian May, Brenda Russell, Suicidal Tendencies, Infectious Grooves, Tony! Toni! Tone!, Michael Lloyd, Fishbone, Eddie Money, The Whispers, Thomas Dolby, Tower of Power, Pebbles, The Replacements, Donny Osmond, Jeffrey Osborne, New Edition, Manhattan Transfer, Julian Lennon, Soul II Soul, Jay King, Vanessa Williams, Bobby Brown, Philip Bailey, Peter Cetera, Natalie Cole, Bernadette Copper, Mantika, The Pointer Sisters, 2nd II None, For Real, Tony DeFranco, Dana Strum, Phantom Blue, Penthouse Players, AMG, Go West, and many more.

SCORE ONE RECORDING INC.

5500 Cahuenga Blvd.; N. Hollywood, CA 91601; (818) 762-6902; FAX: (818) 762-2531. Manager: Al Johnson.

SCREAM STUDIOS

11616 Ventura Blvd.; Studio City, CA 91604; (818) 505-0755; FAX: (818) 505-6405. Manager: Jeanne, Liz. Engineers: Liz Sroka. Mixing Consoles: SSL 4056 G Series w/Total Recall and 8 stereo faders, control room designed by Vincent Van Haaf. Audio Recorders: Mitsubishi X-850 digital 32-track w/Apogee filters, Studer 827 analog 24-track, Mitsubishi digital 2-track w/Apogee filters, Studer A-820 1/2" 2-track, Digital Audio Workstations: Akai DD 1000 Optical disk system. Monitors: Customized UREI 813B, Yamaha NS-10M, Tannoy NFM8. Other Major Equipment: Lexicon 480L digital reverb, AMS digital reverb, AMS 1580S digital delay, (2) Lexicon PCM70 digital EFX, Eventide H3000 SE w/sampling & mod factory, (2) Lexicon 910 Harmonizer, Lexicon Prime Time digital delay, (4) Roland SDE-3000 digital delay, (3) Yamaha REV7 effects, (2) Yamaha SPX90 effects, Roland SRV-2000 digital reverb, Klark-Teknik 3-channel analog delay, (2) Focusrite mic preamp & parametric EQ, (4) GML 8200 parametric EQ, (4) API 550A EQ, (2) UREI 530 & 535 graphic EQ, (2) BBE 802 & 822 Sonic Maximizer, TC Electronic 1210 Spatial expander, Neve 33609 2-channel, (2) UREI 1176 limiter, (4) dbx 160X compressor, dbx 165A compressor, (2) Dyna-Mite 2-ch. compressor, (2) Inovonics 201 compressor, UREI LA-2A limiter, (2) UREI LA-3A limiter, (2) UREI LA-4A limiter, (2) Drawmer 201 2-channel gate, (4) Kepex II gate, (3) dbx 902 de-esser, Russian Dragon sample synchronizer, dbx 120SDX boom box, Marshall 5402 time modulator & flanger, Spanner stereo panner, Forat 16-bit 8-channel drum sampler & editor w/hard drive, (2) Wendell Drum Replacement system, Magnavox CD player. Specialization & Credits: Scream is proud to have mixed, recorded or both, the following records: Nirvana's #1 quadruple-Platinum "Nevermind" and Gold "Smells Like Teen Spirit," Ozzy Osbourne's double-Platinum "No More Tears" and "Live and Loud," Extreme's double-Platinum "Pornograffitti" and #1 Gold "More Than Words," Janet Jackson's #1 Platinum "Black Cat," Faith No More's double-Platinum "The Real Thing" and "Angel Dust," Skid Row's #1 double-Platinum "Slave to the Grind," and Motley Crue. Rage Against the Machine, Dwight Yoakam, Indigo Girls, Queen, Fishbone, Kenny Loggins. We are most honored having Michael Wagener, David Leonard, Andy Wallace, Greg Penny, Brian Malouf, Matt Wallace, Peter Collins, GGGarth Richardson work here. We're cozy and private, located a few miles from most major record and film companies. We are within blocks of 38 different restaurants. We have a patio with a gas bar-b-que, Nintendo, cable and purple pool table. Scream is owned by musicians for magicians.

SCREENMUSIC STUDIOS

11700 Ventura Blvd.; Studio City, CA 91604; (818) 753-6040; FAX: (818) 508-4870. Owner: Multi-Globe Int. Inc. Manager: Jay Kaufman.

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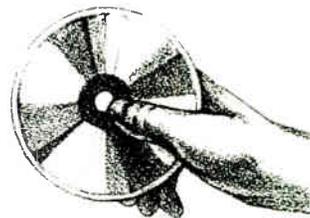
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Anaheim, CA

SF AUDIO SOUND & RECORDING



5290 E. Hunter Ave., Anaheim, CA 92807; (714) 779-6677; FAX: (714) 777-0894. Owner: Steven Forster. Manager: Steven Forster.

SHERWOOD STUDIOS



2899 Agoura Rd. #299; Westlake Village, CA 91361; (805) 379-4477. Owner: Bill Cobb.

SIDESTREAM SOUND



5013-1/2 Narragansett Ave., San Diego, CA 92107; (619) 222-0238.



SIDEWAYS RECORDING STUDIOS
Santa Ana, CA

SIDEWAYS RECORDING STUDIOS



2931 W. Central; Santa Ana, CA 92704; (714) 545-9649. Owner: Sideways Records. Manager: Jim Hahn. Engineers: Jim Hahn, Maurice Jackson, independents. Dimensions: Studio 23'x20', control room 20'x15'. **Mixing Consoles:** Amek custom w/Neve class A amps 72-input, Neve 12x2 w/(8) 31105 & (4) 1073 ED & preamp. **Audio Recorders:** Otari MX-80 24-track, Panasonic SV-3900 DAT, Panasonic SV-3500 DAT, Tascam 32 1/4" 2-track, (3) Aiwa AD-F780 cassette, Yamaha C300 cassette, Tascam 112 cassette. **Digital Audio Workstations:** Digidesign Sound Tools II Macintosh Quadra 900. **Monitors:** Tannoy OMT 215, Tannoy PBM 6.5, Yamaha NS-10. **Other Major Equipment:** Adams-Smith Zeta-3B synchronizer, Roland R-880 w/Lexicon 480 card, Eventide H3500 w/Steve Vai precepts, (3) Lexicon PCM70, Lexicon PCM60, Lexicon LXP1, Lexicon LXP5, (2) Roland SDE-3000, Alesis MIDiverb II, (2) Alesis Quadraverb Plus, Yamaha SPX50, Summit Audio TPA-200 tube preamp, (2) Neve 32264 compressor/limiter, (2) Aphex compellor, Aphex Expressor, UREI 1176LN compressor, UREI 7110 compressor, Orban de-esser, (6) Audio Logic quad gate, BBE 422, BBE 401, Eventide H949 Harmonizer, TC Electronic TC-2240 EQ, White 4400 1/3-octave EQ, (40) Neumann, AKG, Sennheiser

—LISTING CONTINUED TOP OF NEXT COLUMN

microphones; Crest 8001 1150-watt stereo amp, Hafler P-505 250-watt stereo amp, Macintosh IICI, Macintosh Quadra 900, (3) Alesis D-4 drum machine, Kurzweil K-1000, Yamaha 6-piece Recording Series, Marshall JMP1 tube preamp, 12 studio guitars from vintage Rickenbacker, Gibson, Fender, Ovation. **Specialization & Credits:** Since 1987, Sideways has been Orange County's premier recording facility. We cater to record companies, ad agencies, artists, producers, composers and musicians of all styles. Friendly and efficient engineers get the job done right at very reasonable rates. This year we've had the pleasure of working with CBS, Sony, WEA, Private Music and Louie Louie just to name a few. Call for rates and updated equipment list.



SIGNATURE SOUND
San Diego, CA

SIGNATURE SOUND



5042 Ruffner St., San Diego, CA 92111; (619) 268-0134; FAX: (619) 268-3137. Manager: Luis Arteaga.

SOUND AFFAIR RECORDING LTD.



2727 South Croddy Way, Ste. G; Santa Ana, CA 92704; (714) 540-0063. Owner: Ron Leeper. Manager: Andree Hogg.

SOUND CHAMBERS RECORDERS



5264 Blakeslee Ave., N. Hollywood, CA 91601; (818) 752-8932; FAX: (818) 508-7987. Owner: Richard McIlvery. Manager: Mary McIlvery. Engineers: James McIlvery. **Dimensions:** Room 1: studio 45'x40', control room 22'x27'. Room 2: studio 26'x24', control room 20'x24'. Room 3: control room 19'x24'. **Mixing Consoles:** Solid State Logic SL4056E/G w/Total Recall, Trident Series 80B 36-input, Soundcraft Sapphyre 44-input. **Audio Recorders:** (2) Studer 827 24-track, (3) Panasonic 3700, Ampex ATR 102 w/1/4" and 1/2" heads. **Digital Audio Workstations:** Digidesign Pro Tools 4-track. **Monitors:** UREI 813C, Yamaha NS-10, JBL 4206, JBL 4208, JBL 4401, JBL 4311. **Other Major Equipment:** (3) Lexicon PCM70, (2) Lexicon 480L, (2) EMT plate reverb, AMS RMX16 reverb, (4) Yamaha SPX900, (4) Lexicon PCM42, (4) Roland SDE-3000, Eventide H3000 SE, (2) Teletronix LA-2A limiter, (4) UREI 1176, (2) UREI LA-4, (4) dbx 160 limiter, (2) Drawmer DS-201, JVC 850 3/4" video, JVC BR-7700 1/2" video, TimeLine Lynx synchronizer, (2) Akai S-1000, Roland JD-800, Korg M1, Kurzweil K2000.

SOUND CITY STUDIOS



16456 Cabrillo Rd., Van Nuys, CA 91406; (818) 787-3722; FAX: (818) 787-3981. Owner: Tom Skeeter. Manager: Shivaun O'Brian. Engineers: Joe Barresi, Jeff Sheehan. **Dimensions:** Room 1: studio 40'x50', control room 20'x20'. **Mixing Consoles:** Neve 8028 Custom. **Audio Recorders:** (2) Studer A-800, (2) Studer A-80 2-track 1/2" & 1/4", Studer B-67 1/4". **Monitors:** JBL, Augspurger Design, (4) Yamaha NS-10. **Other Major Equipment:** GML mic pre, Pultec EQP 1A, Pultec MEQ-5, Pultec HLT3 C, Lang PEQ-2x2 EQ, EMT 140 tube reverb plate, (3) Teletronix LA-2A, Yamaha SPX 900, Yamaha REV7, Lexicon PCM42, Dolby 361, Kexep gates, Eventide H949, (4) UREI 1176, AMS RMX 16 digital reverb, Drawmer Quad gate, dbx 160X, Yamaha SPX9011, Lexicon 102, (2) dbx 165A **Specialization & Credits:** Clients include: Nirvana, Tom Petty, Rage Against the Machine, The Cult, Kyoss, Elton John, Green Jelly, Fleetwood Mac, Tool, Greta, Robben Ford, Allman Brothers, L7, Cheap Trick, The Scram, Masters of Reality, Poison, Infectious Groove, Guns N' Roses, Bob Dylan, Foreigner, Ratt, Peter Frampton, George Harrison, Dokken, Dio, Jimmy Page, Joe Walsh, Santana. Producers: Burch Vig, GG Garth, Rick Rubin, Sylvia Massey, Daniel Rey, Chris Goss, George Drakoulis, Jimmy Iovine, Mack, Andy Johns, Beau Hill, Don Smith.

SOUND CONCEPTS



943 Manhattan Beach Blvd. Suite C; Manhattan Beach, CA 90266; (310) 796-0424; FAX: (310) 796-0424. Owner: Dave Conrad. **Specialization & Credits:** Services: custom compact disc recording for short-run replication or CD reference copies. Full digital editing capabilities on Sonic Solutions digital audio workstation. Compact disc mastering and premaster compact disc creation services as well.

SOUND DESIGN



33 W. Haley St.; Santa Barbara, CA 93101; (805) 965-3404; FAX: (805) 966-9525. Owner: Affiliated Concepts Corp. Manager: Mitch Summer.

SOUND MASTER RECORDING STUDIO



10747 Magnolia Blvd.; North Hollywood, CA 91601; (213) 650-8000. Owner: Brian D. Ingoldsby. Manager: Steve Coker.



SOUND WRITER STUDIO
Manhattan Beach, CA

SOUND WRITER STUDIO



1116-A 8th St., Ste. 160; Manhattan Beach, CA 90266; (310) 379-7426. Owner: Leigh Genniss. Manager: Leigh Genniss. Engineers: Leigh Genniss, the Professor, Patrick Yarborough, Laura Goble. **Dimensions:** Studio 8'x16', control room 1.9 & 1.4 room ratio. **Mixing Consoles:** Soundcraft 6000 52x24 w/auto and complete recall. **Audio Recorders:** Sony PCM3324 24-track digital w/Apogee filters, Sony PCM2500 2-track digital w/Apogee filters, Panasonic SV-250 digital 2-track, Nakamichi MR-1, TEAC CD 401 player w/edit for sound effects. **Digital Audio Workstations:** Korg T3 w/cards T1 update-10 disk, Korg O1W, Roland JD-800, Akai Lynn MPC 60 drums, Dean Jammer guitar w/Humbuckings, Steinberger bass. **Monitors:** UREI time align (new revision), JBL 4412 alt., NS-10M, Auratone alt., Tannoy alt., Sony MDR V6 digital headphone. **Other Major Equipment:** IPS 338 GSP 21, Lexicon 480L, Eventide H3000, Roland 800, DSP 256, DSP 128, DigiTech 7.6 time machine, Lexicon LXP15, (2) LA-4A, (2) UREI JBL 7110 comp/lim, dbx comp/lim., Russian-Dragon, Simon system direct boxes, Innovative audio tube direct box, Audio Logic stereo graphic, Audio Control SA 3050A, Atari 1040ST total MIDI w/printout, 2 systems, 4 meg., Neumann microphones, AKG microphones, Shure microphones, Crate G120C guitar amp w/stereo line in/out, Trace Elliott bass amp 4/10 2/15, (2) Crate keyboard amps for stereo, JBL/UREI 6260, JBL/UREI 621 alternates. **Specialization & Credits:** Clients include: Danny Rocca, Madrock, Michael Taylor, the Ohio Players, Antron, Andrew Gordon, Kiet Bui, Rusty Vail, Juvenile Committee, H.W.A., Hami Dare, Soup, Lighter Shade of Brown, Latin Kings, Dangerous Gangsters, Supreme Love Gods, Stoker, Chris Charles, Jammin' James, William Handy Jr., Demetrius Shipp, Eazy E, Rhythm D, Joe Higgs, Upper Deck, Cyrus, David Brooks, Solomon Burke, Selassie Lenge, Courtney Lenerd, Jai Cannon, the Altermath, Jee Hun, Deitzer D., CB-4, Grand Jury Productions, Veragon Productions, DUO Esparanza, Quality Records, Virgin Records, Warner Bros. Records, Tommy Boy Records, Ruthless Records, DEF-American Records, AVC Records, Mountain Top Tapes, many, many more!!! Want digital at analog prices? Call us!!!

SOUNDER RECORDING STUDIOS



17021 Chatsworth St., Granada Hills, CA 91344; (818) 366-0995; FAX: (818) 366-3295. Owner: Brian Mann. Manager: Sandy Solomon.

SOUNDLABS AUDIO PRODUCTIONS



339 Budson St.; Oak View, CA 93022; (805) 649-4011. Owner: Chris Longo. Manager: Chris Longo.

SOUNDLAND INC./DBA HOT TIN ROOF



5250 Vineland Ave., N. Hollywood, CA 91601; (818) 763-7110; FAX: (818) 763-6140. Owner: Soundland Inc. Manager: Frank or Bertha. Engineers: Bryan Stott, John Gughenheim, John Lawson. **Dimensions:** Room 1: studio 45'x48', control room 26'x25'. **Mixing Consoles:** Trident 80B, DDA S-500. **Audio Recorders:** Studer A-827, Ampex ATR-100, Otari 100, Sony DMR-400, Sony BVU-800, Sony PCM2500 DAT, Sony 75ES DAT. **Digital Audio Workstations:** Sonic Solutions System. **Monitors:** UREI 813 time-align ML x-overs, Tannoy 15" MGB, Tannoy 6.5 Phase 2, Yamaha NS-10, NHT near-field S-1000. **Other Major Equipment:** Sony 1630 processor, (2) Dolby 361-A NR, (2) UREI 1176B limiter, (4) dbx 160XT limiter, dbx 163X limiter, dual state-gate, Aphex T20 Dominator 2-ch., API 5502 4-band EQ 2-ch., Rocktron Aural Exciter, Lexicon PCM70, (2) Yamaha REV7, (2) Yamaha SPX90, (3) Korg DRV-3000, Roland SDE-3000, (30) assorted mics: Neumann, AKG, Sony, Shure, EV; (3) Aiwa 3-



SOUNDLAND INC./DBA HOT TIN ROOF STUDIOS
N. Hollywood, CA

head synchronizer cassette recorder. **Specialization & Credits:** Multitrack recording—CD prep and sub mastering with Sonic Solutions hard disk editor. CD pressing and cassette manufacturing referrals. Studio credits include tracking for Judson Spence and Raindogs for Atco/Atlantic, produced by Don Gehman, Recording Japanese female group "Reg Wink" for Sony Japan through Blue Jay West Productions. Tracking for Dread Zeppelin album for IRS. On-dub and mixing of Argentina's new teen idol Diego Sabattini. On-dub and mixing of former "Flans" now Solo, Mimi for Capitol-Mexico. Tracking for Johnny Diesel, The Divinyls and Boom Crash Opera produced by Don Gehman. Recording Pandora, Juan Gabriel, Gloria Trevi, Gary Wright, Willy DeVille, Sahara, Paz Martinez, Napoleon.

SOUNDGRAPHICS STUDIO



PO Box 91133; Long Beach, CA 90809; (310) 498-9135. Owner: David Eastly. Manager: David Eastly.

SPECTRUM STUDIO



664 Camino Campana; Santa Barbara, CA 93111; (805) 967-9494; FAX: (805) 967-9494. Owner: Don Ollis. Manager: Don Ollis.

THE STAGG STREET STUDIO



15147 Stagg St.; Van Nuys, CA 91405; (818) 989-0511; FAX: (818) 782-1444. Owner: Gary Denton. Manager: Melody Carpenter.

STUDIO DEE



3306 Glendale Blvd., Ste. #4; Los Angeles, CA 90039; (213) 662-9595. Owner: Huey Dee. Manager: Huey Dee. Engineers: Bob Drake, Rob Rampley, Art Work, Mike Ross. Dimensions: Studio 12'x12', control room 14'x12'. **Mixing Consoles:** Trident 24 (audio grade) 36x24x24. **Audio Recorders:** Sony/MCI JH-24, Fostex G16 w/8330 sync card, Tascam 38, (2) Sony 1000 ES (mod.), Studer Revox PR99. **Monitors:** JBL 4425, Yamaha NS-10, Auratone. **Other Major Equipment:** Neumann U87 (audio upgrade), AKG 414EB (Stephen Paul mod.), Eventide H3000 SE, Eventide H910, Yamaha REV7, Yamaha SPX900, Yamaha SPX90 II, Lexicon LXPI (audio upgrade), Roland SRV-2000, Roland SDE-3000, JBL/UREI 1178, dbx 166, (4) Valley Kepex II, (4) Valley Gain Brain II, Orban 622B parametric EQ, Atari 1040ST, Alesis SR16, Ensoniq EPS sampler, Roland D-50, J.L. Cooper DPS100.

STUDIO DEL MAESTRO



PO Box 996; Cardiff-by-the-Sea, CA 92007; (619) 944-3456. Owner: Richard Del Maestro. Manager: Richard Del Maestro.



STUDIO 56
Hollywood, CA

—SEE LISTING TOP OF NEXT COLUMN

STUDIO 56



7000 Santa Monica Blvd.; Hollywood, CA 90038; (213) 464-7747; FAX: (213) 467-8579. Owner: Paul Schwartz, Frenchy Gauthier. Manager: Claudia Lagan. Engineers: Dennis Mackay, Doug Michael, Kevin Becka, Tom Herzer. Dimensions: Room 1: studio 31'x24', control room 19'x20'. Room 2: studio 10'x15', control room 15'x14'. Room 3: studio 45'x60', control room 22'x15'. **Mixing Consoles:** Neve VR60 w/Flying Faders, Trident 808, Neve 8028. **Audio Recorders:** (2) Studer 820 w/Dolby SR 24-track, (2) Otari MTR-90 24-track, Studer 807 1/4" 2-track, (2) Studer 820 2-track, Studer 807 4-track, Otari 5050B 2-track, Mitsubishi X-86 digital 2-track, (5) Panasonic 3500 DAT. **Digital Audio Workstations:** Sound Tools, Pro Tools. **Monitors:** TAD, Tannoy SRM-12B, JBL, NS-10, (2) Mitsubishi 60" video monitor. **Other Major Equipment:** Lexicon 480L, Lexicon 300, (5) Drawmer D-S201 dual gate, (2) TC Electronic TC 2290, AMS RMX 16 reverb, Eventide H3000 Harmonizer, (2) JREI 537 graphic EQ, (4) Summit Audio TLA-100A tube leveling amp, (4) API Jensen preamp, (2) dbx 166 dual compressor, Lexicon PCM41 digital delay, Yamaha SPX1000 effects processor, (2) Lexicon PCM70, Lexicon PCM42, Roland SDE-3000, Roland SDE-2500, Yamaha grand piano.

STUDIO M PRODUCTIONS



1041 N. Orange Dr.; Hollywood, CA 90038; (800) 453-3345; (213) 462-7372; FAX: (213) 462-8556. Owner: Mike Michaels C.A.S. Manager: Dean Gilmore, John Speak.

STUDIO MASTERS



8312 Beverly Blvd.; Los Angeles, CA 90048; (213) 653-1988; FAX: (213) 653-2947. Owner: Randolph Wood. Manager: Larry Wood.

STUDIO ON WHEELS



339 W. Windsor Rd., Ste. 6; Glendale, CA 91204; (818) 243-6165. Owner: John Falzarano. Manager: John Falzarano.

STUDIO ONE RECORDING



925 E. North St.; Anaheim, CA 92805; (714) 538-3640; (714) 776-4991. Owner: WV Associates. Manager: Joy Vestman.



STUDIO 101
Solana Beach, CA

STUDIO 101



159 S. Highway 101; Solana Beach, CA 92075; (619) 481-2274; FAX: (619) 481-9005. Owner: Marc Wintriss. Manager: Marc Wintriss. Engineers: Independents. Dimensions: Room 1: studio 15'x20', control room 10'x15'. Room 2: studio 25'x50', control room 10'x15'. Room 3: studio 8'x10', control room 10'x15'. **Mixing Consoles:** Trident Series 24 fully automated 28x24x24 (Pat Schneider modified & rechipped), custom 12x12x2 tracking console w/all discrete Class A Trident A-Range, Focusrite, Neve and API input modules. **Audio Recorders:** Studer A80 Mk IV 24-track w/Autolocator & Varispeed, Studer A80 Mk IV 2-track, Panasonic SV-3700 R-DAT, (3) Nakamichi MR-2B cassette. **Digital Audio Workstations:** Macintosh Quadra 900 w/OpCode Studio 5 running Studio Vision and Performer software, Digidesign Sound Tools II w/Pro Tools interface, CD-ROM drive, w/1.2 gigabyte hard drive. **Monitors:** Meyer HD-1, Tannoy PBM 6.5, Yamaha NS-10M. **Other Major Equipment:** Dolby SR 24-channel, Dolby 363 SRA 2-channel, TimeLine MicroLynx 3-machine sync w/remote, Lexicon 480L w/SME, Lexicon PCM70, TC Electronic 2290, Eventide H3000 SE/B, Summit Audio EDP 200A dual tube program EQ, Summit Audio DCL 200 dual tube compressor/limiter, Summit Audio TPA 200 dual tube preamplifier, (4) Drawmer DS-201B dual gate, UREI 1178 dual limiter, (2) dbx 165A compressor/limiter, Zeta Music System VC220 MIDI violin controller, Telefunken Elam 250 (Klaus Heyne mod.), Neumann M-49 (Klaus Heyne mod.), Neumann U47 (Klaus Heyne mod.), Neumann U67 (Klaus Heyne mod.), (2) Neumann U87a, (2) Neumann KM84 (Klaus Heyne mod.), AKG 414EB/CK12 (Klaus Heyne mod.), (2) AKG 414/ULS, AKG D12/112, EV RE20, (2) Beyer Dynamic M88, (4) Shure SM57, (2) Shure SM58, (4) Sennheiser 421. **Extended Equip-**

—LISTING CONTINUED ON NEXT PAGE

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—LISTING CONTINUED FROM PREVIOUS PAGE

ment Description: (2) Crown PZM-30, RCA 77 DX (Charles Gant Refurbished), Halfer Pro 2400 (powering NS-10M's), Oberheim Matrix 12 analog synthesizer, Kawai KG Series 7" grand piano, Hammond B-3 w/Leslie 122, Martin D18 acoustic guitar, Faematronix 2-group fully automatic Espresso machine. **Specialization & Credits:** Studio 101 is an affordable, small, yet powerful audio production and post-production facility one block from the ocean in Solana Beach. Our comfortable location offers restaurants, motels and entertainment locales within walking distance. In an industry notoriously shrouded with hype, we take pride in delivering an honest service without hidden charges. We specialize in 24-track recording and mixing, audio post and video lockup, DAT editing, assembly and duplication and CD mastering. If we can be of any assistance or if you would like to schedule a tour of the facility, please do not hesitate to give us a call.

STUDIO VII



11166 Burbank Blvd., N. Hollywood, CA 91601; (818) 752-0480; FAX: (818) 752-0483. Owner: David Lee. Manager: Lou Michel.

STUDIO ULTIMO



1900 S. Sepulveda Blvd., W. Los Angeles, CA 90025; (310) 479-6010; FAX: (310) 479-7170. Manager: Mitch Zelezny. Engineers: Mitch Zelezny, Tom Biener. Dimensions: Studio 45'x35', control room 29'x30'. **Mixing Consoles:** Neve 8108 modified. **Audio Recorders:** (2) Ampex ATR-124 24-track modified. **Digital Audio Workstations:** Digidesign Pro Tools 4-track, 1 GB hard disk, optical drive. **Monitors:** Custom TAD 3X bi-amped by Bryston 4B, Meyer Sound Labs HD-1, (2) Yamaha NS-10M, Auratone. **Other Major Equipment:** Sony 5800 73/4 1/4 U-matic, Sony Trinitron 25 1/4 video monitor, RCA 31 1/4 video monitor, (2) TimeLine Lynx, AMS RMX-16, AMS DMX-15, EMT 251 w/250 program, (2) Eventide H3000 SE, Lexicon 480L, Lexicon 200, Lexicon PCM70, Lexicon Prime Time II, TC Electronic TC 2290, (2) Summit Audio dual program EQ, Teletronix LA-2, Neve stereo compressor limiter, AKG C-12, Neumann U47 modified, Neumann M49, Neumann U67, and much more!!

SUMMIT RECORDING



Trabuco Canyon, CA 92679; (714) 459-1085. Owner: Paul Bourassa. Manager: Paul Bourassa.

SUNBURST RECORDING



10313 W. Jefferson Blvd., Culver City, CA 90232; (310) 204-2222; FAX: (310) 558-3809. Owner: Bob Wayne. Manager: Bob Wayne.

SUNDIAL RECORDING



PO Box 5426; Santa Barbara, CA 93150; (805) 969-6926. Owner: Don Messick. Manager: Don Messick.

SUNSET RECORDING



856 Airport Rd., Monterey, CA 93940; (408) 375-2861. Owner: Sal Marullo. Manager: Sal Marullo.

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SUNSET SOUND



6650 Sunset Blvd., Hollywood, CA 90028; (213) 469-1186; FAX: (213) 465-5579. Owner: Paul Camarata. Manager: Cheryl Martner.

SUNSET SOUND FACTORY



6357 Selma Ave., Hollywood, CA 90028; (213) 467-2500; FAX: (213) 467-3103. Owner: Paul Camarata. Manager: Philip MacConnell.

SUTTON SOUND STUDIO



8390 Curbaril; Atascadero, CA 93422; (805) 466-1833. Owner: Rick Sutton.

THETA SOUND STUDIO



2219 W. Olive, Ste. 226; Burbank, CA 91506; (818) 955-5888; FAX: (818) 955-5867. Owner: Randy Tobin. Manager: Jim Latham.

3RD FLOOR STUDIOS



2505 Sandra Dr.; Riverside, CA 92509; (909) 824-6462; FAX: (909) 983-0818. Owner: Larry Rausch. Manager: Larry Rausch.

38-FRESH RECORDING STUDIO



1119 N. Las Palmas Ave.; Hollywood, CA 90038; (213) 383-7374. Owner: Mike Greene.

TINY LIGHTS RECORDING



1441 N. McCadden Place; Hollywood, CA 90028; (213) 462-5718; FAX: (213) 462-1514. Owner: Michael Momm. Manager: Mitchell Frank. Engineers: Scott Mathers, Michael Green. Dimensions: Room 1: studio 18'x42', control 15'x27'. Room 2: control 8'x22'. **Mixing Consoles:** Amek Mozart 40-input w/Supertrue automation and R. Neve preamps, Tascam M-50, Mackie 1604. **Audio Recorders:** Sony APR-24, Tascam DA-88, Otari MTR-10 2-track 1/4", (2) Panasonic 3700 DAT, Tascam 122 MK II cassette, Sony D-10 Pro II DAT, Technics SV DA 10 DAT, Technics RS 8905 cassette. **Digital Audio Workstations:** Digidesign Pro Tools (4-tracks) based on Mac Quadra 750. **Monitors:** Westlake BBSM-4, Yamaha NS-10M, Electro-Voice Sentry 100, Tannoy Gold 15-S. **Other Major Equipment:** Lexicon 300 Effects, Eventide H3000 SE, Tube-Tech MP-1 mic preamp, dbx 165 A comp/limiter, Lexicon PCM70, Drawmer Quad Gate, (6) dbx 160 comp/limiter, TC Electronic 2290, Time Line Micro Lynx synchronizer, Manley gold tube mics, Neumann U87, (2) AKG C-414, (2) AKG 452, (3) Shure SM 57, AKG 460, Milab VIP 50, AKG D-12, Electro-Voice RE20, Akai MPC-60 II drum sampler, Sample Cell 24-bit sampler and more.

TNT RECORDING



1693 E. Alvin Ave.; Santa Maria, CA 93454; (805) 928-3500. Owner: Larry Thomas, Doug Tomooka. Engineers: Larry Thomas, Douglas Tomooka. Dimensions: Studio 25'x18', control room 20'x14'. **Mixing Consoles:** Tascam M-3700 32x8x2 automated, Tascam M-3500 24x8x2, Studiomaster Series 5 24x8x2. **Audio Recorders:** (4) Alesis ADAT, (2) Panasonic SV-3700, Tascam 32 1/4" 2-track, Tascam 112B, Tascam 103, (2) Sony TC WR-690. **Digital Audio Workstations:** Macintosh IIfx, Pro Tools 2.0, Studio Vision, PL1 1200MB turbo drive, Club Mac DAT drive, Digidesign SMPTE slave driver, Digidesign Sound Designer II w/DINR. **Monitors:** Tannoy DMT 12, JBL 4718, (2) Crest 7001, Yamaha NS-10M. **Other Major Equipment:** Lexicon PCM70, Lexicon LXP15, Eventide H3000 SE/V, Yamaha REV5, Lexicon LXP1, (2) Yamaha SPX900, Aphex 320 Compellor, dbx 160X, dbx 166X, UREI LA-22, Studio Tech mic preamp, Valley People GateX, (2) Omni Craft GT-4A, (2) Rane PE15, Ashly 6Q-231, BBE Sonic Maximier, Sansamp rack-mount, Sennheiser, AKG, EV, Shure, Audio-Technica microphones; Korg 01/W Pro, Roland R-8.

TOPANGA SKYLINE STUDIO



1402 Old Topanga Canyon Rd., Topanga, CA 90290; (310) 455-2693. Owner: Johnny Perez. Manager: Douglas Dyer. Engineers: Russ Ragsdale (chief engineer), Douglas Dyer, Christopher Blake. Dimensions: Room 1: studio 25'x30', control room 22'x20'. Room 2: studio 16'x20'. **Mixing Consoles:** Euphonix CS II 72 stereo automated faders w/Total Recall. **Audio Recorders:** (2) Sony APR-24 analog, Panasonic 3700 DAT, Aiwa cassette deck, Sony APR-5000 2-track 1/4" -1/2" heads. **Monitors:** Westlake BBSM-15 mains, KRK 9000 near-fields, Yamaha NS-10 near-fields, (2) Boulder 500 amps, Audire Forte amp, Yamaha P2700 amp. **Other Major Equipment:** Focusrite Red 1 mic pre, Focusrite Red 2 2-channel EQ, TC Electronic 2290 DDL, Eventide H-3000 ES Ultra-Harmonizer, Lexicon 300 reverb, Lexicon LXP-15 reverb, (2) Lexicon LXP-1 reverb, (2) dbx 165 comp/limiter, UREI LA-4 stereo comp/limiter, UREI 1176 comp/limiter, Teletronix LA-2A tube comp/limiter, Drawmer DS404 Quad-Gate, Pultec EQP-1A3 tube EQ, (2) AKG C-28 tube mics, (2) Sony C-47 mics, Neumann U87, Neumann TLM-170, (4) Sennheiser 421, (2) AKG 451, Shure SM-7, (5) Shure SM 57.



TOTAL ACCESS RECORDING
Redondo Beach, CA

TOTAL ACCESS RECORDING

612 Meyer Ln. #18; Redondo Beach, CA 90278; (310) 376-0404; FAX: (310) 379-3758. Owner: Allan W. Davis. Manager: Wyn Davis.
Mixing Consoles: Amek G2520 52x48x104 w/MasterMix II automation. **Audio Recorders:** Mitsubishi X880-EX 32-track digital w/Apogee filter, (2) Ampex ATR 124 24-track, Ampex ATR 102 2/4-track 1/2" & 1/4", Sony 2500 R-DAT, Panasonic SV-3700 R-DAT, Nakamichi M-2 cassette, Forat F-16 8-channel 16-bit sampler w/hard disk and remote. **Digital Audio Workstations:** SoundStage 2-track digital hard disk audio editor w/full DSP & 80 min. capacity. **Monitors:** (2) Tannoy FSMU, (4) Canton Karat 100 near-field, (2) Yamaha NS-40M near-field, (2) Yamaha NS-10M near-field, (2) Tannoy PBM-8 near-field, (2) NHT large near-field, (2) Infinity 2001, (4) HorrorTones (Auratone). **Other Major Equipment:** Sony 1/2" & 3/4" video player, (2) Sony video monitor, Jensen/Boulder 12 ch. pre-amp, Jensen/Hardy 4 ch. pre-amp, (2) AKG C-12, (2) 414, (2) D-12E, (2) 452-EB; (2) Schoeps CM3-U w/omni and cardioid capsules and stereo mount; (4) Neumann U87, 67, (3) KM84, (2) KM86, (2) KM88; Shure 57, 58, Beta 57 & SM7; Electro-Voice RE-20; (2) Sennheiser 421, (2) 441; (2) Beyer 69, M-160; Fostex stereo mic; Drawmer DS-201 noise gate 8-ch., Aphex CX-1 noise gate 2-ch., Summit Audio TLA-100A tube limiter, (2) dbx 165A, (2) dbx 160, (2) Teletronix LA-2A, Lang PEQ-2 program EQ, Orban 621B parametric EQ, UREI 530 graphic EQ, (2) UREI LA-3A, (3)1176; Sontec stereo parametric EQ, Lexicon 480L w/LARC and 3.0 software, Lexicon 224XL, Lexicon PCM70, Lexicon 95 Prime Time II, Klark-Teknik DN780 digital effect device, Eventide H3000 SE, Yamaha SPX90, REV7, Roland SDE-3000 delay, AKG spring reverb, (2) TimeLine Lynx modules lock-to-picture. **Rates:** Hourly and lockout rates are negotiable. Please call. **Specialization & Credits:** Total Access provides technically advanced recording systems coupled with a warm atmosphere and skilled staff. We can arrange for accommodations and anything else needed to accomplish any project. We are located one mile from the Pacific Ocean in beautiful Redondo Beach. Worldwide clientele includes Guns N' Roses, Ken Scott, Dokken, Gary Wright, Michael Wagener, Great White, Tears for Fears, White Lion, Alice Cooper, Will and the Kill, Terry Bozzio and many others. Labels include Capitol, Geffen, Enigma, Elektra, A&M, Atlantic, MCA, IRS and Sony.

TRACK RECORD INC.

5102 Vineland Ave.; N. Hollywood, CA 91601; (818) 761-0511; FAX: (818) 761-0539. Owner: Thomas M. Murphy. Manager: Alan Morpew. Engineers: Ken Paulakovich, Tom Murphy, Pete Magdaleno, Darian Sananaja, Brian Virtue, Richard Presley. **Dimensions:** Room 1: studio 40'x40', control room 20'x20'. Room 2: studio 30'x30', control room 20'x25'. **Mixing Consoles:** Neve V Series (60-channel V III w/Flying Faders), SSL 6000 (56-channel w/G computer). **Audio Recorders:** Studer 820 24-track, Studer 827 24-track, Sony JH-24 24-track, (2) Ampex ATR 2/4-track, Panasonic SV-3500 DAT, Tascam DA-30 DAT. **Monitors:** (2) TAD monitor system. **Other Major Equipment:** TimeLine MicroLynx, Audio Kinetics Q-Lock 3.10 synchronizer, Lexicon 480L, (2) Lexicon 224XL, Lexicon PCM70, Yamaha SPX900, REV5, (3) Yamaha SPX90, (2) Roland SRV-2000, (2) Ecoplate I & II, (2) Roland SDE-3000, Bel BD-80 delay w/8 sec. sampling, Neve 33609 limiter, (2) Teletronix LA-2A, (5) UREI

1176L.N, (4) dbx 160X, Valley People Dyna-Mite 430, Drawmer 6-ch. dual gate, Valley People Kepex II gate 6-ch., (4) Neve 1073 (mic pre/EQ), (2) Pultec EQ-H2, Pultec MEQ-5, (2) Trident CB9066 EQ, (3) AKG C-12, AKG The Tube, (5) AKG C-12A (1 has Klaus Heyne mod.), Telefunken U47, Neumann U47, (2) Neumann KM64, (5) AKG 414 EB, (EB P48, & B-ULS TL), (9) AKG 451/452, (3) Electro Voice RE-20, (5) Neumann U87 (1 w/Stephen Paul mod.), (2) Neumann U47 FET, (4) Neumann KM84, (13) Sennheiser 421, (2) Shure SM81, (12) Shure 56/57, Shure SM7, (2) RCA 77 ribbon, Kawai 7 grand piano, Yamaha C7, and much more.

TRAKBYTES

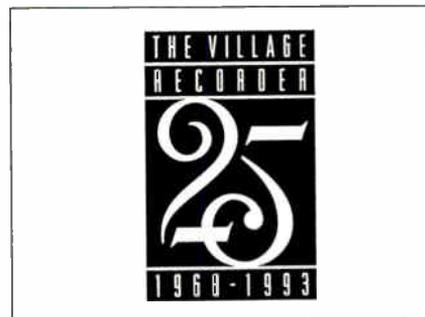
12478 Washington Blvd.; Los Angeles, CA 90066; (310) 390-5573. Owner: Bob McNabb.

URBAN AUDIO STUDIOS

850 W. Foothill Blvd. #10; Azusa, CA 91702; (818) 969-5099; FAX: (818) 969-1091. Owner: Tim Williams. Manager: John Cardenas.

VALLEY CENTER STUDIOS

5928 Van Nuys Blvd.; Van Nuys, CA 91401; (818) 989-0866; FAX: (818) 989-3818. Owner: Mark Antaky. Manager: Mark Antaky.



THE VILLAGE RECORDER
W. Los Angeles, CA

THE VILLAGE RECORDER

1616 Butler Ave.; W. Los Angeles, CA 90025; (310) 478-8227; FAX: (310) 478-2414. Owner: Georgie Hornel. Manager: Kathy Konop. Engineers: Charlie Brewer, chief engineer; Jeff Harris, Charlie Brocco, Rob Hart, Marty Brumbach, Tom Winslow. **Dimensions:** Room A: studio 35'x17', control room 20'x14'. Room B: studio 16'x16', control room 18'x18'. Room D: studio 30'x50', control room 22'x25'. Room F: studio 13'x12', control room 12'x14'. **Mixing Consoles:** SSL 4056E w/48 mono & 8 stereo inputs w/SSL G automation, Neve VR-60 w/Flying Faders, Neve VR-72 Flying Faders, Trident T-24. **Audio Recorders:** (4) Studer A-800 24-track, Otari MTR-90 24-track, (8) Ampex ATR-102 2-track, (3) Ampex ATR-104 4-track, (8) Technics SV-3500 DAT, (3) Technics SV-3700 DAT, Sony 2500 DAT, Sony 1630 w/BVU-800, (18) Aiwa AD-F780 cassette, (3) Alesis 8-track ADAT. **Monitors:** JBL TAD custom mains, Auratone 5-C, Yamaha NS-10M, Tannoy Gold 12" coaxial.

WEST L.A. SWEAT SHOP

PO Box 91392-2200; Sylmar, CA 91392; (818) 367-8642; FAX: (818) 367-8642. Owner: Bob Saldana. Manager: Bob Saldana.

WESTBEACH RECORDERS

6035 Hollywood Blvd.; Hollywood, CA 90028; (213) 461-6959; FAX: (213) 461-9690. Owner: Donnell Cameron, Brett Gurewitz. Manager: Donnell Cameron. Specialization & Credits: Producers Workshop, the legendary Hollywood studio famous for the Sheffield Lab live-to-2-track sessions and hit albums by Steely Dan and Fleetwood Mac is now Westbeach Recorders. The newly restored live room surpasses it's historic glory with a new Travertine tile floor and classic acoustic tile ceiling. The Altec 604E's with TML extended bass now sport the exclusive TADCO bi-amp crossover system designed by Steve Hazelton and Tom Pasagnio. Westbeach is also in possession of the new Matherly transformerless valve microphone preamplifier (one of seven in the world). Other classic outboard gear includes Siemens and Focusrite preamps, Teletronix and UREI limiters. A full array of tube microphones is also available as well as AMS and Lexicon digital effects. High-quality equipment, great-sounding rooms and the most competitive rates in Hollywood make Westbeach the logical choice for your next recording project.

WESTLAKE AUDIO

7265 Santa Monica Blvd.; Hollywood, CA 90046; (213) 851-9800; FAX: (213) 851-0182. Owner: Glenn Phoenix. Manager: Steve Bur-

—LISTING CONTINUED ON NEXT PAGE

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WESTLAKE AUDIO
Hollywood, CA

—LISTING CONTINUED FROM PREVIOUS PAGE

dick. Engineers: Darryl Dobson, Bill Malina, Steve Harrison, John Fundingsland, Chris Fogel, Brad Aldredge. Dimensions: Studio A: studio 25'x48', control 25'x20'. Studio B: studio 20'x35', control 21'x19'. Studio C: studio 27'x38', control 23'x19'. Studio D: studio 30'x50', control 25'x25'. **Mixing Consoles:** (2) Neve VR3 Series 60x48, Neve VR 72x48, Harrison MR-2 56x48, Trident 80C 72x24, Sony MXP-3000 36x24 (production room 1), Soundcraft Sapphire 44x24 (production/transfer room 2). **Audio Recorders:** (2) Sony 3348 48-track digital (rental), Sony 3324 24-track digital (rental), Mitsubishi X-850 32-track digital (rental), (2) Alesis 8-track digital recorders (rental), (10) Sony APR 24-track analog, Sony JH-16/24 16 or 24 track 2" analog, Studer A 24 track analog, Ampex ATR 2/4-tracks, Mitsubishi X-86HS digital 2-track (rental), Akai Adam 12-track digital (rental), (11) Panasonic 3700/3900 DAT, Yamaha YPDR CD recorder (rental). **Digital Audio Workstations:** Digidesign Pro Tools 8-track digital recording and editing system. **Monitors:** Westlake SM-1, Westlake HR-1, full selection of near-fields. **Other Major Equipment:** Yamaha YPDR CD recorder, Dolby SR, TimeLine Lynx, Sony 3/4" video, Quantech QRS-XL, AMS DMX, AMS RMX-16, Publison 90, TC Electronic 2290, Eventide H3500/H3000/2016, Lexicon 480L/300/224/PCM70/PCM42, Yamaha REV5/REV7/SPX1000/SPX9011, Roland SDE-3000B, EMT 250/251/252/240/150, dbx 165A/162/160/902, Drawmer gates, Valley Audio gates, Inovonics 201, UREI 1176/LA-3A/LA-4, Telonix LA-2A, GML comp., GML EQ, Pultec EQP1A. **Specialization & Credits:** For 1993, Westlake Audio has added two new production rooms and a digital audio edit bay which features Digidesign's Pro Tools 8 channel digital recording and editing system. The digital bay is also equipped with a Yamaha CD recorder. Production room 1 houses a 36-input Sony MXP-3000 console and is an ideal room for MIDI tracking and acoustic overdubs. Production room 2 houses a 44-input Soundcraft Sapphire console and is an excellent room for MIDI tracking. Both production rooms support multiple analog or digital tape machines. "P2" has also been wired for major digital and analog transfer work. We at Westlake are very excited about the endless creative possibilities these rooms have to offer.

WESTWORLD RECORDERS



16760 Stagg St., Van Nuys, CA 91606; (818) 782-8449. Owner: Robert Schreiner. Manager: Jerry Pearson.

WANT MORE INFORMATION?

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WILD CHILD STUDIO
Long Beach, CA

WILD CHILD STUDIO



6471 Wardlow Rd., Long Beach, CA 90808; (310) 429-8669. Owner: Timothy Hunter. Manager: Timothy Hunter.

HAWAII



AUDIO RESOURCE HONOLULU
Honolulu, HI

AUDIO RESOURCE HONOLULU



1084 Young St., Honolulu, HI 96814; (808) 526-3733; FAX: (808) 734-1840. Owner: Tony Hugar, Milan Bertosa. **Specialization & Credits:** A member of the World Studio Group, Audio Resource Honolulu is Hawaii's largest facility featuring 48-track digital recording with a Sony PCM-3348, analog recording with MCI JH-24's and digital editing with a AMS Audio File. Studio includes Neve, DDA and CAD consoles; UREI, dbx, Drawmer, Summit Audio, Lexicon, Eventide outboard gear; Pultec EQs, EMT plates, Westlake, Tannoy, KRK monitors; Neumann and AKG tube microphones. Complete audio/video synchronization available for audio sweetening and ADR. Clients include Whitney Houston & Bobby Brown, George Winston, Don Bluth Animation, REO Speedwagon, Henry Kaiser, Anri, K.T. Sugiyama, PBS, TNT, McDonald's, JVC, Cadillac, ESPN, Tube.

COMMERCIAL RECORDING HAWAII



333 Cooke St., Honolulu, HI 96813; (808) 536-5439; FAX: (808) 537-4841. Manager: Donn V. Tyler. Engineers: Donn V. Tyler, Eric Kurtz. Dimensions: Room 1: studio 24'x36', control 14'x17'; Room 2: studio 12'x18', control 12'x18'. **Mixing Consoles:** Yamaha DMR8 digital, Tascam M512. **Audio Recorders:** Yamaha DMR8 20-bit digital, Yamaha DRU8 20-bit digital, Tascam BR-20T, (2) Ampex ATR-100 2-track, Ampex ATR-100 4-track, (2) Panasonic SV 3900 DAT, Panasonic SV 3700 DAT, Sony PCM-7030 DAT. **Digital Audio Workstations:** Otari DDR-10. **Monitors:** (4) JBL 4333A, (2) JBL 4310, (4) JBL 4315, (2) Yamaha NS-10, (2) Yamaha NS-10M, (4) Auratone 5C, (2) Toshiba 32" video, (2) Toshiba 21" video. **Other Major Equipment:** Brainstrom SR-15 time code analyzer/distributor, Horita BSG-50 video sync generator, Sony V0-9800 SP 3/4" U-matic recorder, Korg 01/WFD synthesizer, (2) Yamaha AD8X 8-channel digital converters, Yamaha AD2X 2-channel digital converters, (2) Yamaha HA8 8-channel microphone preamps, Steinway M7 piano, Slingerland drum kit, Technics SL-P1300 CD player, many Neuman, AKG, Sony microphones—all signal processing is integral with the digital board).

FLYIN' HAWAIIAN PRODUCTIONS



4942 Likini St., Honolulu, HI 96818; (808) 839-5431; FAX: (808) 537-1818. Owner: Lester Ganlan.

FORTUNATE SUN STUDIO



720 Iwilei Rd., Ste. Box 1, Honolulu, HI 96817; (808) 531-5744; FAX: (808) 536-8983. Owner: David Tucciarone, Wei Chen, Bazio Chen. Manager: David Tucciarone. Engineers: David Tucciarone.

Steve Kramer, Wei Chen. Dimensions: Studio: 20'x20'. **Mixing Consoles:** Otari Series 54 46x24x44 w/moving fader automation. **Audio Recorders:** Otari MTR-9011, Tascam MS-16, Fostex E-2, Sony PCM-2500, Sony DT-55ES, Nakamichi MR-1, (2) Akai GX912. **Digital Audio Workstations:** Digidesign Sound Designer II, Digidesign Pro I/O Interface, Macintosh IIfx, Macintosh SE/30, Opcode Studio Vision, Mark of the Unicorn Performer, (2) Mark of the Unicorn MIDI Time Piece. **Monitors:** (2) TAD TSM-1, (2) Meyer Sound Labs Sound HD-1, (2) Yamaha NS-10, (2) Auratone 5C. **Other Major Equipment:** Lexicon 300, Lexicon PCM70, Lexicon LXP15, (2) Lexicon LXP1, Eventide H3000 SE, TC Electronics TC2290, Drawmer 1960, Drawmer DS-201, Drawmer DS-401, UREI 1176N, (2) AKG The Tube, (2) AKG C-414EB, (2) AKG C-451E, Neumann KM84, Roland D-70, Korg Wavesstation, (3) E-mu Proteus 1, (2) Roland R-8, Alesis D-4, TimeLine Micro Lynx.

MELODY LINE PRODUCTIONS



2662 Kallalani Circle, Pukalani, Maui, HI 96768; (808) 572-1640; (808) 572-7152. Owner: Tom Hall. Manager: Tom Hall.

STUDIO M PRODUCTIONS



8715 Waikiki Station, Honolulu, HI 96830; (800) 453-3345; (808) 734-3345; FAX: (808) 734-3299. Owner: Mike Michaels C.A.S. Manager: Hugo Buehring.

NEVADA



GRANNY'S RECORDING STUDIOS
Reno, NV

GRANNY'S RECORDING STUDIOS



1515 Plumas St., Reno, NV 89509; (702) 786-2622; FAX: (702) 786-2685. Owner: Gerald Roth. Manager: Bjorn Thorsrud. Engineers: Bjorn Thorsrud, Tom Gordon. Dimensions: Room 1: studio 35'4"x21'2", control room 27'3"x24'8". Room 2: studio 19'9"x17'2", control room 17'7"x14'2". **Mixing Consoles:** Neve VR-60, Soundcraft 6000 36x24. **Audio Recorders:** (2) Studer A-800 MkIII, Studer A-820 1/4" w/SMPTE stripe, Sony APR-24, Otari MX-5050, (2) Panasonic 2700, Casio DA-2. **Monitors:** (2) UREI 813, (2) UREI 811, (2) UREI 809, (2) KRK 7000, (6) Yamaha NS-10M, (2) Tannoy SGM-10B, (2) Auratone 5C, (4) EV Sentry 100A. **Other Major Equipment:** GML 8200 EQ, (2) Pultec EQP-1A3 EQ, (2) Lang PEQ-2 EQ, (4) GML transformerless mic pre's, (2) Telonix LA-2A compressor/limiter, (2) dbx 160 compressors, (4) dbx 160X compressors, Lexicon 480, (3) Lexicon PCM70, Lexicon PCM42, Yamaha SPX1000, Yamaha SPX9011, (2) Orban 536A Sibilance controllers, Barcus-Berry 802, Neumann U67 (Stephen Paul modified), AKG "The Tube", (2) Neumann U87, (2) Neumann KM84, (2) AKG 460, (4) Senheiser 409. **Specialization & Credits:** A bed and breakfast facility on the foot of the Sierra Nevada mountains. Our features include: seven bedrooms, full kitchen and laundry facilities, walking distance to our athletic club, 10 minutes from the airport, 5 minutes from downtown Reno, 45 minutes from Lake Tahoe, and an in-house gourmet chef (great cheesecake). Equipped for complete album production, jingle and advertising production, and even film and video post-production with our own Foley pit. We're under new ownership/management. However, we still have the friendly and professional staff that has come to be expected here.

OAKDALE POST AUDIO



3329 S. Eastern Ave. South, Las Vegas, NV 89109; (702) 734-3900; FAX: (702) 734-4824. Owner: Oakdale Post Audio Inc. Manager: Bill Ebmeyer. **Specialization & Credits:** Located close to major strip resorts, we overlook the 12th tee of the Sahara Country Club Golf Course providing a relaxing yet productive environment in which to work. Oakdale's client list includes IBM, TNN, FBI BBD&O, Hanna Barbera, and many others. We have worked with many nationally known personalities including Jack Palance, Tanya Tucker, Rich Little, B.J. Thomas, and Rip Taylor. Over the past 5 years, our work for these and other clients has earned us 36 Addy and 10 Telly awards. Associations to which we belong include AES, ITVA, and Las Vegas Chamber of Commerce. We offer 5 machine lock to picture in addition to a Pro Tools digital audio workstation. Video streamers are available for ADR, and our numerous sound effect and music libraries may be uploaded digitally for sweet-

ering. An elaborate Mac-based MIDI system featuring Sample Cell and over 3 gigabytes of CD-ROM based samples may be used for your custom music needs.



POWERHOUSE RECORDING
Las Vegas, NV

POWERHOUSE RECORDING



3111 S. Valley View Blvd., Las Vegas, NV 89108; (702) 871-6200.
Owner: Powerhouse Corp. Manager: Paul Badia. Engineers: Paul Badia, Tony Corporale, Scott Papich. Dimensions: Studio 35'x40', control room 18'x20'. **Mixing Consoles:** D&R Avalon 64x32x64. **Audio Recorders:** Stephens 821 24-track, Scully 280B 2-track, Ampex 700 2-track, (2) Panasonic 3700 DAT, (2) Nakamichi MR-1 cassette deck. **Monitors:** (2) Fostex LS3-B (2) Yamaha NS-10M. **Other Major Equipment:** EMT 240 gold foil reverb, Yamaha REV5, Roland SDE-3000 delay, Korg SDD-2000 delay, Eventide 910. Eventide instant phaser, Lexicon Prime Time, Aphex Type C Aural Exciter, (2) Spectra Sonics 610 comp/limiters, (2) ADR S01 comp/limiter, (2) ADR S06 gates, ADR S23 autopanner, Urban 516-EC de-esser, dbx 500 sub-harmonic generator, Neumann microphone, AKG microphone, Sennheiser microphone, RCA microphone, Audio-Technica microphone, ZETA III synchronizer. **Specialization & Credits:** Powerhouse is a full-service 24-track facility with a large, comfortable recording area. We specialize in personal service to our clients. They include Englebert Humperdink, Dinwæ Warwick, Steve Dorff, Jay Leno, Sting and all of the major ad agencies in our region. Independent engineers are always welcome

NEW MEXICO

C & D SPOT STUDIOS INC.



214 Gold Ave. SW; Albuquerque, NM 87102; (505) 764-8482; FAX: (505) 764-9631. Owner: Cliff Yost, J. Doug Geist. Manager: Philip Mendelsohn. Dimensions: Room 1: studio 27'x17'6", control 17'x13'. Room 2: 17'x9'6", control room: 14'x13'. Room 3: studio 5'x7', control room 13'x8'6". Room 4: echo chamber. **Mixing Consoles:** D&R 32-input, Tascam 32-input, Mackie 12-input. **Audio Recorders:** MCI JH-24, Fostex E-2, Fostex E-16, Fostex 23, Tascam D 30, Sony portable DAT, Alesis ADAT, Panasonic SV-3500. **Digital Audio Workstations:** Digidesign Pro Tools, Digidesign Sound Designer II w/noise reduction. **Monitors:** (2) Elledge custom P/IRM3 Jr., (4) Elledge custom P/IRM2, (2) Tannoy PBM 6.5, (2) Spica, (2) Auratone, (2) JBL Control 1, (2) JBL 4412. **Other Major Equipment:** Acoustic echo chamber 17'x9'6", Foley pit, Fostex 4035 sync controller, Fostex 4050 autoocator, various gates, compressor, EQs; E-max, Ensoniq, various MIDI gear, DrumKat, Yamaha 7' grand piano, Yamaha recording Series drumkit, (2) Fostex 4030 syncs, Macintosh sequencing, Atari sequencing, IBM PC sequencing, Neumann, AKG, Shure, EV and other mics.

DEAD HORSE STUDIO



PO Box 3004; Las Vegas, NM 87701; (505) 454-0269. Owner: Jon Gold. Manager: Jon Gold.

MAX HIGHSTEIN RECORDING



5 Herrada Pl.; Santa Fe, NM 87505; (505) 986-1055. Owner: Max Highstein. Manager: Max Highstein. **Specialization & Credits:** Set in the high desert near Santa Fe, New Mexico, we're geared toward NAC, folk, jazz, and eclectic album projects. We understand your need to produce great sounding, professional recordings on a reasonable budget—that's our specialty. The studio features beautiful, natural-sounding rooms designed to bring out the best in acoustic instruments and voice; a superb piano; a complement of synths; and a full array of gear to faithfully capture and mix your performances. World-class backing musicians can be readily drawn from Santa Fe's active cultural community. Low rates include engineering with optional producing services available to oversee your project from start to finish. Credits include the debut album by CHANCE, featured on the TV series *Northern Exposure*; and Max Highstein's *Touch the Sky*, one of NAC radio's most heavily played albums. Call for information on rates and accommodations.

QUINCY STREET SOUND INC.



130 Quincy St. NE; Albuquerque, NM 87108; (505) 265-5689; FAX: (505) 256-9345. Owner: April L. LaMonte. Manager: Daryl Piper.

SPOTS



PO Box 4872; Albuquerque, NM 87196; (505) 255-3225. Owner: Barzo Productions. Manager: Barbara Sue Rosen.

STEPBRIDGE STUDIOS



528 Jose Street; Santa Fe, NM 87501; (505) 988-7051; FAX: (505) 820-1911. Owner: Tim Stroh. Manager: Sandy Lussi.

JOHN WAGNER RECORDING STUDIOS INC.



12000 Candelaria NE, Ste. E; Albuquerque, NM 87112; (505) 296-2766; FAX: (505) 296-9374. Owner: John Wagner, Laurie Zachery. Manager: John Wagner. **Specialization & Credits:** John Wagner Recording Studios is the only full-service 24-track recording studio in New Mexico capable of sophisticated SMPTE-interlocked audio for video. We use the Adams-Smith SMPTE synchronizing system with compact controller along with a 32-channel, 16-bit Yamaha digital automated mixing console, plus our new 2-channel digital master hard disk recording system. Our 3,200-sq.-ft. facility has two control rooms, two large voice-over booths, and a large (30x20) studio. We have over 25 years experience in all aspects of audio recording, including recording projects for RCA, Capitol, MCA, Motown, CMH; creating numerous award-winning jingle campaigns; and recording two Grammy-nominated albums. Recent clients include Saatchi & Saatchi, Southwest Productions, American Laser Games, Storyville Productions.

OKLAHOMA

AMBIENT SOUND PRODUCTIONS



2733 NW 12th St.; Oklahoma City, OK 73107; (405) 949-1602. Owner: Doug Matthews. Manager: Doug Matthews.

CARUMBO RECORDING



519 N. Porter; Norman, OK 73071; (405) 329-1765. Owner: Michael McCarty. Manager: Michael McCarty.

THE 25TH TRACK



309 E. Vicksburg; Broken Arrow, OK 74011; (918) 455-2459. Owner: Walt Bowers. Manager: Walt Bowers.

TEXAS

AUDIO ARTS RECORDING



6241-C Hwy 290 W.; Austin, TX 78735; (512) 892-0029; FAX: (512) 892-7270. Owner: Johnny Q. Records. Manager: Jeff Moeller.

BEE CREEK STUDIO



3403 Crawford Rd.; Spicewood, TX 78669; (512) 264-1379. Owner: Spencer Starnes. Manager: Spencer Starnes.

CAPTURED LIVE SOUNDZ



405 Post Road Drive; Austin, TX 78704; (512) 416-0937. Owner: David B. Morgan. Manager: Ron Lewis.

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CEDAR CREEK RECORDING



5012 Brighton Rd., Austin, TX 78745; (512) 444-0226. Owner: Fred Remmert. Manager: Edwin Miller. Engineers: Fred Remmert, Tim Dittmar, Jim Wilson, Marty Lester, James Tuttle. Dimensions: Room 1: studio 27'x14', control 15'x12'. Mixing Consoles: Neve 32-input/16 bus custom-built in 1972, AD Systeme Optifile-3D systems automation. Audio Recorders: (2) Studer A-827 2" 24-track, MCI JH-110 1/4" & 1/2" 2-track, Studer D-740 CD, Panasonic SV-3700 DAT, Panasonic SV-3900 DAT, Tascam 122 MKII cassette. Digital Audio Workstations: Studer Dyaxis. Monitors: Meyer HD-1, Westlake BB5M-6F, UREI 811 C-L, JBL 4430, Yamaha NS-10M, Auratone 5-C. Other Major Equipment: Dolby SR 52 channels noise reduction, Summit Audio DCL-200 dual tube comp/limiter, (2) Tube-Tech CL-1B tube compressors, Teletronix LA-2A tube compressor, UREI 1178 dual limiter, Summit Audio TPA-200A dual tube mic preamp, (8) API 3124 mic preamps, (4) Focusrite ISA-110 preamp & EQ module, Focusrite ISA-130 dynamics module, Lexicon 480-L digital effects system, Lexicon 224 v.4.4 digital effects system, Eventide H3000 SE digital effects system, Neumann U47 (FET) mic, Neumann U67 tube mic, Neumann U87 mic, Neumann KM-56 tube, (2) Neumann KM-54 tube, (4) B&K 4011, (2) B&K 4006.

THE CONGRESS HOUSE STUDIO



7308 S. Congress Ave., Austin, TX 78745; (512) 444-5762; FAX: (512) 462-2209. Owner: Mark Hallman. Manager: Bradley Kopp.

CRYSTAL CLEAR SOUND



4902 Don Dr., Dallas, TX 75247; (214) 630-2957; FAX: (214) 630-5936. Owner: Sam Paulos. Manager: Keith Rust. Engineers: Keith Rust (chief engineer), Sia Ahmadzadeh. Dimensions: Room 1: 45'x35', control room 23'x17'; Room 2: studio 15'x10'. Mixing Consoles: DDA DCM 224V w/Uptown moving fader automation, Mackie CR-1604. Audio Recorders: Studer A827 24-track, Studer A810 2-track, Sony 5002 2-track, (3) Panasonic SV3700 R-DAT, Panasonic SV3500 R-DAT, (50) KABA real-time cassette. Digital Audio Workstations: Pro Tools 4-channel w/Sound Designer II and D/NR noise reduction software. Monitors: (2) UREI 811, (2) KRK 703C, (2) Yamaha NS-10M, (2) Tannoy PBM-6.5, (2) JBL 4311. Other Major Equipment: TC Electronic M5000 EFX processor, AKG 68K EFX processor, Eventide H3000 EFX processor, Ensoniq DP4, Yamaha SPX900 EFX, Yamaha SPX90 EFX, Korg SDD-3000 delay, Akai S1000 sampler, Lexicon 200, (2) Tube-Tech PE-1B tube EQ, Summit Audio LA100, API 5002, (3) Aphex 612, Aphex Compellor, (4) JBL 7110, (2) dbx 165, dbx 160X, Orban 622 B, Baldwin SD-10 9' concert grand piano, Hammond B3 & Leslie cabinet.

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DALLAS SOUND LAB



6305 N. O'Connor Blvd., Ste. 119 LB11; Irving, TX 75039; (214) 869-1122; FAX: (214) 869-1135. Owner: Russeh Whitaker. Manager: Johnny Marshall. Engineers: Thom Caccetta, Michael Vazquez, David Rosenblat, Tim Kimsey, Frank Salazar, Sterling Winfield. Dimensions: Room 1: Studio 46'x52', control room 24'x21'. Room 2: Studio 10'x8', control room 16'x14'. Room 3: Studio 24'x12', control room 28'x26'. Room 4: Studio 24'x18', control room 20'x16'. Mixing Consoles: SSL 6056, MCI JH-536, MCI JH-636, Tascam M-512. Audio Recorders: Sony PCM-3324 24-track digital, Otari MTR-90 24-track analog, Otari MTR-10 4-track analog, Otari MTR-10 2-track analog, MCI JH-24 24-track analog, MCI JH-110 2-track/4-track/center, MCI JH-110 video lay-back, Tascam ATR-60 24-track analog, Tascam ATR-80 center stripe, (4) Panasonic R-DAT. Digital Audio Workstations: New England Digital Post Pro 16-track, Digidesign Pro Tools 4-track. Monitors: (2) UREI 813B, (2) Westlake custom, (2) Tannoy SRM-12, (2) Meyer Sound Labs HD-1, (10) Yamaha NS-10, (2) JBL 4401, (6) JBL 4673, (8) Auratone 5-C. Other Major Equipment: New England Digital Synclavier 56 voice, Steinway 9' Concert Grand, Hammond B-3 w/Leslie, KABA 10-slave cassette, MTM 16/35mm recorder, MTM 16/35mm reproducer, BTX SoftTouch synchronizer, BTX maxi-pad synchronizer, Tascam ES-50/51 synchronizer, Lexicon 480L, Lexicon 224, Quantec room simulator, AMS RMX-16, AMS DMX 1580-S, (2) Yamaha SPX90 digital efx processor, Yamaha REV7 digital reverb, Lexicon PCM70 digital efx processor, (2) Lexicon PCM41 digital delay, (54) Dolby "A" noise reduction, (24) dbx noise reduction. Specialization & Credits: STUDIO A: up to 48-track digital/analog recording with interlock to video or film. Services include 40-piece capacity orchestra scoring to picture, video sweetening, and album/jingle production with audio and video timelines to three soundstages (15,000/6,000/3,000-sq.-ft.) for live shows, concerts, etc. STUDIO B: 4-track digital audio workstation for voice-over and sfx production. STUDIO C: 16-track NED POST-PRO direct-to-disk digital audio workstation interlocked to 3/4" and 1" video tape with a large isolation booth for ADR (looping), SFX assembling and mixing to picture. STUDIO D: 24-track studio for album/jingle production. STUDIO E: film chain for 16/35mm transfers and cassette duplication. STUDIO G: Synclavier 56-Voice Hard-disk based Digital Music Production Studio. Past clientele include: Phil Collins, ZZ Top, BB King, Grover Washington, Stevie Ray Vaughan, Herbie Mann, Rod Stewart, Tri-Star Pictures, NBC, Universal Studios.

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DIGITAL SERVICES RECORDING STUDIOS



5805 Chimney Rock; Houston, TX 77081; (713) 664-5258. Owner: John Moran. Manager: K.T. White. Engineers: Roger Tausz, James Hoover, John Moran. Dimensions: Room 1: Studio 35'x40', control room 30'x25'. Room 2: Control room 15'x13'. Room 3: Studio 45'x60'. Room 4: Control room 20'x12'. Room 5: 20'x15'. Room 6: 13'x15'. Mixing Consoles: SSL 6056EIG, Sony/MCI 636, Sony/MCI 628, Neve 5442, DDA 24x4, Tascam MM1. Audio Recorders: (2) Sony 3324 dig. multi., Otari MTR-9011 analog multi., Sony 1610 CD master recorder, Otari MTR-12 4-track 1/2", Otari MTR-10 2-track 1/4", Otari MX-55 3-track 1/4", (3) Tascam DA-30 DAT, (3) Sony/RTW F-1 dig. processor, (10)

Nakamichi MR-2B, (2) Sony BVU 800D. **Digital Audio Workstations:** SSL Screen Sound, Sonic Station, Sony DAE 1100A, (3) Apple Macintosh. **Monitors:** (2) TAD, (2) Meyer Sound Labs 833/834, (4) Meyer HD-1, (8) Yamaha NS-10M, (4) JBL 4411, (2) AMR ref., (2) CSI MDM-4, (2) Auratone 5C, (2) Klein & Hummel. Sony PVM 1040. **Other Major Equipment:** (5) Adams-Smith 2600 synchronizer, Lexicon 224 XL, (6) Lexicon PCM70, Lexicon Prime Time II, Eventide H3000, Eventide 969, Yamaha REV7, Yamaha SPX90, (2) Lexicon LXP-1, (2) Lexicon LXP-5, (8) dbx 160X, AMS DMX delay/sampler, (4) Tube-Tech mic preamp, (2) Tube-Tech CL1 compressor, (2) Tube-Tech EQ, (4) Summit Audio EOP-100 EQ, (2) Summit Audio EOP-200, Summit Audio mic preamp, (4) UREI 1176, (2) Audio & Design vocal stessor, Neumann TLM150, Neumann U89, Neumann U69 stereo mic, Sennheiser 421, Sennheiser 441, AKG 414, AKG C460, AKG D12, Schoeps CMC-5, Crown P2M, Crown GLM, Shure 57, Shure 58, Shure 89, Shure 81, RCA DX77, Countryman DI, TimeLine Lync synchronizer, TimeLine keyboard controller, DSR V2-1 prototype steam-powered Hoo-Do. **Specialization & Credits:** Digital Services produces audio for records, television and film. Our clients include Asia, Genesis, INXS, ZZ Top, Clint Black, *The Young Riders*/ABC-TV, Houston Grand Opera, Geto Boys, Choice, Bushwick Bill, Talking Heads, B.B. King, Neil Young, Willie Nelson, Herb Ellis, Hyundai, American Electric Power Co., Houston Astros, *The Mariano Kid*, *GunsMoke 3*, JVC Jazz Festival, Placido Domingo, Little Joe y la Familia, Merle Haggard, Van Cliburn Inter'l Piano Competition, American Medical video, Houston Symphony orchestra, Barbara Streisand, *Robo Cop 2*, Mazz La Mafia, *That's Black Entertainment*, Burger King, Compaq Computer, Chrysler, Blue Bell Ice Cream, Dow, Culture Club, Frank Zappa, Timbuk 3, B-52s, 3 Times Dope, GTE, Coca-Cola, Coppertone Conspiracy, Carl Lewis, and at least two other clients we can't remember right now. World-class studios, CD-mastering lab, soundstage and remote truck make us Texas' most advanced studio facilities.

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RTB D16

5301 El Paso Dr., El Paso, TX 79905; (915) 772-7333. Owner: J.O.S. Enterprises. Manager: Robert Hernandez.

ELK AUDIO

RTB D2

PO Box 142763, Austin, TX 78714; (512) 323-2016. Owner: E.L. Kuniansky. Manager: Randy McBride.

EMERALD STUDIOS INC.

RTB D48

2411 NE Loop 410, Ste. 132; San Antonio, TX 78217; (210) 656-2427; FAX: (210) 656-8024. Owner: Mitchell and Sunny Markham. Manager: Sunny Markham. Engineers: Mitchell Markham, Marius Perron, Jaime Lagueruela, Braden McDonald. **Dimensions:** Room 1: studio 46'x55', control room 26'x22'. Room 2: studio 21'x19', control room 26'x22'. **Mixing Consoles:** MCI JH-636 w/automation, MCI JH-542 w/automation. **Audio Recorders:** (2) MCI JH-24, MCI JH-110 2-track, (6) Alesis ADATs w/(2) BRCs, (2) Panasonic 3700, Fostex E-2 center-track. **Digital Audio Workstations:** (2) Sound Tools workstations, (2) Mac Ilcx, (2) Radius full-page monitors, (2) 1.2 gigabyte hard drives. **Monitors:** (4) JBL 4430, (2) Meyer HD-1 near-field, (2) Tannoy Golo near-fields, (2) Yamaha NS-10 near-field. **Other Major Equipment:** Lexicon 300, Lexicon PCM70, (2) LXP-1, (2) LXP-5, Dynacord DRP-20, Yamaha FX500, (2) SPX900, (2) Proteus 1, (2) Proteus 2, (2) Roland U220, Korg Wavestation, M1-R, Akai S1000, D550 rack, (2) D-4 drum machine, (2) R-5 drum machine, (2) Kurzweil MIDI boards, (2) Kurzweil PX, Kurzweil HX, Emulator III.

FIRE STATION STUDIOS

RTB D24

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4145 Commerce #2; Dallas, TX 75226; (214) 826-4838. Owner: T. Forrest Bradford. Manager: T. Forrest Bradford.

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RTB D2

6118 S. Padre Island Dr.; Corpus Christi, TX 78412; (512) 992-8411; FAX: (512) 992-8428. Owner: Freddie Martinez Sr. Manager: Freddie Martinez Jr.

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RTB D24

2545 N. Fitzhugh; Dallas, TX 75204; (214) 241-5182; FAX: (214) 827-6107. Owner: Anvil Media Companies. Manager: Ron Morgan. **Specialization & Credits:** Specializing in the recording of music projects, radio commercials and audio-for-video. Two locations offer five studios for flexible scheduling. Digital music recording on Sony Digital 24-track with a Neve console. Commercial digital recording, editing and mixing on Waveframe workstations and DAT. Analog recording 2- thru 24-track. Also offering music and SFX libraries, sound design and music production with Sound Tools/Sample Cell/Studio Vision, real-time dubbing of reel-to-reels and cassettes. Clients and projects we have been involved with include: Coca Cola Texas, Coors Light, Mason Dixon Band, McDonalds, Motel 6 (Clio Award winner), Stevie Ray Vaughn, *Mercantile Momentum/MCorp* (Clio Award winner), Tascam, *Colors movie* soundtrack (RIAA Gold Record Award), Ron C. Nemesis, Stevie Nicks, (RIAA Gold/Platinum Record Award). Walmart, TGI Friday's, Whataburger, Wolf Brand Chili, Ponderosa Steakhouse, Long John Silver's Seafood, Buckwheat Zydeco and the Texas Tornadoes for El Chico.

GRAFFITI PRODUCTIONS INC.

RTB D32

3341 Towerwood Dr. Suite 205; Dallas, TX 75234; (214) 243-3735; FAX: (214) 243-4477. Owner: Graffiti Productions Inc. Manager: Dennis Lowe/Barry Dickey.

BOB GREEN PRODUCTIONS INC.

RTB D24

7950 Westglenn; Houston, TX 77063; (713) 977-1334; FAX: (713) 977-1305. Owner: Bob Green. Manager: Emily MacGowan. Engineers: Jim Spurlock, Don Fisher, Bob Green. **Dimensions:** Room 1: studio 21'x20', control 19'x20'; Room 2: studio 14'x18', control 13'x18'. **Mixing Consoles:** Harrison, (2) Auditorics. **Audio Recorders:** Otari MX-80, (2) Sony 5003v, (4) MCI JH-110, (2) JVC JS DT-900 DAT w/SMPTE, (3) Otari MX-5050. **Digital Audio Workstations:** Fairlight MFX-2. **Monitors:** (2) Tannoy, (8) JBL. **Other Major Equipment:** Eventide H3000 B Ultra Harmonizer, Nakamichi MR-1 cassette, Klark-Teknik DN-504 Quad compressor, Yamaha CD-740 CD, Audio & Design F601-RS compressor, Sony BVU-800 3/4" video, JVC BRS 611 M Super VHS, Orban De-essers, Orban parametric EQ, Technics SLP 1300 CD, Telex 6120 M reel-to-reel duplicators, Sony CCP 310 & 314 cassette duplicators, Akai S-900 sampler, Sony and Sennheiser mics. **Specialization & Credits:** Our emphasis is on broadcast advertising production as well as industrials. We prefer to tout our PEOPLE, their experience, talent and judgment and let the facility speak for itself. If you prefer to work in a beautiful creative environment, with producer/engineers who understand broadcast...this is the place. We're also known for our gigantic music and effects library. We offer many free demos of our production spots and AV's, and of our talent pool of professional voices. Send for our free brochure and appropriate demos.

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RTB D2

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HOT HOUSE RECORDING

RTB D2

Dallas, TX 75228; (214) 279-1102; FAX: (214) 279-7021. Owner: Mark Rainbolt.

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313 N. Locust; Denton, TX 76201; (817) 566-2367. Owner: Jim Vincent. Manager: Jim Vincent.

LOMA RANCH STUDIO

RTB D2

Rt. 1, Box 97A3; Fredericksburg, TX 78624; (210) 997-3521. Owner: John & Laurie Hill. Manager: John Hill.

MANNA ALL DIGITAL

RTB

397 Dal-Rich Village #252; Richardson, TX 75080; (214) 239-9636; FAX: (214) 239-4075. Owner: Mike Taylor. Manager: Sharyl Taylor. Engineers: Mike Taylor. **Dimensions:** Room 1: studio 26'x18, control 26'x18'. **Mixing Consoles:** Soundtracs 72-channel MIDI automated. **Audio Recorders:** (2) Akai A-DAM 12-track digital, (2) Panasonic 3700.

—LISTING CONTINUED ON NEXT PAGE

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—LISTING CONTINUED FROM PREVIOUS PAGE

Alpine F-1 2-track, (2) Aiwa digital cassette deck, Tascam 122 cassette, Tascam 133 cassette, IBM 24-track texture sequencing. **Digital Audio Workstations:** IBM Turtle Beach 56k system. **Monitors:** (2) KRK 9000, (2) EAW 12" 3 way, (2) Tannoy SGM 15" gold series, Haller Pro 5000. **Other Major Equipment:** AMS RMX 16 digital reverb, Eventide H3000 SE Ultra Harmonizer, TC Electronic 2290 delay, (2) Sony R-7 digital reverb, Sony M-7 digital modulator, Klark Teknik DN 780 digital reverb, (2) Roland R-880 reverb w/GC & controller, BBE Exciter, Aphex Big Bottom Exciter, dbx subharmonic processor, 128-bit Ultra Exotic Lava Lamp, Roland GP 16 guitar processor, Alembic bass preamp, IVP bass preamp, Emulator III XP w/CD-RDM and MD library, double kick set D-Drums, Roland A 80 88 weighted key controller, (2) Hammond B-3 w/ 3 Leslie, AKG "The Tube" vocal mic, Neumann U87 A.



PATRICK MCGUIRE RECORDING
Arlington, TX

PATRICK MCGUIRE RECORDING



1402 Rockdale; Arlington, TX 76018; (817) 467-1852. Owner: Patrick A. McGuire. **Manager:** Patrick A. McGuire. **Engineers:** Patrick A. McGuire, David Morgan. **Dimensions:** Studio 20'x22', control room 10'x12'. **Mixing Consoles:** D&R 4000 Series 24-channel in-line. **Audio Recorders:** Mitsubishi X-400 16-track digital, Tascam DA 88 8-track digital, Panasonic SV-3700, Marantz PMD 500 16-track digital, Otari 5050 B-II 1/4" 1/2-track, Yamaha C-300, Tascam 122. **Digital Audio Workstations:** Digidesign Sound Tools on Macintosh IIcx w/1 Gigabyte HD. **Monitors:** Tannoy LGM, Tannoy PBM 6.5. **Other Major Equipment:** Opcode Studio 3 MIDI interface, Dpcode Studio Vision sequencer, Eventide H-3000 Ultra-Harmonizer, Yamaha REV5 multi efx, Yamaha EMP700 multi efx, Yamaha SPX90-II multi efx, Sony R-7, Sony D-7, Sony M-7, ART 01A reverb, Alesis Quadraverb, Aphex 612 Gates, Aphex Dominator II, Aphex Compellor II, (2) Symetrix 528 voice processor, (2) Symetrix 501 comp/limiter, Barcus-Berry 822A sonic maximizer, Neumann U87A microphone, Audio-Technica AT4033, AKG D112 microphone, AKG D12E microphone, (2) Audio-Technica ATM63 microphone, (2) Crown P2M 306P microphone, Sennheiser MD431 microphone, (2) Sony C535P microphone, Yamaha MZ 204, (4) Shure SM57, Shure Beta 57. **Extended Equipment Description:** Yamaha G3 6' grand, Yamaha DX7II FD, Yamaha FG335 acoustic/electric guitar, Yamaha BB3000 bass guitar, Fender thin line Telecaster, F-mu Proteus 1 sound module, Alesis D-4 percussion module, Kurzweil K2000, Peavey Special 130 guitar amp, Acoustic G60T tube guitar amp, (2) Sony headphones, (2) AKG headphones, (3) Fostex headphones, (2) Sennheiser headphones. **Specialization & Credits:** Patrick McGuire Recording was established in August of 1984 to give musical artists in the Dallas Ft. Worth Metroplex a quality, relaxed and affordable place to record. Patrick, with 20+ years at that time as a working musician, saw a place in the market for a studio that catered to the special needs of the artist. Music recording is still our primary focus. At Patrick McGuire Recording, we treat you with the respect you deserve. We want you to leave our studio with your sound, not ours or anyone else's. If you're proud of the work you do here, you'll come back and you'll tell others. This service-oriented approach has made us one of the most successful studios in our class in the Southwest.

MIDCOM REMOTE SERVICES



3 Dallas Comm. Complex, Ste. 108; 6311 N. O'Connor Rd., LB-50; Irving, TX 75039; (214) 869-2144; FAX: (214) 869-0898. Owner: Mike Simpson. **Manager:** Jeff Jones. **Engineers:** Jeff Jones. **Mixing Consoles:** Soundcraft TS-24 32x24x16x2x1 w/custom stereo grouping,



MIDCOM REMOTE SERVICES
Irving, TX

Amek/TAC Bullet 12x4x2 w/2 stereo input module. **Audio Recorders:** (2) Otari MTR-9011 24-track w/custom transport software, Studer A-810 T.C. 2-track w/center stripe time code, (2) Nakamichi MR-18 cassette recorder w/Dolby B&C, Panasonic SV-3500 R-DAT recorder, Nakamichi DMP-100 F-1 PCM encoder w/external sync. **Monitors:** UREI 811B Time Align, Westlake BBSM-6 near-field, Digital Designs DD161a near-field, Auratone 5C video near-field. **Other Major Equipment:** (2) White Instruments 1/6 oct. EQ for mains, Hafler P-505 mains amplifier, Hafler P-230 near-field amp., TTM 24-ch frame accepting Dolby. dbx & Telcom, Cipher Digital 4700 Shadowll synchronizer w/Shadowpad, Cipher Digital Cypher reader/generator/insert. Lexicon 480L digital effects processor w/sampling, Lexicon 224XL digital reverb, Lexicon Prime Time II digital delay, Eventide H910 harmonizer, (8) dbx 903 compressor/limiter, (2) dbx 904 noise gate, MicMix Dynalex noise reduction for dbx, BBE 702 sonic maximizer for dbx 900, (2) dbx 160X compressor/limiter, Aphex Compellor stereo compressor/limiter, Sony CV-1900 19" color monitor/receiver, Sony VD-5800 3/4" U-Matic recorder, Panasonic AG-6800 VHS Hi-Fi recorder. **Extended Equipment Description:** RTS 2-channel intercom system, Clear-Com 2-channel intercom system, Jensen custom 40-channel transformer mic splitter, Neumann TLM170, Neumann U89, Neumann KM84i, AKG C-414EB, AKG C460B/CK61-U.L.S., AKG D12E, Electro-Voice RE20, Sennheiser MD421, Sennheiser MD441, Beyer M69, Beyer M88, Beyer MC734, Beyer M201, Crown P2M, Shure SM57, Shure SM58, Shure SM81. **Specialization & Credits:** Eddie Money "Unplugged" tour, Z-Rock Radio Network 1990-1992 live broadcasts including Metallica, Queensryche, Dio, King's X, Black Crowes, Vinnie Moore, Ugly Kid Joe, & Shotgun Messiah; Dallas Cowboys Radio Network 1991-1992; Mary Kay Cosmetics 1985-1992 seminars; 2 Live Crew live music video. Stevie Nicks benefit concert for Jane Goodall; Alan Jackson music video for Fox network; Marcus Roberts "Deep in the Shed" music video; Island Records "Deep Ellum" Compilation project; The Cure "Prayer" tour Mark Stetler *6th String* debut album, Aida, "Nixon in China," "The Aspura Papers," Great Performance series for PBS; "Dolly," ABC -TV prime time; 1989 Miss US Pageant for CBS TV; "The Vocal Majority" two live albums; "The Texas Debates" presidential debates for APR; Anthrax *I'm the Man* live album (Gold); George Strait New Year's Eve Video for MCA; Bob Banner Productions "Face of the 80's" syndicated TV special; 7th Van Cliburn Piano Competition for APR.

NEW AGE RECORDING



8535 Fairhaven; San Antonio, TX 78229; (210) 614-9818; FAX: (210) 614-9988. Owner: Richard Veliz.



OMEGA PRODUCTIONS
Dallas, TX

OMEGA PRODUCTIONS



7027 Twin Hills Ave., Ste. 5; Dallas, TX 75231; (214) 891-9585; FAX: (214) 891-9623. Owner: Paul Christensen, Chuck Billings. **Manager:** Steve Lowney. **Engineers:** Steve Lowney. **Dimensions:** Control room 30'x8'. **Mixing Consoles:** API custom 32x32, Hill Multimix 16x16x8x4x2, Midas 40x24 (available on request). **Audio Recorders:** (2) Otari MTR-9011 24-track analog, Otari MTR-10 2/4-track, (2) Sony 3324 24-track digital (available on request), (3) Technics cassette decks, (2) Mitsubishi X-850 32-track digital (available on request), Sony 3348 48-track digital (available on request). **Monitors:** (2) JBL 3340, (2) Yamaha NS-10, (2) Auratone. **Other Major Equipment:** Dolby SR noise reduction (available on request), (7) dbx 160 limiter, Teletronics LA-2A limiter, (2) UREI 1176LN limiter, ADR vocal stress-

er, dbx 162 limiter, dbx 165 limiter, Dyna-Mite Valley People limiter, BTX 4700 shadow sync unit, BTX 4500 time code reader/generator, Deneke time code reader/generator, Sony 14" video monitor, JVC 6600U 3/4" video recorder, (8) AKG 414 mics, (6) Beyer 201 mics, (2) Neumann U47 mics, (3) AKG 451 mics, (3) Shure SM81 mics, (6) Shure SM58 mics, (7) Sennheiser 421 mics, (5) Sennheiser 441 mics, (4) Shure SM53 mics, (7) Shure SM57 mics, (4) Crown P2M 31S mics, (3) Sony ECM 22P mics, (7) Countryman D1 mics, (5) Heider D1 mics, Audio-Technica ATM 5-R mic, AKG 10-12E mic, (2) Electro-Voice RE-20 mics. **Specialization & Credits:** Omega has been supplying remote audio recording services to the record, film and video industries since 1973. Their 40-foot Kenworth diesel remote facility is specially equipped to travel coast to coast. Partial credits/awards: two Platinum records, five Gold records, two Amex Golden Reel awards, four RIAA gold video awards, two 3M Visionary awards, three Grammy nominations, six Dove awards and one Silver Screen award. Artists: Lyle Lovett, Genesis, U2, REM, Garth Brooks, Kennie G., Damn Yankees, Moody Blues, Lynyrd Skynyrd, B.B. King, Reba McEntyre, Ricky Van Shelton, Little Feat, Neville Brothers, Joe Walsh, Prince, Art Garfunkel, David Byrne, Dizzy Gillespie, Roy Drbison, Fats Domino, Ray Charles, Clint Black, Neil Young, Fabulous Thunderbirds, Ramsey Lewis, Molly Hatchett, Texas Tornados, David Bowie and Jerry Lee Lewis.

PANTEGO SOUND



2210 Raper Blvd., Arlington, TX 76013; (817) 461-8481. Owner: Jerry and Randy Hudson. **Manager:** Doug Leake.



PLANET DALLAS RECORDING STUDIOS
Dallas, TX



PLANET DALLAS RECORDING STUDIOS
Dallas, TX

PLANET DALLAS RECORDING STUDIOS



PO Box 191447; Dallas, TX 75219; (214) 521-2216; FAX: (214) 528-1299. Owner: Rick Rooney. **Manager:** Tammy Whitt. **Engineers:** Rick Rooney, Ben Yeager, Brent Danner. **Dimensions:** Studio 50'x50', control room 25'x20'. **Mixing Consoles:** MCI 528B with Otari disk mix. **Audio Recorders:** MCI/Sony JH-24, Sony JH-110C, Tascam 42, (4) Tascam 122 MK, (2) Panasonic SV-3500, Panasonic SV-3700. **Monitors:** (2) Lakeside Custom/TAD, (4) Yamaha NS-10M, (2) Auratone Cube, (2) Tannoy PBM 8, (2) Quadraflex 204L. **Other Major Equipment:** Gentner Auto-Coupler, (10) API 560-B EQ, (2) Summit Audio TLA 100A compressor, (2) Summit Audio EQP 200A EQ, (2) UREI LA-4 compressor, (4) Orban 622 B parametric, (2) Dietz Q-Metric parametric, (2) BASE Bedini Audio Spatial Environment, (2) BBE 822 Sonic Maximizer, (4) Brooke-Siren DPR 402, (4) dbx 160 compressor, (2) dbx 166 compressor, (2) UREI 1176 LN, AKG ADR 68K, (2) Yamaha SPX 900, (2) Yamaha SPX 90 II, (2) Yamaha REV7, (2) Lexicon PCM60 with updates, Deltalab DL-4 Time Line, Lexicon Prime Time, MasterRoom XL-305, (2) Aphex 612 expander gate, (4) Valley People Dyna-Mite noise gates, (2) Dolby 363 SR, (2) Neumann U47, (2) Neumann U87, (4) AKG 414, (2) AKG D-12E, (4) AKG C460 B, (2) AKG C451 E, (9) Sennheiser 421, (2) Sennheiser 441, (8) Shure SM 57, (2) Electro-Voice EV DS35, Beyer M380, MIDIMAN Sennman Pro synchronizer, Yamaha Drum Kit 8-piece recording system. **Specialization & Credits:** 24-track with Otari Disk Mix Automation; analog or digital mixdown; DAT-to-DAT editing; Digidesign/Pro Tools, 8-track, complete editing and sequencing, phone patch availability. Studio design by Lakeside Associates of

Los Angeles. Clients include RCA, Capitol, SBK, EMI, Rykodisk, Warner Brothers, Network, IRS, Geffen, SubPop, Island, Priority, Virgin, Profile, Dak Lawn Records, Def American, Core Records, Last Beat Records, Ray Ruff, MC 900 FT Jesus, Tripping Daisy, XTC, The Bodeans, Sara Hickman, the Blue Johnnies, Mojo Nixon, Michelle Shocked, Unity 2, The Smithereens, Stranger than Fiction, Evan Johns and His H-Bombs, Earthquake, The Moon Festival, The Spin, Uptown Girls, Winter Hours, The Daylights, Shallow Reign, Lesson Seven, Royal Flush, Consolidated, Gregory "D" and DJ Mannie Fresh, Reverend Horton Heat, The Shagnastys, Voodoo Zyn, The Nixons, and Trisha Lynn. ShowBiz Pizza, Frito Lay, Chevrolet, Pizza Hut, Inc. and the Mitchell Fox Agency.



POLYTRAC RECORDING STUDIO
Friendswood, TX

POLYTRAC RECORDING STUDIO

RE24 DE **403 Laurel; Friendswood, TX 77546; (713) 996-7744. Owner: Jerry Bennett. Engineers: Jerry Bennett. Dimensions: Room 1: 40'x24', control 24'x28'. Drum room 12'x16'. Vocal room: 14'x12'. Mixing Consoles: Harrison 4032. Audio Recorders: Sony/MCI 24-track, Tascam 85-16B, Otari MTR-10, Otari MX-5050B, Panasonic SV-3700 DAT. Digital Audio Workstations: Sound Tools II. Mac ci w/1gb storage. Monitors: (2) JBL 4435, (2) NS-10, (2) JBL Control 1, (4) Auratone Cubes, Bryston 4B amp, Crown D150 amp, Crown D75 amp. Other Major Equipment: (3) Neumann U87, (5) MD421, PL20, (2) SM81, (2) Crown PZM, (4) SM57, MD441, Yamaha piano, DX7 II FD, Emulator II+, Synergy, Proteus 1, Proteus 2, Alesis D-4, Performer software, Lexicon 224, LXP1, LXP5, SPX90, dbx 166, (2) LA-4, Compellor, Aphex expander gate. Guitars by: Gretsch, G&L, Dobro, Fender, Shobud, Gibson, Dvation, Alvarez, Garcia. Drums: Gretsch, Pearl, Paiste, Zildjian. Our headphone cue system is designed just for the musician—stereo/mono, 4 selectable lines and controllable by each musician. Specialization & Credits: Polytrac has a comfortable, positive working atmosphere. Perfect for critical projects. Credits include: Kinsuite (Geoff Workman, producer), Dominion (Gospel Rock), Texas Crude (2 songs for made-for-TV movies), Tommy Cloudt (country), Coleman Bros (Gospel), the Code 3 Rock & Roll Band (D.A.R.E.), Singing Toler, Footprints (Phil Toler, prod.), Spare Change, so. Texas Crystals, Brick River Band, Scott Pratt (Gospel), Micheal Little (soul), Momma's Boys (pop), Corporal Blu (rock), Sugar Creek (country), Marty Godwin (pop/rock), Tanya Kelley (pop) and more.**

THE PRODUCTION BLOCK

RE24 DE **906 E. Fifth St.; Austin, TX 78702; (512) 472-8975; FAX: (512) 476-5635. Owner: Production Block Studios Inc. Manager: Delaine Frasier.**

RAMPART STUDIOS

RE24 DE **PO Box 36188; Houston, TX 77236; (713) 772-6939. Owner: Steve Ames. Manager: Steve Ames.**

REELSOUND RECORDING CO.

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ROCK ROMANO'S RECORDING STUDIO

RE16 DE **1312 Tulane; Houston, TX 77008; (713) 868-5660. Owner: Rock Romano. Manager: Rock Romano. Engineers: Eric Demmer. Dimensions: Room 1 studio 30'x25', control room 9'x15'. Mixing Consoles: Ramsa WR-T820 B 20x8, Tascam MM-1 20x2, Tascam M-30 8x4. Audio Recorders: Tascam MS-16 16-track w/dbx, Otari 5050IIB 2-track, Panasonic SV-3700 DAT, Technics RS-TR cassette, Technics RS B905 cassette. Digital Audio Workstations: Ensoniq SD-1 32 voice, Yamaha V50. Monitors: JBL 4412, Yamaha NS-10S. Other Major Equipment: Neumann U47 FET, Beyer MC740 N (c), AKG 414-EB, (3) AKG 451-EB, (3) Sennheiser 421, Sennheiser 441MD, (2) Sennheiser ME-40, (2) Crown PZM30, Shure SM7, (3) Electro-Voice PL20, UREI 1176 LN limiter, (2) UREI 1178 stereo limiter, dbx 166 limiter/gate, dbx 161 limiter, (3) dbx 363X stereo gate, (2) Alesis Quadraverb, Lexicon LXP1 reverb, Baldwin baby grand piano, ART SGE Mach II processor, Furman LCX compressor, (2) Alesis MIDIVerb II, Tascam MEQ-40 parametric EQ, Paul Reed Smith custom "10", Fender Telecaster American standard, Dobro Duolian re-issue, Fender 1963 jazz bass, Gibson ES-175, Martin 015 (1950), Earthwood 1972 bass, Leslie 825 cabinet, Music Man HD 212, Tube Works RT-4001 direct box, Shure SM81, (8) Shure SM57, (4) Shure SM58, AKG D-112, (2) Audio-Technica ATM31, (2) Electro-Voice ND257, BBE 442-A Maximizer, Alesis D-4 drum module.**

SATURN PRODUCTIONS

RE24 DE **17703 Craft Ct.; Crosby, TX 77532; (713) 328-6752. Owner: Richard Cagle. Manager: Richard Cagle.**

SOUND ARTS RECORDING STUDIO

RE24 RE **8377 Westview Dr.; Houston, TX 77055; (713) 464-GOLD (4653); FAX: (713) 464-2622. Owner: Jeff Wells. Manager: Joy Wyndham. Specialization & Credits: Sound Arts Recording Studio has recently moved to a beautiful new facility featuring a Trident 808 54-channel automated console complemented with an arsenal of outboard equipment. Including Neve 1066/1073 EQs, Neve 2254 and 3264 compressors, UREI LA-2A/LA-3/LA-4/1176 compressors, Neumann U47/M49/KM54 tube microphones, EMT plate reverb, TOC monitors, Yamaha 6' grand piano, and a Hammond B-3 organ with Leslie. Also, a fully equipped MIDI pre-production room and a relaxed, creative, professional atmosphere. Experienced engineers and producers to help you complete your project, on time and within budget. Composers, arrangers and studio musicians available. Other services include BMI and ASCAP music publishing and recording engineering classes. We personally invite you to come visit us and listen to our quality productions. Clients include Rap-A-Lot Records, Def American Records, J. Walter Thompson Advertising Agency, Geoff Workman, NiteBob, IFMA and many more. Thank you for a great year!!**

SOUND FACTORY

RE16 DE **1807 Post Oak Ln.; Carrollton, TX 75007; (214) 394-4515; FAX: (214) 394-4515. Owner: Steve Garrett. Manager: Vicki Foster.**

SOUTHWEST RECORDINGS

RE24 DE **2031 Libbey; Houston, TX 77018; (713) 681-7565. Owner: Jeff Smith. Manager: Jeff Smith.**

STUDIO WEST

RE24 DE **15523 Barbarossa; Houston, TX 77083; (713) 530-1179; FAX: (713) 530-1705. Owner: Tom Tena, J.R. Kuzniar.**

SUMET SOUND STUDIOS

RE24 DE **7027 Twin Hills Ave.; Dallas, TX 75231; (214) 691-1740; FAX: (214) 691-6616. Owner: Ed Bernet. Manager: Bobby Dennis.**

TAYLOR SOUND RECORDING STUDIO

RE16 DE **10652 Goodnight Ln.; Dallas, TX 75220; (214) 556-0790. Owner: Jay Taylor. Manager: Jay Taylor.**

UNREEL SOUND

RE16 DE **PO Box 426, Rt. 1 Box 156; Decatur, TX 76234; (817) 62-SOUND; FAX: (817) 627-1004. Owner: Barry Eaton, Kenneth Wilson. Manager: Barry Eaton.**

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MIX

FEEDBACK

THE ECONOMY OF DAWs

As an avid user of one of the "Toy DAWs" Stephen St.Croix maligns in July's "Fast Lane," I have to raise a stink. Aside from the fact that the article takes precisely the elitist tone he denies, his arguments against these machines amount to just plain bad advice in this economic climate. The decision to purchase an inexpensive digital audio workstation has been one of the best business moves I've made. Granted, it's a 2-track-only system; it isn't expandable. The EQ is less than perfect and somewhat cryptic. The machine crashes occasionally, sometimes destroying what I've spent a lot of time tweaking. It's slow by the "Big Guns" standards.

The majority of my work is in radio production and programming. I've resurrected year-old spots by flying in new dates and times. I've been able to accommodate copy changes through creative editing rather than by recutting voice-overs. I spend much less time editing variations of 60-second jingles and can often offer variations that would have had to be re-recorded in the past. In many instances, the machine doesn't just save time and money, it actually allows me to earn money where I couldn't have before.

From premastering CDs to creating custom drum patterns to removing "P" pops and sibilant sections, my "toy" has more than earned its keep. I could have saved my money, waited for the economy to turn around and tried to buy a bigger system. Except I probably would have gone out of business by then.

Joe Egan
Eclipse Recording
South Burlington, VT

SMALL IS BEAUTIFUL

Stephen St.Croix's article in July's *Mix*, "Baiting Buyers With Bits for Bucks," bugged me. I'm afraid it gives the impression that he believes an audio recording, and the work done to make it, is meaningless, or at least a partial waste of time, or a wank, or not worthy of serious consideration, unless the recording is done with technology and technique that is nearly as flawless as is humanly possible. I hope that isn't his point. Most of the recordings I love were certainly not done with the "best" technology available in their day.

Sure, most equipment manufacturers are willing to mislead their customers to some degree. It's equally true that manufacturers, retailers and equipment owners who have a vested interest in very expensive hardware are at least a little nervous these days about the proliferation of inexpensive 16-bit gadgets that sound pretty darn good.

I expect and hope that digital workstations are going to improve. But articles like July's "Fast Lane" serve mainly to make those who can't afford expensive gadgets feel like their work isn't going to be taken seriously. They also perpetuate the "mine is bigger than yours" attitude that is already too prevalent.

Randy Thom
Nicasio, CA

GUITAR TIP #101

I greatly enjoyed your article on recording acoustic guitar in the June issue of *Mix* and always value learning the techniques of others. Although most of the engineers interviewed discussed only studio applications, I was surprised to see that I am using a dif-

ferent technique than any mentioned.

I commonly use a stereo mic, specifically an AKG C-422, as the main guitar mic during live solo performances for broadcast. Usually, I set the mic on cardioid at 90° and try to keep the performer at least a foot or two away. The center pile-up anchors the image, but the separation adds some degree of depth to the guitar sound. Most performers use a pickup, and I use that signal to center the image as well. Proximity effect requires that I filter out some of the low end from the stereo mic, and the DI is usually very bright, but adding only a little to the mix adds a nice crispness to the overall guitar sound.

Have you had other suggestions similar to mine? Or could this be the reason for my continued obscurity? I always enjoy *Mix*, and I look forward to other process-oriented articles.

Harold F. Chambers III
WKSU-FM
Kent, OH

GUITAR TIP #102

That was a great article from John La Grou on recording acoustic guitars. One noticeable omission, though: Blumlein X-Y coincident technique using figure-8 mics. I am probably the main cheerleader for Kavi Alexander's recording of acoustic music on the Water Lily Acoustics label. Kavi records using Blumlein miking exclusively, with a pair of Tim de Paravicini's tubed Milab capsule-style mics. Just listen to *Meeting by the River* featuring Ry Cooder and Indian guitarist Vishwa Mohan Bhatt: It doesn't get much better than that. Then check out Bhatt's *Saramandi* and other Kavi-made recordings. He gets the

balance of direct and reverberant sound with rock-steady imaging and effortless frequency extension. His analog recordings also make the best transfer to CD I've yet heard.

The Blumlein technique allows the phase difference to happen in your listening environment (spaced speakers) while retaining phase coherence in the recording process. As long as engineers and producers stay locked behind the console in the "sweet spot," they will miss what happens in real-world rooms where most of us listen to music. The Blumlein recordings sound good anywhere in my home or guitar-building shop.

Rick Turner
Topanga, CA

PROPER CREDIT

Something was lost in the translation in your note regarding my Scientific and Technical Award from the Academy of Motion Picture Arts and Sciences (*Mix*, June

1993), in which you stated that I had developed Dolby's Container.

The Dolby Container was designed by Dolby's Claus Weidemann and developed by Dolby Labs, both of whom shared the award with me. My contribution was the original development leading to my U.S. patent #4412,100, which was initially applied to AKG's Optimod© broadcast transmission audio processors and which was also used in Dolby's Container.

Robert Orban
AKG Acoustics Inc.
Belmont, CA

KEEP ALL YOUR NOTES

I noted John Leckie's references to the lack of credits in the January 1993 *Mix*. Personal experience has taught me that credits are crucial to a future career. In a business that assumes that 50% of one's claims are fanciful, to say the least, factual support is advisable.

Credits for engineers were the exception to the norm at the time

that both John and I were establishing ourselves in the recording business as staff engineers at top studios. When those credits became more common, however, the "not being around" at the end of the recording sessions situation certainly rings true. I was omitted from the credits on a number of successful albums and singles for similar reasons.

My advice to the young, determined recording person is to do whatever you can to ensure those credits. Keep those session diaries, obtain the records that you work on (even if you have to buy them), and when those records chart, keep copies of the charts. When you put together a discography and have all that documented support, it will be the best asset you own.

Denny Bridges
(engineer for Roxy Music, Paul McCartney, Brian Eno, Jeff Beck and others)
Morristown, NJ

MIX Reader Service

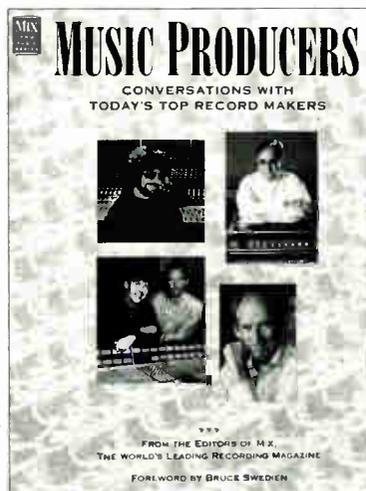
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1. See the opposite page for a listing of Reader Service numbers for advertisers in this issue.

2. Circle the Reader Service numbers that correspond to each advertisement or editorial item in which you are interested. (Maximum of 20 numbers.)

3. Complete all information on the card below. Please check ONE answer for each question unless otherwise indicated.

4. Mail card postage-free!

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P.O. Box 5069, Pittsfield, MA 01203-9856

Issue: *Mix*, September 1993 ♣ Card Expires: January 1, 1994

Name _____ Title _____

Company _____

Address _____

City _____

State _____ Zip _____

Phone (____) _____

1) Your company's primary business activity (check ONE):

- 01. Recording studio (including remote trucks)
- 02. Independent audio recording or production
- 03. Sound reinforcement
- 04. Video/film production
- 05. Video/film post-production
- 06. Broadcast/radio/television
- 07. Record company
- 08. Record/tape/CD mastering/manufacturing
- 09. Equipment manufacturing (incl. rep firm)
- 10. Equipment retail/rental
- 11. Contractor/installer
- 12. Facility design/acoustics
- 13. Educational
- 14. Institutional/other (please specify)

2) Your job title or position (check ONE):

- 15. Management—President, owner, other manager
- 16. Technical & Engineering—Engineer, editor, design engineer, etc.
- 17. Production & Direction—Producer, director, etc.
- 18. Sales & Administration—Sales rep, account executive, etc.
- 19. Artist/Performer—Recording artist, musician, composer, other creative
- 20. Other (please specify)

3) Your role in purchasing equipment, supplies and services (check ONE):

- 21. Recommend the purchasing of a product or service
- 22. Specify makes, models or services to be purchased

- 23. Make the final decision or give approval for purchase
- 24. Have no involvement in purchasing decisions

4) Your company's annual budget for equipment, supplies and services:

- 25. Less than \$50,000
- 26. \$50,000 to \$149,999
- 27. \$150,000 to \$249,999
- 28. \$250,000 to \$499,999
- 29. \$500,000 or more

5) Purpose of inquiry:

- 30. Immediate purchase
- 31. Files/future purchases

6) Where you got this copy of *Mix*:

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7) Where your audio-related work takes place (check all that apply):

- 37. Commercial (public) production facility
- 38. Private (personal) production facility
- 39. Corporate or institutional facility
- 40. Remote or variable locations

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P.O. Box 5069, Pittsfield, MA 01203-9856

Issue: *Mix*, September 1993 ♣ Card Expires: January 1, 1994

Name _____ Title _____

Company _____

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State _____ Zip _____

Phone (____) _____

1) Your company's primary business activity (check ONE):

- 01. Recording studio (including remote trucks)
- 02. Independent audio recording or production
- 03. Sound reinforcement
- 04. Video/film production
- 05. Video/film post-production
- 06. Broadcast/radio/television
- 07. Record company
- 08. Record/tape/CD mastering/manufacturing
- 09. Equipment manufacturing (incl. rep firm)
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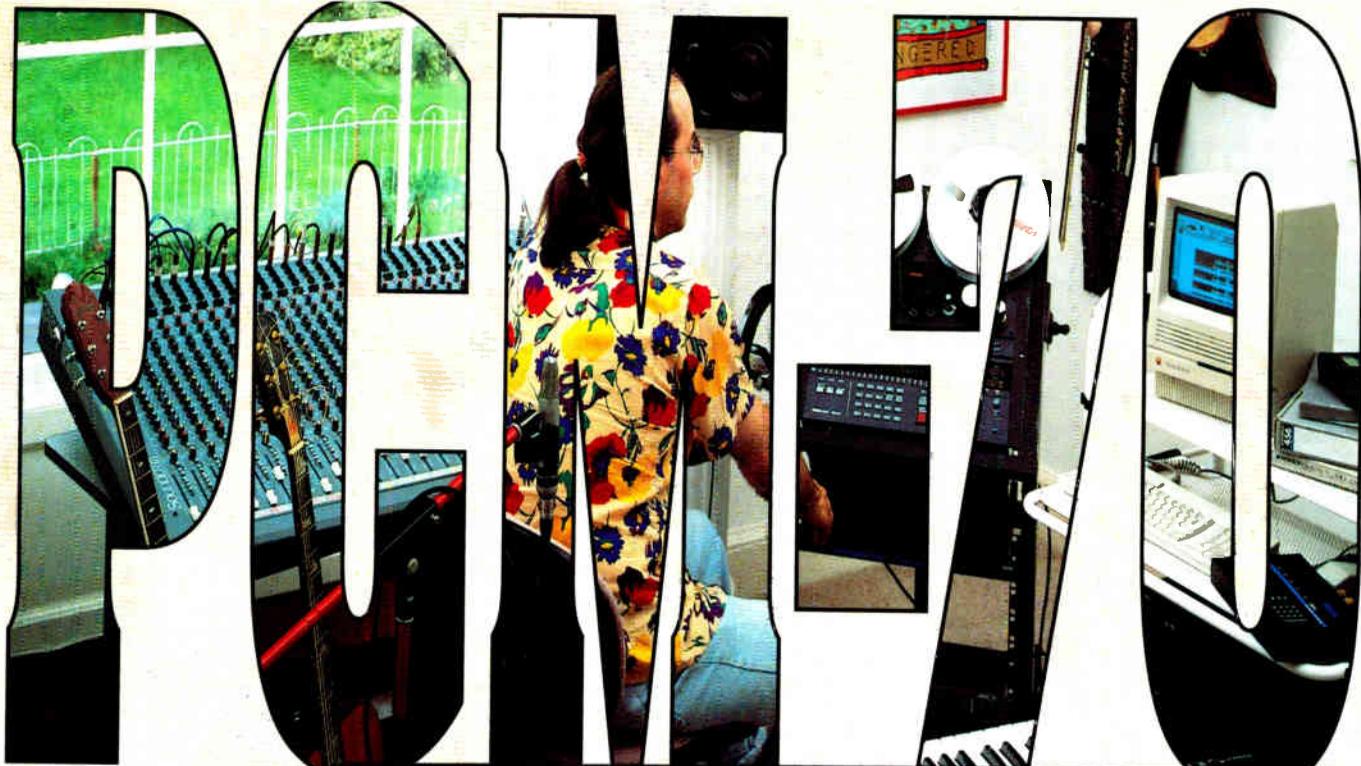
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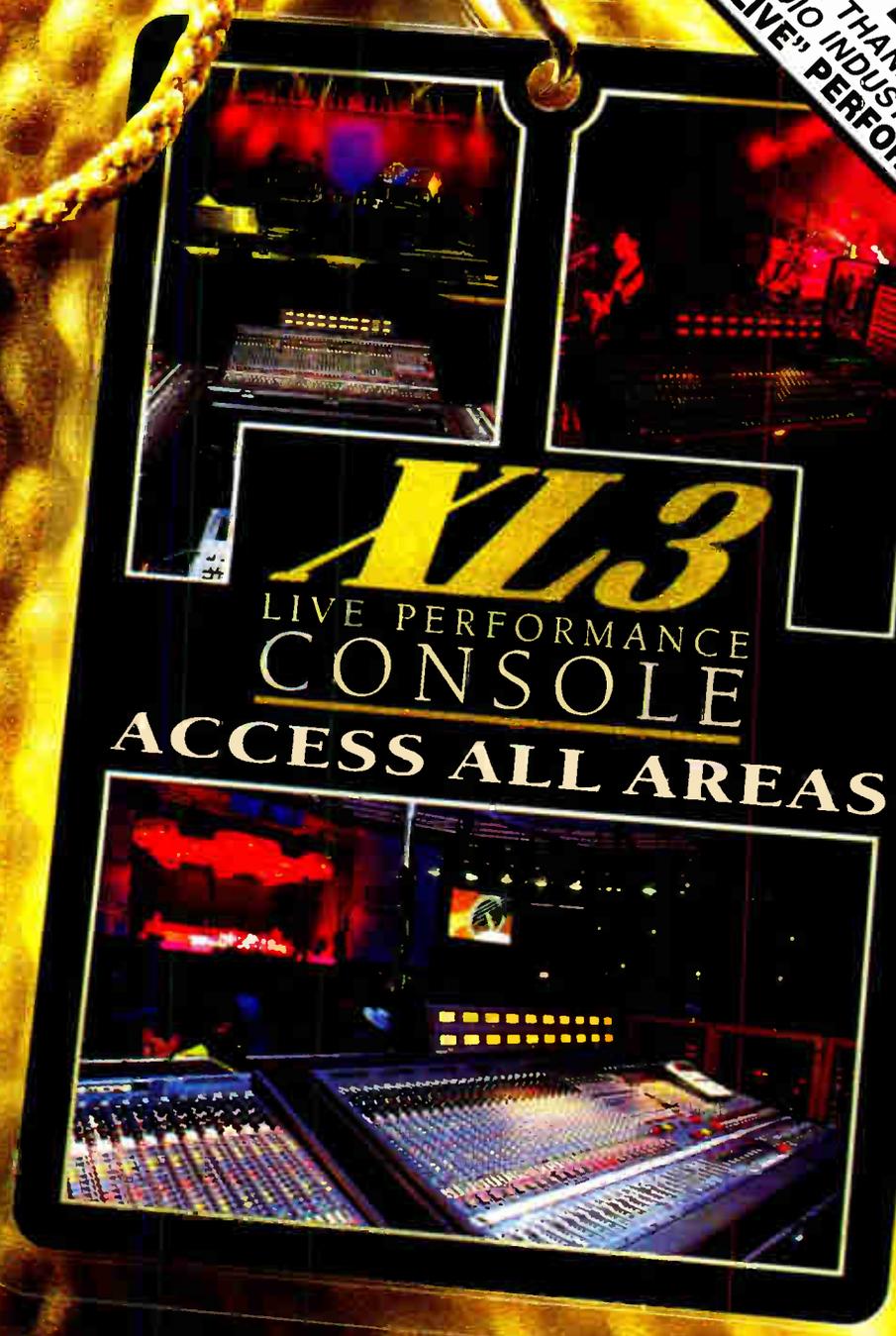
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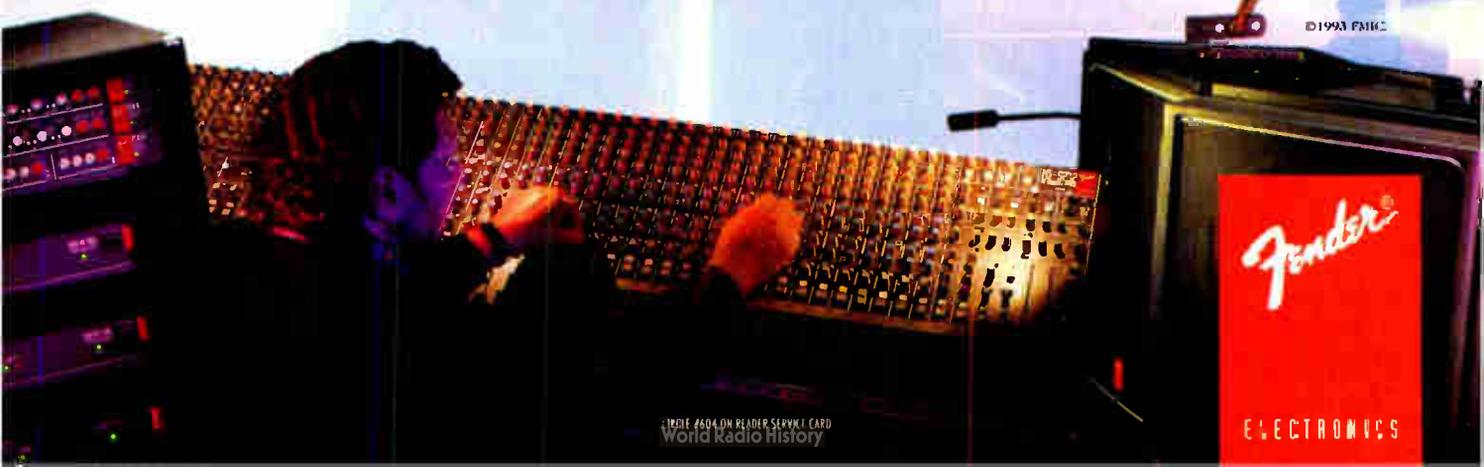
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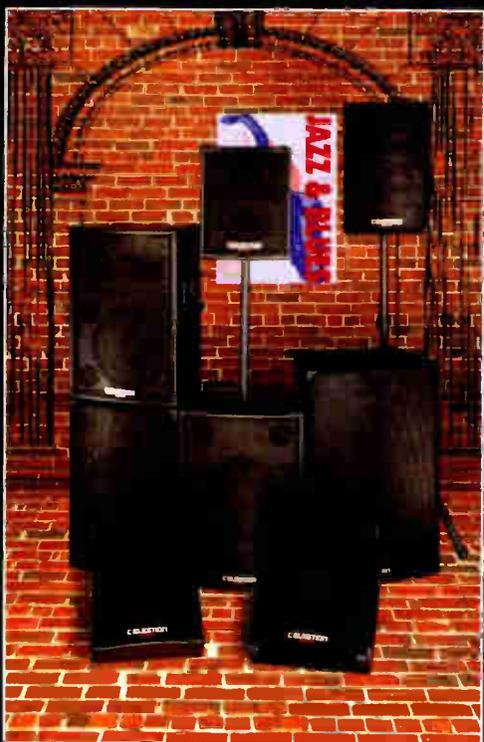
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Applications in Sound Reinforcement

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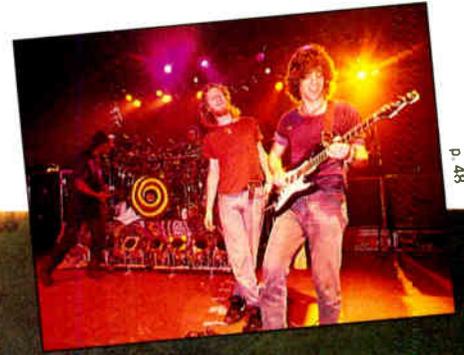
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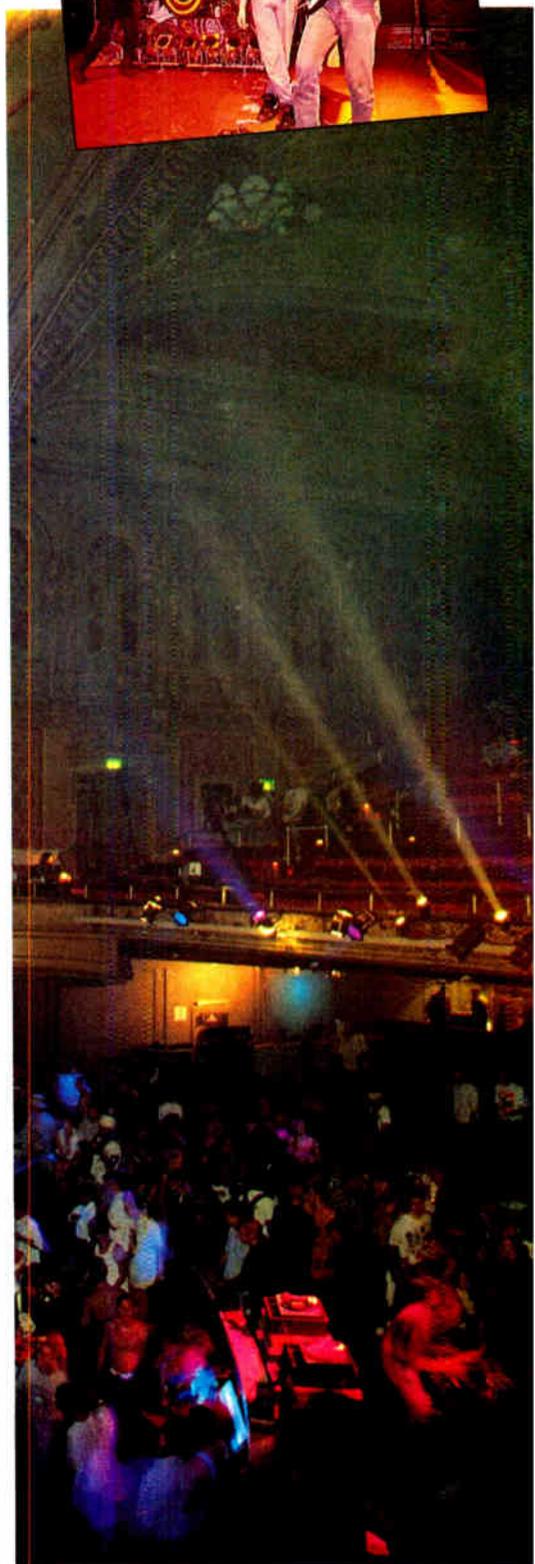
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ON THE COVER:

The Grateful Dead with Ultrasound at the Sam Boyd Silver Bowl in Las Vegas, Nevada. See story in September *Mix*. Photo by Ken Friedman/BGP Archives

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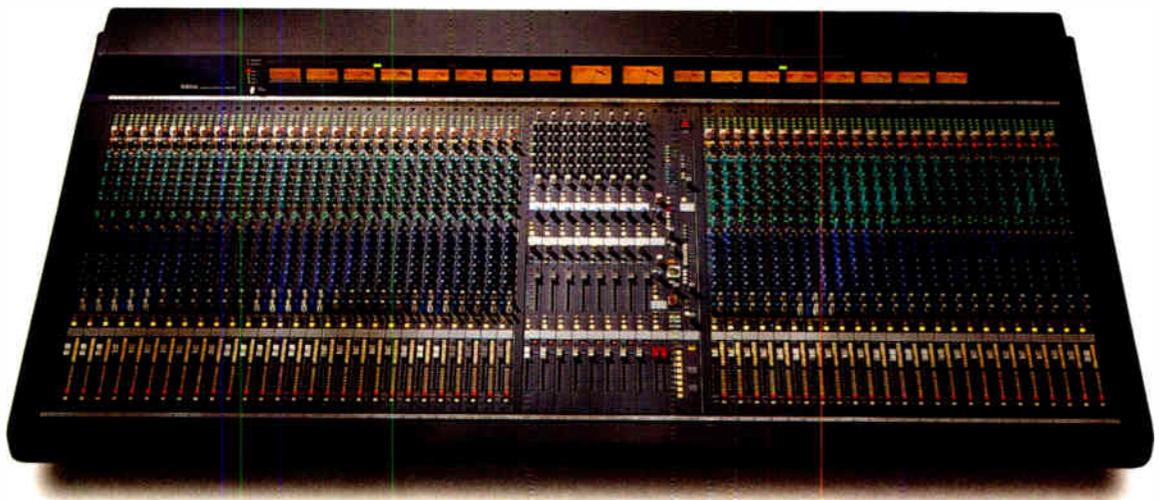
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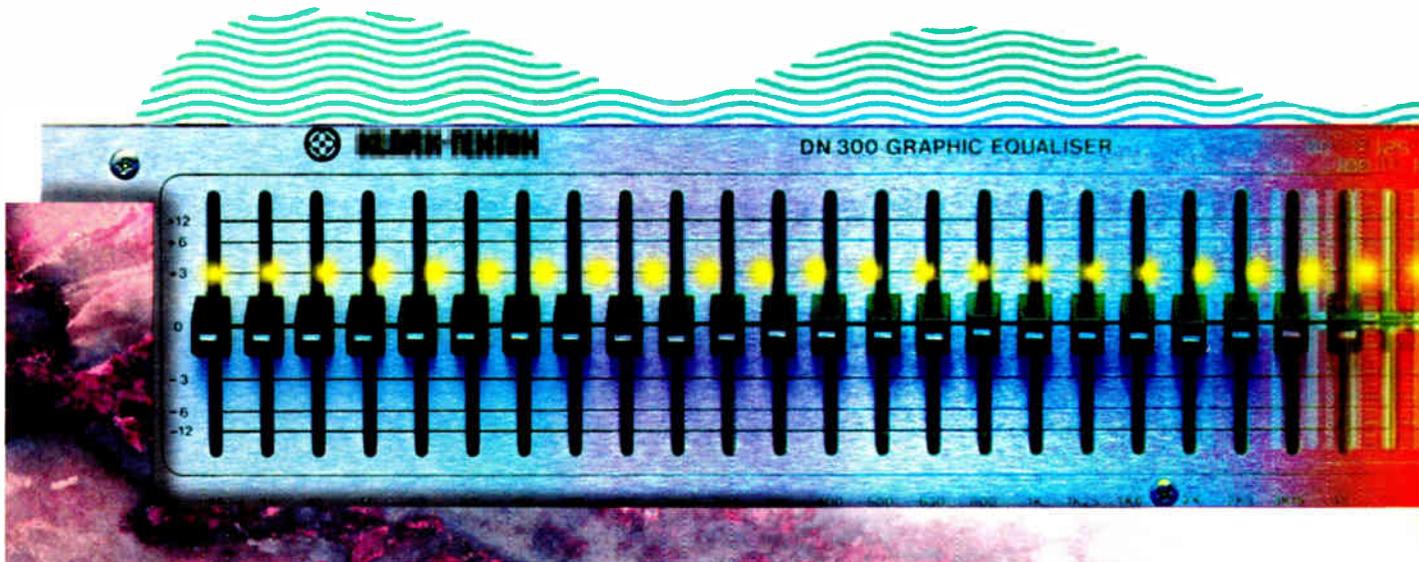


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Equalization



by Wade McGregor

The face of equalization is changing.

The familiar sliders and knobs are becoming phosphorescent displays of transfer functions. The process of equalization is also changing as we are offered new tools for measurement and correction of sound systems. The graphic equalizer may become more graphic and less equal as we reevaluate its uses.

The role of EQs in live sound reinforcement is split between installed systems and touring systems. Both require similar facilities, but installed systems may have the advantage of being able to equalize the primary FOH system in detail, while touring systems will change EQ settings to conform with the perceived qualities in each new venue. The parametric EQ has generally been used in touring sound as a problem-solving tool to be inserted into a channel or group of the mixer. The exceptions to this are primarily systems that have been equalized using Meyer Sound Lab's SIM® system, Apogee's CORREQT or other specialized FFT-based approaches. Installed systems have also depended heavily on the 1/3-octave EQ, except where diligent consultants and contractors have

THE

Digital Age

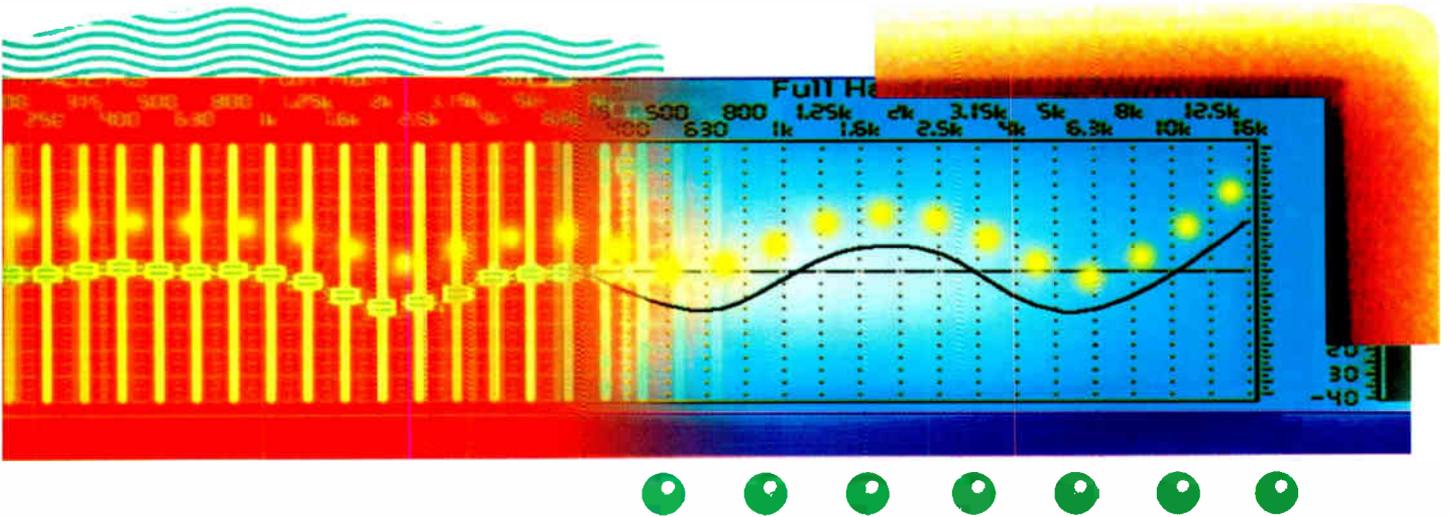
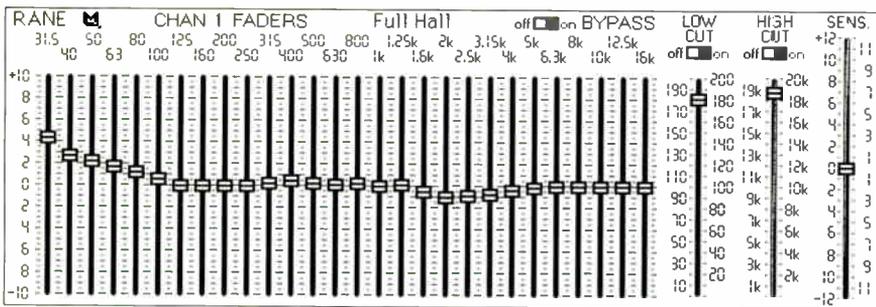
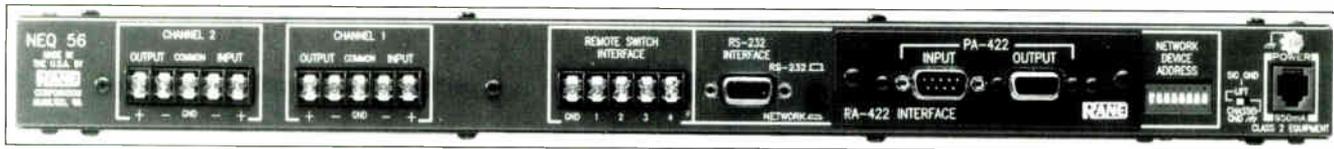
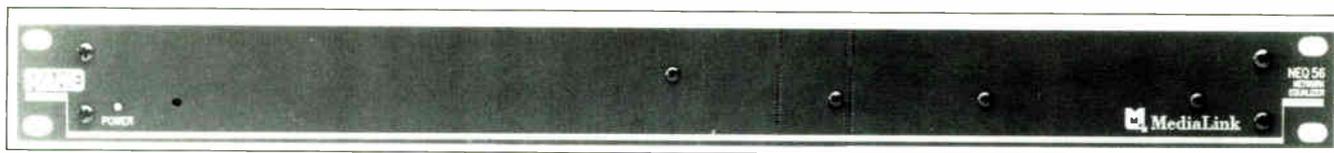


Illustration by Andrew Faulkner

used the Techron TEF, DRA Lab's MLSSA or one of the aforementioned systems to measure the resulting system response.

The graphic EQ offers the user an interface that seems to display what is being done to the amplitude of the signal across the audio band. In reality, the frequency response that results from the combination of 30 bands of EQ may differ wildly from the picture drawn by the front panel sliders, and so too may the phase response. The t.c. electronic t.c. 1128 programmable EQ, for instance, can display the resulting amplitude response of the filters, often with surprising results achieved by radical settings.

It is because we relate to the graphic EQ's front panel so well that it has become such a popular form of EQ. A conventional parametric EQ offers considerable advantage when accurately equalizing a system, but is very difficult to reset reliably or tune in the middle of a live show. The ear-training of many live sound techs is based on the 1/3-octave bands, and skilled users can quickly snap the offending band down as it starts to feed back. This knowledge can be transported between EQs, more or less, and has been regarded as a necessity for both FOH and monitor sound technicians.



The Rane Network Equalizer's blank front panel redefines the "graphic" equalizer (top; back panel also shown). All adjustments are made via computer control software which displays faders (shown above) or an editable frequency response curve.

This approach is not possible with a typical parametric, simply because there are three times as many interacting settings to adjust. It is only through the use of high-speed micro-processing that the parametric can help in live situations, but then the operator is removed from the loop, as in the case of the Sabine FBX-1200 Feedback Exterminator. The lack of direct control makes many live sound techs wary of this approach, and most will supplement a conventional parametric with a graphic if they feel that changes will need to be made on the fly.

One of the problems in using a parametric for FOH or monitor system EQ was the fact that all too often every one of the five or six bands of parametric EQ would be used when ringing out the system. When a problem occurred during the show, there wasn't any extra EQ left to deal with it. If you moved one of the current bands to fix a new ring, you may have found the old one taking off into feedback.

More parametric bands could make this a less risky endeavour. The Apogee Sound CRQ-12 began shipping this year and provides up to twelve bands of parametric EQ plus two sets of high-, low- and bandpass filters. This versatile 2-input/4-output EQ is configured to allow for some interesting possibilities and was specially designed to suit the needs of the CORREQT process developed by

Apogee's president and director of engineering Ken DeLoria. "The equalizer can cascade the parametric equalization to allow a central cluster to have short- and long-throw loudspeakers share the same 12-band parametric EQ but use different shelving and low- and highpass filtering. [This makes it possible] to correct for the low-frequency coupling of the loudspeakers and provides the high-frequency roll-off typically used on the short-throw loudspeakers," notes DeLoria.

Manufacturers have developed EQs that no longer have knobs or sliders on the front panel; in their place is a network connector on the back. Somewhere in the next room or across the country, a computer displays all the knobs and sliders in a front panel equivalent on its screen. The difference is much more dramatic than just remote control—it extends to how and why the controls are adjusted at all.

Networked EQs can be used to develop an individual curve for each loudspeaker cabinet (and typical group of cabinets), which is then stored in the EQ's memory or on disk. When the system is set up, the appropriate preset is recalled. On top of this EQ setting, a file for the typical filter settings for a particular focus is overlaid, to suit the loudspeaker's coverage—long throw, short throw, etc.—and applied to each individual

system EQ. Then the system is voiced to suit the acoustic and artistic requirements for that show by using an offset mode on the entire group of system EQs, essentially superimposing a room-compensating EQ on the pre-existing system EQ curve.

Visual feedback from the computer will allow the operator to see the resulting transfer function of all these combined EQ settings. Any additional system or individual loudspeaker EQ settings can be adjusted with the knowledge of the total result available instantly. Manufacturers could provide the equalization settings specific to their loudspeakers as a file for downloading into the EQs, sidestepping the current practice of chaining several EQs in the form of a *voicing* graphic EQ, a system EQ and a loudspeaker controller EQ.

When we equalize individual instruments, voices or an entire FOH sound system, how often are we really equalizing? It is more common to *voice* a sound source or sound system and not actually attempt to make the audio spectrum particularly equal. This approach works very well for those who have carefully trained their ears and eyes for the pitfalls of this technique. The *voicing* of the sound system is typically a search for the most aesthetically pleasing quality that a specific system can produce for a particular application. But voicing remains a difficult standard to maintain in different venues and especially between different sound-system components.

It is in voicing a sound system that the graphic equalizer became the standard. Through this easy-to-visualize approach, the equalization could be understood directly from the front panel of the equalizer. The operator could quickly develop an intuitive relationship between the graphic EQ settings and the resulting aural effect.

For many years, individuals and even a manufacturer or two have tried to convince the industry that a differ-

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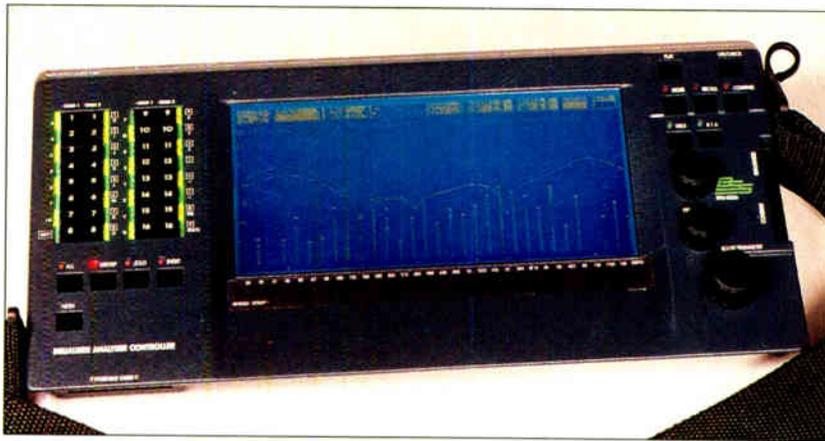


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ent approach would be advantageous to the audible result. Source Independent Measurement is the best known of these approaches and has proven itself in productions that had the budget to apply this sophisticated technique. SIM[®], however, still uses an operator making judgements and turning the knobs of a parametric EQ to

make any and all adjustments to the system response. The SIM operator is presented with a display of the amplitude and phase response of the sound system from a measurement microphone (up to 64 measurement mics can be connected), and the EQ response is inverted and overlaid onto the unequalized system response. The operator adjusts a parametric EQ and can rapidly see the results of the equalization in both amplitude and phase of the system. This system is notable for its use of program con-



BSS now offers a strap-on remote (shown above) for mobile control of their Varicurve equalizer line.

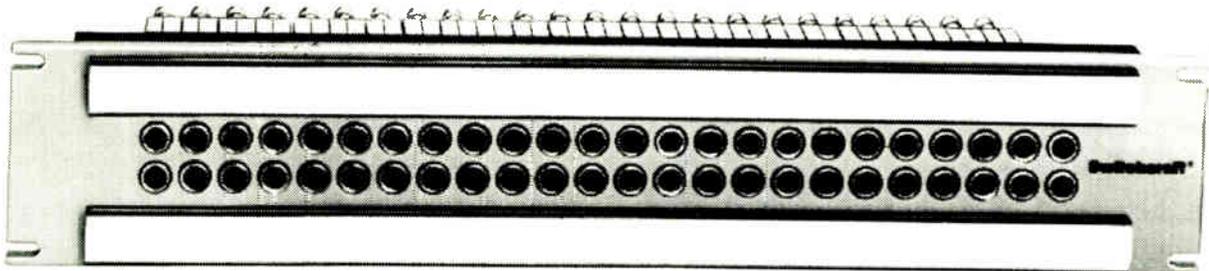
tent as a test signal and therefore its application during concerts as well as during system setup.

The AcoustaEQ software from Altec-Lansing uses the Techtron TEF-20 for measurement, teamed with a precision parametric EQ. A similar two-part computer display shows the response before and after equalization, with the EQ curve inverted over the unequalized response. AcoustaEQ uses the TEF sweep for a measurement signal and is intended for use during the setup of the system. The

latest version of the AcoustaEQ software can compensate for any delay through digital processors, which are going to become more common as system EQs and controllers.

We are now entering the age of network control. At first it may be the control of audio equipment from a central location for adjustment, reset or maintenance, but we are also very close to some other interesting possibilities. One of these is in the area of equalization. If we are able to take a sophisticated time-domain analyzer, such as the Techtron TEF, Meyer SIM II, DRA Lab's MLSSA or Hewlett-Packard HP 35665A, and use the resulting information to create a dynamic system response, perhaps then we could unify the concepts of equalization and voicing the sound system. Then the output from the measurement system, using carefully

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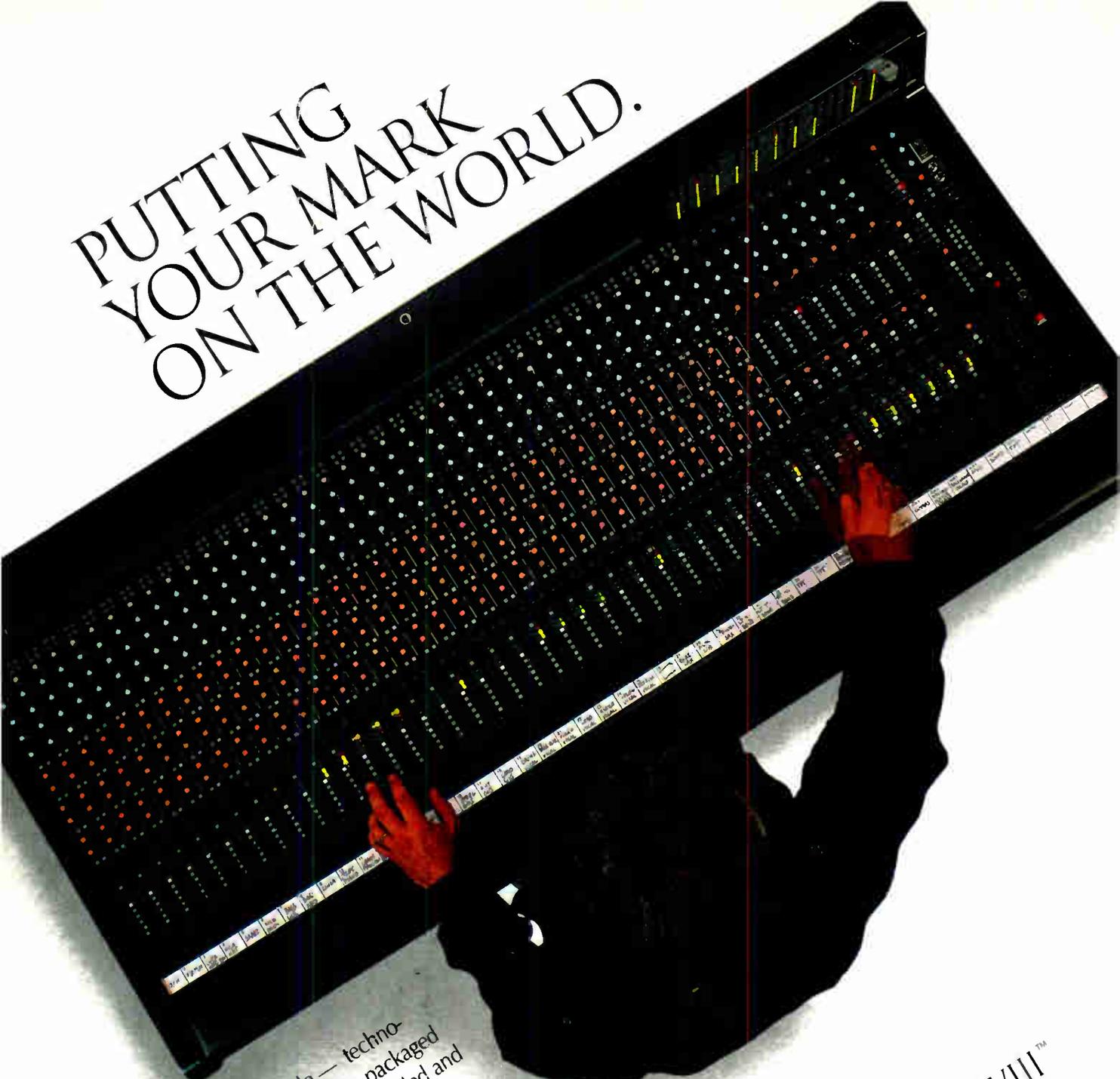
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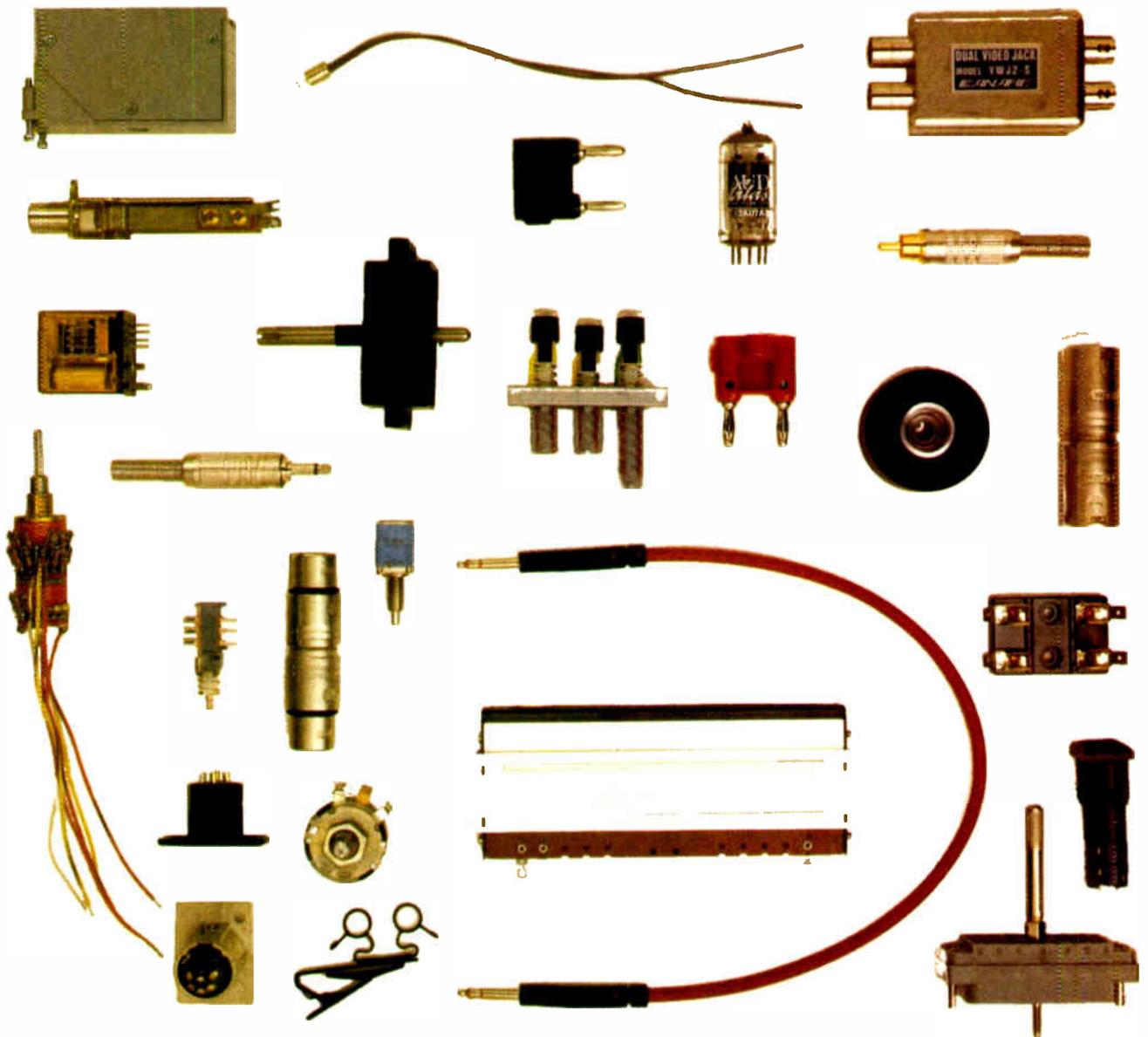
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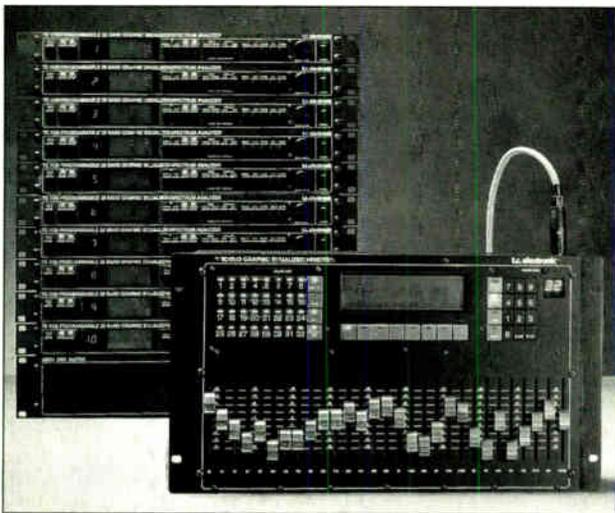
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The t.c. electronic 1128 graphic equalizer and 6032 motorized fader head (top) provide a single master controller (with programmable memory) for an entire rack of equalizers; the Sabine FBX-1200 Feedback Exterminator (below)

placed sampling microphones, will allow us to draw on the computer screen sections of the system response that we would like to have equalized and those areas in the spectrum we would like to modify to suit our aesthetic criteria. We would also be able to decide, with a little help from the instrumentation, which errors in frequency response are not worth adjusting for.

It would seem that using an analyzer to communicate the required equalization curve to an EQ should be pretty straightforward. Unfortunately, the software to make the appropriate decisions on how accurately the EQ tracks the analyzer's output is not as simple to design as it seems. Each measurement location in a room must be intelligently correlated to other locations to derive a signature of the loudspeaker's response in the room. Even when you are only concerned with the response of the direct sound from the loudspeaker, multiple measurement positions may be required. Frequency response will vary across the coverage area of even the most well-behaved loudspeaker system. It takes an experienced operator to understand which measurement positions best represent the

majority of the audience and to weigh the measurements in this respect. It also requires an understanding of which aberrations in the measured response are suitable for correction through equalization.

BSS Audio Ltd. has further developed its Varicurve™ digitally controlled analog parametric EQ, enhancing its ability to automate the equalization process through the facilities of the new FCS-900 remote controller. The Varicurve includes an RTA that can be used to create equalization curves with either six (two-channel mode) or 12 (one-channel mode) bands of parametric equalization. The

output of the FCS-960 EQ/analyzer's RTA is converted to 210 frequency points, and the software sets the parametric filters to create an inverse of the RTA data. If the curves are too complex, a smoothing algorithm is applied to allow the filters to create the best match in response while ignoring response ripples of less than 1 dB. The extreme ends of the spectrum are also ignored when they fall below -3 dB, to prevent the EQ from creating potentially destructive boosts at those frequencies.

The user may select from a series of preset response target curves or create new ones. The first time the system is used for a particular application, the user can start with a preset EQ curve and then manually voice the system to suit their requirements. An RTA measurement is then taken of the resulting response of the system and stored in one of 50 memory locations. This response can then be used as the target response the next time out. This saves considerable time in setting up the filters by hand while still allowing for the fact that a flat response from a sound system is not always wanted or even possible when using an RTA for measurement. But returning the acoustic response of the system to a

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known setting is obviously more than just recalling an EQ setting. BSS has chosen to use the RTA for measurement, as it is the standard tool for most sound system operators and provides a familiar tool for reference. The future may see this approach expanded to include more sophisticated time-domain analyzers that can distinguish between the direct arrival of sound from the loudspeaker and acoustic reflections within the venue.

Ken DeLoria related to me a classic story of misuse of a measurement system: "There was a guy walking around this church with an RTA and he would say, 'Look, it's 3 dB down in these seats at 500 Hz.' He would then throw up a horn and build a filter network to just put the 500 Hz band through the horn, focusing it on those seats. He peppered the church with loudspeakers just to get the RTA to read a perfectly flat response at every seat in the church, and yet you couldn't understand a word that anyone said through the sound system! This guy was totally ignoring not just the phase response of the system but also gross time aberrations caused by all these multiple sources."

Another example of the uninformed use of real-time analyzers is the attempt to equalize a dip in the response caused by two loudspeakers covering the same area in the same frequency band. The 6dB drop at 500 Hz on the RTA display may actually be a 30dB cancellation caused by the difference in arrival time of the sound from each loudspeaker that happens to be at 527 Hz. When 500 Hz is boosted on a 1/3-octave graphic EQ, the cancellation at 527 Hz does not change, but the frequencies on either side of it will be boosted to give an M shape to the actual response. This will be audible as too much boost at 500 Hz, even though the RTA will show the response returning to flat. This is because the RTA is looking at the acoustic energy between 440 and 565 Hz, and the peaks created on each side of the null will eventually be great enough to give an equal amount of energy to the 500Hz band. Unfortunately, the cancellation at 527 Hz is at exactly the same relative level as before the equalization was applied.

Equalization manufacturers have tried to overcome this by creating a method of measurement that will compensate for acoustic problems in the venue. t.c. electronic, for example, suggests to the users of its t.c. 1128

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programmable EQ/analyzer that the microphone be placed in four positions (center, halfway to stage left extreme, halfway between center position and rear extreme, and halfway to stage right extreme of the loudspeaker system's coverage pattern) to derive a more accurate measured response of the system. Each position is weighted statistically, and the resulting response is used to create an equalization curve. This method still requires, as always, that the person operating the system have a good understanding of the system's capabilities, its configuration and the pitfalls of 1/3-octave analysis and equalization.

A demonstration of precise equalization and communication between measurement and equalization systems was given at the recent NSCA Conference in Orlando, Florida. The Techron TEF was used to measure a loudspeaker, and then the measurement data (amplitude and phase) was saved to a disk. The disk was then inserted into another computer and the TEF display was overlaid onto the Innovative Electronics Design UDAPS 2000 series digital parametric EQ display. The EQ was adjusted to match the inverse of the measured response of the loudspeaker on those sections that were determined to be equalizable. The resulting curve was then built by the EQ DSP.

The IED 2000 system includes a choice of cards for eight channels of 9-band, two channels of 36-band or one channel of 72 bands of parametric EQ that can be combined into very large system configurations. The system is capable of displaying the amplitude and phase of the EQ's resulting response and can be adjusted on-screen until a suitable curve has been finished, before actually making a change in the current system response. This allows the user to experiment with different settings, examine the transfer function (combining effects) of the filters and then decide whether to insert the result into the audio chain or not, without affecting the current filter setting of the UDAPS EQ.

The process of communicating measurements from the TEF analyzer to the UDAPS system is already well on the way, but the software to directly derive equalization curves from the measurements is still being developed. John Johnson, VP of software engineering for IED, says, "We want to develop more experience with the

type of solutions that are used in real applications before going too far with automating the equalization. The automation should help the user to achieve appropriate solutions, but they must remain in control of the process." It is only by carefully observing the process experienced users follow that a form of automation can be designed that actually assists rather than hinders them.

Sophisticated analysis equipment greatly assists in determining which errors in the sound system can be fixed using EQ and which require mechanical measures such as changes

in loudspeaker placement or absorption of problematic room reflections. Learning to differentiate between the two and providing the most appropriate solution will result in significant improvements in the sound the audience pays to hear. The assistance of computers to speed up the equalization process promises to leave more time to deal with acoustical problems and the aesthetic requirements of the production. ●

Wade McGregor is an electro-acoustic design consultant for Relentless Recording in Calgary, Canada.

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Mix Position & Room Acoustics

BY DAVID (RUDY) TRUBITT

It goes without saying that your mix position has an effect on how you mix a show. But how does one go about making this crucial choice? The subject was covered at Synergetic Audio Concepts' (Syn-Aud-Con) 1993 Live Sound Reinforcement Workshop. Following is a distillation of the workshop staff's advice on this important topic.

Ideally, you should be able to choose the location of your house mix position. In this case, common sense dictates choosing a spot representative of a large part of your audience. Although a point directly between the left and right speaker arrays maximizes one's stereo imaging, it is often not a wise choice.

"With all conventional sound systems," says Showco's M.L. Procise,



"there is an aberration we all live with. When you have two sources in the room, they have to sum somewhere. In the center of the room, you get an additional 3-5dB peak in the low bass of the system."

"You have this thing that we call 'Power Alley,'" explains Audio Ana-

lysts' Albert Leccese. "When you have wavefronts coming from each side of the stage, at low frequencies you're going to have a peak right down the middle."

"When you have this 5dB peak in the low bass," explains Procise, "it's difficult to make sure everybody else

in the room is getting good bass response, since you're being inundated with bass. What we try to do instead is move the console slightly off the center line or in front of one speaker stack, so that we won't have to be subject to that summation in the center."

Note that where there's a peak, a null will be lurking nearby. "Off to either side of the center line," warns Leccese, "you're going to have a narrow area that's going to have no bass in it. That's a null at which certain frequencies are going to cancel. If you happen to choose that spot for your mix position, then you're going to be

first reflection from the ceiling or the side wall is [focused]." In some cases, these reflections can be anticipated by visually scanning the surfaces of a room. Imagining walls as mirrors can help, as sound and light reflect in similar ways.

However, a simple visual inspection is often inadequate in more complicated spaces. Leccese suggests another approach: "Early in the morning, there's a bunch of activity at the stage end of the room. There are boxes rolling around, there are people banging and clanging, rigging is going up—all kinds of noise is originating from the stage area. [While this is happening,] I like to walk around the hall and listen. If I'm in a certain place and my eyes tell me there's a forklift over here, but my ears tell me it's over there, [where I'm standing is] not where I'm going to put my mix position, because at that particular spot there is a nasty reflection coming from the approximate location of where the P.A.'s going to be."

Of course, this selection process assumes that you have a say in the matter. "Sometimes you don't have a choice where you have to set up the console," warns Randy Stiegmeister of Maryland Sound Industries. "You might go into a theater and end up in the back row, too close to the P.A., or clear off to one side." What then? "We live in a world of compromise in audio," says Procise. "You have to do the best you can from wherever you have to sit. You might be sitting in the back, but you should walk the room and know what it sounds like everywhere else—then you can live with the compromise."

"You basically have to do a mental correction factor," adds Leccese. "This is what a particular instrument sounds like when I'm over here. When I go over there, it sounds like that. Therefore, there's a correction factor that you can apply for each and every instrument. After you've worked with a band in a particular place for a while, you get a pretty good idea of what it should sound like [in different parts of the room]."

Even if you have a free hand in choosing your mix position, audience members will be spread throughout the acoustical anomalies of the room. Therefore, "it's your duty to walk the room during the day and check out the system," urges Stiegmeister. "Don't sit on your butt and let somebody else tell you what's happening."

“We live in a world of compromise in audio. You have to do the best you can

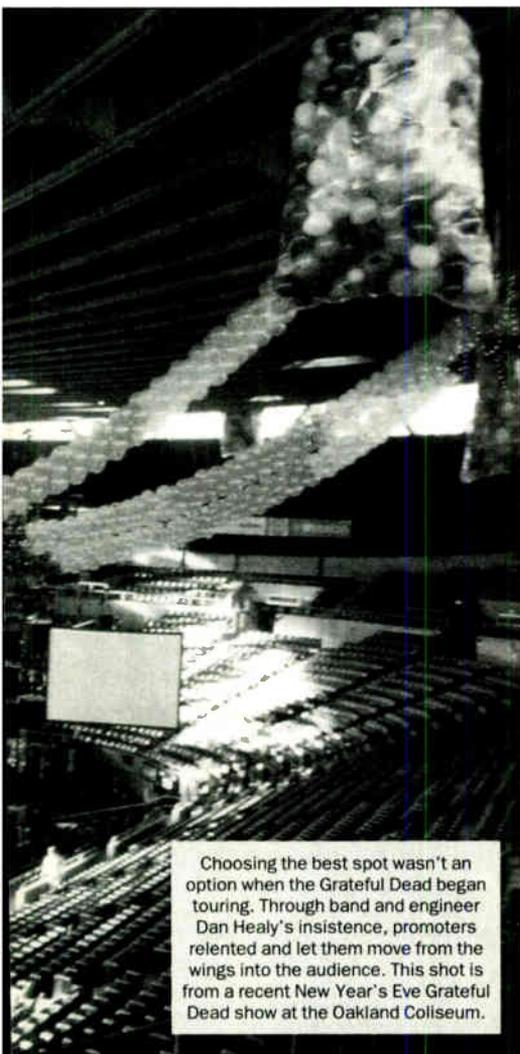
from wherever you sit. You might be in the back, but you should walk the room and know what it sounds like everywhere—then you can live with the compromise.”

—M.L. Procise, Showco

Remember that your mix station itself can color your perceptions. If you're mixing from a riser, obviously your ear level will be well above the audience around you. Furthermore, the space *under* a riser can create a resonant cavity, creating low-end anomalies. And, adds Stiegmeister, "You might have some bass-trapping created by the little pit you create with your console and racks. Maybe if you move your racks a little bit you'll eliminate some reflections that are only coming to you and nobody else. So there are lots of little physical things that can affect your space."

Finally, the ability to mentally project yourself into the sound-space of other parts of the room is equally important for mixing monitors, according to freelance monitor engineer Randy Wietzel (who was recently out with Michael Jackson). "Don't just stand behind the console. It's real important to walk the stage, stand in everybody's area and listen to what they're hearing. You have to remember the sounds in each stage area and correct for those problems, not for what you're hearing [from behind the console]. It's really important that you memorize what the stage sounds like, so that when you make your adjustments, you can 'hear' what's happening on stage."

So bear this in mind next time you set up your mix position. Whether you have a choice in the location or just the option to shift a rack or two, remember that hearing what's going on, as well as being able to imagine the sound in various parts of the audience, is the first step towards a successful mix. ●



Choosing the best spot wasn't an option when the Grateful Dead began touring. Through band and engineer Dan Healy's insistence, promoters relented and let them move from the wings into the audience. This shot is from a recent New Year's Eve Grateful Dead show at the Oakland Coliseum.

mixing bass-heavy, as opposed to bass-light."

Besides anomalies in frequency response at various points in the room, one should also be aware of strong reflections. "Sometimes," continues Leccese, "you may end up putting the mix position where the

Touring With Acoustic Pianos

by Dave Lawler

Illustration by Gary Baseman

The piano only seems to have been around since the dawn of mankind.

In the pre-TV, pre-telephone, pre-life-as-we-know-it era, the piano was perhaps the major source of family (and tavern) entertainment. Stagecoaches and trains transported the instruments across prairies, mountains and deserts, just so that gold rush saloons could have more “cultural evenings.” A generation or two later, the grand piano was on the road again, touring with such artists as Carole King, Elton John and Keith Emerson, among others. ♦ Although the piano always gave the concert stage a certain elegance, the rigors of size, weight, road casing, tuning, acoustic isolation, feedback, and miking problems soon became an unpleasant fact of life for touring personnel. (I know this well, for in the '70s and early '80s I was a frustrated touring upright-piano tuner/player, with a broken back and blue fingernails from trying to get any gain out of that God-forsaken instrument!) ♦ Then came the invention of the digital piano. Although many previous attempts to create an electronic piano were shunned by purists, the digital piano opened up an era where the player could lift the instrument, be in tune at all times (at no expense), and salvage his or her fingers while matching the volume of the guitars. ♦ However, despite ongoing improvements in the quality of digital sampling, the novelty of these advantages has worn off for some. Many players noticed that, no matter how much money they spent, there was still something missing. Electronically



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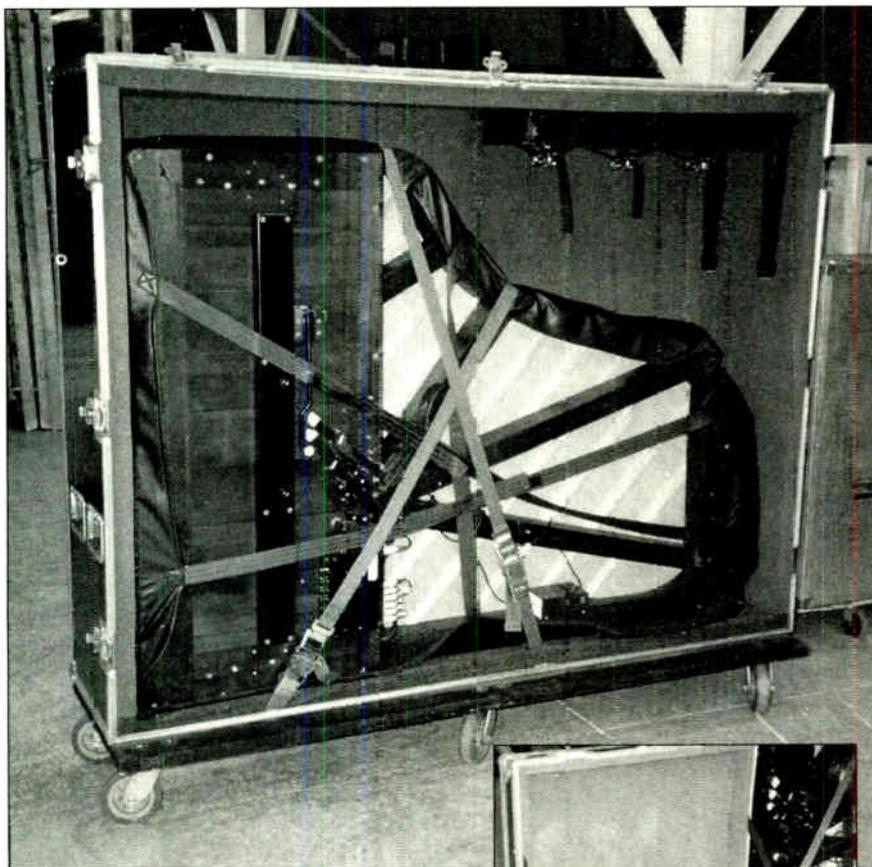
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The author's grand packed for travel, legs and lyre are stowed separately (inset).

re-creating, say, a Steinway B is a very complicated project. The acoustic characteristics of a piano are very difficult to sample, especially when long decay times without sample looping are desired. It is also very difficult to re-create a believable wooden-key grand piano action. So it's not too surprising that we've started to see a resurgence of the acoustic piano in the touring market.

TOURING CONSIDERATIONS

The instrument I own and tour with is a Yamaha C5D 6'6" medium-size grand. It is big enough to be a serious instrument and look like a substantial piano onstage, while still small enough to fit sideways in a truck and to be moved without the Roman Army. The instrument travels on its side in one large Anvil Case, while the legs and lyre are packed separately in a smaller case (see photo). It can be removed from the case and set up with just three people. Also, one thing I have always disliked about digital pianos is that they jiggle and move around when you play them; a 1,100-pound piano has a lot of majesty and doesn't move much.

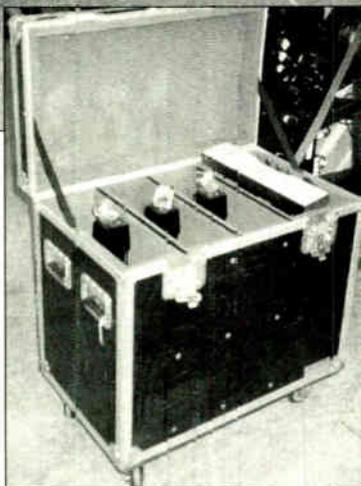


PHOTO BY THE AIR BOLDSHAW

TUNING

On tour, I use the Yamaha PT100 electronic tuner, which has ended the days of interrupting stage setup to tune the piano (and thus cut down union bills). This unit allows you to touch up the piano each day without re-tuning the entire instrument, which saves a lot of wear and tear on the pin block. A switch that moves the tuner's pitch up or down in half-step increments mounts on the tuning hammer, allowing the process to move at remarkable speed (see photo on the next page). The *temper* (relationship of pitches from note to note) and *sharp-ening* or *stretch tuning* of the top octaves (where higher octaves are tuned slightly higher in pitch than exact multiples of the frequencies of lower octaves) can be put into mem-

ory and recalled to the preference of each artist. With this tuner and a pick-up system (described shortly), I have even tuned wearing headphones during the opening act, thus leaving room for the other facets of my job during the day.

MAINTENANCE (DON'T TRY THIS AT HOME!)

The touring world has long been fearful of piano maintenance. Many tours have traveled with their own piano, using a different tuner in each city to perform necessary maintenance. Eventually, the result is usually a butchered piano. However, the biggest mistake made by many artists is touring with a piano that is much too old to withstand the rigors of touring. Even a full-time tech can work eight hours a day trying to keep such a piano alive. I believe that piano duties should take an average of no more than 1-1/2 hours per day, including setup, strike, tuning and maintenance. If it's taking significantly longer, then you've got the wrong piano or the artist is walking on the strings during the show!

AUDIO AND THE INSTRUMENT

Before discussing the audio and mixing aspects of piano sound reinforcement, I should mention the one process that affects an instrument's sound more than anything else: *regulation*. Many people don't understand that you are not stuck with the way a piano sounds (and plays) as it comes from the factory, or even after considerable use. As with a guitar, you can alter some of the physics of the instrument, as well as the way the strings cross the bridge, etc. All of these crafty techniques, which require special, drastically overpriced tools absolutely useless for anything else, fall under the heading of regulation.

With pianos, the most significant procedure is action placement (movement of the hammers forward and backward along the string) and hammer shaping. Obviously, classical music will call for a much mellower tone than a Bruce Hornsby concert. A concert piano in the context of a band, especially in large venues, must be significantly brighter than a solo classical concert. Therefore, one should choose a piano that suits the character of the music that your artist is going to play. Personally, I like a piano that is regulated brightly enough to shoot birds out of the sky! Audio-wise, it is

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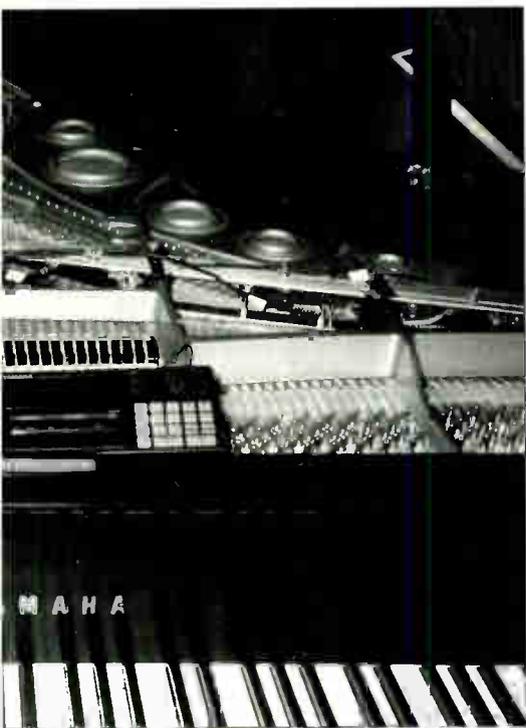
The complexity of the piano's sound presents many possibilities for miking styles. This is further compounded by the various configurations of the lid: totally closed, first section folded open, music rack in or out, short stick, lid fully open or lid off entirely. Each method will create a different set of standing waves between the soundboard and the lid (or lack thereof), altering the apparent tone and/or resonances of the instrument.

For starters, as soon as you are going to amplify a piano with standard microphones, you are going to have an isolation problem. The amount of isolation necessary depends on the ambient dB level onstage and how close other instruments and amplifiers are to the piano. In a folk trio format, you can get away with a short-stick lid and no isolation, while during a Bryan Adams concert, you would have to do everything possible to isolate the piano.

Maximum isolation can be attained as follows: First, remove the music rack and completely close the lid. A piano lid actually has a quarter-inch crack, which can be filled by applying one-by-one-quarter-inch black win-

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dow weather-stripping. Products with a peel-off adhesive on one side are appropriate for this task. Next, four-inch Sonex or other acoustic foam should be cut and inserted into the open spaces between the braces on the underside of the piano, to isolate the soundboard from other amplifiers and stage monitors. Finally, the legs should be lifted from the floor with acoustic isolators, which keep sub-sonic vibration from entering the piano through the legs.

Miking style will depend on the artist. A solo performer may play with the lid open and require standard large-diaphragm condenser mics. A trio or jazz group may play with the lid on short-stick; use PZMs and/or AKG 460s or 414s. As the band gets louder, the lid should be closed, with the mics mounted inside the piano on drum-mic-type clamps or tape hammocks.

Another type of amplification method is the C-Ducer, which has been very popular in the last few years. This is actually a contact pickup and does very well mounted under the Sonex foam on the soundboard. Single or multiple units have been used and exhibit improved signal-to-leakage ratio, higher feedback thresholds and fairly decent tone.

My personal choice is the Helpin-still six-bar pickup system, originally designed back in the '70s. The original preamp was a passive toy with very poor gain, frequency response and

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sonic quality. This unit has been replaced by a unit custom-built by Schubert Systems Group of North Hollywood, Calif., with six independent active gain, EQ and pan channels, as well as a headphone preamp for tuning. The stereo signal leaves the unit at an almost line-level balanced XLR! Each channel for the wound strings has a higher gain stage, as the pickup bars must be further from the strings to allow for increased amplitude of the lower notes. The preamp and its power supply can be permanently mounted under the piano, with a hole drilled through the frame for the pickup cable harness to pass through.

In 1992, I toured the world with k.d. lang and the Schubert piano system, using no isolation techniques and no mics, with the front part of the lid open. The stereo signal was processed with an Aphex Exciter and had an EQ cut of approximately 6 dB at 400 Hz (with about a half-octave bandwidth). Some artists have requested mics to augment the Schubert system, which necessitates some of the isolation techniques discussed above.

Over the years I have seen many configurations of miking and pickups, sometimes using up to eight mixer channels and lots of EQ and notch filters, with results that don't always merit the effort. A simpler system has much less phase interaction, and will usually have better octave balance than many miking systems.

Lately, the newest rage is the MIDI piano. A MIDI unit can be installed in a grand piano to drive a module that augments the acoustic sound. The module may also generate string sounds or any other patches, triggered from the velocity- and pressure-sensitive piano keyboard. This makes it very easy for the pianist to play many keyboard parts without the stage look of a multi-keyboardist. The MIDI unit I have found to be most reliable is the Gulbransen KS20, which can be installed in any grand.

In the last few years we have also seen a resurgence of the acoustic grand piano (and its sidekick, the Hammond B3) on concert stages, which suggests that musical styles are cyclic. Is it really true that we always end up going back to where we came from? ●

Audio engineer, stage manager and piano technician Dave Lawler welcomes your favorite piano pickup or miking techniques; write him in care of Mix magazine.

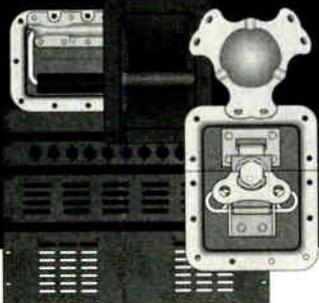
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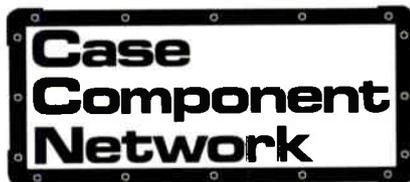
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THERE WAS A TIME, NOT TOO LONG ago, when the circus was truly a spectacle to behold, and watching a black-and-white film played through a mono sound system constituted satisfying entertainment. These

days, the idea of seeing a parade or watching a magician performing magic acts seems quaint to a public that has an insatiable appetite for new thrills.

One person who helped cultivate that collective appetite is filmmaker George Lucas, who for the last 20 years has dazzled audiences with movies that have set precedents for special effects and new applications of cinema technology.

George Lucas' Super Live Adventure

BY RICK CLARK

To bring attention to his body of work, Kenneth Feld (producer of Ringling Bros. and Barnum & Bailey Circus, Walt Disney's *World On Ice* and the Siegfried & Roy magic show at the Mirage in Las Vegas) has put together *George Lucas' Super Live Adventure*, a \$25 million multimedia event that intersperses footage from the movies *Willow*, *American Graffiti*, *Tucker* and the *Star Wars* and *Indiana Jones* trilogies with live action, music, lasers, pyrotechnics, illusions, state-of-the-art lighting and an elaborate sound system.

Feld, the show's executive producer, brought on sound designer Jonathan Deans to help realize the extravaganza's sonic vision. Deans, whose sound design background has ranged from working on numerous operas to events such



Scenes from *Lucas' Super Live* production rehearsals.



PHOTOS: GUY LAWSON

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as *Cirque Du Soleil* and Siegfried & Roy, chose Francois Bergeron as his associate designer.

Deans' previous projects involved focusing the throw of an actor's live voice back onto the actor, rather than forcing the audience to catch the sung or spoken words bouncing off the walls and proscenium. He achieved this through elaborate time-aligned multispeaker setups.

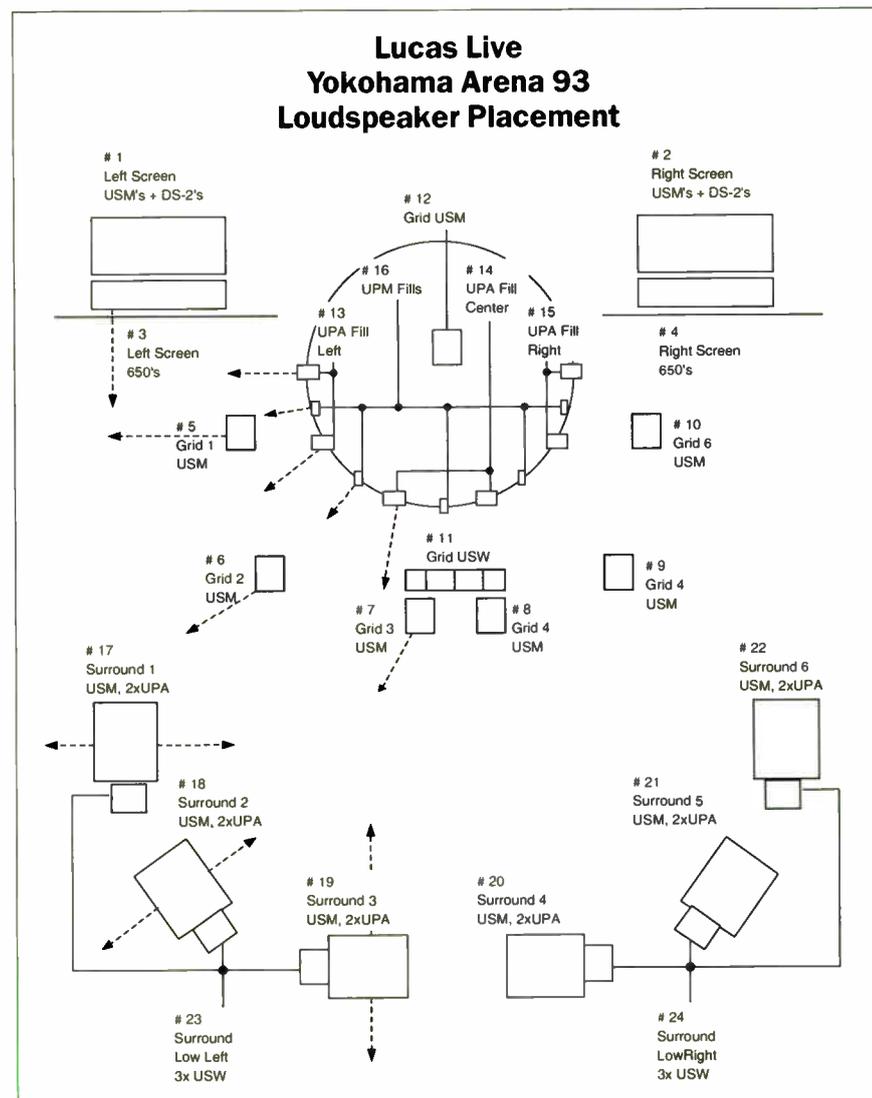
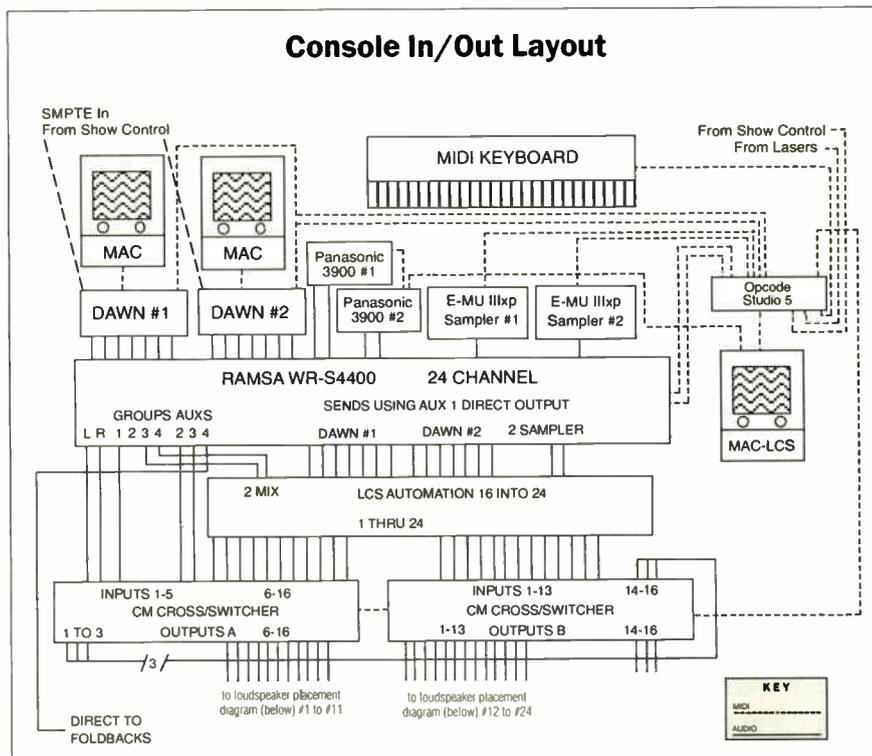
Deans also applied this experience for *Lucas' Super Live Adventure*. The only difference was that this show was entirely pre-recorded. To create the illusion that the sound truly originated from the performers and props, Deans used 76 individual Meyer Sound speaker enclosures arranged in 24 groups around the arena. Crest amplifiers were used throughout.

"The system is made up from various Meyer products, which range from the 650-R2 subwoofers, DS-2 mid-bass, USM-1s, USW-1s, UPA-1Cs, UPM-1s and UM-1Cs applied in different configurations," Deans explains. "We have a very extreme left/right system, as you look at the stage. The edge of the circular 60-foot diameter stage itself is loaded with speakers, as well as a flown grid, which is 40 feet from the stage. Out into the auditorium, 100 feet away from the grid, are clusters or pods of what everyone is calling 'surround sound' speakers. With this setup, we are able to fly sound from the [movie] screen up over the grid, or whip across the stage, around the arena and then back again.

"There are some high-powered USM-1 speakers pointing directly down on the stage, which makes us look where the performers are talking and not somewhere else," Deans continues. "The whole system is time-aligned with BSS 804 delay units and equalized with BSS 926 Varicurves."

Most of the show's sound effects and all of the dialog are accessed in real time by MIDI. A special hardware/software system, called LCS (for Level Control System), was used to coordinate everything. It was created by Deans with Steve Ellison and Carl Malone, both of whom worked with Mackie Designs to co-develop the new OTTO-1604 automation system.

"The LCS is a new Macintosh-based automation system for mixing live sound," Deans says. "We have



Production drawings show audio and MIDI routing at the FOH (top) and loudspeaker placement in the arena (bottom).

DRAWINGS COURTESY REAL TIME AUDIO AND MEYER SOUND LABS

"Show control evolved in the '50s using modified teletype machines for controlling special effects in theme park attractions," explains Golder's Galen Brandt. "Starting in the '60s, you could program a show on programmable logic controllers and let it run itself.

"The situation here is completely different," Brandt continues. "This show is part drama, part musical comedy, part circus act and part theme park. It requires a show-control system that can orchestrate a dozen disciplines, guarantee life-safety conditions for the performers and the crew, and allow the human operator to respond on the fly to the nightly variations in live theater."

At the heart of the system is Richmond Sound Design's Stage Manager 3000 software, with some proprietary Golder software add-ons running on a souped-up Commodore Amiga computer. MIDI Show Control has been a formal part of the MIDI specification since 1991. "But," explains Damon Wooten, Golder's president, "it's new for a lot of the specialty disciplines. Some systems accepted MIDI, but the rest had to be modified."

The Golder team's approach was to construct a large "glue box" with MIDI Show Control input and numerous types of electrical outputs to operate each device's existing controls (i.e., 120 volts AC, 12 or 24 volts DC or TTL logic-levels). "For example, with fog machines," explains Wooten, "we bring the AC power out to a relay and then back. We might do that with two or three different controls—power, heat and the fan or pump—so it's really not the fog machine that has MIDI show control, it's our glue box."

Standard MSC messages are used to operate the glue box. Sending a "fog machine on" message actually has that result, even though the glue box just pulls in a relay. "We have followed the spec very closely, to kind of make a point," says Wooten. "We want to make sure what we do can be used later for reference, and not just as a one-off."

A wide variety of gear is controlled by the system, including sound effects (via MIDI note messages sent to the audio system), four types of lights, hydraulics, compressed air, motors and a robot, not to mention the syn-

chronized bullet and laser pyro hits onstage, the costumes and a huge "flying," laser-shooting replica of the Millennium Falcon spaceship from *Star Wars*.

The system controls all these elements through many individual cue lists. Each cue contains a number (sometimes in the hundreds) of individual actions associated with a particular scene. Once a cue list is activated, these actions may be triggered manually, by time code or by other cues. The system is very fast, with a response time of about 8 milliseconds from "go" to execution.

Although the possibilities for creative control are what excite people most, safety is perhaps the system's most important aspect. For redundancy, there are actually two separate Amigas running simultaneously, each with the complete show in RAM. If one fails for any reason, the other can be switched online instantly, even mid-cue. "You try to imagine what can possibly go wrong," Wooten ponders. "What if the actor does this? What if the tiger does that? And, of course, when you think you've figured it out, the actors come out and do something completely unexpected, and you go back to the drawing board."

During dangerous parts of the show, several people observe the action while holding down a dead man's switch. "If [any operator] removes their hand from the button," Wooten explains, "you disable the gag or prop from operating. The safety side of the system must be failsafe. If an actor is in position 30 seconds ahead of time, things won't happen. If a prop is moving, it has to pass through a certain position and trigger the system to invoke a cue list specific to the next sequence. If [that doesn't happen], the cue list never opens and the contents never fire."

Even though MSC is in its embryonic stages, shows like this clearly show its potential. Wooten is especially grateful to the man without whom, in all probability, the standard wouldn't exist. "Charlie Richmond [of Richmond Sound Design, where Wooten worked for six years] is the one who badgered everybody to accept MIDI Show Control as a standard," Wooten concludes. "I think he deserves a tip of the hat for that. He is a true theater person, and he's really the one that lit the flame in me."—*Rudy Trubitt*

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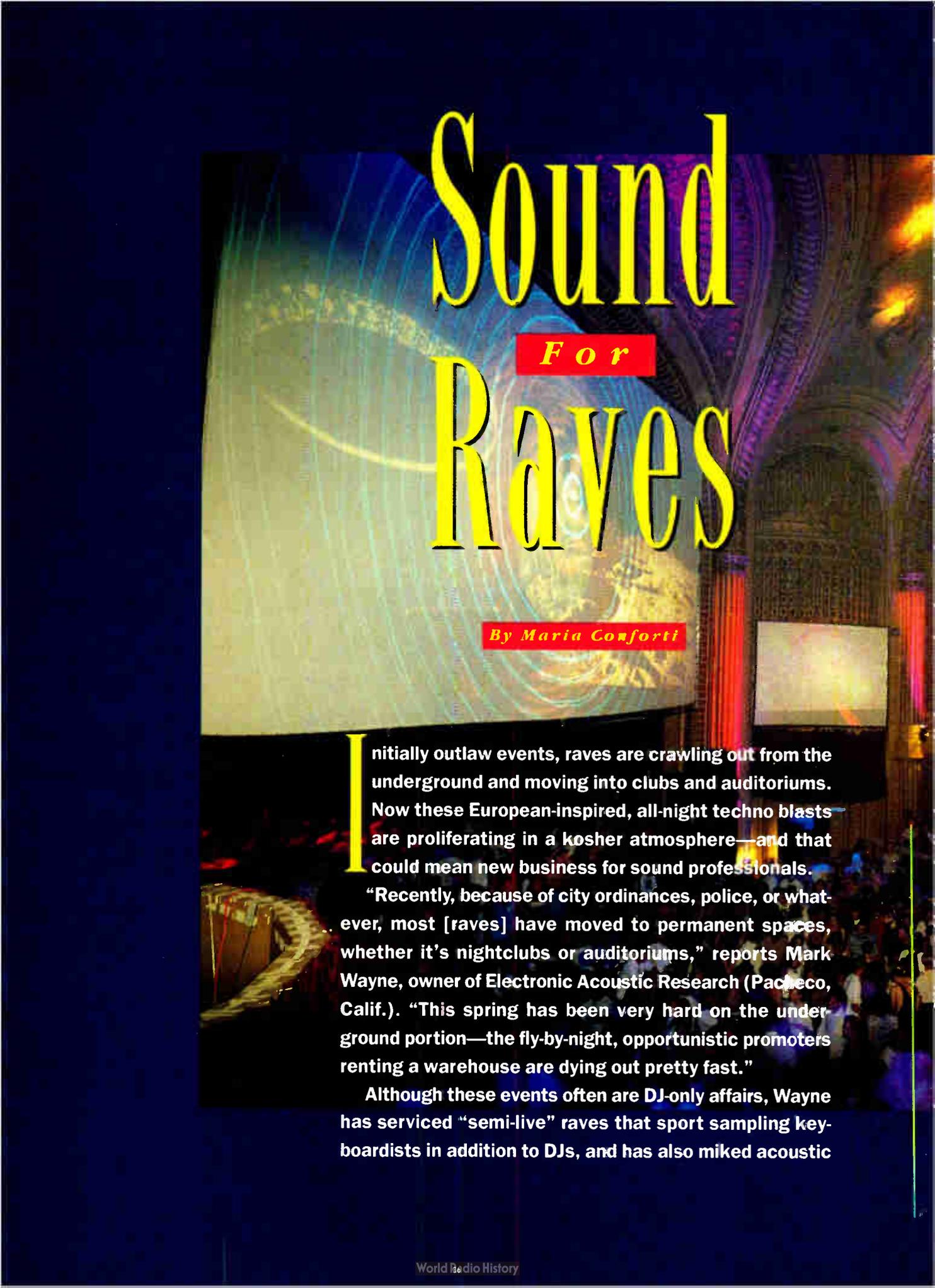
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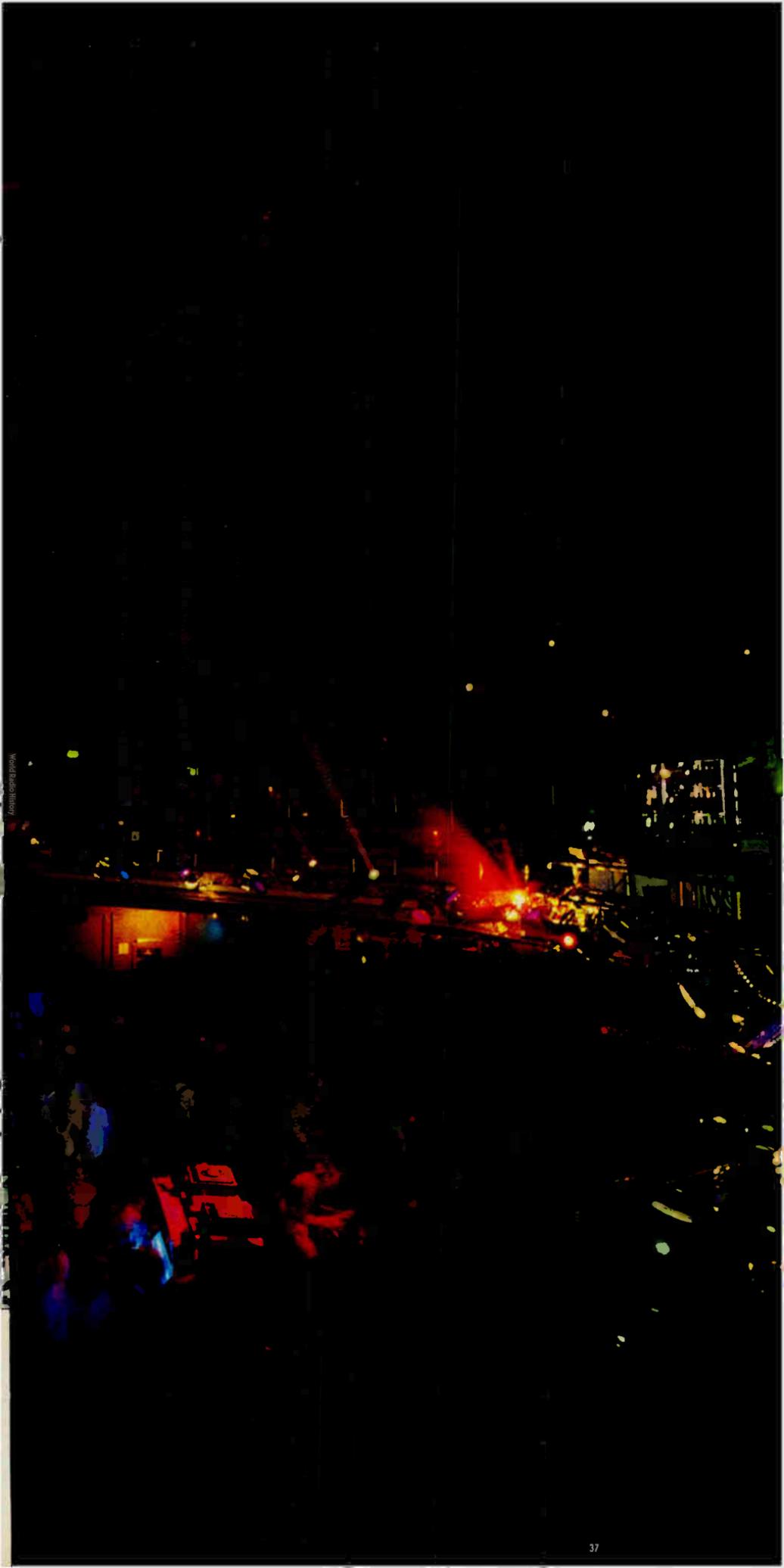
Sound *For* Raves

By Maria Conforti

Initially outlaw events, raves are crawling out from the underground and moving into clubs and auditoriums. Now these European-inspired, all-night techno blasts are proliferating in a kosher atmosphere—and that could mean new business for sound professionals.

“Recently, because of city ordinances, police, or whatever, most [raves] have moved to permanent spaces, whether it’s nightclubs or auditoriums,” reports Mark Wayne, owner of Electronic Acoustic Research (Pacheco, Calif.). “This spring has been very hard on the underground portion—the fly-by-night, opportunistic promoters renting a warehouse are dying out pretty fast.”

Although these events often are DJ-only affairs, Wayne has serviced “semi-live” raves that sport sampling keyboardists in addition to DJs, and has also miked acoustic



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percussion for some events. Nevertheless, he observes, "About 80 percent of the time, you're just hooking into a DJ/mixer."

However, live music within a rave is becoming more common. This summer, the Divine Playground "touring rave" will feature live acts (specifics were unavailable at press time) as well as DJs, and will also host side attractions in the vein of the Lollapalooza tours. DP will play eight to 10 major markets, including San Francisco, Los Angeles, Dallas, Chicago, Detroit, Atlanta and Washington, DC. "We have places in each city that, in most cases, there's never been a show there before," says Phillip Blaine, co-owner of the L.A.-based Kingfish Entertainment promotion company and the Divine Playground touring company. He adds that area promoters will contract local sound companies for each event.

"A lot of the rave promoters use mobile sound systems that aren't really set up for concerts at all; they're set up for dances," observes Blaine. "I hire concert sound companies and just get them to bring in more bass than usual—I want the clarity of a concert system with the additional bass to make sure that the sound is full enough. If you don't tell that to the concert sound company, they'll just bring in their stuff, which is very good in quality but not very strong on the low end. As long as the bass is adequate enough to where you can feel it in your gut, then that's where it's at."

"One of the keys to a good rave is sensory overload, and humongous amounts of bass power is required, like you've never heard at any rock show," agrees Ken Feldman, promoter for Cozmic 7 Productions (Austin, TX). "People expect to be pushed around, literally, by the music. High end is pretty easy to come by, but good, solid bass is the trick."

Rave clients are divided into two camps, says Wayne: "The ones that tend to go for the tribal beat are interested more in lows than midrange. There are other promoters that want a very hi-fi sound. It certainly doesn't hurt to have a system that does everything."

At least one contact for this article noticed regional sound preferences. Mike "The Shredder" Gutierrez of Shredder Sound Systems and Atlas Sound and Lighting (La Mirada, Calif.) does about four raves per weekend,

two in Los Angeles and two in San Francisco. He says that L.A. ravers are strictly bass-heads, whereas in San Francisco, "they like heavy bass, but the music they play is more house-type with vocals. They want to be able to hear [vocals] on the same level that they do the bass, so I have to readjust my sound system."

Gutierrez uses four bass cabinets for every mid/high box in L.A. and two bass cabinets for every mid/high box in San Francisco. There are several systems in Shredder Sound's arsenal for both club (two-way) and arena (three- and four-way) applications. "I use mostly JBL components, all Crest amplifiers, practically all Brooks-Sirens and JBL/UREI processing" and a Yamaha digital crossover, Gutierrez says. For big jobs, he has a custom-built JBL system and a new TAD system, and he uses Intersonics Bass Tech 7s for anyone who wants to pay for them. "As far as trouble-shooting, the systems are semi-standard, so one drive rack will work for the same systems," he adds. "The only thing that we change around is the speaker configuration, so I consider the key element of my system to be my processing and my amplifiers." Each rack can power either one block or one wall in a large system, or a small club sound system.

Wayne custom-built his two systems. His M-1000 system is a one-boxer with two JBL 2226s, two Electro-Voice EL10s and one JBL 2450 on a custom-made EAR horn. "I'll use anywhere between 16 and 32 of those, depending on the size of the event," he says, adding that a Yamaha D2040 digital crossover/limiter is used with these speakers. Wayne also has his own two-box system, the M-2000, with a Cerwin-Vega 18 in the low box and two JBL E120s and a TAD 4001 driver in the high box. He uses a custom crossover and DBX162 limiters with the M-2000, and his own custom MOSFET amplifiers to run either system.

Cozmic 7's biggest system to date used 12 MTL4s, 12 MTH4s and "a whole bunch" of Bass Tech 7s. This system shook the paint off the walls, Feldman says: "It was a pretty old warehouse, and we literally had to sweep up paint chips from around the edges of the wall. We shook a big piece of wood right out of the ceiling right as we turned it on. We just let it go for a little while and let it shake down for a little bit. That's what rave

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music is all about: pushing tremendous amounts of air."

"As far as front-end stuff, that's the beauty of [raves] for a sound company: You don't have to have a lot of the real expensive gimmicks and gadgets to make a rave system work," Bozeman says, although some sound companies are setting up stacks in four corners, "like you would in a dance club, so you get a lot of intense energy focused toward the dance area. If you use SurroundSound-type processors, you can create binaural imaging and all kinds of neat effects that the DJ can play with." The first Divine Playground event, which occurred in Miami this March, had just such a speaker setup, complemented by a joystick in the DJ booth.

Atlas equips its DJ booths with a custom monitor system. "It's a two-way system with bass cabinets and a pair of full-range speakers," Gutierrez explains, "but we biamplify it and give it its own equalizer, and give the DJ a little bit of control so he can adjust the sound the way he wants to. The monitor system itself is probably equivalent to some small club sound system."

Almost all rave DJs spin vinyl. "I've asked the DJs why they don't do CDs," Wayne says. "First of all, most of the stuff is on vinyl anyway. Second of all, there is a synergistic relationship between the speakers and the turntable and the people jumping up and down. It seems that part of the sound is to get the turntables just prior to feedback; too much feedback, obviously, is a problem," Wayne continues, adding that he usually sets up three sandbag-stabilized turntables with a Rane MT24 mixer.

Most warehouse floors are concrete to begin with, Bozeman notes. He uses either silicon or sand plus foam between the DJ's mixer deck and the surface it rests on. "It turns out silicon or sand is a good isolator for bass, and foam is a good isolator for high frequencies, so that combination works really well," he says.

When setting up two-, three-, or four-turntable booths, Gutierrez places turntable-sized blocks directly beneath the vinyl vehicles to guard against feedback. "My next line of attack would be the equalizer. I use third-octave equalizers on all my sound systems. They're either Klark-Teknik

or UREI equalizers, and I start to notch the very bottom frequencies. Most of the time, people will tell me, 'There's a lot of information at 25, 30, 40 cycles.' It's true, there's bass there, but that's such low bass that a lot of times it's imperceptible. I find that the frequencies that a lot of people like to feel and dance to are the higher bass ones, like 63, 80, 100. Those are the ones that make the sound system really thump."

The requirements for staff are straightforward, although *who* provides the people varies. "Usually we get the promoters to supply us with, say, a half-dozen guys that'll help us unload the truck and stack the system," explains Bozeman. "Other than that, two people can plug everything in and have it running in no time, because it's very simple." Wayne cites a similar manpower requirement, but says he brings his own staff. Gutierrez also brings his staff, although they usually number five at most; he says promoters don't like to see a big sound crew, as some get the idea that's what they're paying for. As for setup time, "We give ourselves an hour and a half," adds Gutierrez. "We

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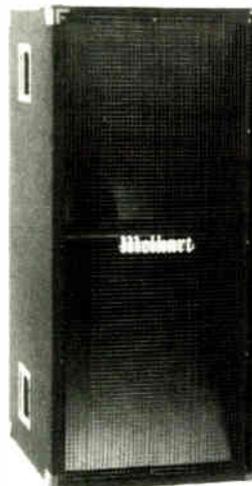
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always ask the promoters for a two-hour lead time. But because there are other sound companies that have screwed jobs up, promoters always ask us to show up at like noon—and the gig doesn't start until midnight or 10:00. We won't do that."

When working a warehouse rave, watch out for that third rail: Large warehouses usually get 480-volt, three-phase service. "Generally, they will have a transformer within the warehouse—if the power company doesn't provide it out of the pole—that will knock that down into 220 three-phase," Wayne says. "Across one of those 220 legs there will be a center tap. What you'll get at the box is two 120-volt legs that are usable and a stinger leg with 240 volts, which should be avoided at all costs. The important thing to remember for an electrician who is used to tying into those is, when you get into a warehouse, you've really got to watch out for that stinger leg. You've really got to carry your voltmeter and make sure that you've got it absolutely measured." Some newer warehouses have a Y system that provides three 120-volt legs.

"These [large systems] have to be accommodated, not necessarily with three-phase power, but their own separate power distro system," Gutierrez says. "The club gigs, you can get away with regular wall power. Our systems will sometimes use in excess of 100 amps for a really large show, so we have to be able to accommodate that."

Just remember to cover your assets, lest you find the police impounding your boxes at a "non-sanctioned" rave, or slick promoters getting a little too slippery with their beeper numbers apres-event. "As far as getting paid, I have a policy, and I suggest it to anybody that's just starting out or when you're working with a new account," Wayne says. "That is, 50 percent down to book the show—which is forfeitable if the show's cancelled, because you're holding the date—and 50 percent when you arrive, before you unload the truck. Most rave promoters are going to tell you, 'Maybe you'll have the 50 percent up front,' but they won't have the rest of it when you get there. What they're going to want you to do is essentially become a co-promoter on the show, but it's a one-way door, because if they make a lot of money, they're not going to give you any more money. And if they don't make any money,

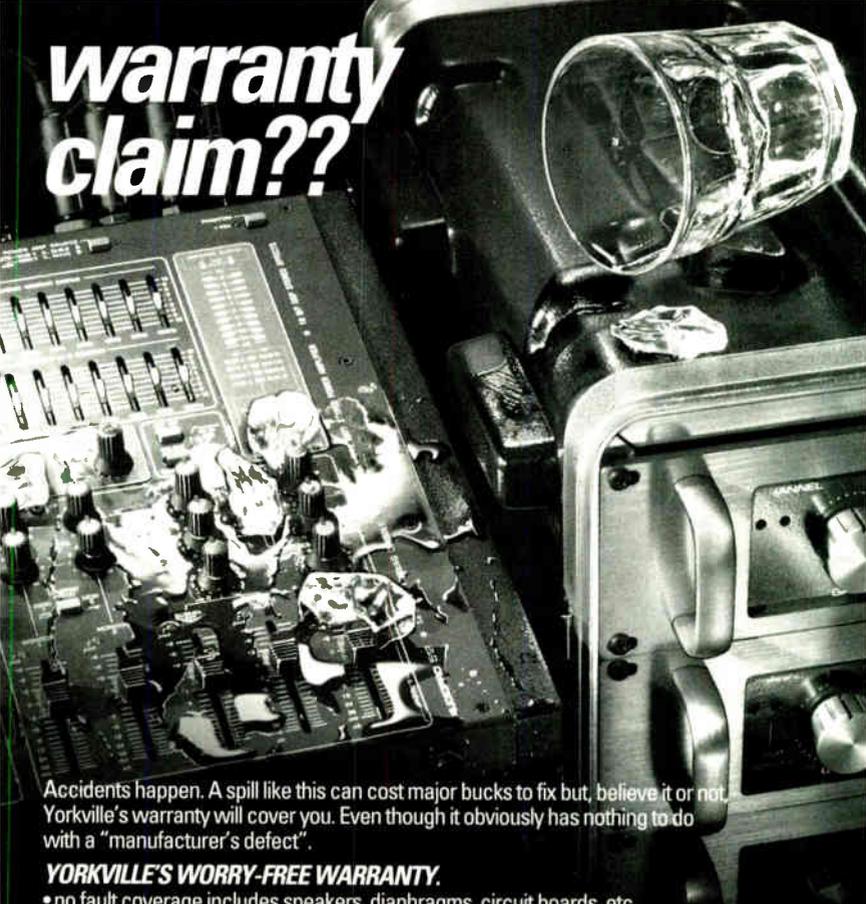
they're going to expect you to take it on the nose with them. You've got to get that straight with them beforehand, and if they're asking you to co-promote the show, what you might get is a small guarantee against a dollar or two on each ticket."

Getting stiffed is hardly a problem any more, Gutierrez says. "We're in a position now where we can select the jobs that we do. So even if the promoter has a total disaster, we always get a 50 percent deposit and we'll let the other 50 percent slide on the word of the promoter."

Still, there's good earning potential

in raves compared to the type of equipment they necessitate, Bozeman says: "A sound company doesn't have to [provide] a big mixing console or multimix monitor system, or the technical expertise of engineers who are good at mixing live acts. Basically, we're talking front-end stacks and racks of power and some kind of relatively simple hookup to the DJ system and a minimal monitor foldback." That plus a couple of hooded sweat-shirts, and you're set. ●

Maria Conforti is a New York-based freelance writer.



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TOUR PROFILE

By Gregory DeTogne

Guns N' Roses

Sound Company:

Electrotec, Canoga Park, CA

House Mixer: David Kehrer

Monitor Mixer:

George "Barney" Barnes

Crew Chief/System Engineer:

David Zammit



GENE HIRSHMAN

ON MAY 24, 1991, GUNS N' ROSES embarked on a world tour that has scorched a path around the globe unabated for over two years. Supported initially by the simultaneous release of their *Use Your Illusion I and II* (both on Geffen Records), the tour has spawned its share of controversy and seen more changes than the sheets in a Thai bagnio. At one time the band gained three background vocalists, a horn section and another keyboard player, before shrinking back to their original size during the "Skin N' Bones" leg of the tour, which was still running strong over the summer. With their act being seen in arenas and stadiums and along the shed circuit, GNR are as rebellious, explosive and preternaturally loud as just about any rock band in his-

tory. To adequately manage their sizable sound reinforcement needs, Canoga Park, California-based Electrotec stepped into the fray to deliver both an FOH system and an enormous monitor rig.

Incorporating a one-off design developed for GNR, the FOH system is a custom version of Electrotec's venerable LAB-Q array called the Q-2. While the configuration of the P.A. changes according to the venue, in arenas it is flown on a curved beam providing 270 degrees of coverage. Numbering 13 columns per side, the arena P.A. incorporates 24 bass bins and 25 mid/high bins. Three of the latter are configured for long-throw use. Near-field coverage for the first ten rows is supplied by wedge-shaped underhang cabinets.



“For 60% of any given show, Axl’s microphone is so hot that it’s always on the edge. I spend the whole night riding each phrase, each word. I can’t just turn everyone else down; it’s not that simple. There is no room for compromise with GNR.”

—David Kehrer

Amplification for the system comes from “6400 pounds of Crest power,” says Electrotec’s Mick Whelan. Originally hailing from Coventry, England, Whelan has been with Electrotec for 20 years, 16 of which he has spent here in the U.S. With regards to the power he unleashed for the GNR P.A., he adds, “About a year ago, a magazine asked me how many watts were in the system. I hate talking about watts—they don’t mean diddley to me—so I said, ‘If you want to know how loud this thing is, let’s just say it’s loud enough to blow the head off of a pint of Guinness at 250 feet from the stage.’”

Whelan says that the P.A. was designed to meet parameters delivering clean and loud sonic perfor-

mance. To array such a beast, he began in a scientific manner, using TEF analysis to supply accurate polar plots and ETCs. “If you start out with an array that possesses minimum overlap and lobing and is as good as you can get it, that’s great, but the problem is that it’s not loud enough for rock ‘n’ roll. To make it loud, you need more loudspeaker devices, but you’ve got to be really careful where those devices are pointed. To improve the SPL and on-axis performance in the GNR system, we pushed the overlap a bit. With speech-only reinforcement, you’ve got to be concerned with over-

lap because intelligibility will suffer, but with music we can play around quite a bit.”

At the house console for GNR is David Kehrer. A seasoned veteran who has been with the band for most gigs since the beginning, Kehrer commands a Gamble EX56 and a Soundcraft Series IV, which is used for sub-mixing. Outboard gear he keeps on hand is essentially the “standard stuff,” with the exception of a lot of Aphex compressors and gates, which pop up throughout the system. No compression is used in the mains, although Kehrer has added an Aphex

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Dominator to the overall mix for some brick-wall peak limiting. "The system has so much power that I rarely hit its limit," Kehrer points out. "It's set up so that you never see any of the amps go into clip."

Kehrer won't deny that he mixes loud, but true to Whelan's design goals, the resulting sound isn't painful because it's so clean. Based upon his experiences, other tours that sound louder than GNR just *seem* to be because of the distortion factor. "To be honest with you, I don't even measure SPLs," he says. "I get a groove going, and I know right where I am. There

are a lot of rules governing levels these days—especially in sheds—but we're no worse than any other bands that come through. When things are really strict, we abide by the rules, because when it comes to the bottom line, the band wants to do the show."

As a band, GNR are difficult to mix. "Axl Rose [GNR's lead vocalist] has three different voices," Kehrer says. "His lowest voice barely comes out as a whisper in terms of volume; he has a middle voice, which is normal in terms of gain; and then he has a scream, which can be deadly."

To deal with Axl's dynamic range, Kehrer has inserted an Aphex Expresor and an Aphex Dominator on his mic channel, along with a t.c. 31-band equalizer. Given Axl's reputation for constantly moving about the stage and in front of the P.A. with his Shure Beta 58, Kehrer also tunes the whole system to his microphone. "For 60% of any given show, Axl's microphone is so hot that it's always on the edge," he explains. "In my job, I spend the whole night riding his channel—each phrase, each word. It's almost like punching in just to get him where he should be in the mix. I can't just turn everyone else down; it's not that simple. There is no room for compromise with GNR."

Much publicity has been generated by the number of monitor engineers that have come and gone on the tour. Like the guillotine during the French Revolution, Axl Rose has dropped the blade on a number of aspirants who didn't live up to his demanding expectations. At one point the crew even took to wearing T-shirts provided by lead guitarist Slash emblazoned with an unsmiling "smiley face" on the front and an inscription on the back that read "Friends Don't Let Friends Mix Monitors." Ultimately, Scotsman George "Barney" Barnes took over the position, following a stint on the tour as system engineer. As of this writing, he has spent over two months on the job, which is a positive sign of his further longevity.

Did he have any reservations? "No, I knew exactly what I was getting into," he said during a break in the tour this spring (brought about by a fractured hand suffered by rhythm guitarist Gilby Clarke). "They knew exactly who they were getting, and I felt good about it then and I still feel good about it now. The band is quite loud, but it's not the loudest band I've worked with. The hardest aspect of my job is that oftentimes for the first couple of songs I'm flying by the seat of my pants. That's because Axl needs time to build his confidence on stage. He will come out and won't sing as loud at first, but he still wants to hear himself as loud as he'll be later in the evening. Once he gets up to running speed, however, things mellow out."

By anyone's estimates, the monitor system is a good-sized small P.A. At present there are ten points for flying mid/high LAB-Q cabinets and eight points for flying LAB-Q bass bins, all

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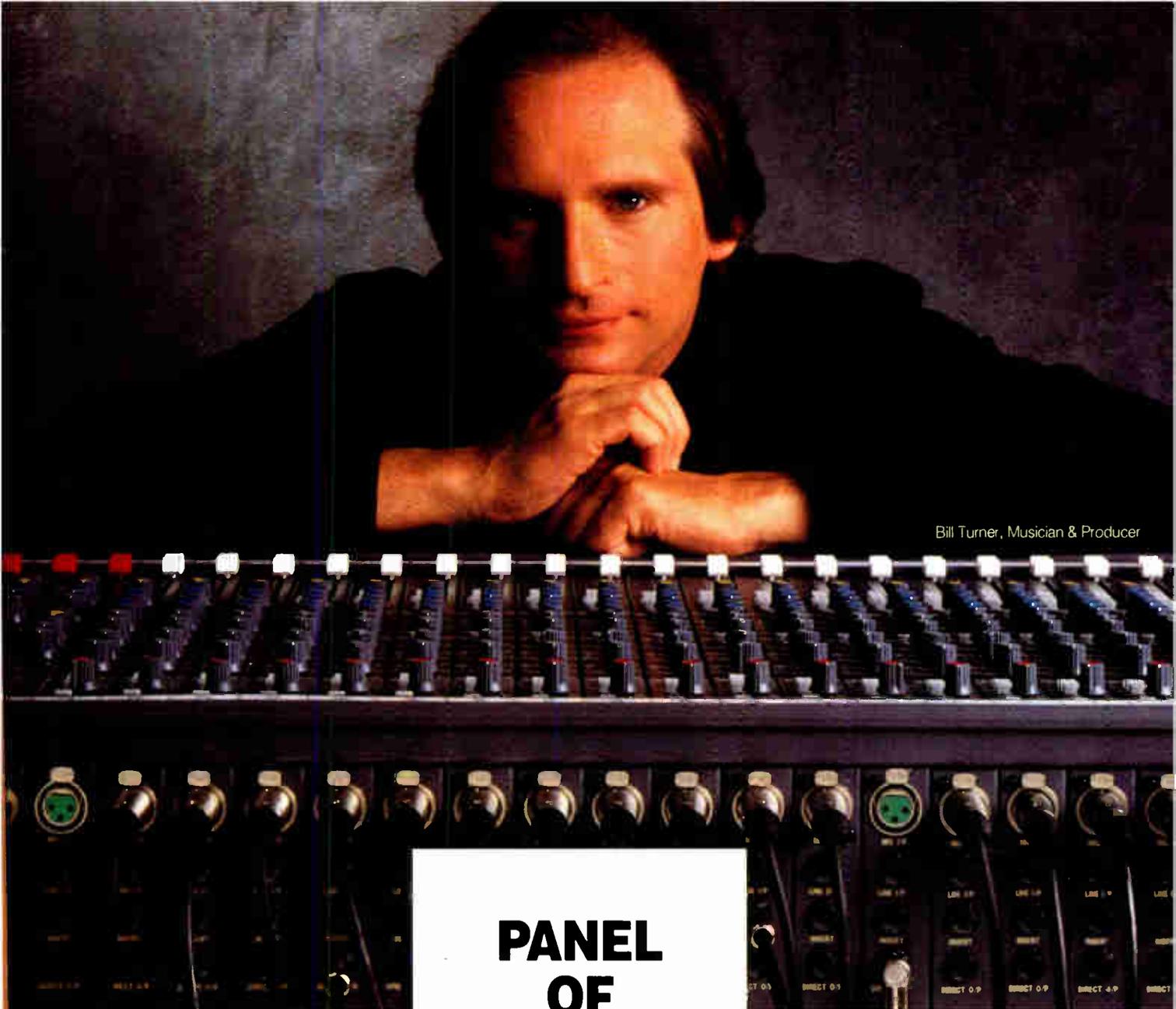
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of which are buttressed by 52 wedge monitors. A Gamble EX Series console handles the mix, while t.c. 1128s with remote heads supply the EQ.

"On an evolutionary scale, this system is probably a step backward when you consider all of the micro-monitors and wireless in-the-ear monitors in use today," Barney jokes. "Perhaps things have gotten out of hand, but it's what the band wants."

Depending on your own personal tastes, a portion of the monitor rig that may have "gotten out of hand" might be found at Matt Sorum's drum kit. "Matt performs with two 2x18 cab-

inets that ride right under his butt," Whelan reports. "We used a Crown Macro-Tech 3600VZ to drive the cabinets, and typically I've measured 140dB peaks produced by the kick and snare drums. When Matt first tried out the rig, he turned to me and rhetorically asked: 'That's loud, isn't it?' To maintain uncompromised power, we wound up adding a specially modified version of one of TOA's L-1102 leveler/limiters to limit the excursion in both boxes."

The process of evolution is making itself felt in the house system as well, as the GNR crew plan the future

addition of digital processing, which will first be used for equalization. "I'm a big fan of digital processing, and every time I've gone from using traditional crossovers to using completely digital crossovers I've noticed a tremendous amount of gain in the fidelity of the system," Kehrer says. "With digital, the high end opens up and becomes more transparent, and it's instantly audible."

The digital processor Kehrer and Whelan chose to supply the system's crossover settings is TOA's SAORI. To bring the unit up to an operational level, Whelan and TOA's John Murray will use both the SAORI and a TEF 20 analyzer to set the loudspeaker crossover parameters for optimum performance.

"When you combine the TEF 20's high-resolution analysis and display with the SAORI's ability to quickly provide any combination of digital crossover and delay settings," says Murray, "you obtain a viable tool with vast capabilities." Working without the benefit of an anechoic chamber, the SAORI/TEF combination allows one to choose symmetric, asymmetric, or overlapping crossovers with frequencies on 1/12th octave centers and from among eight different slopes. All of this, plus precision signal alignment between drivers, can be obtained in a relatively short time.

"The resulting loudspeaker performance is often superior to analog-driven systems," Murray notes. However, he adds "this is due to the flexibility of the SAORI and the resolution of the TEF, not the erroneous 'lack of phase shift' DSP hype that is currently circulating through the industry. The advantages of using the SAORI or *any* DSP-based signal processor are found in the variety of choices obtained for delay times, crossover frequencies, and symmetric or asymmetric crossover slopes, *not* in the device's phase characteristics."

From a human standpoint, the esprit de corps that the GNR crew feels rivals that of soldiers in combat. "What we've been through has been intense," Kehrer says for the record. "This is not a normal tour, and a lot of guys just couldn't handle it when things became larger than life. For those of us who have made it, though, this is a really fine place to be." ●

Gregory DeTogne is a freelance writer and publicist based in the Chicago-land area.

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Axl Rose is shown from the chest up, singing passionately into a Shure microphone. He has long, straight hair and is wearing a white t-shirt with a red and white checkered pattern. The background is a simple, light-colored wall.

Axl Rose



Beta 58 Wireless

Beta 58

Beta 57

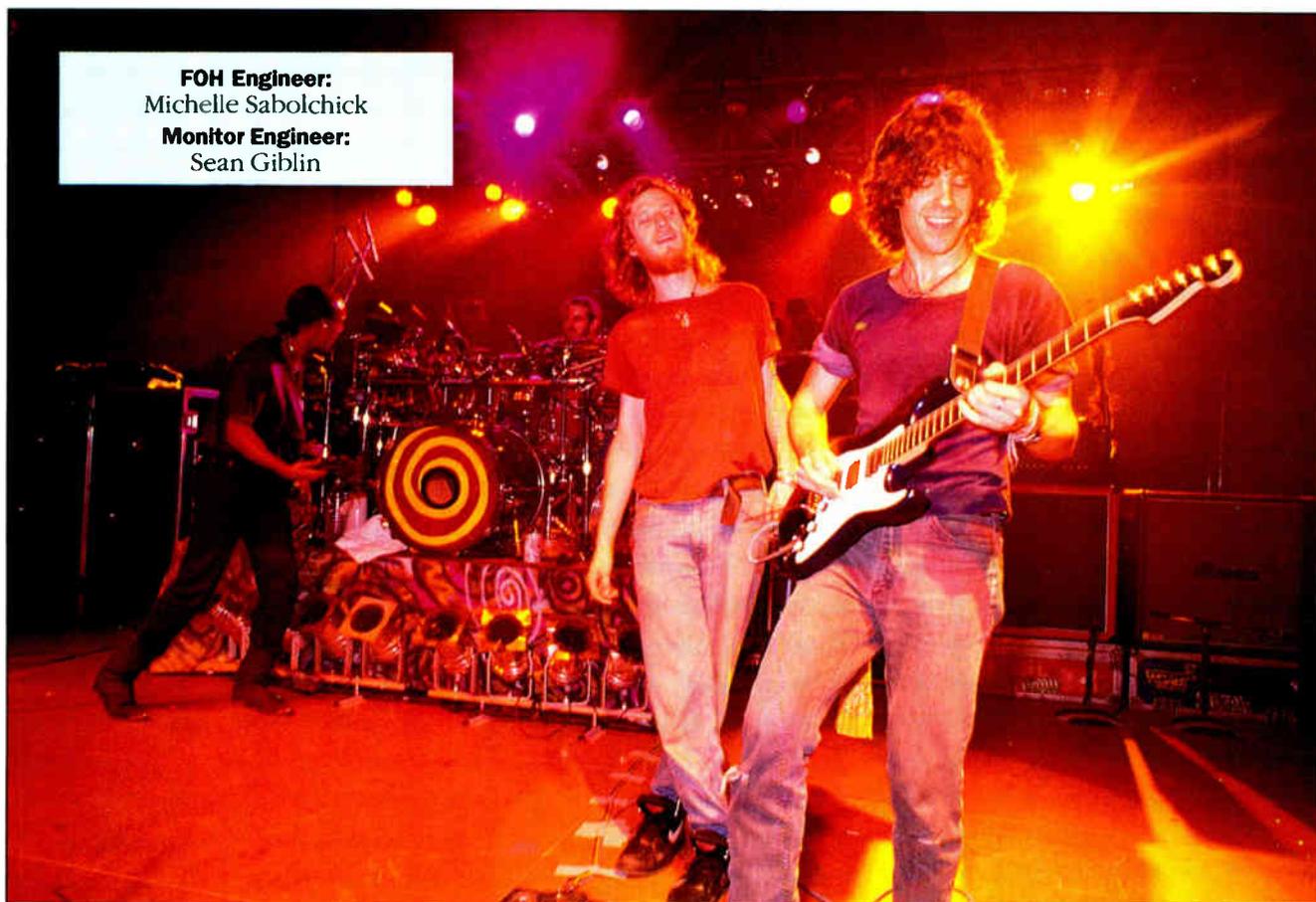
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By Donny Emerick

Spin Doctors

FOH Engineer:
Michelle Sabolchick
Monitor Engineer:
Sean Giblin



PAUL LABRANA

UP-AND-COMING FUNKADELIC rockers Spin Doctors and their independent audio engineer, Michelle Sabolchick, have been touring heavily recently, both supporting and reaping the success of their major-label debut, *Pocketful of Kryptonite*. With appearances on *Saturday Night Live* and the cover of *Rolling Stone*, the band's rise in popularity was reflected in their production gear as they criss-crossed the U.S. twice in increasingly large venues.

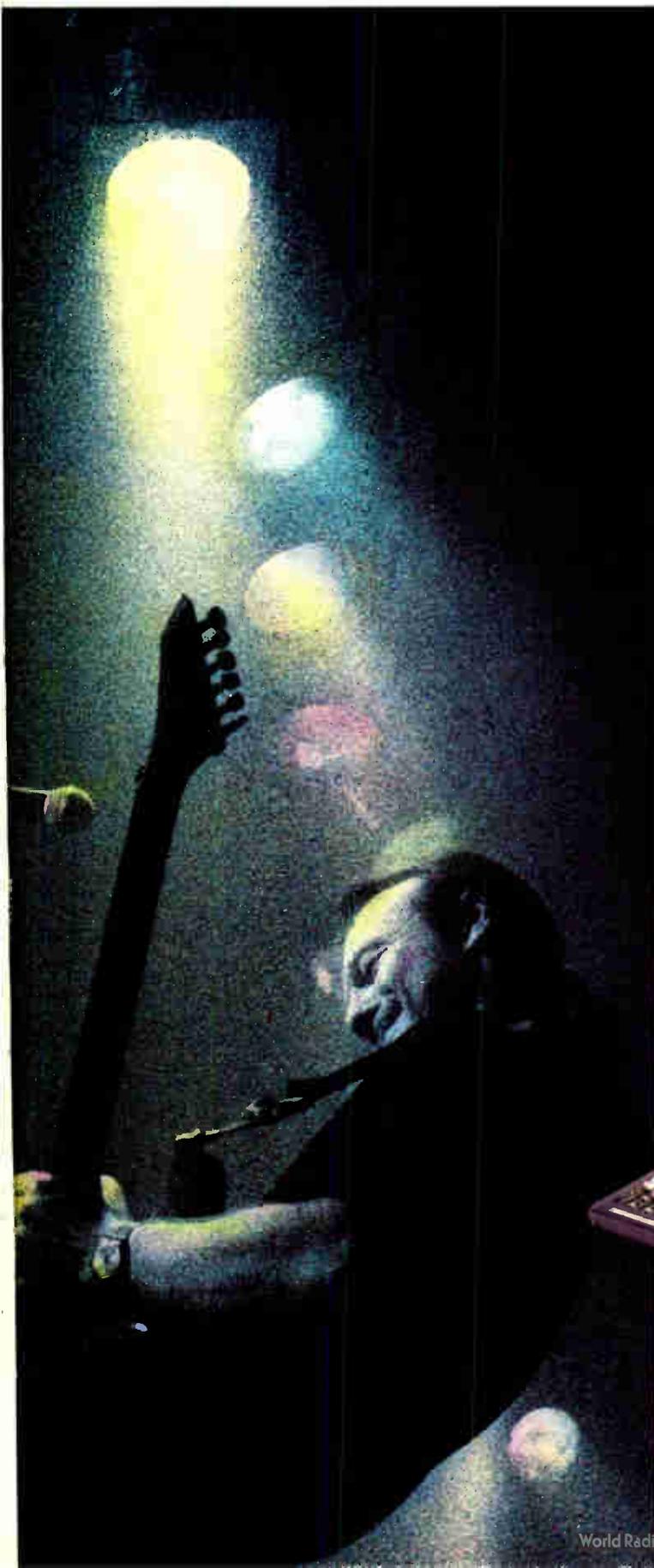
Sabolchick's position with the band opened up after an associate quit midway through the Spin Doctors' summer '92 tour. "He started the tour, but he'd been out for about three years straight and didn't want to be on the road anymore," she explained. "He called me and said, 'I've got

this job and I need to find a replacement.' That's how I got it."

One of the few women in the professional live sound business, Sabolchick said, "Most of the people I deal with are pretty professional about it. Many people say it's neat to see me doing it, because there's not a lot of us."

"On the first tour I started working with the Spin Doctors, last July, we were playing mostly big clubs," she added. "We weren't carrying any production and were just using what they had when we got there. We used a lot of junk. The next tour we started carrying FOH and monitors, and we'd still advance P.A. everywhere we went. It was mainly an East Coast tour, so there were several sound companies we used as much as possible. That way we

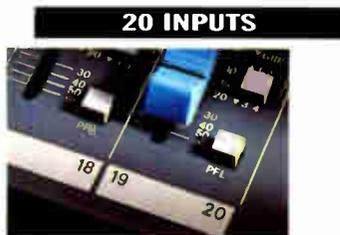
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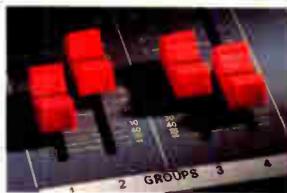
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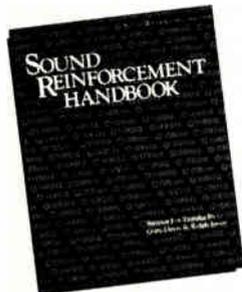


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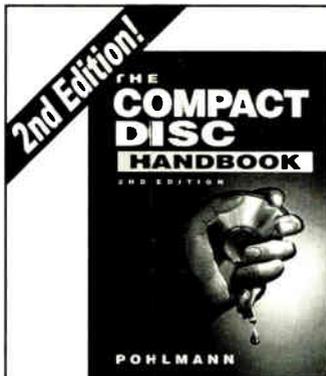
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World Race History

knew we were getting a P.A. we liked.

"This last tour, we decided to carry full production," Sabolchick noted. "We got a good deal from the sound company and we could afford it, so we figured it was better than chancing it and getting stuck. It worked out quite well."

Stacks and racks for the recent tour were provided by Fidelity Audio out of Virginia Beach, Va. Front-of-house and monitor gear was supplied by RSA, of Long Island, N.Y. The P.A. consisted of EAW KF-550s and two Intersonics Bass Tech 7 servos. "All of it was Crest-powered—8001s for the lows and servos and 4001 for the high-mids," Sabolchick said.

The monitor system used custom enclosures built by RSA; the wedges and sidefills contained 12-inch speakers and 2-inch horns. Monitor duties were handled by independent engineer Sean Giblin, who uses a Soundcraft 800B monitor desk.

Sabolchick also used a 40-channel Soundcraft 800B at the FOH. "I really like the sound of Soundcraft boards. They're kind of old, can get kind of noisy, and they have some technical problems, but the EQ on them is pretty nice and they sound really good," she said.

"[The band] doesn't use a lot of effects. In my racks, I had an SPX900, an SPX90 and a Lexicon PCM 70," she added. "The only effects I ever really use are an autopan from the SPX900 that I use on the bass. The drums are totally dry. I use a guitar reverb for one song. The band is very much into having it sound just like it does onstage. I just try to duplicate what's coming off the stage as much as possible."

Sabolchick described her mixing strategy as "just loud enough to get over the stage volume. I try not to mix so loud that it hurts, but their stage volume is loud. To get everything in the P.A. and have a decent mix coming through, it's just got to be loud," she explained.

One of Sabolchick's biggest challenges is making sure lead vocalist Chris Barron can be heard over the band. "I get the vocals as loud as I can over stage volume," she explained. "I mix around the vocals, because that's the most important thing—get them out front and make sure they're clear. Then I bring in the kick and bass, and the guitar comes last."

To bring the vocals out in the mix, she treated them slightly differently

than the band's instruments. "I have the vocals going through two stereo subgroups," she explained, "where everything else has its own subgroup. I have it through two just to get more gain from it. Occasionally I'll throw in a short delay or a few programs on the Lexicon that sound really good—not for effect, mainly just to help his vocals cut through more. Other than that, it's got a compressor on it, but that's it."

High stage levels also led to some experimentation with the lead-vocal microphones. "We've gone through several," Sabolchick said. "We started with a Beyer M88; I really liked the sound of it, but it didn't have enough volume before feedback onstage for the monitor guy. Then we switched to the EV 757. I'm not really crazy about the sound of it, but we get a lot more gain from it. It's working out better. We're still experimenting with different microphones, so that could change."

Instrument mics included a Sennheiser 409 and 421 for guitar cabinets; a Shure SM81, a Shure Beta 57



Band Engineer Michelle Sabolchick

and a variety of Sennheiser 421s, 408s and 409s captured the drum sounds. She ran the bass direct, with an additional 421 on the cabinet.

On the agenda for Sabolchick and the band was a small club tour of

Europe later in the spring. "We won't be carrying anything from the stage except some band gear," Sabolchick said. "Everything else we're going to rent once we get over there. We are going to be carrying our monitor system. RSA, the company supplying our monitors this tour, has a system over there, so [the monitors are] going to be identical to what we have now. We're also going to carry our own mics, but the FOH and P.A. will be whatever we get.

"Production-wise, we're not looking forward to it," she added. "Some of these places, it's going to be like going back a couple of years, playing these tiny clubs. We have no idea what kind of gear we'll get, and we're not expecting a lot in terms of production quality. But it's a very good move for the band, and there's not a lot of pressure to make sure it's the best—it'll just be the best it can be." ●

Donny Emerick has a pocketful of kryptonite to go along with his beard and Dartmouth baseball cap. When you see him out at a club, buy him a beer.

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TOUR PROFILE

By David (Rudy) Trubitt

INXS

Sound Company:

Showco (Dallas, TX)

House Mixer: Benji Lefevre

Monitor Mixer: Bernie Bernil

System Engineer:

David "Cowboy" Conyers



INXS at San Francisco's Warfield Theater, the first date of their US theater and club tour.

THIS SUMMER FOUND more than one well-known act taking their show into smaller venues. One example was INXS, who started with a club tour of Australia, moved up to the States for two weeks and then went on to Europe. These theater and club dates gave the band a string of high-demand, sellout gigs which set the stage for a possible arena leg in support of an upcoming record. It also gave them a chance to return to their roots, according to veteran house mixer Benji Lefevre.

"When I did my first show with them last year, they had a lot of sequenced stuff and the machines ruled a lot of their lives. This time around, I was instrumental in trying to wean them off the machine, because they are really good

players. Although what they did before was really good, I think it was strangling them. Obviously, there are certain songs where some of the sampled sounds are so familiar and important to the melody that you can't get away from them completely. But we have replaced a lot of the sequencing with [manually triggered sounds] rather than running a sequence just to do a specific part."

"Every band starts in clubs," says Lefevre. "The difference in doing them with a band like this is that you can specify the audio exactly, whereas up-and-coming people have to deal with the club's in-house system. But a club is a club. By and large, they are probably more difficult to do than [larger venues] because they are such weird shapes. You also have to involve the stage sound in your mix. It's truly a

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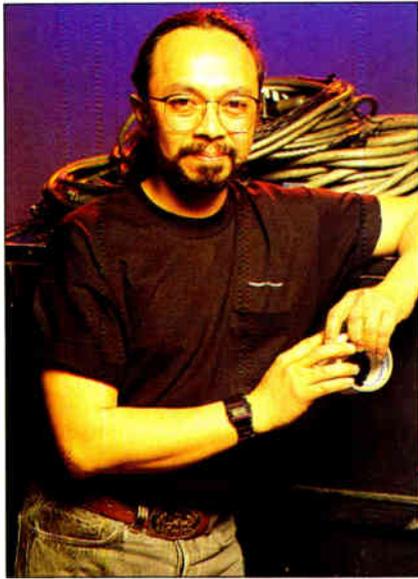
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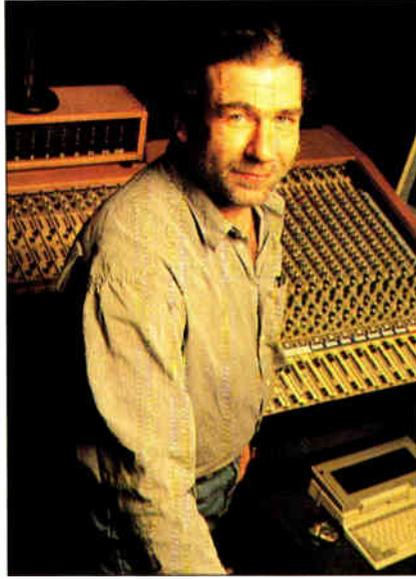
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Monitor mixer Bernie Bernil



House engineer Benji Lefevre

reinforcement of what's coming off the stage, rather than being a separate entity. And that's really good fun, because everybody has to work together; otherwise, it ends up being a mess."

Lefevre tries to keep his focus on music, rather than gear. "I'm not a super electronics technician—I can employ people to fix the desk if it

goes wrong. What I like to do is draw a performance out of people. It helps to have a good technical background, but I do enjoy interacting with the musicians. That was one thing that the Stones really enjoyed [Lefevre mixed the Rolling Stones' *Steel Wheels* tour]. I told them if I was going to be away from my wife for a year, they'd

best listen to what I've got to say." And they went "Great, at least somebody is talking to us!" If someone wants me to shut up, just tell me and I will, but until then I'm going to say what I think."

Not to say that Lefevre isn't a good listener—in person, he's extremely relaxed and personable. "I hope that a lot of what people like about what I do," he adds, "is the way that I work with every department—the lights, sound, the band, everybody. I think the sound is the most important, obviously. But I'm not afraid of the big picture."

Part of that picture is monitor engineer Bernie Bernil, who mans a maxed-out Ramsa WRS-840 monitor console. In addition to his regular work with Showco, Bernil is associated with Tennessee Concert Sound of Memphis. He also teaches Audio and Concert Production in the Commercial Music Program at Memphis State.

"In a club situation, I'm only doing 10 mixes," Bernil explains. "Three on the front line and stereo sidefills. A lot of front line is mainly for vocals, like for Michael Hutchence's mix—the only thing that goes in there is vocals. I rely on the sidefills and the stage sound. We take a lot of time adjusting levels because of the different-sized rooms we go into. It's not like an arena tour, where you know the buildings are all relatively the same size and type of acoustics. [On this tour] I find myself pulling and adding frequencies from venue to venue. Throughout the night, you will find me reaching for the graphic to get something out and just change the frequency points, because when it gets hotter, people tend to want a little bit more top end."

"Especially in Australia," recalls Bernil. "Those are hot and sweaty clubs! In one place, Benji set up the front-of-house and then realized he was underneath a massive air-conditioning duct. In the middle of the show the condensation was really bad—it started pouring, so he had to get a couple of people to hold a space blanket over him, taped to the meter bridge. At another gig, I had to set up under an AC vent. So the hands came in with some plywood and scaffolding and built me a little lean-to. The band came in, looked at my area and looked at me. I just sat there and smiled. But I enjoyed it—now I can say I've done the clubs and universities down under!" ●



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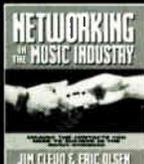
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