

MIX

**New Directions
in Microphone Technology**

**What's That Workstation
Worth to Your Business?**

PROFESSIONAL RECORDING · SOUND AND MUSIC PRODUCTION

**Directory:
Northeast Recording Studios**

**How Office Automation Can
Make Your Studio More Efficient**

**LIVE
SOUNDS:
SUZANNE
VEGA**



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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.

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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.

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One of three Scenarias at
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CR-1604

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Start with a single CR-1604 and add one or two more later. Expand each with ten more studio quality mic preamps. Or create an integrated MIDI automation system with simultaneous control of up to three CR-1604s. Only Mackie offers this kind of versatility. Because only the CR-1604 is part of a complete, modular mixing system.

COMBINE IT • \$249

A favorite of MIDI "power user" film scorers and session keyboardists, the MixerMixer (\$249) effectively turns up to three CR-1604s in "one big mixer" without giving up channels through "cascading" or losing AUX sends. For example, three CR-1604s and a MixerMixer yield 48 line inputs (8 of which are mic inputs), 12 stereo AUX returns, 24 direct



FADE IT • \$75

outs and three stereo/6 mono sub masters. All combining is done at unity gain, so no level or headroom is lost and no additional noise is introduced. Matching 100mm Remote Fader (\$75) controls master level of all mixers plugged into the MixerMixer (existing master faders become submasters). Comes with its own 6-ft cable and can be bolted to the side of a CR-1604, handheld or attached to any surface. Not shown: The CordPack (\$69): 39 high-quality cables that provide all the patchcords necessary to connect 3 CR-1604s to a MixerMixer.

EXPAND IT • \$199

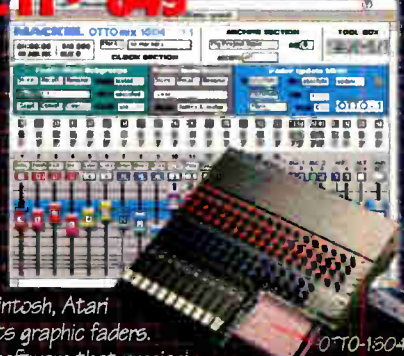
Instead of 16 cheap, off-the-shelf integrated circuits, the CR-1604 has six totally discrete preamplifiers with four conjugate pair, large-emitter transistors. The result is ultra-low noise (-129dBm E.I.N. @150 ohms), low distortion (0.005%), astonishing headroom and extremely wide (300K!) bandwidth that contributes to the preamps' transparent accuracy. At any gain level, you can handle everything from a close-miked kick drum to a flute with exceptional sonic fidelity and freedom from overload. This preamp design has made the CR-1604 legendary among pros who are used to \$150,000+ mega consoles (and, in dozens of documented cases or file, have enthusiastically stated that they actually prefer our preamps!). But what if you need more than six mic inputs? Simply add ten more of the same with our XLR10 Mic Preamplifier Expander (\$199). It attaches in minutes to form an integrated, mechanical/electronic whole and includes its own +48V phantom power switch. Plus you can still use the line inputs on channels 7-16!



AUTOMATE IT • \$849

Never again will you lose that elusive "perfect mix." Save it, recall it and fine-tune it over and over with our OTTO-1604 MIDI Automation Retrofit System (\$849). Consisting of an internal gain cell board and external MIDI control box, OTTO provides realtime fader and muting automation of CR-1604 channel inputs, AUX Returns 1-4, ALT 3/4 buses and master outputs. The system works with any Macintosh, Atari or PC sequencing program which supports graphic faders.

FREE OTTOmixSM Mac automation software that precisely duplicates CR-1604 controls is also included. OTTOmixSM allows simultaneous, unlimited subgroups over up to three CR-1604s, pre-programmed auto-fades/cross-fades, automatic archiving and a seamless interface with external fader boxes.



ROTATE IT • \$19

Yet another twist to the CR-1604's unique rotating pod! The RotoPod bracket set (\$19) creates a 10-rack-space, jacks-to-top configuration with all inputs and outputs on the same surface as the mixer's controls. Special rack rails allow recessed or flush mounting.



* Please see our Suggested Retail Price and Inquire about the advanced manufacturing technologies we've implemented at our facilities. Factory-direct prices, our service teams and our many products in a variety of economic factors making these of the most and most popular products.

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MIX

PROFESSIONAL RECORDING • SOUND AND MUSIC PRODUCTION

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Recording Studios**

Cover: Designed by architect John Storyk, JSM in NYC's Chelsea district consists of two main studios, three NED Synclavier suites, seven MIDI preproduction rooms and audio and video tape duplication capabilities. Studio A (pictured) features a 56-input SSL E Series console with Total Recall and G Series automation, Studer A827 multitrack recorders and an extensive array of outboard equipment.

Photo: Ken Korsh.





THE LARGEST CONSOLE IN THE WORLD...

The CSII Digitally Controlled Analog Audio Mixing System provides facilities beyond the constraints of conventional designs but with the familiarity of a traditional in-line work surface. Add to this features such as the SnapShot Recall™ system, for instantly recalling all console settings, & Total Automation™ control and you have unequalled mixing power at your fingertips.

The new System Expansion Options™ and the CSII's modularity allow for up to 104 Totally Automated mono/stereo signal paths, each with Digitally Controlled Eq and Dynamics, 24/48 multitrack buses and up to 96 aux sends and mix buses. You can start with a 32 fader system and expand as your requirements change to end up with the largest audio mixing system in existence.



IS ONLY 7'4" WIDE.

The sleek, Digitally Controlled work surface, even for a 104 fader system, is only 7'4" wide. This allows you to sit at the center of the image while you adjust controls, so you can hear the changes.

The CSII represents a new generation of audio mixing system where you get much more, in a smaller space, for a lot less.

System configurations are available for Music, Film & TV Post, Broadcast, and Sound Reinforcement applications.

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Euphonix

FROM THE EDITOR

It's hard to find a part of a studio's business operation that hasn't been revolutionized by desktop computers and productivity software over the past ten years. From the music creation itself, through organizing, scheduling and tracking the sessions; through the recording, editing and mastering process; through tape routing and billing; through monthly bookkeeping and year-end taxes—we have become dependent on personal computers to manage the business of recording.

"We used to route forms manually through this 25,000-square-foot building, and it would take too long," says the Record Plant's Rick Stevens to Beau Carr in this month's update on studio business software. "Now we can route those same forms electronically without anyone leaving their desk. We also send follow-up reminder messages for scheduling, for meetings, for everything. It's not only ecologically sound—there's no paper—but the communication is instantaneous."

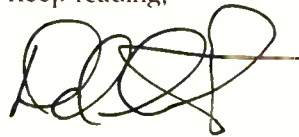
Also at the new Record Plant, phone messages are transmitted via E-mail from the receptionist as soon as they arrive. "The speed of the call-back can be the difference between a booking or losing the project to another studio," says Stevens. "That has been a very significant factor in our success."

With the seductive advantages of each new business management product, though, comes the fear of early obsolescence. This is nothing new to mature computer users, who have had to find their own reality checks—when to make the change and how long to stick with it before the next change. Our business editor, Chris Stone, digs into this level of reasoning in his "Operator" column.

Taking the real-world situation a step further, Ted Pine works through the business evaluation of upgrading to a digital audio workstation, a make-or-break decision for many operators of project-oriented studios.

Ever since money stopped growing on trees in this business, we seem to require ever better systems to track it. Maybe with this growing proliferation of business measurement tools we are entering a more realistic period of studio operation, where studios won't always be hanging by a thread. Wouldn't that be nice?

Keep reading,



David Schwartz
Editor-in-Chief

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all other tapes combined.*

AMPEX

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World Radio History

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All microphones capture sound. Sony's new C-800 and C-800G capture subtlety. These vacuum tube microphones are the product of five years of intensive research and critical evaluation. The result: some of the world's most respected musicians and engineers now demand the extraordinarily warm, rich and natural sound these microphones deliver.

Designed especially for musical instrument recording, the C-800 incorporates a large diaphragm capsule capable of a maximum input sound pressure level of 150 dB SPL. Its extremely wide dynamic range gives you the flexibility to use diverse microphone techniques on a variety of instruments.



C-800



SONY

SONY

C-800G

AND VERY COOL.

The C-800G is engineered to excel in vocal recording applications and employs an innovative thermo-electric cooling system, which significantly reduces inherent noise and distortion. A newly developed dual diaphragm capsule provides superior off-axis frequency response.

All of which means this: for sound that's very warm and very cool, one name is very clear. Sony.

For more information, call 1-800-635-SONY,
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CURRENT

AES BERLIN REPORT

This year's European AES Convention, held March 16-19 in Berlin's well-appointed International Congress Center, was a roaring success. With 1993 officially marking the formal declaration of the "United States of Europe," the 94th AES Convention enjoyed record attendance, with more than 7,194 people attending.

High points of the technical exhibition included several new digital and analog consoles, plus some important enhancements. Sony Corp. unveiled the new DMX-S6000 In-Line Digital Console, available in four frame sizes with up to 64 AES/EBU-format inputs, 56 buses, four output groups, assignable dynamics and EQ. Also shown: the new PCM-9000 Magneto-Optical Master Recorder, which is designed to replace a PCM-1630 U-Matic combination for CD/MID mastering, etc. The PCM-9000 offers up to 80 minutes of 20-bit/48kHz storage, with onboard editing.

Amek unveiled a prototype of its new Recall by Langley PA console, which features 24 or 40 input channels routing to eight subgroups and stereo mains, plus snapshot recall of all front-panel controls. To speed up system reset, a built-in speech synthesizer informs the operator which controls need to be adjusted. (The dulcet tones belong to a sampled Rupert Neve!)

Siemens showed the new four-layer version of its AMS Logic 1, which provides control of up to 48 stereo signal paths, plus Event-based Automation. Also displayed: a 24-output option for AudioFile, plus Issue #10 software that provides enhanced graphics display, including event ramps and zoom in/out.

DDA debuted the new Q2 Theater and Live Sound Console, which features eight mix buses expanding to eight stereo subgroups, 16 mono subgroups, or four LCR subgroups, plus 4-band parametric EQ, eight aux sends, direct outputs, and eight mute groups and optional VCA-based muting.

Focusrite exhibited module designs for the new Euroconsole, comprising a simplified version of the Studio Console without wedge sections and offering 24 bus assignments, Uptown 990 moving fader automation and a built-in patch bay.

Malcolm Toft Associates launched its model 980 split-format recording/production console, which features 32-, 40- or 48-input frame sizes, 24-track routing, 4-band sweep EQ on inputs and monitors, and eight aux sends per channel. Toft was one of the original founders of the Trident company.

Otari unveiled the digitally controlled Concept One production console, available in 32-, 40- or 48-module formats. Each input module features two signal paths per channel, with separate 4-band EQ, ten auxiliary sends, and 24 track buses.

Solid State Logic demoed G Plus updates for SL Series consoles, providing an audio phase scope, remote-controlled talkback, automated solo, PPM metering, built-in video-source switcher, data storage to 3.5-inch floppies, plus redesigned group/main mix amps for lower noise and enhanced LF response.

Soundcraft showed the new DC 2000 Recording Production Console, available in 24- or 32-channel frame sizes, with full moving fader automation and touchscreen con-

troller interface.

Turning to workstations, Digital Audio Research's new Sabre editing system provides eight channels of storage to removable MO drives, plus a redesigned control surface connecting to a separate color display monitor.

Fostex unveiled a prototype of its new RD-8 Digital Multitrack Recorder, which is fully compatible with the Alesis ADAT format, plus the low-cost D10 time code-compatible DAT recorder designed specifically for two-machine editing.

Finally, Tascam demonstrated a 24-track recording system comprising three DA-88 8-channel units synchronized via the new SY-88 chase synchronizer boards and the RC-808 remote control station. Also: a pre-production prototype of the CDR-1000 compact disc recorder, which offers automatic addition of index and take markers from PNOs. Start IDs recorded onto DAT masters.

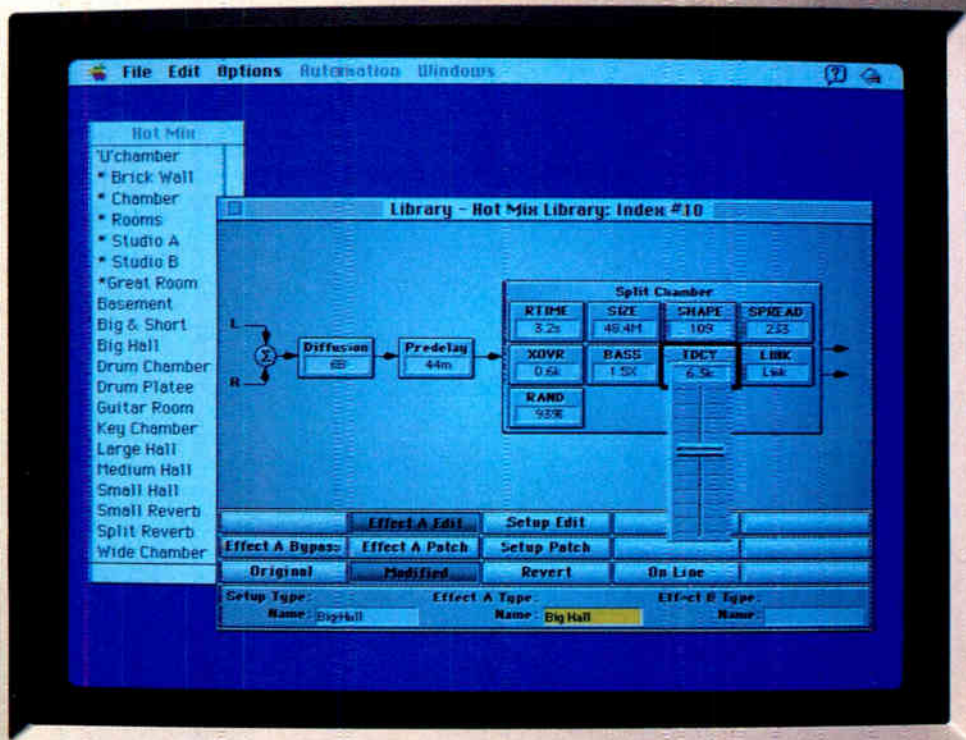
—Mel Lambert

TEC AWARDS CHANGE RECORDING SCHOOLS AWARD

The Technical Excellence & Creativity Awards, sponsored by *Mix* and presented by the Mix Foundation for Excellence in Audio, have announced that there will no longer be a TEC Award given for Outstanding Recording School/Program. The award will be replaced by a system of grants and endowments, with the possibility of one special award each year.

According to Hillel Resner, president of MFEA, "There are so many schools today training young people for careers in communications technology that we wanted to expand the program to give the most assis-

—CONTINUED ON PAGE 16



NuVerb

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PRO DIGITAL REVERB AND EFFECTS PROCESSING FOR THE MACINTOSH*

NuVerb puts Lexicon's world-class digital signal processing into a card that easily installs in a Macintosh NuBus® slot. The NuVerb card is designed to integrate with DigiDesign's Pro Tools or Sound Tools II systems, using the TDM digital audio bus system. NuVerb can also be configured with an AES digital I/O for connection with all systems.

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NuVerb has professional quality signal processing effects that feature the legendary Lexicon

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sound. You can easily create a phenomenal array of effects—from halls and chambers to totally wild spaces. And you can create them all with the power and convenience that is inherent in desktop production systems. For the multimedia and post-production pro, NuVerb also features automation of effects via SMPTE time code.

For over 20 years, audio professionals have relied on Lexicon processing to give their productions an edge. So much so that today, over 80% of the most successful recordings are processed with a Lexicon. With NuVerb, you'll have that same professional reverb for all your desktop tools.

Contact your authorized Lexicon dealer and plug-in the exciting NuVerb today.

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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.

TASCAM DA-88

POWER

VARI SPEED

DIGITAL IN

REMOTE

DISPLAY

ALL INPUT

AUTO INPUT

INSERT

RHSL

AUTC

IN/OUT

CLEAR

00 03 15



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.

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.

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

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INDUSTRY NOTES

Otari Corporation (Foster City, CA) opened a Northeast regional direct sales office in New York City, phone (212) 297-6109, serving end-users in the Boston, New York, Philadelphia and Washington, D.C. areas. Steve Zaretsky will manage and staff the new office during its start-up phase. Technical support will be provided by two companies. Tape machine warranty service and technical assistance will be handled by New York Technical Support Inc., (212) 246-0227. ProDisk warranty service and technical support will be the responsibility of Film-Tek and Associates Inc., (201) 797-4999. Bruce M. Merley joined Howard Schwartz Recording Inc. as general manager. XTA Electronics, the brainchild of Michael Woodward and Andrew Grayland, is a new company that manufactures products for the pro audio, sound contracting and sound reinforcement markets. XTA's first product is the DS400 mic line distribution system, and subsequent products will include a real-time analysis system and a range of other signal processing equipment. XTA products are manufactured at the company's facility in Kidderminster, England. Group One Ltd. president Jack Kelly is affiliated with XTA, and Group One (Farmingdale, NY) will distribute and market XTA products in the U.S. In other Group One news, the company is the new official U.S. distributor for KRK Monitoring Systems (Huntington Beach, CA). Audio Intervisual Design continues as KRK's exclusive dealer in L.A. Group One Ltd. was also named the exclusive U.S. distributor and marketer for Uptown Automation Systems (Boulder, CO). Lipson & Co. of Los Angeles and Fink & Blakely Associates of San Francisco have allied to form an executive-recruiting agency called FIRST (First Interactive Recruiting

Specialists) to serve the emerging multimedia and interactive industries. FIRST can be contacted in Los Angeles at (310) 277-4646 or in San Francisco at (415) 441-3777. Martin Audio appointed Bill Webb as its new head of engineering. Webb has worked as a successful managing consultant in the audio industry since 1985. He launched Martin's Em Series systems. LaFont (Pickering, Ontario) selected Sascom Marketing as the exclusive North American distributor of its film/TV post consoles, including the HD4. Westlake Audio of Los Angeles will be the first U.S. dealer for the HD4, and was also appointed as the exclusive Southern California dealer for British-made Raindirk consoles. NXT Generation Inc. (Greendell, NJ) is a new company specializing in maintaining and overhauling Sony professional DAT recorders. The company is a spin-off of JRF Magnetic Sciences, and its technicians are all factory-trained by Sony. Phone (201) 579-4849. David Roubush, former corporate marketing manager for AKG Acoustics Inc., started Strategic Marketing Partners, an independent firm specializing in marketing technology-based products. The company, based in Lafayette, CA, functions as an outside resource to upper management, helping to develop and execute practical strategies for achieving high market impact. Phone (510) 284-8417. Post-production studio Hollywood Digital made five major additions to its staff this month. Eldon Phillips, Ernie Camacho, Jim Bohn and Michael Hutchison have joined the facility's editing staff; and M. Drew Marsh is its newest colorist. Crystal Taylor Systems Inc. of Huntingdon Valley, PA, recently hired Kristin Yandrick, formerly of The Toy Specialists, NYC, as rental manager. ■

—FROM PAGE 12, CURRENT

tance to the greatest number of students and institutions."

HARMAN ACQUIRES LEXICON

Harman International (Northridge, Calif.) recently acquired Lexicon Inc. (Waltham, Mass.). Lexicon joins JBL Professional, Soundcraft and DOD as a wholly owned subsidiary of Harman. "Most of our competitors are now parts of larger companies," said Ron Noonan, president of Lexicon. "As a small, independent American company, we felt that we were somewhat vulnerable, even though we finished last year with earnings up 45 percent."

Noonan and the rest of Lexicon's management team will stay on, as will the firm's existing distributors, independent representatives and internal staff.

NEUMANN FACTORY TO RELOCATE

At the AES Convention in Berlin, Dr. Jorg Sennheiser announced that his company would be closing the 46-year-old Neumann factory in Berlin on June 30, due to increased leasing costs for the facility. Sennheiser KG plans to acquire a separate manufacturing facility for the streamlined Neumann microphone and console product lines. Another non-manufacturing facility is also being sought in the Berlin area before the end of this year to house the remaining Neumann staff, who will be oriented more toward "system planning and design," under a new corporate development plan for Neumann dubbed "Strategy 2002."

CONFERENCE NEWS

The Association of Professional Recording Services will host APRS '93 in London, June 23-25. Call (011) 44 923 772907, or fax (011) 44 923-773079. Pro Audio & Light Asia will be held in Singapore from July 7-9. Call (011) 852 865 2633 for more information. ■



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by Ken C. Pohlmann

EUREKA 147

It now appears that digital radio will become a reality in your lifetime. In fact, you might be enjoying the new era of crystal-clear radio reception before your car loan is paid off. Much of the industrial world is on the digital radio fast track; the United States (courtesy of the EIA) began equipment tests this spring with an eye toward picking a standard later this year. However, it appears that the system envisioned by the U.S. will be conceptually different from and incompatible with the system selected by Europe, Canada, Mexico and Australia. Specifically, whereas the U.S. is leaning toward a new in-band system, other countries are embracing the established, out-of-band Eureka 147 system.

Eureka is a research and development consortium of European governments, corporations and universities that was established in 1985 to develop new technologies. By 1990 more than \$7.5 billion had been invested in more than 300 projects ranging from biotechnology to transportation. Project number 147, started in 1986, aimed to develop a Digital Audio Broadcasting system. A prototype system was first demonstrated in 1988, and Eureka 147/DAB has remained the pioneering technology ever since.

Eureka 147 employs MUSICAM (Masking-pattern Universal Sub-band Integrated Coding And Multiplexing) bit-rate reduction in its source coding to minimize the eventual spectrum requirements. Derived from MASCAM (Masking-pattern Adapted Sub-band Coding And Multiplexing), MUSICAM divides the input audio signal into 32 750Hz-wide sub-bands and uses perceptual coding models of minimum hearing threshold and masking to achieve data reduction. Each sub-band is given a 6-bit scale factor according to the peak value in the sub-band's 12 samples and is

quantized with a variable word ranging from 0 to 15 bits.

In addition, a sideband Fourier spectral analysis is performed on the input signal to assist in the masking threshold calculations. In this way, the data rate is independently reduced to, perhaps, 128 kbps per mono channel (256 kbps for stereo). Extensive tests of 128kbps MUSICAM have shown that the coder achieves fidelity that is indistinguish-



able from a CD source, that it is monophonically compatible, that at least two codec stages produce no audible degradation, and that it is preferable to very high-quality FM signals. Parenthetically, ISO/MPEG have recently defined several data reduction systems: Layer 1 is MUSICAM operating at 192 kbps per channel. Layer 2 is MUSICAM operating at 128, 96 or 64 kbps per channel. Layer 2A is a joint stereo version of MUSICAM operating at 128 and 192 kbps per stereo pair. Layer 3 is a version of ASPEC. Layers 2, 2A and 3 have been judged to be acceptable for broadcast applications; in other words, the 128 kbps per channel data reduction currently endorsed by Eureka 147 does not impair the quality of the original audio signal.

Eureka 147's most innovative fea-

ture is its method of transmission coding. In traditional radio broadcasting, a single carrier frequency is used to transmit a mono or stereo audio program—one carrier per radio station. This method allows complete independence of stations but poses a number of problems. For example, reception conditions at the receiver might produce multipath interference at the desired carrier frequency, in part because the station's bandwidth is narrow (e.g., 250 kHz for current analog FM). In

addition, wide guardbands must be placed around each carrier to prevent adjacent interference. In short, independent carrier transmission methods are not particularly robust and are relatively inefficient.

Eureka 147 digitally combines multiple (bit-rate-reduced) audio signals, and the combined signal is modulated across a wide broadcast band. The channel-coding method used is COFDM (Coded Orthogonal Frequency Division Multiplexing) with QPSK (Quadrature Phase Shift Keying) modulation on each carrier. This method splits audio data

among many 15kHz-wide carriers, spreading any given audio signal across a transmission band of 1.5 MHz or more. This reduces the data rate on any one carrier, which promotes long bit periods. This frequency diversity provides important benefits. For example, it yields great immunity to intersymbol interference and multipath interference. Not only are adjacent bits interleaved over a wide frequency range, but convolutional coding corrects those errors that do occur. Finally, time interleaving combats fading experienced in mobile reception.

The spectral efficiency of 147 is higher than with individual carrier methods. The transmission power efficiency, as with many digital radio systems, is even more impressive; it may be ten to 100 times more power-efficient than FM broadcasting. Looked at another way, a Eureka 147 station could cover a broadcast market with transmitter power of less than 1,000 watts.

Eureka 147 is inherently a wide-band system, and is called an out-of-band system because it would require a new spectrum allocation outside the existing commercial broadcast bands. The narrowest 147 configuration would use 1.5 MHz to transmit six stereo channels. In practice, a much wider band would be required for most applications. For example, up to 512 carriers might convey 16 stereo channels in a band that is 7 MHz wide. In other words, fully implemented Eureka 147 would occupy an entire radio band. Because spectral space is already crowded, this poses a major problem. Proponents have often argued for the L-band (1452 to 1492 MHz) for Eureka 147, but the U.S. government is unwilling to commit that space. On the other hand Eureka 147 could operate in a number of other bands, ranging from 50 to 3,000 MHz.

Although some European countries have allocated the 1452-1492 band for DAB, Germany and the UK have not. Germany has argued for DAB in the 200 to 230MHz band, where it would replace upper VHF TV users. Under one plan, this space could be used temporarily until DAB market penetration justified replacing the FM band with DAB.

Canada has tested 147 extensively



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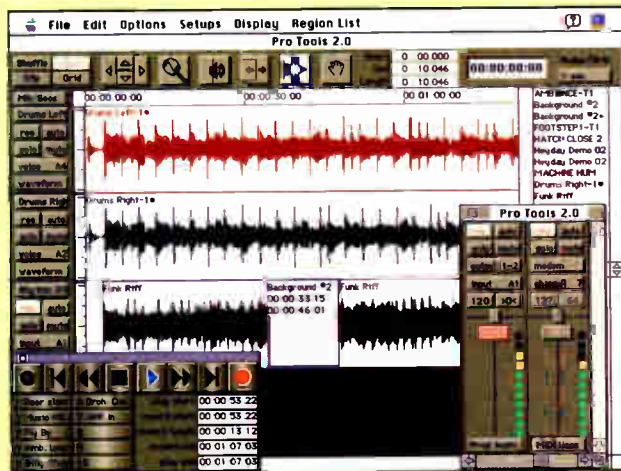
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in the L-band. In one test, fixed and mobile receivers performed millions of signal strength measurements using a 50-watt transmitter and 16dB antenna (EIRP of 2 kW at 1,500 feet) to broadcast nine CD-quality channels (per channel power of 200 watts) with solid coverage to distances 28 miles from the transmitter. Canada is moving to establish a permanent broadcast test facility in Toronto.

But in the U.S., although the FCC has proposed use of the S-band for digital radio, lack of suitable spectral space has thrown a possibly fatal obstacle in the path of 147.

Other drawbacks also exist. In particular, the need to combine stations leads to practical problems in some implementations. Eureka 147's designers, taking a European bias, envisioned a satellite delivery system that would blanket Europe with a single footprint. Terrestrial transmitters would be used mainly as gap fillers, operating on the same frequency, to supplement signal strength in dense urban canyons where a satellite's signal might be diminished. This mainly monolithic approach is appropriate in Europe but much more difficult in the U.S., where the continent is much larger, and the stations are much more competitive. With satellite delivery of Eureka 147, the concept of local markets would become more difficult to implement, while national stations would become much easier to implement. Clearly, this would totally redefine the existing broadcast industry.

Eureka 147 could be employed with terrestrial transmission wherein local towers supplement satellite delivery and local stations coexist with national channels. In January 1991, the terrestrially minded NAB endorsed such a system and proposed that the L-band be given over to it. The plan called for creation of "pods" in which each existing broadcaster would be given a digital channel; four stations would multiplex their signals over a 1.5MHz-wide band. The power levels and location of pods would duplicate the coverage areas of existing stations.

The NAB estimated that no more than 130 MHz of spectrum would be needed to accommodate all existing broadcasters in the new system.

However, opposition to the endorsement quickly grew; broadcasters did not like the multiplexing arrangement or the potential for new stations it allowed, and in March 1991 the Department of Defense indicated that the L-band was not available. In the face of these obstacles, the NAB reversed its position in January 1992 and, instead, proposed development of a digital radio system that would operate in the FM and AM bands, coexisting with existing FM and AM stations. Meanwhile, unperturbed by America's political and commercial conflicts, other countries have forged ahead with Eureka, arguing that,

practical problems aside, Eureka remains the best technical system available.

While Eureka is viable in the S-band, and possibly in the FM and AM bands as well, it now seems that the U.S. is heading away from Eureka. Next month we'll consider the pros and cons of in-band digital radio technology with a look at some of the systems competing to become the U.S. standard. ■

Ken Poblmann is the godfather of digital for the Music Engineering and Audio Engineering programs at the University of Miami.

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USE READER SERVICE CARD FOR MORE INFO

by Stephen St.Croix

FOR FOUR MEMORIES

Correction: Due to an editing error in the March 1993 "Fast Lane" column on MiniDisc technology, the term "lossy compression" in the original text was inadvertently changed to "lousy compression." *Mix* regrets this error.



1: ZOMBIE ROCK—MYTH OR REALITY?

I once did a session with a very well-known guitar player who was so stoned that we actually had to lift him up onto a stool and wedge him into a corner of the studio so that he wouldn't fall off before the tape rolled. He could not speak; he could acknowledge conversation only by slightly altering the rate at which his eyelids fluttered. By the time we got him balanced, gaffer-taped his guitar in place, and made it back to the control room, I was pretty sure he had stopped breathing.

I sat behind the console and slowly turned the monitor volume up... way up, to the point where all the tiny electrons in the preamps began to whisper to me, but the artist in question whispered nothing. I saw myself making the call to his record company, his agent and his wife. I heard the screaming responses in my mind: "He's what? We only left him there with you a few hours ago! What did you do to him? He had four more albums due..."

Well, with nothing to lose, I dropped the monitor levels back to something reasonable for the era (an SPL of about 120 or so) and rolled tape.

Even before the song started, he

must have heard the hiss: His hands moved to position on his guitar (we all sighed and cheered in relief), and when the first downbeat came he was there, with the most amazing guitar work I have heard to date. He played through the piece—a very complicated piece—in one smooth, flawless monster take. You have heard it on the air a thousand times. Then he fell off the stool and hurt something.

2: THE PRICE OF FAME

I was in New York at one of the heavy major studios, working with a different (and quite insane) superstar jerk guitar player. If there were any drugs involved here, I didn't see evidence of it. But if drugs were involved, my guess would be crystal methadrine and kerosene, 50/50. This guy thought he was the absolute master of the universe. He played real fast, and was very popular, so maybe he was.

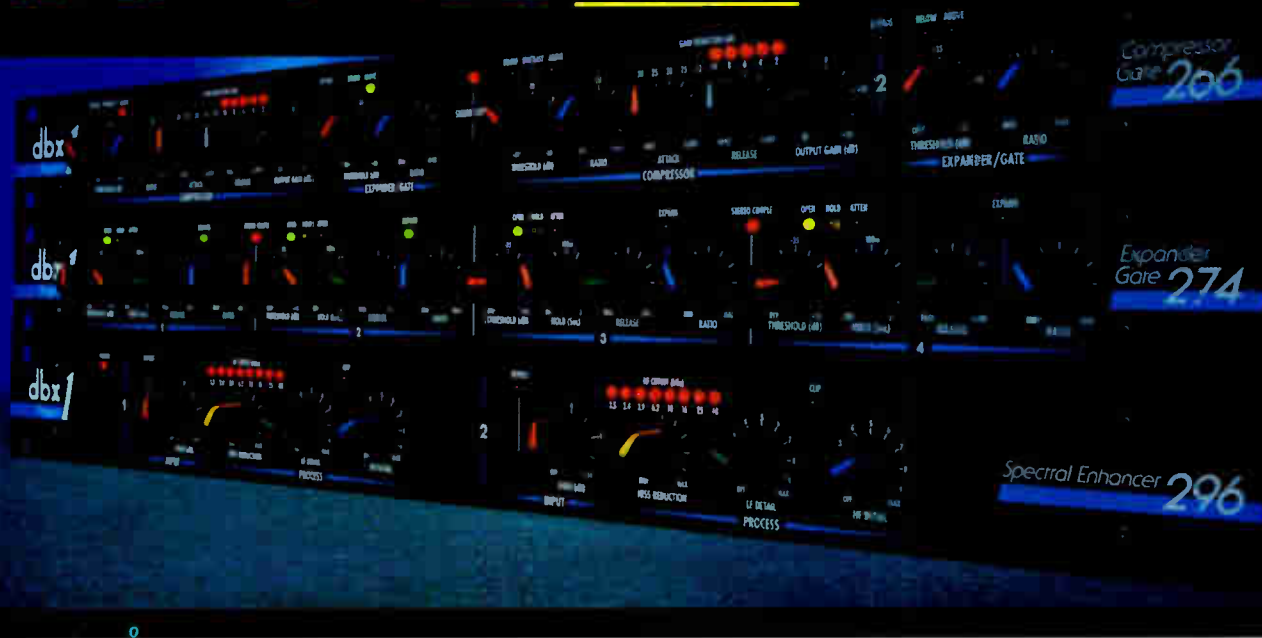


Anyway, I was there to do some guitar overdubs, because he needed a few slippery, blues-type fills (I don't do methadrine or kerosene).

So I found myself on a stool in the middle of the room, looking into a dark control room at shadowy figures talking and pointing toward me. I didn't know these people at all, so I wasn't totally comfortable. Tape rolled, and I blew a take. (The multitrack in the back of the control room had a 1-kilowatt record-arm light focused directly at my eyes.) They rolled it again, I dropped a note again. (I think I can see a faint red

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glow in the eyes of those people on the dark side of the glass.)

Superstar jerk guitar player starts fiddling around with something on the producer's table, punching numbers on a keypad of some sort.

Tape rolls for the third time, I start playing, I'm doing fine, and superstar comes running out into the studio, pulls the earphones away from my ears, and whispers "nickel a second, nickel a second!" Then he lets go of the cans so they snap back over my ears. This jerk had actually been in

there computing exactly how much the studio time was per second so he could bust me for blowing two lousy takes.

By the way, I did not blow that take, and it is the one on the record. Maybe a few of you, those with hyper-golden ears, may have noticed a strange "whumping" sound ten seconds into that song. The sound of two cans clapping.

For two years I reached for my ears every time it came on the radio. Several friends felt that I should not drive with the radio on until the song fell out of heavy rotation.

3: THIS CITY HAS A MILLION STORIES, AND A MILLION VOLTS

Speaking of New York, it was in yet another major label's studio that I discovered one of the most bizarre technical problems I have ever seen.

What do you have in New York? Tall buildings and lots of cabs. Well, it is very common for recording studios to be underground or very high.



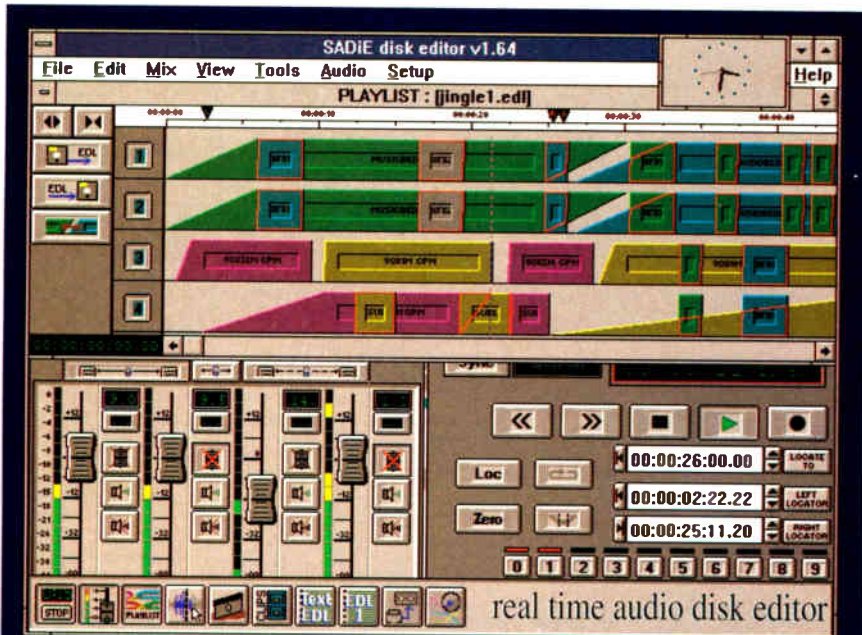
(Street noise is severe, and who wants to pay for business frontage when it's that last thing you need?)

This particular studio was very high and very nice. They had, however, quite a severe problem with gear blowing up. It seems that often, while putting gear into or removing it from their metal racks, huge electric arcs would appear, taking small portions of the known universe out of warranty. My company, Marshall, was not exempt, which is why I was there. How many fried Time Modulators can a guy look at before he gets on a plane to find out how they do it? For those of you who don't like rhetorical questions, the answer is three

Anyway, it turns out that they had a lot of problems. The key to finding the solution was hidden in one fact that they all simply accepted; they could not record during rush hour! Far too many RF demodulation artifacts.

I listened to this junk, and it sounded like cabbies talking to me, but of course it was just a guess—I don't speak Iranian. It turned out to be exactly that. This studio was on an outside corner of an older, poorly grounded skyscraper, directly in line with the transmitters from at least two major cab companies.

I know this is hard to believe, but the actual high-frequency, vertical voltage gradient in that room was so high that you could clip a test lead to a rack cage at the bottom, near the floor, and then touch the other end of that lead to the same cage at chest



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level and draw a quarter-inch arc! I have no idea how they recorded audio under these conditions, but I do know that they used massive shielding on their decks and desks.

In researching this, I personally viewed footage from a New York demolition firm showing several three- to eight-foot bolts of lightning appearing where internal steel construction girders were being ripped apart during building demolition, all due to these amazing voltage potentials generated by the ridiculous RF fields present in the Big Baked Apple.

The studio's solution? One that I agreed with completely; they closed down and moved.

4: THE STRANGEST CUT OF ALL

Okay. One more, then you can go on to read the rest of this month's issue. London. Hyper-mega-superstar. Very nice guy. I'm not there to play this time, but to work on the dark side. I got there a few hours before the star, so that I could sound the place out and learn the desk. As I wandered around, I noticed a beautiful piano in the studio. It sounded great, and we were to record it, so I started to set up the mics.

When I sat down to play this piano, I noticed something strange. You know the piece of wood behind the keyboard? The one that is directly in your face when the keyboard is covered? You know, that part of the piano that nobody knows the name of? Well, on this piano, a significant portion of it was...Well, it was missing.

In the middle, directly over middle C, the top edge (where the lid touches when closed) was gone. More than an inch of wood was missing from the center, and it tapered out smoothly until about 1.5 feet either side of center, where everything was normal.

I asked the other engineer what it was, and he laughed and told me I would have to wait and see for myself. I couldn't stop wondering, though, and I developed a theory that it was some sort of acoustic modification, a relief port or something. Maybe they stuck a mic there.

Finally the hyper-star came in, greeted us, chatted, and then walked over to the piano and sat down. He then produced a rather large bottle



of cocaine hydrochloride, tapped out a line onto the top of that very piece of wood, pulled a razor blade out from under the seat, and began methodically chopping it up, along with a bit of the wood it was on. He then inhaled the mixture, and recorded

yet another Platinum album.

I haven't seen him in over a decade, and I sometimes wonder if he ever got that entire piano up his nose. He'd certainly had a good start when I met him.

By the way, the wood piece on a piano that comes down and smashes your fingers when you play is called the fallboard, and the piece that went up this guy's nose is called the stretcher. I also want to make it clear that in no way do I condone abusing wood in this manner. ■

Stephen St. Croix needs a vacation.

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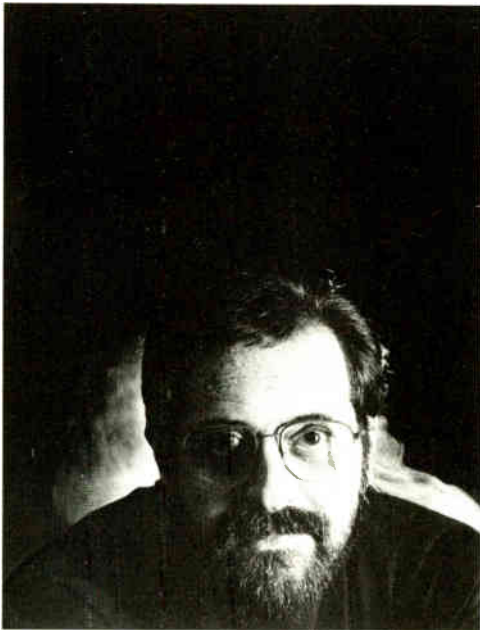
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by Mr. Bonzai

PHIL RAMONE

LIFE IN THE HIT ZONE, PART 1



jazz pals and started recording some new sounds at home. By the time he was 21, he was engineering for Burt Bacharach & Hal David, Quincy Jones, Leiber & Stoller, Neil Diamond and Doc Pomus.

Phil Ramone is an engineer who is absolutely in control of his sound, as well as a producer with the creative powers and *simpatico* to push sessions into peak performance.

Bonzai: What were you up to in Los Angeles today?

Ramone: I was at a photo session for Gloria Estefan—we're working on a Christmas album together.

Bonzai: Doesn't it seem strange to be thinking of Christmas so early in the year?

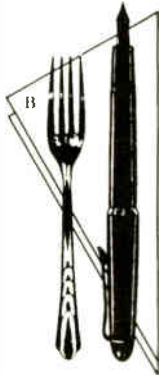
Ramone: Yes, but if you don't start getting it worked out now, you never get it done. You really have to plan way ahead. And tomorrow, I'm heading up to San Francisco to work with a group I'm starting next week.

Bonzai: Is this a new group?

Ramone: Yes, they're called Bloodline, but I've been with them for about a year in development. It features a 15-year-old whiz kid on guitar with Aaron Davis, the son of Miles Davis, on drums; Robbie Krieger's son, Waylon Krieger; and Berry Oakley Jr., whose father was in the Allman Brothers. And we have a keyboard specialist named Lou Segreti. Lou adds to the foundation of the group, because they are quite young, ranging in age from 15 to 21. It all started when I heard this guitar player, who was 14 at the time.

Bonzai: Do you believe in reincarnation?

Ramone: In this situation? [Laughs] Well, you gotta believe in something. With exceptional talent, I don't know if its in the genes or reincarnation. I've been involved



The following interview with Phil Ramone is a little different than most profiles of this genius, this lucky bastard, this musical magician. Instead of just schmoozing nostalgic with Ramone, I thought it would be interesting to dwell on what he is doing right now and quiz him on how one particular project is done in 1993.

Next issue we discuss Billy Joel, Paul Simon, Paul McCartney, Frank Sinatra and even get a glimpse of the young engineer during Marilyn Monroe's tribute to John F. Kennedy, "Happy Birthday, Mr. President." When you go through his great records of four decades you might guess Ramone must be sunning himself at a rest farm in the Catskills by now. But no, he's off to make some history with a 15-year-old guitar player called "Smokin' Joe."

Ramone himself got an early start in music as a three-year-old child prodigy violinist who entered Juilliard at 13, but goofed off with his

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with gifted artists like Julian Lennon who suffer the comparison of being involved musically with the same set of hereditary genes. I do believe that in some families it does really work.

There are no rules, of course—kids who are talented are talented. But it's extremely difficult for those people who happen to be the children of wonderful musicians. They suffer this thing called comparison, which is hard. I don't think it's any different than if you took over in a hardware store where your father

worked—there is the same element of testing—but musicianship involves a sensitivity, that emotional thing of how you accept your role as a musician with regard to what you believe about yourself. It takes a while for a teenager to deal with just growing up, and then to handle the comparison with his father.

Bloodline is not a lightweight band. We are certainly not trying to do anything that is in the novelty world. It does have sounds that remind you of the Allmans and things like that, but that's okay—that's just the way they play.

Bonzai: How did you get involved in the first place?

Ramone: I saw Joey Bonamassa—they call him "Smokin' Joe"—in a club in New York City about a year and a half ago. His manager, Roy Weisman, had called me and asked if I would come and see what I thought of him. It was an incredible night of music, and my only suggestion was that a band should be created around what Joey did. I said that if there was interest in my involvement, I would have to be there from the ground floor. If things didn't work out, at least I would feel I had a responsibility to this group. That's the way I took it.

About four months later, I was asked to listen to the new band in Utica, upstate New York, where Joey lived. They had moved into a house and started playing together to see what would work musically, if our personalities worked, and if Joey would be happy being a member of a band that had other elements in it. After three or four days of that, I recorded some roughs and ideas and heard what they had to say. Afterward, I said that I was ready to commit to this. That was November of 1991.

Bonzai: How did you find material for the band?

Ramone: It was critical to discover who could write, what would be written. We had several members who wanted to try writing for the group. I listened to some thematic pieces that Aaron Davis had written, and Berry Oakley Jr. had some half-finished songs. Each guy started with a simple thing, and we rehearsed for a couple of months and then started performing in little clubs. In upstate New York no one cares who you are—either you play well or you don't. We went through a catharsis of deciding what the good songs were, and what wasn't working. There had to be a commitment between writing and what they would play in the clubs, and what worked with a young guy turning 15.

We introduced some outside writers, some veterans who have had experience working with established bands, just to see how they would fare with this group. It was a nice marriage for some of the new songs. So it's been building the material for about a year, which worked well for us because the band now performs

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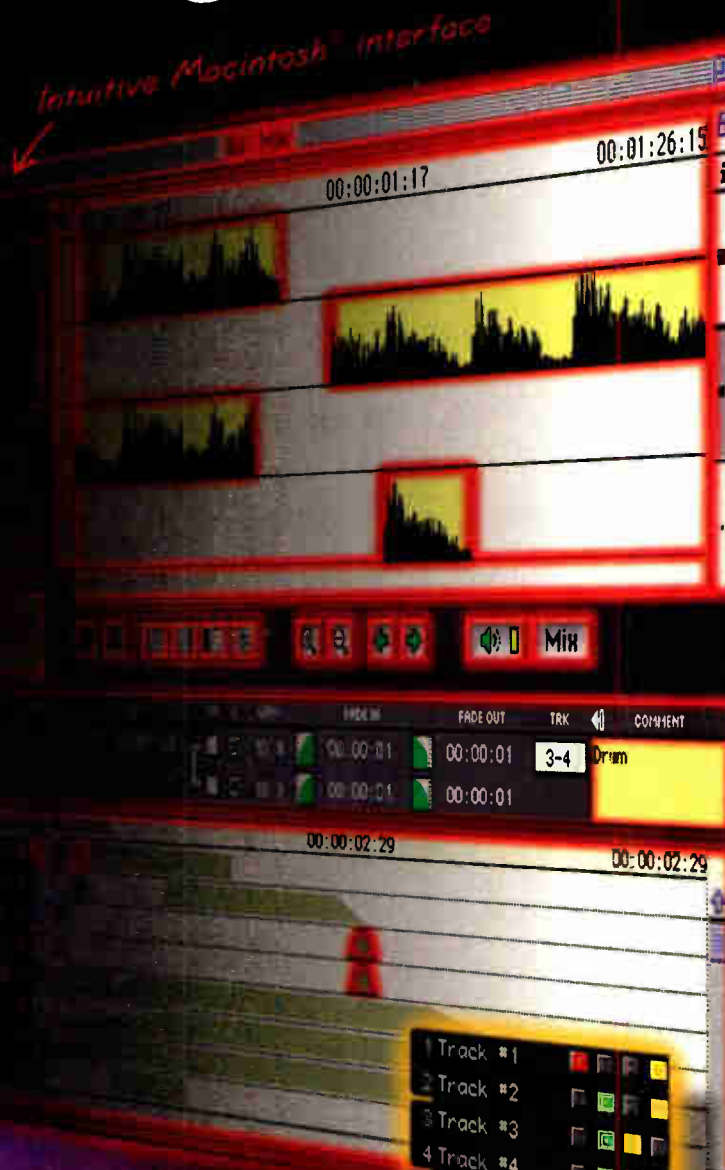
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incredibly well, the audience responds, and the record companies are very positive. There's been a commitment from SBK to move forward.

Bonzai: I bet a lot of young musicians reading this will feel that it sounds like a wonderful, almost luxurious, experience. Who funds this type of extended project development?

Ramone: A company called Premiere Artists Services Inc., which is Eliot Weisman and his two sons Roy and Eric. This was Roy's baby. The company manages Liza Minnelli, Frank Sinatra, Steve Lawrence and Edie Gorme. That's the history of their work, and they wanted to move along with younger-based music, and they were willing to gamble a significant financial investment to make sure it would work.

This wasn't a garage band that walked in, and all you had to do was fund it for two months. We knew this was going to be a long-term way of working. It's quite an adventure for all involved. If it

works out, the rewards for everyone will be quite good. And we've all worked on that basis. You do not find this in every situation. Even a bar band has to go out and work 50 or 60 gigs just to pay the rent. Two members live in Southern California, one lives in Northern California, and two live in New York. Obviously, logistics needed to be worked out.

Bonzai: Where are you going to record in San Francisco?


Ramone: Across the Golden Gate Bridge in Marin County at Skywalker Ranch. It's a good place for a meeting of all the talent, and it's been a desire of mine to work up there. I did not want to be in a situation where people could keep popping in. I have that philosophy from the years that I worked with Billy Joel. You stay together, and you become a creative unit. The same thing happened with Paul Simon: We had a rhythm section that really hung out together.

You know, something happens to you when you're producing, when you can be part of the band. There are all those corny jokes about the "fifth Beatle," but in reality there is

some truth in it. You actually should become a part of the band, and you take on a lot of personal responsibilities. Otherwise, you don't really know what you're producing. What's out in front of a band is half of what you really get, because there are a lot of hidden agendas that must be addressed. In the beginning, 90 percent of the bands are very happy together, but as they get to know each other they have their different problems that must be resolved, both musically and personality-wise. Somebody has to be there to keep it together, because when it plays well it's really magic. And that's what making records is all about.

Bonzai: So now it's time to get the magic down on tape?

Ramone: Yes, and in a very interesting environment. It is somewhat luxurious, but we did the homework and recorded the demos in the basement with a little 4-track recorder. If the readers want to know what it's really about, it isn't about money. It's about being careful and not being overly impressed with tons of gear. We worked with a reasonably priced rental of a P.A. system, and then



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management invested in a small monitoring system so that the guys could hear themselves. And I just recorded the material with a 2-track DAT and dumped it over to a 4-track TEAC, and then overdubbed on that. Just to get it down so we could hear the quality of the songs, with no frills and no major effects.

Bonzai: When you say you recorded, did you do the actual engineering?

Ramone: Well, I sat down and set it up, and after that it's pretty easy. Our keyboard player did most of it after that.

Bonzai: But you keep your hand in the engineering?

Ramone: Oh, you bet, absolutely. But here's the thing with engineering and producing: It's a funny combination of being in the room but needing to leave the room. For this project we have Jeremy Smith coming up to engineer at Skywalker. There are several friends who are going to be working on this to make sure that everybody has a chance to feel like they are a part of this group project. We have ten days to do five songs completely. You have to work at a pretty good pace, and you have to take into consideration the pressure on the band. It takes a team effort. I'm convinced we'll be okay, because it's an attitude thing, and it's a workmanlike situation.

Bonzai: We went through a period of recording excess 20 years ago. How is it different now?

Ramone: You're not talking about mad signings for mad money anymore. Fortunately, or unfortunately, the art and the music and the money go together, and you have to be precise about what that means to you. There is no excess money being thrown at you. If you really want to deal with what you have to do, which is to make great music, you spend your time and your studio time correctly. You need to be disciplined, and you cannot go in unprepared. And there is no reason to be unprepared anymore, because you can rehearse and record at home or in an environment that doesn't have the expense of a great studio.

If you bring the project in correctly, and within the budget, it gives the record company a chance to spend money on promotion, which is the other half of the picture. If you

know what you are doing musically, and you record it well, then it's up to the record company, and some luck, and some live appearances and guidance to get it on the radio. It's a combination of factors that make sensible records.

Bonzai: *Mix* editor David Schwartz did an interview with Billy Joel, and David asked what you brought to the records as a producer. Billy called it the "X Factor." He couldn't really put it in words. What do you think the X Factor is?

Ramone: It means being very honest and extremely objective about what you hear, and not throwing your ego around the room so that the band doesn't have confidence in itself.

It means having a relationship with the artist where he trusts you with the very inside of what the song birth is about. That song process is so personal, and I shared so much of that with him. And throughout all the processes of making the record, none of us took on an individual ego thing like, "Wow, we're so hot—we can't be wrong."

Every time we started the next album, we asked, "How do you get the motors going?" That's what a good producer is supposed to know—how to get that motor going for everybody, not just for himself. And we were diligent not to repeat any ideas. If you examine those records you'll find we didn't repeat ideas, and we didn't take the safe route just because we had a hit with one kind of groove.

Let's face it, a shuffle is a shuffle, a two-and-four is a hard beat. You know what those beats are, but so do 200,000 other people making records. Inside there is the faith in each other—a tremendous amount of confidence has to be communicated to the artist.

It's disarming to make a record with so many experts in the way. Sometimes you have to go off by yourself and adjust the songs. It comes down to the song and how you handle it. The respect for the lyric and the music is 99 percent of what makes a good song a hit anyhow.

Bonzai: Is there always a certain amount of fear or trepidation when you start a new project?

Ramone: Well, I feel I am blessed with a sense of freshness each

time, and I'm not trying to be clever or slick. I have an excitement inside me about starting. I think you take that on as the real basis of your work.

If you have fears, you start to go nuts. It's more about caring and interest than worrying whether you can do something that you haven't done before and doing it better. Those anxieties are normal anxieties for every artist and producer. How fresh is it, and does it remain true? Maybe the record company will get excited if it really hits someone and makes their hair stand up on end. They might even feel emotionally in tune with it. If you go in and say I'm going to write a Number One hit it is not going to happen.

Bonzai: You did some beautiful work with Julian Lennon. What is he up to now?

Ramone: I think he's writing, and I suspect he's doing very well. We began *Valotte* when he was 18 years old writing the early songs and then starting to really write the rest, some of them during the final process of making that album. Like other artists, I think Julian went through a difficult stage of being compared to his father, which was natural. He sounded like his father, and people thought I did that intentionally. I don't know if that's a compliment or not. Obviously if I could do that I would have cloned myself to sound like John, and I would have made the album myself. [Laughs] That's a machine I haven't invented yet.

You have to take into consideration the growth and the period he went through, and it's an amazing feat when you consider that he not only beat the odds, but he also made a very good record. Subsequently, he had things like tours and choices that weren't his and audiences changing—I don't think he's been given that extra moment yet. I think it will happen, because he's now in his late 20s. He has no agenda other than to write, and he's a very good writer. The pressures of the ups and downs leave tremendous marks on your spirit and your mind. It's just a question of how he's going to deal with it. I really trust Julian: He's a substantial artist. ■

Roving editor Mr. Bonzai is putting together a band consisting entirely of celebrity pets.

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World Radio History

*New
Directions
in* **Microphone
Technology**
BY GEORGE PETERSEN

Over the past couple of decades the professional audio industry has benefitted from amazing leaps in technology, ranging from ten-pound power amplifiers to pocket DAT recorders. Need the sound of a vintage Steinway concert grand or the soprano section of the Mormon Tabernacle Choir? No problem. These days you can get whatever you want instantly from a floppy disk or CD-ROM.

But over this same short 20-year period, changes in microphone technology have been more evolutionary than revolutionary. In fact, the hot ticket these days is more likely a Truman- or Eisenhower-era vacuum tube model than the latest laser-assisted/turbosonic microphone. However, with the concept of the all-digital studio moving closer to fact than science fiction, a new golden age of

microphones may lie just around the corner.

In examining the dodgy subject of "New Directions in Microphone Technology," we opted for something a little different than the "safe" approach of asking manufacturers why their current model XXX-A represents the cutting edge—which of course it always does—until the new improved XXX-B is launched at the next AES show. We solicited the opinions of three individuals whose knowledge spans three quite different areas of microphone technology. Participating in this forum are Stephen Paul, an expert in the repair and modification of vintage microphones; author/consultant and engineer John Eargle; and producer/engineer/inventor George Massenburg.

THREE EXPERTS
SPEAK OUT
ON FUTURE
DEVELOPMENTS IN
TRANSDUCER
TECHNOLOGY

STEPHEN PAUL

Stephen Paul—the owner of Stephen Paul Audio, a Sherman



With the concept of the all-digital studio moving closer to fact than science fiction, a new golden age of microphones may lie just around the corner.

Oaks, California-based firm—is regarded as a pioneer in developing ultrathin-film technology for microphone diaphragms, finally breaking the seemingly insurmountable 1.0-micron barrier with his new 0.9-micron designs. Paul is also a singer/songwriter who began his career as a recording artist for Atlantic Records in the 1970s and has recently completed an album of new material.

Why haven't we seen any radical changes in microphone technology over the years?

Paul: I think we've made some radical changes in microphones. Our 0.9-micron diaphragm is part of

the future of microphone technology. Until we started building thin diaphragms, nobody seemed to care how thick the diaphragm was. It must have made a difference, or it wouldn't have lit the manufacturing world on fire.

But if you want to look at *radical* possibilities, some guys in England built a microphone that uses a laser beam that bounces off a reflective diaphragm. Now I've been working on a system that eliminates the diaphragm: It uses changes in the refractive index of air to modulate a laser. But it's important to remember that when it comes to doing vocals with certain artists, you still may want to use

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a [Neumann] U47. That's just the way things are. Some classics never die.

The concept of microphone *resolution* is an area where mic manufacturers are trying to improve. Resolution is more than bandwidth—it's how *controlled* the moving system is. Our thin-film technology involves a lot more than just putting a 0.9-micron diaphragm on a capsule—it also involves a lot of tweaking to the damping system and the backplate to make it work. Also, everybody talks about the need to improve dynamic range, supposedly to keep up with digital, but in my opinion digital doesn't sound as good as a correctly biased roll of Ampex 499 being smacked over its head. Certainly a microphone's sound pressure handling is important, but dynamic range can be a funny thing. If you're making audiophile records, the low end of the dynamic range is important in terms of how quiet you can get the mic to be. But if you look at the average multitrack pop music mix, where the engineer has lots of outboard gear humming away, it's rare that the self-noise of what's coming out of the console is less than -60 dB. So a lot is made about nothing in that area.

The top end of the microphone and how hard you can hit it without having to pad the mic is more important. In the old days, when you wanted to pad a capsule on a condenser mic, you stuck in another capacitor parallel with the capsule. This drops the capsule's output by putting dead capacitance in parallel, but it also creates distortion, because it changes the physical behavior of the diaphragm as well as changes the way things are loaded. These days, a lot of manufacturers are dropping the bias voltage on the capsule, which gives better padding with lower distortion. It's a small thing but a big advance in sonic quality.

Laser mic technology may provide a breakthrough someday, but keep in mind that all these changes in mic technology really come down to the human ear, which has a diaphragm, anvil, stirrup and cochlea. The basic breakthrough was in 1935, when the dual-diaphragm condenser capsule was invented, and it will last well into the next century.

What is the magic of tube mics?

Part of it is distortion, and part of it is that the distortion is octave-distor-

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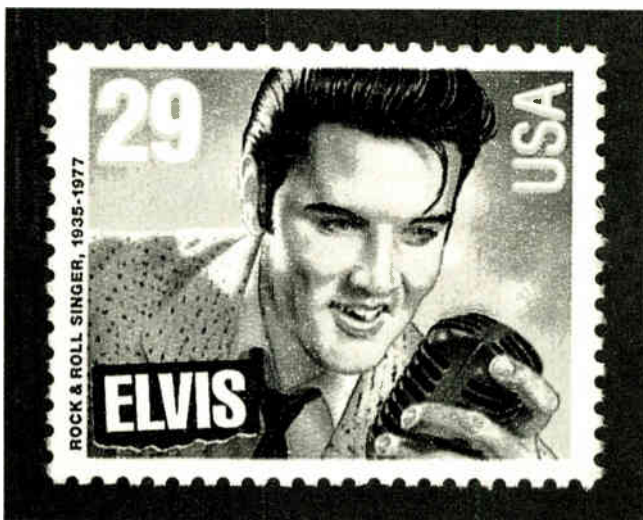
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The King croons into a Shure Unidyne 556S mic on the recent Elvis Presley stamp.

THE SHURE UNIDYNE SERIES A LEGEND LIVES ON

"The more things change, the more they stay the same," or so the old saying goes. And this is certainly true of the Shure Unidyne microphone, which for over 50 years has been seen with some pretty impressive names, whether it's General Douglas MacArthur speaking into an original Unidyne 55C to accept the Japanese surrender on the deck of the USS Missouri at the end of World War II, or The King crooning into a Unidyne 556S on the recent Elvis Presley commemorative stamps.

But this story starts more than a half-century ago, in 1938, when Shure engineer Ben Bauer developed the Model 55 (technically named the Unidyne I). As its name implies, this was the first dynamic microphone to achieve a unidirectional pickup pattern using a single element, which previously required the use of two separate capsules mounted in one housing. The result was a smaller microphone, with smoother response and tighter directional control.

Three years later, Shure debuted the Model 555—essentially a Unidyne 55 with a shock-mount built into the base—for broadcast applications. A year later, the 555 was replaced by the 556 (a supercardioid with

improved frequency response), which remained a standard for the next decade.

With the advent of television and other situations requiring more visibility of performers' faces, Shure introduced the (Unidyne II) 55S, which was also available in a shock-mounted broadcast version Model 556S. The "S" suffix designated "small," and the new models were smaller, with improved audio characteristics.

More recently, the latest Unidyne model—the 55SH Series II—has become an almost de rigueur accessory for performers seeking to re-create that classic vintage look. You may be surprised to see how often this mic shows up in movies, television and MTV these days.

A couple of months ago, I bought two 55SH Series II mics for a video shoot I was producing. Retailing at \$217, the 55SH Series II is the ideal choice for applications requiring a rugged vocal mic that conveys an image of another era. Soundwise, the 55SH Series II has a mellow sound, roughly equivalent to an SM58, but without the 58's presence boost. Of course, if you're looking for a great-sounding vocal mic, Shure's SM87 does the trick. But if you need something that defines coolness, the Shure 55SH Series II may be just what you need.

—George Petersen

tion—second harmonic. Here's one of my pet theories, which may or may not hold much water: If you look at solid-state semiconductors, you'll find that they are really reluctant to deliver electrons. The electrons have to be yanked out of position, and the carriers have to be pulled along from hole to hole to hole, until finally you have a flow. In a tube, there's this cloud of electrons in a free space, which is only too willing to zoom to the anode or the plate.

By analogy, it's similar to the way that people marvel at the term 'discrete' and feel that discrete is so much better than ICs. There are two basic things that go on. Originally, we all thought that ICs were clearer, because they don't *gradually* distort—they're either clean or they're latched up. Transistors tend to clip gradually, so you can be clipping a transistor without realizing it. The reason I think we like discrete transistor circuits over ICs is *surface area*.

If you look at the surface area of a transistor—the area of the silicon and the epitaxial layers—and compare it to the area of a transistor on an IC, you see that it's like comparing a V-16 to a turbocharged V-4 engine: You can get the performance out of both of them, but there's no substitute for cubic inches. Of course, tubes have even more surface area, and I think that's part of what translates to the *apparent* clarity of tube circuits, because if you put a state-of-the-art tube circuit on a distortion analyzer, it may not measure as being more clear, but it sure sounds clearer, fatter and warmer.

JOHN EARGLE

The consummate audio engineer, John Eargle has authored dozens of books and magazine articles, many focusing on the theory and practical applications of transducers, both microphones and speaker systems. Eargle also runs a successful audio consulting business, with companies such as JBL often seeking his advice. On the rare occasion when he has some spare time, he enjoys making classical recordings. In fact, his most recent project, the Seattle Symphony performing Howard Hanson's Mosaics; Piano Concerto in G; Symphonies 5 & 7 for Delos Records, received a 1993 Grammy nomination in the category of Best Engineered

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Where do you see microphone technology heading?

Eargle: The paradox here is that—more than ever before—there is a nostalgic interest in old capacitor microphones, and anybody who can get his hands on an original Neumann M50 considers it to be quite a find. And by the best objective standards of today's designs and measurements, the microphones of that type and era are considered aberrated.

There will always be a need for a microphone with a bump—something that's different—something

that's got a schtick to it. I just wish that more of these sacred microphones were really good. But many times a performer needs a reciprocal of a microphone. There is no such thing as a 'natural' voice, and rather than fix vocals with an equalizer it makes sense to have the microphone do it for you. There will always be room for beneficial aberrations in microphones.

At the other end of the spectrum is the demand of increasing the word length in digital recording from 16 to 20 bits. We'd better start doing something about the microphones, because a lot of the recording mics

have noise floors that will intrude on a 20-bit system. In some cases, the microphone could be contributing to the noise floor before the digital recorder does, although I'm not sure how much more reduction of the self-noise of the microphone is possible. The lowest-noise general omnidirectional mic I know of is the Sennheiser MKH-20—it's a remarkable mic with a noise floor of 10 dBA. The only units I know that are lower than that are some specialized instrumentation mics designed for measuring vibrational or seismic activity. Bruel & Kjaer makes a 1-inch diaphragm mic for such purposes that has a noise floor around 0 dB, but it doesn't go beyond 7 to 8 kHz, and its directivity isn't very good, because it doesn't need it for picking up low frequencies.

Of course, the noise floor of the microphone is not the same as the noise floor of a quiet studio. A studio with an NC-10 [noise criterion] rating and a microphone with a 10dB(a) rating are nominally the same number, but the noise floors are going to be quite different. The room noise is dominant at low frequencies and quiet at higher frequencies. The mic will be noisier at higher frequencies than the room. But most music takes place under conditions that are not nearly as quiet as the associated equipment. For example, in a studio full of players, there is a lot of noise such as feet rustling, music pages turning, etc. Most of today's music has a relatively narrow dynamic range, and if you can get the microphone's range to embrace the highest and lowest levels of the music the mic will happily sit there and contain the whole thing.

Increasing the word length to 20 bits is nice, but I wish there was as much zeal about increasing the sampling frequency. There are some experimental DAT machines in use where the tape runs at double speed at a sample rate of 96 kHz, creating a recording with a Nyquist frequency [usable frequency range] of 48 kHz. Of course, you couldn't make a CD of this, but you could use it to make an archival recording. People may begin using this for the sheer pleasure of creating recordings that are better than what is required from today's software.

We need to see microphones improve in the 20k to 30k Hz range. Most of the good omni mics today

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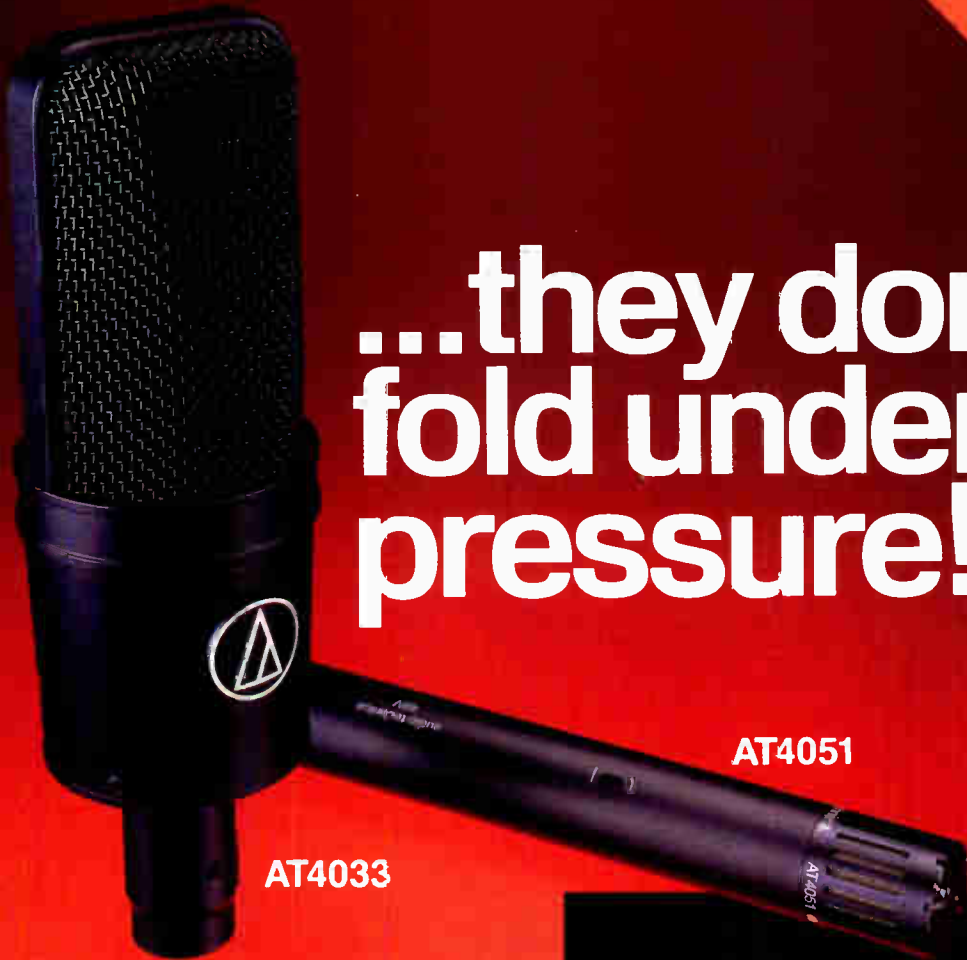
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Jeff Giedt (standing), Josh Leo (center, seated),
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Josh Leo *Producer*

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have a slight, very broad peak around 20 kHz. The frequency response curves you see only go out to 20 kHz, and you have no idea where it goes after that. So it doesn't do us much good to design a recorder that goes out to 48 kHz if we don't know what our microphones are doing above 20 kHz.

In many other areas—particularly outside the recording studio, such as teleconferencing and other special applications—a lot more could be done with microphones in terms of pattern control. We've been playing with first-order cardioids (with an omni at one end and a figure-8 at the other) for so long that we've overlooked compound patterns, compound elements, interference-type directional arrays, phased arrays and higher-order arrays. These are all things that will provide some significant avenue of development—maybe not what Neumann, Sennheiser or Schoeps would be interested in, but possibly some things that mainstream companies such as Shure, EV, Audio-Technica and Beyer would want to get involved with.

So from a technology standpoint, why are we stuck with capacitor and moving-coil microphones?

People talk about building a digital microphone, but no one's ever been able to do it. It's not impossible. Bell Labs made a 4-bit digital loudspeaker that fits in a telephone handset. It only takes four bits to make it work with a 24dB dynamic range, and for a telephone that might not be such a bad thing. The problem in building a digital microphone is getting the bandwidth and dynamic range that you want. I believe the Sennheiser MKH-20 that I mentioned earlier has a 0.5 percent nominal distortion value in a soundfield of 135dB SPL, with a self-noise of 10 dBA. That's an audible dynamic range of approximately 125 dB. That corresponds to a 21-bit digital system, and there aren't many of those around. There won't be a digital microphone of any viability until we have widespread use of digital consoles.

But a digital microphone design could be very linear. In contrast, the linearity of a capacitor microphone becomes fundamentally limited at high levels because of the proximity of the diaphragm to the backplate. That should not be a problem in a digital microphone, where you

would be measuring—maybe at a distance of 1 cm or so—or monitoring the diaphragm motion. You wouldn't be limited by the nonlinear charge relationship of a capacitor mic design. A digital mic could be very linear, but what are you going to do with all those bits? Even today, we have mics capable of 125 dB, and we still can't use all that dynamic range."

GEORGE MASSENBURG

Whether as an engineer, producer, studio owner or manufacturer, the Massenburg name has long been synonymous with high-quality audio. Dissatisfied with the performance of off-the-shelf equipment, Massenburg formed George Massenburg Labs, which over the past decade has produced no-compromise designs in equalizers, mic preamps, mixers and console automation. As a producer, Massenburg is currently working on a new project for Jimmy Webb and a live record for James Taylor.

Do you have any favorite mics?

Massenburg: My favorite microphone to explore these days is the

Coles 4038 ribbon, and it is not new. I found out about it from [Beatles engineer] Geoff Emerick. The 4038 is still being made and it's terrific. One is easily fooled into thinking it's a condenser; it has a smooth, wooden, antique kind of sound on acoustic instruments, and it's not right for everything. And it doesn't have amplifier problems because it doesn't have an amplifier! I think that it's a brilliant mic. Here's *fundamental* ribbon technology and it works great.

Now, if you try to push the envelope of high-resolution multimicrophone recording, sooner or later, you'll realize that it does not necessarily require expensive microphones. Unfortunately, rumors and "magic thinking" have dictated which "vintage" microphones are hip. The markets have gone wild as a result, and I think it's deplorable. It's, at best, counterproductive for engineers who can least afford to think their recordings are going to become wonderful if they spend \$5,000 for a AKG C-12 or a Telefunken 251 or whatever. I should think that each of us might be better off if we use our ears critically and independently to

choose the front-end.

I disagree with the "common wisdom" on many individual mics. U47s, for instance, were *not necessarily* wonderful—they were some of the first microphones I ever used (in 1961) and they were quite bright—and this was before PVC diaphragms were quietly replaced by Mylar ones. I don't subscribe at all to the "black magic" of vintage microphones. Especially about how one can't beat a vintage Neumann M50—which are priced from \$4,000 upward these days. What's really terrible is that they're so seldom well matched. I've been using B&Ks for a couple of reasons, not the least of which is reliability. I like the increased resolution and they can do many of the same things as M50s, with their spherical capsule arrangement. [Designed for recording sounds when the mic is distant from the source, the M50 mounts a small diaphragm capsule in the center of a hard plastic sphere, thus emphasizing high frequencies—GP] So I've been using spherical adapters—developed by Wieslaw Wszczyk of McGill University and designed to fit over B & K mics—with my 4003s.

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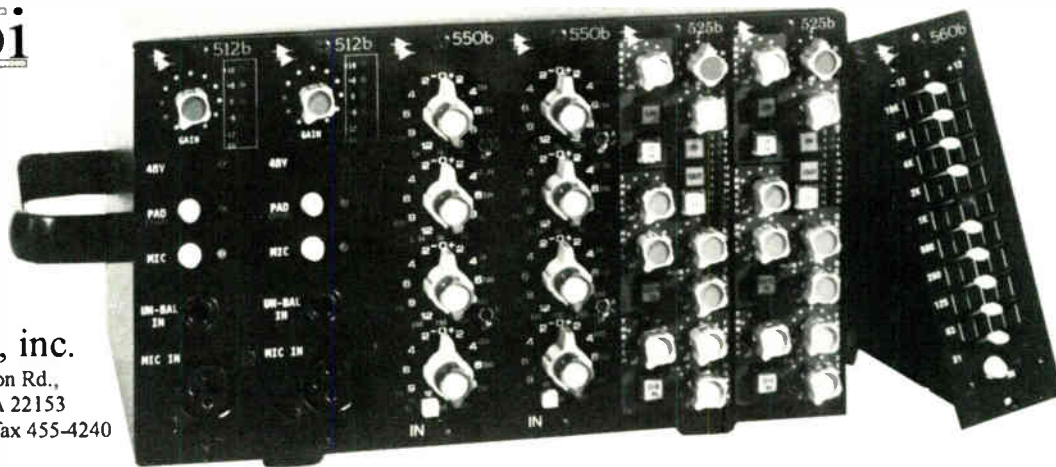
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It makes the mic more directional above 5 kHz—directionality that doesn't smear the high-end detail. Using these as room mics, in a situation where sound travels 30 to 40 feet through humid air, much of the mic's natural edge—which may come from the use of nickel diaphragms—is mellowed, which is why we like the sound of a room mic on first violins: They get scratchy up close. [Also known as APE Acoustic Pressure Equalizers, the Wszczyk adapters are now available commercially from Bruel & Kjaer—GP]

What lies ahead in the future of mic

technology?

There may be some wonderful new technologies available to us in 50 or 100 years: one that comes to mind might make use of a microphone array. I've seen some of the research in "beam forming," having to do with the evaluation of underwater signals used to map submarines at great distances from the transducers. Perhaps someday we may make use of an "intelligent" microphone (in the same sense as the human ear) that is able to be directed to listen to, and separate from interferences, certain sounds in a live room. Perhaps we will have a truly high-resolution dig-

ital microphone. In school I worked with gratings, using 80-gigahertz microwave hardware to do research into gratings and anomalies. Perhaps the future will bring us a microphone into whose capsule is etched a grating; whose sound-wave-induced deformities could be analyzed to a very high resolution. A high-resolution, direct-digital microphone could be corrected entirely in the data domain. There's no reason why audio can't eventually take advantage of this research. Our observation is that would be amazingly expensive—one microphone today might cost \$20,000 or so.

One of the greatest challenges in microphone design is the fact that the human hearing process is multi-directional, and the single-capsule, left/right stereo pair approach does not properly interpret what we are hearing. The ear decodes sounds from different directions, sorts them out and gives you a sense of the placement and the room. Achieving that with a microphone requires a tremendous amount of signal processing and a lot of well-defined diaphragms. So, given a linear microphone, we could build an array—maybe a dodecahedron or some simple, symmetrical array—that would feed a high-performance processor with direct digital data, so we could set one microphone up in a room and be able to hear as well as our ears hear. It's clear that the ear is perfectly adequate listening to a chamber orchestra in a live room, so why can't a microphone in that same position do as well?

Lastly, I would like to point out that the future will undoubtedly bring a widened view of the "audible" band: More than ever before, 20 kHz has become a severe limitation. I was deeply impressed when Jim Boyk, from Cal Tech, showed me some spectral analyses made on a new HP analyzer of trumpet with a Harmon mute, and its harmonic at 50 kHz was at least as loud as its fundamental. Its harmonics went out to 100 kHz—you could count them! There *is* something to extended high-end response, and, sooner or later, we're going to have to take this seriously. Life doesn't end at 20 kHz. ■

George Petersen lives with his wife and two musical dogs in a 110-year-old Victorian house on an island in San Francisco Bay.

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OFFICE AUTOMATION

FOR AUDIO PRODUCTION FACILITIES

How does an audio production facility make money? By keeping the customer satisfied and making smart decisions about how to use available cash.

According to *Mix's* most recent Audio Production Facilities Report, a vast majority of studios are using computers to handle their office tasks, such as accounting, word processing, financial analysis, inventory, etc. But is this investment in office automation tools really paying off? Are the OA systems adding anything to customer satisfaction? The answer varies according to whom you ask and the competitive pressures that shape their business decisions.

Office automation does not have to be expensive or complicated. The goal is simply to free up more time for you and your co-workers. The strategy to achieve this goal depends on how well key tasks are transferred to a computer, so the tasks can be done faster, automatically

and, ideally, unattended.

In this context, "key" tasks are tasks that you do over and over again and that use up a lot of your time. Computers thrive on repetitive tasks, such as calculating totals, identifying specific items (past-due dates, inventory quantities that are below the reorder point, etc.) and generating standard letters, invoices, reports and so forth. It's possible for a computer to do many of these tasks on its own, while you do more productive things like provide high-quality personal service that keeps satisfied customers coming back for more.

SINGLE-USER SYSTEMS

An effective office automation system can be as simple as a single computer running software that does some basic accounting functions. The offices of Sunset Sound and its sister facility Sound Factory, both in Hollywood, Calif., have each been using a single computer and Pristine Studio

Management System software for business office tasks since April 1986. The entire Pristine package includes modules for general ledger and financial reporting, accounts payable and check writing, billing and accounts receivable, bookings and work orders, tape library management, sales inventory and equipment control

Let the computer handle the repetitive tasks, while you provide personal service. The secret is selecting the right technology.

BY BEAU CARR

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As you would expect from the company that pioneered digital sampling, the EIIIx series features true 16-bit resolution for the purest audio quality possible. Proprietary DSP technology gives you pitch transposition capabilities over an incredible 10 octave range without aliasing, imaging or clock noise.

But incredible sound is only half of the story. The EIIIx series offers an impressive complement of features beginning with 32-voice polyphony, 32 digital resonant lowpass filters and

8 MB of RAM standard (expandable to 32 MB). And with AES/EBU digital I/O and eight balanced polyphonic outputs, the EIIIx series is ready for any mix environment. Dual SCSI connectors make it easy to link multiple EIIIx modules and to access a variety of mass storage devices. Add a long list of sample processing functions and you've got both power and versatility at your fingertips—all accessible through the industry's clearest user interface.

Optional Remote Controller/Librarian software allows you to control all EIIIx functions from the screen of your Macintosh and easily catalog, search and retrieve sounds from your entire library in seconds. You can even configure and load custom sound banks into your EIIIx with a simple click of your mouse.

All EIIIx series samplers are compatible with the ever-expanding EIII sound library. Over 16 gigabytes in size, the EIII library includes virtually every instrument on earth as

well as an enormous selection of sound effects—all brought to you by E-mu and the industry's leading third-party sound developers.

EIIIx series samplers are available in a variety of configurations. For sampling live, or from analog source material, the EIIIxs features two channels of 64x oversampling sigma/delta analog-to-digital conversion. Remove analog sampling and you've got the EIIIxp—ideal for sampling within the digital domain or as a voice and memory expander when linked to other EIIIx units. Both models are available as Turbo versions featuring 32 MB of RAM and an internal 120 MB hard drive.

But with all these features, the most impressive one may be price. EIIIx models start at \$3,995. Visit your nearest E-mu dealer for a demo and consider your search for the perfect audio tool over.



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(equipment maintenance).

According to general manager Craig Hubler, Sunset Sound purchased the package to handle accounting and billing primarily. "The record companies are very particular about what information appears on the invoices," says Hubler. "Everything has to be configured to include the song titles, the studio name, the producer's name, the artist's name and all sorts of other details.

"In labor costs alone, we've saved a fortune," he continues. "We used to hand-type our invoices on four-part NCR. That took a lot of time. Now the computer prints out detailed invoices in a fraction of the time."

Boyce Williams and Fred Jones collaborated to produce the Pristine system. Jones, the original owner of Fred Jones Recording (also in Hollywood), attributes the success of his studio, in part, to the facility's office automation. "I was able to take care of people better and faster; I could keep track of things better and faster; and I could invoice better and faster. I wouldn't forget about that three hours of studio time somebody

**Office automation
does not have to be
expensive
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to free up more time for
you and your
co-workers.**

was using."

Despite the success, Jones isn't so sure he would do it all again. "When we developed the Pristine system back in 1983, there was nothing else on the market that would allow us to bill hours and products in detail

on our invoices. We had no choice."

Today, generic accounting packages are much better than they were in 1983, and many can be customized to meet the specific needs of just about any audio production business. For the independent studio on a tight budget, Jones recommends looking for a program that provides at least 80% of the functionality the business requires. "If necessary," Jones recommends, "hire a professional [accountant, computer consultant, etc.] to make the necessary alterations to get an additional ten to 15 percent closer. That's a 90 to 95 percent fit for a reasonable cost."

An excellent example of this concept is New Views Accounting, a moderately priced program for DOS-based computers used by Record Plant in Los Angeles. New Views' most powerful feature is its built-in programming language, which allows extensive customization. Through this capability, Record Plant was able to configure an accounting system that matched their needs very closely.

New Views is notable for another reason as well: its unique design. Users of this program view their accounting books through a scrollable window in the same way that

SOFTWARE PACKAGES

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Product: Peachtree Accounting
Peachtree Complete Accounting
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PRISTINE SYSTEMS INC.

Products: Pristine Studio Management System
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Q.W. PAGE ASSOCIATES INC.

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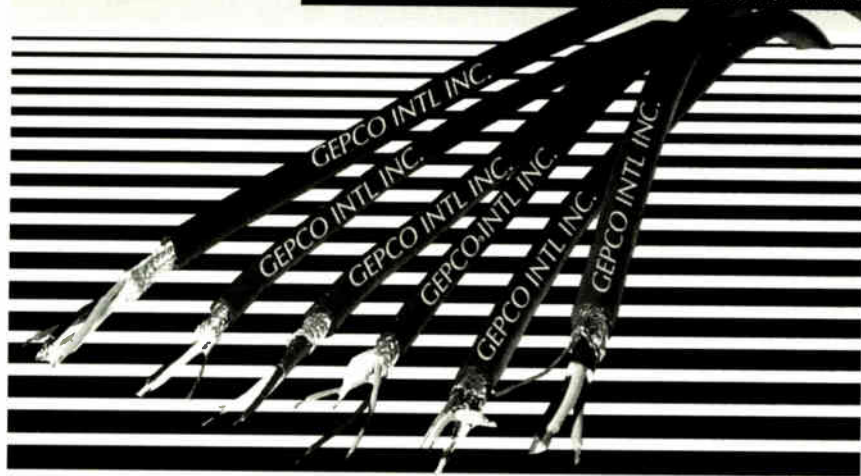
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spreadsheet users move around large spreadsheets to see different sets of rows and columns. In addition, all data is organized on one of four levels. The top level displays the typical major sections: accounts payable, accounts receivable, budgets, inventory, etc.

Click on General Ledger, for example, and the screen opens to display the entire general ledger. Click on Cash in Bank (an account on the general ledger), and the screen opens to display all the cash transactions. Click a final time on a specific transaction, and the detail of that transaction is displayed. The menu commands are the same on all four levels. The result is an extremely flexible, yet easy-to-use software package for non-accountants.

As an alternative to generic packages, larger facilities may find that vertical market software (programs written specifically for a particular type of business like recording studios) is a viable option. However, though these off-the-shelf packages provide features and functions unique to production facilities, keep in mind that they often cost more money than generic packages and usually require some degree of customizing, too.

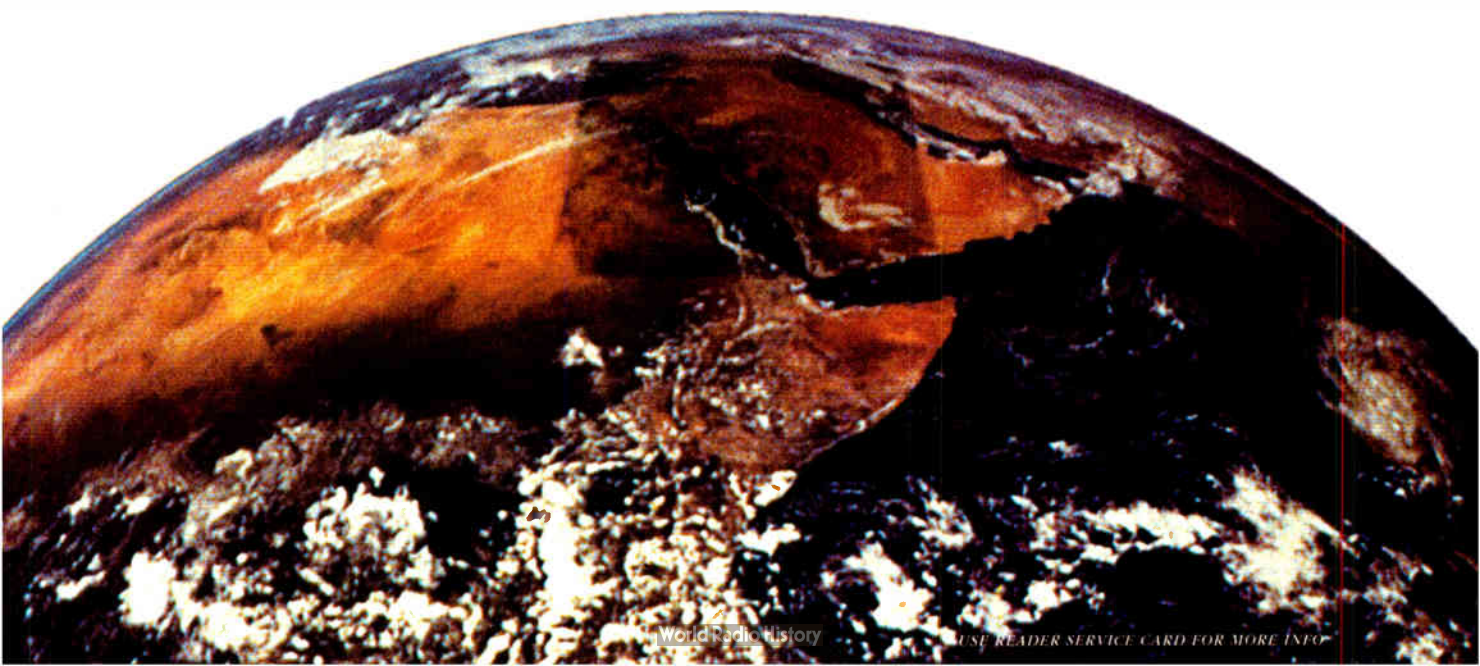
The major benefits come from the integration of the unique functions and features, which can provide substantial cost savings through increased efficiency. The Pristine Studio Management System and Archie are two examples of vertical market software for the recording industry. (More about Archie later.)

GENERIC SOFTWARE

Susan Dey Sinko, the studio manager at Sound Emporium in Nashville, says she's a fairly new computer user. Although she's been manager at Sound Emporium for close to nine years, the studio was originally owned by Roy Clark, and all the bookkeeping was handled in Tulsa, Okla. When producer Garth Fundis purchased the studio in June of 1992, he installed a DOS-based system running Peachtree Accounting for Windows.

"I find the Windows version very easy to use," Dey Sinko says. "The system does payables, receivables and general ledger as well as our tape inventory, which is updated every time we include tape on an invoice. I can pull up the inventory module and check our stock with a

IMAGINE A RACKMOUNT MIXER...



couple of clicks of the mouse. This system saves us time, and I feel like the whole business is running a lot more efficiently."

Different Fur recording studios in San Francisco owns two Macintosh computers. One stays in the control room for music editing, and the second one does office duty. Studio manager Susan Skaggs uses MultiLedger accounting software and reports benefits similar to Sound Emporium's. "At any moment, I can see where we stand for the month," Skaggs explains. "How much we owe, how much people owe us, how much time I've booked during the month and then compare it to previous months or the previous year. Based on that up-to-date picture of the business, I can make better decisions about whether we should purchase a new piece of equipment or get on the phone and do some more marketing."

Before she had MultiLedger, Skaggs never seemed to have time to reconcile the studio's bank statements when they arrived in the mail. Sometimes she'd fall as much as six months behind and spend many

weekend hours trying to catch up, because the studio writes hundreds of checks per month. Now she can reconcile the statements in about ten or 15 minutes every month and spend the extra time working on more productive projects.

STAYING ORGANIZED

Probably the most important feature of accounting programs is their ability to organize so much data and display it as meaningful reports. The immediate advantage for Different Fur is a reduction in Certified Public Accountant fees, because their CPA has much less work to do. But the organizational benefits of automation can pay off in less obvious ways too.

"I had the state board of EQ—the sales tax people—out here to audit my books last year, and I didn't even have to prepare for them," says Skaggs. "I had all the reports filed away in a separate folder for each month. The auditor was upstairs for about half-a-day. When he came down, he said 'I'm gonna recommend that a full audit is not necessary.' If the records look neat and organized when they start off, I guess they have more con-

fidence in you and think you're not as likely to cheat."

Of course, accounting is not the only area that studios must conquer. Frequently, it's the little jobs around an office that waste the most time. Office Manager grew from an idea that Todd Lockwood had when he attempted to gain control over the administrative tasks of White Crow Audio in Burlington, Vt.

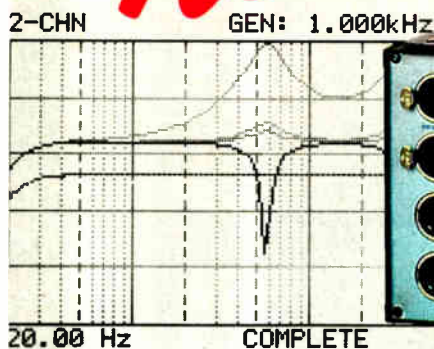
Office Manager brings together many resources usually obtained only by purchasing a variety of unrelated software. Using Macintosh's HyperCard capability to produce a seamless working environment, the program offers features like a powerful address file, automated letter processing, smart mailing label printing, envelope printing, automated to-do list with archive, job tracking, a project file for keeping track of ideas, telephone dialing with call history and more.

An add-on program, called Office Manager Remote, runs on Apple's portable PowerBook computer. The program allows portable users to keep identical address files on more than one computer. When the two

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The Top 500



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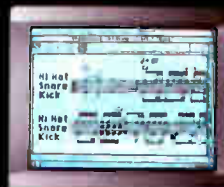
The D4's sounds are unparalleled for their realism. For example, when you hit a D4 sound harder, the tone *and* pitch change just like a real drum, thanks to the D4's Enhanced Dynamic Articulation.TM Plus, stereo reverb and ambience are built into many of

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1	2	208	HONEST SNARE HR-16	ALL WOOD-BRASS RIM	302	NEW		RAW HIDE BRAND NEW D4	
2	NEW		STUDIO TOM BRAND NEW D4	16" MAPLE TOM w/VERB	303	450	52	HI ROOM TOM SR-16	10" MA
3	NEW		BIG "O" BRAND NEW D4	DOUBLE HEAD KICK w/VERB	304	NEW		WET HALF BRAND NEW D4	HALF OPEN
4	5	52	RIM SHOT ROOM SR-16	BRASS PICCOLO w/VERB	305	327	52	RIM 2 CENTER SR-16	ART
5	10	156	BIG FOOT HR-16:B	SINGLE HEAD 26" MAPLE	306	123	208	DOUBLE HEAD	DOUBLE HEAD
6	NEW		SLAM BRAND NEW D4	POWER TOM w/VERB	307	223	151		
7	23	156	COMBO SNARE HR-16:B	PICCOLO PLUS WOOD	308	401	51		
8	NEW		BIG BALLAD BRAND NEW D4	WOOD SNARE w/BIG VERB	309	NEW			
9	NEW		FAT CITY BRAND NEW D4	SUPER FAT SNARE	310	175	1		
			CLOSE TO OPEN	ARTICULATED HI HAT	311	NEW			
					312	171			



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computers are hooked together, the program looks at both address files, identifies the names and addresses that are missing in either file, and automatically transfers them so both address files contain the same data. "It's a neat way to have common address files without actually being on a network," says Lockwood.

NETWORKED SYSTEMS

As a production facility grows, the OA system may expand to multiple computers tied together to form a Local Area Network or Wide Area Network. A LAN usually connects computers in a localized area, like a single building. A WAN can extend the connection across town or even to various locations around the world, usually via telephone lines and sometimes by satellite hookups.

According to assistant engineer Linell, Digital Associates in Nashville is in the process of installing a network so they can transfer files back and forth between site #1 (the main office and recording studio) and site #2 (their cartage company and rehearsal studios) located on the other side of town. "We won't have to drive the invoices across town anymore," she says. "We'll just send them electronically to save time."

This type of communications capability can pay off big in the form of electronic mail (E-mail), too. Record Plant is a four-studio complex in Los Angeles with PCs in every control room, on every executive's desk and at the front desk as well, for a total of 14 computers in the system.

"We used to route forms manually through this 25,000-square-foot building, and it would take too long," says president Rick Stevens. "Now we can route those same forms electronically without anyone leaving their desk. We also send follow-up reminder messages for scheduling, for meetings, for everything. It's not only ecologically sound—because there's no paper—but the communication is instantaneous."

"Instantaneous" is the key word here. As business gets more and more competitive, speed often means the difference between profit and loss. Phone messages at the Record Plant are transmitted via E-mail to the appropriate individual as soon as they are entered into the system by the receptionist, who is

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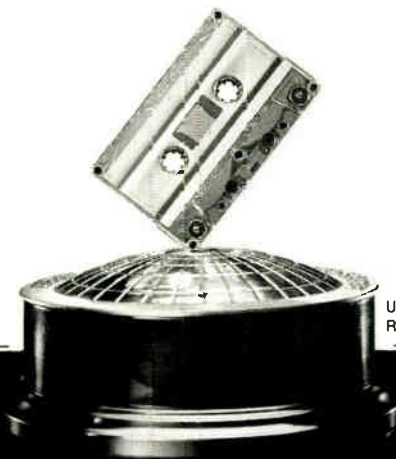
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on the phone with the caller. "This is particularly important to the booking department," Stevens continues, "where the speed of the callback can be the difference between a booking or losing the project to another studio. That has been a very significant factor in our success." Record Plant uses the Windows version of Messages published by Software Grove.

Besides transferring files and E-mail, Networks also let users maintain schedules simultaneously for several people, rooms, pieces of equipment, etc.; collect data from remote locations and merge that data into a centralized file for processing; share access to peripheral devices like printers, modems, fax cards, CD-ROM drives, etc.; and much more.

The power of networking is what then-studio-manager Mike Abercrombie had in mind when he started to automate the new offices of Sony Classical in New York City. The facility opened its doors to a very heavy production schedule, which meant that it immediately had four rooms online, a number of engineers to schedule and a lot of product to push out the door.

"We had to be up and running over night with everything functional," Abercrombie remembers. That included "an invoicing system, timesheets/work orders to keep track of the sessions, a tape library, employee tracking, sales inventory and equipment. Archie was the answer for us, because it did everything we needed and was available off-the-shelf. I was online in about a week. That was the single biggest factor in deciding."

Similar to Pristine's system, Archie gets involved in all aspects of the recording studio, thus providing a consistency of effort, which is a benefit that might not be obvious at first glance. Many businesses fail to develop an organization-wide plan for the use of technology. By default, the company adopts computers randomly, with isolated individuals building their own computer-based solutions. The result is often duplication of effort, a decrease in communication and teamwork, and a lot of wasted time and money.

A comprehensive package like Archie or Pristine can focus and coordinate everybody's efforts toward the same goals along the same strategies. "We analyzed our business and found that so much of

what's done is redundant," says Abercrombie. "Rather than entering the same client data over and over for time sheets, work orders, invoices, tape labels, etc., we wanted to enter the data once and have it available to everyone who generated any kind of document for a client. The fact that Archie is sort of all-company encompassing is a big advantage.

"We also have a sister studio in Hamburg, Germany, that runs Archie," he continues. "That consistency makes it very easy to exchange information with them and to send tapes back and forth, because all the labels and paperwork are laid out and referenced the same way."

BYTE HEADS

With so many people in the recording industry who are both creative *and* technical, it's no wonder that computer wizards emerge to develop their own systems from scratch. One such developer is Todd Wilson, chief engineer at The Complex in Los Angeles. Even though he has a full schedule, he finds time to program the facility's four networked Macintosh computers to implement a full-blown office automation system.

Wilson uses Claris' Filemaker database program for application development. To date, the system works like this: During the initial client phone call, Sharon Kaizer (booking/studio manager) enters data to generate a session confirmation sheet, a setup sheet for the engineers and a work order. Once the work order has been signed, the engineers get a worksheet that they fill out during the session with start time, end time, breaks, tape used, etc. That data is entered into the computer by the office staff, and all calculations are completed automatically. When Nick Smerigan (general manager) adds the client ID and work order numbers, the computer fills in all the related data and prints an invoice.

Next, Wilson added another Macintosh at the front desk and equipped it with a bar code reader. As tapes go in and out of the facility, their bar code tags are scanned, and their destination and carrier are entered for automated tracking. "Eventually," says Wilson, "I want to add a modem so the system can be accessed from outside the building. The new owners in Japan want to access our data that way. And Sharon will be able to use her PowerBook from



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a client's office or from home to book studio time on the system."

DATA SECURITY

One topic that concerns most studio owners and managers is the issue of data security on a network. With so many technically talented people in the typical recording studio, how can management be sure that sensitive data on a network is safe from the occasional ingenious hacker? Wayne Duke, a Certified Network Engineer and owner of Pacific Micro Systems (a Novell Gold authorized dealer) in Covina, Calif., believes that, if the appropriate steps are taken, data security and integrity on a network can be achieved.

"Security doesn't just happen on a network," Duke explains. "Novell has provided the tools, such as user identification, password management and data access controls, but it's up to the network administrator and users to use them." He also suggests that "under certain circumstances, it would be wise to bring in a network security expert who could evaluate security needs and make specific recommendations."

BUSINESS PANACEA

So is office automation the answer to every office problem? "I think the key is to decide what works best to automate and what doesn't," says Record Plant's Rick Stevens, "rather than just using technology for technology's sake."

The Record Plant tried automating their scheduling function, but because their clients usually stay for extended periods of time, the schedule seldom changed from day to day. It was much easier using manual forms. Likewise, Sunset Sound decided it was too much work to track their master tape inventory via computer. They've gone back to using a tried-and-true handwritten notebook system.

And in spite of the elegant design of Archie, which is capable of capturing worksheet data in the control room, the engineers just didn't want to log in to the network after a 12- or 14-hour session and do data entry. "It was great in theory," says Sony's Mike Abercrombie, "but we found it was quicker to provide the engineers with traditional paper time sheets generated by Archie. The time

sheets contain all the client information on top and boxes on the bottom half for engineers to fill in by hand during the session. Then they drop the form in a box and the office inputs the data."

SO...

Office automation is not the magic answer for all businesses. Only solid, long-range organizational planning based on a thorough needs assessment can accurately identify the ways in which technology can streamline your operations.

An invaluable source of information in this regard is your list of current clients. They know what they want when they visit your facility, and they can tell you whether or not they feel they are getting it. After all, repeat business from satisfied customers is easy money. The secret is selecting the right technology to keep the money flowing in. ■

Beau Carr currently develops and conducts courses on office automation and planning, basic productivity skills, and data gathering and analysis.

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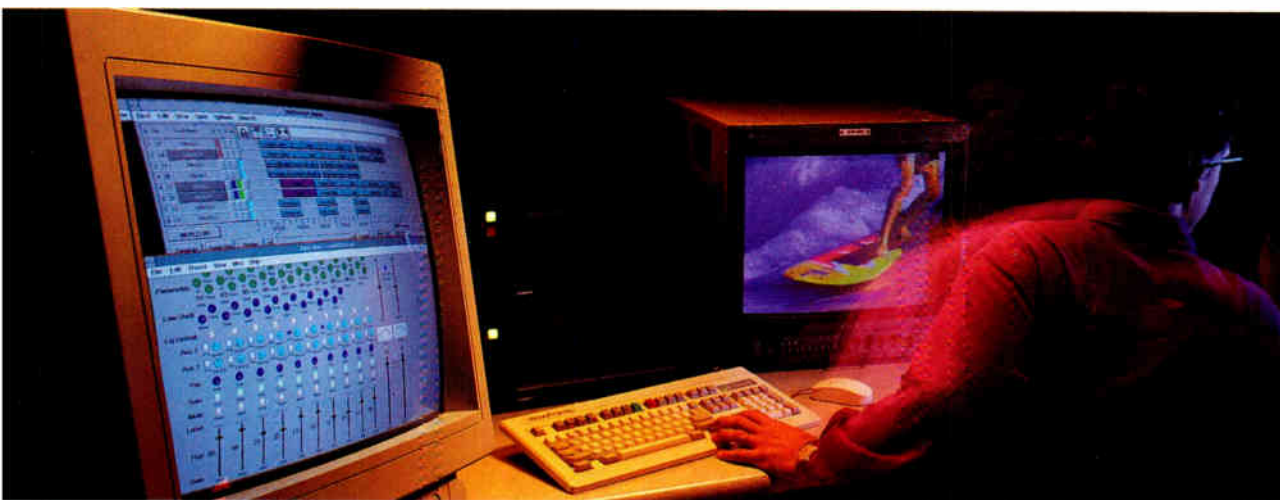
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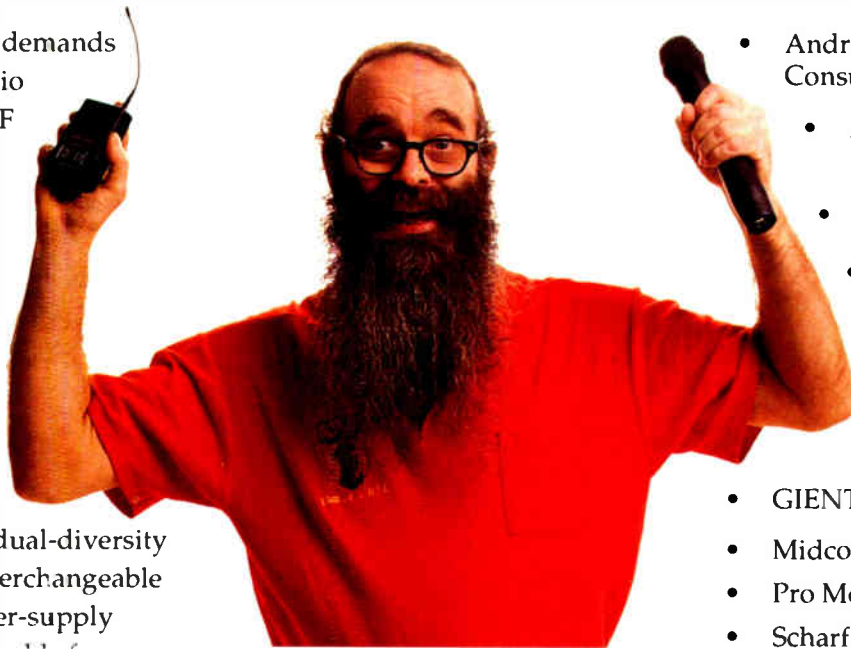


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Dave Andrews
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World Radio History

by Chris Stone

PRODUCTIVITY SOFTWARE FOR BETTER STUDIO OPERATION

O

PERATOR TIP OF THE MONTH:

When deciding about computer systems for your studio, avoid the latest gadgets. Look for practical solutions to everyday problems and ways to convert a flood of data into a stream of information that will truly help you run your business.

Today we take computers for granted in the studio environment. We use them to make our music and our businesses more efficient. Ten years ago only the largest studios could afford the "luxury" of automation from Macintosh and IBM PC hardware. The only type of system appropriate for the job of running your studio was an expensive multi-user minicomputer. A 20-meg disk drive cost \$7,500, and the entire system was \$25,000 to \$30,000.

Then there was the software problem. Nothing was available except a few accounting programs, and even those required customization to fit recording studio needs. Customization was expensive. So, few of us could even think of automation, because it was a \$50,000 investment to get "online."

Now hardware is faster and cheaper than ever. Software is inexpensive and powerful. Systems are much easier to tailor to the business needs of a growing company. So why is there so much confusion about which system to buy? IBM PC or clone? Macintosh? Amiga? UNIX system? Should you use a turnkey software system written for generic recording studios, or should you create your own mix of software?

I asked Alex Shmelev, system designer extraordinaire for his opinion. Shmelev has been solving studios' hardware and software requirements

since 1979. "The important thing to keep in mind whenever you make a decision about computers is how it will improve the effectiveness and efficiency of your business," he says. "Remember that the system is just a tool: It's *how* it is used that produces the results. Plan to use your system for at least three years without expanding it to get the most out of your original purchase. Plan your systems for the long term, and remember that systems don't have to be fancy to be functional. Save the high-tech sophistication for the control room, where the investment is most likely to pay off with more bookings."

Diversification is the name of the game at Taylor Made Productions of Caldwell, N.J. Glenn Taylor opened Taylor Made in 1977 as a 4-track TEAC demo room and now specializes in sync-to-picture work, voice-overs, layback to 1-inch video, MIDI programming and traditional music project recording. "The first piece of gear I saw and purchased with a disk drive was in 1982," Taylor recalls, "[it was] a reliable E-mu Emulator 1.

Today the device that has had a huge impact on our facility overall is the Macintosh computer. I liked it so much I bought two! We use a IICI in the studio for several tasks, but at the heart of our electronic composing is a [Mark of the Unicorn] Performer. We do original scoring, jingles and sound design [on it].

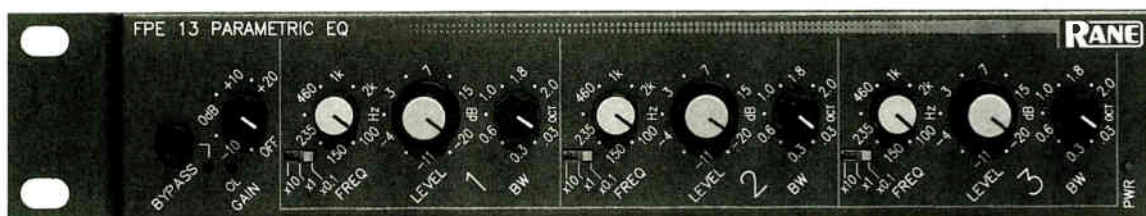
"Also, because we own over 20 libraries of effects on CD and CD-ROM, we recently acquired the Gefen Systems Organizer, which has turned out to be a lifesaver for finding cues in the same way as a word-finder program," he adds. "Our studio office is equipped with a Mac LC model. Our database is Touchbase, which allows us to track all client histories. Microsoft Word is our choice for correspondence and studio documentation, while their Works program handles our general accounting requirements."

Todd Lockwood has operated White Crow Audio (a successful studio in Burlington, Vt.) for many years and recently diversified into professional software with his company, White Crow Software Inc. "At White Crow, we found that we were wast-

ing a lot of time doing simple things like writing letters, making telephone calls, keeping track of clients," Lockwood explains as the motivation for automating his studio. "We started with a DOS-based computer in 1982 but switched over to Macintosh after we tried one to do simple office work. However, we found it took three separate programs to write a letter and print an envelope. I knew there had to be a faster way of doing these things.

"So I took a couple of years to learn Macintosh programming language and eventually wrote a program called Office Manager, which today is used by over 1,000 small businesses," he continues. "Anyone familiar with Intuit's Quicken will appreciate what I mean when I describe Office Manager as 'Quickenlike.' Office Manager takes care of all the time-eating chores that tend to keep studio managers anchored to the front desk. The program instantly creates letters, merges standard letters, speed-dials the telephone, and prints fax cover sheets, labels and envelopes. It includes a user-customizable job-tracking file that can easily

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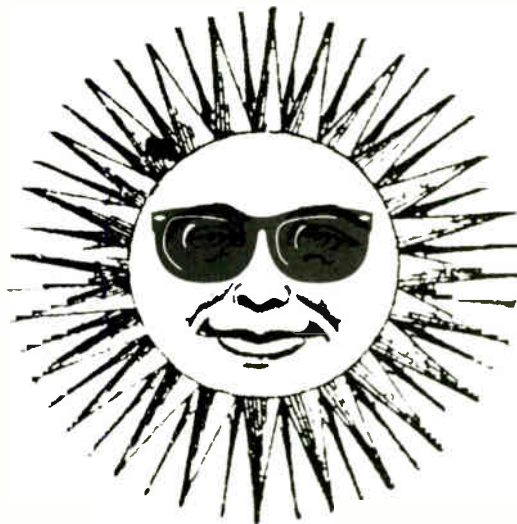
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be configured to track sessions. Want to know what rate you charged a client on their last session? It's there instantly."

Doug Parry has been in the L.A. studio business for more than 15 years, first with Smoketree Ranch (famous for its incredible MIDI capabilities) and now with the new Andora Studios in Hollywood. Another Mac aficionado, Parry says, "Customizing a billing system or database on a Macintosh is easy and can even be fun. However, creating a billing system can be time-consuming and may require more knowledge about a program than most people have time to learn.

"Just recently, using Claris Filemaker Pro 2.0 software, I revised my entire invoicing system and office database to take advantage of the new features offered in the new version of FileMaker," he adds. "After several weeks of designing new layouts, compiling scripts, automating commands, buttons and calculation fields for days, I am happy to say it is done! We have beta-tested the invoice template with several independent engineers and producers, and the result is now commercially available as Powerbook Billing to anyone seeking a Macintosh Office without the knowledge or need for programming. The novice user can be up and running immediately—entering data, modifying records, printing invoices, generating mailing labels, evaluating payment schedules, controlling inventory, printing fax covers and payment logs, etc. I now have the office under complete control of the Mac using three programs: Claris FileMaker Pro 2.0, Microsoft Excel 4.0 and Microsoft Word 5.1."

As these case studies illustrate, today's recording studio demands a computer system to run effectively and competitively. The Macintosh seems to be the platform of choice for many, but IBM and clones have several programs available for various studio functions as well. (For more information on this topic, see Beau Carr's article on studio software in this issue.) ■

Chris Stone, a pro audio consultant and former studio owner, is president of the World Studio Group, a global studio-booking agency.

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ILLUSTRATION BY CHARLIE POWELL

In the digital age, few can afford to be without some kind of workstation. But there are \$10,000 digital audio workstations, and then there are \$100,000 digital audio workstations. The question is, just how much workstation can you afford?

Twenty-four months ago, when the recession was still in full swing

and there was precious little money to be lent, the answer was pretty obvious: You could buy as much workstation as you had cash in your pocket. No money, no workstation. Today the credit machine is gearing up anew. Leasing companies, professional audio dealers, even local banks are making deals. It's getting a little easier to take the \$5,000 you've got in

hand and use it as a down payment to buy a \$50,000 dream machine. Now the question becomes, under what circumstances does it make sense to spend more to get more?

Decisions like these demand careful analysis, the kind that computer spreadsheet programs were created to perform. Now, there's no denying that typing little rows of numbers can be pretty tedious. But hey, it's more entertaining than backing up digital audio. And the following model we're going to put together may help you organize your thinking and perhaps prevent a costly mistake.

Please note that this model assumes that you know the basics of getting around a spreadsheet pro-

There are \$10,000 digital audio workstations, and then there are \$100,000 digital audio workstations. The question is, does it make sense to spend more to get more?

BY T E D P I N E

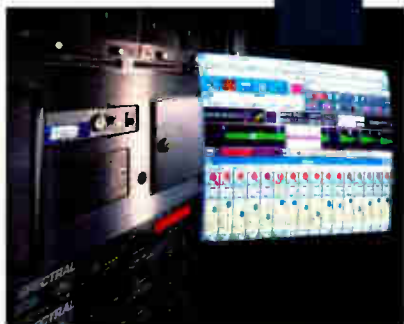
TABLE 1: PAYBACK ANALYSIS—PC SYSTEM

Cash Flow	Year 1	Year 2	Year 3
Hourly Rate	\$75	\$80	\$85
Weeks Per Year	48	48	48
Hours Worked	40	40	40
Hours Billed	25	25	25
Revenues from Bookings	\$90,000	\$96,000	\$102,000
Revenues from			
Studio Services	30,000	31,500	33,075
Total Sales (Gross)	120,000	127,500	135,075
Cost of Goods Sold	16,296	17,111	17,966
Net Sales	103,704	110,389	117,109
Expenses:			
Rent/Utilities	3,600	3,780	3,969
G&A	15,967	16,765	17,604
Lease or Loan Payments	2,789	2,789	2,789
Maintenance	0	100	605
Insurance	1,933	2,030	2,131
Marketing	500	525	551
Total Expenses	24,789	25,989	27,649
Operating Income (Loss)	78,915	84,400	89,460
Depreciation	2,986	3,983	1,327
Taxable Income (Loss)	75,929	80,417	88,133
Income Taxes	21,260	22,517	27,321
After-Tax Income	54,669	57,901	60,812
Add Back: Depreciation	2,986	3,983	1,327
After-Tax Cash Flow	57,655	61,883	62,139
Capital Investment			
Down Payment	2,500	0	0
Peripherals	400	0	0
Leasehold Improvements	1,300	0	0
Total Capital Investment	4,200	0	0
Cumulative			
After-Tax Cash Flow	\$53,455	\$115,338	\$177,477

TABLE 2: PAYBACK ANALYSIS—MAC SYSTEM

Cash Flow	Year 1	Year 2	Year 3
Hourly Rate	\$80	\$85	\$90
Weeks Per Year	48	48	48
Hours Worked	40	40	40
Hours Billed	28	28	28
Revenues from Bookings	\$107,520	\$114,240	\$120,960
Revenues from			
Studio Services	31,200	32,760	34,398
Total Sales (Gross)	138,720	147,000	155,358
Cost of Goods Sold	16,296	17,111	17,966
Net Sales	122,424	129,889	137,392
Expenses:			
Rent/Utilities	3,600	3,780	3,969
G&A	15,967	16,765	17,604
Lease or Loan Payments	6,342	6,342	6,342
Maintenance	0	100	605
Insurance	2,140	2,247	2,359
Marketing	500	525	551
Total Expenses	28,549	29,759	31,430
Operating Income (Loss)	93,875	100,130	105,961
Depreciation	6,063	8,085	2,694
Taxable Income (Loss)	87,812	92,044	103,267
Income Taxes	27,222	28,534	32,013
After-Tax Income	60,590	63,511	71,254
Add Back: Depreciation	6,063	8,085	2,694
After-Tax Cash Flow	66,653	71,596	73,948
Capital Investment			
Down Payment	3,500	0	0
Peripherals	400	0	0
Leasehold Improvements	1,300	0	0
Total Capital Investment	5,200	0	0
Cumulative			
After-Tax Cash Flow	\$61,453	\$133,049	\$206,998

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- ▶ Scrub smoothly and precisely, back and forth, with a mouse, trackball, or scrub wheel? Yes No
- ▶ Pitch shift and time compress/expand an entire song, musical phrase, or just a single note? Yes No
- ▶ Create seamless vocal or solo composites from an unlimited number of takes? Yes No
- ▶ Copy and paste song verses, choruses, or just phrases or riffs to build a finished piece? Yes No
- ▶ Easily align downbeats in cross-faded or over-dubbed music tracks? Yes No
- ▶ Quickly reorder CD mastering song lists complete with cross-fades and segue effects? Yes No
- ▶ Customize the interface to match your working style? Yes No
- ▶ Show clients a great looking work environment that does their job every time? Yes No
- ▶ Create on the most flexible, most complete system in the world for less than going analog? Yes No

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World Radio History

gram like Lotus 1,2,3. Also, it's assumed that the workstation is being added to an ongoing business with an established client base and rate sheet. Projections for a start-up operation without predictable revenue sources would be highly speculative and should be made extremely conservatively. Table 1 shows what the model we'll be building looks like.

The following example is based on the experience of Peter Acker, whose Windsor, Vermont-based commercial production studio, Radioland, was featured in our February 1993 story, "Buying a Workstation for a Project Studio." Note that the the revenue and expense numbers presented here do not represent Radioland's actual results but rather present a plausible scenario for a project studio serving a secondary market. At any rate, although Acker actually evaluated a number of workstations, for the purpose of this example we'll analyze two: a \$9,000 PC compatible and an \$18,000 Macintosh system.

The key to making this a meaningful exercise is being scrupulously honest about your business and its prospects, particularly when filling in the top rows: Hourly Rate, Weeks Per Year, Hours Worked and Hours Billed. What do you *really* make per hour after any discounts from your rate card? Acker realized \$65 in his latest year of analog operations but is confident that he can raise his rates to \$75 per hour by going digital, and he anticipates rate increases to \$80 and \$85 in Years 2 and 3. How many weeks do you *really* work per year? Acker takes off standard U.S. holidays and gives himself a two-week vacation, so 48 is the number entered into Weeks Per Year.

How many hours do you *really* bill per week? Don't assume it's the same as the number of hours you work, because that would mean, for example, you were buying a workstation that you don't have to back up. (Or do your clients pay you for backup time? You're *good!*) Acker conservatively figures he can bill 62.5% of the hours he works, or 25 hours per week. Now, to get the total Revenues from Bookings number, you multiply Hourly Rate by Weeks Per Year by Hours Billed.

In addition to hourly charges, Acker has other sources of revenue, such as markup on tape and talent. This figure, which represents about

25% of total billings (or \$30,000), is entered in the Revenues from Studio Services row. Acker assumes that this proportion will remain constant over the next three years, so the Studio Services figure is multiplied only by an inflation factor of 5% during Years 2 and 3. Next, the Revenues from Bookings and Revenues from Studio Services lines are summed together to obtain the Total Sales (Gross) figures.

There is a Cost of Goods Sold associated with Revenues from Studio Services, however, because you have to buy materials and pay the talent. In Acker's latest full year of

operation, the total of these charges came to \$15,500. We multiply that number by 5% for inflation and enter \$16,296 into the Year 1 Cost of Goods Sold cell. This number is again increased by 5% for each successive year, because we're assuming inflation will be constant. Finally, Cost of Goods Sold is subtracted from Total Sales (Gross) to obtain Net Sales. We see that Acker expects to net a little more than \$100,000 in sales in Year 1, with increases to \$110,000 and \$117,000 in Years 2 and 3, thanks to the rate increases.

The Expenses items should be based on recent history. Acker allo-



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icates \$3,600 per year for Rent/Utilities, and again this number increases by 5% each succeeding year for inflation. G&A refers to expenses that can't be billed directly to clients, like office expenses, postage and backup tapes. Next, Acker decides to put \$2,500 down on the workstation and finances the balance of \$6,460 through a three-year bank loan at 14% interest. The figure of \$2,789 is entered into the Lease or Loan Payments line, representing yearly payments of interest and principal. (Your banker, dealer or leasing agent should be willing to produce these numbers for you.)

There's no Maintenance the first year, because the system comes with a full warranty covering parts and labor. The Maintenance figure of \$100 for the second year was derived by talking to the dealer and other owners. This is increased by the 5% inflation factor for the third year, with an additional \$500 tacked on to cover the cost of a software upgrade. The Insurance line includes business coverage plus a medical plan. It also increases 5% each year for inflation, and that's probably low. Finally, Acker has \$500 in Marketing expenses the first year, which covers phone sales and some direct

mail activity; it, too, is increased by the 5% inflation factor for each year.

Now we sum up all the Expenses items into the Total Expenses line, subtract this from the Total Revenues line above, and find that Acker projects around \$79,000 per year in pre-tax Operating Income. Next, just like on the federal income tax form, we have to calculate the yearly Depreciation on the workstation. Acker has elected to depreciate the gear on a three-year accelerated basis with a four-year recovery period, so in Year 1 he subtracts 33.33% of the \$10,000 purchase price; Year 2 it's 44.45%, and Year 3 it's 14.81%. These are the standard issue percentages for three-year accelerated depreciation: Ask your accountant why.

Subtract the Depreciation numbers from the Operating Income line, and that's Acker's Taxable Income. We'll assume Acker is in a 28% tax bracket, so we multiply that percentage by Taxable Income and discover he's going to pay more than \$20,000 a year in taxes. However, in Year 3, Acker's projected Operating Income of \$89,460 would kick him into a higher tax bracket (31%). So be careful when increasing those rates. This leaves Acker with about \$55,000 in the After-Tax Income line for Year 1, then \$58,000 and \$61,000 for Years 2 and 3.

Just to make things confusing, we now add back the Depreciation figure we subtracted before for tax purposes, because that money is never actually paid out to anybody: It's presumably still in the bank. *Et voila*, in the After Tax Cash Flow line Acker has \$57,600 at the end of Year 1. In the Capital Investment section, we add up all the money Acker will have to pay out of pocket for the workstation, including \$2,500 for the Down Payment, \$400 for Peripherals (an uninterruptable power supply) and \$1,300 for Leasehold Improvements (upgrading the electrical service to accommodate the workstation's power requirements).

We sum those figures in the Total Capital Investment line and subtract them from After-Tax Cash Flow to get the Cumulative After-Tax Cash Flow figure for Year 1 of \$53,500. The Year 2 Cumulative After-Tax Cash Flow total of \$115,000 is obtained by adding the Year 1 cumulative number (\$53,500) to Year 2's After-Tax Cash Flow of \$61,800. Likewise, for Year



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3—\$115,000 plus \$62,000 equals \$177,000, the three-year Cumulative After-Tax Cash Flow. Our completed spreadsheet now looks like Table 2.

The Cumulative After-Tax Cash Flow line tells us that when all is said and done at the end of Year 3, Acker stands to put \$177,500 cash in pocket. The PC compatible is an excellent investment, it would appear. In fact, to beat it you'd need the equivalent of a three-year CD paying 40% interest. The question remains, can Acker do any better buying the \$18,000 Macintosh system? We'll have to analyze this investment with the same level of scrutiny, beginning with the same Revenue factors: Hourly Rate, Weeks Per Year, Hours Worked and Hours Billed.

Acker decides that in order to support a higher monthly lease payment, he'll have to charge his clients a higher Hourly Rate for the Mac system—\$80 an hour during Year 1, \$85 in Year 2, and \$90 in Year 3. He is also adamant about taking off four weeks per year, so Weeks Per Year remains at 48. But being a conservative kind of guy, Acker is not willing to predict that the Mac is going to

bring him any more business. Thus 25 stays as the number in the Hours Worked line. However, Acker has carefully benchmarked the Mac and has found that it is faster than the PC—between 10% and 15% faster, in fact. So Acker believes he can bill his clients an extra two hours per week.

This is not so farfetched an idea. For example, if the Mac backs up faster than the PC, Acker no longer has as much downtime at the end of each session that clients are unwilling to pay for. They'll naturally choose to use the extra time to "be creative," so he can bill them. Note that if Acker were to conclude that he could neither raise his rates, work more jobs, nor bill more hours, we could stop the analysis right here. There would be no way that the Macintosh system, being twice the cost, could compete with the PC compatible as an investment. The Expenses line items in this example are almost identical to the preceding one. Rent/Utilities, Supplies and Insurance don't change, and Acker believes that the Maintenance costs will be the same as well—the machines are equally reliable, and the manu-

facturers have identical service charges.

One significant change in the Expenses category is in Equipment Leases: Acker will finance \$14,700 of his \$18,200 purchase on a three-year 14% loan. According to his banker, Acker can expect to make a monthly payment of \$528.50 on that amount, which comes out to \$6,342 annually. That's good news, in that the increased revenue Acker expects to make by increasing his billable hours will completely cover the annual lease payment. At the end of three years, Acker projects that he will net about \$30,000 in additional cash by buying the more expensive system. Compare the differences between the Cumulative After-Tax Cash Flow tables 2 and 3.

The big question for Acker is, does he want to shell out an extra \$1,000 in cash plus take on an extra \$8,000 in debt just to earn another \$30,000? It seems like a significant risk for a relatively small reward. For example, suppose his market simply will not sustain an Hourly Rate greater than \$75 an hour. Let's say on top of that there's a system failure

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in Year 3, and Acker loses a week of operations and has to eat an additional \$1,000 in repair bills. By putting those numbers into the model, we discover that Acker would only earn \$186,000.

Under a different set of circumstances—when business is booming and labor is a scarce commodity—it can make good sense to take out a larger loan and go for the more expensive option, if it increases your operational efficiency. This is the beauty of spreadsheets: Once you have put together the model, you can try many different assumptions ranging from optimistic to despondent regarding future rates, utilization and expenses.

As noted before, the above numbers are hypothetical: They don't reflect Radioland's actual operating results. Nevertheless, when faced with a similar decision in 1991, Peter Acker decided in favor of the conservative approach and purchased a 4-track Micro Technology Unlimited system for \$8,960, including the PC host computer and operating software.

"At the time I bought the workstation, the recession was starting to

tighten its grip," he explains. "There was no guarantee I could raise my rates or that work would remain steady. However, I knew that even in the worst-case scenario, with the MTU system I could make my monthly payments. I might not make money, but through cost cutting, I could be in business the next year.

"To remain competitive I had to make this step," Acker continues. "I was at the point where I was either going to spend \$9,000 or double that, and the question was whether the difference was going to buy me that much more functionality. In the final analysis, the answer was no; I could get the majority of what I needed with the MTU system."

Sounds reasonable, but how's it paying off? "Last year, I managed to hang on to 75 percent of my client base, but lost 25 percent because of the recession," Acker answers. "To survive, I had to tighten the outgo as much as possible while still trying to add new business. The marketing I did was over the phone through personal contact and relationship building. It's taken almost a year, but now it's paid off. This year I'm 20 percent

ahead of last year while raising my rates. And my clients truly appreciate the advance in technology."

The motto of this story? There are only three ways to pay for a piece of equipment: Charge more, work more or bill for more of the work you do. If you are contemplating investing a little extra, be sure you know exactly how you're going to make up the difference. Also keep in mind that all projections are by nature speculative. There's never any guarantee that you will be able to maintain your rates or keep a sustained flow of business.

It is a prudent and common practice to prepare a worst-case scenario along with a favorable projection so that you can analyze your possible exposure and liability if the bottom drops out of your business. A spreadsheet model like the one above can be a useful tool in your decision making; it is not a substitute for judgement or the opinion of a financial professional. ■

Ted Pine is an audio industry consultant, which means he can make a living talking like this.

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by Paul Potyen

DIGITAL VIDEO PRODUCTION

PART 2: SURVEYING THE FIELD

Here are some interesting statistics: According to a recent Professional Video Marketplace survey, 87% of professional video facilities expect to be using desktop video-capable PCs by 1995. And the same survey reports that 50% now use the technology. Today the field seems swamped with an incredible array of video hardware and software products, ranging in price from a few hundred dollars up to \$100,000.

Last month, I identified various tasks—such as cataloging source ma-

look at some of the most significant computer-based video production tools currently available and assess their capabilities. This overview is not meant to be comprehensive; there are whole magazines devoted to this stuff. Rather, it's intended to give audio types a clearer picture of the variety of available desktop video tools.

AVID TECHNOLOGY

Founded in 1987, Avid Technology (Tewksbury, Mass.) is committed to providing software solutions and in-



Avid Series 2000 Media Composer

terial, controlling external video decks, recording (digitizing) video into the computer, editing picture and sound (either analog or digital), creating graphics and titles, and creating transitions and effects—that can be accomplished under computer control. This month we'll take a closer

tegrated systems for digital media to video and audio-for-video post-production facilities, broadcast organizations, ad agencies, governments and corporate media departments worldwide. Its first product—the Macintosh-based Avid/1 Media Composer—shipped in 1989. Avid's major cur-

rent product line consists of the Media Composer Series 200 and 2000 as well as Media Suite Pro, AudioVision and NewsCutter. The foundation of the whole line of Avid products is random-access editing of digitized audio and video, as opposed to control of external decks and other devices.

At the very high end of the line is the 2000, offering full-screen editing and playback, advanced image quality, pro audio editing and mixing, transition effects, a visual timeline, and flexible output capabilities including frame-accurate EDL and printing to master tape. Several options are available, with extras such as enhanced digital audio I/O, 24-track audio editing software (codeveloped with Digidesign), and software for seamless film/tape matchback.

While Avid does not make claims of "broadcast-quality video," the fact remains that many Avid users find the quality of the digital video and audio suitable for their needs. Avid markets its Media Composer product line as a set of offline systems for professional use with the ability to auto-assemble EDLs to a master tape or import them to other traditional online systems.

One user of the high-end Avid system is Steve Cohen. He's using it to edit the feature film *Lost in Yonkers*, which is being produced by Rastar for Columbia Pictures in Hollywood. He describes his system as a hybrid film/digital environment. "All the edit decisions that are made on the Avid are conformed to film," Cohen explains, "so we can screen our work picture in a screening room. The sound is also prepared on the Avid, using multiple tracks, and that rough mix is output to 35mm, using 1/4-inch SP tape as the intermediary. So in the screening room, we run the Avid soundtrack along with the conformed picture. That gives us the advantages of all the sound tools that the Avid has. Conforming the film is made very easy by the 24-frame Avid software, and



**RasterOps Editing Access Suite
Movie Pak System (p. 86)**



Matrox Studio A/B Roll (p. 88)



Fast's Video Machine Studio software is an edit controller that also allows the addition of effects, graphics and titles. (p. 91)

the integration of the two environments is what makes this system unique. The Media Composer is a great tool in a tape environment, but it is even better in a film environment. I love it, and so does the studio and the Columbia sound department.

"Hollywood is going to move to digital picture-editing tools so fast that it will take your breath away," continues Cohen. "Now that we have 24-frame digital video from Avid, the technical problems preventing that migration pretty much go away. There's a lot of pent-up demand. I see that every day in my cutting room. The message to the audio world is that, as picture editing moves to digital tools, the integration of those tools with digital audio tools becomes that much more important. For example, today all of our [final] sound is being cut on WaveFrames, and it's very hard to get useful information into the WaveFrame."

Avid's Series 200 systems, which include the 210, 220, 230 and 240, are described as offline random-access systems. They offer many of the same features as the 2000 systems, but, because they use the Macintosh IIfx as the engine, they lack the power of the 2000s, which use Quadra 950 computers. Both the 2000 and the 200 use JPEG image compression, selectable from five different resolutions, which corresponds to equivalent file sizes per minute of program material. Each Avid system includes the appropriate Macintosh with a large hard disk, along with video capture, SCSI accelerator and audio record/playback hardware and control/edit software. The single exception to this is the Model 210, priced at \$14,995, which includes a set of hardware and software for the customer who already owns a IIfx and a qualified hard drive.

Avid describes its Media Suite Pro as a "desktop video solution" that combines TV-quality pictures

—CONTINUED ON PAGE 84

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Circle #201 on Reader Service Card

ADVANCED GRAVIS ULTRASOUND 3D

A more consumer-oriented 3-D system for the PC is now available from Advanced Gravis. UltraSound 3D uses "convolution" techniques to generate new right and left binaural audio signals with a resulting wraparound sound effect. The system will enable music CD-ROMs to create an interactive concert environment for home listening; other applications include multimedia and computer games. UltraSound offers 16-bit, 32-voice wavetable synthesis and compatibility with Sound Blaster™ and AdLib™ plus support for Windows 3.1 Multimedia Extensions.

Circle #202 on Reader Service Card

NOTATOR LOGIC FOR MACINTOSH

Ensoniq (Malvern, PA) is now shipping Emagic's Notator Logic, an enhanced Macintosh version of the popular Notator SL sequencing/notation program. The newly designed program offers unlimited tracks of any length, unlimited se-

quences, unlimited polyphony for each track, 960 PPQ resolution and a tempo range of 0.05-9999.99 BPM. Real-time editing is available through the event list, matrix/hyper edit or notation, all at the same time. In addition to the Mac version, Notator Logic should be available for the Atari 1040, TT and Falcon030 by April.

Circle #203 on Reader Service Card

WHITE CROW OFFICE MANAGER 2.5

Version 2.5 of the Macintosh productivity program from White Crow Software (Burlington, VT) offers multiple fonts and styles in both personal and merge letters, user selection of formats for automatic letter heading and a new Default Printing mode to allow printing in a different font and size than onscreen viewing. Other improvements include an expanded, six-line address field; editing, prioritizing and post-dating of To-Do items; tracking of incoming calls, letters and faxes; a redesigned telephone dialer and a new envelope printer. Office Manager 2.5 lists at \$99; call (800) 424-0310 for upgrade info.

Circle #204 on Reader Service Card

MEDIA VISION CDPC XL/PRO AUDIOSPECTRUM 16 MAC

Media Vision (Fremont, CA), maker of sound cards and multimedia components for the PC, makes its first foray into the Mac environment with a fully integrated multimedia component system and an audio adapter. The CDPC XL system (available in LC and NuBus configurations) features a dual-speed CD-ROM drive and provides 16-bit stereo digital audio recording and playback to 44.1 kHz, 4-operator FM synthesis and MIDI through a 100W amplifier and stereo speakers. An analog mixer allows fade-in, fade-out and pan, plus individual volume controls for each source; a condenser microphone for live sound and an external mic input are included as well.

The Pro AudioSpectrum 16 MAC adapter offers most of the audio features of the component system on an LC or NuBus card, with a smaller (4-channel) input mixer. Bundled with both products are Media Vision's Pocket Tools, Pass-

port's Audio Producer™ and TRAX™ and LucasArts *Indiana Jones and the Fate of Atlantis™*

Circle #205 on Reader Service Card

TRIPP LITE BC 400 BACKUP

Tripp Lite (Chicago, IL) offers a new 400 VA battery backup system that is said to be the smallest and lightest on the market. The unit features two spike-protected AC outlets, large batteries for longer life and an efficient pulse-width-modulat-



ed waveform output. At \$219, the BC 400 is designed for use with desktop PCs, phone systems, cash registers or internet hardware.

Circle #206 on Reader Service Card

DIGIGRAM PCX5 AUDIO CARD

The PCX5 is a new PC audio compression card from Digigram (Montbonnot, France) that offers all of the features of the company's PCX3 card at a lower price. A single DSP manages two completely independent channels, and the unit can run in Linear mode (no compression). Audio quality is said to be even better than that of the PCX3, using both MUSICAM ISO/MPEG-Audio and WBX compression algorithms. Other features include AES/EBU digital I/O; two channels of 16-bit analog I/O with A/D and D/A conversion; sampling frequencies of 48, 44.1, 32, 22.05, 16 and 11.025 kHz; frequency response of 20-20k Hz at 48 kHz; and S/N ratio of over 90 dB. Particularly suited for OEMs developing high-quality professional applications, the PCX5 card occupies one PC/AT slot and can be used in some laptops as well. Call (33) 76 52 47 47 or fax (33) 76 52 18 44 for info.

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—FROM PAGE 81, DIGITAL VIDEO PRODUCTION
with all-digital flexibility and control. It's designed to work with standard camcorders and VTRs, and because it is designed for transfer of edited digital material to tape the system has no need for EDLs. It includes a built-in title and special effects generator. At around \$15,000 (not including the Mac II-based host computer), this system is designed for corporate media departments and ad agencies rather than high-end professional facilities.

A "broadcast-quality" version of Media Composer was scheduled to be available by the NAB show last month, tailored to the needs of live news broadcast. While the other Avid systems are capable of full-frame 30 frames/second, NewsCutter offers 60 fields/second of video, internal character generation and automated clip capture. A companion product, Media Recorder, captures media directly from common broadcast sources, and a third product, AirPlay, allows users to broadcast digital files directly to air, totally eliminating the need for analog tapes.

The newest member of the Avid family is AudioVision, a multitrack digital audio editing system that is synchronized to digital video. Video productions created and edited on Media Composer can be transferred via MO cartridge or EtherNet to AudioVision for audio layback, editing and mixing to picture, eliminating the slow cycle time of external video decks. Alternatively, video can be transferred directly from tape to AudioVision. The system, tentatively priced around \$65,000, supports audio sampling frequencies up to 48 kHz.

Despite its track record as an innovator in digital video technology, Avid appears to be equally qualified to make some big waves in the digital audio domain. The Avid roster includes names of many people familiar to those in the pro audio industry. Look for more information about AudioVision in a "Field Test" in the July issue of *Mix*.

DIGITAL F/X

At the top of its product line, and hardly qualifying as a desktop video product, Digital F/X's (Mountain View, Calif.) Compositum is described by that company as a digital production suite. However, as the

company's name implies, Compositum (as well as its other products) is strong on visual effects and graphics. While Compositum users have the option of buying the DDR-100 D-1-compatible 100-second disk recorder, the basic unit is designed for the most sophisticated of graphics and special effects generation while controlling external pro videotape decks. Mike Brown at Component Post in Santa Clara, Calif., uses it for special effects D-1 posting for corporate, broadcast and film projects. Typical of the facility's recent projects was a special effects sequence in the upcoming Warner Bros. release *Made in America*.

Priced at \$15,000, Video F/X Plus is really a hybrid system offering video capture with random-access, software-based editing of the digitized video and audio, as well as A/B roll editing, frame-accurate time code editing, a 4-input switcher, linear keyers, a 32-bit still store, a jog/shuttle wheel, MIDI support, export of common EDLs, and many graphics and animation functions. Designed for corporate media production and smaller post-production houses, the system consists of a NuBus card for a Macintosh Quadra 700 or higher, an external box and an external controller.

The software-only component, Soft F/X, allows random-access editing of digitized video and audio. Digital F/X envisions Soft F/X users bringing their high-capacity hard drive and source tapes to a Video F/X "bureau" for digitization at 8-bit resolution. Then in an "offline" environment the users can create EDLs using Soft F/X. When they are finished, they simply bring their source tapes and EDL back to the bureau, where a master can be made simply by using the auto-assemble option.

After spending a day on the system, I can report that the resolution of the video and audio were inadequate for making accurate edits. I found it necessary to fine-tune my edits in the Online mode using the video and audio coming from my source tapes. Still, it was an improvement over traditional editing techniques. And it's obviously an attractive solution for the corporate market, with companies such as Nestle, NASA and Coca-Cola using the Video F/X system.

Digital F/X is fully aware of the audio side of the production process,

having recently acquired WaveFrame and Hybrid Arts. While its current line of video-editing systems does not support anything more than Macintosh audio fidelity (mono 8-bit 22kHz) in the digital domain, you can bet on seeing a lot of audio related activity in the near future from this company.

Other random-access video-editing systems at the upper end of the spectrum include Solid State Logic's Scenaria, Editing Machines Corporation's EMC2 and Lightworks' Lightworks. At this point, the only other activity in the realm of random-access video is in the multimedia arena, where high resolution and high frame rates are less critical than in the broadcast market.

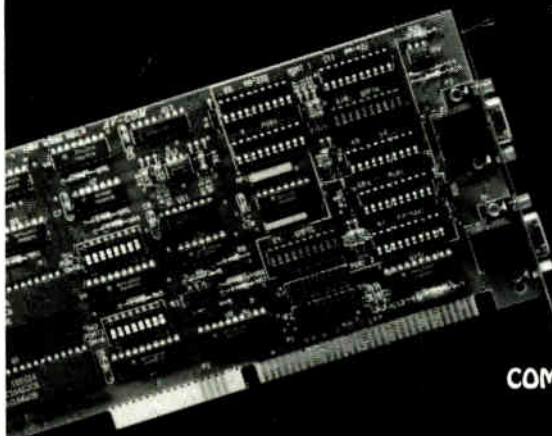
SUPERMAC TECHNOLOGY

SuperMac (Sunnyvale, Calif.) was the first company to take advantage of Apple's QuickTime technology with its VideoSpigot card. This NuBus card for the Mac allowed users to digitize video from an analog source. The resulting file could be played back from any Mac equipped with the QuickTime extensions—no additional hardware was required. The size, frame rate and resolution of the resulting QuickTime movies were disappointing to many, but with SuperMac's release of DigitalFilm (\$5,999), the results were much improved. SuperMac claims that DigitalFilm provides real-time capture of full-motion video and audio to disk from NTSC, PAL and S-Video inputs at resolutions up to 640x480 pixels.

Generally speaking, the files generated from DigitalFilm occupy between 35 and 60 MB per minute. In order to play back such files at the maximum resolution, you must have a DigitalFilm Player card in your Mac. The only alternative is to convert the DigitalFilm files to software-only files using the new Compact Video compression algorithm available with QuickTime 1.5. It takes about 1½ hours to convert one minute of video using this method.

VideoSpigot and VideoSpigot for Windows (jointly developed and marketed by Creative Labs) are popular alternatives for those wanting to digitize video for playback on personal computers. Less time-consuming compression algorithms are available for these files, and Adobe's Premiere software-based video-editing program (now available for Windows

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as well as the Macintosh) provides an excellent way of assembling QuickTime movie clips and creating QuickTime movies complete with transitions, graphics and titling.

RADIUS INC.

VideoVision is Radius' (San Jose, Calif.) solution for those who want to record QuickTime video and audio on the Mac. It consists of a single digital interface card with built-in video input, video output and 24-bit graphic display capabilities, an external connector panel for video and audio connections, and comprehensive software controls. The main advantage of VideoVision is its ability to print QuickTime movies to videotape without extra hardware. Presently, however, anyone expecting professional-quality videotapes using this system will likely be disappointed.

DigitalMedia Studio—priced at \$3,999 and expected to be ready for shipping by April—is based on the VideoVision system but adds a JPEG compression chip to input and output video at 30 frames per second and 640x480-pixel screen sizes. Radius also claims that DigitalMedia Studio includes external machine control, SMPTE time code support, A/B roll editing, and extensive video special effects generation using Adobe Premiere, which is bundled with the system. As is the case with SuperMac's DigitalFilm, Radius VideoVision and DigitalMedia Studio are required for playback, as well as for recording the higher-resolution, uncompressed files.

RASTEROPS

MoviePak is RasterOps' (Santa Clara, Calif.) QuickTime video-digitizing solution. It is a daughterboard for that company's line of NuBus video and display adapters, and it can be sold separately to those who already have RasterOps cards, or as part of its Editing Aces Suite, which also includes a MediaTime board (with its own on-board AudioMedia chip) and Video Expander II for NTSC signal encoding into composite and S-Video.

The curious part about the audio portion of the equation is that the current QuickTime architecture allows 16-bit audio to be recorded in a movie, but on playback it ignores the top eight bits. RasterOps' point is that

when Apple improves QuickTime audio to allow playback of 16-bit audio, these same movies will then play back at 16-bit resolution.

Ken Caillat of Crunch Media in Santa Monica, Calif., is using MoviePak to produce a series of music-oriented CD-ROM titles for Mac and Windows. The company's first title is *The Compleat Beatles*, expected to be out in August.

NEW VIDEO CORPORATION

EyeQ from New Video (Santa Monica, Calif.) is yet another Mac NuBus card with a daughterboard described as a flexible solution for creating digital video on the Macintosh. It's clearly aimed at the multimedia market, offering a wide range of compression algorithms that the company claims allow for full-screen, full-frame video to be played back from a CD-ROM. The hook is that in order to achieve such high compression rates without additional Mac hardware, you need to send your files to an external processing lab. And once those files are compressed, you can no longer edit the movie. A complete EyeQ system retails for about \$4,500.

All four of the above products require a software-based QuickTime editing system, such as Adobe Premiere, for anything beyond video capture and playback. Despite Premiere's power and flexibility, the limitations of the current QuickTime technology do little to answer the need for improved audio quality (which is limited to 22kHz sampling at 8-bit resolution) and editing efficiency (because of the long compiling times required to view your work at optimal resolution). Premiere's Preview mode gives you some idea of what to expect, but the only way to know exactly how your movie looks and sounds is to wait anywhere from two minutes to two hours for each minute of your movie, depending on the resolution, frame rate and type of compression.

Despite these drawbacks, there is a ready market willing to put up with the low quality of the resulting movies on PCs—from users of multimedia-oriented entertainment products to those involved in corporate presentations and training programs. Apple has agreed to make its QuickTime architecture OMF-compatible, and it's likely that we will see the gap closing between these multimedia-

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oriented video tools and the top-of-the-line technology offered by companies such as Avid.

COMPUTER CONTROL OF VTRS

As outlined in last month's column, another whole category of products is often described as either "desktop video" or PC-based professional-quality video solutions. Not to be confused with random-access digital video production tools, these products are described more accurately as PC-based A/B-roll systems. Many offer a lot more than simple cuts-only editing, and, despite their dependence on linear tape, they can offer tremendous cost savings over traditional techniques.

MATROX SYSTEMS

Dorval, Quebec-based Matrox Systems has been in the graphics- and video-processing business for more than 15 years. The Video Products Group was formed in 1991, and today the company is shipping several hardware and software video products for the PC.

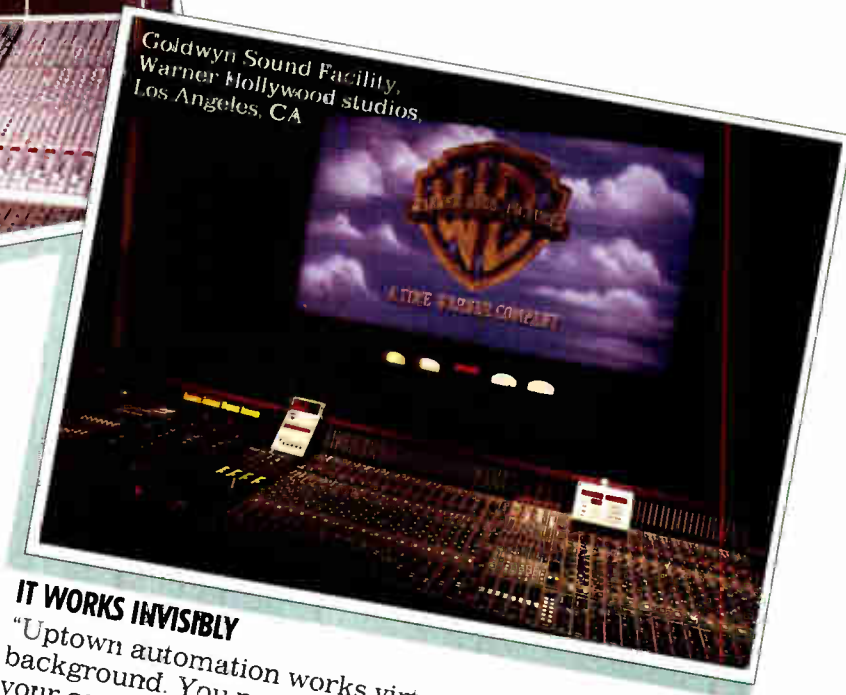
Matrox Studio is described as a professional A/B-roll broadcast-quality video production suite on five boards that fit into an EISA PC, for \$9,995. The system includes built-in time-base correctors, a 32-bit graphics subsystem, two DVE and two keyer channels, four layers of video/graphic mix effects, an 8-track analog audio mixer, Personal Producer video-editing software, as well as paint and titling software.

A video upgrade, which includes a black-burst generator and extra hardware for adding another video/graphic layer to the A/B-roll system, is available for another \$3,500. The audio subsystem can also be upgraded to include a 12-track audio mixer plus digital audio support for \$1,200. Matrox Studio can support consumer VCRs as well as professional decks, including D-1 format.

Bill Moffat of Avar Post in Kitchener, Ontario, uses Matrox Studio "for everything from broadcast TV programming to corporate product marketing videos." The company services regional ad agencies and independent producers. "We use it with Betacam SP decks," Moffat says. "The audio capabilities are just amazing. All the audio is digitized



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The M700 is a 32-buss production console series that combines sonic purity and a familiar, flexible architecture in standard configurations up to 128 input channels. Designed using a minimal number of active components, the M700's signal path is clean and efficient, which results in a natural sounding mix that's open, robust and transparent.

The ease and flexibility of the M700 Series can be extended by means of TASCAM's new Moving Fader Automation (MFA) package, a full-featured, stand-alone automation system which can be enhanced with a computer as a display terminal. The very responsive MFA package includes TASCAM-designed motorized faders with 12-bit resolution, along with capabilities for sub-grouping faders, mutes and solos.

If you haven't yet seen the remarkable M700/MFA production console in action, you can easily do so by calling (213) 726-0303. Or by writing TASCAM, 7733 Telegraph Road, Montebello, CA 90640.

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into the system from DATs and CDs. You can edit and mix unlimited layers of audio without any discernible signal degradation. And the storyboard works on a nonlinear basis, so you can move, delete or insert audio and/or video sections into any point in the show without having to redo the whole thing." When he comes up with a version he likes, he simply prints the program to tape in one pass.

Matrox's Personal Producer editing software is also available as part of an entry-level package, along with its Illuminator-16 video graphics controller card and Illuminator Video Stabilizer Module, for \$2,995. This low-cost system lets you create an EDL with A/B transitions from a single video source, then print to tape. (The A/B transitions are performed between a freeze-frame of the last frame of a clip A and the live action clip B.)

This system runs on a Windows platform and can use any MPC-compatible audio card for integration of digital audio with any audio coming from the video sources. Both Matrox Studio and Personal Producer for Illuminator-16 are designed to let you create an EDL with transitions, graphics and effects and then print the result to tape. Though Matrox Studio could qualify as a professional tool, it appears that Personal Producer for Illuminator-16 is designed for the semipro and hobbyist.

One final note: The company has been developing a nonlinear editing hardware and software upgrade for Matrox Studio and was expecting to ship in the first quarter of '93. By using JPEG compression, Matrox claims, "Near-VHS-quality video is attained at 250 Kb/second, which yields 64 minutes of video on a 1-gigabyte hard drive." The company literature adds, "The video quality on the finished tape depends on the size and speed of your hard disk drives. Near S-VHS quality is achieved at 1 MB/second, which yields 16 minutes of video on a 1GB drive."

FAST ELECTRONICS

Headquartered in Germany with U.S. offices in Natick, Mass., Fast Electronics recently unveiled Video Machine. The Mac II-based product combines the features of an A/B-roll

editing system with six composite or S-Video inputs, a programmable digital video effects module, a character generator with frame-synchronization scan conversion, a paint box and an edit controller. Video Machine includes a NuBus card, an external 19-inch rack-mountable box and software, for \$4,995. Fast also is working on a product for digitizing video: The Digital Recorder/Player has been announced as an upgrade path for Video Machine.

OTHER SYSTEMS

NewTek, the Topeka, Kansas-based makers of the popular Video Toaster for the Amiga and Macintosh, also offers the Video Toaster Workstation. It's a 4-input switcher with real-time (60 fps) digital effects, network-quality still store, frame grabber, animation and modeling software, a 52MB hard drive and 5 MB of system memory.

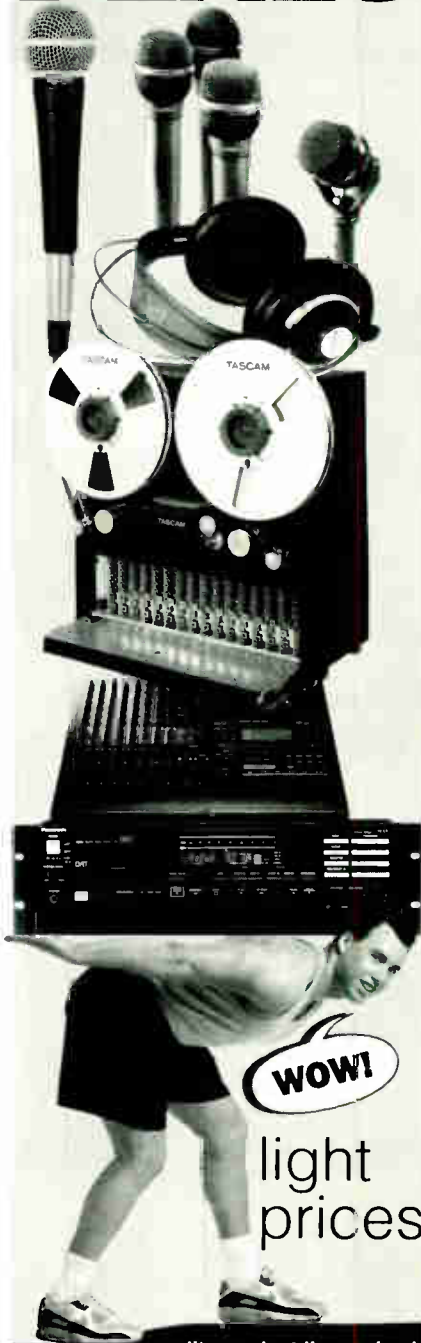
A Windows PC-based EVClips video production system is available from BTS (Simi Valley, Calif.). It includes an edit controller, video switcher/dissolver, character generator/keyer, audio mixer and scene management system.

Sundance Technology Group (Irving, Texas) makes the Sundance System, which includes A/B-roll editing hardware and software as well as scene-logging database software for the Macintosh. In addition the company has announced Radio, an external box that offers a low-cost, nonlinear editing option for the Sundance System.

Given that you don't necessarily have to rob a bank to acquire this technology, it offers some attractive avenues for diversification for the audio professional. Whether your intended target is in CD-ROM production, video storyboarding, corporate video training, broadcast, feature films, or any number of other video production niches, the key to understanding whether new desktop video technology is right for you is in knowing that it can save you time and/or money. For some, conventional production techniques still make economic sense. But for a growing segment of media producers, the current generation of digitally based video production tools offers a significant enough advantage to make that investment. ■

Paul Potyen is a Mix associate editor.

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by Dan Daley

NEW TECHNOLOGY NICHES

Coming hard on the heels of the establishment of the project studio within the professional audio industry is yet another technology-driven trend. The proliferation of digital systems, particularly stand-alone ones, has created a new set of opportunities for specialized new businesses with relatively small capital investments: most notably, the project service business.

CD-R is one area where entrepreneurs seem to be making serious inroads. For instance, in Nashville, engineer Ricky Cobble and partner Van O'Dell pooled their resources and bought a pair of Panasonic SV-3700 DAT decks and a Philips CD-R machine and hung out a shingle after realizing that the convenience of CDs had a lot of potential for the huge music-publishing industry in Music City. "Not everyone has a DAT deck in their office, but almost everyone has a CD player," says Cobble, noting that song pluggers making the rounds can hit five or more labels and producers a day. "CDs offer small size and random access as well as having a large installed base of users around town."

Their company, Disc & DAT, initially operated out of one of their homes when it opened last November, but by early this year they were planning to locate in a local studio, exchanging rent for insider pricing on CD-R copies for the host studio—a move that parallels the development of project studios within larger facilities in symbiotic economic and business relationships.

LOW CAPITAL, FAST RETURN

Disc & DAT's technology start-up cost was less than \$8,000 for the \$5,000 Philips system and two DAT

We've already seen how the project studio developed in the wake of low-cost digital equipment, and we've seen the somewhat rancorous friction between the old and new guards as traditional studios viewed project studios as unfair competition. Now another round of project-related niches is opening up. Will this round go more smoothly?

decks. Another \$1,000 or so went into the printing of cards, stationery and advertisements in local audio publications. They charge \$100 per CD, about 50% less than other studio-based CD-R operations in Nashville. They'll need to burn between 800 and 900 paying CDs to break even, which Cobble expects the company will do within the first six months of this year.

In researching the market possibilities for this venture, Cobble noted that, aside from the CD-R systems within existing studios, the local Dreamhire equipment rental outlet had acquired a Yamaha CD-R and had it almost immediately rented out on a semipermanent basis to

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Disney/MGM in Orlando. That further convinced Cobble and O'Dell of the latent demand for this type of service in the market. Ironically, Dreamhire now rents Disc & DAT's Philips system from them on a spot, as-available basis, generating additional income. And the two partners have expanded their niche by becoming CD replication brokers for clients who, once their initial CD-R is done, need short-run (5,000 to 1,000) replication, using replicator American Helix in Alabama.

Disc & DAT is representative of the new technology niche operators now sprouting up across the country. But not everyone sees such a rosy picture. Just as commercial facilities had a problem with project studios when they began, so, too, do traditional recording studios see conflicts with project service companies now and in the future.

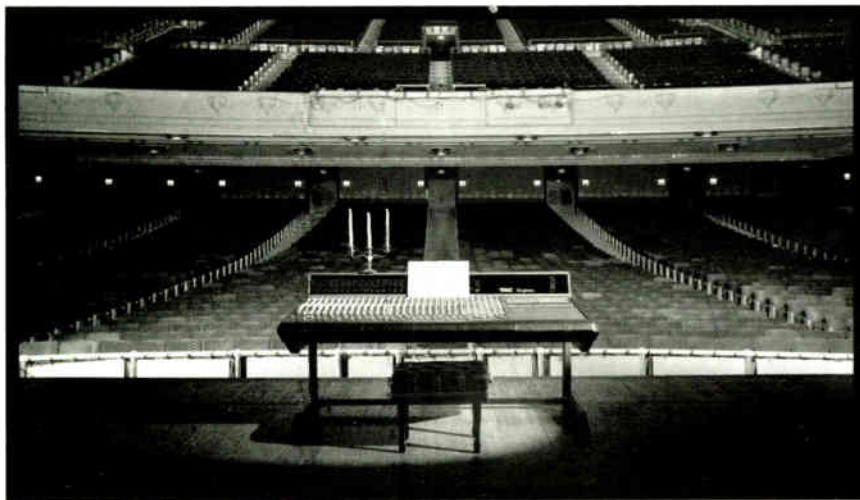
THE OTHER SIDE OF THE COIN

Masterfonics, a leading studio and mastering facility in Nashville, also offers CD-R services. Using a Philips portable system and a Yamaha in-place system, Masterfonics will burn a CD-R for \$150. But, according to studio co-owner Glenn Meadows, there's more to it than price. "We've seen a lot of people flock to these new independent operators to save money, but we've also seen a lot of them come right back here to have it done right," Meadows says, noting that independent service providers can't offer accurate monitoring environments and often offer mastering as part of the package using low-cost Mac-based digital audio systems.

"People don't realize what's involved in mastering, or that you should use a time code DAT to get frame-accurate CD-Rs," he continues. "The amount you save in doing the project in that way is, in my opinion, not cost-effective." Meadows acknowledges that independent operators are putting downward pressure on his CD-R pricing, pressure he says he's resisting. The parallels between project studios and new project niche businesses appear to be dramatic.


SYSTEMS OPERATION

The complexity of new digital systems is also giving rise to another



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World Radio History

new breed of entrepreneur: the systems specialist. In this case, an investment in hardware isn't necessary; however, a serious investment in time spent learning the intricacies that aren't always found in manuals is required.

Dan Rudin is an audio engineer who made the transition to digital systems and now specializes mainly in Digidesign systems and the late NED's Post Pro, a system that apparently will long outlive its parent company. Rudin began his time investment during slow work periods, learning the systems first out of professional curiosity, then with a sharpened sense of purpose. Since then, he's teamed up with Dave Shipley, co-owner of Nashville's Treasure Isle studio, offering his services along with Shipley's personal Mac-based digital audio system.

Rudin says he'll inject himself into any digital audio system scenario he can encounter, and if it's not something he's familiar with, he won't charge for his time, looking at it as a trade-off to learn something new. "The hierarchies of the systems are

basically the same," he says, "but the differences within them can sometimes be dramatic."

MORE TIME, LOWER RATE

Interestingly, Rudin charges \$5 an hour less for his specialist services than he does for straight audio engineering. "The physical drain of working with hard drive-based digital audio systems isn't as intense as it is in a session where you're miking drums," he explains. "I'm also learning something new every time I sit down. There are plenty of bugs in hard drive systems and software, but that's the nature of hard drive recording. But it can slow you down, and I think a lower rate is fair to the client. And one of the secrets of digital editing is not having people looking over your shoulder. So if you're working in private, that's a luxury worth charging a bit less for."

Computer-based systems are also opening up new markets for specialists. Just as Disc & DAT's owners have moved in a natural progression to brokering replication subcontracts, Rudin is moving toward authoring CD-I and CD-ROM programs. "That's down the line in the

future," he says. "But the groundwork is being laid at this point."

The past is prologue. We've already seen how the project studio developed in the wake of low-cost digital equipment and a dramatic widening of range and depth of small- and mid-budget projects, from cable television to independent records. We've also seen the somewhat rancorous friction between the old and new guards as traditional studios viewed project studios as unfair competition that lowered industry technical standards, while project users regarded some traditional facility owners' attitudes as reactionary.

Now another round of project-related niches is opening up, all related to new and increasingly inexpensive technology. Will this round go more smoothly? Or have attitudes hardened on both sides of the fence? Time will tell, but an awareness that we've been down this road before might make things a bit easier. ■

Dan Daley is Mix's East Coast editor. He has found his niche in life. Unfortunately, it's illegal in most developed nations.

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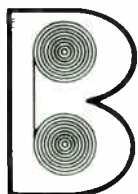
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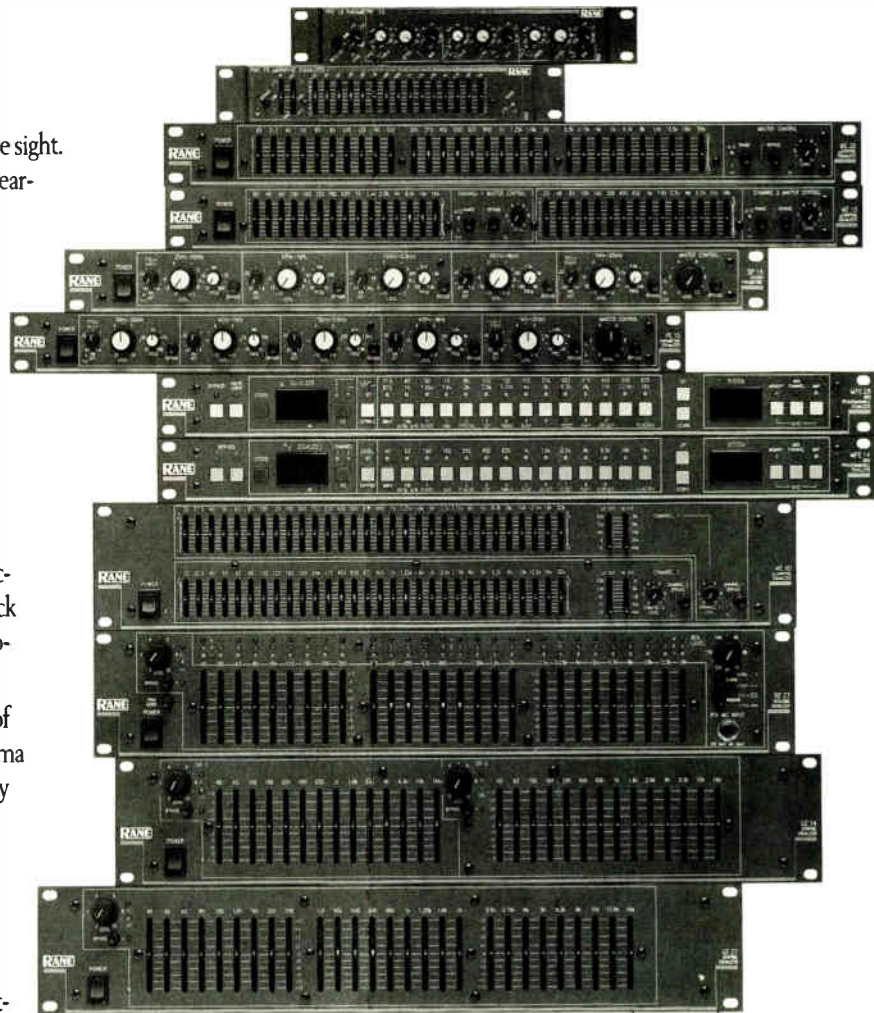
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World Radio History

by George Petersen

CARVER PDR-10 CD RECORDER

CD recorders seem to be getting better and more affordable every day. Just a few years ago, the concept of a CD recorder meant an investment of \$25,000 or more in a rather pricey accessory to an expensive computer-based audio system. Today, the situation is quite the opposite, and with a number of units on the market for under \$10,000, the affordability of such units to the typical studio or broadcast facility has become a distinct reality.

Enter the Carver PDR-10. With a net user price of \$8,500, the stand-alone (no computer required) PDR-10 is the least expensive full-features

recorders. It's solid and designed for years of heavy use.

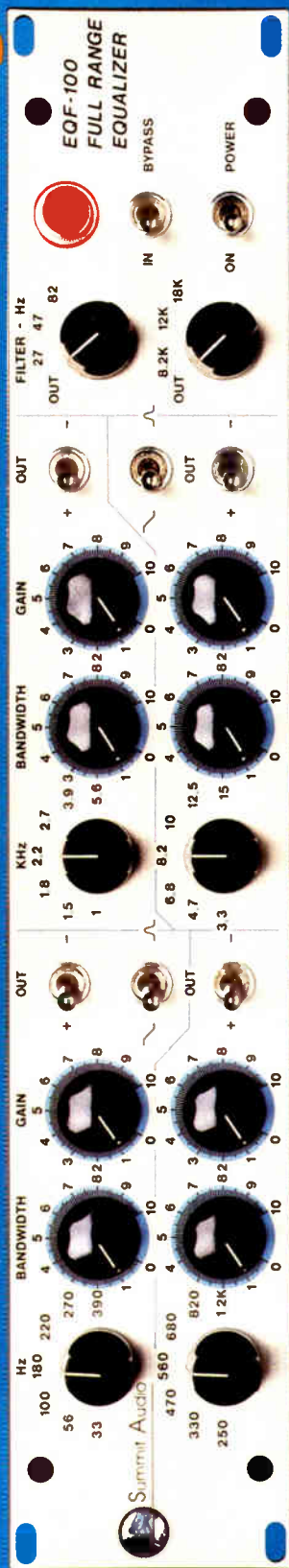
The PDR-10 and its Apex twin offer a full complement of analog and digital input/output possibilities. Analog connections include either RCA unbalanced, balanced XLR or 1/4-inch unbalanced mic inputs (a rear-panel switch determines which of these is active), and both unbalanced RCA and transformer-balanced XLR outputs. Digital I/O ports include XLR AES/EBU, Toslink optical and RCA SPDIF. A mystery switch on the back panel allows users the option of disabling the three digital outputs, although I was unable to discern any possible reason that anyone would want to do this. Of greater value are two 15-pin subminiature D connectors for remote controlling the PDR-10. One is marked for the RC-5 full-function remote (presumably an optional accessory); but much hipper is the other connector, which combines both RS-422 (250K baud serial control) and a simple set of pins providing control of Transport, Record and Search functions via simple contact closures. Any tech could design a studio remote or station automation adjunct in a matter of minutes. This is one appreciated touch that other manufacturers would do well to emulate.

Physically, the PDR-10 is logically laid out, with a large, bright, fluorescent display that indicates not only time and track functions, but also status messages such as whether the disc inside is recordable (or not) and the presence (or absence) of a digital source input. The Record Level control (which controls the level of analog inputs only) is sizable, which I liked, but separate control of left and right levels must be adjusted by



tured CD recorder available today. But first, some history. The Carver PDR-10 is identical to the Apex CDR40, a CD recorder available only in the European market. Both units use a Philips-made transport and laser writing system that is durable and used in a number of other CD

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FIELD TEST

using both the level pot and a small Balance control. I would have preferred separate controls for left and right inputs, but the system that the PDR-10 design offers is far superior to those dreaded concentric input controls found on some tape recorders and DAT machines.

The Transport and Record buttons are large and lighted when active, providing extra reassurance to the operator. There's no question as to whether the machine is recording, because the lighted buttons are clearly visible even from across the room. I liked the fact that the flashing buttons in Record Ready mode made it easy to hit the right switch in a dimly lit control room. Below the transport controls is a row of tiny but significant buttons for selecting Time Display, Search, Looping, Track Skip, Track Increment, Analog/Digital input source and Fix-up.

During recording, the PDR-10 creates a temporary table of contents (containing all track and timing data) on the CD, which allows discs created on the PDR-10 to be recorded with one or a few tracks at a time and then be removed from the recorder for additional recording at a later time. Fix-up refers to the process of writing a *permanent* TOC, thus converting the disc from the CD-R Orange Book specification to the Red Book standard for conventional CDs. After the Fix-up process, discs can be played back on any CD player; however, once the TOC is finalized via Fix-up, the discs are no longer recordable. With this in mind, the PDR-10 requires pressing the Fix-up switch first, followed by the Record button, as a safeguard against inadvertent disc fixing. The Fix-up process takes approximately 3½ minutes for a 63-minute CD and about four minutes for a 74-minute disc.

Operationally, the PDR-10 is only slightly more complex than a DAT cassette recorder. Connect the source, insert a blank disc, press the Record button to check levels, and hit Play to begin recording. With a fresh disc, the unit starts recording on CD track number 1; in Manual mode, this track index number advances whenever you hit Stop or Pause. In automatic Track Increment

mode, the PDR-10 will automatically advance tracks when copying a CD from a digital source; combined with a digital output CD player, the PDR-10 is ideal for short-run CD duplication. Unfortunately, the PDR-10 cannot automatically translate DAT index points into CD track numbers; with that in mind, Carver is working on such an adapter, which should be out in the months to come. A DAT-to-CD indexing accessory is currently available from Audio + Design Recording (distributed by Gotham Audio of New York City).

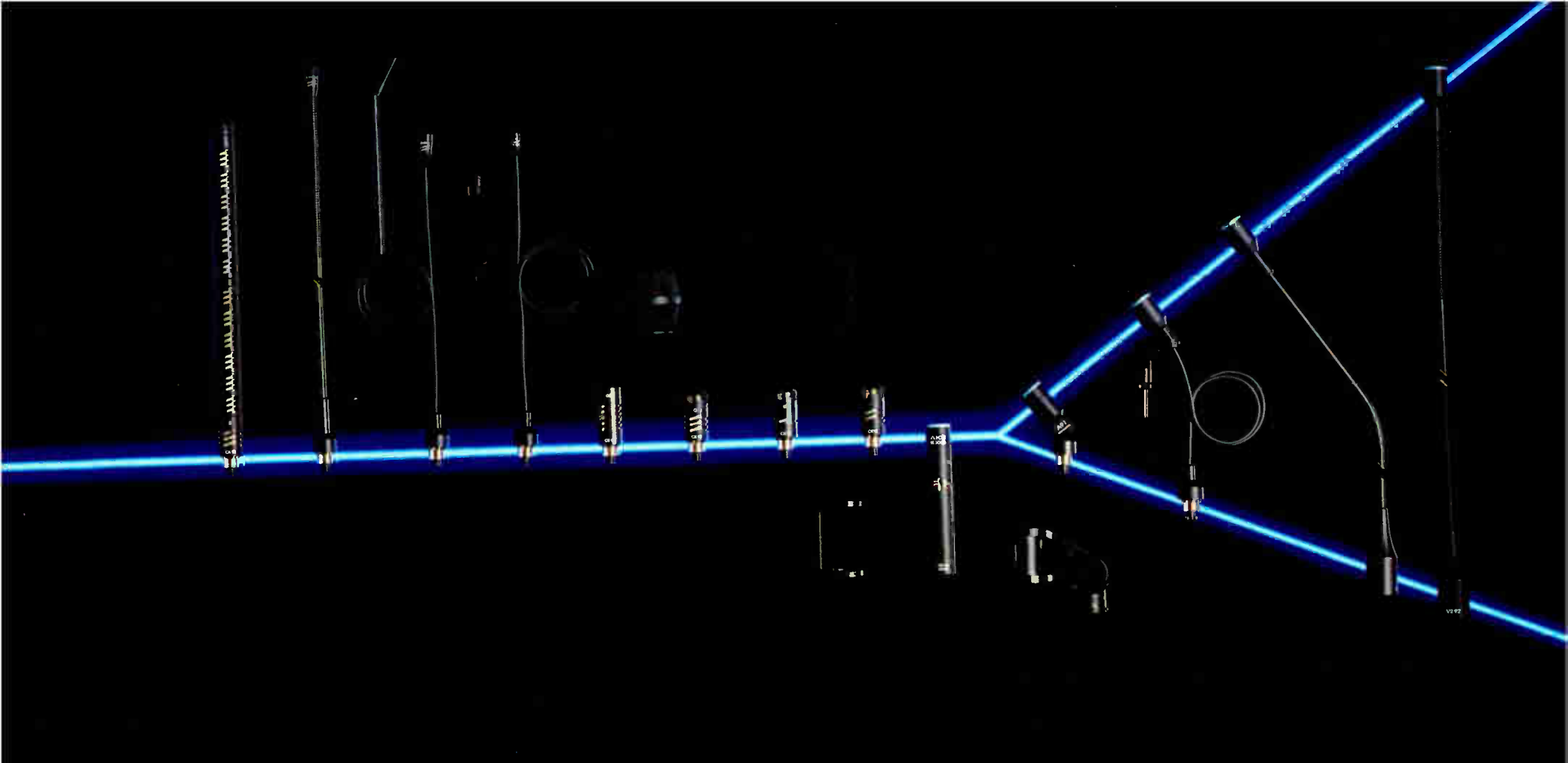
If you mess up a track, the PDR-10 provides a programmed Skip function that tells the unit to skip over the particular track. However, once tracks are recorded, the track numbers cannot be reassigned or deleted; further, the skip flag can only be read by Orange Book CD recorders—conventional CD players will ignore the skip flag and play the bad track anyway.

Over a period of weeks, I tested the unit with a variety of 63-minute discs from DIC/Digital, Philips and TDK, and had excellent results with all three brands. I also had the opportunity to try DIC's long-play version and had no trouble playing back a 24-cut, 74-minute disc on any player I tried, with the exception of one vintage model that refused to play the disc. This is not the fault of the Carver CD-R or the DIC disc, but due to some vagueness in the Orange Book standard. Newer-generation players have no problem with CD-R-73s, but my advice is to stay with the 63-minute CD-Rs if you absolutely require 100% playback compatibility.

While most pro users will connect the PDR-10 to digital sources—such as DATs, CDs and digital workstations—the internal 1-bit D/A converters are excellent, and CDs produced from analog source material sounded virtually identical to the source.

At a user net price of \$8,500, the Carver PDR-10 packs a lot of pro features into a compact three-rackspace chassis that is easy to use and sounds great. This is one CD recorder that will find itself in a variety of studio, broadcast, post-production and duplication applications.

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by George Petersen

PRODUCT

CRITIQUES AND COMMENTS

FOCUSRITE RED 2 EQUALIZER

FAt last year's AES show in San Francisco, Focusrite unveiled the first two products in its Red Range, a line of signal processors based on Rupert Neve's renowned ISA Series of outboard gear and Focusrite Studio Console. Red 1 is a 4-channel mic preamp with variable pad and individual switching for phantom power and polarity reverse on each channel. Adapted from the ISA 110 console module and ISA 115 rack-mount equalizer, Red 2 is a dual-channel, 4-band equalizer with highpass and low-



pass filters in a two-rackspace chassis. The "red" name comes from the bright anodized aluminum chassis, which should make this a distinctive addition to any studio rack.

With a mere touch of the smoothly curving front panel and recessed, lighted switches, it is clear that Red 2 is not just another studio EQ. The layout of the controls is extraordinarily simple, yet everything is immediately obvious, despite the fact that the only words on the faceplate are Focusrite and In—above each channel's EQ bypass switch. The only thing that may require a second

take is the placement of the input trim controls at the far right side, rather than the left where one might expect them.

The rear panel is equally simple, containing the transformer-balanced XLR (pin 2 hot) inputs and outputs and removable AC cord socket for the internal power supply. The latter is significant, because previous Focusrite equalizers, such as the rack-mounted ISA 115HD, required a rack-mount outboard power supply.

Each equalization channel consists of a variable (-12dB/octave) highpass filter operating at 36, 60, 105, 185 or 330 Hz; ± 15 dB LF shelving at 33, 56, 95, 160, 270 or 460 Hz; parametric low-mid section sweepable from 40 to 1,200 Hz with ± 15 dB of cut/boost and Q (bandwidth ratio) adjustable from 0.3 to 1.0; parametric mid-high section sweepable from 600 to 18k Hz, with ± 15 dB cut/boost and a 0.3 to 1.0 Q range; ± 15 dB shelving HF section at 3.3, 4.7, 6.8, 10, 15 or 18 kHz; and a -12dB/octave lowpass filter switchable to 5.6, 8.2, 12, 16 or 22 kHz. Each of the parametric bands has a lighted "x3" button, which triples the range of the frequency select control to provide a high degree of precision in tuning in the exact frequency you need.

While the cut/boost controls include center detents at the "zero" (12 noon) mark, these same controls (along with the frequency and Q controls in the parametric sections) do not have any other position markings, so trying to match exact settings a day or month later could be difficult, even if one uses the (photocopyable) setup reference sheet included with the unit. Fortunately, the art of equalization has more to do with ear-tuning than exact frequency numbers, so this shouldn't be much of a problem on

most studio projects.

Enough theory—I wanted to see how the Red 2 performed in the studio. I started out by listening to the difference between the EQ in and out sections. One hallmark of a quality signal processor is that the hard-wired (or, in the case of the Red 2, relay-bypassed) signal should sound as close as possible to the signal running through the unit, and the Red 2 handled this with ease. The unit's -98dB noise floor was nowhere to be heard, and none of the "funny phase artifacts" common to other equalizers were evident. Of course, the relay switching used in the bypass and x3 switches were absolutely silent in the signal path, although the faint but reassuring clicking of the relays was evident in the quiet control room.

Clearly, the hands provide a wide range of overlap, allowing for some fairly radical equalization changes, if necessary. Whether used on drums, vocals, acoustic instruments or synths, the sound of the equalizer is extremely musical, with a smoothness that can easily lull the user into a greater amount of EQ than he or she is used to. Actually, this musicality allows users to dig into tracks to bring up little parts that need a little extra emphasis, without making the track sound harsh or brittle. In fact, after living with the Red 2 for a while, my main complaint is that it is only a 2-channel device—I soon wanted a couple more channels!

The Focusrite Red 2 has all the earmarks of an audio classic that will be equally admired 25 years from now as that mint-condition Neumann U47 you always wanted. The construction throughout is absolutely first-rate; the audio is superb (rated frequency response is 5 Hz to 85 kHz, -3 dB), and the price is an affordable (by world-class standards) \$3,450. Of course, if you wait until the year 2018 to get one, you'll probably have to pay a lot more.

Distributed in the USA by Group One Ltd., 100 Sea Lane, Farmingdale, NY 11735; (516) 249-1399.

PEAVEY PRM308Si STUDIO MONITORS

Over the years the Phased Reference Monitor series from Peavey's Audio Media Research division has developed into a line of top-notch studio tools. And the PRM series may start to get the recognition it deserves with the introduction of the PRM308Si, whose radical cosmetics alone may get the attention of a few more engineers.

Aside from the granite-look laminated finish, the PRM308Si is similar in design to the standard black-oak-finished PRM308. Both models are intended for listening in the near-field, offering a three-way system with 8-inch woofer, 5-inch cone midrange and 1-inch dome tweeter in a front-ported 18x13x12-inch enclosure. Like the PRM308S, the granite-finished model has arranged the drivers in mirror-imaged pairs to improve stereo imaging; an acoustic foam blanket surrounds the MF and



HF drivers to reduce the effect of baffle reflections.

The usual scenario with studio monitors is somewhat akin to buying a new pair of cowboy boots: Try them on, break them in, and a week later you get used to them. Not so with the PRM308Si's. I became accustomed to their sound immediately. The rated sensitivity of the monitors provides an SPL output of 88 dB (1W/1m), which is slightly lower than most ported systems but presented no problems whatsoever. Peavey conservatively rates the PRM308Si with a power handling of 80 watts program (this equates to a max SPL in the 106dB range), but in terms of transient reproduction the monitors are capable of much more, as long as the power amp is deliver-

—CONTINUED ON PAGE 155

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NEW PRODUCTS



ECKEL ACOUSTIC PANELS

Eckel Industries (Cambridge, MA) introduces Textured Functional Panels, a set of absorptive panels that can be fitted into a wall-mounted track system. The panels are 30 inches wide, come in a variety of lengths up to ten feet, and can be moved along the tracks to instantly alter the acoustic characteristics of a room. Construction is zinc-coated steel with a fill of 2-inch, fine-fibred fiberglass.

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SHURE BETA 87

The newest addition to the Beta Series of mics from Shure (Evanston, IL) is the 87, a supercardioid handheld condenser. The Beta 87 is said to offer extremely uniform polar response at all frequencies, excellent feedback rejection and superior internal shock-mounting. A three-stage pop filter is contained under the steel grille. Also available is the L2/Beta 87, a wireless model designed to the same specs as the Beta 87.

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ACOUSTECH 8025

The 8025 is a new low-priced two-way studio monitor that is said to offer flat response of ± 3 dB up through and past 20 kHz, as well as near-zero phase distortion and sensitivity of 90 dB. The unit can handle 150 watts of program power and can be used in wall-mounted, hanging or free-standing applications. Low frequencies are provided by an 8-inch filled polypropylene cone, while a 26mm, treated textile dome puts out the high frequencies. The cabinet is 10.5x17x16.75 inches, and Acoustech (Ann Arbor, MI) lists the units at \$1,190/pair.

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ETYMOTIC RESEARCH ER-7D MIC

The ER-7D recording probe microphone system from Etymotic Research (Elk Grove Village, IL) is designed for high-quality portable recording applications. The \$2,500 system includes two probe-tube microphones equalized to provide flat response with the tiny (1.4mm) probe tubes in place. For ear canal recordings, a diffuse-field inverse filter takes

out the average pinna and ear canal resonance while retaining directional cue information. According to the manufacturer, this results in binaural recordings that sound natural when played back over conventional headphones and loudspeakers.

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PEAVEY AUDIO MEDIA RESEARCH VMP 2

This dual-channel, tube-based microphone pre-amp from Peavey AMR (Meridian, MS) provides over 70 dB of gain, with a frequency response of 20-40k Hz and input equivalent noise of -125 dBV at 200 ohms. Features include a regulated "soft start" power supply, balanced XLR mic and unbalanced 1/4-inch line inputs, +48V phantom

power, switchable 20dB input pads, single gain control, low and high shelving EQ with bypass switch, and a low-cut filter switchable to 40 or 80 Hz.

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CLARK CABLE HARNESSES

Clark Wire & Cable (Northbrook, IL) introduces new components and cable assemblies for the Alesis ADAT and the Tascam DA-88, which require multipin connectors to utilize the balanced +4 outputs. Clark offers prewiring of any or all studio wiring harnesses, including Control/Data cables as well as audio and video interfaces.

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JL COOPER DATAMASTER

The dataMaster from JL Cooper Electronics (Los Angeles) includes the synchronizing features of the dataSync MIDI synchronizer and adds the ability to lock the Alesis



ADAT to SMPTE time code (as well as MTC) without wasting an audio track. It also enables ADAT to be controlled via outside devices such as computer-based systems and video editors (9-pin control capability is optional), and to interface with any analog multitrack machine, either as slave or master. Other features include support of 24, 25, 30 drop, 29.97, and 29.97 drop-frame rates; a SMPTE reader/generator with jam sync/regeneration; SMPTE flywheeling; and user-selectable offset times.

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MIDDLE ATLANTIC STUDIO RACK

Middle Atlantic (Riverdale, NJ) offers the Model LRK studio rack for housing recorders, mixers, signal processing and other components. The rack is constructed of 3/8-inch black laminated particle

board, with four casters and threaded rack rails for mounting. Ten vertical spaces fit in the lower portion of the rack, while the upper slope holds 12 more. Retail price is \$286.67.

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ALESIS MONITOR ONE

Designed for near-field listening and priced at \$395, this compact two-way studio monitor from Alesis combines a 6.5-inch LF driver and proprietary 1-inch soft dome tweeter in a ported enclosure. Dimensions are 15x8.25x8.5 inches, frequency range is 55-25k Hz, power capacity is 60 watts program, and sensitivity is 90 dB SPL (1W/1m). A polymeric rubber-coated cabinet reduces acoustic reflections and provides a non-slip surface for meter-bridge mounting.

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SAMSON AUDIO MIXERS

From Samson Audio, a newly formed division of Samson Technologies (Hicksville, NY), comes the MPL Series of professional mixers. The MPL 1502 (\$399) has 15 channels (five XLR and five stereo inputs), 3-band EQ, two aux sends, a peak overload detector, a Tape In/Out function and four aux returns to stereo. For \$699, the MPL 1602 offers 16 channels, 3-band EQ and three auxes in a 2-bus mixer. The 4-bus MPL 2242 (\$1,129) provides 22 channels (six stereo, ten mono), with XLR inputs, 4-band EQ, six aux sends/returns, and PFL and solo-in-place. A swiveling rear jack panel allows



the MPL 2242 to operate as either a rack-mount or tabletop unit. All three mixers have an S/N ratio of approximately 128 dB and bandwidth of 15-30k Hz.

Circle #235 on Reader Service Card

RANE MAP 33 PROCESSOR

Now shipping is the MAP 33 Programmable Acoustic Instrument Processor from Rane (Mukilteo, WA), which uses a multipickup approach (usually a microphone/piezo combination) with separate programmable 7-band EQ, notch filtering, band limiting and level controls for each pickup. Other functions include a separate vocal mic input with EQ and level control, a separate monitor output with dedicated EQ and separate mix, balanced stereo master outs (mic

and line level), insert loops, foot-controller inputs. The unit has 64 memories and can be operated from the front panel or via MIDI program changes. List is \$1,995.

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**PERTEK
MONITORMATE**

The MonitorMate is a 4x6x2.3-inch unit that clips to a microphone stand, providing control of monitor volume and the level of microphone



output to the main mixing board in a live setting, or independent control of a headphone mix during recording. The MonitorMate offers balanced XLR and 1/4-inch stereo inputs, plus XLR, 1/4-inch stereo, 1/4-inch mono and headphone outputs, and can drive a monitor speaker with up to 30 watts of power.

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**ART FXR
PROCESSOR**

Offering studio grade multi-effects for under \$100 per channel, the FXR from ART (Rochester, NY) has 250 preset combinations with up to four simultaneous effects. The single-rackspace FXR can be used mono-in/mono-out, stereo-in/stereo-out or as two independent processors. The Elite version adds an LED matrix showing which parameter is being controlled, an auto-store button, full response to MIDI patch change protocol and footswitching through the MIDI program table.

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BSS FCS-920

From BSS (San Leandro, CA) is the FCS-920, a slave module for the FCS-926 parametric equalizer/analyzer system. The unit provides functions identical to those of the FCS-926: totally digital control of 12 parametric EQ sections, with the ability to store and recall multiple EQ curves, automatically equalize a room to any selected curve, and configure as two 6-band EQs or a mono 12-band EQ. The 1-rackspace unit can be controlled by any FCS-926 or via a new Wireless Remote System Controller that can link up to 16 FCS-926 or FCS-920 units for remote control.

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**GEM
POWER AMPS**

Gem Sound Corp. (Bronx, NY) has unveiled two power amps for professional sound applications. The PA500 (\$349) offers 250 watts per channel at 4 ohms, with maximum THD of 0.008%, and is fan-cooled for heat pro-

tection. The top-of-the-line PA1555 (\$1,495) features advanced MOSFET technology and provides 600 watts/channel at 4 ohms, with THD of 0.02%; both channels can be bridged for 1.2 kilowatts of momentary mono peak power.

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by David (Rudy) Trubitt

SOUND CHECK



The First Baptist Church of Orlando, Fla., recently installed a PM4000 into its large, 6,000-seat facility, which is under the direction of Chris Hinkle, director of production services for the church.

WESTBURY NATIONAL TOUR NOTES

Established in 1971, Westbury National Show Systems Ltd. (Scarborough, Ontario) provides rental and pro audio dealer services to a large number of clients. Currently, the company is providing tour support for acts based around Adamson. EV DeltaMax and Meyer loudspeaker systems. *Mix* asked company representative Ian Murray how Westbury happened to be fielding this variety of brands. "Here, it's such a small industry that service is really the catchword," he said. "You've got to give clients what they want. Over the years, we've amassed quite an inventory—you can have 90 percent of what they want, but they always throw you a curve on the last ten percent."

The company has about 80 Adamson boxes, a large invento-

ry of custom enclosures designed in the '80s, and about 30 to 40 DeltaMax boxes. When it landed a 15-week tour with Bare Naked Ladies, the missing 10% turned out to be Meyer MSL-3s. "We didn't have any, so we bought them," Murray explains. "With 15 weeks [a particularly long tour by Canadian standards], it was worth our while to give them what they wanted."

The tour also carries a PM4000 house and Ramsa WRS-840 monitor board. Other current tours for the company include Anne Murray (Adamson, QSC, PM 3000, Ramsa WRS-840), the Tragically Hip (Adamson, QSC, PM3000 house and monitor) and Roger Whitaker (EV DeltaMax, QSC, PM3000 house and Soundtracs MC 3210 monitor).

Westbury is also doing a num-

—CONTINUED ON PAGE 113



*House mixer
Geoff Keehn*

Suzanne Vega

PERFORMER

Suzanne Vega

VENUE

The Warfield Theater,
San Francisco,
February 13,
1993

SOUND COMPANY

Scorpio Sound

HOUSE MIXER

Geoff Keehn

MONITOR MIXER

John Gallagher

Suzanne Vega's current tour is playing mostly theater-sized venues across the U.S., with an anticipated European leg to follow. Working in their favor are strong material and performances by Vega herself, a skilled band and crew with much individual and joint experience, and dynamic musical arrangements enhanced by moderate stage volumes. The tour is carrying FOH gear and a full monitor rig from Scorpio Sound (West Bridgewater, Mass.) and picking up stacks and racks at each gig to complete their system.

At the house mixer (a PM3000) is Geoff Keehn. "I've never been on a long tour with Suzanne, but I've



Suzanne Vega

worked with her for a long time," says Keehn, who did some second engineering on her first two records and co-engineered *Days of Open Hand*. Keehn's last road gig was a year-long stint with Curtis Stigers. Also on that tour were Vega's current monitor engineer, John Gallagher, as well as the drummer, bassist and guitar tech. "We work together well. Once you know somebody, it's easier," says Gallagher.

"It's like a little family," Keehn adds. "John's one of the best monitor engineers I've worked with. He makes the stage sound great. I was having a talk with the drummer just the other day and his remark was, 'It's not just volume—it's musical.'"

The four-piece band (electric guitar, bass, drums and keys) and Vega's vocal and acoustic guitar re-create (or exceed) the performances of material from her four records. Vega's new album, *99.9° F*, produced by Mitchell Froom (Crowded

House, Richard Thompson) is something of a departure from Vega's previous efforts. Though her dry, intimate vocals remain a familiar landmark, occasional looped rhythm tracks and intense shifts in ambience give the new record a sound of its own. The question was, how would this translate in a live setting?

"Mitchell and I spoke before we went out on this tour," Keehn explains. "He said he pretty much wanted it to punch off the stage; so keep it very dry and not very processed. On the new record, there are a lot of vocal effects: time delay, phasing, very tight doubling. You can try to recreate that kind of stuff in a live situation, depending on the [venue]."

Monitor engineer Gallagher describes Vega's vocal mic choices since 1986: "We're using a [Shure] Beta 58 right now. It has that high-end cut: It's very sibilant, and it's smooth in the low end. We used a Beyer M88 for a while, but the proximity [effect

of that mic [didn't suit] her—if she gets off it at all, it goes away. We tried an EV 757, which is perfect on certain singers. I call it the 'Steven Tyler mic': If you want to be screaming into it all night, it's fine. We used an AKG 535 on the last tour. It was okay. But in general, I don't like using condensers as a vocal mic. Sometimes cables start moving around and cracking and popping—you should be able to catch that at soundcheck, but I'd rather not worry about it at show time. And I don't mind dropping a Beta 58: You know it's going to work."

In the house, her vocal runs through a Summit Tube limiter set for very light compression. "For a vocal compressor I wouldn't ask for anything else, it's very smooth," says Keehn. "But, this particular Summit is very hissy [for such a quiet show]." On the European leg, Keehn has requested a BSS DPR-901, a frequency-dependent, four-band dynamics processor.



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"It's a very flexible box," says Keehn. "Any [band] can be compression, expansion, de-essing, whatever you like. I used it at the end of Curtis' tour. For example, when the singer backs off the mic, you can expand the low end, compress the top and try [to control the variation in proximity effect]."

"Suzanne sings very softly," continues Keehn. "That sets the volume of the show, depending on how far back up-stage I can get her vocal mic from the P.A. Trapezoidal cabinets are much easier for us to use than square cabinets," due to what Keehn feels is their greater directivity. "With square cabinets, I'm finding [sound from] the horn just wraps right around the back of the cabinet and goes right into the vocal mic." When wrap-around is a problem, Gallagher positions his side-fills to try to block part of the path between P.A. and mic.

Vega's low vocal level also complicates the mix. "The band isn't loud, but the vocal mic is picking up the entire mix," says Keehn. Rather than try to gate or ride the vocal when Vega goes off-mic, Keehn uses it to his advantage. "I'll start the soundcheck with the vocal mic open at the level I think it's going to be, and I'll start bringing things in. Sometimes if you just put up the kick drum and bass, you've got a great mix."

Fortunately, Vega's monitor mix does not unnecessarily complicate matters. Her forward position enables her to hear her vocal effects from the house rather than duplicate them in the monitors, a fact Gallagher appreciates: "Effects in the monitors, especially in smaller places, are not always compatible with the effects being used in the house. Then it ends up being more of a mish-mash of sound than something coherent.

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wants," Gallagher continues. "She's got very good ears, which helps me. I've worked with other people who also knew what they wanted, but the way they say it is not always pleasant—let's put it that way!"

Gallagher runs seven to eight mixes, including stereo sidefills. Vega uses two or three wedges, depending on the size of the venue. (The low-profile Scorpio wedges consist of a single 12- and TAD 2-inch.) When three wedges are used, her vocal alone is run through the center with her acoustic guitars in the outer pair.

"Her guitars are good-sounding," says Gallagher. "I don't have to do anything radical to them. One has a pickup, and the other has an internally mounted condenser mic and a pickup. I don't use the mic onstage, just the direct. She does everything from hard strumming to really soft finger picking, and she plays with the level on her guitar a bit, so I kind of have to watch her."

The tour's Soundcraft 800B monitor desk lacks one feature Gallagher misses. "I'm used to faders for subtle changes," he explains, "as opposed to rotary controls, which are hard to find quickly. When a vocal is on the edge of feedback, it's more comfortable for me to ride the fader than keep my hands on a rotary pot. But it's a nice desk; the EQ is nice."

Although the stage has an open look, movement of each player is constrained. "Everything's in the same position every day, measured from the vocal mic to the drum riser," Gallagher notes. "It helps me, because I don't have to mix things loudly. Normally, a drummer would have kick, snare and bass guitar right off the bat. But there's no bass in his wedge, because he's close enough to him that he doesn't need any. It's one of the qui-

etest stages I've ever heard."

The low stage level offers additional drum-miking flexibility. "I close mic just about everything—all the drum kit and so on—just to get some meat out of things," Keehn says. "But I've also got a pair of overhead AKG 414s, which come in extremely handy. I've gotten to the point where I take the entire kit except for the kick and put it on one VCA and the overheads on another. Mitchell and I had a talk about this at the beginning. His suggestion was to try squashing the overheads, which surprised me since I'd never done that before. But I tried [using BSS 402s], and it seems to work pretty well. It tightens it all up."

As it happened, producer Froom was present at the San Francisco show. He noted that clarity in musical arrangement is as important live as in the studio. He also explained that to help re-create some of the album's sounds, samples (recorded with appropriate effects) were drawn from the sessions. Some of the looped rhythm beds on tunes from *99.9°F* use manually triggered sounds, while others actually do loop. The intent was to use these unusual rhythm tracks in such a way that the audience would not be aware of what was live and what, if anything, wasn't.

Froom offered one other interesting anecdote. At one point during the sessions, what he describes as an Indian-made P.A. was brought in. It had a huge fiberglass horn, built-in delay and an obviously "unique" sound. For the tour, however, this unusual P.A. was replaced with a bullhorn used by Vega during "Blood Makes Noise."

As for the P.A., Keehn explains, "getting stacks and rack every night makes for some interesting situations. There have been some nights it's been absolute hell, but other times, like today, it was quiet as a mouse." The Warfield's system consists of Meyer MSL-3s 650 subs and Crest amps, supplemented by additional 650s and racks supplied by Ultrasound.

"The Scorpio system is very compact and tidy," continues Keehn. "They've got everything down to multicore and Elcos from desk to effects and returns." Keehn also notes that the system makes "buzz-busting" easy with ground lifts available at numerous points in the AC and signal chain.

Although results could vary depending on gear supplied at each venue, I found the sound at the sold-out Warfield show to be excellent. Vega's vocals achieved

her trademark intimacy, and a very dynamic and musical performance by the band was enhanced by the sound system, making for a very enjoyable performance. ■

For the thousands who have wondered (and the one who actually wrote to ask), David (Rudy) Trubitt is indeed the son of composer and professor Allen R. Trubitt. Astute readers will note that parentheses are not hereditary.



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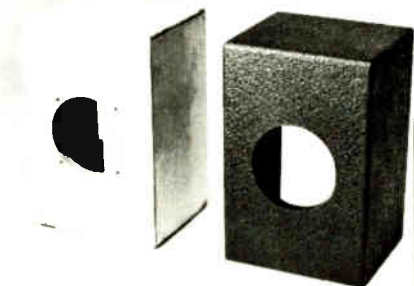
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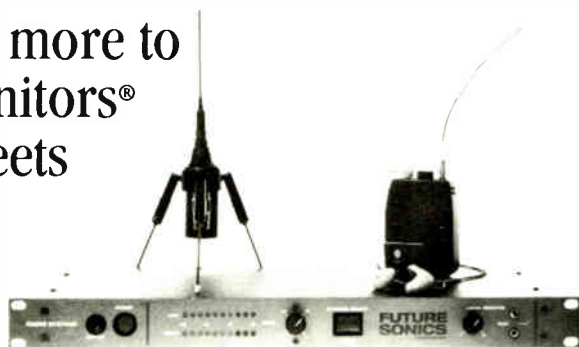


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LIVE SOUND

—FROM PAGE 108, SOUNDCHECK
ber of TV awards shows, including the Gemini and Juno shows. The company recently sold a large amount of gear, including dozens of custom low-profile wedge monitors to the Canadian Broadcast Corporation, which recently revamped its operation. Westbury also does convention work, lighting, set design and more. "We began to diversify 15 years ago," adds Murray, "and it's really paid off here in the '90s."



A Turbosound Flashlight system was recently installed in the University of Wisconsin Stadium.

TURBOSOUND FLASHLIGHT INSTALLED IN STADIUM

The first U.S. installation of Turbosound's Flashlight loudspeaker system is in the Camp Randall Stadium at the University of Wisconsin in Madison. The system, including 11 TFS-780H cabinets, is used primarily as a public address system during Big Ten football games, which draw crowds of up to 77,000. What's interesting about this installation is the loudspeaker placement—rather than a distributed system, often used in such situations, the Flashlights are hidden in the facade of a historic building at one end of the playing field.

Sound from these speakers must travel as much as 750 feet to reach fans at the oppo-

site end of the playing field. The very tight dispersion pattern on the Flashlights makes this long throw feasible, and their relatively compact size fits the available space (see photo). System design was handled by Dan Abelson of Audio Independence Ltd. and John Westra of Milam Audio Corp., who served as system contractor.

OOPS

In our March issue, we ran an item about a recently established computer bulletin board service for EAW KF 850 users that identified Mark Frink as the "point-man" for EAW's Virtual Array Technology Association. This was incorrect. Frink is no longer associated with that group or EAW, and his BBS system operates independently of any manufacturer affiliation. The VATA does provide technical support to sound companies who own EAW gear and maintains a database to facilitate cross-rentals and requests for bids, but takes

no active roll in either process. For VATA information, contact EAW at (508) 234-6158. Our apologies for any confusion caused by the error.

NEWS FLASHES

Signal Perfection Limited (Columbia, MD) was awarded the contract for the retrofit of the existing system and a new lawn speaker system at New Jersey's Garden State Arts Center in Holmdel, NJ. The work will be done in conjunction with Mike Sinclair, the state's in-house consultant, and Craig Janssen of Acoustic Dimensions (Dallas, TX)...Burns Audio (Sun Valley, CA) provided sound for the recent Grammy Awards. Other recent awards shows done by the company include the Soap Opera, Comedy, Soul Train, Directors Guild, Writers Guild and Academy Awards. Burns also provided sound for the American

Film Institute's tribute to Elizabeth Taylor...Gand Music and Sound (Northfield, IL) recently installed a new system in Chicago's Civic Opera House. The system includes eight Bose 402 speakers and four Bose Acoustic Wave Cannon subs. The 402s are suspended behind pipe organ gratings, and the cannons were attached to a ledge. Six Crown Com-Tech CT-400 amplifiers are used to power the system. Gand's Hank Horton served as project manager...Circuits Maximus Company Inc. has expanded its operation with a move to a new corporate facility as of February 1, 1993. "The release of the C:MAX wearable monitor system and the development of other products to meet the needs of the performance artist dictated a move to larger quarters," reports Marc Krushinski, operations manager. "We now have the ability to keep up with production and maintain a separate R&D space." The company can be reached at (410) 381-7970. ■

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COMPUTER CONTROL CONCEPTS

by Bob Moses

PART THREE: WHY THE FUSS?

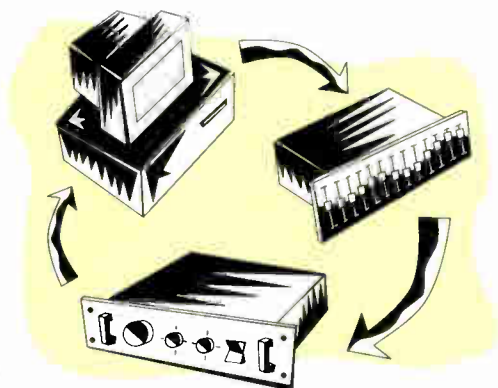
Is all this hype surrounding computer control merely snake oil created by overzealous marketing cowboys? Or, is it a sign that our industry (along with the rest of the real world) is facing a major transformation into the information age? We are witnessing the evolution of sound systems based on distributed intelligence, automation and more comfortable human interfaces. If you haven't seen the writing on the wall, please read on.

CONTROL AND MONITORING

A primary feature of computer-controlled audio systems is the ability to remotely "twist the knobs" on all the equipment and remotely monitor equipment's status. The key to this is small computers (microprocessors) that live in every device in the system. Often called "distributed intelligence," these computers control a device's parameters based on your commands.

Computers are generally more accurate than humans, so when you tell them to set a fader to 10 dB you get 10 dB, not 9%. When you tell them to move 64 faders to various settings, you get exactly those settings in a fraction of a second. Computers can pass messages to each other over a communications network. So you can tell one to make all the adjustments, and it spreads the word to all the other computers in the system.

Computer control can also give you a staggering amount of diagnostic information about the system. In today's real world, systems based on IQ, NexSys and Medialink networks allow



the sound engineer to monitor a power amplifier's signal levels, temperature, loading and other status in real time. When an amp fails you know instantly which one, how, why, when and where. Indeed, the ability to monitor an amp's status means you can take preventative measures (e.g., turn the amp down) before failures even occur. When they do occur, computer-controlled signal routing lets you swap out the amp without leaving the mix island.

SYSTEM AUTOMATION

Close your eyes and fantasize with me... It's 7:00 p.m., and you have just arrived at a posh dinner club with your date. Your table has a lovely view of the mountains as they glow in the sunset. Soft music lingers in the background while you eat and make pleasant conversation. At 8:30 p.m., the house lights dim; the background music fades away; the mirror ball spins; the bubble machine burps; the subwoofers come up and the music starts swinging. The transition from "dinner" mode to "dancing" mode could be executed by a computer-controlled multimedia system, of which sound is one of the media.

This hypothetical system ties all the equipment together with a small Local Area Network. Each piece of equipment watches the LAN's master clock, and when 8:30 p.m. rolls around, everything performs its preprogrammed task. Alternatively, the LAN could have a single master controller and a number of de-

pendent devices. When the master decides it's 8:30 p.m., it commands all its dependents to change their status. In either case, no person lays a finger on a button. The multimedia entertainment system is as automatic as the outdoor lights that turn on after the sun sets.

IDIOT-PROOF P.A. SYSTEMS

Many sound systems are destined for a life of abuse by people who don't know how to operate them properly. Take, for example, sound systems in places of worship. These systems are generally operated by lay people, often the proverbial minister's son. Inevitably, these systems wind up fighting their human operators. The system rarely wins and requires constant maintenance by a professional. This is not a healthy relationship: Sound system abuse causes damage requiring constant remedial attention.

Preventing people from misusing equipment and making the system easier to operate are paramount goals. Computer control can simplify the human interface by hiding details of how every piece of equipment must be adjusted for every application. All the lay person needs to do is push a button, and the entire system reconfigures itself according to preprogrammed (by a professional) setups. By qualifying bizarre input, computer control prevents the lay person from unwittingly (or maliciously) messing with the equipment. Operation of the system is foolproof. Professionals will spend less time troubleshooting abused equipment and more time developing programmable functionality. These are three simple examples. How will computer control make your world a better place? ■

Bob Moses is a senior digital audio engineer for Rane Corp. and a longtime participant in the AES computer control standards process.

by Bob Hodas

BEAUTY AND THE BEAST ON ICE

SOUND PRODUCTION FOR DISNEY'S ICE SHOW



*Sound
so clear;
anyone
could
hear what
Donald
Duck was
saying.*

Since assuming ownership of Ice Follies and Holiday on Ice in 1978, Ringling Brothers has been producing ice shows that tour the world. Under license from the Walt Disney Company, Ringling has been presenting shows featuring Disney characters using the name "Walt Disney's World on Ice." The latest of 12 productions is a version of the hit movie *Beauty and the Beast*.

Last year, owner/producer Kenneth Feld decided to make a high-tech commitment to sound for his new production. His goal was to compensate for the inherent acoustical problems endemic

to most large arenas.

The first step was the purchase of a Meyer Sound Laboratories sound system. Roger Gans, chief engineer for the San Francisco Opera, was hired to implement the system design. The design goal was to provide a system flexible enough to get even coverage at modest levels throughout the venues with maximum intelligibility for the dialog track.

Gans' philosophy includes an expansive view of the meaning of "sound design." The system consists of 33 UPA-1Bs, four USW subwoofers, nine M-1As and a single B-2A controller. Power is provided by 19 Crest 4801 amplifiers. Accounting for different-sized venues, primary sound comes from a central cluster consisting of five UPA-1Bs with four USWs mounted directly above (Fig. 1). This cluster is termed "downfill" and covers the ice for the skaters as well as the first several rows of the audience. The UPAs are splayed approximately 60° on the center line and are vertically adjustable from 20° to 60°. The main delay speakers are mounted in pairs on the outer lighting truss. These are mounted symmetrically at upstage ice, midstage ice and downstage ice positions. There is also a downstage center pair. Free-hanging delay speaker pairs form the outer ring and are positioned similarly to the mains. Each symmetrical pair has its own M-1A controller and one channel of a CP-10 parametric equalizer. The rings are delayed using a BSS TCS-804 in a 1-in/4-

out configuration.

These three speaker layers allow for aiming to achieve extremely even coverage, and the audience proximity means that high SPL is not necessary. In fact, the delays become sonically

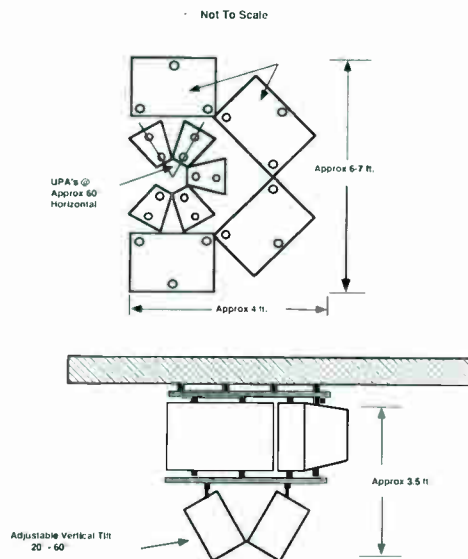


Figure 1: Down fill/monitor cluster

invisible and provide an image that pulls to the center of the ice (Fig. 2). Maximum headroom is also a plus. While this distributed system is not a new idea, it was not practical for Ringling to set up and tune with the short time available for load-ins until the Meyer SIM (Source Independent Measurement) system was purchased.

Ringling has its own fabrication facilities and took on the task of building the hanging hardware. A series of designs passed between Ringling and Gans until a final design was settled upon. This sophisticated frame allows the pairs to be rotated vertically between +20° and -60° in 5° increments, with the pair splayed up to 60° apart. The truss-mounted pairs may be parallel to the truss or offset 22.5° or 45° to the left or right.

Once the system is up, the SIM microphones are set up in each section (e.g., center-stage

main). Noise measurements are taken, and the mics are moved around to a few locations within the section coverage area. This gives the operator an idea of average EQ throughout a seating area. All frequency-response curves are stored into the SIM computer, then recalled and analyzed to determine trends and validity and set the EQ. If pressed for time, readings can be made throughout the hall quickly, and the analyses and EQ adjustments can be made without making noise. The computer finds the delay times almost instantly, and the delay systems are fit into the primary system with level and EQ.

The show itself is run by sound men

Rick Lavin and Paul Bodenheimer. With the Ringling system, eight microphones are set up in different audience sections for measurement during the performance. Lavin can view system response in each section and make EQ adjustments to com-

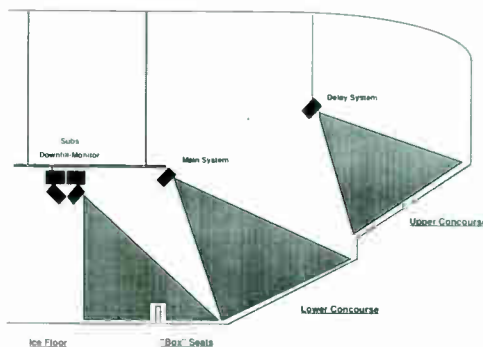


Figure 2: Arena side view coverage diagram

pensate for changes related to crowd size, temperature or humidity as the show progresses. The mix position is often stuck into a corner of the arena, so the

music/dialog balance is not always clear. Because of this, it is important that the mixer spend some time walking around during the show.

Ringling's creative development VP Jerry Bilik controlled all aspects of music production. A composer in his own right, he oversaw the music recording and produced the mix and dialog assembly. Gans supervised the recording, because his extensive live experience with the SF Opera and Pavarotti had given him specific ideas on how the orchestra should be miked in order to translate into a large hall. The music tracks were all new recordings. None of the original soundtrack was used due to arrangement changes to accommodate skating routines, new dialog and some scripting modifications. In addition, the original movie tracks sounded much too big in the hostile arena environment. All tracks were recorded to analog 24-track with Dolby SR. There are no live mics in the show. All songs and dialog were pre-recorded for the performance, as the skaters' extreme physical exertion precludes a passable vocal performance.

The dialog tracks were the least controlled part of the process. Some dialog came directly from original tracks made for the film. Other dialog was re-recorded along with new lines in various studios, arriving at the mix either on DAT or analog SR. At this stage it was either spun back to the 24-

track or laid over the music track that had already been mixed. Matching the assorted dialog lines was difficult and required some automated EQ, de-essing and level manipulation. A digital workstation has been suggested for next year's show. This same

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LIVE SOUND

procedure applies to sound effects.

Mixing was done at Jensen Sound Productions in San Francisco. Dialog was mixed to one track of the 1/2-inch analog SR and music to the other. This allowed the show operator to adjust balances for best fit in each venue. The mix included dynamics and vocal/music balance judgments, but fine-tuning is needed on each show. Having the dialog separate from the music also allows easy replacement for foreign versions.

Each orchestral cue was mixed and edited together one at a time. Much care was needed to ensure that the different cues matched in level and feeling, because adjoining cues may have been recorded on different days with different musicians. As rehearsals approached the show date, script changes came in fast and furious. New cues had to be recorded and dialog changed. In the one hour and 40 minutes of the show, there were probably 800 razor blade edits made for music and dialog assembly.

Is all this investment worth it? Disney's creative director in charge of character voices told me that this was the first time anyone could understand what Donald Duck was saying. A woman who has skated for years with the show and has seen every production said that she could understand all the dialog for the first time. People came down from the top row of the arena and said they had no problems understanding all the voices. The effort certainly seems to have paid off. It should leave a lot of kids and parents delighted. ■

Bob Hodas mixed and edited "Beauty and the Beast on Ice." He operates as an independent engineer and consultant and is a certified SIM operator and owner.

SOUND REINFORCEMENT NEW PRODUCTS

**BOND DF12T
THEATRE COAXIAL**

Intended for theater use, the Bond DF12T (dist. in the U.S. by Equity Sound Investments, Sturtevant, WI) allows designers to focus sound with interchangeable horns and high-frequency pattern control. Available horns are 40°x40°, 60°x60°, 80°x40° and 60°x40°; the ellipsoidal units can be rotated 90° for further flexibility. The patented Power-Cooling system provides a unique centrifugal blower system for improved power handling and dynamics.

Circle #212 on Reader Service Card

**BGW PERFORMANCE
SERIES 2 AMP**

BGW (Hawthorne, CA) introduces a new power amp that delivers over 300 watts per channel from a two-rack-space package, weighing under 32 pounds. The unit has balanced XLR and 1/4-inch inputs as well as five-way binding posts, and the basic circuitry is contained in a single field-replaceable module for easy repair. Specs include frequency range of 20 to 20k Hz, maximum THD of 0.15% and offset voltage of less than 10 mV at the terminals. Also included are dual-speed, forced-air cooling, detented front-panel gain controls and exceptionally wide bandwidth for sonic accuracy.

Circle #213 on Reader Service Card

**SHURE
WIRELESS MICS**

Shure's new wireless mic systems are based on the T6 receiver, a single-antenna unit that contains reliable surface-mount circuitry in an easily mounted casing. The Vocal Artist system features the L2/58 handheld transmitter, designed to match the sound of the SM58. The Guitarist includes the L11 body-pack transmitter and WA300 instrument cable, while the Presenter system comprises the L11 and the 839W omnidirectional lavalier mic. For each system, a single 9-volt battery is said to provide 12 to 14 hours of playing time.

Circle #214 on Reader Service Card

**LECTROSONICS
195 WIRELESS**

The new UHF wireless mic system from Lectrosonics (Rio Rancho, NM) utilizes dual-compander circuitry with idealized attack and release times based on audio frequency to eliminate audio compromises associated with full-spectrum companders. Other features include 470 to 608MHz operation, pilot tone-controlled squelch, calibrated metering and what is said to be the highest-sensitivity RF section available. The series comprises the UDR195 diversity receiver (available in camera-mountable, field and studio models), the UM195 belt-pack transmitter and the UT195 handheld transmitter.

Circle #216 on Reader Service Card

TOA FLOOR MONITORS

TOA (South San Francisco) has introduced two wedge-shaped floor monitors: the SR-M1 (\$2,298), with a single low-frequency 12-inch transducer; and the SR-M2 (\$2,798), offering a dual-12 design. The high-frequency section features a titanium compression driver coupled to a 40°x40° constant-directivity horn. Peak power capacity is 800W, power handling is 240W RMS continuous program, and sensitivity is 109 dB. In the low-frequency range, power capacity for the SR-M1 is 1,200W, with power handling of 360W RMS continuous and sensitivity of 99 dB SPL; the SR-M2 doubles the capacity and handling ratings, with a sensitivity of 109 dB SPL. An optional processor/control unit, the AC-M1 (\$1,378), offers two bi-amped channels, cross-over phase alignment, driver offset time correction, CD horn EQ and limiting.

Circle #215 on Reader Service Card



SOUND REINFORCEMENT NEW PRODUCTS



MIDDLE ATLANTIC ECONO-DRAWERS

Middle Atlantic (Riverdale, NJ) offers rack-mount steel drawers for stashing cables, mics, tools and other equipment. The drawers are ten inches deep, with a spring-loaded latch and fully enclosed tops. The single-drawer unit lists at \$48.89; the two-drawer model is \$53.33, and the three-drawer configuration is \$57.78.

Circle #217 on Reader Service Card

CROWN MA-36X12 AMP

The MA-36x12 from Crown (Elkhart, IN), combines two independent amplifiers into a single unit for use with bi-amped systems and touring sound. Bass cabinets are driven by channel one, which offers the same specs



as a single channel of the MA-3600VZ, with 1,800 watts per channel into 2 ohms. Channel two offers the same specs as one channel of the MA-1200, driving horns and other HF transducers with 495 watts per channel into 4 ohms. Output Device Emulation Protection combats overheating and overload, and the unit is compatible with Crown's Programmable Input Processors and the IQ computer control system. List is \$2,395.

Circle #218 on Reader Service Card

XTA DS400 MIC/LINE DISTRIBUTION SYSTEM

XTA (dist. in the U.S. by Group One, Farmingdale, NY) has unveiled the DS400, a 4x16 device occupying a single rackspace (a separate, 2U dual power supply, which can power up to 14 DS400 units per channel, is also required). The inputs, including FOH and monitor, are balanced, as are two additional transformer-balanced outputs on the front panel for remote recording or broadcast use. Optional are XLR ins/outs on the rear panel and a multipin connector. The DS400 has a gain switch (0/15/30 dB), an LED headroom indicator and +18dBu maximum output for use with line level sources such as VTRs and A/V equipment.

Circle #219 on Reader Service Card

SIGNALOGIC HYPERSIGNAL-ACOUSTIC 3.31

Version 3.31 of Signalogic's (Dallas, TX) DSP software contains numerous improvements and corrections. Highlights include new functions in the real-time Spectral Analyzer display: continuous calculation and display of the time domain impulse response of the system under test; a coherence function display that can be overlaid with transfer function display; new averaging methods, averaged phase display; and output of waveforms on the DSP/Acquisition board D/A channels during operation to provide stimulus to the system under test.

Circle #220 on Reader Service Card

SENNHEISER PROFORCE MICS

This new line of dynamic mics from Sennheiser (Old Lyme, CT) is designed for feedback resistance through the entire frequency range. The MD511 and MD512 (cardioid), and the MD515 and MD516 (supercardioid) have a special glass composite design, which is said to be dent- and shatter-proof while minimizing handling noise. They feature neodymium/iron/boron magnets and a Spring Capsule Suspension system to eliminate remnant handling noise. The series also includes the MD518, MD527 and MD530 (with full metal construction), and the BF1051, a true diversity wireless, which is Sennheiser's first such system designed specifically for the working musician.

Circle #221 on Reader Service Card

FURMAN Q-SERIES

New from Furman Sound (Greenbrae, CA), the Q-151 and Q-301 are dual 15-band and single 30-band graphic equalizers occupying a single rackspace, while the Q-602 is a dual 30-band, 2U model; all three offer 20mm sliders, constant-Q equalization, output level controls and a Bass Cut button. The Q-152 (dual 15-band) and Q-302 (single 30-band) are 2U configurations featuring 60mm faders, variable bass and treble roll-off, as well as input and output level controls. The Q-541 is a quadruple 5-band stereo model for tonal correction of multiple stereo sources.

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by Barbara Schultz

EUROPEAN NOTES



The Power Station France team: Nick Balsamo, Tony Bongiovi, Philippe Bescombes (left to right)

dios and is the founder and treasurer of France's Association des Studios d'Enregistrement Francais, the French association of professional recording studios. As the head of Power Station France, Bescombes will assist French artists who wish to record at Power Station in New York or at any other Power Station International location. He will also ensure that Power Station France offers U.S. recording acts much easier access to recording in Paris; artists can now coordinate entire projects from the U.S.

POWER STATION'S FRENCH CONNECTION

POWER STATION FRANCE, the newest member of Power Station International's worldwide network of recording studios, offers a direct link between major U.S. recording centers and France. This announcement was made in mid-January by Tony Bongiovi, the principal of Power Station International and the founder, owner and designer of Power Station Studios in New York. Nick Balsamo, the head of Power Station International and president of Power Station Studios, is enthusiastic about the opportunities that the connection will offer French artists. "Power Station France is a direct bridge between the two countries, offering French artists the perfect opportunity to expand beyond their home market," Balsamo says. "With Tony's production expertise and Power Station's history of successes, we can offer the opportunity for French artists to record albums that can break them in the U.S. and around the world."

Power Station France will be headed by Philippe Bescombes, who has owned two Versailles stu-

SOUNDTRACS ACQUIRES SPENDOR

Soundtracs Plc. recently acquired Spendor Audio Systems Ltd., manufacturer of studio monitors. With its wider marketing expertise, Soundtracs hopes to expand Spendor's business in the UK and internationally. Spendor managing director Derek Hughes will continue in his role under contract for two years. Todd Wells, former managing director of Soundtracs, was appointed chairman and chief executive of Spendor.

BRUEL & KJAER & MARILLION

Bruel & Kjaer 4006 microphones were recently used to record Marillion's new live album, which was recorded at the Hammersmith Odeon. Bruel & Kjaer provided two pairs of 4006 omnis: one placed midway back along the side walls, the other on top of the P.A. The recording was made on a 32-channel Tascam M3700 in-line console, supported by a 16-channel M2516, to a Tascam MSR245 24-track 1-inch recorder. Nigel Luby, the engineer for the project explains, "I do a lot of location recording, and I always try to use B&Ks. Their high-frequen-

cy definition and dynamics are just stunning."

TVI, PORTUGAL

TVI, Portugal's newly launched independent television station, has chosen a DAR SoundStation SIGMA digital audio production system for its new Lisbon broadcast complex. The SIGMA was purchased through Audio Cientifico, DAR's exclusive Portuguese distributor.

Because it is important to TVI to expedite foreign-language dubbing and ensure high-quality ADR for its own productions, the new station has equipped its 8-channel SIGMA with DAR's WordFit automatic dialog synchronization system.

FM ACOUSTICS IS MOVING

FM Acoustics Ltd. of Switzerland has secured a new location 15 minutes from the center of Zurich, with a beautiful view of the eastern Alps. The new space will give FM Acoustics 60% more room, allowing for expansion of its offices and manufacturing plant. The new address is Seestrasse 5A, CH-8810 Horgen, Switzerland; phone, (011) 41 1 725-7777; fax, (011) 41 1 725-7790.

LYREC OPENS RUSSIAN TECHNICAL CENTER

Denmark's Lyrec Manufacturing, in conjunction with Melodiya of Moscow, has signed an agreement to open a technical center in Russia. The development of the new facility was announced at a meeting of the managers of Lyrec's other worldwide technical centers.

The new Melodiya-Lyrec Technical Centre will carry a full range of Lyrec tape-duplicating and loading equipment, as well as a range of Lyrec tape recorders for broadcasters. It will also house a parts and customer service department.

The address of the Melodiya-Lyrec Technical Centre is Tverskoy Boulevard 24, 103 009 Moscow; phone, (011) 10 7 095229-9792.

TRACKSTUDIOS WINS GOLDEN REEL

TRACKStudios of Manila, Philippines, along with Filipino artist Freddie Aguilar and his band, Watawat, were recently awarded an Ampex

Studio Spotlight:

LONDON'S CARLTON TELEVISION

Carlton Television, London's new independent weekday television broadcaster, has integrated a Yamaha DMC1000 digital mixing console with an SSL ScreenSound to create a powerful, all-digital audio post-production system.

While ScreenSound provides graphic-based, random-access editing of multiple audio channels, the addition of the DMC-1000 will augment the system with a "hard" control surface and an extended range of DSP functions. Although the DMC-1000 is ideal for mixing digital audio channels from Carlton's Sony D-2 and BVW-D75PS (digital audio-equipped Betacam) video tape recorders, it is also supplemented by eight A/D converters that facilitate direct access from analog audio sources such as conventional 1-inch and Betacam SP.

In addition to the DMC-1000, Carlton has acquired an 8-channel digital audio format converter from British manufacturer Blood & Orange. Its two smaller edit suites are equipped with two



Soundcraft AVE Delta 8x4x2 mixing consoles with stereo inputs; these are augmented by a serial adapter that facilitates fader control of other studio devices and supporting control from a vision mixer.

Carlton Television's head of production engineering, Simon Fell, is enthusiastic about the capabilities of his new broadcast facility. "Starting afresh," asserts Fell, "allows us to aim for top quality and stay within budget. As well as delivering digital performance, our flexible ScreenSound/Yamaha audio-post system provides a complementary range of functions."

Golden Reel Award for recording Aguilar's Platinum album *Kumusta Ka*. TRACKStudios, the first Filipino studio to win this award, is a two-



In TRACKStudios Control Room A: Freddie Aguilar (third from right) with studio owner Mike N. Pederro (left), engineer Angee Rozul (seated) and members of Freddie's Watawat Band

room facility offering 24 plus tracks. The Golden Reel award was presented to TRACKS' owner Mike N. Pederro and the project's engineer, Angee Rozul. Aguilar, who received a cash prize with the award, is donating his winnings to a Filipino children's care facility.

Bits and Pieces

EUROPE

World Studio Group, the international studio-booking agency launched at 1992's AES show, now has 27 charter members. European participants include Austria's MG Sound, Italy's Capri Digital Studios and Ireland's Windmill Lane Recording, which mixed U2's *Achtung Baby* as well as the Chieftains' Grammy-winning *Another Country* and *An Irish*

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Oliver Stone, Director

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Shadoe Stevens

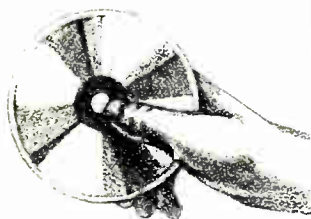
(American Top Forty)

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INTERNATIONAL UPDATE

Evening... Public relations/marketing firm Nick Hopewell-Smith Associates became part of Larkspur Communications, another PR firm of which Hopewell-Smith is a founding director. In addition to continuing to provide PR, marketing and communications services, the new venture will offer its clients information about consumer electronics and personal digital telecommunications. Larkspur Communications can be reached at 140 Brompton Rd., Knightsbridge, London, England SW3 1HY; phone, 071 589-1400; fax, 071 589-0691...PWL New Studios of Manchester ordered Genelec 1034A main monitors. This is the facility's third pair; the others were installed in PWL's London location. Other studios placing recent orders for Genelec moni-

tors include Denmark's Radio (24 model 1031A), Swedish Radio, Stockholm (model S30C), Hungarian Radio (two pairs of model 1034A), and RTV of Slovenia in the former Yugoslavia (models 1035A and 1034A)...Genelec's corporate officers in Finland announce the appointment of two new distributors: Audio Distributor International of Montreal will serve the Canadian market, and Botham Ag will become the company's sole Swiss distributor...Norwegian Broadcasting (NRK), Norway's national broadcast organization, purchased two SSL ScreenSound digital audio editing systems and a SoundNet digital audio network for its video and film post-production work. ScreenSound and SoundNet equipment were also purchased by French cartoon producer Le Studio Ellipse, whose credits in-

Guide to Recording in France

Edited by the Association des Studios d'Enregistrement Français (association of French recording studios), the second edition of the Guide to Recording in France is now available. This guide serves as a valuable, comprehensive reference for anyone who wants to know who's who, who's where, or who's got what in French studios.

The guide includes 30 ASF member studios, each of which appears with a photograph or logo and a detailed list of equipment. The address, telephone and fax numbers, names of contacts and engineers, and a brief narrative description are also provided for each, in English as well as French.

Two of the studios included in the guide, Studio Peakson mobile and Studio Time, are new members of the ASF and appear for the first time in this edition. And though three of the studios who were in the first guide—Studio Le Cactus in Bordeaux, Studio Mix It in Paris and Studio Gimmick—do not appear (because they are no longer ASF members), the guide hastens to mention that in this

publication you will find "almost all French professional studios."

In addition to publishing the guide, the ASF will guide anyone interested in recording in France. The organization's recently appointed representative, Ms. Laurence Dauchy, is ready to help you in your search for a suitable facility or to answer any trade-related questions.

To get your copy of the Guide to Recording in France write to the ASF at 30 Rue Henri Barbusse 75005, Paris, France, or call (011) 33 1 440-7090; fax, (011) 33 1 440-7091. The price of the guide is FFfr.120.00.

—Guillaume J. Schouker



PHOTO: COURTESY ASF

clude "Rupert the Bear" and "Babar." And ORF, the state broadcasting company of Austria, ordered a Scenaria digital audio/video production system to be installed at its production headquarters in Vienna...NOB Audio of Holland has purchased an SL4048 G Series console for a new mobile music production facility to be called **Audio 1**...Milan-based post-production facility VideoTime ordered ten Sony PCM-7030 DAT recorders...Polish National Radio ordered 24 Sony TCD-D10 PRO II DAT portable recorders, a PCM-7050 and 52 PCM 2700s...RTL of Belgium ordered 15 pairs of Genelec 1019A near-field monitors...Wim Vonk Sound Productions, the Netherlands' leading film and TV commercial audio post company, whose credits include award-winning ads for Sony and Mazda, purchased a second 16-channel DAR SoundStation digital audio production system for its Amsterdam studios...Norway's largest film production company, Norsk Film Studios acquired its second DAR SoundStation...Ed Evans, formerly of New York's Power Station, is the new technical director for Touchdown Studios of Munich. As part of his new responsibilities, Evans will oversee the construction of a large, new recording facility in Portugal, designed by Neil Grant, which will be completed this year... David Bristow is E-mu Systems Inc.'s new European marketing consultant.

CANADA

TGI North America, distributor of all Bruel & Kjaer products for North America, recently appointed Rob Hofkamp as its new B&K Microphones sales manager. Hofkamp's duties will include sales administration, sales training and promotion... Master's Workshop of Ontario is the site of David Carradine's ADR for Fox's new *Kung Fu* television adventure series. Master's Workshop is owned by Magnetic Enterprises, which is also providing online video post-production services for the series...Contact Distribution Ltd. was appointed EAW's Canadian representative, handling contractor/consultant relations, rental company sales and other marketing functions...Switchcraft chose A.C. Simmonds & Sons Ltd. of Pickering Ontario as its Canadian stocking distributor...Studio Reference in Montreal and Nu Sound

Production of Toronto each purchased Randirk audio recording consoles.

SOUTH AMERICA

Brazil's Globo TV Network purchased an SSL ScreenSound digital audio editing system and a SoundNet digital audio network. Globo, based in Rio de Janeiro, owns ten TV stations and has 74 affiliates that produce news programs for the entire country.

AUSTRALASIA

The tenth edition of the semiannual "Australasian Music Industry Directo-

ry" is now available. The 224-page directory covers many aspects of the industry in Australia, New Zealand, Japan and other Asian countries... China Central Television of Beijing selected a DAR SoundStation SIGMA for its entry into digital audio production... Hong Kong-based STAR TV installed an SSL ScreenSound at the station's new audio post-production facility... ARX Systems' South East Asian sales and marketing office has relocated: The new address is 24 New Industrial Rd, #04-01 Pei Fu Building, Singapore 1953; phone and fax, 65 289-2849. ■

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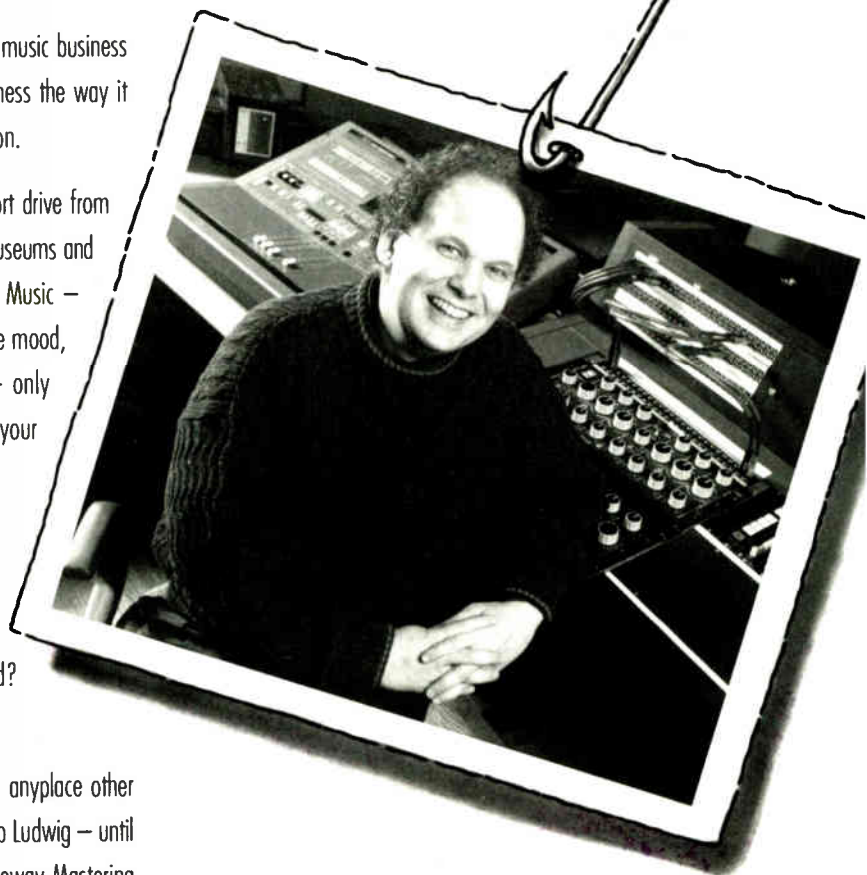
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USE READER SERVICE CARD FOR MORE INFO

by Blair Jackson

TONY BERG'S BIG SEARCH

IS THERE INTELLIGENT LIFE IN THE POP MUSIC UNIVERSE?

These are good days for Los Angeles-based producer Tony Berg. Right before last Christmas, he signed on as a staff producer and A&R person for the red-hot Geffen label, and now the fun begins: He can find, sign and produce the artists he wants. Which isn't to say he's been spending the last few years working with people he didn't care about—quite the contrary. Berg has produced quite an array of very creative people, including Michael Penn (both *March* and the more recent *Free For All*), Squeeze (*Play*), Public Image Ltd. ("Don't Ask Me"), Edie Brickell & New Bohemians (the criminally underrated *Ghost of a Dog*), former Prince bandmates Wendy & Lisa (the extraordinary *Eroica*) and widely anticipated upcoming albums by X and the incredible singer Aimee Mann.

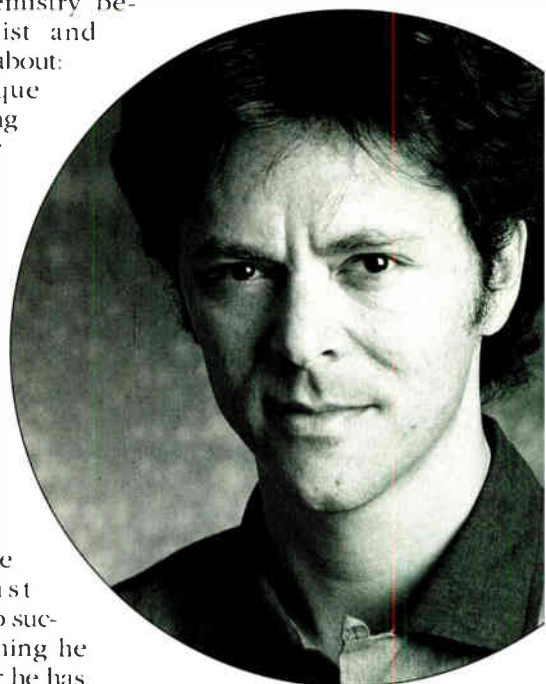
Berg brings a lot more than just a good ear to his productions. Before he began working behind the board, Berg had a long, successful career as a musician, arranger and film music composer. He worked as a session guitarist with everyone from Tom Waits to Smokey Robinson, did a stint as musical director of the acclaimed *Tracey Ullman Show*, and even cut a pair of albums himself (including, ironically, one on Geffen in 1982). All of this experience, coupled with a broad knowledge of recording studios and technology, makes him a formidable partner to work with. He even owns a state-of-the-art studio, dubbed Zeitgeist.

The active role Berg takes in the records he makes is perhaps best exemplified by the two excellent discs he's made with Michael Penn,

whose career he helped nurture from the beginning. Although Penn's *Free For All* hasn't been the commercial success that his first album was, it is no less adventurous and original, and it demonstrates what real chemistry between an artist and producer is all about: having a unique vision and taking the necessary chances to realize that vision.

Berg is one of the nicest, most thoughtful and articulate people I've encountered in nearly 20 years in this business. He's one of those guys you just *know* is going to succeed at everything he does. And so far he has.

Can you tell me a little about Susan Rogers, who engineered Michael Penn's last album, and about how you work with engineers in general? Susan came to my attention when we worked on Michael's first album. Michael had never made an album before, and I said, "Look, you have your choice of anyone in the world to work with. So let's go listen to some records and make a list of things that sound appealing to you." We came up with a list that Susan



was on. I loved the idea of working with a woman, because the recording business has almost no women in it. There is really only a handful of women engineers out there; it's terrible. We listened to her work with Prince, which struck us as extremely idiosyncratic and original and not slick. It was very different-sounding. She had just finished doing a Wendy & Lisa album, and they allowed Susan to bring the 24-track master to our studio to listen to. We put up the faders, and it sounded great. So that, coupled with the fact that we adored her personally, led me to work with her.

How specific are you in the instructions you give an engineer? Obviously you're very studio-savvy yourself.
Extremely. Because I own a studio, though I was never an engineer, I'm able to record an album by myself if I need or want to. I have an aversion to certain sounds. I can't stand the curve that has subtly infiltrated overall record EQ in the last 15 years. It's weighted so heavily to the high end, disproportionately. It's all hi-hat and snare drum and the high end of vocal and reverb, and pads.

Why is that?

I think it's radio. Radio likes it bright, and all the radio compression helps get rid of some of that and bring out the bottom, so you're left with a record that sounds very aggressive on radio, but you listen to it at home and it's *piercing*. I abhor that. The prominence of digital reverb has changed the way things sound, too. It's hard to rely on that so much without it sounding a little funny.

Anyhow, the only thing I really insist on from an engineer is that things retain as much warmth as possible. I like dry records; sometimes unnaturally dry. I also don't care for the late-'70s orientation toward chorusing everything so it sounds like you have information on one side, with the harmonized version of that information on the other side. That's ridiculous.

What kind of equipment does Zeitgeist Studios, where you do a lot of your work, have?

I have two Sony 3324s, I have the API console that they had in the

Record Plant in New York for 17 years, and it is magnificent. I've got tons of tube EQs and limiters. I've been developing my tube mic collection, so now I have a [AKG] C-24, some [Neumann] 47s, some other great things; I've got all that I need.

It seems as though more and more producers and engineers are getting into tube mics. Is that pushing the prices way up?

Well, there are three people who are responsible for pushing the prices up, and I don't begrudge them—they were wise to have invested in them. Those people are Allen Sides, Dan Alexander and Shelly Yakus. Those three guys, in a way, have more influence in the marketplace than almost anyone else. And if you add to that engineers like [Georgel] Massenbourg and [Bob] Clearmountain, who all the other engineers listen to, then you're left with some very influential choices.

The producer's biggest dilemma is, who's in charge? I would say that the artist is in charge.

I was actually sort of surprised to see that Clearmountain mixed Free For All, because I don't normally associate him with this kind of singer/songwriter music.

Which is precisely the misimpression of Bob I'd like to dispel. In my opinion, he's the most versatile, selfless mixer I've ever met. And by that I mean he never imposes his sonic ethic upon the artist or the producer. I can't speak highly enough about this guy. You listen to his body of work over the past 12 years—[Roxy Music's] *Avalon*, Robbie Robertson's first album, "Start Me Up" by the Stones, [Bruce Springsteen's] *Born in the USA*, the second Crowded House album. On Michael Penn's first album he did the singles...you're left with such a variety of styles and approaches, you have to marvel at the guy.

In what way are you as the producer offering direction to someone like that? Is there something implied in the way you've recorded things?

Absolutely. I'm as specific with Bob as I was with you a moment ago, plus we discuss things like individual placement of instruments, choices of reverb, placement of reverb, overall EQ—but most of all, the impression I want that track to give to the listener. Bob is such a bright guy and so sensitive to the needs of the artist, there's never a miscommunication. And the few times when we've been mixing something and I've said, "Bob, I think you're off the track here," he'll pull all the faders down, start over and *blow my mind*. Working with him is probably the luckiest thing that ever happened to me. He's done ten or 12 of my albums, including Squeeze, Edie Brickell and a band that I think are really, really great called Altered States. I think Bob considers it some of the best work he's ever done. They're these three kids from Orange County, and it's remarkable. Their record got lost in the shuffle, which is too bad because it was an amazing record. Warner Bros. [the act's label] said, "We blew it. *Next time.*"

Oh I hate it when that happens!

I hated it so much I've decided to work at a record company. I'm going to work for Geffen as A&R and a staff producer. My biggest frustration, as demonstrated by the Altered States situation, is making a record that you feel strongly about—as I did that, as I did Squeeze's *Play* album—and not having any say in it once it's done. In other words, the frustration of seeing something that I love, that I've spent a lot of time on, that I know the artist cares very much about, go out there [in the market] and never really see the light of day became frustrating enough that I decided to pursue A&R situations. That, plus the fact that I had been involved in the shopping of Bruce Hornsby, Michael Penn, Toad the Wet Sprocket, American Music Club, Eric Johnson; securing their deals at the beginning of their careers indicated to me that maybe this is something I could do well. I had practically closed a deal with another label when Geffen called and made

me a really extraordinary offer.

I'm really looking forward to it. I'm starting from scratch. The great thing about Geffen is that not only are the A&R guys—I'll be the fourth—given huge latitude where they are ostensibly their own company, but you product-manage your records. It's the only company that does that. So there isn't an aspect of the ultimate selling of the records that I won't be involved in.

Does it make you nervous that you have to go out and beat the bushes to find the next act you'll produce, rather than knowing you have some big artist waiting in the wings?

No, I love it. I've always had two albums booked in advance for the last five years, and that proved to be the wrong thing to do. Because I'd be finishing an album, I'd have an artist waiting, and an artist waiting after that, and all it did was exasperate everybody. Things would run late, so the next act would go nuts. Now my responsibility is to find talent and make records with them. That's what I want to do.

Are you going to start having to go out to clubs every night hearing a million new bands?

I've always done that. I love it. But now, instead of doing it in West Hollywood, I can go to Dublin or Sydney or Madison, Wisconsin, or wherever music takes me. I have a big network of friends who will help me find things. I mean, if I go to England, I'll call Peter Gabriel and ask him what's going on there.

"Well, there's this djjeridou player..."
Hey, I'll be there!

How does working with young bands differ from working with a group like Squeeze, who had already made a number of records before you produced them?

The biggest difference is the sheer mechanics of it, which is to say that a young band, for the most part, has no idea what the order of events is in the record-making process, what the protocol is. What you look for is a tracking date. What latitude you have in an overdub session. How much can and can't be done at the mastering stage. A guy who has made ten records is certainly familiar with all

that. But sometimes he will have established his own method that is at odds with yours. So there are times when the young artist is open to more new things.

It really changes from artist to artist. I've been really lucky with Squeeze and Edie, and Public Image and Michael Penn and now X are all people I like, in addition to liking their music, so I've never had any problems with any of them.

What were your recent sessions with X like?

Not only did the sessions go bril-

liantly, but they are four of the most appealing people I've ever dealt with. John Doe is this fascinating paradox. He's a guy you could either mistake for a truck driver or a scholar. And Exene [Cervenka] has this image of being this mysterious poet, and that's somewhat accurate, but when you spend time with her you learn that she's very funny; she's great fun in the studio. Their new material is very aggressive, and I think we managed to bring out the bottom end really well—that's something their other records lacked. The

—CONTINUED ON PAGE 155



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FACILITY SPOTLIGHT

**Zedz Music
Is All Music**

If you work around town long enough, you're going to find a recording niche. Zed McLarnon, guitarist, composer and now facility owner, has knocked about the Boston music and recording scene for the past 25 years. He's played in, engineered for, installed and consulted with many of the multitrack studios in the area, and now he's settled into a 16-track analog/digital production and post-production music boutique known as Zedz Music.

Today Zedz Music is



PHOTO: BRUCE JASON

Zed McLarnon, owner of Zedz Music

best known for its buyout production music library, which features real musicians and authentic sounds. All of the material is composed and recorded—in McLarnon's facility of the same name—by a

small but select stable of local writers, using musicians from Berklee, the New England Conservatory and members of Zedz's band, Multi-Track Pilots. The library didn't exist until nearly eight years after McLarnon created Zedz Music, and Zedz

—CONTINUED ON PAGE 134

**A New Approach
to Editing
in *Needful Things***

by Iain Blair



PHOTO: BOB ANASTYF

**Left: Editor Rob Kobrin with the Avid system
Above: Max Von Sydow in Castle Rock Entertainment's
Needful Things**

It's a cold, wet night in Gibson's Landing, British Columbia, and anyone with any sense was tucked up in bed long ago. But out on the main street of this quaint fishing town, which is doubling for the fictional New England village of Castle Rock, a film

crew is hard at work on an all-night shoot. *Needful Things*, the Castle Rock Entertainment production of the Stephen King bestseller, stars Ed Harris, Max Von Sydow, Bonnie Bedelia and Amanda Plummer, and is being directed by Fraser Heston. Heston—who shot second unit on *City Slickers* and

who is making his feature film directorial debut—is huddled under a tarp in the middle of the street with DP Tony Westman and special effects coordinator Gary Paller (*Omen 4*, *Friday the 13th, Part 8*).

"We couldn't ask for better weather," notes producer Jack Cummins

—CONTINUED ON PAGE 134

Audio Technologies for Film:

MORE WORKSTATIONS

In March, we took a look at real-world audio post-production applications on the DAR SIGMA SoundStation, Ediflex Audiflex, Korg SoundLink and NED Synclavier. This month we look at four more.

DIGIDESIGN PRO TOOLS

Bill Koepnick,
co-owner,
Advantage Audio,
Burbank, Calif.

Strengths: Music editing; precision; fabulous cross-fades; nine slopes available for fade-in/fade-out; easy to use and easy to train on; company sends out regular software up-

grades; Version 2.0 will soon be out!

"We have several 1.2-gigabyte drives and all the original music scores for the animated shows that we do live in these drives," Koepnick says, adding that normally only the first season of an animated show is fully scored. "The editor has broken cues down into categories—chase cues, peppy cues, background cues, action up and down, surprise hits. There might be 400, 500 or 600 pieces of music in a 22-minute program. So the editor goes through the list of cues, clicks on the file name, previews the cue and adds that audio to the session, left and right channel. Then from the audio file regions list, you select the piece you want and drag those



Bill Koepnick, Advantage Audio

into two audio tracks in the Edit window. Grab the Trimming tool and drag the boundaries of the region down to the limits of the region that you want to use.

"Let's say that the music you've chosen works for the first half of a piece of action, and now you need to continue that. Go back

—CONTINUED ON PAGE 136

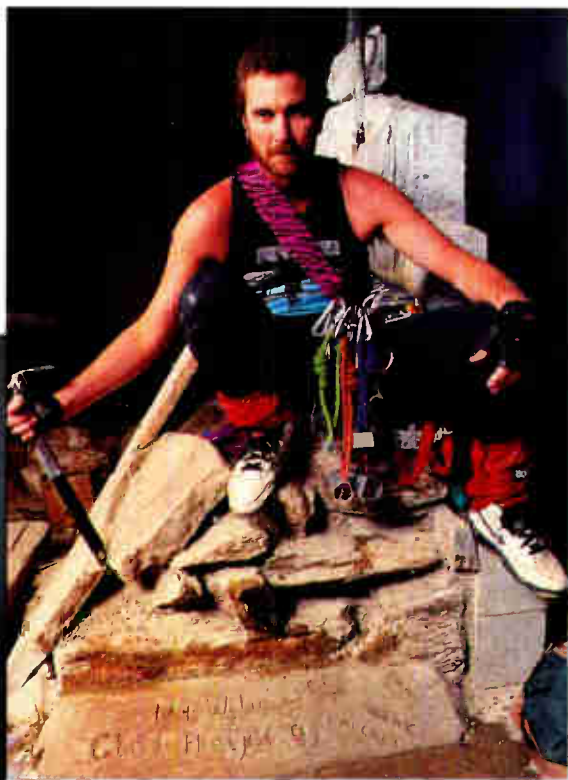
Rock Foley for *Cliffhanger*

When looking at the huge Sylvester Stallone action-adventure film *Cliffhanger* this summer, not many will think of it as "a Foley composition." That's the art of Foley recording: Audiences should not notice. But to sound designer Wylie Stateman of Soundelux, Hollywood, this \$60 million movie is all about Foley, front to back. And it must have felt that way to Foley walkers Dan O'Connell and Gary "The Wrecker" Hecker, as well as mixer Jimmy Ashwill.

Essentially, *Cliffhanger* is a rescue story. Stallone is a park ranger who must trudge over

mountains and through snow to rescue the survivors of a plane crash, who he later finds out are criminals. Along the way there is a multiple-plane crash, several climbers falling down the mountain, a blown-up bridge, a blown-up cave and a heli-

—CONTINUED ON PAGE 138



Foley artist Dan O'Connell atop Mt. Wylie

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—FROM PAGE 132, ZEDZ MUSIC

Music didn't exist until McLarnon had spent years in the business. These things don't happen overnight.

In 1968, armed with an electronics degree and guitar chops, McLarnon took a job as technical director/recording engineer and studio musician with Intermedia (now Syncro Sound), one of the first 16-track studios in the country. He continued to play guitar and engineer, most notably in the Paul Winter Consort, touring the world over the next decade, acquiring a taste for exotic sounds.

A decade later McLarnon decided to marry and settle in Boston, where he began composing custom music for commercial clients, booking time around town for recording. He co-formed a band with bassist Stuart Hamm, and he spec'd a number of commercial and publicly funded studios in the area, including a production house that he later bought the equipment from to start Zedz Music.

"We have this really nice 18-input API console and 2-inch MCI 16-track that I bought from a facility that I spec'd," McLarnon recalls. "The API has lots of headroom and wonderful EQ (550A). We run the MCI at 30 ips, no Dolby, and mix to F1 or DAT. We just acquired a 16-track [Digital F/X] Digital Master EX, with one hour of memory. We can mix to DAT or store the 16 tracks of virtual info by dumping to the digital inputs of the DAT.

"I bought the EX to do two things," McLarnon continues. "I bought it to master, edit and sequence CDs—CD prep is the right term, I believe—and for its post-production audio for video and film capability. I want to move into film work. I've been doing soundtracks for video, and I've done very well for somebody who's not in New York or L.A. But I would like to do more scoring for film."

Admittedly, feature film work doesn't just come to Boston on a regular basis, so McLarnon presently devotes his energy to the next two volumes in his library and such clients as Encyclopedia Britannica, who approached him with the request for "PBS-quality sound."

"People come to Zedz for pristine recording," McLarnon says, adding that he's done soundtracks for PBS station WGBH. "I have a 16-track rather than a 24-track because I'm

interested in having good signal-to-noise and the least amount of crosstalk between tracks as possible. I have an electronics background as well as a music background, and I don't use Dolby in an effort to run the signal through the least amount of preamps. What's neat about the EX system is that if I'm doing a microphone recording, I'll go from the mic, through my API—which is a very pristine board, all discrete electronics, so in fact the audio doesn't go through the faders—and into the EX. I mix in the 16 virtual tracks of the EX and then to DAT. It only runs through two preamps: the API and the A/D converters in the EX.

"I know most of the people in most of the [video and audio] houses here in town," he adds. "When they need MIDI stuff, they go someplace else. But when they have a client who wants custom music, they come to Zedz Music. It's strictly about audio production and now post-production.

"You know, we have Sound Techniques here," McLarnon says in summation. "They're booked all the time, and they deal with some very high-end clients. They have two ScreenSounds, and now a Scenaria. I try to approach this wholly different. I've tried to invent a category that wasn't out there yet, one based on my custom-music experience. Along the way I came up with the library, and I wanted it to be somewhat exclusive, one that not everybody was going to have. My father passed on his musical ears to me; it would be nice to have a company that I can pass on to my son." ■

—FROM PAGE 132, NEEDFUL THINGS

(*Amos & Andrew*, *Highlander 2*) as the crew sets up the next shot, which involves some major special effects. "We need plenty of rain for this scene, and we're certainly getting it."

The desire for bad weather isn't the only unusual aspect of this production. While the director and DP set up another shot on the main street, editor Rob Kobrin and his team are also hard at work a block away, where an impressive array of state-of-the-art equipment is housed in a former doctor's office.

According to Kobrin, who worked with Robert Altman as an assistant editor on the highly acclaimed *Tanner '88*, and with John

Avidsen on *Rocky* and *Karate Kid*, *Needful Things* is by far the biggest major feature to be edited on the new Avid system. "There have been a couple of low-budget movies, but nothing on this scale and the way we're doing it," the editor explains.

"Instead of editing physical film, we're editing a computer analog version," he says. "We basically have two Avids, with my assistant on one, and we work very much like a traditional film room. He logs and synchs the dailies electronically, while my bench is more for design and presentation."

Kobrin has shipped up his own \$150,000 fully extended 2300 Avid system, which includes six optical drives and a 35-inch Mitsubishi monitor. "We're using the optical drives as a computer storage medium," Kobrin notes. "All of our media, both sound and picture, is digitized, and that digital information is then stored on phase-change optical disk." According to Kobrin the advantage of such a system is "the high capacity and interchangeable nature of the equipment."

In addition, he has been using a THX audio monitoring system, which calibrates to the room ("even this old office space") and adjusts for the physical environment. "We can hear the sound as perfectly as if we were on a THX dub stage," he notes.

Of the new software package driving the Avid, Kobrin reports, "We're able to cut at 24 fps. Avid has developed software that makes the change back from video to true 24 fps." Kobrin notes that one problem in cutting video is that the conversion from film to tape throws in "false artifacts or phantom fields, and when you edit on a tape-based system you can see them."

He adds that there have been various attempts in the past to develop 24 fps tape-based systems. "I worked on one, and we struggled through to make the tape run at 24 fps. It was quite a challenge, and it wasn't done again. But Avid has successfully used the computer to extract the 24 fps on film, so we're not cutting video here—we're cutting virtual film.

"That's a huge difference," Kobrin emphasizes. "It makes the match-back to print dead accurate, and it eliminates a lot of the problems between film and tape. So I know the frame I'm cutting is also the frame the audience will see. There's no

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guesswork."

The editor stresses that "basically, production is not aware that we're working electronically. They're shooting standard 35mm negative and recording sound on 1/2-inch tape with center-track pilot tone." There's no time code because Kobrin feels that time code slows production down.

"We then transfer to DAT with time code and load digitally out of the DAT into the Avid so that the audio only goes through one analog-to-digital conversion," he notes. "That digital information is then carried all the way to the mix. And as much as we all wanted to record digitally, the necessary standard of equipment wasn't available for this production."

For Kobrin, the big advantage of the Avid system is speed coupled with sophistication. "It allows me to edit at a higher level than I can in film," he states. "Generally, when a film editor makes a first assembly, it's a little loose because you'll trim, and in film you literally destroy the materials as you edit and splice. But this system is completely nondestructive. You never destroy the dailies, so I'm not cutting, I'm editing, and that's the big difference."

Because of this, the production requires a very small reprint budget. "It's mainly for the DP to see a scene in a different light," notes Kobrin.

"The bottom line is that this system gives us enormous creative freedom," he continues. "We can edit unlimited versions and save them all. In film, when you change something, what was there before is gone, but when I change something, what was there before still exists. The Avid has 32 levels of Undo, and that completely frees the editor up to experiment."

As Kobrin notes, this approach is revolutionizing the creative process. "Technically, we're still working in a very traditional manner," he explains, "where I cut from the script, and we're organized very much along the lines of a flatbed edit. But creatively, the editor can try anything immediately instead of ordering a new set of reprints and coming in three days later to try another cut."

Summing up, the editor says that "what drives all of this and what brought me to this point and why I've wrestled with all the technology is my ambition as an editor to offer the best. So that when my director

leaves the room, he feels completely confident we've tried every possible combination and that the cut is the best possible. In fact, Fraser told me that this production has been the most interactive experience he's ever had with an editor and post-production, and that this approach has saved enormous time and considerable reshooting. I'm certain that electronic editing is the future." ■

—FROM PAGE 133, MORE WORKSTATIONS

into your file list, select some piece that you think might butt up nicely to it, drag that down and put it on another pair of tracks. Once again, truncate down the region, then if it makes a nice crossfade one to the other you can just leave it on the B pair. For our purposes, we like to have A and B music. Sometimes, however, if you need to do a very quick crossfade or blend the two pieces, you can take the Selection tool, and starting in the tail end of the A piece of music, drag the cursor into the B piece of music for the region that you want the crossfade effect. Then you merely hit an F key or go up to the menu and call up the crossfade dialog box with diagrams of the slopes of available fades—I think there are nine different slopes available for fade-in and fade-out. You choose the one you like, click OK, and it's done. And it works beautifully.

"Edits that might have little ticks or bumps in them, you just crossfade across them, and they go away. It's too easy in some respects, but it makes this kind of editing work."

AMS AUDIOFILE

John Wiggins,
post audio supervisor,
HBO Studio Productions, NYC
Strengths: Speed, speed, speed; music editing; layering textures; macro programming made easy; ramp up and down, allowing for flawless edits; sounds great!

"I do something that nobody in their right mind would do—I compose with the AudioFile, making music for HBO," Wiggins says. "I make 'pieces' in my home studio with an additive synthesis computer setup, creating different pitched textures. I bring the pieces in on 1/2-inch and load the ones I like into the File. Every sound that I use is a module,

with slightly different versions of each, so the producer and I have plenty to choose from.

"Right now I'm working on two promos for *Earth and the American Dream*. We have the File hooked up to a 24-track, so I build in the File, edit and dump to stereo pairs of the 24. And then I build more, interweaving these strange, ominous sounds. They're so thick to begin with, and then I'm putting four or five of them together and weaving them onto two channels at a time. It's my way of composing, and the ones that sound great, sound great.

"This spot wasn't [picture] cut to music; it was cut the way the producer wanted it, and I'm fitting everything from the AudioFile. In this case I cut all the different drum parts in the File—sort of stringing together drum beats against her picture cuts, measure by measure since she didn't cut to any particular rhythm. Don't get me wrong, this is the hard way to do it. But it keeps me from sounding like everybody else. Right now we're actually on the 24-track, laying in the opening drone and the first drum hit, then the main drum bed to picture. I'll mix all this from the 24-track back to the D2."

DOREMI LABS DAWN

David Cohen, sound designer/editor, TekniFilm Labs, Portland, Ore.

Strengths: dialog editing and assembly (closest to PAP-style); inexpensive; locks to picture and plays back instantly; great scrub, great waveform; minimal amount of windows; commands and terminology match editor's needs; easy to learn, yet can make very complex edits simple.

"Recently Will Vinton Productions brought over 16 rolls of 35mm film for two 30-second spots on Spanish Yellow Pages," Cohen says. "We loaded 16 tracks of effects off the dubbers into the DAWN, then turned them into two three-stripes by designating which would merge together into one effect. You go to a time code address and internally set the balance, level, length of loops and such in the DAWN. For example, there were three seconds of pages being flipped that we had to turn into seven seconds. So we pulled and assembled from various parts, rather than just making a loop, then put it on one track. You can pull from the

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EDL Window, edit in the Edit Window, and mix in Mix View. We essentially created an effects preduib, and it's a very simple learning curve.

"I also did the dialog on a recent Movie of the Week," Cohen adds, "and I'm looking forward to editing the dialog on Gus Van Sant's upcoming *Even Cowgirls Get the Blues*. You just find the take that you need and load it onto the DAWN hard drive. Make a sync mark by placing the cursor, give it a GOTO command and send it to the time code number you've designated. If necessary, bump it till it phases. You can sync your dialog—sync a whole scene—do your handles, take out offending sounds and replace them with alternates, pull out the loop lines and create custom matching fills in a relatively short time. There are individual fades, so you can assemble as many pieces as you want into one. Handles are easy, and backgrounds are smooth."

SPECTRAL SYNTHESIS AUDIOENGINE

Mark Hermann/Michael Seven, owners/producers, Powwow Productions, Playa del Rey, Calif.

Strengths: Vocal comping; 16 tracks simultaneous graphical waveform editing; ultrasmooth scrubbing direct from disk; ten UNDOs; markers on the fly; fast crossfades/time compression-expansion; stable and reliable.

"On a recent album project for Epic Records, we recorded an act directly to the Spectral system without the aid of a recording studio or console, using the onboard DSP power to EQX, effect and mix," Hermann recalls. "The Spectral makes vocal comping a breeze."

"We had the artist sing the track down 12 times, from which we would compile the lead vocal, setting markers on the fly after each phrase in the Spectral Digital Studio," Seven explains. "We then took all 12 tracks into the waveform. By selecting between two markers we can isolate each phrase, highlighted graphically on all 12 tracks, and quickly preview each one by clicking on the channel's Select icon. We decide on the best take and copy it down to an open track, moving quickly from line to line. You build the comp as you go, making an often tedious process in the analog world seem easy.

"Another powerful asset is the Au-

dioEngine's ability to time-compress and expand, which came in handy with the live drum tracks," Seven adds. "The first take of the song had incredible energy, but the drummer missed a fill in the second verse."

"Normally, you'd have to take it again," Hermann interjects, "but we saved the moment by doing a 10-track edit of the drums from the same area of the first verse, copying and pasting them over the problem spot. The fill was a few frames short, due to a slight fluctuation in the drummer's timing, so we used the Engine's DSP power to time-expand the tracks, making a seamless join." ■

—FROM PAGE 133, CLIFFFLANGER

copter crash...all sounds that are ripe for Foley and effects experimentation. But to bastardize an old saying, the mountain had to be climbed because Stallone was there.

Between tromping through the snow and all the rock-climbing hits, Stateman and his team put together more than 3,500 Foley cues. The snow was relatively simple: 700 pounds of shaved ice, corn starch, formiculate and 300 pounds of cat litter. The rock hits were a bit more difficult, and they involved the construction of a mini-mountain, affectionately dubbed Mount Wylie, on the Foley Stage of Skywalker South, Santa Monica.

"Great care was taken in selecting the rocks from two different quarries in Los Angeles," Stateman explains. "We bought the largest rocks we could haul in a wheelbarrow, the heaviest being close to 400 pounds. They then went down an elevator, along with about 25 sacks of concrete.

"We ended up with 5,000 pounds of boulders," Stateman continues, "selected from three consistencies. One was a flagstone-type sandstone; one was granite river rock; and one was dolomite, a petrified wood, which gave a hard, pinging sound. A stone mason named Brian McCormick came in and fashioned this 6-foot, pyramid-shaped mountain with steel bars sticking out the top. The Foley walkers were then able to clamp on, working in full climbing harness and gear. He also put in handholds, footholds and areas where we could drive carabiners and other climbing anchors. The cone shape meant that we could trickle rocks down it to get

Post Product Spotlight

SONY DMX-S6000 SERIES DIGITAL CONSOLE

Unveiled at NAB, the Sony DMX-S6000 Series combines digital signal processing in a large-scale, all-digital audio post-production console. The DSP technology offers internal 48-bit calculation, achieving 32-bit accuracy and AES/EBU digital I/O with full implementation of a 24-bit word length. An advanced SMPTE-based moving fader automation system features snapshot storage with resetting of control parameters. Four configurations are available, ranging from 24 input channels with 24-track send/return to 64 input channels with 48-track send/return.

The DMX-S6000 Series supports a range of mix formats, including PCM-7000 DAT and D-1, D-2 and Betacam digital VTRs. The unit contains a MIDI interface and can accept Edit Decision List (EDL) floppy disk data. The digital interface for multi-track send and return is SDIF-2 balanced (pin-compatible with all Sony DASH multitacks). Digital I/O includes channel path inputs, mix bus outputs and aux send outputs; channel insertion capability for outboard processing equipment is optional. Master clock can lock to a variety of reference signals, including composite video and black burst, as well as composite sync, high-definition sync, AES/EBU DI and digital audio word sync. Supported sampling rates are 44.056, 44.1, 47.952 and 48 kHz.

A conventional in-line control surface has large and small faders and a dual signal path, so a 24-channel frame handles up to 48 inputs during mixdown. Each path has access to central assignment control for EQ, dynamics, aux sends, track sends and panning (LCRS is optional). The console has 4-band EQ; dynamics include limiter/compressor and expander/gate processing with assignable key input. ■

that tumbling, spilling sound for a slip or a false hold."

Everything was recorded to an Otari MTR-90 with Dolby SR, and all cues were frame-synchronized by hand back at Soundelux. Sounds were combined together in the design of each cue so, despite the huge number of Foley setups, rarely did the team burn up an exorbitant amount of tracks.

"We had a very efficient Foley track," Stateman remarks, "rarely going out more than 20 units of effects. It was a practical experiment in combining sounds, using different microphones and using our two Foley artists to their greatest potential. We called them 'bro' team cues, because everybody in the room became involved, including the recording engineer and recordist—cranking knobs, speed-changing recorders, harmonizing and working props.

"We also worked with multiple microphone setups," he continues. "Our primary mic was a Neumann hypercardioid [KMR-81 and 82]. Then, for the gun mechanisms and some of the higher-transient impact stuff, we would use the Sennheiser 421 dynamic, and for working in really close, the Sony ECM-50. For moments of stereophonic recording, we employed the Beyer dynamic.

"We experimented with stereophonic recording," Stateman adds. "It became an interwoven concept of mono to stereo for effect. So if someone was climbing and, let's say, swing in a wide shot, it would obviously be mono. But when the camera and the picture editor came in very tight, we would use the stereo microphone to get a real dynamic change to the movement of the sound. We followed the camera moves with our microphone selections and techniques."

Granted, not every feature film budget allows for a mountain in the Foley pit. Rest assured, it made for some grueling days. "We spent 20 nine-hour days pounding out material," Stateman says. "You could count the days by the number of blood blisters and bruises that the artists have. It was a very physical job. After it was over, the walkers went on vacation, to the beach at Cabo San Lucas in Mexico. It was just extraordinary work, and I would like to thank the Foley team." ■

Tom Kenny is a Mix associate editor.

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by Philip De Lancie

SOUND FOR MULTIMEDIA

IS THE AUDIO INDUSTRY LISTENING?

Incompatibility is the unavoidable by-product of innovation. Because the first version of a given product type isn't necessarily the most viable, the early stages of a new market may be marked by years of stiff competition between differing approaches to filling a given need. But as a market matures, the benefits of agreeing on common standards begin to outweigh whatever competitive advantage may be won by trying to go it alone. In the prerecorded music industry, for example, the LP, the compact cassette and the CD were each standards whose widespread acceptance by competing interests spurred market growth, leaving everybody better off.

In interactive multimedia the market is still at an early stage, with new and different ways of delivering content to users springing up daily. There are a variety of incompatible, proprietary consumer machines designed to play through television sets (CD-I, CDTV, VIS, Sega-CD, 3DO). And there are "desktop" systems for the computer market, which involve hooking a CD-ROM drive to the host computer, or hooking the machine up to a multimedia-capable network.

The main personal computing families—IBM and Macintosh—are, of course, incompatible by nature. But even within these two "platforms," the capabilities of the various models and configurations to play back the elements that make up multimedia (audio, graphics, text, animation and video) vary widely. This is particularly true on the IBM side, where media playback abilities are added to a basic machine by installing any of a number of different media cards from competing third-party vendors.

Just consider a few of the ways in which incompatibility manifests itself in multimedia, and one begins to yearn for a nice clear-cut format war like the DCC/MiniDisc rivalry. For instance, audio applications may create or digitize audio elements at any of a variety of bit resolutions and sampling rates. Differing schemes ("file formats") may be used to organize the data within files, and different types of names (DOS convention or Macintosh) may be applied to the file. The "headers" that are used to identify the type of contents (so the playback platform knows what to do with it) also vary.

Before the content gets to the end-user's platform, it has to be stored on some kind of delivery media. Here, too, are complex variables. Even within the family of CD-ROMs (see Fig. 1), audio is handled in a variety of ways with different compromises made to fit the audio component of a program within the overall "bitstream" of data coming off disc. All in all, the multitude of options and special cases can be daunting to anyone used to the comparatively straightforward world of recording-industry audio.

IMA TO THE RESCUE

The various interests that make up the multimedia industry recognize that the confusion and hassle resulting from incompatibility are huge impediments to expansion of the market for their products and services. One major trade organization that has been working on the problem is the Interactive Multimedia Association. The Annapolis, Md.-based group includes hardware, software and user interests.

The IMA began the Compatibility

Project in June of 1991. The ultimate goal of the project is to bring about a technical environment in which any IMA-compliant multimedia content can play on any IMA-compliant platform. The organization recognizes that this goal won't be realized overnight (if ever), or by proclamation of sweeping new standards. Rather, it foresees a step-by-step evolution toward compatibility through breaking the problem down into its component parts and making progress where it can.

The IMA's basic approach starts with defining a particular problem, such as audio playback capabilities of personal computers and workstations. Then a working group is formed from IMA member companies to develop a Request for Technology. The RFT, which solicits suggested solutions from members, lays out technical requirements and the criteria by which the proposed solutions will be evaluated. When suggestions have been submitted, the IMA group makes the evaluations and comes up with recommendations.

In the case of audio, an initial set of recommendations, entitled "Recommended Practices for Enhancing Digital Audio Capability in Multimedia Systems," was officially adopted and published last fall. The document, available from the IMA ([410] 626-1380), is intended as the first of a series of incremental recommendations on digital audio in multimedia.

Participation in the two groups that developed the document included representatives from the computer field such as Apple, IBM and Compaq, as well as some companies more closely tied to music creation and reproduction, like Roland and Dolby. Aside from Sony, however, there was little representation of companies with direct ties to the software side of the entertainment business.

As the multimedia market grows, so too will attempts to deliver music-related entertainment to the desktop. (*A Hard Day's Night* is already available on CD-ROM for viewing on computer.) But despite the fact that IMA membership is open to any interested party, the recording industry and entertainment companies appear con-

tent to let the computer industry define the fidelity with which their creations will be heard by consumers.

Unfortunately, the computer industry has its hands full just getting cross-platform compatibility to work at all. That means that so far, in the absence of involvement by the audio industry, considerations of fidelity appear to be taking a back seat.

through a logo program, or to monitor and verify claims of compliance.

A group of standard formats is specified in the initial recommendations, with the term format defined as a combination of sample data type and sampling rate. And a standard set of algorithms, available to anyone who wants them, are specified for audio data compression/decompression

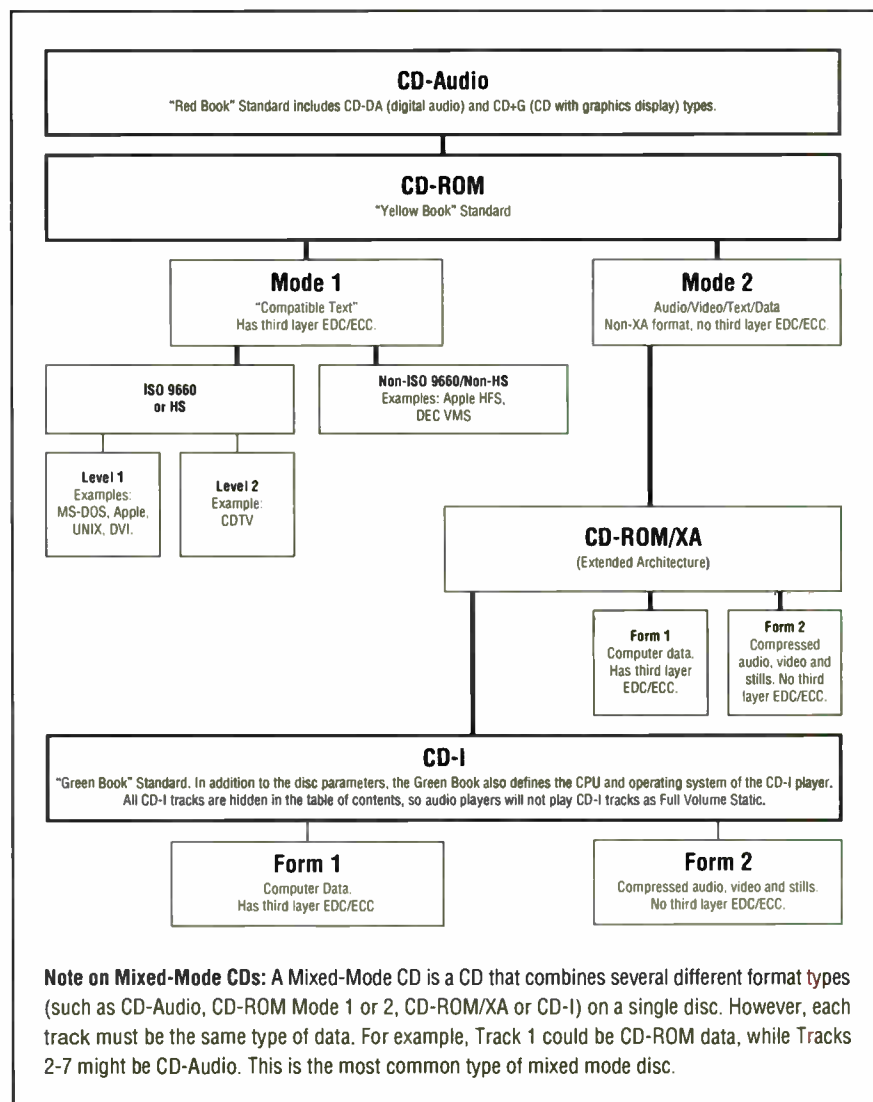


Figure 1: Some CD standards

IMA COMPLIANCE

The IMA digital audio effort is intended to encourage cross-platform exchange of data by specifying a limited set of minimum capabilities that vendors must support for their platforms to be considered IMA-compliant. The IMA has no plans to promote compliant machines to consumers

sion and format conversion.

To be compliant, the recommendations state that a machine must be able to record one of the specified formats in real time. It must also be able to play back all the formats in real time. Further, the IMA urges vendors to support conversion from any standard format to any other, though format conversion need not be accomplished in real time. The conver-

sion algorithms provided in the document are intended to serve as a basis from which conversion code may be optimized for each vendor's platform.

The IMA audio recommendations are not intended to be exclusive. That is, a compliant platform may support additional formats as long as the IMA formats are covered. Future recommendations may add new formats to the core group but will not eliminate existing ones.

Two other important aspects of compatibility will also be addressed in later recommendations. One area is the formatting of data in a signal stream, which involves the blocking of data, embedding of synchronization information and tagging of files with appropriate headers. Another area is the formatting of individual files, which could include the merging of audio with other media types and with control information, as well as standards for file labeling and organization. According to compatibility project director Brian Marquardt, recommendations covering these issues may be out later in 1993.

STANDARD AUDIO FORMATS

According to the current document, the formats were chosen to provide "baseline digital audio cross-platform support to satisfy a range of audio quality and data bandwidth requirements." As a starting point, the IMA ensured inclusiveness by codifying the most common existing formats.

Two data types were adopted to avoid leaving behind some of the older workstations currently in use. Based on the CCITT G.711 telephone industry standards, both are 8-bit mono-only schemes. The "µ-law" data format used in the U.S. and Japan, and the "A-law" format used in Europe are nonlinear compression formats that dedicate more digitization code to lower amplitude signals (to ensure their audibility), while sacrificing precision at higher amplitudes. With sampling rates of 8 kHz, these formats don't take up much of the bitstream, but the fidelity they deliver is limited to that of a long distance telephone line.

Somewhat higher quality may be expected from the formats widely supported on Macintosh and MPCs (IBM-compatibles conforming to the

Multimedia Personal Computer standard). These are 8-bit linear PCM formats in mono and stereo. Their nominal sampling rates are 11.025 kHz and 22.05 kHz, one quarter and one half, respectively, of the CD-Audio standard. At best, the 22.05kHz sampling rate yields frequency response up to about 11 kHz, while response for the lower rate would be half that. Further, 8-bit resolution allows only 256 bits to describe each sample (compared to 65,535 for 16-bit CD-Audio), which translates into more quantization noise and reduced dynamic range (no better than 48 dB). These 8-bit linear PCM formats may be acceptable in some situations, but

When it comes to sound for multimedia, the multitude of options and special case scenarios can be daunting.

they are definitely not hi-fi.

Another consideration with these "native" Macintosh and MPC formats is the fact that the actual sampling rates used on Macs and some MPC soundboards vary from the nominal sampling rate. This raises the question of sample rate tolerances. The IMA recommends tolerances broad enough to encompass these variations in current practice. But synchronization issues related to the "nonexact" sample rates remain. For instance, a file of audio sampled at 22.254 kHz may be played back at the standard 22.05 kHz sample rate with a resulting change in speed that is probably imperceptible. But if that audio file is synchronized to animated graphics, the difference in speed will, over time, put the audio and animation noticeably out of sync. According to Marquardt, this synchronization problem has yet to be resolved by the IMA and is not expected to be addressed this year.

For the best audio quality, the IMA included 16-bit/44.1kHz Red Book

audio among its formats. The high fidelity of this format is widely accepted. But the format eats up 1.4 megabits of storage for each second of program. And it takes the entire available data bandwidth to pull bits off of a CD-ROM drive at that rate. That means that while a Red Book audio segment plays, the use of graphics, animation or other media elements is limited to whatever can be done with files that already have been loaded from the CD-ROM into the computer's RAM. So Red Book audio—while delivering the best fidelity—has to be used very sparingly.

ADPCM COMPRESSION

To get around the storage and bit-rate requirements of Red Book, the IMA added a class of compressed digital audio formats to its recommendations. As part of the process of deciding what compression scheme to use, the digital audio working group developed certain requirements and evaluation criteria.

First, the compression algorithm and stream format had to be open (i.e., nonproprietary) and available for anyone to use without royalties or licensing fees. Second, the compressed audio had to be decompressible in real time by a personal computer CPU (386/20 MHz) without needing dedicated processing chips to be built into the platform. This "software decompression" was to require no more than 25% of the processing power of a 386/33MHz PC. Third, the scheme had to be applicable to multiple sample rates, especially the rates used in the other IMA recommended formats (8, 11.025, 22.05 and 44.1 kHz). The requirements also addressed the issue of "scalability," which refers to the ability of a single audio file to be decompressed into different formats depending on the audio capability of the playback platform.

Suggested compression schemes meeting the above criteria were subjected to listening tests. These subjective evaluations of sound quality counted for 30% of the total scoring. According to Compaq's Monty McGraw, who served as chair of the working group, the sample sounds used were taken from an EBU Sound Quality Assessment Material test-CD. The sounds were compressed and decompressed with the finalist algorithms and distributed to the partici-

pating companies on DAT or, in some cases, cassette.

The tests were conducted by each participant in its own way, with no attempt made to apply uniform procedures or monitoring environment. Some listened through headphones, some through a stereo system and others through the speakers built in to their computers. Only the persons who prepared the tape knew which sampling rate and algorithm were used on a given sound sample. Participants filled out a sheet giving their assessment of the sound quality of the various samples.

In the end, the format selected for recommendation was not the one that was rated highest in the listening tests. Rather, it was the scheme that, in the view of the working group, offered the best balance between quality, cross-platform portability and CPU utilization during decompression. The algorithm chosen is an Adaptive Differential Pulse Code Modulation scheme developed by Intel for audio playback within the DVI video compression standard.

In general, the main advantage of ADPCM systems over linear PCM is their efficiency. ADPCM encodes only the difference between samples rather than the samples themselves. As Ken Pohlmann states in his *Principles of Digital Audio*, "In theory, given the same number of quantization bits, ADPCM can achieve better signal resolution. In other words, relatively fewer bits are needed to achieve good performance." DVI's 4-bit ADPCM uses only about one fourth the bit-capacity of the original PCM data from which a compressed file is derived.

The 4-bit ADPCM is a "lossy" compression, which means that the signal quality is compromised by the compression/decompression process. But it's hard to get a precise idea of how much damage is done. In the audio community, certain basic specifications, such as dynamic range and frequency response, are normally the starting point of discussions about audio storage and transmission systems. Oddly enough, however, neither the IMA nor Intel was able to provide these specifications for the DVI ADPCM. Instead, discussion of the algorithm's fidelity is somewhat vague, perhaps because the more important consideration for the IMA is cross-platform compatibility.

According to McGraw, the DVI ADPCM yields an audio bandwidth roughly one kilohertz less than that of the original signal. The highest frequency of a linear PCM 22.05 kHz sample rate file, for instance, would be reduced from about 11 kHz to 10 kHz after compression/decompression due to some filtering functions in the algorithm.

The loss of frequency response is compensated for by advantages in dynamic range. McGraw says that a 4-bit ADPCM signal, derived from 16-bit linear PCM, delivers a 16-bit dynamic range (90+ dB) when decompressed for playback, far superior to the range of an 8-bit linear PCM sig-

As the multimedia market grows, so too will attempts to deliver music-related entertainment to the desktop.

nal. This performance comes at a price, however.

"When you get the 16-bit signal back out from the ADPCM algorithm," McGraw explains, "some noise and distortion will have gotten into the datastream, meaning that the signal will be different from what it was going in. So there are some digital artifacts as a result of the algorithm that don't fall into the category of traditional analog audio distortions like harmonic distortion."

According to Ken Mills of Intel, the company has never done distortion analysis of the algorithm. "We know there are artifacts," Mills says. "DVI is essentially a video product, and audio is not that high on the priority list. So the fact that it works, and works reasonably well, is good enough."

Because the algorithm has only four bits with which to describe the difference between one sample and the next (as contrasted with the 8-bit ADPCM used on CD-I), its capacity to adapt to rapid changes in dynam-

ics may become stressed. Mills says that distortion may be audible in program with drum hits and other transients. A heavy snare backbeat, for instance, "could be nasty," with an edgy quality or even crackling breakup.

Comparing the strengths and weaknesses of ADPCM and 8-bit linear PCM, Mills adds, "PCM-8 sounds really nice on relatively constant or loud rock music, almost as good as 16-bit, because you can't hear anything down in those lower bits. But as soon as the music gets quiet, you are in deep trouble. ADPCM, on the other hand, can follow the gradual changes in a piece, adapting itself to quiet passages and louder ones. However, it falls apart on the transients."

One further word of caution regarding ADPCM: While the 8-bit linear 22.05 and 11.025kHz formats are already supported on Macs and MPCs, the IMA ADPCM recommendation is not. Microsoft is in the process of developing code to add the algorithm to the list of Resource Interchange File Format (RIFF) data types supported by Windows. Apple's intentions regarding a possible similar extension of System 7 are unknown. In the meantime, multimedia developers who want to use ADPCM will have to include the decompression algorithm on their CD-ROM or other delivery media. The code would be loaded into the system as part of the "installation routine" that sets up a playback machine to run a given application when it is opened.

Overall, the Compatibility Project's work in audio represents a significant first step toward allowing a single set of data to play back on many platforms. As the process evolves, the emphasis may shift from standardizing existing practice toward incorporating new and better means of delivering content.

For the audio industry, this process offers an important chance to help shape the future of audio delivery to the growing desktop market. Unless this chance is taken, however, the industry's opportunities in multimedia may continue to be constrained by systems designed for expediency rather than fidelity. ■

Philip De Lancie is a mastering engineer at Fantasy Studios in Berkeley, Calif.

Tape & Disc News

WEA SAYS "YES" TO "S"

WEA Manufacturing, the duplication/replication arm of Warner Music Group, will begin using Dolby S-type noise reduction on prerecorded cassettes for the Warner, Atlantic and Elektra families of labels this spring. According to a statement released by Dolby, the NR encoding will ultimately be found on all the Warner Music releases, regardless of musical genre.

Dolby S is already in use on classical releases from BMG's RCA Victor label. But WEA's move gives a boost to widespread adoption of the system, which has been stalled by concerns about the comparatively tiny installed base of cassette machines that can properly decode the signal. Dolby has long maintained that S-type cassettes sound good even if not decoded, or when played on a

Dolby B-type machine. But S-type decoding is obviously preferable, and S-type circuitry has so far been found only in relatively expensive decks, limiting the system's appeal to record labels.

WEA's vote of confidence in S-type may come in part from a decision by Sony to bring the system into the mainstream of cassette hardware. The company's 1993 cassette line includes two S-type-equipped models, including a dubbing deck priced at \$249. According to Dolby's William Barnes, Sony's best-selling deck in 1992 was a \$199 dubbing deck, so Dolby expects consumer interest in the new S-type model to run high.

The Sony move underscores the company's multifront approach to the consumer hardware wars. The S-type cassette decks will find their way into stores at the same time as another new Sony product, a home MiniDisc recorder/player. Sony has previously maintained that MD is intended to replace cassettes in portable applications, and was not targeted toward the home market where it might compete with CD.

"JUST PUT IT ON MY CARD"

Cassette tape, MD and CD will all soon be on the verge of obsolescence, if Los Angeles-based Urshan Research has its way. The company announced that it is now only months away from completion of a production prototype of a system that stores one gigabyte of data (500 MB/side) on a credit card-sized optical storage device dubbed the "Compact Card." The CC system, which is about the size of a standard VCR, uses an array of lasers to read and write data (including digital audio and video) to the card at a rate of 45 megabits per second. According to Urshan, the CC effort is currently sponsored by companies including Apple and Fujitsu. The company has also been working with AT&T to develop a worldwide network for high-speed transceiving of CC data.

CASSETTE PRODUCTIONS TO MAKE CDS

Cassette Productions announced plans to install replication capacity for CD-ROM, CD-I and CD-Audio. The multimillion-dollar expansion will turn the company's Salt Lake City plant

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into one of the few in the nation that duplicates CDs, videocassettes, analog cassettes and floppy disks under one roof. The plant has also undergone a 100% increase in floppy duplication capacity and a 50% increase in video duplication capacity.

DIC HEADS FOR THE BEACH

DIC Digital announced the opening of a "state-of-the-art" metal particle tape laboratory in Virginia Beach, Va. Senior VP of manufacturing Jeff Woods will direct the facility. Woods says the lab was located in the U.S. "since this is the most active marketplace for 4mm and 8mm computer backup tape and DAT." In addition to testing capabilities, the facility will allow DIC to develop specific products in response to the needs of OEM customers.

SPLICES

Mobile Fidelity Sound Lab (Sebastopol, CA) is expanding and upgrading its mastering facilities with improvements in its present mastering suite and the addition of a second room. The improvements include new custom-designed mastering consoles for each room...Disk Makers (Philadelphia, PA) is offering a Full Color Express service for cassette duplication with a two-week turnaround time. The customer provides a master tape and photograph, and Disk Makers does the mastering, graphic design, printing and packaging. The minimum order is 300 units for \$1,080...Saki Magnetics (Calabasas, CA) has developed and custom-manufactured ferrite record heads for PolyGram high-speed cassette duplication systems operated by Trutone Industries in South Africa...Otari Corporation (Foster City, CA) announced the sale of T-700H TMD high-speed video duplicating systems to Premiere Video of Livonia, MI. Several additional T-700Hs have been sold to Cassette Productions in Salt Lake City...Global Zero (Westbrook, ME) is on the market with its G-Zero videocassette shell. The shell's six pieces (compared to 32 in the typical VHS shell) are recycled and recycleable...Optical Disc Corporation (Santa Fe Springs, CA) has named Kees de Jonge as manager of the company's international sales efforts in Amsterdam, Holland. De Jonge comes to ODC from Netstal. ■

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C O A S T

L.A. GRAPEVINE

by Guido Coasto

The Los Angeles recording community lost a true professional when C.E. Whittington, owner of Claremont's Indian Hill Audio/Video and Sun-Dwyer Recording, as well as co-founder of North Hollywood's Alpha Recording, died of a heart attack earlier this year. Among the many recordings created in Whittington's facilities are Prince's first two albums and Robbie Dupree's Number One hit "Steal Away."

—CONTINUED ON PAGE 150

Anthrax was recently at Hollywood's Cherokee Recording to work on their upcoming Elektra release. Pictured (L to R) behind the new 64-input SL 4000 G Series console are bassist Frank Bello, engineer Brian Carlstrom, vocalist John Bush, producer Dave Jerden and guitarist Scott Ian.



STUDIO SPOTLIGHT

by Jeff Forlenza

Philly's Sigma Sound Turns 25

Joe Tarsia started Sigma Sound Studios in Philadelphia in 1968. Twenty-five years and many hits later, Sigma is a Philly legend in sound. In fact, a lot of the Philadelphia Sound that directly affected today's pop music was created at Sigma.

What's the Philly Sound? Listen to Harold Melvin and the Blue Notes' "If You Don't Know Me by Now," or the classic "Backstabbers" by The O'Jays. You know, "They smile in your face..." And remember The Spinners' "Rubberband Man," or Blue Magic's "Sideshow," or the Stylistics' "Betcha by Golly Wow"? Words fail to describe how much those

songs affected American life during the '70s, and they were all created at Sigma Sound Philadelphia.

The stories abound about Sigma star risings. A young singer by the name of Darryl Hall used to sleep upstairs at Sigma in the late '60s. David Bowie recorded his "Young Ameri-



Michael Tarsia (left) with producer Terry Stubbs at the Neve in Studio One, Sigma Sound Philadelphia

cans" at Sigma in 1974 during sessions in which a young unknown from the Jersey Shore stopped by: Bowie tracked his version of "It's Hard to Be a Saint in the City," while The Boss couldn't seem to figure out the Jean Genie and kept muttering, "This guy is from Mars."

Before Sigma Sound opened at 212 North 12th and 309 South Broad streets, the studios were home to Cameo/Parkway Records, where Joe Tarsia had six years of engineering experience, tracking the likes of Chubby Checker, Bobby Rydell and The Dovells.

Today, Joe Tarsia's son Michael is president and chief engineer of Sigma Sound, and they have diversified. The Sigma of the '90s offers video post-production and 3-D computer animation to go along with their proven success in audio recording. Recent Sigma hits include Patti LaBelle's Grammy-winning album *Burnin'*, which was almost entirely engineered and mixed by Michael Tarsia at Sigma. ■

C O A S T

SESSION SPOTLIGHT

by Bob Buontempo

Unique Session with Titelman, Lord-Alge and Michael McDonald

The last time Tom Lord-Alge and Russ Titelman worked together as a production team they scored a Grammy with Steve Winwood's "Back in the Highlife." Recently, they finished mixing a solo project for smooth R&B crooner Michael McDonald at the same studio.

The project was mixed in Studio B at Manhattan's newly renovated Unique Recording. The Unique update includes expanding the size of its three SSL consoles to 72, 64 and 56 inputs, respectively, and adding Ulitimation and Augspurger monitors to Studio A.

Former Doobie McDonald describes

cians [instead of drum machines or sequencers] on most of the tracks, I tried to preserve that groove and not get too gimmicky with effects. In fact, for ambience, we sometimes sent a signal through the EV Sentry 100s in the studio for playbacks, and miked the room with a pair of U87s."

The original recording took place at Power Station in New York and Westlake in L.A. "I ended up saving miles of cables of cross patches on these mixes," Lord-Alge says. "When I mix—as do most engineers, I imagine—I like to have all the drums on adjacent faders, then bass, guitars, vocals, et cetera. But

sometimes when tracking, things can get split up oddly, due to the order of tracking, space available, whatever. So I take the original track sheet and write up a new one where I'd like to see the tracks come up on the board. Then I'll cross-assign a track from where it is to the track I'd like it on the [Sony] 3348. Then, using the digital bounce function on the Sony, I'll double-check everything and put the machine in 'record.' Every record light comes on every track, and all the tracks are now in the order I'd like them to be on the tape. I just pray there isn't a power failure! I'm also mixing to the Mitsubishi digital machine with some analog backup."

Lord-Alge mixed on an SSL E Series console with G Series modules. "It's like my instrument," he says of the SSL, "and I play it because I know it best." ■

N.Y. METRO REPORT

by Dan Daley

Eastside Sound is expanding from one to three rooms over the spring and summer. The studio's



Located in Valley Forge, PA, Forge Recording Studios has been in business since 1971. Recently Forge moved to a new 10,000-sq.-ft. facility. Chief engineer and president Warren R. Wilson handled the design of the new studio, which features a Neotek 32x36 console and digital and analog recording capabilities.

Harrison Series 10 console will move to a new second-floor room, which co-owner Lou Holtzman—who will handle the design with Richard Bittner—says will be devoted to mixing and post-production. The original downstairs room will house a classic console, manufacturer as yet undecided. The second-floor room's construction began in

—CONTINUED ON PAGE 150



Michael McDonald and Tom Lord-Alge (seated) in Studio B at NYC's Unique Recording

his new project as a return to his roots: "Stylistically, I'm trying to get back to the live R&B feel, not so much the style of contemporary R&B, but more of the feel of 'Takin' It to the Streets.' I think a lot of people will like the back-to-basics, live-musician approach."

"I'm trying to keep the live feel, too," Lord-Alge adds about his working style. "Since there were real musi-

—FROM PAGE 148, L.A. GRAPEVINE

Known as a colorful figure, Whittington worked on media presentations and video post-production at Indian Hill and was also active in the Southern California country scene. Clients of Indian Hill who have unfinished projects or are seeking disposition of master tapes should contact Terrance Dwyer Productions at (909) 625-4706.

Jim David recently sold One on One Studios (North Hollywood) to Ecstasy Records of Japan. Ecstasy will keep the One on One name and current staff, and will also add two

Sony 48-track recorders. David said that though One on One was a success, he felt it was time to get out of the business. He added that studios in general have felt the crunch—rates are down while equipment costs and overhead are up. Fishbone was the last act to work at One on One before the change of ownership.

L.A.'s Morgan Creek Records goes country: Hot on the heels of labels such as Giant and Asylum, Morgan Creek, a subsidiary of the Hollywood film company, plans to locate a satellite office in Nashville. No date yet for the opening of Morgan Creek East, but

MCR president Jim Mazza has been racking up the frequent-flyer mileage between L.A. and Nashville signing country acts, the first of whom is Shelby Lynne.

Audio Intervisual Design, one of L.A.'s most respected pro audio distributors and sonic system designers, moved to expanded digs. The new A.I.D. building at 1155 N. La Brea Ave. features a full-size demo studio and control room, with acoustical treatment by Polonis Sound and Acoustics.

Rose Mann, a mainstay of the legendary Record Plant of the '70s and '80s, is returning to the newly expanded facilities as its vice president/studio manager. Mann will oversee client and service-related studio operations.

Over at Andora Studios in Hollywood, longtime console/audio designer Frank Demedio completed modifications on the vintage Neve 8078A console in Studio B, which was also fitted with Genelec 1035A monitors.

Audient Marketing, a full-service marketing and PR firm out of the Southland, recently added the JBL Professional Group (JBL Pro, Soundcraft and UREI) to its list of clients. Other Audient clients include JL Cooper, QSC and Fostex. ■

—FROM PAGE 149, N.Y. METRO

February and is expected to be finished in early May. On the third floor of the building, a new mixing room will be added in time for AES. Holtzman is in discussions with Harrison about a new advanced-design console for that studio.

"We had to add some new profit centers here," says Holtzman. "The Series 10 is a great console, but it's only for certain engineers, so we'll add a classic console for a wider range of appeal." Holtzman has also changed partners: R.J. Cicero has moved on, and producer/programmer Yaron Fuchs is now a co-owner.

The new Sony Music facility across the street from the new Hit Factory (and around the block from Power Station and a block-and-a-half from Sync Sound—we got a regular Studio Alley going on here) did some sessions in February in preparation for an expected official opening this spring.

The 79,000-square-foot complex houses more than a dozen mastering rooms, two large audio recording stu-

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dios, a video-sweetening and mix room, four video edit suites (two online, two offline), two advanced tape dupe rooms, and other video graphics and processing capabilities, as well as a 100x75-foot soundstage with a 35-foot ceiling and two large rehearsal rooms that can double as studios. Studio A has an SSL 64-input console and Genelec 1035A monitors. Studio B has a 56-input Sony board and customized UREI 813s. Mix Room C has another Sony desk and E.M. Long surround-sound monitoring.

Facility designer Russ Berger says the audio rooms were designed to be 90° off-axis to the recording rooms. "There's simply too much stuff in the front of the control room these days, including multiple video monitors and center channels for surround sound," he explains. Other design features include monitors mechanically grounded in concrete, and extensive use of glass walls. A source at Sony said the company had no comment on the facility other than it is intended for use by Sony artists rather than as a commercial facility.

In other Russ Berger area designs, the USA Network added two audio post rooms with SSL ScreenSound workstations at its facility in New Jersey, and Capital Cities/ABC-TV added an AS2 with a Neve console and E.M. Long surround monitoring system.

It pays to expand: Trendset Productions was a one-room, 8-track analog facility specializing in local and regional radio spots from its midtown location. After spending \$25,000 in other studio facilities to finish production on a record project for Atlantic Records, studio owner Gene Sicard decided to upgrade the studio to keep any future record work in-house. Equipment added includes a Soundtracs Quartz 32-input console, a Digidesign Pro Tools system, and an Alesis ADAT 8-track and a JVC 3/4-inch VTR for post-production capabilities. A vocal booth was also enlarged, with Toy Specialists chief tech Neal Simon doing the design and wiring. The upgrade has boosted his radio work from three national spots a year to three this year already. "At that rate, one major project a year pays for an upgrade like this," Sicard says.

Steve Bramberg, former studio manager at Sigma Sound and Bearsville, has taken that post at Richie Cannata's two-room, 48-track Cove City Sound on Long Island. ■

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SESSIONS & STUDIO NEWS

by Jeff Forlenza

NORTHEAST

Rapper KRS-One of Boogie Down Productions was at D&D Recording (Manhattan) tracking and mixing his upcoming Jive Records release. Premier of Gangstarr produced most of the album with KRS-One, while guest producer/DJ Kid Capri worked on one

NY) with producer Danny "Kootch" Kortchmar and engineer Niko Bolas...Tribe Called Quest and De La Soul were both tracking new albums at Battery Studios (NYC) with engineers Tim Latham and Bob Power...Also in Manhattan, Lloyd Cole visited the Magic Shop to work on his new album for Capitol Records. Lloyd produced the project with Adam Peters, and Dave O'Donnell engineered...Reggae star Maxi Priest checked into Quantum Sound Studios (Jersey City, NJ) to remix



R&B legend Booker T. Jones (left) with producer/drummer Erik Nielsen at The Site in Marin, CA. Booker T. added keyboard overdubs to the latest release from Denny Brown, which also included the Tower of Power horns and Texas guitarist Dave Grissom.

track. Eddie Sancho engineered the rap/edutainment project with assistant Luc Allen...Billy Joel was tracking his latest release for CBS/Sony Records at Cove City Sound Studios (Glen Cove,

Donald "Buck" Dharma and Eric Bloom of Blue Oyster Cult were at Bad Animals/Seattle to record a parody of their classic "Godzilla" for Seattle's KISW. Tom McGurk engineered the twisted tune. (L to R) Dharma, McGurk and Bloom.



his latest single with Chad Elliott of Unsteady Productions. "Prince" Charles Alexander mixed the track on Quantum's SSL 4000E with G computer...Mario Bauza, the 82-year-old godfather of Cuban salsa/jazz, returned to Clinton Recording (NYC) to record his latest for Messidor Musik. Using Clinton's classic Neve 8078 console and 32-track digital recording capabilities, producer Goetz Wornor worked with engineer Johannes Wohlleden and assistant Derrick Garrett on Bauza's follow-up to his Grammy-nominated album *Tanga*...

SOUTHERN CALIFORNIA

Producer John Porter was at Burbank's Red Zone Studios working with blues legend Buddy Guy on a project for Silvertone Records. Guest musicians included country star Travis Tritt and Paul Rodgers. Joe McGrath engineered and Trent Slatton assisted...Mr. Big checked into Rumbo Recorders in Canoga Park with producer/engineer Kevin Elson and assistant engineer

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PHOTO: ROB RICH

Billy Joel at Cove City Sound with (L to R) producer Danny Kortchmar, studio manager Steve Bramberg, studio owner Richie Cannata and engineer Niko Bolas.

Tom Size to work on their latest for Atlantic Records...Tom Petty was at Sound City Studios (Van Nuys) tracking his upcoming release with Def producer Rick Rubin and engineers Dave Bianco and Jim Scott...The Boo-Yaa T.R.I.B.E. were in Paramount Recording's Studio B mixing rappers E.Y.C.'s MCA debut, with producers Will Rock and Bob Dog and engineer Keith Barrows... Motown artist Chanice cut a track for her upcoming album at L.A.'s Studio Masters with producer Kiy Griffin and engineer Robert Brown...At Saturn Sound in Burbank, producer Ralph Shuckett worked on Belinda Carlisle's new album with engineer David McNair and assistant engineer

Todd A. Judge...

SOUTHEAST

Chicago-based singer/songwriter Michael McDermott was recently in Reflection Studios (Charlotte, NC) to track his latest SBK/EMI release. Producer Don Dixon was brought onboard to play bass and guitar (as well as produce), while Reflection chief engineer Mark Williams handled the Sony 3036 hard disk-automated console and two Sony PCM-3324 digital recorders...At Bill Lowery's Southern Tracks in Atlanta, Keith Sweat tracked and self-produced his new album for Keia/Elektra with engineer Karl Heibron...Former Velvet Underground drummer Maureen Tucker

New Potato Caboose were cutting fresh tracks at Sigma Sound Philadelphia. Foreground (L to R): Keyboardist John Reding and engineer David Ivory. Background: Doug Pritchett, vocals; Don Laux, guitars; Jerry Smith, bass; and Chris Arminio, drums.



PHOTO: STEPHANIE JENNINGS

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NORTHWEST

The Limbomaniacs completed a collaborative project with Garry Shider and Gary "Mudbone" Cooper of Parliament/Funkadelic fame at Pete Scaturro's Ball and Chain Studios in San Francisco. Mixing was done at SF's Different Fur Recording. Singers from Bay Area funk outfit The Mo'Fessionals added backing vocals...Mechanic Records act TAD mixed their latest in Bad Animals/Seattle (Studio A) with producer Jay Mascis (Dinosaur Jr. leader) and engineer Jay Agnello...Steve Owen and Bottomless Joe finished their album at OTR Studios in Belmont, CA. Cookie Marenco engineered and produced the album for Cojema Music; the project included guest musicians Mike Marshall and Philip Aaberg...

NORTH CENTRAL

Pachyderm Studio in Cannon Falls, MN—a Neve 8068/Studer 24-track-equipped studio set in a 40-acre park just outside Minneapolis—features five isolated recording areas, including a granite drum room. Recent Pachyderm sessions include Soul Asylum, The Jayhawks and producer George Drakoulias working on a benefit album called *Sweet Relief*. Nirvana checked in for two weeks and recorded 16 tracks with Chicago producer Steve Albini and engineer Bob Weston. Albini also worked with PJ Harvey for her upcoming Island release. Capitol act Sugartooth came to Pachyderm with producer Doug Olson...

SOUTHWEST

Alternative band Stranger Than Fiction tracked a six-song EP at Planet Dallas. Rick Rooney engineered the project for Core Entertainment...

STUDIO NEWS

Mercy College of Dobbs Ferry, NY, recently acquired the Center for the Media Arts in Manhattan. The new Mercy College for the Media Arts will offer five areas of media study: graphics technology, professional photography, audio and recording arts, broadcast announcing and television production...Jeff Wells' Sound Arts studio in Houston recently moved to a larger facility at 8377 Westview Drive, Houston, TX 77055...Chapman Recording Studios of Kansas City, MO, recently installed a Neve 8232 console into their 20-year-old, two-room facility. ■

—FROM PAGE 103, AUDITIONS

ing clean (nonclipped) power output. The PRM308Si's sounded great driven from a 250W/channel studio power amp, although I don't recommend pushing the speakers full out. I usually monitor in the 85 to 95dB range, and the PRM308Si's provided plenty of headroom.

On the front panel is a curious switch that allows the user to select either a "reference" (flat) or "equalized" frequency response. I use the term curious, because the monitors sound perfectly fine in the reference position; I couldn't understand why anyone would want to monitor in the equalized position, which attenuates the midrange, resulting in emphasized low- and high-frequency response. Peavey's intent was to provide a means of simulating how a mix would sound in a typical "home" environment. However, I found this switch invaluable for placating clients who, unaccustomed to hearing mixes on flat studio monitors, always seem to want the mix boomer and brighter than it should be. To me, this was the real intent of this feature, and I liked it. I also appreciated having the switch on the front panel, so you always know what position it's in.

The PRM308Si's caused some noticeable degradation when placed within 18 inches of computer or video monitors, so if your studio setup has visual displays at close quarters, you may want to consider Peavey's PRM308SV's, a black-cabineted model that includes internal magnetic shielding.

I used the PRM308Si's on a number of tracking and mix projects over a period of weeks and was impressed. The bass response is rock solid, the top end is smooth, and the midrange is right where it should be. There was a discernible bit of edginess at the two crossover points (300 and 3,000 Hz), but this was extremely minor and does not appear at critical frequencies.

Best of all, the Peavey PRM308Si monitors offer a nonhyped reproduction of what's coming off the tape. Retailing at \$899/pair, these are worth checking out by anyone seeking a reliable studio reference.

Peavey Electronics, 711A Street, Meridian, MS 39302; (601) 483-5365. ■

—FROM PAGE 131, TONY BERG

lyrics are exceptional—very smart, very funny and very salient. It's guitar, bass and drums with the two vocals and almost no enhancement. We took our time and there was no pressure, and Tchad Blake did a great job tracking it.

Was Tchad using all those dirty compressors he likes so much?

Oh yeah, and these Spectrasonic things that shouldn't be in a toy closet—I love them! Tchad is a one-of-a-kind character. I think if he chooses to be, he would be a very successful producer. He's very sensitive, he has great instincts for material, and he can get sounds unlike anyone.

When you produce someone like Michael Penn, who you have a long relationship with and who has a lot of ideas about his own music, are you making most of the choices about instrumentation song to song, and how things will play in the mix? Free For All has some really nice, unusual combinations on it.

I think you're touching on the producer's biggest dilemma, which is, Who's in charge? I would say that the artist is in charge. That isn't to say I won't duke it out until the very end; I will. But when all is said and done, and the record is in the stores, it's his album, not mine, and I would never insist on redetermining the artist's vision of a song. It's not my place to do that. It's my place to enhance it and perhaps expose the artist to things he wouldn't otherwise be exposed to. And argue vehemently, if I need to.

But, for instance, would it be Michael's idea to put a djembe [an African drum] on one track?

Michael is quite a musical guy, and when you walk into my studio, I have not only 40 guitars and 40 amplifiers, all museum-caliber, I've also got maybe 45 to 60 ethnic instruments on the walls that, even if you don't know what they are, your curiosity inevitably will lead you to pick one up.

You've worked with so many interesting songwriters. I think Edie Brickell is really underrated; Ghost of a Dog

was brilliant, though I guess it wasn't too successful compared to the first record.

I love that record. She is amazing. She's a very unusual woman. There's an aspect to her that is much older than her years.

We made her album at Bearsville, and one day she and I were sitting outside on a porch, and I had a dobro and I was just fooling around, and as I did that a chord progression began to develop and then a very distinct structure to the song. And I'm just sitting there, and Edie is silent while I'm doing this. I'm not exaggerating—after five minutes Edie sang an entire song to it: verse, chorus, complete lyrics. And in my opinion it was the most extraordinary thing we did on the entire album. I turned to her and said, "This is unbelievable. I don't know what happened here, but we've got to go in and record this." And she said, "No, I can't." Apparently, the lyrics she came up with were very personal and related to something specifically that had happened to her family, and she said she could never sing it again. So that song is in the ether. I have a funky little cassette of it.

Do you see a thread in the kind of artists that appeal to you? Obviously, you like strong songwriters.

That's what I respond to more than anything—people who are literate, who have an original way of articulating a thought. I don't know how you feel, but I frankly think there are maybe about ten lyricists in all of pop music right now that have anything original to say. It's a dire time for lyricists. Just listen to the radio.

I've never trusted the radio to be a standard of what's good out there.

But when we were kids, the lyric content of what was on the radio was really provocative. And with the exception of rap music—which I don't think is necessarily very lyrical, but at least it has something on its mind—the radio is filled mostly with really vapid stuff. That's what I hope I can change with the people I'll sign to Geffen. They're out there; I know that. And I should be able to find them. ■

Blair Jackson is managing editor of Mix.

Northeast RECORDING STUDIOS

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.



The Music Palace of Long Island, N.Y., was designed by world-renowned acoustician Tom Hidley. The studio features an SSL 4000 G Series console with Ultimotion, two Studer 820s and a Sony 3348 digital multitrack. The recording rooms include a large, live drum room and two iso booths. Recent clients include Peter Gabriel, Color Me Badd, Public Enemy and Lisa Stansfield. **Photo:** Lenny Marks/Image Photography.

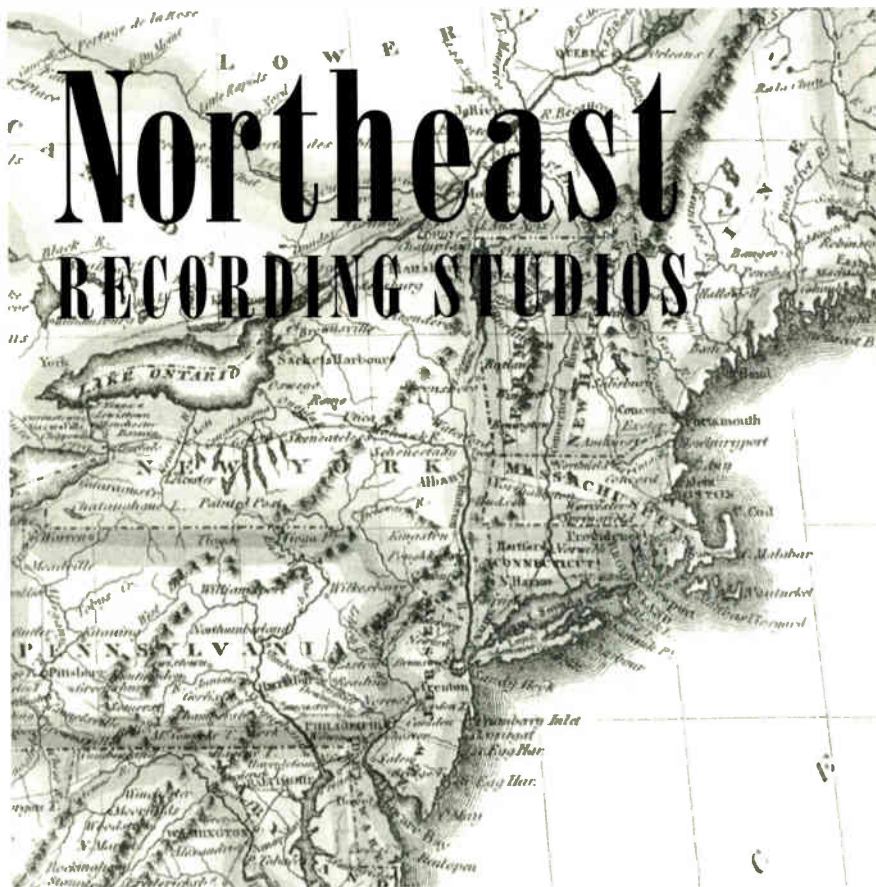
C O N T E N T S

158 Connecticut	167 New Hampshire, New Jersey
160 Delaware, District of Columbia, Maine, Maryland	170 New York
164 Massachusetts	180 Pennsylvania
	182 Rhode Island, Vermont

Upcoming Directory Deadlines:

Facility Designers & Suppliers: **May 7, 1993**
 Southern California & Southwest Studios: **June 8, 1993**
 New Products for 1994 (AES Issue): **July 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 Boldface 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!



"It was smooth and fine, just walking around St. Marks Place playing on kazoos and digging the streets filled with goofy beautiful faces. Parking our asses outside the record store there listening to some sparks fly out of an unknown album of jazz...literal sparks, all around as that music ran."

—Jim Carroll

CONNECTICUT

ALPHA PROFESSIONAL AUDIO INC.



12 Charcoal Rd., Norwalk, CT 06854; (203) 866-4139. Owner: David LeVan. Manager: Annamarie LeVan.



AMBIENT RECORDING CO.
Stamford, CT

—SEE LISTING TOP OF NEXT COLUMN

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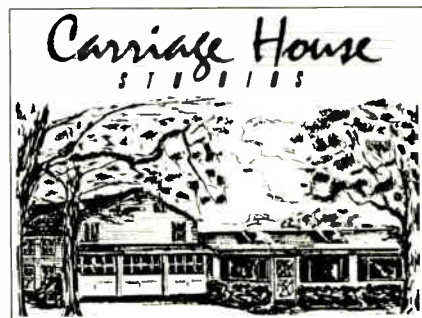


65 High Ridge Rd., Ste. 334; Stamford, CT 06905; (203) 968-9882; FAX: (203) 968-9882. Owner: CSS. Manager: Mark Conese. Dimensions: Room 1: studio 50'x30' control 22'x20'. Mixing Consoles: 30-input totally discrete Class A electronics tracking console, SSL 6000 E/G w/G computer and Total Recall. Audio Recorders: Studer A800 MKIII 24-track, Ampex AG440C 15/30ips 2-track, Ampex 351 tube 2-track, (2) Tascam DA-30 DAT, (2) Tascam 122 MKII. Monitors: (2) George Augspurger custom control w/subwoolers, (2) Yamaha NS-10M, (2) Westlake studio, (3) Yamaha PC5002m, Yamaha B-1, Yamaha B-2, (4) Crown, Hatler. Other Major Equipment: (4) EMT tube reverb plate, Lexicon 224 digital reverb w/LARC, Lexicon PCM70, Lexicon PCM41, Lexicon Prime Time delay, Yamaha REV7, Yamaha SPX90, Eventide H3000, (2) Alesis Quadraverb, Teletronix LA-2A, (4) Neve 2254e comp/limiter, (6) dbx 160 compressor, (2) UREI 1176 LM, Pultec tube EQ, (2) API 550A EQ, Yamaha recording custom drums, assorted snare drums, 1917 Mason and Hamlin 6' grand, (4) 12-channel powered headphone mixers, lots of Neumann, AKG, Sennheiser, RCA, Beyer mics. Specialization & Credits: Located in the New England countryside, yet just 45 minutes from downtown Manhattan, Ambient is the perfect choice for artists who appreciate a private working atmosphere. Ambient Recording was professionally designed and built from the ground up to be a world-class recording facility. Our commitment to quality shines through from the amazing-sounding 25,000-cu.-foot live room to the gold connectors and oxygen free copper cabling, as well as our custom-designed totally discrete class A tracking electronics and the latest control room design with custom George Augspurger monitors. Natural light in every room, fresh air, local walking trails, great food selection and Cindy's famous cookies.

BLANK PRODUCTIONS/BLANK TAPES



1597 Hope St., Stamford, CT 06907; (203) 968-2420; FAX: (203) 329-7193. Owner: Bob, Lola, Ken Blank. Manager: Bob Blank.



CARRIAGE HOUSE STUDIOS
Stamford, CT

CARRIAGE HOUSE STUDIOS



119 Westhill Rd., Stamford, CT 06902; (203) 358-0065; FAX:

(203) 964-4988. Owner: Johnny Montagnese. Manager: Patricia Spicer. **Specialization & Credits:** Located on the grounds of an old New England estate, the Carriage House is 40 minutes from New York City, in Stamford, Connecticut. The Carriage House is an artistic retreat offering state-of-the-art technology with grass-roots attention to service. Producers, engineers and artists have returned to the Carriage House because they have enjoyed an environment that promotes artistic focus and project manageability. The studio layout is very effective when trying to do many elements at the same time. The live room, made of hardwoods and stone, provides excellent acoustics for drums, vocals, acoustic instruments or live chamber application. The Main Room is half-carpet/half-wood with two iso booths on either side and an air lock, which doubles as a third iso booth. The Control room is built around an SSL 4048 EQ w/TR. Accommodations are very private and include 3 bedrooms, a living room, a kitchen and cable TV.

DOC ROCK DIGITAL PRODUCTIONS



3700 Durham Rd.; Guilford, CT 06437; (203) 457-1032. Owner: Bob Nary. Manager: Bob Nary.

GRACE RECORDING STUDIO INC.



159 Pelham Ave.; Hamden, CT 06518-2524; (203) 288-9771; FAX: (203) 248-9442. Owner: Fred Rossomando, Lee Walkup. Manager: Richard Osterlind.

BOB JOHNSON AUDIO ENGINEERING



7 Crofut Rd.; Naugatuck, CT 06770; (203) 729-7871; FAX: (203) 269-1204. Owner: Bob Johnson.

MARITIME RECORDING STUDIO



18 Marshall St.; Norwalk, CT; (203) 866-1731. Owner: Richard Prackup. Manager: Leila Serrano.

MEDIA ARTS CENTER/NICKEL STUDIOS



753 Capitol Ave.; Hartford, CT 06106; (203) 951-8175. Owner: Jack Stang, producer. Manager: John Bolduc.

PRESENCE STUDIOS



13-B Riverside Ave.; Westport, CT 06880; (203) 467-9038; FAX: (203) 221-8061. Owner: Jon Russell. Manager: Jon Russell. Engineers: Joe Carrano, Mark Diamond, Welcome. Dimensions: Room 1: studio 30'x34', control room 24'x22'. Room 2: studio 12'x14', control room 12'x12'. **Mixing Consoles:** SSL 4056BG-TR G. **Audio Recorders:** Studer D-D820-48 48 digital, Studer A827 analog, Studer A820 TC 1/2", Ampex ATR-800 1/4" 2-track, Panasonic SV-3700 DAT, Panasonic SV-3500 DAT, Panasonic SV-250, (40) Sony TCK-620 real time duplication, (2) Tascam 122MKIII. **Digital Audio Workstations:** Fairlight Series III CMX. **Monitors:** (8) Hafler DH-220, (2) Hafler DH-500, Hafler DH-5000 monitor amps, (2) Westlake HR-7U, (2) Westlake TM-1, (4) Yamaha NS-10M, (2) Tannoy PBM-6.5. **Other Major Equipment:** (2) Oolby 361 A/SR, (3) TimeLine Lynx, Lexicon 480L 3.0, Lexicon 224XL, Lexicon PCM70, Lexicon PCM 60, TC 2290 11 sec. (4) Roland SDE-3000, Lexicon Super Prime Time M97, Loft 441 analog delay, (2) Marshall AR-3000 tape eliminator, Eventide H3000 B, Eventide H949, (2) Yamaha REV7, (3) Yamaha SPX90, (4) Neve 1073 EQ, (2) Drawmer DS-201 gate, Drawmer 1960 stereo comp/limiter, (2) UREI LA-2A, (2) UREI 1176LN, Summit Audio TLA-100, dbx 162, dbx 902 de-esser, (4) dbx 165 over easy, (2) Tube-Tech PE-113, dbx 905 parametric, Roland SBX-80, Yamaha C1, Sony BVU-950 3/4", Proton 600M monitor, call for mic selection. If we don't have the musical instrument you're looking for, we'll get it.

PULSEWAVE RECORDING STUDIO



19 Norwood Terr.; Trumbull, CT 06611; (203) 268-1018. Owner: John P. Mozzi. Manager: Keith Chirgwin. Engineers: John P. Mozzi.

—LISTING CONTINUED ON NEXT PAGE

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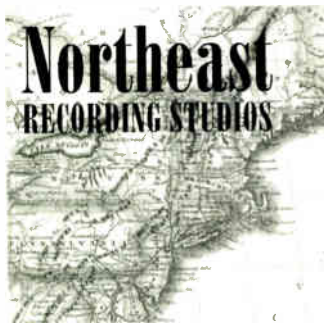
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—LISTING CONTINUED FROM PREVIOUS PAGE

Fred Louis, Keith Chirgwin. Dimensions: Room 1: studio 22'x25', control room 13'x16'. Room 2: studio 20'x11'. Mixing Consoles: Sony MXP 3036. Audio Recorders: Sony JH-24, Alesis ADAT, (2) Panasonic SV-3700 R-DAT. Digital Audio Workstations: Digidesign Sound Tools II. Monitors: Tannoy PBM-8, UREI 809, (2) Yamaha NS-10, EV MS-802, Genelec 1031A. Other Major Equipment: Lexicon 300, Lexicon PCM70, Yamaha SPX1000, (4) Korg SDD-3000, Aphex Dominator II, Aphex Expressor, (2) dbx 160X, Drawmer DS-201, Neumann U87, Bruel & Kjaer 4011, (2) Bruel & Kjaer 4006X, AKG C414-ULS, (2) AKG C-535, (9) Sennheiser MD-421, (2) Sennheiser MD-441, Korg O1W/FD, Korg WaveStation AD, Korg M-1 REX, Kurzweil 1200, Macintosh IICI computer.

RBV PRODUCTIONS INC.



920 N. Main St.; Southbury, CT 06488; (203) 264-3666; FAX: (203) 264-3616. Owner: Evan Jones, Moira Jones. Manager: Marjorie Jones.

Pro Audio dictionaries and technical reference guides are available through the Mix Bookshelf catalog. Call toll-free (800) 233-9604 for your free copy.

REEL HITS



15 Bridge Rd.; Weston, CT 06883; (203) 221-7793; FAX: (203) 221-1110. Owner: Dean & Doriane Elliott. Manager: Al Payson.

REELSOUND RECORDING



53 Old Fairwood Rd.; Bethany, CT 06524; (203) 393-3819. Owner: Dan Fiorillo. Manager: Dan Fiorillo.

SOUND SITUATION



130 Griswold St.; Glastonbury, CT 06033; (203) 633-1952. Owner: David Budries. Manager: David Budries.

STAR CASTLE RECORDING



36 Tamarack Ave., Ste. 201; Danbury, CT 06811; (203) 746-0464; FAX: (203) 746-0464. Owner: Robert Batesole. Manager: Robert Batesole.

STUDIO UNICORN



109 Lenox Ave.; Bridgeport, CT 06605; (203) 333-0736; FAX: (203) 333-0736 + *0. Owner: Paul Avgerinos. Manager: Paul Avgerinos.

THREE COMMUNICATIONS PRODUCTIONS



510 Main St.; Middletown, CT 06457; (203) 347-8439. Owner: Michael Arateh. Manager: Michael Arateh.

TROD NOSSEL RECORDING STUDIOS



10 George St.; Wallingford, CT 06492; (203) 269-4465; FAX: (203) 294-1745. Owner: Thomas "Doc" Cavalier. Manager: Edyth Mercier.

VISION PRODUCTIONS



27 Olcott St.; Manchester, CT 06040; (203) 645-7030. Owner: Vizion Enterprises. Manager: Steve Sossin.

DELAWARE

TARGET RECORDING STUDIO



801 Valley Rd.; Newark, DE 19711; (302) 731-4431. Owner: Marc Moss. Manager: Keith Moss.

DISTRICT OF COLUMBIA



DC POST INC.
Washington, DC

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1155 21st St. NW; Washington, DC 20036; (202) 466-7678; FAX: (202) 223-0992. Owner: Tom Angell. Manager: Adam Hurst. Engineers: Skip S. Relle Dimensions: Room 1: studio 13'x7', control 18'x22'. Room 2: studio 13'x7', control 18'x22'. Mixing Consoles: DDA DCM232 2x32-input, Yamaha MR142. Audio Recorders: Studer A820 24-track, Studer A820 2-track, NED Post Pro 8-track direct-to-disk, Panasonic SV-3700 DAT, Studer A727 CD player. Monitors: Bryston 48P, (2) Crown D-75 amps; Tannoy FSMU, Tannoy PBM 6.5, Klark-Teknik Jades, Auratone. Other Major Equipment: Dolby SR on all tracks, Alpha Audio Boss System w/TimeLine Lynx, Lexicon 480L, Lexicon PCM70, Quantec QRSX1 room simulator, Eventide H3000 Ultra-Harmonizer, dbx and Valley International noise gate/comp, Klark-Teknik DN7 16 digital delay, BBE 802 audio compressor, Drawmer DS201 noise gate, Aphex Compellor, AKG C-414, Neumann U-47. Extended Equipment Description: Synclavier w/32MB, 32 poly 32 FM, 16 outs, optical disk, Roland D-550, Yamaha TX802, all formats (1", Beta SP, 3/4" SP, D2, VHS, Mitsubishi 35" monitor. Specialization & Credits: On-air programming for The Learning Channel, music composition and SFX editing for ABC/NHK Pearl Harbor, Two Hours That Changed the World; Washington Post's production The Secret Files: Washington, Israel and the Gulf; local and national commercials for Mac Donalds, COMSAT, etc.

LION AND FOX RECORDING INC.



1905 Fairview Ave. NE; Washington, DC 20002; (202) 832-7883. Owner: Hal Lion, Jim Fox, Sally Lion. Manager: Rob Buhman.

RODEL AUDIO



1028 33rd St. NW; Washington, DC 20007; (202) 338-0770; FAX: (202) 338-7695. Manager: Renee Funk.

SOUNDWAVE INC.



2000 P St. NW, Ste. 200; Washington, DC 20036; (202) 861-0560; FAX: (202) 466-2377. Manager: Trevor Seneff.

MAINE

TUNDRA STUDIOS LTD.



45 Casco St.; Portland, ME 04101; (207) 772-1222; FAX: (207) 775-0448. Owner: Tundra Studios. Manager: Tim Tierney.

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7101 Wisconsin Ave., Ste. LL01; Bethesda, MD 20814; (301) 294-2222. Owner: Jeff Kidwell.

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315E Howard Ave.; Rockville, MD 20850; (301) 279-0937. Owner: Bob DeWald. Manager: Marco Delmar.

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3301 Decatur Ave., Kensington, MD 20895; (301) 946-7364; FAX: (301) 946-1687. Owner: Ed Eastridge. Engineers: Ed Eastridge, Ron Freeland, Greg Hartman, Jim Crenca. Dimensions: Room 1: studio 26'x32', control 24'x8'. **Mixing Consoles:** Sony MXP-3036, Soundcraft 200 B, (2) Shure FP410. **Audio Recorders:** (2) Sony APR-24, (3) Alesis ADAT, (4) Panasonic SV-3700 DAT, (2) Panasonic SV-3500 DAT, Tascam 202 WR. **Monitors:** (2) Meyer HD 1, (2) UREI 811 Time Align, (2) Yamaha NS-10, (2) JBL 4408, (2) JBL SR 4725 (studio). **Other Major Equipment:** 24-ch Dolby SR noise, dbx noise reduction 2-ch, (2) Lexicon PCM 70, Lexicon PCM 60, Roland DEP-5, Klark-Teknik, Yamaha SPX1000, Yamaha SPX90, Lexicon Prime Time delay, Audio Arts 4200A stereo parametric EQ, (2) UREI LA-3A, UREI stereo graphic EQ, dbx 900 rack w/de-esser, comp/limiter, noise gate, parametric EQ; (2) dbx 160 compressor, BBE 802, (6) Valley People Kepex, (2) dbx 900 rack, 60 input splitter w/Jensen transformers. **Extended Equipment Description:** Extensive list of microphones by: Neumann, Sanken, AKG, Sennheiser, Shure, Crown; Bryston 3B, QSC, Crown DC-300, Crown D-150, Kawai 9' grand piano, Akai S1000 digital sampler, Fender Vibroverb, Marshall JMP half stack, Yamaha KX 76 MIDI controller, Yamaha 802 synth, Roland JC-120, Roland GR-300 synth guitar, Korg DDD-1 drum synth, Oberheim OB-8 synth, JVC CR850 u 3/4" deck. **Specialization & Credits:** During the last year we have done projects with Ralph Stanley, Nils Lofgren, Danny Gatton, the Johnson Mountain Boys, Rodney Crowell, Delbert McClinton, John P. Kee, Arlen Roth, Edwin Hawkins, The Nighthawks and Raging Slab. We also did a complete series of radio programs for The Smithsonian and National Public Radio, totaling 13 shows with various folk musicians from around the world.

CENTRAL STUDIO



5629 Annapolis Rd., Bladensburg, MD 20710; (301) 277-8508. Owner: Kevin Mora. Manager: Monsy.

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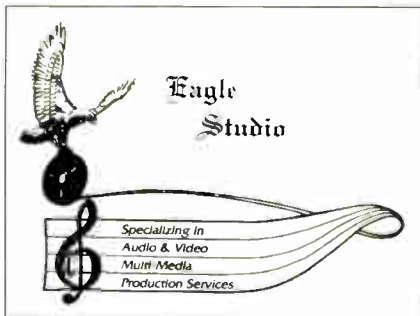


2105 Maryland Ave., Baltimore, MD 21218; (410) 685-8500; FAX: (410) 685-0313. Owner: Michael Collins, Mark Young. Manager: Jacci Burfield.

JACK DANIELS PRODUCTIONS



8056 Tuckerman Ln., Potomac, MD 20854; (301) 983-9595; FAX: (301) 983-8750. Owner: Jack Daniels. Manager: Jack Daniels.



EAGLE STUDIOS
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812 Washington Ave., La Plata, MD 20646; (800) 286-2138; FAX: —LISTING CONTINUED ON NEXT PAGE

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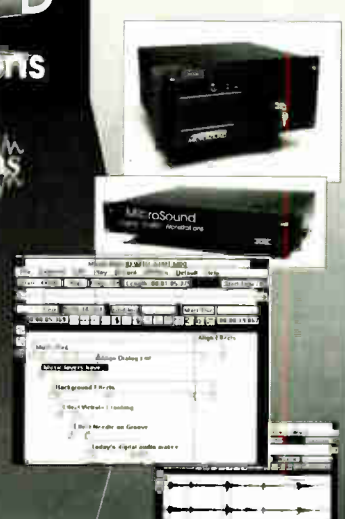
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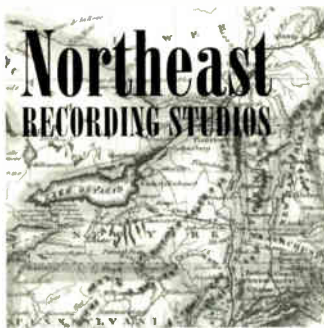
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—LISTING CONTINUED FROM PREVIOUS PAGE

(301) 870-2138. Owner: Joe Williams. Manager: Ronnie Drenica. Engineers: Paul Butz, Ronnie Drenica, Joe Williams, Richard Van Nostrand. Dimensions: Studio: 48'x16', control room: 15'x20'. Mixing Consoles: Tascam M-3700, Tascam 688, Carvin 1644, Biamp. Audio Recorders: Tascam MSR-24, Tascam 238, (2) Tascam DA30, Tascam 122 MkII, Tascam 202 MkII. Digital Audio Workstations: Amiga 3000, Korg D1W/FD, Yamaha SY99. Monitors: (2) TDA 265-ME-AV, (2) Pioneer PL-12, Furman HA-6, (4) Furman HR-2. Other Major Equipment: Ensoniq DP/4, Alesis Quadraverb Plus, (2) ART DR-X 2100, (2) ART MDC 2001, Ashly SG-35E, BSS FCS-960, dbx 160XT, Tascam MTS-1000, Tascam IF-1000, Sony VD-9600, JVC SC-1000 U, Panasonic AG-7750, E-mu Proteus I, E-mu Proteus II, Kurzweil EG-20, (16) EV assorted mics, (2) Shure SM57. Specialization & Credits: We are located in beautiful Southern Maryland, only 45 minutes from Washington, D.C., 1 hr. from Baltimore, Md., and 1-1/2 hrs. from Richmond, Va. Our 2000-sq.-ft. facility affords a very comfortable and relaxed atmosphere and our four engineers collectively have over 100 years of musical experience. 60 years of engineering experience and 40 years of computer experience. Recent clients have included: Danny Gatton, Billy Hancock, Dave Elliott, Dave Chapel, NEECCII, Dynamo Grin, Elevation Zero, Butterfly Clan, Green House, Shattered Blue and Kingdom Records.

EDGEFIELD RECORDING COMPANY

5523 Mountville Rd.; Adamstown, MD 21710; (301) 874-5394; FAX: (301) 874-0844. Owner: John Walker, Karen Kerber. Manager: John Walker.

1137 RECORDING

1137 Fillmore St.; Baltimore, MD 21218; (410) 889-4228. Owner: GRC Inc. Manager: Robert Friedman.

FLITE THREE RECORDINGS LTD.

1130 E. Cold Spring Ln.; Baltimore, MD 21239; (410) 532-7500; FAX: (410) 532-5419. Manager: Louis R. Mills, Jr. Engineers: Louis R. Mills Jr., Frank J. Ayd IV. Dimensions: Room 1: studio 21'x27', control 22'x16'; Room 2: 22'x19', control Foley stage. Mixing Consoles: Automated Processes Inc. 2614, (2) Sony MC2000. Audio Recorders: Studer B67-UK full-track 1/4" ATR, (4) Studer B672/2-UJK 2-track 1/4" ATR, (2) MCI JH-110C-3-18-VP, Panasonic SV-3500 DAT, (2) Nakamichi MR1, (3) Yamaha KX930, Tascam 133. Digital Audio Workstations: AMS AudioFile Plus +8-6 audio disk recorder. Monitors: (2) UREI B13B, (6) Auratone Near-Field, (2) Tannoy near-field, (2) Tannoy PBM-6.5 (4) JBL 4333, JBL 4311. Other Major Equipment: Eventide H3000S Ultra-Harmonizer, (5) UREI 176LN comp/limiter, (2) UREI LA4 comp/limiter, UREI 565 Little Dipper filter, (4) UREI 537 graphic EQ, (2) UREI LA-2A Leveling amps, (2) dbx 160 limiter, Invoconics 201 comp/limiter, Lang PEQ2A EQ, Drban DR245F stereo synthesizer, (2) Panasonic SP10 MkII turntable, (2) McIntosh 2100 power amplifiers, (6) Crown P150 amplifiers, Crown RTA-2 real time analyzers, 6517E Cinema Products filter set, (4) Dolby 361 noise reduction system, Dolby M16, Yamaha SPX-90 II effects/reverb generator, Symetrix T1-101 telephone interface, (2) Crown DC300A dual channel amplifiers. Extended Equipment Description: Geffen Systems M&E Music & SFX Library Computer, (14) sound effects library, (2)1 production music libraries, (2) Neumann U84-1, U86-1, (5) U87-Z, (2) U88-1, (2) U89-1, (2) U47FET condenser, (4) AKG C414TL Transformerless condenser, (2) Electro-Voice RE20, (2) AKG 451, (4) Senneheiser MD241, (2) Gates V/valley noise gate, (4) Accurate Sound T101-3 high-speed dubbers, Ampex VPR3 VTR, Panasonic D350 composite digital studio VTR, Sony BVW-75 Super Beta VTR, Yamaha C3 grand. Specialization & Credits: Digital Mix-to-Pix, audio sweetening, audio layback to video, ADR, voice-over and music recording and editing, both digital and analog, high-speed reel-to-reel duplication, music & sound effects selection, casting and paymaster services for AFTRA and SAG, the area's largest selection of SFX and production music. Voice-over, music recording and ADR for *Homicide: Life On The Streets* (NBC-Baltimore Pictures-Barry Levinson); *Avalon* (Tri-Star); *He Said, She Said* (Paramount); *Making of Patriot Games* (Turner); *Civil War* (PBS); projects and shows for Radio Smithsonian, NPR, APR, Pacifica Radio, Disney, Warner Brothers, etc. A wide variety of national and local commercials, industrials, training tapes and infomercials for KingWorld, Cornerstone Pictures, First National Bank, Vince Clews & Associates, Johns Hopkins, Wendy's, EUE

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Screen Gems, Giant Foods, BMW, T Rowe Price, Westat, Subaru, Burger King, Richardson, Myers and Donofrio; Trahan, Bruder & Charles; Eisner & Associates; Fisher Price Toys, etc.

HIGH HEEL STUDIOS INC.

425 Fawcett St.; Baltimore, MD 21211; (410) 235-0920; FAX: (410) 889-8606. Owner: Arnold Geher. Manager: Arnold Geher.

HIT AND RUN STUDIOS INC.

18704 Muncaster Rd.; Rockville, MD 20855; (301) 948-6715. Owner: Steve Carr. Manager: Steve Carr.

HI-TOUCH STUDIOS

10200 Owen Brown Rd.; Columbia, MD 21044; (301) 596-6612; FAX: (301) 229-0289. Owner: N.B. Tharp. Manager: Steve Antosca.

MOMMA EVE SOUNDS

4209 Fords Lane; Baltimore, MD 21215; (410) 764-7704. Owner: Larry Lee McCants. Manager: Evelyn Floyd. Engineers: Larry Lee McCants, Carel Floyd Jr. Mixing Consoles: Tascam M3500, Yamaha MV1602. Audio Recorders: Tascam MkII, Tascam DA-30. Monitors: Yamaha NS-10M, custom made. Other Major Equipment: Yamaha GC 2020B II comp/limiter, BBE 422A Sonic Maximizer, BBE 822A Sonic Maximizer, Alesis 3630 comp/limiter, Rane PE115 parametric EQ, Yamaha Q2031 stereo graphic EQ, (3) Yamaha TX81Z sound modules, Roland U220 sound modules, Peavey SX sampler, Peavey SP sample playback, Roland RBM drum module, DigiTech Vocalist effects, Yamaha R100, Alesis Quadraverb, (3) Alesis MIDIVerb II, Roland Dctapad, Yamaha RX5 drum machine, Yamaha MJC8 MIDI junction controller, Yamaha KX88 keyboard controller, Audio-Technica ATM63, ATM4033 microphones. Extended Equipment Description: (3) Alesis Micro Cue amp, Yamaha QX5 sequence, JVC XLV251 disc player, Technics SP1200 turntable, (4) Tascam PB32P patch bays, (4) Yamaha RH5M headphones, MIDIMan Synchman Plus SMPTE sync, MIDIMan MIDI Time Window, Hafler Pro 230 power amp, Tascam P2 3500 power amp, Sharp boombox.



OMEGA RECORDING STUDIOS
Rockville, MD

OMEGA RECORDING STUDIOS

5609 Fishers Ln.; Rockville, MD 20852; (301) 230-9100; FAX: (301) 230-9103. Owner: Edward Petersen. Manager: Bob Yesbek. Engineers: Bill Brady, Chris Murphy, Brian Gerstner, Brian Smith, Tom McCarthy, Mark Hood. Dimensions: Room 1: studio 50'x40', control room 27'x24'. Room 2: studio 26'x25', control room 23'x19'. Room 3: studio 22'x20', control room 20'x15'. Room 4: control room 27'x27'. Mixing Consoles: Neve V3-60 w/Flying Faders automation, SSL 4048 E w/Total Recall 48x32, API 2488 w/Fadex automation 32x32, Audionics Grandson 24x16. Audio Recorders: Mitsubishi X-850 32-track digital, (3) Studer A-80 MkIV 24-track, Studer A80 2-track 1/2", (2) Studer A810 2-track 1/4" w/CT SMPTE, (6) Studer B67 2-track 1/4", Ampex A-800 4-track 1/2", (6) Sony/Panasonic DAT. Digital Audio Workstations: Studer/Dyaxis one-hour disc editor/recorder. Monitors: (2) Westlake TM-1 modified, (2) UREI B13C, (2) UREI B11, assorted small speakers including Yamaha, Tannoy, etc. Other Major Equipment: EMT 250/251 digital reverb, AMS RMX-16 digital reverb, (4) Alesis Quadraverb, (6) Lexicon PCM70, (8) Yamaha SPX90 II, (8) Drawmer noise gate, (2) Dolby M-24 noise reduction, (2) Dolby SR noise reduction, Eventide Ultra Harmonizer, TC 2290, (2) EMT 140 ST plate, (2) Eventide Harmonizer, (3) Lexicon Prime Time, (4) DeltaLab Effectron, Sony REV-1, EMT 240 Gold foil reverb, (12) Kepex noise gate, (6) dbx compressor, (4) TimeLine Lynx synchronizer, (19) Briston/Crown monitor amplifier. Extended Equipment Description: Steinway B grand piano, Kawai grand piano, Baldwin upright piano, Kurzweil 250 w/all sound blocks, (2) Roland D-50, D-550 & SBX-80, (4) Roland JXP-3, PG200, D110, S-330, (2) Dberheim DPX-1, Matrix-12, (2) Korg M1, M3, (2) Yamaha DX7, TX802, E-mu Emulator II, Mac II computer w/380-meg HD, SLP-2500 CD player, (8) Nakamichi cassette recorder, (2) Pultec PEQ-1, Sontec (GML) stereo parametric EQ, Sontec (GML) stereo comp/limiter, (4) UREI 1176LN comp/limiter, (9) UREI LA-4 comp/limiter, (96) assorted condenser and dynamic mics, (2) full set Yamaha drum. Specialization & Credits: Omega Studios also offers State- and Veterans-approved

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courses in the Recording Arts and Sciences. Comprehensive certificate programs in basic, intermediate and advanced recording technologies and practices, electronic music and MIDI, music business, advertising, production and studio assistantship are offered in both evening and full-time curricula. Program tuitions range from \$600 to \$3,500 depending on the particular programs the student wishes to take. Omega studios is celebrating its 25th year in business and the Omega Studio school is celebrating its 15th year in business. Bob Yesbek is the creator and director of the Omega Studios' School of Applied Recording Arts & Sciences.

OZ



310 E. Middle St.; Baltimore, MD 21202; (410) 234-0046; FAX: (410) 539-2835. Owner: Voltage Studios Inc. Manager: Stephen Palmieri.

RED APPLE WORX INC.



PO Box 441532; Fort Washington, MD 20749; (301) 292-4415. Owner: Carl W. Fletcher. Manager: Carl W. Fletcher. Engineers: Ralph E.C. Maunder (principal engineer), Jesse Meman (staff arranger), Carl W. Fletcher (producer, engineer), Tom Saputo (producer, engineer), Mark (Doc) Deffenbaugh. Dimensions: Room 1: studio 23x18, control room 13x11. Room 2: studio 7'6"x7'6", control room 5'x5'6". Mixing Consoles: Allen and Heath CMC-32 32x16, Sound Workshop 1280-B 12x8. Audio Recorders: Fostex E-16 16-track w/Oolby C, Fostex E-2 3-track, Tascam 234 Syncassette 4-track, Panasonic SV-3500 DAT, (2) Technics RS-8905 w/Dolby B, C, dbx. Monitors: McIntosh 2105, McIntosh 2100, Bose 1801, Yamaha P-2150, Yamaha P-2075, BGW 6500 amplifiers; (2) Gauss 7258, (4) TOA 280-ME 3-way reference, (2) TOA 265-ME-2 way reference, (4) Hot Spots. Other Major Equipment: (2) Valley People Kepex II, Ashly Audio SG-33 noise gate, BBE aural processor, (2) Fostex 4030/4035 synchronizer and remote, Alesis Xtic digital reverb, Orban 1113B dual reverb, Biamp MR140 pro reverb, ROS digital delay, Valley People Gain Brain II, (2) Yamaha analog delay, (2) MIOIverb II, Korg DRV-3000 digital reverb, Yamaha SPX90, OSP 128+, Voyetra sequencer plus MkII, Yamaha KX88, Korg RK-100 remote MIOI controller, various microphones. Extended Equipment Description: Fender Chroma Polarix, Ensoniq ESQ-M synthesis module, Korg EX-8000 synthesis module, Korg EX-8000, Yamaha TX81Z FM tone generator, E-mu SP-1200 digital sampling percussion system, Akai VK90 Moog Source, Akai S900 digital MIOI sampler, Korg M1 digital workstation, Kurzweil GX-1000 guitar expander, Premier drumset and Roto-toms, Mesa/Boogie studio 22 amplifier, Peavey TNT-150 w/Black Widow speakers.

ROAR PRODUCTIONS AUDIO & VIDEO



6655-H Dobbin Rd.; Columbia, MD 21045; (800) 466-ROAR; FAX: (410) 381-9486. Owner: Steven and Jerome Rosch. Manager: Michael Hamilton.



SHEFFIELD AUDIO-VIDEO PRODUCTIONS
Phoenix, MD

SHEFFIELD AUDIO-VIDEO PRODUCTIONS



13816 Sunnybrook Road; Phoenix, MD 21131; (410) 628-7260; FAX: (410) 628-1977. Owner: John J. Ariosa Jr. Manager: Richard Van Horn. Engineers: Fred Derby, William Mueller, Gath Michael. Dimensions: Room 1: studio 50'x40', control 25'x20'; Room 2: studio 21'x16', control 22'x21'. Mixing Consoles: (2) SSL 4048 E/GIR, Neve 5104. Audio Recorders: (2) PCM 3324 Sony Digital, (2) Otari MTR 90 MkII, (2) Sony 3202 2-track digital, Studer 810, Studer A80 1/2", (3) Studer B67, (4) Panasonic 3700 DAT. Digital Audio Workstations: Pro Tools w/Mac Quadra & video fx. Other Major Equipment: (12) Sontec mic pre w/EQ, Lexicon 200, REV5, Lexicon 224XL, Lexicon TC 2290, AMS 15-80's, AMS RMX-16, EMT 1405, Eventide Ultra Harmonizer, Sony DAL-1000, Drawmer M-500, Sontec limiter/compressor, BBL-833, SPX90, SPX1000, Lynx TimeLine, REV7, AKG, Neumann, B&K, Crown, Sennheiser, Shure mics; UREI 813 and Yamaha NS-10 monitors; Yamaha C 7'4" piano, Hammond

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TURN TO PAGE 159 FOR AN EXPLANATION OF RECORDING SERVICE SYMBOLS.

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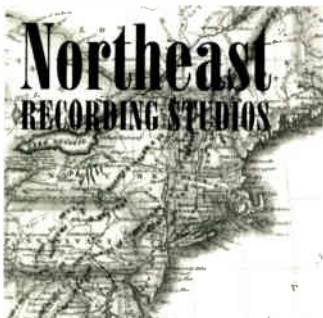
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B3 organ, Sonor drums, (2) video edit suites, 44x52 soundstage, 48' tractor-trailer remote audio truck w/SSL and Neve console, 30' remote video truck. **Specialization & Credits:** We specialize in remote audio recordings using our new 48' remote truck with both SSL and Neve consoles. We also specialize in lock-out packages for long-term record projects, which include accommodations. Some recent projects include Motown's *East Coast Family*; Atlantic Record's *Kix Live*; Capitol Records' *Renee Diggs*; TRS Records' *Lillian Axe*; *The Inauguration Special-Disney*, New Orleans Jazz Heritage Festival.

MASSACHUSETTS

ALBRECHT-SMITH



P.O. Box 120; Waban, MA 02168; (617) 265-0022. Owner: Kevin Smith.

BARKING SPIDER STUDIO INC.



12 Evergreen Rd.; Sudbury, MA 01776; (508) 443-8318; FAX: (617) 893-3749. Owner: Rob Bernstein/Steve Mallett. Manager: Steve Mallett. Engineers: Rob Bernstein, Steve Mallett, John Fannon. Dimensions: studio: 11'x14', control room 13'x14', Room 2: studio: 7'x9'. **Mixing Consoles:** Soundtracs Quartz 4800 w/MIDI muting and 40 I/O modules, Fostex 812 12x8x2, (2) Mackie 1202 12x2. **Audio Recorders:** Otari MTR-90 II w/auto locator, Tascam 38 8-track 1/2" analog, Tascam 32 2-track 1/4" analog, Tascam 238 8-track w/dbx, Panasonic SV-3700 DAT, Sony TCD-D3 DAT, Tascam 122 MkII cassette, (2) Tascam 112 cassette. **Monitors:** (2) Genelec S30 3-way tri-amped, (2) Yamaha NS10-M near-field, (2) JBL 4406, (2) Tannoy AVM-6.5. **Other Major Equipment:** Lexicon PCM-70 w/MRC, TC Electronic 2290, Eventide H3000S Ultra-Harmonizer, Lexicon LXP15, (2) Lexicon LXP1, Lexicon LXP5, (2) Yamaha SPX90, Roland SDE3000, (2) Alesis Quadraverb, ART Multiverb, Roland DEP-5, Tube-Tech PE1-C tube EQ, Summit Audio EOP-200A tube EQ, Klark-Teknik DN410 dual parametric, Klark-Teknik DN360 dual 31-band graphic, Ashly Audio GEQ-231 dual 31-band graphic, Drawmer M500 MIDI Dynamics processor, Drawmer 1960 tube compressor/mic pre, (2) Drawmer DL241 dual compressor/limiter, Klark-Teknik DN504 quad comp/limiter. **Extended Equipment Description:** Drawmer DS201 dual gate, Klark-Teknik DN514 quad auto gate, Ashly SG-35 quad gate, Apple Mac Ilii 5/105, (3) Apple Mac Ilii 5/80, Yamaha KX88, Korg M1, (2) Roland D50, (3) E-mu Proteus 1, E-mu Proformance/1, Akai S1000 HD sampler, Roland U220, Roland R8M, Neumann U87, AKG C414, MOTU MIDI Time Piece, (2) BBE 422 Sonic Maximizer, Akai ME35T audio-to-MIDI trigger, (2) AKG C460-B, (2) AKG C451-EB.

"BIG T" PRODUCTIONS



24 Haviland St. #8; Boston, MA 02115; (617) 267-2802. Owner: Anthony Schultz. Manager: Anthony Schultz.

BLUE JAY RECORDING STUDIO INC.



669 Bedford Rd.; Carlisle, MA 01741; (508) 369-0766; FAX: (508) 369-4616. Owner: Bob and Janet Lawson. Manager: Bob Lawson. Engineers: Mark Wessel, Mark Tanzer, Tina Hansen. Dimensions: Studio 38'x28', control room 18'x19'. **Mixing Consoles:** SSL SL4056E 56-channel G Series computer. **Audio Recorders:** (2) Studer A-800 24-track, Studer A-820 1/2" 2-track, Studer A-80 1/2" 2-track, Studer B-67 1/4" 2-track, Panasonic SV-3700 DAT, Sony PCM-2500 DAT, (3) Yamaha CS30. **Monitors:** UREI 813B customized time-aligned, Yamaha NS-10, AR 18-B, Auratone. **Other Major Equipment:** Dolby XP-24 24 channel SR noise reduction, Lexicon 224 XL reverb w/LARC, AMS RMX-16, AMS DMX-15-80, EMT 140 stereo tube plate reverb, Eventide H-3000 Ultra-Harmonizer, Focuserite EQ and mic pre's, (4) Pultec EQ, (3) UREI LA-2A tube limiter, (2) UREI LA-3A compressor, UREI LA-4A stereo compressor, (2) UREI 1176 limiter, (4) Lexicon PCM-42 delay, AKG ADP-68K effects processor, Yamaha SPX90, (2) Yamaha REV7, TimeLine Lynx synchronizer, (3) Bryston 4 power amps, Kurzweil K-2000 sampling keyboard, Macintosh II FX computer. **Extended Equipment Description:** Telefunken 251 tube mic, AKG C-12 tube mic, Neumann

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BLUE JAY RECORDING STUDIO INC.
Carlisle, MA

U-47 tube mic, Schoeps matched pair, (2) Neumann U-64 tube mic, Bruel & Kjaer 4006/4007, (2) Neumann U-87, KM-86, (3) AKG 414, Falcone 74" grand piano, (2) dbx 165 compressor, (2) dbx 160X compressor, TC 2290 digital processor, (2) Drawmer DS201 stereo noise gate, Drawmer 1960 mic pre's and tube compressor, Drawmer M-500 Dynamics processor. **Specialization & Credits:** Located 30 minutes from downtown Boston, Blue Jay offers state-of-the-art equipment and superior acoustics in comfortable, private countryside surroundings. Constructed in 1979, the uniquely designed, earth-sheltered facility reflects a commitment to technical excellence as well as attention to the needs of creative artists. Our recording room offers ample isolation as well as a bright central room. Our mix room gets rave reviews. Blue Jay artists include: Billy Joel Terence Trent D'Arby, Genesis, Pat Metheny, k.d. lang, Marky Mark, Roy Orbison, Amy Grant, Alice Cooper, Carly Simon, Boston, etc. Producer/mixer credits include: Danny Kortchmar, Peter Asher, Neil Dorfsman, Tom Lord-Alge, Rhett Davies, Mike Shipley, etc.

DEREK STUDIOS



850 Main St.; Dalton, MA 01226; (413) 684-0198. Owner: Gregory K. Steele. Manager: Gregory K. Steele. Engineers: James Hart, Bob Sweet Jr. Dimensions: Room 1: 45'x30', control room 18'x16'. Room 2: studio 10'x8'. Room 3: 45'x30', control room 23'x21'. Room 4: studio 8'x8'. **Mixing Consoles:** Amek/TAC Scorpion II 32x16 w/monitor EQ, Roland M-160, Tascam 8x2. **Audio Recorders:** Tascam SM-16 w/autolocator and dbx, Tascam 58 w/autolocator and dbx, Otari MX-5050B MkII, Panasonic SV-3700, Ampex 351 vintage tube, Onkyo TA-RW909, Aiwa WX-220, (2) Tandberg TCD 310 MkII. **Digital Audio Workstations:** Apple Macintosh SE 2meg/40meg HD, Mark of the Unicorn Performer 4.0, Mark of the Unicorn MIDI Time Piece. **Monitors:** (2) JBL 4435 bi-radial, (2) JBL 4425 bi-radial, (2) KEF 103.2, (2) Auratone 5C Sound Cube, Sony MDR-7506 headphone, AKG K-141 II headphone, AKG K-240 headphone, (2) Yamaha P-2200. **Other Major Equipment:** Lexicon Model 200, Lexicon PCM70, Lexicon Model 95 Prime Time II, Lexicon PCM42, Lexicon PCM41, (2) Lexicon PCM60, Eventide H3005E Ultra Harmonizer, (2) dbx 160, dbx 166, UREI LA-4A, Valley People Dual Dyna-Mite 430, Valley People Gate noise gate, Valley People 415 Dynamic Sibilance processor, BBE 822A, AKG 414EB, (3) AKG 451E, Beyer MC740, Beyer MC734, Beyer M260 ribbon, (2) Beyer M201, Electro-Voice RE20, (2) Neumann KM-84, (2) Sennheiser MD-421, (2) Shure SM81, (4) Shure SM57, (2) Shure SM53. **Extended Equipment Description:** Yamaha DX7 II FD, E-mu Proteus II, E-mu Performer piano module, E-mu SP-12 Turbo, Roland R-8, Roland PAD-80 controller, Roland D-110, Duerheim Matrix 6-R, Korg DSS-1, Gibson '59 Les Paul, Fender p-recision bass, Chickering grand piano, Hammond B-3 w/12 Leslie.

DOWNTOWN RECORDERS



DOWNTOWN RECORDERS
Boston, MA

DOWNTOWN RECORDERS



537 Tremont St.; Boston, MA 02116; (617) 426-3455; FAX: (617) 426-3455. Owner: Peter Cheung. Manager: Peter Cheung. Engineers: Joe Cuneo—chief engineer, Paul Sanni—second engineer. Dimensions: Studio 23'x28' plus four iso booths. **Mixing Consoles:** MCI/Sony 636 modified 28x4 fully automated, Roland M-24E 24-channel line mixer. **Audio Recorders:** Panasonic SV-3500 DAT, Tascam DA-30 DAT, MCI JH-24 24-track 2", MCI JH-110 2-track 1/2" and 1/4", Otari 5050B 2-track 1/4", Sony PCM-701 ES digital mas-

tering, Tascam 122 MkII. **Monitors:** UREI 813A, Yamaha NS-10M, Tannoy PBM-8 & PBM-6.5, JBL 4311, Auratone. **Other Major Equipment:** Roland S-50 digital sampler, Roland MC-500 sequencer, Yamaha TX812, Roland TR-808, TR-909, TR-727 drum machines, Roland R-8 Human Feel, E-mu SP-12 sampling percussion, (2) Technics SL-1200 MkII turntable w/Gemini mixer, TC Electronic 2290 12-sec. sampler and processor, Lexicon LXP-1, LXP-5 w/MRC controller, Lexicon 224XL w/LARC remote, Lexicon PCM70 digital processor, Yamaha SPX90 digital processor, Korg DRV-300, Alesis MIDVerb II, Alesis Quadraverb, Lexicon Super Prime Time, Lexicon Prime Time, Lexicon PCM42, Aphex Aural Exciter, BBE 802 Sonic Maximizer, (2) LA-4 compressor, (2) dbx 165A compressor, (10) Ashly SG33 noise gate, (4) Ashly CL-52 compressor, Sontec stereo mic preamp, Pearl DC-96; microphones: Neumann U-87, KM-88, AKG 414, 451, Crown PZM, Sennheiser MD-421, MD-441, Shure SM81, SM57. **Specialization & Credits:** Clients: K9 Posse, Arista, Atlantic Records Remix. Recent albums include The Pixies, Roger Miller and Marimolin w/Lyle Mays. National credits include Aerosmith, Peter Wolf, Nils Lofgren, Bon Jovi, Bonnie Bramlett. Direction: We've always believed that a great performance makes a great recording, so we make sure that the entire recording process is relaxed and enjoyable, while keeping everything at the highest professional standards. Our room was designed for a comfortable feel and a great live sound. Our staff is experienced, knowledgeable, and they know music and the music business so they can give you all the assistance you desire. All of our engineers are also musicians, so they know what it's like to be on the other side of the recording window. We're here to make your recording experience creative and enjoyable and, above all, to record great tracks. That's what we're best known for.

FISHBOWL PRODUCTIONS



89 Clinton St., 3rd Floor; Everett, MA 02149; (617) 389-5816. Owner: Joe Miraglio. Manager: Joe Miraglio.



GBH MOBILE
Boston, MA

GBH MOBILE



125 Western Ave.; Boston, MA 02134; (617) 492-2777 x2302; FAX: (617) 864-7927. Manager: John Voci.

HBS PRODUCTIONS INC.



PO Box 533; Cambridge, MA 02238; (617) 661-1971; FAX: (617) 661-1971. Owner: Bruce Bartone.

LYX MUSIC PRODUCTION & RECORDING



25 Foster St.; Worcester, MA 01608; (508) 752-6010. Owner: Paul Weddle, Bob Gilpatrick, Andy Celley. Manager: Bob Gilpatrick. Engineers: Bill Robinson, Fran Flannery. Dimensions: Room 1: studio 60'x25' (includes 2 isolation booths), control room 20'x18'. Room 2: studio 10'x8', control room 12'x8'. **Mixing Consoles:** Amek 2500 upgraded and automated, CMX CASS-1 Sound Editor w/Mix Automation. **Audio Recorders:** Sony APR-24 24-track, Sony PCM-7030 DAT, Revox PR-99 upgraded 2-track, Otari MX-5050 2-track w/center track time code, Tascam upgraded 122 MkII. **Digital Audio Workstations:** Apple/DigiDesign Mac II/Sound Tools. **Monitors:** UREI 813C, Yamaha NS-10, Auratone 5C. **Other Major Equipment:** Dolby 363 SR 2-ch noise reduction, Akai S1000 sampler, (4) Time-Line Lynx VSI, Sony BVU-800 VTR, Sony PVM-1960 Trinitron monitor, reverb and delays by Lexicon, DeltaLab, Alesis, Yamaha, EMT; compressors and gates by UREI, Drawmer, Ashly, dbx; EQs by Summit, T.C., Industrial Research, Ashly; mics by Neumann, AKG, Beyer, Shure, Crown, Sennheiser; power amps by Bryston, AB, Yamaha. **Specialization & Credits:** Overlooking the Centrum in downtown Worcester, MA, Lyx's automated 24-track offers its services to label acts looking to record while in town. Five state-of-the-art, acoustically designed rooms, excellent signal path integrity and discrete loading access. Our studio services include 2- and 24-track recording, automated mixing, audio-for-video post, MIDI sequencing, digital editing, and real-time cassette duplication. We also offer creative services including full artist production, as well as custom music and audio production for advertising and industry. We are the most modestly priced studio w/this level of services in the area.

FOR MDRE INFORMATION ABOUT MIX LISTINGS SEE PAGE 157.

MASTERWORKS (A.K.A RANDOM ACCESS)



955 Massachusetts Ave. #137; Cambridge, MA 02139; (617) 577-0089; FAX: (617) 577-0089. Owner: Jonathan A. Wyner. Manager: Jonathan A. Wyner.

METRO RECORDING STUDIOS



364 Worthington St.; Springfield, MA 01103; (413) 734-3240; FAX: (413) 734-3240. Owner: Chalero Music Company. Manager: Bill Myers.

NEW ENGLAND MOBILE RECORDING



PO Box 409; Stow, MA 01775; (508) 562-2111. Owner: Alan W. Goodrich. Manager: Jay W. Goodrich.



NORTHEASTERN DIGITAL RECORDING
Southborough, MA

NORTHEASTERN DIGITAL RECORDING



2 Hidden Meadow Ln.; Southborough, MA 01772; (508) 481-9322; FAX: (508) 624-6437. Owner: Dr. Toby Mountain. Manager: Anne Shepard. Engineers: Toby Mountain, Jason Arnold, Laurie Russell. Dimensions: Room 1: Studio 20'x13', Room 2: Studio 18'x12', Room 3: Studio 16'x12'. Mixing Consoles: Troisi SA 200 custom 12x4x2, Troisi SA 200 custom 4x2. Audio Recorders: (2) Sony PCM-1630 2-track digital processor, (2) Sony PCM-1610 2-track digital processor, Sony PCM-2500 DAT, Sony DTC-1000 DAT, (2) Sony 75-ES DAT, Panasonic SV-3500 DAT, Sony APR-500 dual head 2-track analog 1/2" or 1/4", Sonic Solutions/Sony Star Labs CD recorder, Sony PCM-701 digital processor, Sony PCM-F1 digital processor. Digital Audio Workstations: Sonic Solutions Sonic System, Sonic Solutions Sonic Station, Digidesign Sound Tools, Digidesign DECK. Monitors: Aerial Acoustics 10T, Snell Type C, Tannoy DMT-12. Other Major Equipment: (2) Sony DMR-4000 3/4" video recorder, (2) Sony BVU-800 3/4" video recorder, (2) Sony DAE-1100A digital audio editor; Dolby A/SR noise reduction; dbx Type I, Type II noise reduction; (2) Troisi Digital Companion analog to digital converter, (2) Troisi Digital Companion digital to analog converter, Lexicon 300 digital reverb, Lexicon PCM70 digital reverb; Schoeps, B&K, AKG, Sennheiser microphones; Bryston 4B power amplifier, Perreaux power amplifier, Yamaha DX7IIFD keyboard, Roland D-50 keyboard, Alesis HR-16 drum machine, California Audio Labs HO CD Transport CD player, (2) Macintosh IIx computers, (2) Macintosh IIfx computers, Mark of the Unicorn Performer 4.0, Mark of the Unicorn Mosaic. Specialization & Credits: Northeastern Digital Recording specializes in CD premastering and digital editing using the Sonic Solutions Sonic System and the Sony PCM-1630, including transfers from a wide variety of digital and analog formats. Write-once recordable compact disc and CD-ROMs as well as CD replication services are also available. Our composers' suite offers digital editing and sequencing with Sound Tools, and MIDI composing, recording and mixing with Performer, Mosaic and DECK. Credits: The Beach Boys, David Bowie, Frank Zappa, Bob Marley, Arlo Guthrie, Buddy Guy, Alison Krauss, Big Star, Richard Thompson, Nils Lofgren, Paul Winter, Robbie O'Connell, Rory Block, Richie Havens, Rykodisc, Hannibal, Rounder, Heartbeat, Philo, Alligator, Omega/Vanguard Classics, East Side Digital, Green Linnet, Centaur, Musical Heritage Society, New Albion, New World, Newport Classic, Northeastern, Biograph, Atlantic, Chrysalis, CRI, SBK, EMI, A&M, RCA.

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ONE WORLD RECORDING
Boston, MA

ONE WORLD RECORDING



72 E. Dedham St.; Boston, MA 02138; (617) 426-8078; FAX: (617) 426-3709. Owner: Steve Van Natta. Manager: Alexander Milne. Engineers: John Breglia, Steve Van Natta. Dimensions: Room 1: studio 68'x30', control 34'x20'. Room 2: studio 12'x14', control 15'x12'. Mixing Consoles: Neve 8038 32x16x24 32-input w/1081 EQ, Hill Multimix submixer. Audio Recorders: Studer 827 2" 24-track, Studer A807 1/4" 2-track, Otari 5050B 2-track, Panasonic 3700 DAT, Panasonic 3500 DAT, (6) Nakamichi MR-1. Digital Audio Workstations: Macintosh II GX running Sound Tools w/20mg Ram, 1.5 gig hard disk/Studio Vision, IBM PS2 running Voyetra Sequencer Plus MKIII & libraries. Monitors: Yamaha NS-10M, Custom Audio Pro Ar 18 BX1, JBL 4435 (modified). Other Major Equipment: UREI 1176 compressor, UREI 1178 comp/limiter, (2) Neve 2254/E compressor, (2) dbx 160X compressor, (2) dbx 166 comp/gate, Spectra Sonics 610 comp/limiter, Spot Master Sound Brightener, Ampex tube mic & preamp, Neumann U47, (2) AKG 451 CK1, (2) Sony 56F ECM vintage, AKG tube, E-mu Emulator II+ HD 20mg w/full library, Oberheim OB-8, Alesis D-4 drum machine, Neumann U-87, (2) Neumann TLM 170, Klark-Teknik DN 780 digital reverb, AMS S-DMX digital delay/sampler, (2) Belles amplifiers 500/200. Specialization & Credits: Our Steven Durr-designed control room combines an over-specified Neve 8038 recording desk with a Studer 827 24-track, supported by an extensive inventory of both state-of-the-art and vintage gear from all of the top manufacturers. A vast array of MIDI equipment including both IBM and Mac-based sequencing as well as CD premastering on Sound Tools is available on and off site. An antique Steinway grand piano highlights the largest live room in Boston. Completing the total One World package is our experienced in-house production staff and creative working environment suitable for any album or recording project. One World is centrally located in downtown Boston, minutes from Logan airport, making it the ideal cost-effective and convenient alternative for both the national and international artist. Clients include: Warner, Atlantic, A&M, Polygram, London, East/West, Stompoff, Flying Fish, etc. Multimedia: Maxwell, Electronic Publishing, WGBH Communications.

PERMANENT WAVE PRODUCTIONS



PO Box 276 M.O.; Shrewsbury, MA 01545; (508) 842-4422. Owner: Brian D. Markey. Manager: Brian D. Markey. Specialization & Credits: Permanent Wave is a full-service multimedia production company specializing in the development of program materials for corporate clients (see Brian Markey's "Business Opportunities in Multimedia" article in the January 1992 issue of *Mix*). Our services include: Video and audio for commercial advertising and training productions. Digital and analog multitrack recording. Post-production and audio-for-video. Film/video scoring and soundtrack production. Music composition and arranging. Sampling, MIDI system design and programming. Session musicians.

PLATINUM SOUND & PRODUCTIONS INC.



406 Centre St.; Boston, MA 02130; (617) 983-9999; FAX: (617) 524-7639. Owner: Akhil Garland. Manager: Akhil Garland.

REEL ADVENTURES II



335 Merrimac St.; Newburyport, MA 01950; (508) 463-3028; FAX: (508) 463-0322. Owner: Rosemarie Reeves. Manager: Tom Reeves.

SILVER CITY STUDIOS



944 Somerset Ave.; Taunton, MA 02780; (508) 823-9014. Owner: Ronald W. Pires. Manager: Cynthia Moreau.

SILVER LININGS INC.



25 Huntington Ave.; Boston, MA 02116; (617) 262-9289; FAX: (617) 266-3067. Owner: Arklay King. Audio Recorders: Otari MTR90 II 16-track 2", (2) MX5050 II 1/2-track, Sony PCM-7030 OAT w/SMPTE, Sony TCD-10 Pro II DAT, (2) MX-5050 B02 4-track. Digital Audio Workstations: Sonic Solutions stereo No Noise sys-

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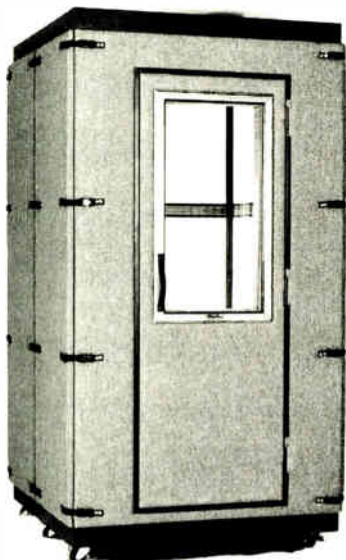
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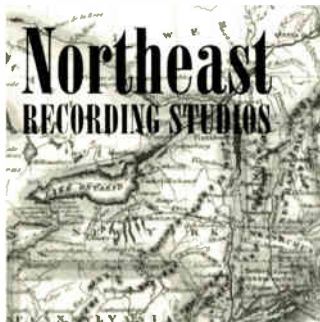
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term/CD premastering/automated multitrack, (3) 1.6 gig drive, (2) 1.6 gig removable MO drives. **Monitors:** Quested Q108, EAW M550, Yamaha NS-10, (2) Auratone. **Other Major Equipment:** Sony CDW-900E CD printer, (2) Neumann U89 L mic, Neumann U87 AL mic, Sony ECM MS-5 mic, AKG C-414 mic, Roland R-880 digital reverb, (14) dbx 150 noise reduction on all analog recorders, Klark-Teknik DN780, Dolby 563, Dolby SR/A. **Specialization & Credits:** Silver Linings Inc. specializes in the restoration and rehabilitation of degraded or historical audio and its transfer to archival media such as CD, MO Disk, DAT. Using the Sonic System No Noise™ system as a primary tool, other processing is employed as needed in order to achieve the best possible results. Removal of record pops and clicks, surface noise, tape hiss, other artifacts and some forms of distortion is possible. Clients include: CD mastering houses, digital equipment company, Disney's World of English, Mellon bank and various museums and universities.

SOUNMIRROR INC.



76 Green St., Boston, MA 02130; (617) 522-1412; FAX: (617) 524-8377. **Owner:** John Newton. **Manager:** Nancy Grossman. **Engineers:** Henk Kooistra, Brad Michel, John Newton, Everett Porter. **Mixing Consoles:** (3) Studer analog w/42 inputs, Lexicon Opus digital w/automation, Benchmark 5x2. **Audio Recorders:** (2) Sony 3324 w/Apogee filters, Mitsubishi X-86 2-track 20-bit digital, (4) Sony 1630, (3) Sony DMR-4000, (3) Sony DMR-2000, Studer A80 1/4" and 1/2" analog w/Dolby, (2) Sony PCM-7030 time code DAT, (2) Sony PCM-2500 OAT, (2) Sony D3 portable DAT, (2) Sony DTC-700 DAT, (3) Nakamichi Deck 2. **Digital Audio Workstations:** Lexicon Opus 8-track w/automation, Sonic Solutions 24-track 20-bit, (2) Sony DAE-3000 equipped for 2-track stereo editing, direct DAT editing and 24 track digital editing. **Monitors:** (4) B&W 801M, (2) B&W 802M, (2) B&W 803, (2) B&W 805, (2) B&W CM-1/2, (2) Quad ESL 63. **Other Major Equipment:** SigTech AEC-1000 acoustic correction filter; microphones: (6) Neumann TLM 50, (2) Neumann TLM 170, (2) Neumann KM 83/84, (4) Neumann KM 100 series, (7) B&K 4006, (6) B&K 4011, (2) Sanken CU-41, (20) Schoeps CMC series; Lexicon 480L, Lexicon 300, Lexicon LF-10, Sony DAL-1000 limiter/compressor, DCS-900B 20-bit multi-format AD converter, (2) Apogee AD500, (3) Apogee DA1000, Adams-Smith Zeta-3, Sony DFX-2400 sample rate converter, Sony BVU-800 video recorder, (3) B&W MPA-810 amplifiers, B&W MPA-1 amplifier, Quad 606 amplifier, Threshold S500-II amplifier, Nakamichi PA7-II. **Specialization & Credits:** Since its inception in 1972, Soundmirror has become one of the premier acoustic music recording and post-production companies in the world. Soundmirror's four post-production suites offer complete mixing, editing and CD mastering entirely in the digital domain. We offer disk-based multitrack mixing and editing utilizing a Sonic Solutions 24-track system or a Lexicon Opus, and our Sony DAE-3000 tape-based editing system is available for 2- to 24-track post-production needs. Our new two-room audio/video production suite offers a voice-over recording room with an adjoining control room/editing suite. We are New England's most complete CD mastering facility, offering a fully digital mastering process by experienced engineers at attractive rates. A fully isolated machine room common to all studios allows complete flexibility to suit the needs of each client. All of this complements our extensive location recording capabilities around the world. Clients include Polygram, Telarc, Nonesuch/Elektra, Virgin, Teldec, BMG and Rounder.

SOUND OF GLASS STUDIO



PO Box 2329; Worcester, MA 01613; (508) 835-2501. **Owner:** Charles Blaum. **Manager:** Charles Blaum.

SOUND TECHNIQUES INC.



1260 Boylston St., Boston, MA 02118; (617) 536-1166; FAX: (617) 536-4446. **Owner:** Lance Duncan. **Manager:** Lance Duncan. **Engineers:** Lance Duncan, Jim Anderson, Chris Anderson, Don Goonan, Ken Simon (chief technician) **Mixing Consoles:** SSL G Series 48 inputs w/Total Recall, Neve V Series 36-input, SSL Scenaria, Allen & Heath Saber 32-input. **Audio Recorders:** (2) Sony 3324-A digital 24-track, Sony APR-24 analog 24-track, Sony 5003 1/4" 2-track w/TC, Ampex ATR-102 1/2" 2-track, (3) Otari MTR-10 1/4" 2-track w/TC, Mitsubishi X80 digital 2-track, (5) Panasonic 3700 R-DAT, Sony 7030 R-DAT w/TC, (10) Tascam 32 1/4" 2-track, (7) Tascam 122 MkII cassette. **Digital Audio Workstations:** SSL Scenaria, (2) SSL

—SEE PHOTO/LOGO TOP OF NEXT COLUMN



SOUND TECHNIQUES INC.
Boston, MA

Screen Sound version 4.1 linked via SSL Soundnet, Digidesign Sound Tools. **Monitors:** (3) Westlake BBSM-12, (2) Meyer HD-1, Westlake BBSM-4, (3) Tannoy PBM-6.5, (2) Yamaha NS-10M. **Other Major Equipment:** TimeLine Lynx w/System Supervisor and keyboard control unit, Lexicon 480L, Quantec QRS-XL, Lexicon 224, (2) Dynacord DRP 20, (4) Eventide H3000, (2) Lexicon PCM70, (2) Yamaha REV5, (2) Yamaha SPX90 II, (2) Lexicon PCM42, (5) Roland SDE-3000, TC Electronic 2290 w/sampling, Tube-Tech CL1A, (2) Pultec EQP1A, (2) UREI UA175, (6) Bryston 7B mono block amps, (4) Crown, Sony BVH-3100 1", (2) Sony BVW-75 Beta SP, Young Chang 7" concert grand. **Specialization & Credits:** Sound Techniques is a world-class audio production facility, specializing in music production, mix-to-picture, and original music composition. Located in the heart of Boston, the studio has access to unlimited resources and services. Our clients include: Aerosmith, Extreme, Yo Yo Ma, Top Choice Clique, Reeves Gabrels, RTZ, the National Symphony of Mexico, Ron Carter, Kenny Burrell, Grady Tate & Stephanie Grappelli, Sony/CBS, Warner Bros., Denon, Relativity Records, A&M Records, SBK Records, and Windham Hill. T.V. credits include: Queen/Freddie Mercury Benefit at Wembley, Bonnie Raitt, Kool and the Gang, Peter, Paul & Mary and Anne Murray.

SOUNDTRACK



162 Columbus Ave., Boston, MA 02116; (617) 542-7272; FAX: (617) 542-7222. **Owner:** Rob Cavicchio. **Manager:** Jeanne McGrail.

SOUNDWORKS STUDIO



10 Wheeler Ct., Watertown, MA 02172; (617) 924-0065. **Owner:** Brian Capouch. **Manager:** Diane Menyuk.

WENOELL RECORDING STUDIO



Box 61; Wendell, MA 01379; (508) 544-8288. **Owner:** Jeffrey Bauman. **Manager:** Jeffrey Bauman. **Engineers:** Mark Allen Miller, Jeffrey Bauman, Bruce Kahn, Peter Kepler. **Dimensions:** Studio 25'x28'x19', control room 18'x14'. **Mixing Consoles:** Trident 24 w/32 channels of Maga Mix automation. **Audio Recorders:** Otari MTR-90 II 24-track, 3M M-79 1/2", Otari 5050 2-track, Sony 501 2-track, Panasonic SV-3700 DAT. **Monitors:** (2) Gauss 7258, (2) Altec 604 E, (2) EV Sentry 100A, (2) Yamaha NS-10M Studio, (2) Auratone T6, (2) Auratone Sound Cubes. **Other Major Equipment:** Lexicon PCM70 digital effect, Lexicon PMC60 reverb, Lexicon PCM42 digital delay, Teletronix LA-2A limiter, (2) Pultec MEQ-5 equalizer, UREI 1176 limiter, Valley People 610 compressor, Yamaha SPX900 digital effect, Alesis Quadraverb Plus, dbx 166 compressor, Drawmer DS-201 noise gate, Ashly MOS FET amplifier, Klark-Teknik DN360 graphic equalizer, Valley People Dyna-Mite, (2) Ashly SF-33 stereo noise gate, Urban co-operator compressor/expander, Aphex Type C Aural Exciter, Ashly SE-66 stereo parametric equalizer, Fostex 330 stereo equalizer, MIDlman SyncMan Pro. **Specialization & Credits:** Wendell Recording Studio is a quality, cost-effective residential facility for the artist who desires total control over his or her working environment. Located deep in the woods of western Massachusetts, on ten stone-walled acres, we are a three-hour drive from NYC, 1/2-hour drive from Boston and closer yet to Hartford International Airport. Artists stay in a beautiful guest house full of light, wood and detail, complete with cedar Swedish sauna, offering a sense of home and privacy. They often take the one-minute walk down the footpath to the studio through the woods, arriving relaxed and ready to record. Why put up with the problems of city studios, with their claustrophobia, bad air and parking problems when you can be in a place that's all your own—24 hours a day, with you determining the schedule. If you would like to do your next project in a beautiful, total service environment that you control, this is the place for you.

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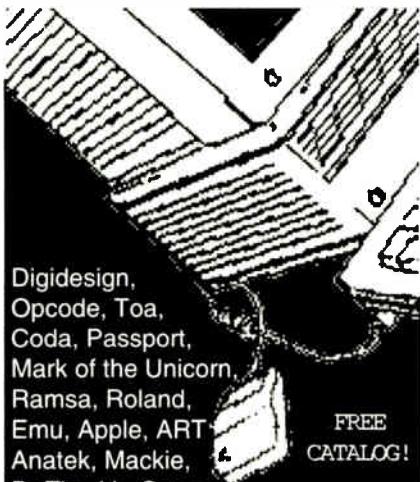
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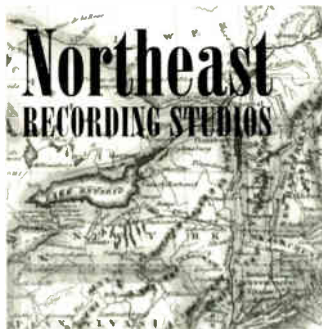
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iTech VHM5 Vocalist, DigiTech IPS-33, Smart Shift, DigiTech DSP-128, DigiTech RDS 3.6. (2) Ibanez SDR-1000, Yamaha SPX90, Yamaha TX802. **Extended Equipment Description:** MiniMoog, Kurzweil K1000SE w/Sound Block upgrade, The Patch bay That Ate New Jersey II-The Sequel (it grew!), Roland RSP-550, Roland VP-70, Roland S-550 sampler w/monitor and 80 meg HD, Roland PAD-80 w/dbl bass pedals & hi-hat pad and pedal, Roland GM-7 0, Roland D-110, Roland U-220, Roland D-550, Alesis MEQ-230, Alesis Datadisk SQ, Alesis Quadraverb, Alesis MIDiverb III, (2) Alesis Microverb, Alesis Micro Enhance, Alesis MMT-8, Alesis HR-16, Alesis HR-16B, Alesis D-4.

Hillside Sound Studio
102 HILLSIDE AVE. ENGLEWOOD, NJ 07631
(201) 568-3268

HILLSIDE SOUND STUDIO
Englewood, NJ

HILLSIDE SOUND STUDIO



102 Hillside Ave., Englewood, NJ 07631; (201) 568-3268; FAX: (201) 568-0568. Dwner: Dae Bennett, Dave Kowalski, Manager: Dae Bennett, Dave Kowalski, Engineers: Dae Kowalski. **Mixing Consoles:** Mitsubishi 40x24x2 w/Otari Westar Diskmix automation, 4-band full parametric EQ high/low bandpass filters, (25) Troisi X-com gate/compressor dynamic module, (2) Troisi DQ Keyable equalizer. **Audio Recorders:** Sony 3324 24-track digital DASH format, Studer A80 MKIV 24-track analog, Sony 3202 2-track digital DASH format, Studer A80 2-track analog, Studer A810 2-track analog, Panasonic SV-3900 DAT, Panasonic SV-3700 DAT. (3) Tascam 122 cassette. **Digital Audio Workstations:** Digidesign Pro Tools 4-track editing system on a Macintosh Quadra 950 computer. **Monitors:** UREI 814B, Meyer Sound HD-1, Yamaha NS-10M, Auratone. **Dither Major Equipment:** (4) Neumann U87, (2) Neumann U84, Neumann U47, (4) Electro-Voice RE20, (2) AKG 414, AKG D-12, (4) Sennheiser MD-421, (4) Shure SM57, (4) Shure SM58, TimeLine Micro Lynx synchronization system, Lexicon 724XL digital reverb, (2) Lexicon PCM70 multi-effects, (2) Yamaha SPX90 multi-effects, Lexicon Prime Time delay, Lexicon PCM42 digital delay, Lexicon PCM60 digital reverb, Eventide H949 Harmonizer, (2) UREI 1176LN compressor/limiter, Aphex II Studio Aural Exciter. **Extended Equipment Description:** Macintosh Quadra 950 w/ Performer 4.01, Studiovision & Pro Tools, Opcode Studio 5 MIDI interface, Roland JD-800 synthesizer keyboard, Akai 950 digital sampler, Kurzweil K2000 R module, Korg 01R/W sound module, Alesis D-4 drum module, Roland D-550 sound module, Oberheim Matrix-6 sound module, Bosendorfer 74" grand piano, Yamaha 5-pc recording series drums. **Specialization & Credits:** Credits for Hillside Sound Studio: Guy, (Guy) MCA; Rob Base, (Rob Base) Profile; The Incredible Base, (Rob Base) Profile; Naughty By Nature, (Naughty By Nature) Tommy Boy; Simple Pleasure, (Simple Pleasure) Reprise; 40 Years of Tony Bennett, (Tony Bennett) Columbia; Berlin, (Tony Bennett) Columbia; Wrecks & Effect, (Wrecks & Effect) MCA; Redhead Kingpin, (Redhead Kingpin) Virgin; Album With No Name, (Redhead Kingpin) Virgin; Today, (Today) Motown.

HOUSE OF MUSIC



1400 Pleasant Valley Way, West Orange, NJ 07052; (201) 736-3062. Dwner: Charles and Irene Conrad. Manager: Irene Conrad. Engineers: John Rollo, Paul Higgins, Mike Weisinger, Ron London, Nelson Ayres, Danny Grigsby. Dimensions: Room 1: studio 30'x40', control room 18'x22'. Room 2: studio 18'x23', control room 16'x22'. MIDI room 1: 18'x22'. MIDI room 2: 13'x17'. **Mixing Consoles:** Neve VR60 w/Flying Fader automation, MCI 528 w/automation,

Yamaha RM2408 24x8x2, Soundcraft 600 16x8. **Audio Recorders:** Studer A800 MkIII 24-track, (2) Sony/MCI JH-24 24-track, (4) Studer A80RC 2-track, Tascam MS-16 16-track, Sony PCM F1, Sony PCM2500 Pro DAT, (2) Panasonic 3700 DAT, (4) Tascam 122. **Monitors:** (8) Crown DC-300, (2) McIntosh 2500, (8) Crown DC-150, Haller 500, Sony V FET, UREI 8138, Westlake TM1, (6) Yamaha NS-10M, (2) Big Red, (2) Tannoy NFM-8, (4) ROR, (4) Auratone. **Dither Major Equipment:** dbx 216D 24-track, dbx 310D 4-track, Dolby A 2-track, Adams-Smith 2600, Sony/MCI JH-45, (3) EMT 140 plate, EMT 250 reverb, (2) AMS RMX 16 reverb, (2) AMS DMX 15-80s DDL, Lexicon 224XL, (2) Lexicon PCM70, Yamaha REV7, (4) Yamaha SPX90, Lexicon PCM41, Lexicon PCM42, AKG BX20, Roland SRV-2000, Eventide H3000 B Ultra-Harmonizer, Eventide 949 Ultra-Harmonizer, (4) Eventide 910 Ultra-Harmonizer, (2) Fairchild 670 stereo limiter, (12) UREI limiter, (12) dbx 160, (4) dbx 165, (5) Pultec EQ, (10) B&B EQ, (16) Dyna-Mite gate, (4) Kepex II gate, (4) Drawmer gate, (6) B&B gate, Neve stereo compressor, (4) Aphex I Aural Exciter, (2) Aphex II Aural Exciter, (140) assorted, Neumann, AKG, Shure, Crown PZM and Neumann tubes. **Extended Equipment Description:** Atari, Macintosh hardware and software, comprehensive selection of state-of-the-art synthesizers and MIDI implementation, (2) Yamaha 7' grand piano, Hammond B-3 w/Leslie, drum kits and percussion, assorted guitar amplifiers, Yamaha grand w/Forte MI Akai S1100 sampler, Sony Synchronization to Sony 3/4" Adams-Smith lockup. **Specialization & Credits:** Comprehensive synthesizer consultation and production services available on arrangement with Larry Fast/Synergy and Khalis Bayyan (Ronald Bell). Also available is a full range of digital and analog sampling, hard disk digital recording and integrated MIDI digital recording. In-house production, arranging and film scoring services available for all styles of music from an experienced staff who have impressive track records including Kool and the Gang, Bonnie Tyler, Jimmy Cliff, Peter Gabriel, Southside Johnny, Meat Loaf, Joe Cocker, Britny Fox, Paula Abdul, Gutterboy, Wynton Marsalis, Soundgarden, Color Me Badd, Cinderella, Surface, Bang Tango, Buster Poindexter, Warrant, Quarterflash, Dirty Looks, and others. Scenic seven-acre site 25 minutes from midtown Manhattan with our own 24-hour car service, pool, jacuzzi. House of Music provides a full range of client services for record production, audio-for-visual post-production for TV, music video, film and commercial advertising work.

JOYFUL NOISE STUDIO



47 E. Walnut St.; Metuchen, NJ 08840; (908) 549-7928. Dwner: Ted Coleman. Manager: Ted Coleman.



MISSION SOUND STUDIO
Pt. Pleasant, NJ

MISSION SOUND STUDIO



533 Dak Terrace, Pt. Pleasant, NJ 08742; (908) 899-5586. Dwner: Joe and June Santucci. Manager: June Santucci.

NO COMMENT PRODUCTIONS



84 Fairway Ave., Belleville, NJ 07109; (201) 450-8090; FAX: (201) 450-8090. Dwner: Tony Viscardo. Manager: Tony Viscardo.

OCEAN RECORDING STUDIOS



700 Ocean Gate Dr., PD Box 743; Ocean Gate, NJ 08740; (908) 269-8660. Dwner: Dennis & Christine Bourke. Manager: Christine Bourke.

PANETTA STUDIOS



6 Miller Ave., Elmwood Park, NJ 07407; (201) 791-0254. Dwner: Angelo Panetta. Manager: Rob Pashman.

RECORDING AT LEISURE



427 Shore Rd.; Somers Point, NJ 08244; (609) 927-0930. Dwner: Bob Kimmel. Manager: Bob Kimmel.

SEE PAGE 165 FOR AN EXPLANATION OF THE STUDIO SERVICE ICONS. FOR MORE INFO ABOUT MIX LISTINGS SEE PAGE 157.

REEL PLATINUM STUDIOS INC.



259 Paterson Ave., Lodi, NJ 07644; (201) 471-3464. Owner: Bob Allecca. Manager: Bob Allecca.

SHOWPLACE STUDIOS



347 S. Salem St.; Dover, NJ 07801; (201) 328-4400; FAX: (201) 328-4933. Owner: Ben Elliott, Larry Gribler, Steve Schiff. Manager: Ben Elliott. Engineers: Ben Elliott, chief engineer; Rick Dearthoff, engineer/assistant engineer. Dimensions: Studio 45'x32', control room 25'x23'. **Mixing Consoles:** Amek Mozart w/Rupert Neve input modules and Supertime automation. **Audio Recorders:** Otari MTR-90 MkIII 24-track, Studer A-820 2-track w/1/2" or 1/4" w/center-track, Panasonic SV-3700 DAT, Panasonic 3500 DAT. **Digital Audio Workstations:** Mac Ili w/8MG/80 MB hard drive, Digidesign Sound Tools w/600MB hard drive. **Monitors:** Yamaha NS-10M, Tannoy FSM, Tannoy 6.5-PBM. **Other Major Equipment:** Adams-Smith Zeta III, Lexicon 480L, Lexicon 224XL, (3) Lexicon PCM70, EMT 140 stereo tube plate, Yamaha SPX900, (2) Lexicon PCM42, DeltaLab DL-2, Yamaha REV7, Eventide H3000 SE w/sampling, TC Electronic TC1210 Spatial expander, Pultec EOP-1A, Pultec MEQ-5, dbx 500 subharmonic synthesizer, (2) Drawer 201, (3) Symetrix 544 quad gate, Roland Dimension D, Summit Audio TLC 100, Teletonix LA-2A, (2) dbx 160, dbx 162, UREI 1176LN, UREI 1178, (2) Aphex Expressor, Drawmer 500, Jeanius Electronic Russian Dragon, (2) Neumann U87, Neumann U67, Neumann U47 FET, (3) AKG 414 EB, (2) AKG 460 w/CK62, AKG 451, AKG D112. **Extended Equipment Description:** (6) Sennheiser MD-421, B&K 40075, Demeter Tube Di, Demeter 2-channel tube mic pre, E-mu E-max II, Hammond B3 w/Leslie, Yamaha 6-piece recording series drum kit w/assorted cymbals, Marshall 100-watt w/4"x12" cabinet circa 1970, JVC 850U 3/4" video deck, assorted MIDI keyboards and drum machines.

STARDUST RECORDING STUDIO



615 Valley Rd.; Upper Montclair, NJ 07043; (201) 746-2359. Owner: George Louis. Manager: Jeff Chambers.

SUBTERRANEAN SOUND



504 High St.; Long Branch, NJ 07740; (908) 870-1379; FAX: (908) 870-1379. Owner: Stacy Phelon. Manager: Stacy Phelon.



TAYLOR-MADE PRODUCTIONS
Caldwell, NJ

TAYLOR-MADE PRODUCTIONS



PO Box 309; Caldwell, NJ 07006-0309; (201) 226-1461; FAX: (201) 226-1462. Owner: Glenn M. Taylor. Manager: Pauline Taylor. Engineers: Glenn M. Taylor, Hannah Taylor, Maxine Taylor, Blackos Taylor. Dimensions: Studio 23'x18', control room 18'x18'. MIDI room 37'x12'. Preview room/lounge 10'x8'. Vocal booth 9'x4'. **Mixing Consoles:** Harrison /GLW Raven w/M-Wank mod. 76x32 and Optifile "3D" automation system, Tascam Model One line mixer 8x2. **Audio Recorders:** Otari MX-80 24-track 2", Otari MX-5050 MkIII 8-track 1/2", Otari MX-5050 4-track 1/4", Otari MX-5050B 2-track 1/4", Otari MX-55TM 2-track 1/4" w/time code, Studer A80 VU MkIV 2-track 1/2", Panasonic SV-3500 DAT, Casio DA-7 DAT portable, (11) Tascam/Nakamichi cassette, Sony PCM-501 ES 2-channel digital, Marantz PMD-201 portable field cassette, Pioneer 1020-L 1/4-track 1/4". **Digital Audio Workstations:** Macintosh Ili computer, Performer 3.61 music sequencing software (search software), Mark of the Unicorn MIDI Time Piece. **Monitors:** UREI 813C, Yamaha NS-10, JBL 4311, JBL 4408, JBL Century L-100, Auratone Super Sound Cube, Sony Micro Mini, Koss walkman headphone. **Other Major Equipment:** (2) Neve 31105 mic pre EQ, (2) Focusrite ISA-115 HD mic pre EQ, (2) Eventide H3000 Ultra-Harmonizer & 949 classic, (4) Lexicon 224XL, 224, PCM70, LXP1 reverbs, Roland R-880 digital reverb, EMT vintage 140 stereo plate (N.Y. tech. mod.), (2) Yamaha REV7 & SPX90 reverb, ART Multiverb multiple FX, Ensoniq DP-4 4-channel multiple FX/reverb, (2) Lexicon DDL, Korg SDD-3000 DDL, Yamaha Model 1500 DDL, DeltaLab Super Time Line DDL, MXR DDL

 TURN TO PAGE 165 FOR AN EXPLANATION OF RECORDING SERVICE SYMBOLS.

w/memory cards. BASE Bedini Spatial environment system. Audio & Design PAN-SCAN auto-panner. Valley rack; (5) Kepex, (2) Gain Brain, (2) Maxi-O; (2) Aphex Model 602-B and Type Exciter, (8) Omni Craft noise gate, additional gates: Drawmer, Aphex, Alesis, Audio Logic, Valley People. **Extended Equipment Description:** (6) dbx 165, 161, 166 limiter, (3) Orban single-channel de-esser, TC Electronic 1210 Spatial Expander, (2) Neve comp/limiter, Pultec EQH-2 tube EQ, Ashly SC-66 stereo parametric EQ, (28) Dolby SR/A channel of NR, Roland SN-550 digital noise filter, (32) dbx Type I channels, MXR Classic Flanger "Mini Rack", (2) JVC 8250 3/4" video, Otari MX-70 1" audio layback, Panasonic Pro 1800 VHS, (2) Panasonic/NEC color monitor, (4) TimeLine Lynx synchronizer, J.L. Cooper PPS-100 sync unit, Technics SLP-1250 Pro CD w/pitch control; huge selection of CD & CD-ROM Sound FX and Library music; over 40 microphones: AKG, Neumann, Sennheiser & Shure; over 30 MIDI keys, modules & classic keyboards; vintage collection of acoustic and electric guitars, basses, amps and drums. **Specialization & Credits:** Taylor-Made Productions is the sound source for all media. We are a full-service original music scoring house w/sync-to-picture capability, as well as a production source for bands and individual artists. Additionally, we are a complete audio-for-video post-production studio, with stock music and a huge SFX library at the client's disposal. We offer extensive MIDI programming and music production. We also offer our clients a large talent pool of vocalists, narrators and voice-over talent, as well as in-house creative and scriptwriting services for corporate, industrial, comedy and commercial purposes. Our products include work for AT&T, Lorux Watches, Universal Pictures, World Federation of Wrestling, Hertz, Jersey Central Power and Light, Nando Sparkling Wine, WWOR-TV, Schlott Real Estate, New York Airlines, National Public Radio, Fresh Air Radio, Volvo-White Trucks, Warner-Lambert, Parke-Davis, Lederle and Johnson & Johnson Pharmaceuticals, Clairol and Nabisco brands to name more than a few.



T.M.P. RECORDING
Berlin, NJ

T.M.P. RECORDING



234-3 Rt. 73; Berlin, NJ 08009; (609) 768-2226; FAX: (609) 768-7135. Owner: Tom Digangi. Manager: Lenny Digangi, Tom Traub. Engineers: Eddie O'Bona, Brian McMahon, Steve Kristiansen, Mike Cohn, Len DiGangi, Tom DiGangi. Dimensions: Room 1: studio 16'x25', control room 15'x20'. Room 2: studio 9'x11'. Room 3: studio 5'x6'. **Mixing Consoles:** Tascam M3700 automated. **Audio Recorders:** Tascam MSR24, Tascam MS16, Tascam BR 20T w/time code, Tascam DA 30 DAT, Technics DA-10 DAT, Tascam 122 MkII, KABA 1 master/3 slave, Alesis ADAT. **Digital Audio Workstations:** Hybrid Arts Digital Master, Roland S-750. **Monitors:** (2) Tannoy SRM-12B, (2) Yamaha NS-10M. **Other Major Equipment:** Tascam ES50 synchronizer, Lexicon LXP15, Lexicon LXP1, Lexicon LXP5, Lexicon PCM42, Yamaha SPX900, Korg SDD-2000, BBE Sonic Maximizer, Aphex Aural Exciter Type C, Ashly quad noise gate, Audio Logic MT-44, Symetrix 525, Symetrix noise reduction, Klark-Teknik DN500, dbx 160X, dbx 166, Ashly CL52 E, Korg A-2, Ashly PQ16, Korg M1.

TULLEN SOUND RECORDING



26 Altamont Ct.; Morristown, NJ 07960; (201) 539-8120; FAX: (201) 539-5615. Owner: Skipp Tullen. Manager: Barbara Shalit.

UBIQUITY MUSIC PRODUCTIONS/RECORDING



PO Box 91; Lindenwold, NJ 08021; (609) 783-7650. Owner: David Hardy. Manager: Alex Ledvin. **Specialization & Credits:** Pre-/post-production facility. We have a highly skilled staff of computer technicians and musicians who can assist producers and save you a ton of money in production costs. We are a consortium of producers who have credits on major record labels and films. We specialize in dance, R&B, pop, rap and jingle writing. No extra charge for the use of an extensive library of sounds. Our technicians/musicians will travel to the studio of your choice for pre-/post-production services. We can provide original music or refine your production to meet industry standards. We have mastering capabilities in-house. Call for free consultation—(215) 742-3067.

VAN GELDER RECORDING STUDIO INC.



445 Route 9W; Englewood Cliffs, NJ 07632; (201) 567-4145. Owner: Rudy Van Gelder. Manager: Rudy Van Gelder.

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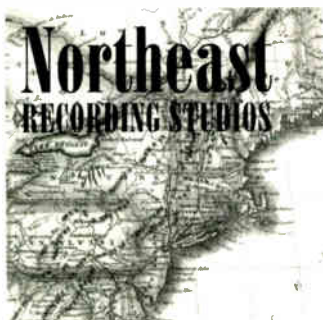


Marshall Electronics, Inc.

P.O. Box 2027 Culver City, CA 90230

Tel (310) 390-6608

Fax (310) 391-8926



WATER MUSIC RECORDERS



PO Box 4; Hoboken, NJ 07030; (201) 420-7848; FAX: (201) 420-8576. Manager: Ann Selznick.

NEW YORK



ACME RECORDING STUDIOS INC.
Mamaroneck, NY

ACME RECORDING STUDIOS INC.



112 W. Boston Post Rd.; Mamaroneck, NY 10543; (914) 381-4141; FAX: (914) 381-4543. Manager: Peter Denenberg, James Brown, Engineers: Rory Young, Peter Denenberg, James Brown, Thom Leinbach, Derrick Garrett. Dimensions: Room 1: studio 25'x28'. Medium-size live room w/separate piano and vocal iso booths. Control room 12'x18'. Room 2: studio 12'x12', control room 12'x20'. **Mixing Consoles:** Automated 56-input discrete console, vintage English-style, 4-band EQ, 8 aux send, PPM and VU bar graph metering, Aphex-style noise gate on each channel (computer-controlled). (10) Individual custom-designed 16-channel stereo cue mix stations, each on it's own rolling stand, system includes very robust amplifiers to satisfy the most demanding (or deaf) musicians. **Audio Recorders:** (2) Otari MTR-90 MkII 24-track, Ampex 24-track slave machine, all 2-track mastering format. **Digital Audio Workstations:** DD-1000 Digital workstation/editor w/24-bit optical disk storage, (2) M/O drives. **Monitors:** TES-1 reference, biamped 640e w/subwoofer, Yamaha, Tannoy. **Other Major Equipment:** Dolby SR 24-channel available on request; dbx, Dolby SR, A and various single-ended systems for 2-track format; Lexicon 480L, EMT stereo plate, Lexicon 224, PCM 70, LXP5, (2) LXP1, Eventide H3000 w/sample board, and more; Neve, API, UREI, dbx limiters; Neve 1066 mic pre/EQ, Pultec, Lang, Sontec (Massenberg) EQ; (56) Aphex-styled, inboard gates w/automation, Drawmer gate, Aphex gate, etc.; Neumann, AKG, Beyer, RCA, Shure, Calrec, Sennheiser, etc. microphones; Steinway B grand 1927, Gretsch drum, vintage Marshall & Fender guitar amps, Ampeg B-15, Leslie cabinet, large selection of guitars on request, complete MIDI suite with Akai samplers. **Extended Equipment Description:** 3 machine audio-for-video lock-up, Sony 3/4" & 1" video, 1/2" 4-track or 3/4" w/Dolby SR, A or dbx; Proton and Sony monitor; Sound effects: LucasFilm, Sound Ideas, Universal, Hollywood Edge and Acme/in-house sound effect libraries w/computerized index. Also extensive original and CD music library. **Rates:** \$135/hr. (w/engineer), \$100/hr. (assistant only). Lock out \$1,350/day (w/engineer, overtime beyond 12 hours at \$135/hr.). Digital editing \$100/hr. Food is billed through with no mark-up, there are no charges for phone calls. **Specialization & Credits:** Acme Recording overlooks the Mamaroneck harbor, 35 minutes from midtown Manhattan and a five-minute walk from the train past restaurants, shop and theaters. Studios A and B are used for album project work. Studio B is the MIDI/overdub room with Studio A being more suited to live bands and large-scale mixing. There is a comfortable lounge with cable TV/VCR, etc. Quality local lodging is available, however most clients just train it from Manhattan. Recent projects include: the Spin Doctors/EPIC, Bluesiana Triangle/Windham Hill, Nice & Smooth/RAL-Columbia, Geri Allen/Toshiba/EMI/Blue Note, Blitzpeer/EPIC/Sony, The Soul of R&B Series/Shanachie, RFK In His Own Words/HBO, Slick Rick/DefJam Triad/Warner, Willie Colon, Dirty Looks, The Roches, Devonsquare, Cornell Dupree and Who It Is, Tom Stacy, Company of Wolves, Nana Vasconcelos.

A.D.R. STUDIOS INC.



Skylight Run; Irvington, NY 10533; (212) 486-0856; FAX: (914) 591-5617. Owner: A.D.R. Studios Inc. Manager: Jack Walker.

ADVANCED AUDIO PRODUCTIONS



6751 Michael Rd.; Orchard Park, NY 14127; (716) 675-3955. Owner: David Pruski. Manager: David Pruski.

ANTLAND PRODUCTIONS INC.



420 Lexington Ave., Ste. 1934; New York, NY 10170; (212) 687-4180, x. 20; FAX: (212) 697-0536. Owner: Roy B. Yokelson. Manager: Roy B. Yokelson.



ARABELLUM STUDIOS
Albany, NY

ARABELLUM STUDIOS



654 Sand Creek Rd.; Albany, NY 12205; (518) 869-5935. Owner: Art Snay. Manager: Yvonne Bautochka.



ASL MOBILE AUDIO
Flushing, NY

ASL MOBILE AUDIO



PO Box 520791; Flushing, NY 11352; (718) 886-6500; FAX: (718) 886-7214. Owner: Aura-Sonic Ltd. Manager: Steven Remote.

THE AUDIO DEPARTMENT INC.



119 W. 57th St.; New York, NY 10019; (212) 586-3503; FAX: (212) 245-1675. Owner: Joe Danis. Manager: Kim Felt, Sue Ekairer.

AUDIOFORCE



630 9th Ave., Room 1012; New York, NY 10036; (800) 847-4123; (212) 262-2626; FAX: (212) 262-2632. Owner: Ray Buccafusco. Engineers: Rick Rowe, Craig Lanoye. Dimensions: Room 1: control 15'x16'. **Mixing Consoles:** Allen and Heath Saber 32x16, Harmonia Mundi BW 102/29 4x2, Harrison Alive 32x8. **Audio Recorders:** Sony 3348, Sony 3324A, Mitsubishi X-880, Otari MTR-9 II, Tascam ATR 60, Alesis ADAT, Ampex ATR-102, Studer A810, Mitsubishi X-86 HS, Sony 7030. **Digital Audio Workstations:** Sony DAE-3000, Digidesign Sound Tools. **Monitors:** B&W 801, Tannoy PBM-6.5, Tannoy DTM-15, Yamaha NS-10M, Electro-Voice Sentry 100. **Other Major Equipment:** Dolby SRP 24, (2) TimeLine Lynx, Harmonia Mundi BW 201 w/EQ, Eventide H3000 SE w/sample, Lexicon 480L, (2) Neve 1081, Akai S1000 HD, Sony 1630, (2) Sony DMR-4000, (2) AMS DMX 1580, AMS RMX 16, (2) E-mu Systems Proteus 1&2, E-mu Systems Pro Fusion, (2) Alesis D-4, Roland D-50, Korg M-3R, Mark of The Unicorn Performer, Opcode Studio Vision, Macintosh 2 FX, Yamaha TG77. **Specialization & Credits:** Complete digital mastering, editing and transfer service. Audioforce technicians are experts in a wide range of CD prep and mastering services, including digital-to-digital format conversion using Harmonia Mundi sample

rate converter. With this amazing device, we can transfer your tracks or final mixes to Sony 1630 (the standard for CD mastering) from Mitsubishi X-86HS, 20-bit, Sony 3402, DAT, and DASH or Pro-Digi multitrack and other formats—entirely in the digital domain. We also offer CD mastering services using the Sony 3000 digital editing package along with Sony limiting and compression and Harmonia Mundi EQ. Digital format incompatibility? At Audioforce, there's no such thing. Newly included full MIDI capabilities and hard drive digital editing.

AVALON RECORDING STUDIOS INC.



40-35 235th St.; Douglaston, NY 11363; (718) 224-9158. Owner: Chris Cavill/Bill Ricciardi. Manager: Bill Ricciardi. Engineers: Bob Stander—chief engineer, Kevin Kelly, Mario Vasquez. **Dimensions:** Room 1: studio 18'x30', control room 16'x16'. Room 2: studio 15'x12'. Room 3: studio 19'x12'. **Mixing Consoles:** API Vintage 40x4 w/stereo compressor. **Audio Recorders:** Studer A827, Otari MTR-121 1/2", MCI JH-110 1/4", (2) Nakamichi MR-1 cassette, (2) Panasonic SV-3500 DAT. **Digital Audio Workstations:** Macintosh SE 40meg hard drive. **Monitors:** (2) Yamaha NS-10, Tannoy 6.5, UREI 813B. **Other Major Equipment:** Lexicon 300 digital reverb, Lexicon PCM70, (2) Lexicon Prime Time, (2) Yamaha SPX90, Yamaha SPX900, Yamaha REV7, Eventide Flanger, Eventide Phaser, Eventide H3000 SE, ART multiverb, plate reverb, (2) UREI 1176, Summit Audio TLA-100A, Summit Audio dual EQ, (4) Kepex II, (3) Drawmer dual gate, Valley People dual Dyna-Mite, (2) Neumann U87, (2) Neumann KM54 tube, (2) V-72 tube mic pre.

AXIS STUDIOS INC.



254 W. 54th St. PH; New York, NY 10019; (212) 262-3120; FAX: (212) 262-3942. Owner: Francois Kevorkian. Manager: Rob Sperte. **Dimensions:** Room 1: studio 8'x10', control room 17'x22'. Room 2: studio 21'x16', control room 18'x14'. **Mixing Consoles:** SSL 6064E 64-input w/G Series computer & Total Recall, Amek Angela 47-input w/faders & DiskMix automation. **Audio Recorders:** Mitsubishi X-800 32-track digital, (2) Studer A827 24-track analog, Studer A827 24-track 1/2" and 1/4" master, (2) Studer A80 MkIV 24-track master, Otari NTR-12 1/2", (3) Panasonic SV-3500 DAT, Sony DTC-500 DAT, Sony PCM-2500 DAT, Sony DTC-300 DAT, Nakamichi DMP-100 Fi 2-track digital, (6) Nakamichi MR-1. **Digital Audio Workstations:** (3) Mac II 8meg RAM Sound Tools card DAT I/O, J.L. Cooper CS-1, Studio Vision, Sound Tools, Alchemy Performer. **Monitors:** (3) Tannoy 215 DMT, Tannoy 12 DMT, Tannoy AVM-TP1, (2) Yamaha NS-10M, EV Sentry 100, ROR Minis. **Other Major Equipment:** (4) TimeLine Lynx module, Lexicon 480L, (3) Lexicon PCM70, TC Electronic 2290 digital delay w/11 sec. sampling, AMS RMX, Yamaha SPX1000 digital effects, (2) Eventide H3000 Ultra-Harmonizer, (3) Lexicon PCM42, (4) Yamaha SPX90 MkII, AMS RMX16, Quantec QRS, Sony DPS-R7, Ensoniq DP/4, UREI LA-2A, 1176, Neve 33609 comp/limiter, Pultec, Neve, API, K&H EQs.

BABY MONSTER STUDIOS



135 W. 14th St., 8th Flr.; New York, NY 10011; (212) 627-5410; FAX: (212) 243-7099. Owner: Jamie Burgh. Manager: Steve Burgh. Engineers: Bryce Goggin, Steve Burgh, Steve McAllister, Rick Rowe, Rojo, Chris Lewis. **Dimensions:** Room 1: Studio 35'x25', control room 21'x16'. Room 2: Control Room 14'x16'. **Mixing Consoles:** Neve 8036 56x8x2 custom, Mackie 1604. **Audio Recorders:** Studer 827 24-track analog, (2) Sony 5002 2-track 1/2" & 1/4", (2) Sony 2500 DAT recorder, Panasonic 3700 DAT recorder, Sony 500-ES DAT recorder. **Digital Audio Workstations:** Macintosh Iix w/Digidesign Sound Tools. **Monitors:** (2) Altex 604E2 "Big Reds", (2) KRK 701, (4) Yamaha NS-10M studio. **Other Major Equipment:** (8) Pultec EQP-1A, EQP-1A3, MEQ-5 tube EQs; Lexicon 480L, (2) Yamaha SPX1000, (2) Yamaha SPX900, (2) Eventide H3000SE w/sampler, (4) Lang PEQ-2, (5) UREI LA-3A, (2) Telatron LA-2A, (4) U.A. 175, Summit Audio DCL200, (8) Ashly gates, (18) assorted gates, (2) AKG C-12, AKG C-24, (2) Neumann U-47, (2) Neumann U-67, (8) Sennheiser 421, Neumann 240B, (3) AKG C-28, (2) Bryston 4-B. **Specialization & Credits:** Baby Monster is a full-service analog and digital studio. Our clients include: Elektra Records, Sony Music, A&M Records, Warner Bros. Records, Earache Records, Konnex Records, Carolina Records, Praxis/Zoo, Gold Mountain, Relativity Records, Zoar Records, Radio Active Records, Atlantic Records, Starlick Video, NBC *Today Show*, The Ramones, Ed Stasium, Daniel Rey, White Trash, Don Fleming, John Agnelio, Screaming Trees, J. Mascis, Dinosaur Jr., Janet Billig, Lemo Heads, Evan Dando, Jim Hall, Sony Fortune, Elliot Sharp, Guy Kluevick, D-Generation, Andy Sharnoff, Brutal Truth, MeatloothKidd, Jim Welch, C.O.C., BMG, The Spelvins, Bobby Field, Dave McNair, Hugh Masekela, Rockapella, Zena Parkins, David Shea, Kitty Brazelton, Lockjaw, Band of Susans and many others.

BARON & BARON PRODUCTION INC.



1500 Broadway, Ste. 402; New York, NY 10036; (212) 768-2009; FAX: (212) 768-2765. Owner: Aaron Baron. Manager: John Lempert.

BATTERY STUDIOS



137-139 W. 25th St.; New York, NY 10001; (212) 627-8200; FAX: (212) 627-5285. Owner: Zomba Recording Corp. Manager: Susan Morrison. Engineers: Nigel Green, Chris Trevett. **Dimensions:**

Room 1: studio 30'x30', control room 22'x18'. Room 2: control room 16'x18'. Room 3: studio 10'x12', control room 22'x18'. **Mixing Consoles:** (2) SSL 4064 G Series/32E-32G EQ, DDA APR-24 36-input. **Audio Recorders:** (2) Sony 3348, X-880, (2) Studer 827, (3) Dtar MTR-100, (2) Studer A-820, DMR 4000, DMR 2000, PCM 1630. **Digital Audio Workstations:** Sound Tools, Pro Tools, DD1000.

BAYSIDE SOUND RECORDING STUDIOS

RS 24 
87-48 78th St.; Woodhaven, NY 11421; (718) 296-2403; FAX: (718) 428-1482. Owner: David Eng. Manager: David Trotter.




BEARSVILLE STUDIOS
Bearsville, NY

BEARSVILLE STUDIOS

RS 48 **DB 48**
PO Box 135; Bearsville, NY 12409; (914) 679-8900; FAX: (914) 679-4284. Owner: Sally Grossman. Manager: Ian Kimmet. Engineers: George Cowan, Chris Laidlaw, Todd Vos. Dimensions: Studio A: 60'x40', control room 20'x19'. Studio B: 30'x24', control room 23'x18'. The barn: 30'x40'. **Mixing Consoles:** Neve 8088 40x16x40, SSL 6000SE 56x32x56 w/G Series computer, AMR 2400 production console 36x24x48. **Audio Recorders:** (3) Studer A800 MkIII 2-track, (3) Sony PCM-2500 professional R-DAT, Studer A820 2-track 1/2", Studer A810 2-track 1/4", Studer A80VU 2-track 1/2", Studer A80RC 2-track 1/2", Studer B67 2-track 1/4". **Monitors:** UREI 813B w/JBL subwoofer, UREI 813A w/JBL subwoofer, (3) Yamaha NS-10M, Yamaha NS-10M studio, Boston Acoustics A-60, EV Sentry 100, Tannoy NFM-8, Tannoy SRM-12B. **Specialization & Credits:** Bearsville Studios provides world-class recording and rehearsal facilities in a relaxed country setting just two hours north of New York City. Spacious lodging with 36-channel cable TV on 100 acres with pool. Convenient to excellent restaurants and shopping in Woodstock. Individual cue mixers in each room. Fully equipped rehearsal facility at 300-seat Bearsville Theater including complete stage monitor system and house P.A. The theater, which measures 55'x40', is also available for concerts, showscaes, remote recording, radio satellite broadcast and video shoots.

BEARTRACKS

RS 48 **DB 48** 
278 Haverstraw Rd.; Suffern, NY 10901; (914) 362-1620; FAX: (914) 362-0483. Owner: Jay Beckenstein. Manager: Chris Bubacz. Dimensions: Studio 47'x30', control room 24'x22'. **Mixing Consoles:** Solid State Logic SL400E w/G upgrades & computer. **Audio Recorders:** (2) Studer A820 2-track, Studer A80 MkIII 2-track 1/2", Studer A80 MkIII 2-track 1/4", Panasonic SV-3500 DAT, Panasonic SV-3700 DAT, (4) Nakamichi MR-1. **Monitors:** Augsperger custom-designed w/TAD & JBL components, (2) Tannoy SGM 10B, (2) Yamaha NS-10M, Acoustic Research AR-18, JBL 4312. **Other Major Equipment:** AMS RMX 16 digital reverb, AMS DMX 15-80, Lexicon 480L, Yamaha REV7, (2) Yamaha SPX 90II, EMT 240, (2) Lexicon PCM42, Lexicon PCM70, (2) Valley People Kepex II noise gate, (2) Drawmer DS-201 dual noise gate, Stereo Technologies AN-2 stereo simulator, Roland Dimension D, (2) UREI 1176 limiter, (2) Teletronix LA-2A limiter, (2) Fairchild limiter, dbx 162 stereo limiter, (2) dbx 165 limiter, (2) Pultec EQP-1R/MEQ-5, Drawmer 1960 stereo compressor, (2) dbx 902 de-esser. **Specialization & Credits:** Since its opening, BearTracks has gained a reputation as a state-of-the-art music production studio that offers a comfortable, relaxed and creative atmosphere to its clients. Located in the woods on the edge of Harriman State Park and conveniently only 30 minutes from midtown Manhattan, this unique facility, built within the existing frame of a huge stone barn and farm complex, has a remarkable acoustic quality that has found great favor among both pop producers, for the explosive drum sounds that can be obtained, and jazz and classical artists for its smooth, warm ambience. This spectacular acoustical quality combined with the commitment to provide its clients with the very best equipment current technology has to offer places BearTracks among the most exclusive and unique recording facilities in the world.

BMG STUDIOS

RS 48 **DB 48** 
1540 Broadway; New York, NY 10036; (212) 930-4800. Manager: Hank Meyer. Dimensions: Mix rooms: room 1: control room 27'x25' and room 2: control room 15'6"x19'6". **Mixing Consoles:** Neve VR 60 Series w/Flying Faders, Sony MXP-3036 36x24, Cedar de-noising, Harmonia Mundi system. **Audio Recorders:** PCM-1630, DMR-4000, DAE-3000, Sony PCM-2500 DAT, Studer A827, numerous Ampex 2-track 1/4" & 1/2". **Other Major Equipment:** dbx 160X, Drawmer dual gate, Lexicon 480L, Lexicon 95 digital delay, Lexicon PCM42 digital delay, Lexicon PCM70 digital effects, Pultec EQP-1A, telephone interface, Dolby 361, cassette decks, TimeLine Lynx.

BRIGG'S BAKERY

RS 24 **DB 24** 
122 W. 88th St.; New York, NY 10024; (212) 787-4242; FAX: (212) 787-8888. Owner: Lee Murphy.


CEDAR SOUND

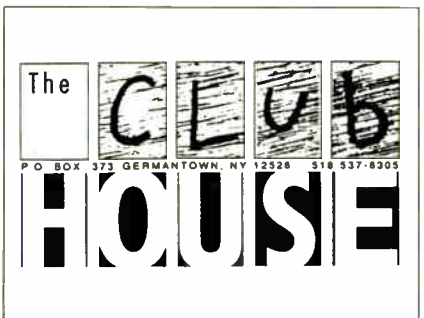
RS 24 **DB 24** 
90 West St., Ste. 2210; New York, NY 10006; (212) 227-3896; FAX: (212) 227-3896. Owner: Regan E. Freedman. Manager: Psquani Frates.

CITY SOUND PRODUCTIONS

RS 48 **DB 48** 
636 Broadway, Ste. 506; New York, NY 10012; (212) 228-9494; FAX: (212) 228-9494. Owner: Bob Kirschner. Manager: Bob Kirschner.

CLACK SOUND STUDIOS

RS 24 **DB 24** 
56 W. 45th St.; New York, NY 10036; (212) 575-5566; FAX: (212) 575-1070. Owner: Tom Courtenay-Clack. Manager: Laurie Taylor. Engineers: John Terelie, Jim Stauffer, Tom Clack, Tom Perkins, Michael Wolf. Dimensions: Room 1 studio 15'x16', control room 12'x15'. Room 2: studio 12'x8', control room 12'x14'. Room 3: studio 14'x9', control room 18'x20'. Room 4 studio 9'x10', 12'x14'. **Mixing Consoles:** API vintage 1604, (2) SoundWorkshop Series 30 24x8x2, Amek/TAC Scorpion 40x8x2, Soundcraft 200 Delta 16x4x2, Trident Fleximix 10x2x2. **Audio Recorders:** (4) Dtar MTR-90 MkII 24-track 2", (12) Dtar MTR-10/12 various 1/4" & 1/2" format, (10) Dtar MX-5050 1/4" 2 & 1/2" 4, Ampex ATR-104 1/4" 2 & 1/2" 2/4, (2) MCI 110C-8 1/2", 8-track 1", (10) Tascam 122B cassette, Stellavox Stella DAT, other various DAT, other various MCI/Ampex 1/4" & 1/2" 2- & 4-track. **Digital Audio Workstations:** (3) SSL ScreenSound, SSL SoundNet. **Monitors:** (4) EM Long MDM-4 near-field, (2) Yamaha NS-10M, Westlake BBSM 4, other various Klipsch/UREI speakers, (2) Bryston 4B, (2) Hafner P5000, (2) H&H V900, other various Crown/Hafner/Yamaha amp. **Other Major Equipment:** (5) Sony VD-9850 3/4" U-matic, Sony BVU-950 3/4" U-matic, Sony BVH-2000 1" C format, (9) TimeLine Lynx sync, TimeLine KCU, (2) TimeLine MicroLynx sync, Audio Kinetics Gearbox/Stripper, (3) BAK 4006, (5) Neumann U87, (5) AKG C-414, (2) Pultec Mavec, (6) API 2125 mic preamp, (2) Lang PEQ1, (5) Pultec EQP-1S, Pultec EQP-1A3, UREI Little Dipper, (2) Akai S-900, Akai S-1100, Voyetra Sequencer Plus Gold MIDI sequencer. **Specialization & Credits:** Specializing in pre- and post-production for video radio commercials, radio drama and sound effects. One of the largest sound effects libraries in the world (mostly our own sounds) and a huge music library. Especially skilled in on-air promos, sound-for-animation and highly produced radio. We have our own composer/performer team. Clients include: MTV, Nickelodeon, Cliff Freeman & Partners, NBC, Saatchi & Saatchi, Young & Rubicam, N. W. Ayer, Ogilvy & Mather, Chiat Day and many more. Awards too numerous to list.



CLUBHOUSE STUDIOS
Germantown, NY

CLUBHOUSE STUDIOS

RS 24 **DB 24** 
Box 373; Germantown, NY 12526; (518) 537-6305; FAX: (518) 537-5829. Owner: Paul Antonelli. Manager: Paul Antonelli. Engineers: Paul Antonelli, Greg Gruntler, Joe Vaccarino. Dimensions: Room 1: studio 25'x27'. Room 2: studio 25'x45'. **Mixing Consoles:** Neve 8058 24 mic 48 line. **Audio Recorders:** Sony/MCI JH-24 24/16-track, Sony PCM-2500 DAT, Dtar 5050B 1/2-track, (5) Tascam 122 cassette.

—LISTING CONTINUED ON NEXT PAGE

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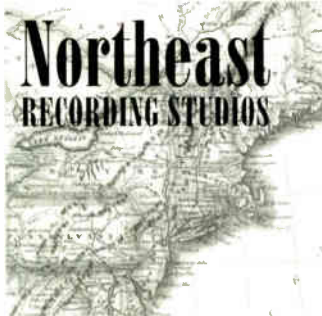
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—LISTING CONTINUED FROM PREVIOUS PAGE

Digital Audio Workstations: Mac Ilx computer, Digidesign Sound Tools CDC 650 meg external drive. **Monitors:** Tannoy DMT-12, Tannoy PMB 6.5, Tannoy NFM 8, Yamaha NS-10, Turbosound TMS-1. **Other Major Equipment:** (2) Telefunken VR-76 mic preamp, (2) Telefunken VR-72 mic preamp, (4) Focusrite ISA 110 mic/line preamp, (4) John Hardy M-1 mic/line preamp, Altec 322C limiter amp, Altec 438C compressor, (2) ADL ADI-1000 tube limiter, AKG ADR-68K digital EFX processor, Eventide H3000S Ultra-Harmonizer, Eventide F1201 instant flanger, Eventide DS101 instant phaser, TC Electronic 2290 dynamic digital delay, Lexicon PCM70, Lexicon LXP1, Lexicon LXP5, (2) BSS-402 comp/limiter, (3) BSS-502 stereo noise gate, Alexis Quadraverb, (2) Yamaha SPX90, 360 Systems MIDI patcher, Mics: Neumann SM69 stereo tube, (2) Neumann U87, (3) AKG 414, (3) AKG 451, (2) Neumann KM84, AKG 460, AKG 747, (4) Shure SM57, (4) Sennheiser 421; Perreaux 6000B MOSFET power amp, Crown DSA-2, (2) Crown DC-300, Apogee AD-500, Adams-Smith Zeta-3, (2) JVC CR-6650 U 3/4", Gretsch drum kit 1960, Marshall JCM 800 100 watts, live echo chamber.

COTTON HILL STUDIOS



18 Walker Way, Albany, NY 12205; (518) 869-1968; FAX: (518) 869-1969. **Owner:** Ray Rettig. **Manager:** Margherita Pettit.

COUNTDOWN STUDIOS INC.



122 W. 26th St., Ste. 2R; New York, NY 10001; (212) 691-9279; FAX: (212) 691-9397. **Owner:** Rhea Vogel, president. **Manager:** Ilona Nierenstein, VP.

COVE CITY SOUND STUDIOS INC.



7 Pratt Blvd., Glen Cove, NY 11542; (516) 759-9111; FAX: (516) 759-4963. **Owner:** Richie Cannata. **Manager:** Steve Bramberg. **Engineers:** Bob Cadway, Tom Yezzi, Dan Hetzel, Rick Bieder. **Dimensions:** Room 1: studio 40'x35'x22', control 30'x18'x12'. Room 2: studio 17'x15'x14'. **Mixing Consoles:** SSL 400 G Series 56-input, Neve 8068 32 input. **Audio Recorders:** Studer 820 24-track, Studer 827 24-track, Studer 820 2-track, (3) Panasonic SV-3700 DAT, Studer 867 2-track. **Digital Audio Workstations:** Macintosh IIfx w/660 meg HD, Sample Cell, Sound Tools. **Monitors:** (2) Westlake BBSM-5, Westlake BBSM-12, (2) Yamaha NS-10M, UREI 813B. **Other Major Equipment:** AMS RMX 16 reverb, Lexicon 224XL, Lexicon 480L, (2) Eventide H3000SE, Pultec EDP-1, (8) Massenburg GML mic preamp, (8) Massenburg GML 5-band para EQ, (10) Lexicon PMC42, (2) Lexicon PCM70, (2) UREI LA-3A, (2) Neve mic preamp EQ, Yamaha REV7, (2) Yamaha SPX900, Yamaha SPX90, (2) Roland SRV-2000, additional equipment available, all MIDI, mics and musical instruments. **Specialization & Credits:** Credits include: Taylor Dayne albums *Tell It to My Heart* and *Can't Fight Fate*, Mariah Carey, Hall & Oates, Celine Dion, Natalie Cole. Includes large room 22' ceiling excellent tracking and mixing. Call for full list.

COYOLE STUDIOS INC.



98 N. 6th St., Brooklyn, NY 11211; (718) 387-7956. **Owner:** Albert & Michael Caiati. **Manager:** Michael Caiati. **Engineers:** Albert Caiati, Michael Caiati, Mat Johnson, Omar Cano, Rowen. **Dimensions:** Room 1: Studio 18'x20', control room 18'x20'. Room 2: Studio 25'x30'. **Mixing Consoles:** MCI 528. **Audio Recorders:** Studer A80 MkII 24-track 2" 15/30 ips, Tascam MS-16 1" 30 ips, Tascam 38 1/2" 15 ips, Panasonic SV-3500 DAT, Otari 5050 1/4" 15 ips, Sony 700 DAT, (2) Denon DR-M30HX cassette decks. **Monitors:** UREI 809, Yamaha NS-10. **Other Major Equipment:** Neumann U87, Micro-Tech Gefel GMBH UM-70, (3) AKG C-414-B ULS, (3) AKG D-112, D-12, AKG C-535, (2) Sennheiser 421, (2) EV ND408, (2) AKG 460B, AKG C-414B-ULS, (2) Tube-Tech CLIA compressor, Summit Audio EQ200, (3) dbx 165A, Aphex 900 Series rack, (2) Ashly Audio SC-66A EQ, Ashly Audio SC-33 stereo gate, Aphex Compeller, (2) Valley People Dyna-Mite, Yamaha SPX90, (2) MIDVerb II, Lexicon PCM60, (3) Lexicon PCM42, UREI 6300 power amp, Symetrix 564-E quad expander/gate, (2) UREI LA-4 limiter/comp., vintage Marshall, vintage Fenders, Hammond L-100 w/Leslie cabinet, Ampeg SVT. **Specialization & Credits:** Coyote Studios was started by musicians for musicians, and has been at the center of the NYC underground music scene for almost a decade. Legendary artists and producers have enjoyed the "vibe" here. Clients have included: Lenny Kaye (Patti Smith), The Smithereens, the Del Lords, The Ramones,

Handsome Dick Manitoba, Andy Shernoff (Dictators), Crypt Records, Matador, Diesel Only Records, East Side Digital, Sympathy for the Record Industry Records, Norton Records, Sub Pop, and the list grows longer every day. With the addition of our Studer A80 24-track, we wish to attract the overdund market, where producers can bring their artists for relaxed overdub sessions at a reasonable price without the pressures of the larger NYC studios. Our staff is cheerful and attentive, and Brooklyn is a great town.

CRYSTAL SOUND RECORDING INC.



220 W. 19th St., 6th Fl.; New York, NY 10011; (212) 255-6745. **Owner:** CSR Inc. **Manager:** Sharon Amandola.



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DAJHELON ENTERTAINMENT GROUP
Rochester, NY

DAJHELON ENTERTAINMENT GROUP



234 East Ave., Rochester, NY 14604; (716) 232-1480; FAX: (716) 546-1681. **Owner:** David C. Schumaker. **Manager:** Ethan Porter. **Engineers:** Steve Forney, Jeff Riedmiller, Phil Thorne, Antonio Gray, Sam Pisano. **Dimensions:** Room 1: 47'x50', control room 22'x30'. Room 2: 24'x38', control room 14'x20'. Room 3: 12'x22', control room 14'x16'. Room 4: 6'x7', control room 12'x14'. **Mixing Consoles:** Neve VR60 w/Flying Faders, Amek Mozart RN40 w/Supertrue automation/dynamic, Amek/TAC Bullet 24-input, Yamaha DMP7. **Audio Recorders:** Sony APR-24, Studer 827, Studer A80, Fostex E-16, Akai MG1214, Sony APR5003 w/Dolby SR, Fostex E2, Panasonic SV-3700. **Digital Audio Workstations:** Digidesign Pro Tools w/2 gig, Digidesign Sound Tools w/1.2 gig, Digidesign Sample Cell. **Monitors:** Tannoy DMT System 215, Tannoy DMT System 15, Tannoy SGM 12B, Tannoy PBM 8, Tannoy PBM 6.5, Meyer HD1, Yamaha NS-10M, Auratone. **Other Major Equipment:** Lexicon 480L, Lexicon 300, Lexicon PCM70, Lexicon PCM421, Eventide H3000 SE, Eventide H3000B, Drawmer M-500, Drawmer 1960, Yamaha DX201, Klark-Teknik DN500, Pultec EDP-1A, Lang PEO-2, UREI 1176LN, Teletronix LA-2A, ELA M251, Neumann U67, Neumann TL170, Neumann KM84, Milab DC96, AKG 414ULS. **Extended Equipment Description:** Microtech Gefell UM-70, Sennheiser 421, Sennheiser 409, Shure SM57, Shure Beta 58; Steinway grand piano, Hammond B3 organ, Gretsch custom drum, all the latest keyboard/sampler/drum computers: Roland, Korg, Kurzweil, E-mu, Akai; Macintosh, and Atari sequencing: Performer, Studio Vision, many others; Sony BVH-3100 1". Sony BVU-950 3/4" SP. Adams-Smith 2600 system sync, much more, too numerous to mention. **Specialization & Credits:** In-house full-color album design/promotional packaging on photographic digital editing system. Music production services. All control rooms completely interfaced with MIDI network, 10,000 sq. ft. of newly renovated, comfortable, acoustically designed audio recording studios including 2,000-sq.-ft. live tracking room designed by Studio b.a.u.t.o.n. Our staff is dedicated to personal client attention. Independent producers and engineers welcome. Complete recording packages with accommodations available. Very reasonable rates.

DIGITAL DOMAIN



309 E. 90th St., Ste. B; New York, NY 10128; (212) 369-2932; FAX: (212) 427-6892. **Owner:** Bob Katz. **Manager:** Susie Hollander.

D.K. U.S.A. STUDIOS



1697 Broadway, New York, NY 10019; (212) 307-0505; FAX: (212) 307-1888. **Owner:** Daiichi Kosho U.S.A. **Manager:** Leslie Ballard.

DREAMLAND RECORDING STUDIO



PO Box 383; Bearsville, NY 12409; (914) 338-7151; FAX: (914) 339-2505. **Owner:** Joel Bluestein. **Manager:** Joel Bluestein, Sarah Chi-anes. **Mixing Consoles:** API 3232 36x16x32 w/40) 554, (7) 550A, (5) 560A (2) 560B EOs; API 1604 16x16x4. **Audio Recorders:** Studer A820 24-track 2", Otari MTR-90 II 24-track, Ampex ATR-102 1/4" & 1/2", Panasonic SV-250 portable DAT, (2) Panasonic 3500 & 3700 DAT, (5) Tascam 122 MkII. **Digital Audio Workstations:** Spectral System AudioEngine. **Monitors:** Meyer HD-1, UREI 813-B studio, Yamaha NS-20M & NS-10M, Tannoy PBM 6.5, Westlake BBSM10. **Other Major Equipment:** (2) Perreaux 6000B, Bryston 4B, (2) McIntosh 2100, (3) Crown DC-300 amplifiers; Lexicon 480L digital effects sys-

tem, (2) Lexicon PCM60 & 70, Lexicon 224, TC Electronic 2290, Eventide 3000 w/sample option, (2) Yamaha REV7, Yamaha SPX1000, (2) Korg A-2, (2) Korg SDD-3000 reverb; (6) Drawmer DS-201 stereo noise gate, Drawmer 1960 stereo tube comp/limiter preamp, Neve 33609 stereo comp/limiter, (3) Lydkraft CL-1A tube comp/limiter, (3) Universal Audio 175 B tube limiting amp, (3) UREI 1176 & 1178 comp/limiter, (5) Teletronix LA-3A audio levelers, (2) Spectrasonics 610, (2) dbx 160, (4) dbx 160X, (2) dbx 165A Over Easy comp/limiters; Lydkraft PE-1A tube EQ signal processor, (7) Pultec EQ, (8) Neve 1073 I/O modified w/4-band EQ, (2) Neve 1060 I/O, (4) Focusrite ISA 116, (2) Lydkraft MP-1A stereo tube, (4) GML mic preamps; (2) GML Model 8200 dual 5-band parametric EQ, Demeter stereo tube direct box, (2) MXR Model 126 flanger/doubler. **Extended Equipment Description:** Steinway B grand piano 1934, Hammond B3 organ w/Leslie floor speaker, Yamaha DX7 II FD, Roland Super Jupiter MKS-80, Roland D-550 linear synthesizer, Roland U-220, E-mu Proteus sample players; Forat F-16 sampler, Akai S-900, (6) individually adjustable stereo cue stations; in-house collection of guitars & amps by Fender, Gibson, Rickenbacker, Martin, Guild, Marshall, Vox, Ampeg, Roland; Timeline Lynx synchronizer, over (100) microphones. **Specialization & Credits:** Dreamland offers accommodations, a full kitchen, outdoor swimming pool, production assistance with in-house musicians and video support. Dreamland Recording Studio has established itself as one of the premiere cutting environments in the country with the ambience of a 100-year-old church and various acoustical environments to choose from. Dreamland has hosted clients such as The B-52's, 10,000 Maniacs, Suzanne Vega, Michelle Shocked, Joe Jackson, Bobby McFerrin, Yo Yo Ma, Robert Fripp, David Sylvian, Dinosaur Jr., Buffalo Tom, Jack DeJohnette, Pat Metheny, Graham Parker, Buckwheat Zydeco, the Hot House Flowers, Marshall Crenshaw, Ghost of an America Airmen, Bill Frisell, Hot Tuna, NRBO and the Mighty Mighty Bosstones. We specialize in all areas of live music from grungy psychedelic hip-hop to classical.

D.S.M. PRODUCERS



161 W. 54th St., New York, NY 10019; (212) 245-0006; FAX: (212) 265-5726. **Owner:** Corporation. **Manager:** Jamie Chaleff.



EAST HILL STUDIOS
New York, NY

EAST HILL STUDIOS



3 East 28th St., 5th Fl.; New York, NY 10016; (212) 447-9166; FAX: (212) 689-4010. **Owner:** Paul Bernhardt and Joel Kipnis. **Manager:** Kevin Marth. **Dimensions:** Room 1: studio 40'x30', control 22'x25'; Room 2: studio 8'x8', control 20'x22'. **Mixing Consoles:** SSL 64-input G series w/Ultimection, Amek Angela 40-input, Sound Workshop 34C 32-input. **Audio Recorders:** (2) Studer A827, Otari MTR-90 MkII, Sony/MCI JH-24, (3) Panasonic DAT 3700, Studer A820 2-track. **Monitors:** Tannoy DTM-15, Tannoy NFM-8, Tannoy PBM -6.5, Tannoy System 10. **Other Major Equipment:** Lexicon 480L, (3) Lexicon PCM70, PCM42, (3) Lexicon PCM41, Neve EQ, LA-2A, Hardi M1, (4) Eventide H3000, (2) TC Electronic 2290, EMT 40 Stereo Plate, API 550, Tube-Tech EQ, UREI 1176, Drawmer dual gates, AKG C12, 414, C451, 460, D12, Micro-Tech UM70, Neumann U87, Shure SM57, 58, 98, Yamaha C7 grand piano, MIDI gear: MPC 60, Atari 1040, Mac II SE, Akai S1100, S900, Proteus 1&2, Roland MKS 70, D50, Super JX, MRS 80, D550, Yamaha TX812, DX 711FD, TG 77, Prophet US, Korg Wave Station; Perreaux 9000B, Yamaha 2002, Crown MT600, and Hot House amplifiers. **Specialization & Credits:** East Hill is a new 48-track SSL facility featuring a 64-input SSL G series with Ultimection. The studio offers a naturally acoustic live room, plus two additional iso booths with movable walls for a flexible recording environment. East Hill also offers two 24-track overdub suites. Studio B has a Sound Workshop 34C with complete MIDI. Studio C features a 40-input Amek Angela console with a spacious live room and a full complement of outboard and MIDI equipment, including Mac II, Akai MPC 60, MPC 60, S1100, and Korg Wavestation. Two separate lounges, plus a private producers' lounge and a complete kitchen are also available. Recent clients include the following: Phil Ramone, Russ Titelman, Ed Stasium, Nile Rodgers, Bill Laswell, Omar Hakim, C&C Music Factory, Michael McDonald, Liza Minnelli, Tony Visconti and Rockapella.

EAST SIDE AUDIO AND VIDEO



216 E. 45th St., New York, NY 10017; (212) 867-0730; FAX: (212) 867-0426. **Owner:** Carlton Communications. **Manager:** Lizzie Schwartz. **Engineers:** Tom Goldblatt, Bob Giammarco, Tom Ju-

carone, Glenn Laredo, Rod Zavala. Dimensions: Room A: studio 10'x12', control room 36'x20'. Room B: studio 10'x15', control room 32'x20'. Room C: studio 10'x15', control room 30'x20'. Room D: studio 10'x15', control room 19'x25'. Room E: studio 12'x15', control room 18'x30'. **Mixing Consoles:** (2) SSL Series 6000, (3) SSL custom 4000 G Series w/5K film formatted section. **Audio Recorders:** NED PostPro and (4) w/SoundNet, SSL ScreenSound digital workstation, (2) Studer A800, (2) Otari MTR-90, (2) Studer A820, (13) Otari MTR-10 2/4-track 12 TC, (2) Nagra 4.2 IV-S, (4) Magna-Tech Series 2000 6-track and 30-frame capability. **Monitors:** (5) UREI 813, (6) Yamaha NS-10M, (2) MDM 4, (10) Auratone. **Other Major Equipment:** Dolby A, Dolby SR, (5) TimeLine edit systems, AMS RMX 16, AMS DMX 15-80, (2) Lexicon 224XL, Yamaha SPX1000, Lexicon 480L, Yamaha REV5, Yamaha REV7, Aphex, Dynaflex, (2) Pultec EQ, (2) Neve compressor, (6) UREI 7110, (2) Eventide 3000, Sennheiser 421, AKG 414, Neumann U87, Neumann U67, (4) Bryston 4R, (2) Bryston 500, (3) Bryston 7B, (2) Haller 500, Akai S900 sampler, Ensoniq EPS, Voyetra 8 synthesizer, Roland 707 drum machine, (2) Sony 5800 3/4", (4) JVC VHS, Sony DVR-20 (D2), Sony DVR-28 (D2), Sony BVU-950.



EASTSIDE SOUND
New York, NY

EASTSIDE SOUND



98 Allen St., New York, NY 10002; (212) 226-6365; FAX: (212) 226-0788. Owner: 98 Allen Opco Inc. Manager: Lou Holtzman, Yaron Fuchs. Engineers: Lou Holtzman, Nicholas Prout, A.W. Dick, Yaron Fuchs and independents. Dimensions: Room 1: studio 25'x45', control room 20'x20'. **Mixing Consoles:** Harrison Series Ten "B". **Audio Recorders:** (2) Sony APR-24 48-track, Studer A80 2-track, Sony 2500 DAT, Sony 1900 DAT. **Digital Audio Workstations:** Sound Tools S20-60 minutes Mac Wren, Garfield MB, Mac Quadra 950, Mac Quadra 700, Digidesign Pro Tools. **Monitors:** (4) Roger Quedest. **Other Major Equipment:** Garfield Masterbeat, Adams-Smith Zeta-3, (3) Sony/MCI 201, Lexicon 480, Lexicon 42DDL, Eventide H3000, (2) Instant Ilanger, Boss DDL, TC Electronic TC2290 DDL, SPX90, Proverb, Master Room C, Master Room MkII, Yamaha 1500 DDL, (2) LA-2A, (2) UREI LA-4, (2) JBL 7110, (2) dbx 160X, (2) BBE 202R, (4) Drawmer gate, Drawmer tube/comp limiter, Symetrix EQ, UREI 530 EQ, Klark-Teknik EQ, Trosie EQ. **Wide variety of microphones.** (2) Microtech U92, Microtech UM70. (2) Haller amps; (3) Harrison, (2) Steinway B grand piano, DX7, TX816, Akai 950, Macintosh IIX, Macintosh II, Macintosh SE/30. **Specialization & Credits:** Eastside is known for its comfortable one-on-one atmosphere, with a professional staff that assists in accomplishing your goals. Our rates are competitive, and we make every effort to bring your project in on budget. The Series Ten B was the first and only totally automated audio console. It can be instantly configured for use in video post, motion picture production, music recording and mixing. Interfacing with the Macintosh II, the Series Ten B stores all parameters and settings of every module, grouping faders and monitor control. Every knob and switch resets automatically, and every move is followed in real time and replicated exactly during playback. The Series Ten B is designed to free producers and engineers to use their creative talents in endless ways. If you think that you've mixed on a totally automated console then be prepared to be pleasantly surprised. We've also added a separate MIDI production control room with 24-tracks.

EASTWIND RECORDING



6816 Ellicott Dr., East Syracuse, NY 13057; (315) 463-6759. Owner: Michael Jaffaran. Manager: Ken Hoston.

ELECTRIC LADY STUDIOS



52 W. 8th St., New York, NY 10011; (212) 677-4700. Owner: Alan Selby. Manager: Mary Campbell. Engineers: Bob Rosa, Michael White, Marc Glass, Hal Belknap, Jennifer Bette, Matt Cappadocia. Dimensions: Room 1: studio 38'x35', control room 16'x26'. Room 2: studio 19'x21', control room 17'x27'. Room 3: studio 19'x21', control room 14'x23'. **Mixing Consoles:** Focusrite 64-input, 32 bus, 12 aux, Massenburg automation; SSL 4000E 56-input, 32 bus, Total Recall G Series computer; SSL 4064G 56-input, 32 bus, Total Recall

G Series computer, Ultimatum. **Audio Recorders:** (4) Studer A-800 MkII 24-track, (2) Studer A-820 24-track, (2) Studer A-80 VU 2-track 1/2", Studer A-820 2-track 1/2", Sony 3348 digital 48-track, (3) Sony PCM-2500 Pro DAT, (2) Studer A-810 2-track 1/4". **Monitors:** (2) George Augspurger custom 2-way w/TAD component, (3) Yamaha NS-10M, (2) Westlake MX-1 2-way, (3) Auratone 5-C, (2) Meyer HD-1, Pro-Ac, Boston Acoustics A-60, B&W 550. **Other Major Equipment:** (8) Neve 4-band EQ, (8) Focusrite 110 EQ, (6) EMT plate, (2) Lexicon 480L, (6) Manley 350 power amp, (3) Lexicon 300, Pultec EQP-1A, Pultec MEQ, UREI LA-2, Sony DRE-2000, Publison Infernal machine, Drawmer gate.

ELECTRIC WILBURLAND STUDIO



1573 Ellis Hollow Rd., Ithaca, NY 14850; (607) 277-5221. Owner: Will Russell.

FOOTHILL DIGITAL PRODUCTIONS INC.



215 W. 91st St., New York, NY 10024; (212) 877-0973. Owner: Allan Tucker. **Specialization & Credits:** Exclusively mastering and editing in two Sonic Solutions suites. Trench warfare editing our specialty. Call for rates and availability.

FUNKY RECORDS RECORDING STUDIO



244 Lyell Ave., Rochester, NY 14608; (716) 458-5610. Owner: Boyd McCoy. Manager: Boyd McCoy.

GIANT

RECORDING STUDIOS

GIANT RECORDING STUDIOS
New York, NY

GIANT RECORDING STUDIOS



1776 Broadway, New York, NY 10019; (212) 247-1160; FAX: (212) 247-2081. Owner: Douglas Pell. Manager: Douglas Pell. Engineers: Ron Allaire, Steve Neat. Dimensions: Room 1: studio 25'x35', control room 20'x30'. Room 2: control room 20'x25'. **Mixing Consoles:** SSL 4056 G computer TR Bernoulli, Trident 65. **Audio Recorders:** (2) Otari MTR-90 II, Otari MTR-12 II, Otari MTR-10 II, (2) Otari 5050 II, (4) Panasonic 3700 DAT. **Digital Audio Workstations:** Synclavier 32meg, 32 FM, 16-output optical disk. **Monitors:** Tannoy System 215 DMT, (4) Yamaha NS-10, Tannoy 6.5 (modified), Tannoy DMT12, Electro-Voice Century 100. **Other Major Equipment:** Lexicon 480, (4) Lexicon PCM42, Lexicon PCM60, Lexicon PCM70, (4) Pultec EDP & MEQ, Teletronix LA-2A, (2) AMS DMX RMX, (2) Neve EQ mic pre, (6) API 550A, (4) API 512 mic pre, (2) Drawmer net gate, EMT 240 Gold Foil, TC 2290, (2) UREI LA-3A, (2) Neve compressor/limiter, (2) Lexicon Prime Time, (2) dbx 160X, Telcom C4 28-channels noise reduction, (3) Yamaha SPX90, Eventide H3000. **Specialization & Credits:** Giant's clients include: Sting, Keith Richards, Michael Jackson, Roger Daltrey, Patty LaBelle, Mariah Carey, C&C Music Factory, Pantera, Steve Winwood, Chuck Berry, Joe Jackson, Cher, Judy Collins, Michael Franks, Miriam Makeba, Art Garfunkel, Queen Latifah, New Order, Lisa Stansfield, Dr. John, Larry Coryell, Rupert Helms, Bruce Hornsby, Sergio Mendes, Najee, Freddie Jackson, Branford Marsalis, Sly Dunbar & Robbie Shakespeare, Color Me Badd, Hammer, Mavis Staples, Kid Creole & the Coconuts, Gregory Abbot, Kazumi Watanabe, Adiva, Debbie Harry, Mama I Want to Sing, Peter, Paul & Mary, Roy Orbison, Bobby Brown, Larry Blackmon, Sara Dash, plus many more!!

GOLDEN HORN RECORDING STUDIOS



97 West Second St., Freeport, NY 11520-5720; (516) 623-1672; FAX: (516) 623-1672. Owner: Sami Uckan. Manager: Elizabeth Hope.

GREENE STREET RECORDING



112 Greene St., New York, NY 10012; (212) 226-4278; FAX: (212) 431-4156. Owner: Steve Loeb. Manager: David Harrington. Engineers: Rod Hui, Jamey Staub, Josh Wertheimer, Dan Wood, Charlie Dos Santos, Chris Shaw. **Mixing Consoles:** Amek/Massenburg Lab APC 1000/GML 56-input Recall, API Legacy 48-input. **Audio Recorders:** Studer A-820 multi, Studer A-827 multi, Studer A-800 multi, Studer A-80 2-track, Studer A-820 2-track. **Digital Audio**

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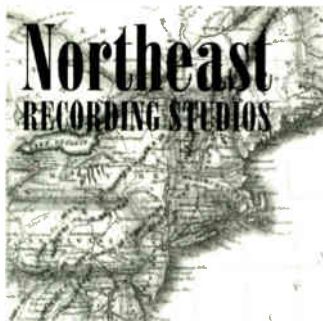
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TURN TO PAGE 165 FOR AN EXPLANATION OF RECORDING SERVICE SYMBOLS.

—LISTING CONTINUED ON NEXT PAGE



—LISTING CONTINUED FROM PREVIOUS PAGE

Workstations: Digidesign Pro Tools. **Monitors:** Quested triamped/soft dome 4x12, John Meyer 833, (4) Yamaha NS-10, (2) Tannoy PBM 6.5. **Other Major Equipment:** Publison 90 Infernal machine, Lexicon 480L, Lexicon 224, Lexicon PCM70, (3) Lexicon PCM42, (2) TC Electronic 2290, Eventide H3000, (2) Lexicon PCM60, (2) Tube-Tech CI-1A comp/limiter, (2) Tube-Tech PE 1B EQ, Pultec Mavec, (2) Pultec EQP 1-A, (2) Lang PEQ-2, EMT 140 plate, AMS RMX-16 reverb, API 512, 525, 550, (2) GML 8200 para EQ, (2) Eventide H910, (2) Barcus-Berry 402 Dynamic proc., (4) ADL 1000 tube limiter, (8) UREI 1176, (2) TimeLine Lynx sync modules, and various Yamaha, Ursa, dbx, Neve, Ensoniq DP4, Eventide Instant Phaser, Dolby 363 A/SR noise reduction, (2) Valley People Kepex III (8U) gate rack, varied mic selection: Neumann, AKG, Mikrotech/Gefell, Sennheiser, Shure, Beyer, Schoeps; E-mu SP1200, (2) Akai S950, (2) Roland SBX80 sync box, Hammond B3 w/Leslie.



HIP POCKET RECORDING STUDIOS
New York, NY

HIP POCKET RECORDING STUDIOS

48 48 **37 W. 20th St., New York, NY 10011; (212) 255-5313; FAX: (212) 645-1787. Owner: Bob Merrill. Manager: Jim Doherty. Engineers:** Joe Ariotta, Butch Jones, Rich Diver, Mark Zampella, Gerry Volkensz. **Dimensions:** Room 1: studio 35'x45'x15', control room 20'x26'. Room 2: studio 20'x30'x12', control room 18'x22'. Room 3: studio 8'x10', control room 16'x18'. Room 4: program room 15'x21'. **Mixing Consoles:** SSL 6056E 56x32 w/Total Recall/RGB option/update, Neve 5104 32-input, MCI JH-542C modified 42x32, Soundcraft TS-12 28x24. **Audio Recorders:** Dtari MTR-90 MkII 24-track, Sony PCM-3324 24-track digital, (3) Sony APR-24, Studer 2-track 1/2", MCI 110B 2-track 1/2" modified, (5) MCI 2-track 1/4" modified, MCI 4-track 1/2" modified, Dtari 5050 4-track, Mitsubishi 32-track full SSL hookup available, (2) Panasonic and Sony DAT, (4) Sony cassette. **Digital Audio Workstations:** Synclavier direct-to-disk. **Monitors:** UREI B13A, UREI B13, (3) EV 100A, (3) Yamaha NS-10M, (6) Auratone cube. **Other Major Equipment:** (2) Adams-Smith full system, Lynx system, Lexicon 224XL, Lexicon PCM60, Lexicon PCM70, Lexicon PCM42, Audicon plates, Lexicon 200, DeltaLab Acoustic Computer, Yamaha SPX90, Bel BD-80, Marshall AR-300 tape eliminator, Neumann U87, Neumann U67, Neumann U47 original tube, Neumann KM84, AKG tubes, AKG 4114EB, AKG 451, Tama drums, Yamaha grand piano, Steinway grand piano, Roland Super Jupiter, Yamaha TX816, percussion, Hammond B-3, JVC 8250U w/RM70, JVC 6650U w/RM70. **Specialization & Credits:** One of New York's most complete recording studios, Hip Pocket includes live state-of-the-art rooms to meet the diverse needs of major-label recording artists, leading advertising companies and top music production companies. A member of the Society of Professional Audio Recording Services (SPARS), Hip Pocket has a reputation for combining technical sophistication with a knowledgeable staff and caring, personal service.

THE HIT FACTORY

48 48 **421 W. 54th St., New York, NY 10019; (212) 664-1000; FAX: (212) 246-2252. Owner: Edward Germano. Manager: Danielle Germano.**

THE HIT FACTORY BROADWAY

48 48 **237 W. 54th St., New York, NY 10019; (212) 664-1000; FAX: (212) 246-2252. Owner: Edward Germano. Manager: Danielle Germano.**

I.N.S. RECORDING

48 48 **19 Murray St., New York, NY 10007; (212) 608-1499; FAX: (202) 608-1526. Owner: Ian North, Debbie North. Manager: Trude Kay.**

THE JAMATORIUM

48 48 **PO Box 787-M, Seneca Falls, NY 13148; (315) 568-5755. Owner: Harry Towers. Manager: Harry Towers.**

KAMEN RECORDING STUDIOS

48 48 **701 7th Ave., 6th Fl., New York, NY 10036; (212) 575-4660; FAX: (212) 575-4799. Owner: Roy and Marina Kamen. Manager: Keith Goldstein. Engineers: Roy Kamen, Keith Goldstein, Matt Richman, James Kocik, Nicky Francois-office mgr. **Dimensions:** Room 1: studio 31'x21', control room 19'x20'. Room 2: studio 30'x22', control room 22'x17'. Room 3: studio 12'x7', control room 16'x13'. Room 4: control room 16'x13'. **Audio Recorders:** MCI JH-24 24-track, (4) Tascam D-30 DAT, Sony PCM-2300 DAT, Panasonic SV-3700 DAT, (2) Dtari MTR-12 w/CCTC, (3) Fostex E Series w/CCTC. **Digital Audio Workstations:** (3) Digidesign Pro Tools 1.2-track, (3) Digidesign Sound Tools. **Other Major Equipment:** Sony BVH-3100 1" video, (3) Adams-Smith Zeta-3 synchronizer, Adams-Smith 2600 sync, (2) Lexicon 224L, (3) Symetrix phone patch, (4) Akai S-1000 HD sampler w/Bmeg, Korg O1W Pro, Korg Wavestation, Korg M-1, (2) Roland D-50, (3) Proteus 1, 2 & 3, Roland R-8 drum machine, Alesis HR-16 drum machine, (6) Neumann U87 mic, (3) Macintosh IIX, Macintosh LC II, Macintosh SE30, (5) 44meg removable cartridge drives, many SFX and music CD Libraries.**

KMA

48 48 **1650 Broadway, Suite 900, New York, NY 10019-6833; (212) 265-1570; FAX: (212) 265-1570. Owner: Michael Case Kissel. Manager: Morris Levy.**

LAST CHANCE STUDIOS

48 48 **914 Madison Pl., Merrick, NY 11566-1207; (516) 485-5853. Owner: Ed Warrin. Manager: Leslie Wonderman. Engineers: Al Price, Bill Barone, Rich Varney, Milton Williams, Tom Zona, Ed Warrin. **Dimensions:** Room 1: studio 11'x13', control room 12'x14'. Room 2: studio 10'x6'. **Mixing Consoles:** Carvin MX2488, Fostex 450-16, Ross, Macie. **Audio Recorders:** Tascam MSR-16, Fostex Model 80, Tascam DA-30, Denon DTR-2000, Nakamichi MR1, Tascam ATS-500 synchronization, Tascam IF-500 synchronization. **Digital Audio Workstations:** Macintosh II, Digidesign Sound Tools, Dpcode Studio Vision, Segate hard drive 130MB, Quantin hard drive 170MB, Digidesign digital interface, Digidesign analog interface. **Monitors:** Yamaha NS-40M, JBL 4406, Carver PM-600 amp, Yamaha P2075 amp. **Other Major Equipment:** Eventide H3000SE, Lexicon LXP-15, assorted reverb delay and dynamic processors, Dpcode Studio Vision, Dpcode Studio 5, full line of keyboards and modules, Korg M-1, Proteus, Yamaha, Roland, all popular microphones: AKG 414, D112, Shure, Electro-Voice; an arsenal of guitars and amps and an array of drums and pad triggers.**

LAUGHING DOG STUDIOS

48 48 **80 Van Duzer St., Staten Island, NY 10301; (718) 720-9497; (800) 955-4DOG. Owner: Bill Donnelly. Manager: Henry Falco.**

RICHARD LEPAGE & ASSOCIATES

48 48 **Suffern, NY 10901; (914) 357-6453; FAX: (914) 357-6806. Owner: Rich LePage. Manager: W. LePage.**

LEVELHEAD RECORDING

48 48 **500 W. 52nd, New York, NY 10019; (212) 664-1033. Owner: Gary Wade, John Dee. Manager: Gary Wade, John Dee. **Specialization & Credits:** Levelhead/Soundscapes is a 24-hour recording and rehearsal facility offering 2" 16-track, 1/2" 8-track, 1/4" 4-track, and 1/4" 2-track recording. We have over 2,000 square feet of space as well as a large selection of instruments, amps and outboard gear. Our staff features experienced engineers with major engineering and production credits. We also offer in-house music production, from jingles to soundtracks to albums. Past clients have included: CBS Records, Famous Music Publishing, Damn Yankees, White Trash (Elektra Records), The Jazz (EMI Records), D.L. Byron (Arista Records), John Popper (The Blues Traveller/A&M Records), Ted Nugent, Tommy Shaw (Styx), Chris Stein (Blondie), Terence Trent D'Arby, Jack Blades (Night Ranger), Peter Noone, (Herman's Hermits/VH-1/Cypress Records), Aztec Two Step, Dave Liebman, Yomo Toro, Richard X. Heyman (Sire Records), The Triplets (Mercury Records), Miller Beer and Miller Concert Series, Bed & Bath, National Dance Company of Senegal, Aid to Afghanistan Relief Fund Committee, Helen Sater (*Supergirl*), Peter MacNicol (*Ghostbusters II*), Mary Stuart Masterson (*Immediate Family*), Fisher Stevens (*Short Circuit I & II*).**

SEE PAGE 165 FOR AN EXPLANATION OF THE STUDIO SERVICE ICDS. FOR MORE INFO ABOUT MIX LISTINGS SEE PAGE 157.

LIEBERT RECORDING STUDIOS INC.

48 48 **16 W. 46th St. 6th & 8th floors, New York, NY 10036; (212) 840-1350; FAX: (212) 764-0440. Owner: Bob and Carmen Liebert. Manager: Rosanne Zisa.**



THE MAGIC SHOP
New York, NY

THE MAGIC SHOP

48 48 **49 Crosby St., New York, NY 10012; (212) 226-7035; FAX: (212) 226-7094. Owner: Steve Rosenthal. Manager: Janet Erb. Engineers: Steve Rosenthal, Edward Douglas, Joseph Warda, Bogdan Herik. **Dimensions:** Studio 42'x23', control room 36'x23'. **Mixing Consoles:** Neve 80 Series custom wraparound 40-input, Trident Series 24 Sidecar 24-input. **Audio Recorders:** Sony PCM3324 24-track digital, Studer A80 Mark IV 24-track, Panasonic 3500 DAT, Panasonic SV-DA10 DAT, Ampex ATR-102 2-track 1/2", (10) TEAC U-670 cassette. **Digital Audio Workstations:** Digidesign Sound Tools II system running on a Quadra 950 1.2 gigabyte hard drive. **Monitors:** Tannoy FMS-U, Altec 604E w/Mastering Lab crossover, (4) Yamaha NS-10M, Tannoy 6.5, EV Sentry 100. **Other Major Equipment:** Neumann U47 tube mic, Neumann U67 tube mic, (2) Neumann KM56 tube mic, (2) Lexicon 224 digital reverb, Eventide H3000S, Lexicon PCM70 digital reverb, Lexicon PCM42 digital delay, Yamaha 6' baby grand piano, Hammond B-3 organ w/Leslie, Akai S900 sampler, Korg M-1 synth, Roland D-50 synth, Yamaha TX216 synth, Roland Super Jupiter w/programmer, (2) Pultec EQP-1A EQ, (2) Lang PEQ-2 EQ, (2) Teletronix LA-2A compressor, (6) Neve 2254 limiter/compressor, Teletronix LA-4A compressor, Private Cue 12-input multistation headphone system. **Specialization & Credits:** The Magic Shop continues to provide the best of the old, the new and the classic in recording technology along with the special live that's made so many consider The Magic Shop their professional home away from home. Clients include Lou Reed, Sonic Youth, The Ramones, Suzanne Vega, Phil Spector, Billy Squier, George Benson, Christine Lavin, Charles Brown, Charles and Eddie, They Might Be Giants.**

MANHATTAN CENTER STUDIOS

48 48 **311 W. 34th St., New York, NY 10001; (212) 279-7740; FAX: (212) 465-2367. Owner: Dne Up Enterprises. Manager: Dan Gillberg. Engineers: Roy Clark, Robert Carvell, Richard Clark, Bill Miho. **Dimensions:** Room 4: studio 32'x20', control room 32'x22'. Room 7: studio 94'x98'x45' w/54'x95'x30' stage, control room 18'x28'. Room 8: studio 24'x28'x12', control room 14'x15'. **Mixing Consoles:** SSL 4056 G Series 56x32 w/Total Recall Ultimatum (moving faders), Neve VR 48 w/Recall and Flying Faders, Neve VR 72 w/Recall and Flying Fader, TAC Scorpion 28x12, Soundcraft 20x2. **Audio Recorders:** Sony PCM-3324 24-track digital, Studer A80 MkIV 24-track, Panasonic 3500 DAT, Panasonic SV-DA10 DAT, Ampex ATR-102 2-track 1/2", (10) TEAC U-670 cassette. **Monitors:** Perreaux, Hot House, Carver, Bryston, Ramsa monitor amps, Tannoy FMS-U, Tannoy 15B w/C150 subwoofers, Genelec 1031A, Digital Design, Yamaha and Tannoy near-fields. **Other Major Equipment:** Dolby SR 2 channels, dbx 2 channel, Adams-Smith Zeta-3, Lexicon, Quantec, TC Electronic, Eventide, Yamaha, Alesis, Summit Audio, UREI, dbx, BASE stereo expander, Focusrite, Boulder, Tube-Tech, Aphex, Rane, AMS, GK ART, Drawmer, Summit Audio, Demeter, DigiTech, B&K, Schoeps, Neumann, AKG, Yamaha, Sennheiser, Shure, EV, and many other mics. **Extended Equipment Description:** NEB Synclavier 9600 w/32 voices, 32MB, 16 out, optical drive, Denny Yaeger library, many synthesizer, Steinway L 5'6", Kawai baby grand, Yamaha professional drum kit, video equipment: complete production and post prod. capabilities available. Direct fiber-optic access to all area teleports.**

MANHATTAN CENTER STUDIOS REMOTE

48 48 **311 W. 34th St., New York, NY 10001; (212) 279-7740; FAX: (212) 465-2367. Owner: Dne Up Enterprises. Manager: Dan Gillberg. Engineers: Roy Clark, Robert Carvell, Dan Mathers. **Dimensions:** Control room: 14'x8'. **Mixing Consoles:** Neve VR48 w/Flying Faders and Total Recall. **Audio Recorders:** Sony PCM-3348 48-track digital, Studer Revox C270 w/SMPTE, Panasonic SV-3700 DAT, (2) Nakamichi MR-1. **Monitors:** Perreaux, Hot House, Carver, Ramsa monitor amps; Tannoy 15B, Tannoy System 2, Yamaha NS-10, Auratone 5C. **Other Major Equipment:** Lexicon 480L, Quantec, TC Electronic 2290, TC Electronic 1210, Drawmer M500, Drawmer**

1950, DigiTech, Eventide H3000, Yamaha REV7, Yamaha SPX900, Summit Audio EQP2000, Tube-Tech PE 1B, Aphex Exciter, Roland GP-16, GK head, Beyer, Crown, AKG, Yamaha, Sennheiser, Shure and Countryman mics. **Extended Equipment Description:** Minolta video camera, NEC video monitors, Stage box including Jensen mic splitter, Hardy M-1 mic preamps, Telex wireless intercom system, AKG 240 headphones, Beyer mic stands, The remote is housed in 1990 PreVost LeMirage 40" bus.

MANOR HOUSE PRODUCTIONS



PO Box 664; Millwood, NY 10546; (914) 241-2028; FAX: (914) 666-8405. Owner: Robert J. Cancro, Brian Smith. Manager: Anne Marie Vaujouis.

MARK STUDIOS



10815 Bodine Rd.; Clarence, NY 14031; (716) 759-2600. Owner: Mark J. Morette. Manager: Frederick Betschen. Engineers: Fred Betschen, Bruce Leek, Glenn Bernardis, Hugh Bone, Tim Kiernan, Mark J. Morette. Dimensions: Room 1: studio 883 sq. ft., control room 303 sq. ft. Room 2: control room 21'x15'. **Mixing Consoles:** Amek M3000 42x24x42, Ramsa WR-S216, (4) Ramsa WR-133, Panasonic WR-450. **Audio Recorders:** Otari MTR-90 24-track, Sony PCM-1630/DMR-2000 2-track digital, (2) Panasonic SV-3500 DAT, (3) Panasonic SV-255 DAT, (2) Panasonic SV-250 DAT, (2) dbx 700 digital audio processor, (3) Nakamichi DMP-100 2-track digital, Ampex ATR-100 2-track analog, Otari MX-5050B 2-track analog, (50) Nakamichi MR-1 LX-5 3-head. **Monitors:** UREI many varied amps, Crown DC-300A amp; (4) UREI 813A Time-Align, various near-field reference. **Other Major Equipment:** Dolby 361 Type A 2 channels, Lexicon 224XL digital effects processor, AKG ADR-68K digital reverb and effects, Lexicon PCM70 digital effects processor, Lexicon PCM60 digital reverb, (2) Yamaha SPX900II digital effects processor, Lexicon PCM42 digital delay, Roland SDE-1000 digital delay, MXR 175 digital delay, MXR Flanger/Doubler, (2) dbx 902 de-esser, dbx 903 compressor, (5) dbx 904 noise gate, (3) dbx 905 parametric EQ, (6) dbx 160X comp/limiter, (2) UREI 1176 peak limiter, UREI LA-3 audio leveler, UREI LA-4 comp/limiter, (3) UREI 535 parametric EQ, (2) Barcus-Berry BBE 802 Sonic Maximizer, Kimball 6'7" grand piano, Yamaha PF80 MIDI electronic piano, Roland Alpha Juno-2 programmable polyphonic synth, LinnDrum computer w/MIDI retrofit, Yamaha SP35 electric piano, any drum machine/synthesizer/sampler available on request. **Extended Equipment Description:** (2) AKG C-12 vintage tube, (2) AKG The Tube, (4) AKG C-414-P48, (4) AKG C-460, (2) Sennheiser MKH-40 cardioid, (4) Sennheiser MKH-20 omni condenser, (10) Sennheiser MD-421, many other mics. **Specialization & Credits:** We specialize in complete studio packages. Our compact disc premastering studio is available for immediate 1630 transfer. While working in the studio, you may go over to our fully staffed art department and plan your CD booklet, album jacket or cassette/DAT insert card. After your day has ended, we can run off up to 100 cassettes in our state-of-the-art cassette duplication facility. One hundred Nakamichi MR-1 and LX-5 cassette decks comprise our cassette duplication room. We custom-load only TDK high-bias cassette tape into the newly designed Shape Mark X shell. It's no wonder Denny Laine, Richie Havens and author Geoffrey Giuliano referred to it as one of the truly unique studios they have ever been in. Mark Studios is also the launching pad of Rick James, Spyro Gyra, Jeff Tinker, 10,000 Maniacs, New York Voices and Billy Sheehan.

MASTERBLASTER SOUND



5 E. 22nd St., Ste. 14M; New York, NY 10010; Owner: Joshua Tanager.

MASTER SOUND ASTORIA



34-12 36th St.; Astoria, NY 11106; (718) 786-3400; FAX: (718) 729-3007. Owner: Ben Rizzi, Maxine Chrein. Manager: Maxine Chrein. **Specialization & Credits:** New York's premier big live music recording room: Neve V automated console; 48-track digital and analog recording; Sony 1630, 3402 and DAE-3000 for digital editing and mastering; custom TAD, B&W 801 and Yamaha NS-10 monitors; Sig Tech acoustic environment modifying system, outboard by Lexicon, Yamaha, dbx, McIntosh, Drawmer, Eventide, UREI, Adams-Smith, Tube Tech and more. Music scoring locked-to-picture. A permanent fiber-optic trunk connects to Lifetime Television's 8,000-sq-ft soundstage to serve your biggest project demands. Inaugurated Octobr 1992, our facility recorded and broadcast Sinead O'Conner and a 45-piece orchestra with live audio and video, via satellite to London for BBC's "Top of the Pops." Audio post-production services include mixing, narration, sweetening, ADR, Foley and digital audio workstation capabilities for video and film. From album recording to your smallest project, don't hesitate to call and discuss your requirements.

MASTERTV SOUND CRAFTS STUDIOS



1621 Ithaca/Dryden Rd.; Freeville, NY 13068; (607) 844-4581; FAX: (607) 844-4581. Owner: Peter Kirk Hopper. Manager: Nina Lee Hopper.

TURN TO PAGE 165 FOR AN EXPLANATION OF RECORDING SERVICE SYMBOLS.

MERLIN MUSIC



224 Sullivan St., E-41; New York, NY 10012; (212) 254-1027. Owner: Paul Goodrich. Manager: Paul Goodrich.

MIDIMATION INC.



37 West 20th St. #906; New York, NY 10011; (212) 620-0740. Owner: Patrick Simpson. Manager: Radha Sukha.

MIDNIGHT MODULATION



2211 Pine Ln.; Saugerties, NY 12477; (914) 246-4761. Owner: Michael Bitterman. Manager: Felicia Currier.



THE MUSIC PALACE INC.
West Hempstead, NY

THE MUSIC PALACE INC.



94-A Cherry Valley Ave.; West Hempstead, NY 11552; (516) 489-6177; FAX: (516) 486-6581. Owner: Michael Bona, Paul Scaturro. Manager: Michael Bona. Engineers: Michael Bona, Pat Gordon, J'Kael. Dimensions: Room 1: studio 34'x24', control room 22'x20'. Room 2: studio 25'x17', control room 20'x18'. **Mixing Consoles:** SSL 4000 G Series w/Ultimation, Neve 8128 w/Flying Faders. **Audio Recorders:** (2) Studer A820-24, Studer A820-2, Panasonic SV-3700, Nakamichi MR-1. **Monitors:** Kinoshita/Hidley mounted in wall of solid concrete, Yamaha NS-10M, UREI 809, Quested tri-amped system. **Other Major Equipment:** (2) FM Acoustics 801 A monitor amplifiers, Bryston 4B, (2) QMI, EMT 250-251, EMT 140 Plate, Lexicon 480 L, Quantec XL, Publison Internal 90, Lexicon PCM 70, Eventide H3000, Lexicon Primetime I & II, (6) PCM 41 & 42, (2) Massenburg EQ, (2) Focusrite EQ, (4) Neve 1073 EQ, (2) Sontec EQ, (3) Pultec EQ, (2) Summit Audio EQ, (2) Neve 33609 compressors, (2) Summit compressors. **Specialization & Credits:** The Music Palace is the ultimate recording and mix environment featuring Tom Hidley's latest 20Hz control room. The monitors are a Kinoshita/Hidley design and are mounted in a solid wall of concrete. The system is di-amped and bi-wired by two FM-Acoustics 801-A amplifiers. This room is the only one of its kind in the U.S. Demonstrators of the room's unsurpassed monitoring accuracy are given by appointment. Artist list includes: Color Me Badd, Vanessa Williams, Public Enemy, Another Bad Creation, movie soundtrack, *Girl* soundtrack, Leaders of the New School, Hall and Oates, Mariah Carey.

NARWOOD PRODUCTIONS INC.



425 Madison Ave.; New York, NY 10017; (212) 755-3320; FAX: (212) 755-3322. Owner: Narwood Productions. Manager: David LeVan.

NEVESSA PRODUCTION



One Artist Rd.; Saugerties, NY 12477; (914) 679-8848. Owner: Chris Andersen. Manager: Maria Miccio.

NEW YORK AUDIO PRODUCTIONS



140 W. 22nd St., 10th Fl.; New York, NY 10011; (212) 243-6826; FAX: (212) 243-7210. Owner: NYAP.

NEW YORK DIGITAL RECORDING INC.



59 W. 19th St., Ste. 4-C; New York, NY 10011; (212) 675-0600; FAX: (212) 675-3724. Owner: MacDonald Moore. Manager: Maura McGloin. Engineers: Paul Zinman, Nelson Wong, Jeff Zaraya. Dimensions: Editing suites 1 & 2: 15.5x19, suite 3: 8x12. **Mixing Consoles:** Yamaha DMC1000 22x8x2 24-bit digital, Studer 962 14x4, Studer 961 10x2. **Audio Recorders:** Sony PCM-3324, Yamaha DRUB 8-track 20-bit, (3) Sony PCM-1630, (3) Sony PCM-2500, (2) Tascam DA-30, Sony/Start Labs CD Writer, Ampex ATR-102, Revox PR-99. **Digital Audio Workstations:** Sonic Solutions Sonic System 24-bit, (2) Sony DAE-3000 w/DMR-4000, Sony DAE-1100A w/DMR-2000, Sony DABK-3003 24-track edit controller. **Monitors:** Snell B.

—LISTING CONTINUED ON NEXT PAGE

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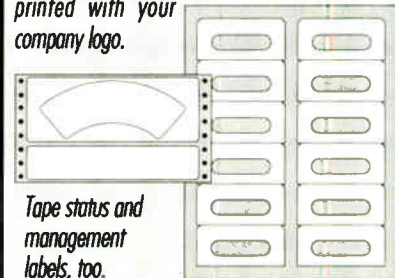


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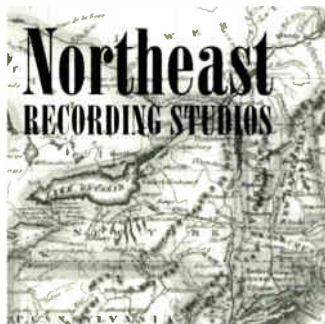
Independent Engineers and Producers

Ad Close

May 7, 1993

Materials Due

May 14, 1993



—LISTING CONTINUED FROM PREVIOUS PAGE

Snell C-IV, Thiel CS 3.0, Thiel CS 3.5, Snell J, Celestion 3. Other Major Equipment: DCS 900 A/D converter, Yamaha ADBX 8-ch. A/D converter, Lexicon 300, (2) Yamaha SPX1000, Roland E-660 digital EQ, GML 8200 parametric EQ, Sony DFX-2400 sample rate converter, (2) Dolby 360, Sony VSU-3310 vari sync unit, (2) Adams-Smith Zeta-3 synchronizer, (3) Sony DTA-2000 tape analyzer; microphones: (4) Sennheiser MKH-20, (2) Sennheiser MKH-30, (2) Sennheiser MKH-40, (2) B&K 4006, (2) B&K 4011, (2) Neumann TLM170, (2) AKG 460, AKG C-24; JVC CR-600 U U-matic video, Sony EVO-9700 video Hi-8 editor. Specialization & Credits: For over 12 years NYDR has provided digital audio services for artists like Ella Fitzgerald, Vladimir Horowitz, the World Saxophone Quartet, Dawn Upshaw, David Byrne, Leonard Bernstein, Emerson String Quartet. Recent projects have included multitrack digital recording and editing of the New York Philharmonic for Teldec Records; high-bit editing of Ahmad Jamal and the Count Basie Orchestra with Joe Williams for Telarc Records; custom CD-R runs for ABC Wide World of Sports, NBC News, Sea World; location multitrack services and post resynching for Martin Scorsese's film *The Age of Innocence*; audio and video post services on Nonesuch Dance Collection laserdisc releases like Twyla Tharp's *Catherine Wheel* and Balanchine's *Davidstundertanze*. Obviously we offer a wide range of all-digital services. Our experience matches our facilities.

NOLA RECORDING STUDIOS



111 W. 57th St., New York, NY 10019; (212) 586-0040. Owner: Jim Czak, John Post. Manager: Mark Sullivan.

JERRY NORELL PRODUCTIONS



71 Willowood Dr., Wantagh, L.I., NY 11793-1248; (516) 731-7020. Owner: Jerry Norell. Manager: Jerry Norell.

PARIS RECORDING



466 Hawkins Ave., Lk. Ronkonkoma, NY 11779; (516) 467-5143; FAX: (516) 471-4026. Owner: Brian Unger. Manager: Diana Perez.



PLATINUM ISLAND STUDIOS
New York, NY

PLATINUM ISLAND STUDIOS



676 Broadway, New York, NY 10012; (212) 473-9497; FAX: (212) 505-8277. Owner: RLK Enterprises. Manager: Richie Kessler, asst. mgr.; Suzanne Mates. Engineers: Axel Neihaus, Hoover Le, Paul Berry, Kevin Crouse, Keith Senior (MIDI specialist), Ian Lintault (chief systems engineer). Dimensions: Room 1: 32'x20', control room 22'x20'. Room 2: 18'x14', control room 18'x21'. Room 3: 9'x6', control room 20'x16'. Room 4: control room 12'x14'. Mixing Consoles: Solid State Logic SSL 4064 E/G w/Total Recall, Neve 8128 56 in w/Flying Faders, Harrison 4032A. Audio Recorders: (3) Studer A-800 MkIII, (2) Studer A-827, Mitsubishi X-850, Studer A-80 MkIII 4-track 1/2", Studer A-820 2-track 1/2", (2) Studer A-80 MkIII 2-track 1/2", Ampex ATR-102 2-track 1/2", (2) Studer B-67 2-track 1/4", (6) Panasonic 3700/3500 DAT, (8) Tascam/Nakamichi 122 MkII, MR-1. Digital Audio Workstations: Macintosh/Digidesign Sound Tools system. Monitors: (4) UREI 813B, (8) Yamaha NS-10M, (2) Tannoy DMT-12, (6) Tannoy PBM 6.5, (4) Electro-Voice

Sentry 100, (6) Auratone 5C. Other Major Equipment: (2) Lexicon 480L, (2) 224XL, (4) PCM70, (2) AMS RMX-16, EMT 140TS reverbs; (2) AMS 1580 (6.4/6.4), (8) PCM-42, Publison Infernal 90 & 89, (2) Eventide H3000, 949, 910, (2) MXR autoflange/autophase delay/flxs; (10) Pultec, (12) Neve 1066, (14) API 550A/560, (4) Trident "A" range, (10) Sphere, (2) Flickinger EQs; (2) U-47, (2) U-67 (Claus Heine), U-48, M-49 & AKG "Tube," (2) RCA DB-77, BX-44 ribbon & various condensers, dynamic, pressure zone mics: Steinway L, Yamaha C7 grand pianos; Marshall JCM-800, Fender DeLuxe, Twin-Reverb (pre/CBS), Ampeg B-15 amps; Leslie rotating speaker cabinet; (2) Super Jupiter w/prog., MiniMoog (MIDI), Korg M-1, D-50, Juno-106, Juno-60 (MIDI), DB-8 (MIDI), (2) DX-7 IIFD, U-220, (2) Proteus XR and other synths. Extended Equipment Description: (2) Akai S-1000, (2) 950, 900 samplers; E-mu SP-1200, Alesis D-4 drum machines; Mac SE30, Atari 1040 STE or IBM computer/sequencers; JVC 8250 3/4" video deck, (4) TimeLine Lynx SMPTE/sync module, (4) Roland SBX-80 MIDI/sync box. Specialization & Credits: Able to accommodate in-house 48-track analog or 32-track digital mixes, record a chamber orchestra, smoothly interface a programmers MIDI rack, digitally edit via Sound Tools and more. Platinum Island is a multifaceted "Oasis of Art & Technology", dedicated to providing its clients with the finest recording experience available today, tomorrow and beyond. Conveniently located in the heart of NYC's Village/SoHo area, we're within walking distance of the area's renowned clubs, galleries, restaurants and venues. Go Platinum with us!

POWER STATION STUDIOS



441 W. 53rd St., New York, NY 10019; (212) 246-2900; FAX: (212) 586-0326. Owner: Tony Bongiovi, Nick Balsamo, pres. Manager: Joan Bisacca; Bob Pergament, VP/sales & mktg. Specialization & Credits: Power Station consists of five studios: Studio A has an 8068 Series Neve 40 custom console. Studio B has an SSL 6000E Series console, with 48 inputs, 32 bus outputs and 48-track record/mix capabilities. This console also features Total Recall and "G" computer software. Studio C has a 72 input/48 bus Neve VFP 72 with Flying Faders Automation and Recall. All are capable of video lockup. Power Station has recently integrated its sound recording expertise with the realm of audio post-production. D-VA1 has a customized 80-input automated SSL 4080 G console equipped to synchronize multiple audio and video machines simultaneously. It has a 1" C format, D2 and 3/4" video formats, four 36" Mitsubishi color monitors plus a GE Light Valve Projection system with large-screen viewing. D-VA1 has audio mixdown capabilities in mono, stereo or stereo surround. A Synclavier 9600 and PostPro digital workstation with a digital sound effects library rounds out the room. Post 1 has an AMS Audiophile and Logic I digital console and a Synclavier 9600 system.

P.P.I. RECORDING INC.



106 W. 32nd St., 3rd Fl., New York, NY 10001; (212) 279-1631. Owner: Chip M. Fabrizio. Manager: Harold Hagopian.

PRIME CUTS STUDIOS INC.



1600 Broadway, Ste. 704; New York, NY 10019; (212) 265-1800; FAX: (212) 265-3838. Owner: Tula Aquino, Mark Kamins. Manager: Jeff Thompson. Engineers: Tula Aquino, Steve Barkan, Shaun James, Rick Van Benschoten, Anthony Saunders. Dimensions: Room 1: studio 12'x9', control room 18'x16'. Room 2: control room 12'x9'. Room 3: control room 12'x9'. Mixing Consoles: Trident Model 24 Series 65 28x24x24. Audio Recorders: Otari MX-80 24-track, (2) Otari MTR-12 2-track 1/2", Sony PCM-2500 DAT, Panasonic SV-3700 DAT. Digital Audio Workstations: Macintosh SE30 sequencer w/Opcode MIDI interface, Atari 1040ST sequencer w/color monitor. Monitors: (2) Yamaha NS-10M, (2) Tannoy 6.5, (2) Auratone 5C, (2) UREI 813, Yamaha NSW2 subwoofer. Other Major Equipment: Akai MPC60 drum machine & sequencer, Yamaha DX7 IFD keyboard/controller, Moog MiniMoog w/MIDI retrofit, Akai S900 sampler, Akai S950 sampler, Korg EX-8000 MIDI keyboard, Korg M-1R MIDI keyboard, Roland D-550 MIDI keyboard, Roland MKS-80 Super Jupiter w/programmer, Roland MKS-70 Super JS keyboard, Roland D-110, Roland TR-808 drum machine, Roland TB-303 Bassline keyboard, Roland Juno 60 MIDI keyboard, Roland Juno 106 MIDI keyboard, Kawai K1r keyboard, Oberheim Matrix 6 keyboard, Ensoniq ESQM keyboard, Casio CZ-1000, Roland SBX-80.



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PYRAMID SOUND INC.



105 E. Clinton St.; Ithaca, NY 14850; (607) 273-3931; FAX: (607) 273-3936. Owner: John Perialas. Manager: Lorri Hunter.

QUAD RECORDING STUDIOS



723 7th Ave.; New York, NY 10019; (212) 730-1035; FAX: (212) 730-1083. Owner: Lou Gonzalez-McLean. Manager: Carla Angel. Engineers: Russell Elevatedo, Pavel DeJesus, Grant Austin, Rick Slater, Wes Naprstek, Chris Barnett. Dimensions: Room 1: studio 30'x40', control room 20'x30'. Room 2: studio 25'x25', control room



QUAD RECORDING STUDIOS
New York, NY

20'x30'. Room 3: studio 15'x20', control room 25'x35'. Room 4: studio 15'x20', control room 30'x15'. **Mixing Consoles:** SSL 6064V w/G Series computer, SSL 4072E w/G Series computer, SSL 4064E w/G Series computer. Neve 8068 MkII 32-input. **Audio Recorders:** (3) Studer A-800 MkIII 24-track, (3) MTR90 MkII 24-track, (2) Studer A80 MkII 24-track, (5) Studer A80 MkII 2-track, (2) Otari MTR-12 MkII 2-track, Otari MTR-10 MkII 4-track 1/4", Otari MX-5050 4-track 1/4", (5) Panasonic 3700 DAT, (2) Panasonic 3500 DAT, Sony 3348 digital/Mitsubishi 32-track available upon request. **Digital Audio Workstations:** Sound Tools/Pro Tools digital editing. **Monitors:** (4) UREI 813B, (many) Yamaha NS-10, (2) Tannoy PBM-6.5, Tannoy PBM-8, (8) Auratone. **Other Major Equipment:** (2) Lexicon 480L, (3) AMS OMX 1580, (3) AMS RMX 16, (15) Pultec EQs EQH & EQP, (2) Eventide H3000, Eventide H3500, (3) Lexicon 224XL, (4) Lexicon PCM70, (5) Yamaha REV7, (5) Yamaha SPX90, (9) Lexicon PCM42, (2) Eventide 969, (2) Eventide 910, (9) dbx 160, (6) UREI 1176, (8) API 550 EQ, (6) Teltronix LA-2A, LA-4A, (2) TC 2290, (3) Roland Dim D, (3) Panscan.

REED W. ROBINS PRODUCTIONS



874 Broadway Ste. 901; New York, NY 10003; (212) 673-5139. Owner: Reed W. Robins. Manager: Reed W. Robins.

RIGHT TRACK RECORDING



168 West 48 St.; New York, NY 10036; (212) 944-5770; FAX: (212) 944-7258. Owner: Simon J. Andrews. Manager: Nancy West.

RPM SOUND STUDIO



12 East 12th St., 11th Fl.; New York, NY 10003; (212) 242-2100. Owner: Robert Mason.

SABELLA RECORDING STUDIOS



49 Oakdale Rd.; Roslyn Heights, NY 11577; (516) 484-0862; FAX: (516) 484-0862. Owner: James Sabella. Manager: James Sabella. Engineers: Ken Gioia, James Sabella. Dimensions: Studio 17'x22', control room 14'x16'. **Mixing Consoles:** Neve MkII 8068 w/VCA grouping and MegaMix automation. **Audio Recorders:** Studer A80 24-track, MCI JH-1108 2-track 1/2", (2) Ampex AG 350 2-track, (2) Sony OTC 1000ES DAT, (2) Harman Kardon COS-491 cassette. **Monitors:** Altec Big Reds/Master Labs crossovers, Yamaha NS-10, Tannoy PBM 6.5. **Other Major Equipment:** EMT 250 reverb, (2) EMT 140S TL mods, EMT 240, Eventide H3000, TC Electronic TC 2290, (2) BCI 240-BD-80 delay, (2) Lexicon PCM41 & 42 delay, (2) Lexicon mod 92 delay, (9) Pultec MEQ, EQH & EQP-1A EQ, (2) UREI

175B tube compressor, (2) UREI 1176, UREI LA-3, (2) Neve 32264A compressor, (2) Neumann compressor, (4) Drawmer DS-201 dual noise gate, (5) Roger Mayer C47355 gate; complete line of vintage mics: Neumann, AKG, Sony, Beyer, etc., Mac computer, new and vintage guitar amps, Demeter, Vox, Groove Tube, Perreux 8000 B, Haller P-500.

SAINTS AND SINNERS SOUND STUDIO



432 Western Ave.; Albany, NY 12203; (518) 454-5278; FAX: (518) 438-3293. Owner: College of St. Rose. Manager: M. A. Nelson.

FRANK SCHEIDT AUDIO PRODUCTIONS



15 Charlotte St.; Rochester, NY 14607; (716) 232-5210; FAX: (716) 232-5212. Owner: Frank Scheidt. Manager: Matthew Scheidt.

HOWARD SCHWARTZ RECORDING INC.



420 Lexington Ave., Ste. 1934; New York, NY 10170; (212) 687-4180; FAX: (212) 697-0536. Owner: Howard Schwartz. Manager: Beth Levy Davis. Engineers: Roy Latham, Michael Unger, George Meyer, Ralph Kelsey, Roy Yokelson, Bill Higley, John Crenshaw. Dimensions: West Room: studio 25'x20', control 15'x17'; East Room: studio 12'x20', control room 15'x17'; Nine room: studio 9'x8', control 16'x18'; Room A: studio 14'x16', control 14'x12'. **Mixing Consoles:** (3) SSL 6048G, SSL 4040, (4) Sony MXP-3036. **Audio Recorders:** (2) Sony PCM-3348 digital multitrack, (4) Sony PCM-3324 digital multitrack, Studer A820 24-track, Studer A827 24-track, (5) Otari MTR-90 MkII 24-track, (4) Studer A820 2-track, (6) Sony HJ-1106 4-track, (10) Otari MTR-10 2-track, (2) Otari MTR-10 4-track, Sony APR-24 24-track, Sony APR-5003 2-track, (2) Sony PLM-7030 TC R-DAT, (7) Panasonic SV-3700 R-DAT, (16) Nakamichi MR1, (3) Magnafax stereo duplicator. **Digital Audio Workstations:** (3) SSL ScreenSound, (2) Digidesign Sound Tools, CompuSonics DSP2002, Akai 51100 sampler. **Monitors:** Numerous monitor amplifiers and UREI monitors. **Other Major Equipment:** (7) Dolby SR-24, (3) Dolby XP-24A, (5) Dolby M-24A, (12) Dolby 361, Adams-Smith 2600 AV system, Adams-Smith Motionwork system, (2) Adams-Smith 2600 compact control system, Adams-Smith Zeta-3, (2) EECO MQS-100 A system, Otari Universal resolver, EMT 250, (2) EMT 140S stereo plate, Lexicon PCM300, (6) Yamaha REV5, (8) Yamaha SPX90, (8) Lexicon PCM42, (6) Lexicon PCM60, PCM70, AKG ADR-68K, (4) Eventide Ultra-Harmonizer, dbx 160X limiter, (12) Pultec EQ, (4) LA-2A limiter, (8) Orban EQ, SSL Logic EFX compressor, (12) Aphex 612 noise gate, (2) Aphex Aural Exciter, (2) Orban 290X processor, numerous Neumann, AKG, Sennheiser mics, Steinway concert grand piano, Neumann amps, drums, synthesizers, (6) Studer Telephone Hybrid, stereo digital satellite uplink and downlink, digital patch, Ednet T-1, fiber optic, Sony DVR-10 D2 digital recorder, BVU-70 Betacam, (3) Sony BVU-3100 1", (2) Sony BVH-2000 1", Sony BVU-950 3/4", (2) Sony BVU-870 3/4", (6) Sony PVM-2530 monitor, Mitsubishi projection monitor, Ikegami 14" precision monitor, (4) Tektronik Waveform/Vector.

SELTZER SOUND



185 E. Broadway; New York, NY 10002; (212) 477-2372. Owner: Carl Seltzer.

SHELTER ISLAND SOUND



30 W. 21st St.; New York, NY 10010; (212) 366-6690; FAX: (212) 366-0465. Owner: Steve Addabbo.

SHELTON LEIGH PALMER & CO.



19 W. 36th; New York, NY 10018; (212) 714-1710; FAX: (212) 714-0132. Owner: Shelton Leigh Palmer. Manager: Maxine Scherr.

SHUSTER SOUND



131 Saddle Rock Rd.; Valley Stream, NY 11581; (516) 791-2985. Owner: Bob Shuster. Manager: Bob Shuster.

SKYLINE STUDIOS INC.



36 W. 37th St. (3rd & 6th fl.); New York, NY 10018; (212) 594-7484; FAX: (212) 239-9776. Owner: Paul Wickliffe, Lloyd P. Donnelly. Manager: Ooreen Pinto. **Specialization & Credits:** Skyline's world-class facility is comprised of two SSL/Studer 48-track rooms and a 24-MIOI suite. Leading industry producer/engineers such as Neil Dorfsman and Kevin Killen repeatedly choose Skyline for its monitoring, equipment selection and top-flight maintenance. Studio 3 and Studio 6 each have three iso booths and 1,000+ sq.-ft. live rooms favored by many for major tracking date and orchestral sessions. In addition our MIOI room provides a truly integrated audio/MIOI/digital workstation environment designed to handle multiple tasks elegantly. The owners' vision (for 14 years) of a great place to make music is attested to by our clients (recently including James Taylor, James Brown, The B-52s, Lou Reed, Roseanne Cash, Queen Latifah, Heavy D, Ryuichi Sakamoto), our dedicated staff (many of our alumni have achieved great success in the engineering field), and recognition from the industry (four TEC nominations).

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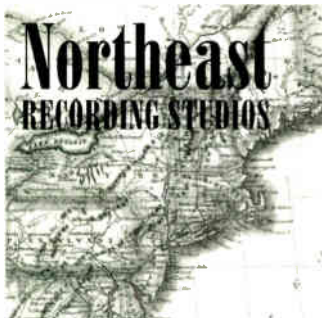
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w/Mark Levinson elect, Sony PCM-1630/DMR-4000, Sony K-1183/84 16/20-bit 2-track. **Digital Audio Workstations:** Sonic Solutions editing systems. **Monitors:** B&W 801 Matrix III, Proac Studio I MkII. **Other Major Equipment:** Sony K-1203 super bit mapping, Sony Master Disk magneto-optical recorders, Lexicon 480L, Lexicon 300, Adams-Smith 2600, Sony DVR-20 D-2, Sony U-Matic Beta SP (NTSC-PAL), GML equalizers, Sony DAE-3000. **Specialization & Credits:** Sony Classical Productions is the studio arm of the Sony Classical label. It sports the most advanced 20-bit digital production and post-production facility available for classical music in the United States. It is also capable of video operations in NTSC and PAL, especially editing and mixing to picture. Recently recorded artists include: Claudio Abbado, Kathleen Battle, Plácido Domingo, Juilliard Quartet, James Levine/NY Metropolitan Opera, Yo-Yo Ma/Bobby McFerrin, Loren Maazel/Pittsburgh Symphony, Winton Marsalis, Zubin Mehta/Berlin Philharmonic, Midori, Murray Perahia, Itzak Perlman, Esa-Pekka Salonen, Isaac Stern, Michael Tilson Thomas, John Williams/Boston Pops. Recently remastered works (using 20-bit SBM technology) include: Broadway Musical Series, Bernstein Royal Editions, Glenn Gould Editions, Horowitz Edition.



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132 W. 22nd St., New York, NY 10011; (212) 366-6640; FAX: (212) 727-7187. Owner: Clay A. Sheff. Manager: Robert Pride.



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New York, NY

SONY CLASSICAL PRODUCTIONS INC.



1370 Ave. of Americas, Ste. 2301; New York, NY 10019; (212) 445-1800; FAX: (212) 262-0228. Owner: Sony U.S.A. Manager: Barry Bongiovi. Engineers: Christian Constantinov, Charles Harbutt, Richard King, Robert Wolff. **Mixing Consoles:** Rupert Neve Amek/GML. (2) Harmonia Mundi/GML. **Audio Recorders:** (4) Sony 3348 16/20-bit, (2) Sony 3324-A, Studer A827, (4) Studer A820

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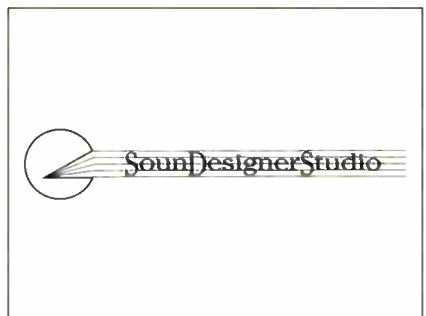
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45 W. 45th St., New York, NY 10036; (212) 575-8664; FAX: (212) 575-9412. Owner: Jeffrey Berman. Manager: Gail Nord-Stephens. **Specialization & Credits:** Radio and television audio post-production in 5 mixing suites, 3 Screensound digital workstations, mixing to all video formats, industrial and audio/visual track creation, 40 music libraries, stock and custom sound effects, casting service, real-time and high-speed duplication, original scoring, digital satellite and digital land patch. Staff engineers: Hank Aberie, Rick Grannoff, Frank Tomaino.

SOUND ON SOUND RECORDING INC.



322 W. 45th St., New York, NY 10036; (212) 757-5300; FAX: (212) 757-5816. Owner: David Amien. Manager: David Amien. **Specialization & Credits:** Sound on Sound Recording has long been known as a haven for musicians, producers and engineers. Featuring state-of-the-art equipment by Neve, Studer and others, Sound on Sound prides itself on offering a great-sounding studio, a wide variety of new and vintage equipment, talented in-house engineers and producers, complete support staff and, above all, a friendly atmosphere. Sound on Sound has recorded Gold, Platinum and Grammy award-winning albums in all styles including rock, jazz, rap/hip-hop, and R&B. In addition, Sound on Sound has also scored many acclaimed movies and TV series as well as many award-winning advertising campaigns. This year, Sound on Sound is proud to announce the opening of its newest studio designed in conjunction with John Storyk of Walters-Storyk Design Group.

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SOUNDWORKS STUDIOS



254 W. 54th St., New York, NY 10019; (212) 247-3690. Owner: Charles Benany. Manager: Christopher Daniel.

SPLASH PRODUCTIONS



123 W. 28th St., #2W; New York, NY 10001; (212) 695-3665; FAX: (212) 226-8466. Owner: D. DiPaola/G. Ricciardi. Manager: Danny Dee.

STAR BASE STUDIO



41-53 53rd St.; Woodside, NY 11377; (718) 476-0665; FAX: (718) 476-0665. Owner: Chuck Thompson. Manager: Chuck Thompson. Engineers: Chuck Thompson. Dimensions: Studio 17'x15', control room 25'x20'. **Mixing Consoles:** Amek/TAC Scorpion 32x8x2, Tascam MM-1 20x2. **Audio Recorders:** Otari MX-70 16-track, (2) Sony PCM 2500 2-track, Tascam 32 2-track, TEAC 3340S 4-track, Sony TC WR-930 double deck, Bang & Olufsen BE2200. **Monitors:** (2) KRK 707, (2) EV MS-802, (2) Yamaha NS-10, (2) JBL 4412. **Other Major Equipment:** (4) Symetrix 511A, Akai MPC-60, Lexicon 480L, Lexicon PCM70, Lexicon PCM60, Yamaha REV7, (2) Yamaha SPX90, (2) Yamaha SPX900, TC Electronic 2290, (4) Drawmer DL-241, (4) Drawmer DS-201, Focusrite ISA 115HO, Massenburg 8200, BBE 802, Orban 464A, Orban 536A, Eventide H3000-S, UREI 1176LN, Roland SRV-2000, Roland SRV-3000, (4) dbx 160X, (4) dbx 166, DeltaLab Super Time Line, MXR 1/3-octave graphic EQ, Loft 400 quad gate/limiter, Furman PQ-6 parametric EQ, Aphex Type C Aural Exciter, (2) dbx 165A, Orban 642B, MEQ 28 (DigiTech), (2) Studiomaster IMP-1, Lexicon MRC. **Extended Equipment Description:** Neumann U89, (2) Neumann U87, AKG 421, AKG 414, (5) Shure SM58, (2) Shure SM57, Shure SM77, (4) EV D054, (2) EV RE20, (2) Sennheiser MD441, (2) Sennheiser 42-track 1, (2) Beyer 160, (2) Crown Micro-Tech 1200, (2) Crown DC-300, JBL 6260, Yamaha P2350, Akai S-1000 HD, Casio FZ-1 sampler, Roland D-50, Korg M-1, Roland MKS-20, Roland MKS-70, Yamaha DX7, (2) Panasonic AG-7500A editing VCR S-VHS, Panasonic AG-A750 editing controller.



STRONG ISLAND RECORDS INC.
Massapequa Park, NY

STRONG ISLAND RECORDS INC.



PO Box 453; Massapequa Park, NY 11762; (516) 798-2308; FAX: (516) 541-6264. Owner: Robert La Serra. Manager: Robert La Serra.

STUDIO 900 INC.



900 Broadway, Ste. 905; New York, NY 10003; (212) 529-3285. Owner: Joe Johnson. Manager: Joe Johnson.

STUDIO PASS



596 Broadway, Ste. 602; New York, NY 10012; (212) 431-1130; FAX: (212) 431-8475. Owner: Harvestworks Inc. Manager: Alex Noyes. Engineers: John Azelvandere, Angela Dryden, Jonathan Duckett, Connie Kieltyka, Alex Noyes, Ted Orr. Dimensions: Studio 12'x18', control 19'x25'. **Mixing Consoles:** Soundcraft 600, Mackie 1202. **Audio Recorders:** Otari MX-5050 MkIII-8, Otari MTR-12, Otari MX-5050 B II w/center-track, Panasonic SV-3700, TEAC DA-P20, Sony PCM-F1, Tascam 122, Aiwa AD-F810. **Digital Audio Workstations:** Digidesign Pro Tools, Digidesign Sound Tools, Macintosh Iix, 1.2GB hard disk, 600MB hard disk, 180MB hard disk, NEC CDR-350 CD ROM drive. **Monitors:** (2) Meyer HD-1, (2) Yamaha NS-10M. **Other Major Equipment:** Eventide H3000 (SE, B, sampling), Lexicon LXP1, Lexicon LXP5, Lexicon PCM60, (10) dbx Type I, dbx 166X, dbx 929, Drawmer DS-201, UREI 546, Tascam ES-50 controller, (2) Tascam ES-51 synchronizer, JVC 6650 3/4" VCR, Digidesign Samplecell, E-mu Emax, E-mu Proteus 1/XR, Yamaha TX802, Roland MKS-80 w/Programmer, Roland MKB-1000, Opcode Studio 3, Roland Octapad.

SUPERDUPE RECORDING STUDIOS



295 Madison Ave., New York, NY 10017; (212) 683-6854; FAX: (212) 779-1676. Owner: Carlton Communications. Manager: Jon Adelman.

SEE PAGE 179 FOR AN EXPLANATION OF THE STUDIO SERVICE ICONS. FOR MORE INFO ABOUT MIX LISTINGS SEE PAGE 157.



SYNC SOUND INC.
New York, NY

SYNC SOUND INC.



450 W. 56th St.; New York, NY 10019; (212) 246-5580. Owner: Bill Marino, Ken Hahn. Manager: Sherri Tantleff. Engineers: Ken Hahn, Grant Maxwell, Michael Ruschak, Pam Bartella, Ray Palagy, John Bowen. Dimensions: Room 1: studio 11'x14', control room 23'x22'. Room 2: studio 10'x16', control room 16'x14'. Room 3, 4, 5, 6: AMS editing rooms. Room 8: studio 22'x15', control room 18'x15'. Room 9: NED PostPro SD. Mixing Consoles: SSL 6000 G Series automated w/stereo modules, SSL 4000 E Series automated, Sony MXP-3036. Audio Recorders: Sony PCM-3348, (2) Sony PCM-3324, Sony PCM-1630, (3) Dtarl MTR-90 24/16/8-track, Sony PCM F-1, Sony/Fostex time code DAT, (3) Nagra CT IV STC/mono & FM also MTM 16/35 mag film, Dtarl MTR-20 4-track, Nakamichi cassette. Digital Audio Workstations: (4) AMS AudioFile w/4-hour memory, NED PostPro SD/Synclavier. Other Major Equipment: Proprietary edit system allowing lockup, edit rehearsal & editing to subframe accuracy of all audio, video and digital machines CMX capable auto conform; Dolby SP24, Dolby Cat 43, Dolby SR/A, TTM NR frames w/Cat 22 cards, Ellison noise reduction, Lexicon 224X w/LARC, Lexicon PCM60, Lexicon PCM42, Lexicon Prime Time II, Akai S1100 sampler, EMT 140 stereo tube plate, Lexicon PCM70, Roland EO, Yamaha SPX90, PAL Beta cam, 1" video w/digital tracks, D-2 video. Specialization & Credits: Nominated for numerous TEC Awards and recipient of the 1991 Best Audio Production Mixer Award, Sync Sound is a full-service audio post-production house featuring a staff of Emmy Award-winning sound editors and mixers. Sync Sound is specifically designed to accommodate editing and mixing to picture (digital or analog). Facilities include (5) nonlinear digital sound editing suites, (4) mixing rooms, an ADR (looping)/Foley stage, a huge automated sound effects library and sound design suite. Sync Sound performs a wide variety of services for network and cable programming, home video, albums and commercials.

TAMARAND DIGITAL RECORDING STUDIOS



Garnerville, NY; (914) 639-1000; FAX: (914) 634-7584. Owner: Bill Horwitz. Manager: Ron Hall.

TASHA STUDIOS



53 Stirrup Ln.; Levittown, NY 11756; (516) 579-5036; FAX: (516) 579-5036. Owner: Bob Ardito. Manager: Sharon Ardito. Engineers: Bob Ardito. Dimensions: Room 1: Studio 12'x8', control 13'x14'. Mixing Consoles: Tascam M-520 20-channel, (2) Mackie 1604 16-channel. Audio Recorders: Tascam MS15 HS, JVC DS-900N DAT, Alesis ADAT 8-track digital. Digital Audio Workstations: Macintosh II FX w/digital Performer, many other software packages. Monitors: (2) UREI 809, (2) Yamaha NS-10M, (2) Auratone 5C. Other Major Equipment: Sennheiser MD-441, Sennheiser MKH-40, (2) Shure SM87, Neumann U87a, (2) AKG C414-ULS, EV PL20 microphones; Korg M-1R, Kurzweil 1000KX, Kurzweil K2000R, Moog MiniMoog synth; Roland S-750 samplers; Roland D-70, Roland U-220, Roland D-550, Roland MK-570, Yamaha TX802, Yamaha TG77 synth; Akai S1000 samplers; E-mu Proteus 1, E-mu Proteus 2, Kawai KSM, Korg 01/WFD, Yamaha SY77 synths; Yamaha SPX900 effects

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processor; BBE 802 Exciter, dbx 163X compressor/limiter, Ensoniq DP4, Eventide H3000SE, Lexicon PCM70, Lexicon LXP15, Lexicon LXP5, Lexicon LXP1 effects processors; Rane PE15 parametric EQ; Roland VP-70 voice processor; Akai MPC60 sampling drum machine; Roland R-8 drum machine; Roland PAD80 drum pad; Mesa/Boogie Mark IV Combo guitar amp; Panasonic AG-6300 VHS recorder; (4) Mark of the Unicorn MIDI Time Piece SMPTE/MTC interface.

39TH STREET MUSIC



260 W. 39th St.; New York, NY 10018; (212) 840-3285; FAX: (212) 840-3923. Owner: Michael Karp. Manager: Jack Malken. Engineers: Dennis Wall, Matt Sietz. Dimensions: Studio A: 30'x30', control room 25'x20'. Studio B: control room 15'x15'. Mixing Consoles: Peavey 701R 7-input, TAC Scorpion 32x8x2 w/power amp. Audio Recorders: Panasonic SV-3500 DAT, Tascam DA30 DAT, Kenwood DP-30 CD, Tascam 122 MKII cassette, Dtarl MX-5050 2-track, Tascam MS w/stand 16-track, Tascam AO65 autolocator, Tascam RC65 remote w/stand, Tascam 58 16-track w/remotes/stand. Digital Audio Workstations: 360 Systems 4x8 MIDI patcher, (2) Atari 1040 ST computer w/color mon., Amiga SM1 color monitor, Notator C-Lab seq. software, Unitor C-Lab seq software, Human Touch C-Lab seq software, 40-meg. hard drive computer. Monitors: Yamaha NS-10, JBL 4412, Tannoy PBM-8. Other Major Equipment: Dberheim DX, Roland R-8, E-mu SP1200, Roland 626 drum machine; Alesis D-5 drum sampler/trigger; Akai 950 sampler w/extended memory; Akai S900 sampler; Roland D-110, Roland D-50; Roland MKS-10, Roland MKS-20 PND module; Yamaha MRF84X TF module, Yamaha DX, (2) Yamaha DX100, Casio CZ-101, Casio CX-1000, Dberheim Matrix-1000, Dberheim Matrix-6, Yamaha CS1, Moog Rouge synth; 4-input DI rack DI box; Numark T1 1400 turntable; (2) Ultimate support speaker stand; Hafler P230, Hafler P125 power amp; Rane GE14 graphic EQ; Rane HC6 headphone amp; (4) AST PL8 power & light module; (2) Boss CL50 comp/limiter; Alesis Quadverb; BBE 822 Sonic Maximizer; Ibanez SDR 1000 stereo reverb; Lexicon PCM70, PCM41, ADA delay; Yamaha REV7 reverb; DigiTech 1900 delay; (2) dbx 563X Silencer; Aphex Type C Aural Exciter; Drban 672 AEO; Drban 622 AEO; Roland VP-70 voice processor; Symetrix 564 quad expander gate; Symetrix 544, Audio Logic; (2) dbx 165A compressor; TC Electronic 2240 HS parametric EQ/preamp; MXR 15-band EQ. Specialization & Credits: Recently in the studio: Nile Rodgers, C&C Music Factory, Ultra Magnetic MCs, Boogie Down Productions, Raheim—Jaisce Sound Track Album, Eliane Elias, Tom Chapin with Branford Marsalis and Roseanne Cash, Gayle Ann Dorsey, Skadanks, Little Louie Vega, Seduction, Queen Latifah.

THIS WAY PRODUCTIONS INC.



503-11 Broadway, Rm. 519; New York, NY 10012; (212) 431-5894. Engineers: Danny Caccavo, Robert Agnello, Paul Special, Peter Darmi. Dimensions: Studio 11'x19', control room 12'x19'. Mixing Consoles: Soundcraft 1600 24x24 w/MegaMix automation. Audio Recorders: Ampex MM1200 24-track, Digidesign Pro Tools 8-track, Tascam DA 30 DAT recorder, Ampex ATR-102 2-track, Ampex ATR-104 4-track, Fostex 20 w/center-track time code. Monitors: UREI 809A, Yamaha NS-10M. Other Major Equipment: Adams-Smith Zeta-3 w/remotes, Eventide 2016 signal processor, Eventide H3000 Ultra-Harmonizer, Digidesign DINR (digital noise reduction), Yamaha REV7, Eventide 969 Harmonizer, Ursa Major Space Station, Yamaha SPX90II, (2) ADR CompeX II compressor/expander, UREI 1176 limiter, dbx 160X limiter, (2) JBL/UREI 7110 limiter, (2) dbx Silencers, Aphex Type C, BBE Sonic Maximizer, (4) Valley People Dyna-Mite, Castle dual phaser, Neumann TLM170, AKG 414, (4) AKG 451, AKG D-12, (5) Sennheiser MD-421, (2) PZM, Sony C-37 FET, Crown Micro-Tech 600, Crown DC-300, Phase Linear 400, Yamaha DX7 II, Mellotron 400, Ludwig drum kit, Fender Telecaster bass, Macintosh Ixx, MDTU MIDI Time Piece and Video Time Piece, Sound Designer, Q-Sheet, (2) JVC 6650 3/4" video deck, MDTU VITC reader/generator, NEC 26" monitor, Mesa/Boogie Studio 22, Marshall Lead 100 w/4x12 cabinet, Leslie speaker, Ampeg Rocket reverb. Specialization & Credits: Now in its fifth year, This Way Productions is a comfortable, mid-priced facility featuring audio post-production and music recording. Most of our production work utilizes the Pro Tools Digital Audio Workstation, in addition to Sound Tools for digital mastering. We specialize in creative custom sound designing, scoring, music recording, and feature a comfortable, relaxed atmosphere in which you can produce high-quality work—the kind of environment we think is unmatched by other studios in our price range. Some of our recent clients and projects include: *Pets or Meat—Return to Flint* (Michael Moore's follow-up to *Roger & Me*), *White Homeland Commando* (feature executive produced by Willem Dafoe). Radio campaigns: "Radio Free Moosehead," Evian, and American Express, MTV, Turner Cartoon Network, Time Warner "The World Is Our Audience," Sasson, "MCI-As the Network Turns" (binocular radio play), Reebok "Talking Tennis Balls," Sonic Boom, Tom Pomposello Productions, Chiat/Day/Mojo.

THURSDAY PRODUCTION INC.



189 Norman Rd.; New Rochelle, NY 10804; (914) 235-7505. Owner: Daniel M. Welsh. Manager: Susan J. Welsh.

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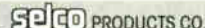
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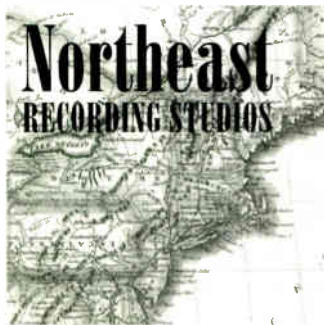
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UNIQUE RECORDING STUDIOS INC.
New York, NY

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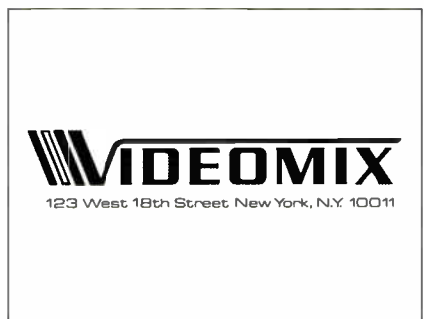


701 Seventh Ave., New York, NY 10036; (212) 921-1711; FAX: (212) 730-2206. Owner: Joanne and Bobby Nathan. Manager: Tony Droutin, Rachel Stein. Engineers: Dave Jensen (maintenance chief), Angela Piva, George Karras, Richard Joseph, Tony Smallios, Matt Hathaway, Eric "Cory" Lynch, Paul Logus. Dimensions: Studio A 12'x15', Studio B 40'x20' (w/iso booth), Studio C 22'x14', Studio D 25'x20'. Mixing Consoles: SSL 4000E w/G Series computer & Total Recall, 72-ch. SSL 4000E w/G Series computer w/"Ultimation" 64-ch., SSL 6000E w/G Series computer & Total Recall, Trident 24 Series 28x24x2. Audio Recorders: (4) Studer A800 MkIII 24-track, (2) Otari MTR-90 MkII 24-track, (3) Studer A820 2-track 1/2", (2) Studer A810 2-track 1/4", (2) Studer A80 MkII 2-track, (2) Otari MTR-12 2-track 1/2". (5) Panasonic SV-3700 Pro DAT, (10) Nakamichi MR-1. Digital Audio Workstations: Sound Tools, Pro Tools digital 2-track/2-hour sampling. Monitors: Augspurger custom, (2) UREI 813 w/Gauss, UREI 813B, (6) Yamaha NS-10M. Other Major Equipment: (3) Adams-Smith w/compact controllers, (2) Publison Infernal 90 (21 sec), (2) Sony DRE-2000A, (3) Lexicon 480L, (3) Lexicon 224X, (3) AMS RMX16, (3) AMS DMX15-80S, (3) Eventide H3000S, (3) Klark-Teknik DN780, (3) AKG ADR-16 4.0, (2) Yamaha REV1, (3) Yamaha REV7, (3) Yamaha SPX1000, (6) Yamaha SPX90, (3) Lexicon PMC70, (14) Lexicon PMC42, (3) Roland Dimension D, (3) Eventide H910, (6) UREI LA-3A, (6) UREI LA-2A, (6) dbx 165A, (6) dbx 160, (8) dbx 160X, (8) Drawmer DS-201, (12) Valley People Dyna-Mite, (6) dbx 902 de-esser, (6) Pultec EQU-2, (6) Pultec EQP-1A, (3) Pultec MEQ-5, (2) Neve 33609 stereo compressor, (24) Neve 1077 mic pre EQ, (2) Neve Prism rack (16) EQ (4) dynamic, (2)

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VIDEOMIX
New York, NY

VIDEOMIX



123 W. 18th St., New York, NY 10011; (212) 627-7700; FAX: (212) 727-3075. Owner: CP Sound Inc. Manager: Kathleen Krause. Engineers: Barbara Flyntz-Bradley, Chris Argento, James von Below, Walter Koehli. Dimensions: Room 1: studio 23'x20', control room 25'x23'. Room 2: studio 23'x20', control room 25'x23'. Room 3: studio 15'x10', control room 20'x15'. Room 4: studio 15'x10', control room 20'x15'. Mixing Consoles: Sony MXP-3000 w/JL Cooper automation, (2) Sound Workshop 34 w/disk mix automation, Sony MXP-2000. Audio Recorders: (3) Otari MTR-90II 24-track, Otari MX-70 16-track, (6) Otari MTR-12-2 2-track, Otari MTR-12-4 4-track, (2) Fostex P-20 time code DAT, (5) Panasonic DAT, (10) KABA Real Time, (2) Nakamichi mastering deck, (5) Maganatax high-speed 1/4". Digital Audio Workstations: (2) Digidesign 6-track online interlock 16/35 Mag., Sonic Solutions 8 I/O w/automated mixing time squeeze, unlimited EQ, NoNoise and Decrackler and Declick options, (2) Digidesign Sound Tools. Monitors: Crown, Meyer, Hot House monitor amp; (4) JBL 4425, (8) Yamaha NS-10, Tannoy 15-8-6 Dolby Surround systems, (8) Digital Design. Other Major Equipment: (60) Dolby SR/A, (16) dbx, Sonic Solution NoNoise w/automated Decrackler and Declick filtering, (3) Soundmaster "Smart-Sync", TimeLine Lynx controller & Micro Lynx, (2) Lexicon 480, (3) Lexicon 200, (2) Lexicon 3000, (2) Lexicon PCM70, (2) Yamaha SPX90, Ursa Major, (3) dbx 900, (3) UREI 1178, (6) UREI 545 parametric EQ, (2) Aphex Expander, (2) Studio Technologies stereo simulator, (2) BASE, Lexicon PCM42, (2) DigiTech sampler, (2) dbx 166, (2) Aphex Studio Aural Exciter, Aphex compressor, Aphex Expresor, Eventide H3000+, Roland 660 digital EQ, Aphex Exciter III, Ursa Major stereo processor, (3) Neumann TLM170, (5) Neumann U87, (2) AKG C-414, many other mics. Extended Equipment Description: (2) E-mu E3, (2) E-mu E2, Yamaha DX7, "Putney" synthesizer, (2) Ampex VPR-6 1", (5) JVC 850 3/4", Sony BVW-75 Beta SP, Sony DVR-10 D2, (2) D-20 online SMPTE DAT, Dolby SR on all recorder, Q-Sheet AV automated MIDI EQ. Specialization & Credits: Certified Dolby Surround, all-Tannoy room audio-for-video post-production. Specializing in SFX, laugh tracks and music scoring. World's finest SFX collection and all major music libraries. Full audio duplication and fulfillment capability. Interformat audio/video/multitrack/ Dolby/dbx dubbing.

VOICES RECORDING STUDIOS



16 East 48 St., New York, NY; (212) 935-9820; FAX: (212) 755-1150. Owner: Richard Leonard. Manager: Phil Gordon. Engineers: Mark Francke, Ben Pizzuto, Brian Sherman. Dimensions: Room 1: Studio 10'x10', control room 20'x25'. Room 2: Studio 10'x12', control room 20'x25'. Mixing Consoles: (2) Sound Workshop Series 34. Audio Recorders: New England Digital PostPro system, MCI/Sony 24-track. Other Major Equipment: Sony BVH-3100 1" video recorder, satellite uplink and downlink recording.

WAREHOUSE RECORDING



320 W. 46th St., New York, NY 10036; (212) 265-6060; FAX: (212) 489-1165. Owner: Nick DiMinno. Manager: Chaim Zegal.

WESTRAX RECORDING STUDIOS



484 W. 43rd St., New York, NY 10036; (212) 947-0533; FAX: (212) 947-0546. Owner: Peter Link. Manager: Michelle Van Natta. Engineers: Jeremy Harris, Jesse Plumley, Todd Anderson, Laura Fried, Steven Wilds, Anthony D'Urso. Dimensions: Room 1: Studio 17'x24', control room 17'x20', MIDI room 16'x16'. Mixing Consoles: DDA AMR-24, Soundcraft 200B, Roland M-240, Roland M-160. Audio Recorders: Otari MX-80 24-track 2", Tascam 85/16B 16-track 1", Otari 5050 MkIII 8-track 1/2", Otari MTR-12 2-track 1/4" and 1/2", Technics 1520 2-track 1/4", Sony SL-HF 650 Beta w/Sony PCM-501 digital audio processor, Panasonic SV-3500 DAT, Aiwa HD-S1 DAT, (2) Tascam 122, Tascam 122 MkII. Digital Audio Workstations: IBM PC/AT, Voyetra Sequencer Plus Gold, 64-track MIDI sequencer w/Patchmaster. Monitors: (4) Yamaha NS-10M, (2) Tannoy LGM-12, (2) JBL 4313B, (2) Auratone, Hafler 230 amplifier, Hafler 220 amplifier, Ashly MDSFET 200 amplifier. Other Major Equipment: Roland R-880, Lexicon PCM70, Lexicon PCM42, Lexicon LXP-1, Yamaha SPX90II, (2) Yamaha REV7, Ibanez SDR-1000 Plus, Korg SDD-2000, Ecoplate III, Aphex Aural Exciter, Aphex ComPELLOR, dbx 160X compressor/limiter, UREI 1176-LN peak limiter, Pultec EPH-2 programmable EQ, Drban 622-B parametric EQ, Drawmer DS-201 dual gate, Roland SBX-80 sync box, (28) dbx 150 Type 1 2/8/16-track, RSP Hush 2000, ART Proverb.

Z MUSIC/DATA BANK



251 W. 30th St., Ste. 200; New York, NY 10001; (212) 239-2050; FAX: (212) 947-3531. Owner: Ric Zivic, Ted Wender. Manager: Nik Caprossi.

PENNSYLVANIA

ATTIC STUDIOS INC.



4632 Umbria St., Philadelphia, PA 19127; (215) 482-8011. Owner: Thomas Altman, Glenn Harvitz, Peter Hood. Manager: Tom Altman. Engineers: Tom Altman, Glenn Harvitz, Peter Hood, Greg Spencer. Dimensions: Studio 23'x16', control room 15'x15'. Mixing Consoles: CAD Maxcon w/MegaMix automation 40-input. Audio Recorders: (4) Alesis ADAT 32-track digital w/BRC remote, Sony Pro DAT, (2) Tascam & Yamaha cassette, Fostex E-16, Tascam 38, Otari MX-5050. Monitors: Tannoy SRM-12, Auratone, Tannoy NFM-8, KRK 7.5. Other Major Equipment: Neumann TLM-170, (2) AKG 414, (2) Neumann KM84, (4) Sennheiser 421, Sennheiser 451, other misc. microphones. D. Fern tube mic pre, extensive selection of Ensongi MIDI gate, IBM PC w/Voyetra Plus Gold & Cakewalk, Mac SE, (3) Mesa/Boogie guitar amp.

AUDIBLE IMAGES



22 Cambria Point; Pittsburgh, PA 15209; (412) 821-2648; FAX: (412) 821-2648. Owner: Jay Dudt. Manager: Hollis Greathouse.

AUDIOMATION



922 W. North Ave., Pittsburgh, PA 15233; (412) 231-7767; FAX: (412) 231-3575. Owner: Gregg Vizza. Manager: Gregg Vizza.

AUDIOMIND



4510 Kingsessing Ave., Philadelphia, PA 19143; (215) 222-2159. Owner: Adam L. Goldman.

CHESTNUT SOUND



1824 Chestnut St., Philadelphia, PA 19103; (215) 568-5797; FAX: (215) 568-5911. Owner: Chestnut Sound Inc. Manager: Joe Alfonsi. Specialization & Credits: Engineers: Michael Harmon, Christopher Gately, Jeremy Birnbaum; Producers: Douglas C. Grigsby III, Joe Alfonsi. Credits include: Teena Marie, Chris Walker, ABC Radio Network, Mark Whitfield, Felicia, Small Change, Gary Brown, Renaissance, Audio Mob, Chiquita Green, Little Shop of Horrors, and Pennsylvania Ballet.

CREATIVE SOUND STUDIOS



601 N. Sixth St., Allentown, PA 18102; (215) 439-8004; FAX: (215) 439-0103. Owner: Hal Schwoyer. Manager: Carole Silvoy. Engineers: Hal Schwoyer, Mark Stocker, Donna Weinstieger. Dimensions: Room 1: 11'x17', control room 11'x13'. Room 2: 4'x8', control room 9'x14'. Mixing Consoles: Soundcraft 600 24x16x2, Tascam 5B 8x4x2, Ramsa 133. Audio Recorders: Otari 5050 MkIII 8-track, Tascam ATR-60 8-track, Otari 5050 MkIII 4-track, Otari 5050 MkIII 2-track, (2) Otari 5050B II 2-track, (2) Panasonic SV-3700 R-DAT, Nakamichi MR-1, (2) Nakamichi MR-2, Telex 6120. Digital

Audio Workstations: Digidesign Pro Tools, Digidesign Sound Designer II digital editor, J.L. Cooper CS-10, Digidesign Video Slave Driver, Radius 21" color monitor, Macintosh IIfx, (2) Storage Dimensions 1 gig hard drive, **Monitors:** (2) Tannoy PBM-8, Tannoy PS-88 subwoofer, (2) JBL 4411, (4) Auratone 5C. **Other Major Equipment:** Cipher Digital Shadow II synchronizer, Yamaha REV7, Yamaha SPX90, Lexicon PCM42, Alesis Quadraverb, dbx Type I 24-track noise reduction, dbx 166 limiter/compressor, BBE 822A Sonic Maximizer, Klark-Teknik DN360 1/3-octave graphic equalizer, Neumann TLM-170 microphone, AKG 414EB microphone, (2) AKG 451 w/CK3 & CK22 caps., (3) Sennheiser 421, (4) Shure SM58 (Beta), (4) Shure SM57, Roland S-50 sampling keyboard, Roland R-8 Human Rhythm composer, E-mu Proteus I & II, Roland S-330 digital sampler, Hybrid Arts SMPTE track gold.

CYRUS SOUND

3545 South Park Rd.; Bethel Park, PA 15102; (412) 854-2076.
Owner: Cyrus V. Anderson Jr. Manager: Cy Anderson.

DAK AUDIO 24 TRACK

7249 Airport Rd; Bath, PA 18014; (215) 837-7550; FAX: (215) 837-0773. Owner: Jon K. Miller. Manager: Chris Miller.

DMG PRODUCTIONS

137 Saint Charles St.; Drexel Hill, PA 19026; (215) 284-4940.
Owner: Marc A. Gallo. Manager: Sean Townsend.

FORGE RECORDING STUDIOS INC.

Lincoln & Morgan St., 3rd fl.; Phoenixville, PA 19460; (800) 331-0405; FAX: (215) 935-1940. Owner: Corp. Manager: Warren Wilson. **Engineers:** Mark McNutt, Warren Wilson. **Dimensions:** Studio 40'x50', control room 40'x30'. **Mixing Consoles:** Neotek Elite 32x24. **Audio Recorders:** Sony 3324, Sony 3402, (2) Ampex ATR-100, (2) Ampex ATR-700, Dtar MTR-90 II 24-track, (2) Sony DMR-4000, (2) Sony PCM-2500, Yamaha CD recorder. **Monitors:** (2) UREI 813, (2) JBL 4315, (2) Phillips Motional Feedback, (2) Auratone. **Other Major Equipment:** (5) Neumann U-87, (4) AKG 414, (2) Neumann KM-84 & 140, (2) AKG C-451, (15) assorted other condenser and dynamic, Lexicon PCM70, Klark-Teknik DN-780, Yamaha SPX900, Eventide H3000B, Eventide H949, BAE, Aphex Aural Exciter, Aphex Compeller, (2) dbx 161 & 154, (2) Drawmer DS-201 gates, (4) Kepex gate, Revox CD player, (2) Tandberg 910 recorder, (2) Pioneer CT-41 recorder, (6) Dolby A, B, SR, C & S NR unit.

HONEYBEAR RECORDING STUDIO

2510 Raspberry St.; Erie, PA 16502; (814) 459-BEAR (2327).
Owner: Walter Slivinski.

IVORY PRODUCTIONS INC.

212 N. 12th St., Ste. #3; Philadelphia, PA 19107; (215) 977-9777; FAX: (215) 563-3283. Owner: David Ivory. Manager: Vince Kerchner.



JAMLAND RECORDING STUDIO INC.
Philadelphia, PA

JAMLAND RECORDING STUDIO INC.

Philadelphia, PA 19118; (215) 923-6601; FAX: (215) 242-5519. Owner: Grover Washington III. Manager: Grover Washington III. **Engineers:** Grover Washington III. **Dimensions:** MIDI Room: control 10'x20'. **Mixing Consoles:** Tascam M-3500 24x8, Roland M-24E line/sub. **Audio Recorders:** Tascam TSR-8 8-track w/remote, Technics. **Digital Audio Workstations:** Alchemy digital sampler/editing for Mac, Digidesign Audio Media software. **Monitors:** Tapco CP 500M, Crown DC-300A, BGW System 250 D, Carver C-1 preamp

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monitor amplifiers: Tannoy SGM 1000, (2) JBL 4401. **Other Major Equipment:** J.L. Cooper PPS-2 Sync. Box, Yamaha SPX900 multi-effects processor, Lexicon PCM-60 digital reverb, (4) Countryman EM-101 condenser, Sennheiser MKE-40, (2) Beyer Dynamic, AKG D-2000 E, Roland D-50 and D-20 keyboards, Yamaha DX7IIFD keyboard, Sequential Circuits Prophet-5 analog keyboard, Akai/Linn 9000 drum machine w/91 updates, Akai S-1000 HD digital stereo sampler, Macintosh IIfx (color monitor) w/Performer, Studio Vision, Master Traks Pro software, Studio Plus Two MIDI box, Eltekon 600 MB hard drive. **Specialization & Credits:** I received my engineering and production training at The Recording Workshop in Chillicothe, Ohio. After three months of intensive training, I immediately began working as a production assistant with "G.W. Jr. Music Inc." My duties included stage production and keyboard programming and repairing on worldwide tours. In between tours, I concentrated on writing and producing music. Grover Washington Jr. recently received a Grammy nomination for a song I wrote and coproduced entitled "Summer Chill" on the Sony/CBS record entitled *Next Exit*. I am also partner in G3 Entertainment, a management company based in Philadelphia that deals in management of rap, R&B, rock 'n' roll groups, as well as actors and athletes.

KAJEM STUDIOS

1400 Millcreek Rd.; Gladwyne, PA 19035; (215) 642-2346; FAX: (215) 642-3572. Owner: Kurt Shore, Sam Moses, Joe Alexander, Mitch Goldfarb. **Manager:** Monica Tannian. **Engineers:** Joe Alexander, Mitch Goldfarb, Brian Stover, John Fairhead, Sheila Matterson, Brad Cullett. **Dimensions:** Room 1: studio 35'x35', control 20'x25'. Room 2: studio 55'x35'. **Mixing Consoles:** SSL 4048E w/G Computer & Total Recall. **Audio Recorders:** (2) Dtar MTR-90 II 24-track, Studer A80 2-track 1/2", (2) Panasonic SV-3500 DAT, Studer B67 2-track 1/4", (3) Dtar 5050-BII 2-track 1/4", (6) Tascam 122 MkII cassette. **Digital Audio Workstations:** Sound Tools hard disk editor. **Monitors:** (2) UREI 813 modified, (2) Tannoy SRM-12B, (2) Tannoy PBM-6.5, (2) Yamaha NS-10. **Other Major Equipment:** Lexicon 480L, AMS RMX-16, AMS DMX-15, EMT 25, (2) Eventide H3000SE B, Sony DRE-2000, (3) Yamaha SPX90, 1000, REV5, (2) Lexicon PCM70, Prime Time II, (4) Focusrite EQ/mic pre, (4) Neve 1081 mic pre, (6) API 550A, (4) Pultec EQP/MEQ, Eventide H949, Akai S1100 sampler, Massenburg stereo EQ, (5) UREI compressor/limiters, Drawmer 1960, (2) Kepex/Gain Brain II, Yamaha 7'4" grand, (2) 12-way custom headphone system, **Specialization & Credits:** Kajem is one of the East Coast's premier residential 48-track SSL facilities. World-famous ambient room with 25' ceiling and incredible acoustics in the Derringer gun factory of Civil War fame. A six-bedroom Victorian home is reserved exclusively for clients. Vintage mics, EQ, limiters and more. Trout fishing, woods and waterfalls. Clients include Cinderella, Queensyrche, Prong, Metal Church, Trixter, Teddy Pendergrass, Patti LaBelle, Jazzy Jeff and the Fresh Prince, Public Enemy, Kwame, Pop Cool Love, Jeffery Gaines, David Chastain, Crimson Glory. 1993 releases: New Born, Cruel Shoes, Dr. Butcher, Matt Sevier. All-in production/studio packages available. Computer Mac-based MIDI suite available.

MASTERS BY JOHNSON

832 Montgomery Ave.; Narberth, PA 19072; (215) 664-1188; FAX: (215) 664-1434. Owner: Stephen Johnson. Manager: Stephen Johnson.

MENAGERIE RECORDING STUDIO

PO Box 535; Saylorsburg, PA 18353; (717) 992-1954; FAX: (717) 992-2371. Owner: Jeff Boyer. Manager: Jeff Boyer. **Engineers:** Jeff Boyer, Jim Krause, Gary Wehrkamp. **Dimensions:** Studio 25'x30', control room 12'x20'. **Mixing Consoles:** Klark-Teknik DMR12 DDA. **Audio Recorders:** Dtar MTR-90 III 24-track, Dtar MX-5050 2-track, Alesis ADAT 8-track, Panasonic SV-3700, (2) Nakamichi MR-1, (2) Tascam 103. **Monitors:** (2) Tannoy 6.5, (2) Yamaha NS-10M. **Other Major Equipment:** Lexicon 300, (2) Lexicon LXP-1, (2) Lexicon LXP-5, Alesis Quadraverb, Alesis Quadraverb GT, Roland SDE-1000, DigiTech 256XL, TC 1210, Eventide H3000SE, Eventide 910, BBE 422-A, Sans Amp, JBL/UREI 7110, (2) UREI LA-4, (2) dbx 165, (2) dbx 166, (2) Drawmer DL-241, (4) Aphex 612, (2) ADL 1000 tube, Matrix 1000, Kurzweil 1200, Hammond B-3, Leslie 147, Yamaha 7-pc. drum kit.

MODERN AUDIO PRODUCTIONS INC.

1650 Market St.; Philadelphia, PA 19103; (215) 569-1600; FAX: (215) 569-1685. Owner: Modern Video Prods. Manager: Chris Quin. **Engineers:** Bob Schachner, Efrain Torres. **Dimensions:** Room 1: Studio 18'x24', control room 18'x18'. Room 2: Studio 8'x12', control room 13'x17'. **Mixing Consoles:** Soundcraft TS 24 28x24 automated, Soundcraft TS 24 8x24, Soundcraft TS 200 8x4. **Audio Recorders:** Sony JH-24, Tascam 50 8-track, (2) Dtar MTR-12 w/CTC, (7) Dtar 5050, Tascam DA30 DAT, (4) Aiwa F770 cassette, (2) Aiwa AD-515 cassette, Tascam 133 cassette. **Digital Audio Workstations:** Roland DM-80. **Monitors:** (2) Klein & Hummel 092, (2) Tannoy PBM-6.5, (2) Yamaha NS-10, (2) RDR, (2) JBL, (2) KRK 703. **Other Major Equipment:** Lexicon 224XL, Lexicon LXP-1, Lexicon LXP-5, Lexicon Prime Time II, Lexicon PCM60, Eventide H3000SEB w/sampling, Eventide 969, Klark-Teknik DN780, Yamaha REV7, Yamaha SPX90, (8) dbx 160X, UREI LA-4, Roland SN-550 digital noise reduction, Sascom Vitalizer, GML 8200 parametric, (2) GML mic preamp, Boss editor, (7) Adams-Smith synchronizers, —LISTING CONTINUED ON NEXT PAGE

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NOTEWORTHY STUDIOS INC.



PO Box 238; E. Randolph, VT 05041; (802) 728-4600; FAX: (802) 767-9652. Owner: Roger Stauss. Manager: Bob Sparadeo.

SOUNDDESIGN



Main Street Gallery, 181 Main St.; Brattleboro, VT 05301; (802) 257-1555. Owner: Billy Shaw. Manager: Joanne Singer. Engineers: Billy Shaw, Joe Podlesny, Al Stockwell. Dimensions: Studio 28'x30' w/separate iso room, control room 28'x18'. **Mixing Consoles:** Sound Workshop 28x32. **Audio Recorders:** Sony/MCI JH-24 24/16/8-track, MCI JH 2-track, Otari MX-5050 8-track, (3) Otari MX-5050B 2-track, Revox A77 2-track, Audiotronics AV132B 2-track reel-to-reel high-speed duplicator, Panasonic RV-3500 DAT, Nakamichi, (10) Akai FX71, Otari DP-4050 high-speed duplicators. **Digital Audio Workstations:** Turtlebeach 56K. **Monitors:** Crown DC-300A, BGW, Soundcraft monitor amplifiers. JBL 4311, Yamaha NS-10M, Auratone, custom air suspension system. **Other Major Equipment:** (24) dbx, Yamaha REV7, (2) Yamaha SPX90, Lexicon digital reverb, Master-Room XL-210 stereo reverb, Korg digital delay, Effectron DDL, (2) MXR DDL, (8) Valley People Kepex, (2) UREI 1176N limiter, (2) Teletronix LA-2A tube compressor, (2) dbx overeasy compressor, (2) Ashly Audio stereo parametric EQ, (4) Omni Craft noise gate, (4) Ashly Audio limiter, Altec Voice IIE 27-band stereo graphic EQ, MXR 15-band EQ, (4) Neumann U87, KM84, KM81, AKG C-414, 451E, (8) Sennheiser 421, (2) Sennheiser 441, (2) Sennheiser 403, AKG D-12, (4) AKG SE-10, Shure SM57, SM58, SM85. **Extended Equipment Description:** IBM computer for automation w/music software, Yamaha C 6'6" grand piano, Ludwig drum kit, Oberheim DMX drum machine, Fender Twin, Fender Princeton, (2) Crate amplifier, Ampeg B15, Yamaha DX7, Roland JX-3P, Kurzweil K1000.

STRAIGHT ARROW RECORDINGS



3 Kent St.; Montpelier, VT 05602; (802) 223-2551. Owner: Mike Billingsley. Manager: Geoff Brumbaugh, Lin Haley. **Specialization & Credits:** Starting with blues and folk music in the '60s, our experience extends now to all acoustic music, ranging from European Classical solos, ensembles and orchestras; African and Caribbean percussion; American and European folk music; Garmelton and Klezmer orchestras; jazz ensembles and contemporary experimental compositions. Since 1985 we have had our digital recording equipment modified to meet the highest standards of recording and reproduction. While we have multitrack recorders in our new two-room studio, we still encourage live mix and direct-to-stereo recordings, particularly in fine halls. Our monitoring environment is accurate, using Tannoy's and B&W 801s driven by Bryston and Yamaha amps, and we employ a variety of direct-to-stereo techniques (including) SASS-B and SASS-P microphones, designed here in 1982. The just completed studio complex is comfortable and spacious, with 16' ceilings and a soft, full-range room tone in the main room, plus 13' ceilings in the control/editing room. We also do CD pre-mastering with our digital editors and a full complement of digital signal-path processors. Inquiries for field recordings, custom sound effects and ambience recordings are also welcomed.



THE TIME MACHINE
Manchester, VT

THE TIME MACHINE



PO Box 2187; Manchester, VT 05255; (802) 824-4349; FAX: (802) 824-4543. Owner: J. Mike Cordell. Manager: Bruce Marshall. Engineers: Bruce Marshall (chief), Mike Cordell, Rebecca Gilley, Jim Gilmour. Dimensions: Room 1: studio 25'x35', control room 32'x24'; Room 2: 24'x24'; Room 3: studio 14'x16', control 22'x20'. **Mixing Consoles:** SSL 4080-G-BG-TR-U 80 input, DDA DMR-12 56 input. **Audio Recorders:** Sony PCM-3348 48-track digital, (2) Studer A-820 Mark II 24-track analog, Otari MTR 90 Series III 24-track analog, Studer A-820 2-track 1/2" analog, MCI JH-110B 2-track 1/4" analog, Sony DAT, Panasonic SV-255 DAT, Nakamichi CR7A. **Digital Audio Workstations:** Digidesign Pro Tools, Digidesign Sound Tools. **Monitors:** Ted Rothstein Custom TR1A, KRK 9000, TOA MEAV 12, Genelec 1031 A, Yamaha NS-10, EV Sentrys, Tannoy 215

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DMT, Tannoy PBM 6.5, Auratone soundcubes. **Other Major Equipment:** TimeLine Lynx sync system, Digidesign Yamaha CD recorder, Fairchild 670 stereo compressor, Lexicon 480-L, Lexicon LXP-15, Lexicon 300, Lexicon 224, (3) Lexicon PCM70, Eventide H-3000 SE Harmonizer, Adams-Smith Zeta III synchronizer, (2) Roland RE501 Tape chorus/delay, (3) Roland S-770 sampler, (2) UREI LA 2A, UREI LA 3A, UREI 565 filter set, Lexicon 200, AMS RMX/DMX-16, assorted MIDI and keyboard gear, mics from tube 49's to B&K, Lear Series II Jet. **Specialization & Credits:** The Time Machine has transported itself into the future of what the industry will see as the ultimate world-class recording retreat. A secluded 10-building compound on 150 acres, The Time Machine is a Vermont mountain top recording paradise complete with tennis & racquetball courts, a huge indoor pool & spa facility, soccer field, fishing/skating ponds, hiking/skiing trails, and breathtaking mountain views. In addition to the time a passenger spends in the studio or in any of the properties' recreational buildings, guests of The Time Machine enjoy having their own three-story, lakefront abode which is accented by gorgeous post and beam construction that provides a very warm and unique presence throughout the estate. The Time Machine was built to provide the ultimate recording experience to the industry's best, one at a time.



WHITE CROW AUDIO
Burlington, VT

WHITE CROW AUDIO



19 Marble Ave.; Burlington, VT 05401; (802) 658-6475; FAX: (802) 658-3873. Owner: Todd Lockwood. Manager: Todd Lockwood. Engineers: Tom Walters, Chris Bailey. Dimensions: Room 1: control room 19'x21". Room 2: studio 29'x38". Room 3: studio 15'x17". Room 4: studio 10'x11". **Mixing Consoles:** Neve 8068 MkII w/GML automation, Neotek Series I. **Audio Recorders:** Studer A820-24, Studer A820-2 1/2", Studer A810 1/4" w/SMPTE, Studer A80RC 1/2" or 1/4", (2) Sony PCM-2500 DAT. **Monitors:** (2) UREI B13, (2) Tannoy NFM-8, (2) Yamaha NS-10M, (2) Snell Type J, (2) EAW MS-50. **Other Major Equipment:** Processors: AMS DMX15-80S DDL/sampler, (5) API 550A EQ, (4) AXE DI-400 +4dbm direct box, Barcus-Berry BBE 802 processor, (2) dbx 165A limiter (link), dbx 902 de-esser, (4) dbx 903 limiter, (2) dbx 905 para EQ, dbx 906 flanger, Dolby SR for all 2-track and multitracks, (2) Drawmer DS-201 dual gate, (2) John Hardy M1 mic preamp, Lexicon PCM42 (4800ms), Neve 33609 stereo limiter, (2) Pultec EQP-1A, Pultec EQP-1A3, Studio Technologies AN-2 stereo simulator, (4) Summit Audio TLA-100A tube limiter (linked), (2) Teletronix LA-2A limiter, Trois D0520 dynamic EQ, Tube-Tech PE-1B EQ, (2) UREI 1176 limiter, Valley People 610 stereo limiter, Valley People Gain Brain II, (4) Valley People Kepex II, Valley People Leveller, (2) Valley People Maxi-Q, Wendel Jr. drum sample player, (5) White Crow/Jensen direct box, (4) White Crow/Jensen guitar amp input box. **Reverb systems:** AMS RMX 16, EMT 240 Gold Foil, Lexicon 480L w/2 LARCs, Lexicon PCM70. **Extended Equipment Description:** Microphones: (2) AKG C414EB, (2) AKG C451E, (2) AKG C460/CK61ULS, (2) AKG D12E, AKG D112, (2) Beyr MC740N, (2) Bruel & Kjaer 4006, (2) Crown PZM30, (2) Crown SASS/B stereo mic frame, (3) EV RE20, Foxtex M88 RP ribbon, (2) Neumann KM84, (2) Neumann TLM170, Neumann U47 tube, (2) Neumann U87, (2) Neumann U89, (2) RCA 77-DX ribbon, Sanken CMS2 M/S stereo, (6) Sennheiser 421, Shure SM53, (5) Shure SM57, (3) Shure SM58, Shure SM81. **Specialization & Credits:** White Crow serves discriminating clients from the greater New York and Los Angeles areas who desire privacy and elegance at competitive rates. Our clientele covers a wide range of musical territory, from Alice Cooper to Odetta to Phish. Our large, quiet studio enables us to accommodate acoustically oriented projects not feasible at many other facilities. Producers looking for a classic, "warm" sound will appreciate our complement of vintage tube gear and vast selection of classic instruments. Clients include: Capitol, Atlantic, Warner/Geffen, Sony/Epic, RCA, Rough Trade, Imago, Zoo, Windham Hill/Gang of Seven.

Pro Audio dictionaries and technical reference guides are available through the Mix Bookshelf catalog. Call toll-free (800) 233-9604 for your free copy.

ONE STEP AHEAD

Coming in Mix:
June 1993

Music Recording

- **DIRECTORIES**
Southeast Recording Studios
- **TECHNICAL FEATURES**
Recording Acoustic Guitars
DSP Explained
- **LIVE SOUND**
Lindsey Buckingham at
Bimbo's
Club Sound in Three Cities
New SR Products
- **BYTE BEAT**
Product Potpourri
- **PRODUCER'S DESK**
James Stroud
- **PLUS!**
Recording Notes on Muddy
Waters, Primus and World
Party; Phil Ramone Lunches
with Bonzai, Part II.

ATTENTION ADVERTISERS:

Deadline for ad placement is the seventh of the month, two months prior to publication. Call (510) 653-3307 for a 1993 Mix Editorial Calendar, space reservations and complete advertising information.

MIX

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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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 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.
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- 22. Specify makes, models or services to be purchased

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- 24. Have no involvement in purchasing decisions

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- 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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025	050	075	100	125	150	175	200	225	250

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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- 03. Sound reinforcement
- 04. Video/film production
- 05. Video/film post-production
- 06. Broadcast/radio/television
- 07. Record company
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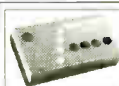
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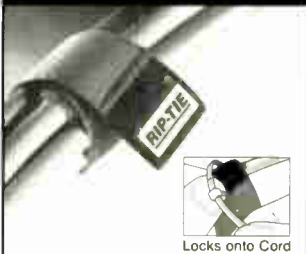
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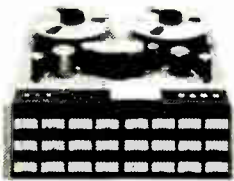
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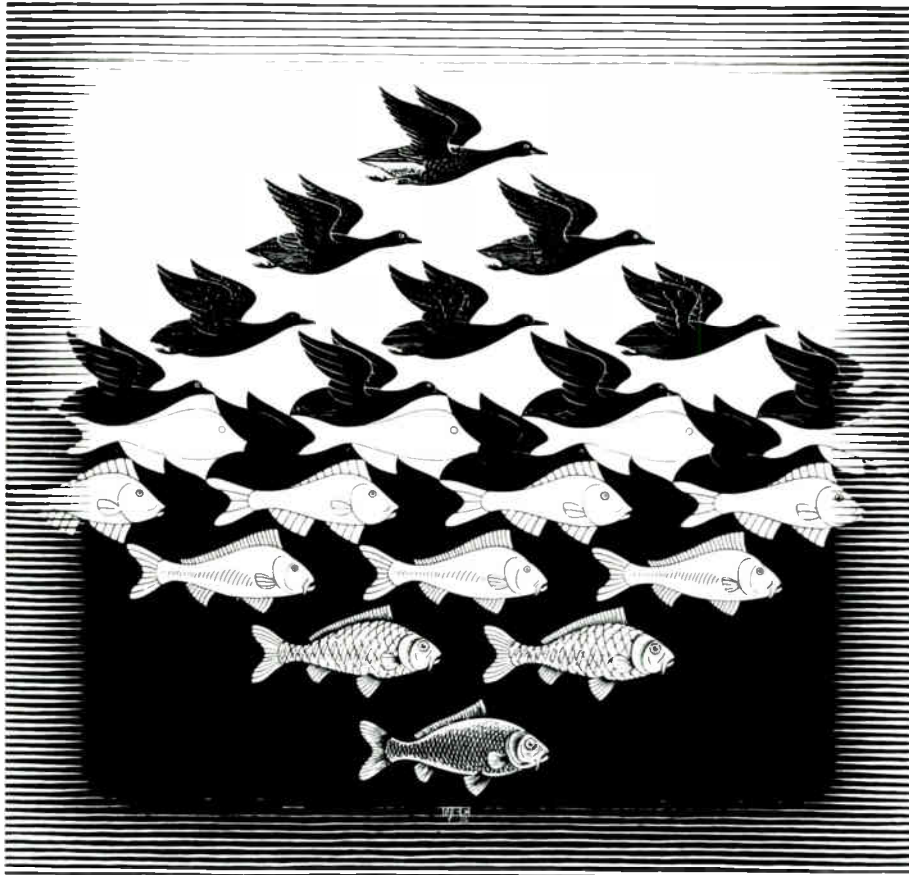
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Study the illustration. Are the geese becoming fish, the fish becoming geese, or perhaps both? Seasoned recording engineers will agree that your eyes *and* your ears can play tricks on you. In the studio, sometimes what you think you hear isn't there. Other times, things you don't hear at all end up on tape. And the longer you spend listening, the more likely these aural illusions will occur.

The most critical listening devices in your studio are your own ears. They evaluate the sounds that are the basis of your work, your art. If your ears are deceived, your work may fall short of its full potential. You must hear everything, and often must listen for hours on end. If your studio monitors alter sound, even slightly, you won't get an accurate representation of your work and the potential for listener fatigue is greatly increased.

This is exactly why our engineers strive to produce studio monitors that deliver sound with unflinching accuracy. And, why they create components designed to work in perfect harmony

with each other. In the laboratory, they work with quantifiable parameters that do have a definite impact on what you may or may not hear. *Distortion*, which effects clarity, articulation, imaging and, most importantly, listener fatigue. *Frequency Response*, which measures a loudspeaker's ability to uniformly reproduce sound. *Power Handling*, the ability of a

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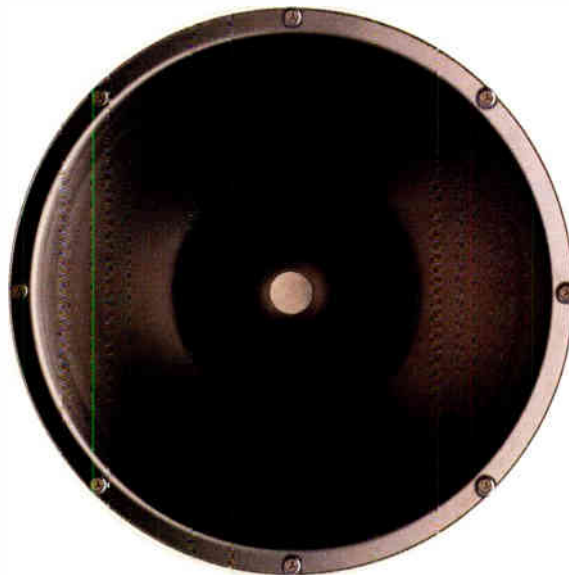
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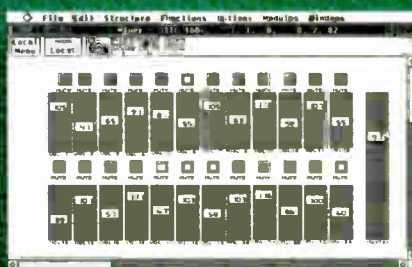
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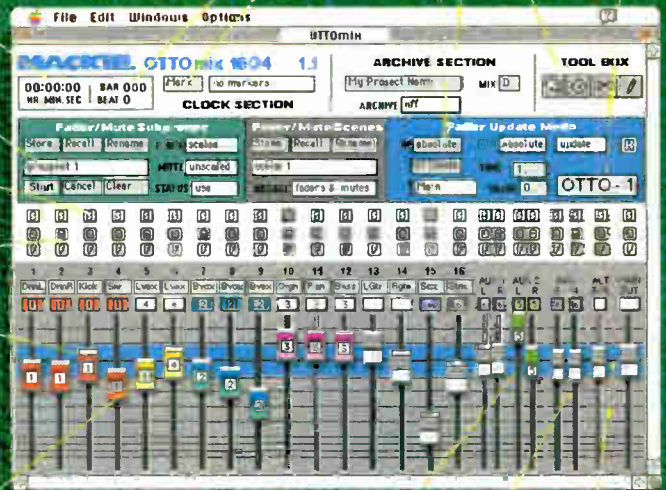
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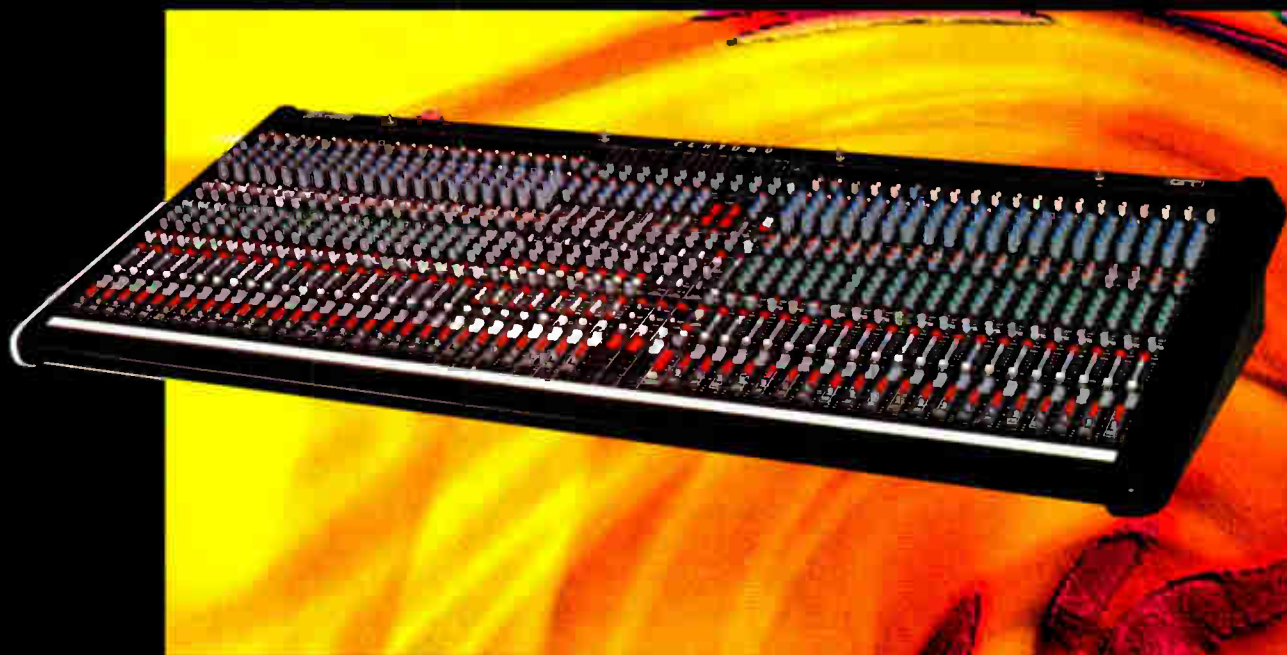
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MIX

Applications in Sound Reinforcement



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On the cover: Jefferson Starship at San Francisco's
Warfield Theatre. At the board is band engineer Andy
Slote and Sound on Stage's Michael Jackson. Cover
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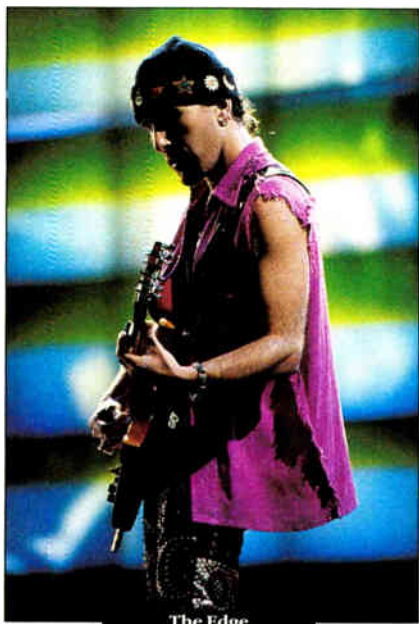


Guitar Reinforcement

Three Top Engineers Share Their Philosophy and Technique

BY DAVID (RUDY) TRUBITT

PHOTOGRAPH BY STAN MUSILEK



The Edge



Rush's Alex Lifeson



Eric Clapton

Photos this page by Steve Jennings



Joe O'Herlihy has mixed U2 since the late '70s. In this interview, conducted at one of the Zoo TV tour outdoor shows late last year, he tells us how he presents the sound of one of today's most recognizable guitarists to audiences all over the world.

Mix: What's your approach to Edge's guitar setup for this tour?

O'Herlihy: Basically this tour is an identical process to what we've done through the years. In this case Edge has got four vintage Vox AC30s and two Randall amplifiers. The structure of his guitar sound is based upon various different combinations of these amps at any one given time. There

(Continued on page 8)



Robert Scovill is best known for his tours with Rush and Def Leopard. His work was recognized by Mix readers last year when they voted him Sound Reinforcement engineer of the year in Mix's TEC Awards. Here he shares his thoughts on general advice for working with a variety of guitars, styles and guitarists.

ELECTRICS

Mix: Generally speaking, how would you approach an electric guitarist in each of three styles: modern hard rock—very high distortion with a lot of bite; a slightly cleaner blues/rock tone; and a completely clean player in a jazz, pop or country setting?

(Continued on page 11)



Mike Ponzek has mixed Eric Clapton since 1984, save for a two-year gap while he was out with Paul McCartney (Rob Collins took over the reins during the interim). Ponzek was also system engineer/audio project coordinator for Rock in Rio II and was named sound reinforcement engineer of the year by Mix readers in the 1991 TEC Awards. I spoke with him during Clapton's fall '92 tour.

Mix: Do you use isolation boxes with Eric Clapton's guitar sound?

Ponzek: From about 1984 to 1986 we used an amp backstage. When Eric went to the four piece group—

(Continued on page 16)

O'Herlihy

(Continued from previous page)

are various different [effects] treatments sent to different amplifiers, and it's a combination of those that is the Edge sound.

The difference from tour to tour is the character and quality of sounds—that has changed dramatically. For instance, the guitar processing on *Achtung Baby* is fairly unique. It's something that we have tried to repro-

duce as much as we can. We're using a Bob Bradshaw switching system that makes a very complicated studio-type setup practical in a live context. It's a massive, computer-based switching system that sends different processed signals to various destinations, and it also does level changes so that when it gets there it's at the right level for that particular treatment.

Mix: Does everything from that system ultimately feed an onstage guitar amp, or do you take any of it direct?

O'Herlihy: The only direct signal in the process is an acoustic guitar DI, and it's a combination—I use the

“When you work with an artist, I think it's vital to know everything about where he's at and what he's doing.”—Joe O'Herlihy

clean [DI] acoustic sound as the main ingredient for the blend, and it's filled in with Vox #1 or Vox #4 or something like that. Otherwise, there isn't any clean, clinical guitar DI as such. Everything has a treatment of some description on it.

Mix: During the arena leg, Edge was playing a strat-style guitar on “Angel of Harlem” that had a great acoustic sound. What kind of pickup system was involved?

O'Herlihy: That was a guitar Yamaha and Edge had been working on—it was a couple of different Piezo-type pickups that they had under the bridge. It was an experimental guitar, and he grew to like it quite a bit. But we had a bit of difficulty in a couple of buildings with the wireless setup for it, because the technology was a prototype. So, we ended up going back to the natural acoustic for the outdoor leg, because he liked the wood sound and all that sort of feeling. But that electric had an incredible sparkle—it was a really, really good acoustic guitar sound. It was incredible to look at him with this thing that looked like a Stratocaster strapped onto him and making it sound like an acoustic.

Mix: What kind of microphones do you favor for his amps?

O'Herlihy: I tried at the start of the tour to get as much studio quality and dynamics through the whole thing as I could. I used AKG C-414s, and they were *too* good, to be perfectly honest. They were too clean; they were fabulous. But, unfortunately, for this application it gave us too much of an almost clinical type of sound, so we went back to the old reliable SM57s. We've also got a couple of SM56s up there because they are shock-mounted, just in case. Everything is on rolling risers, and I didn't want any resonance or anything like that. He likes it nitty and gritty, and there were

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certain things that the studio microphones were taking away from that—it's a different context on record, as you can well imagine. So we went back to the old reliable 57s and 56s.

Mix: What about mic position?

O'Herlihy: We go for center cone placement as much as I possibly can—right on the dust cap. But some of the Voxes, because of the vintage they are, have this wooden baffle cross blocking that center point. That's where the 56s come in, because you can pivot and point them real well. And it is a vital part of the whole thing—you're off center or off your measurement by a few inches, and it does sound quite different.

Mix: How many of the original speakers are left in these amps?

O'Herlihy: Original speakers—that's another crusade. We've gone and collected as much as we can. We've been very lucky—it's all genuine original vintage speakers. There's a combination in one amp—an old blue Vox-Jensen speaker and a Jensen silver. [The other amps] are predominantly the blues.

Mix: What's the difference in tone between the blue and the silver speakers?

O'Herlihy: My impression is that the silver's got kind of a softer tonality. It's a really minute texture thing. They have their little, little differences. Technically, you could put them up on the scope, and it would tell you they're the same. It's a texture thing. We do have a fairly substantial stock of each, and we've been good so far, touch wood, and haven't blown stuff up. When you get it re-coned, it's different because of the tightness. You don't get the wonderful warmth in the sustain with a new cone kit. It's quite precise—it doesn't have the flexibility from years of movement. I think something quite unique about the Vox sound is the speaker system.

Mix: You're so in touch with the details of his setup...

O'Herlihy: When you work with an artist, I think it's vital to know everything about where he's at and what he's doing. He's a virtuoso, and he understands the technical side of things as well. It's fairly unique, in the sense that a lot of people are very good players but might not get the optimum out of their treatments.

Mix: While he's made it such an inseparable part of his style.

O'Herlihy: Oh, absolutely—it's definitely the Edge sound, or the Edge

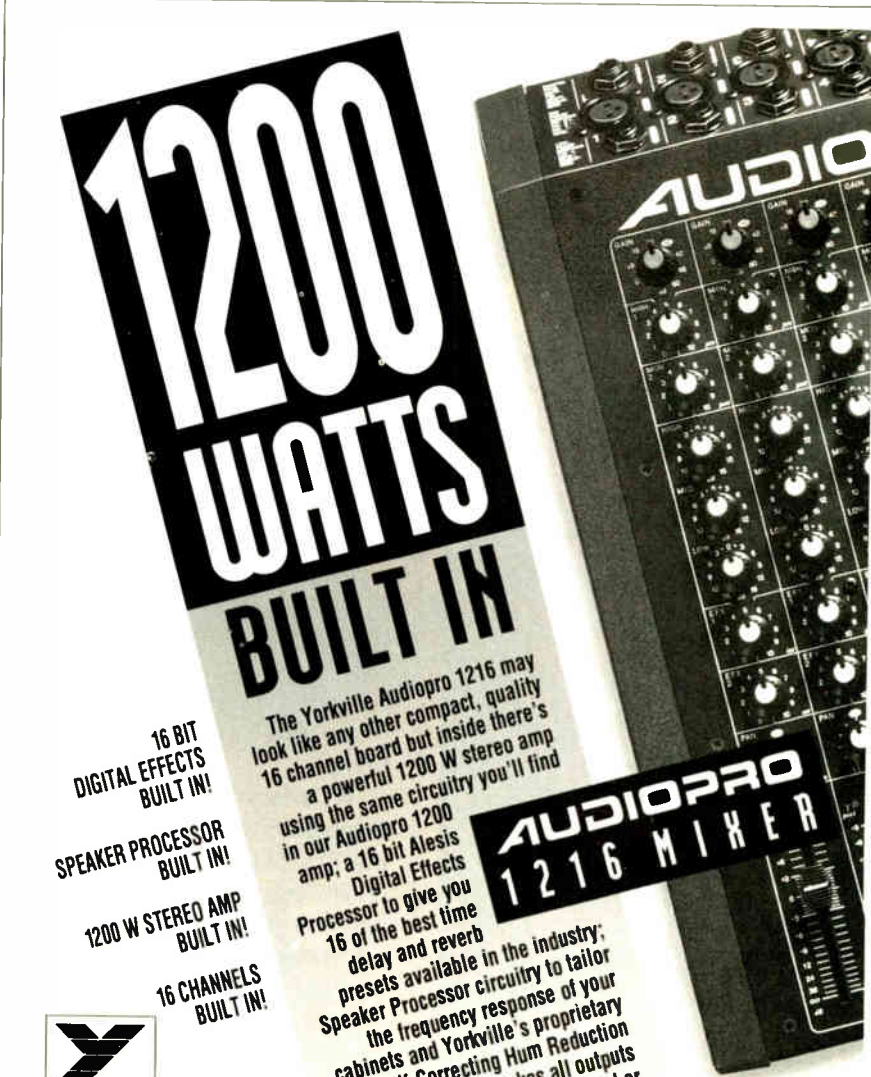
orchestra, as I affectionately christened it many moons ago. From the old [Electro Harmonix] Memory Man days right up to where we are now, it's been an incredible natural progression. It's great to be part of it. ©

Scovill

(Continued from page 7)

Scovill: This scenario applies to all three situations: The first question I will ask the player is, "Were you

happy with the sound you got on the record?" If the answer is yes, then I will want to know, "What mic(s), amp, speaker combination did you use during the recording process to get the sound you used on the record?" If he knows the particulars, then I try the setup used in the recording process. I believe the techniques used there are just as valid out here; I mean, come on, a good sound is a good sound. Nine times out of ten the [modern hard rock] sound you have described is recorded with an SM57. So, because I know the mic so well, I will start from there, but nothing is written in



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ever, at ear level). Therefore he has a tendency to overbrighten it or overly boost the low end, so with your own front end, [ahead of the miked speaker] you can compensate for it.

ACOUSTIC GUITAR

Mix: Do you have a favorite mic for acoustic guitar? What trade-offs would you make in mic positioning and EQ when rejection on a noisy stage, feedback control and optimum tone are competing factors?

Scovill: You have to take into consideration the genre of music you are talking about. For instance, if it's a

very intimate setting, say for country music or a soloist situation, and the required monitor level is not out-of-hand, I will certainly consider miking the guitar with stand-alone microphones. I like the AKG 460s anywhere around the bridge, or even a Neumann KM84. Now if the artist needs to be a bit mobile in the same setting, I will try to get him to use a clip-on condenser mic around the F-hole (sound hole). Maybe a Ramsa or Sony low-profile mic, or bridge-type pickup. Now the other scenario is in a high SPL environment where the player wants to be mobile all night, typi-

cally a rock or pop setup. Here you are almost bound to use some sort of transducer in the bridge. There are some good ones out—I particularly like the one that is in the Takamine guitars, and I heard that Paul Gilbert of Mr. Big used one that was a Hamer guitar, but I do not know the origin or type of pickup used in either of those guitars. The Ovation collector series guitars also sound really good. One other note with bridge transducers: Depending on the sound you are going for, have the player try different string gauges on the guitar. You can decrease a lot of your low-end and top-end EQ by going to a lighter string gauge.

Kind of an interesting turnaround to this line of thinking would be what the guitar player for The Alarm used extensively for a while. He had a regular acoustic guitar with an electric guitar pickup in the F-hole that he played through his normal amp setup. It looked and sounded fantastic.

EFFECTS AND PROCESSING

Mix: What's your preference for getting effects from a guitarist with his/her own rack? Effects direct with a dry mic on their amp? Wet and dry mixed by the player, through the amp and miked off a speaker?

Scovill: I definitely prefer to get the effects mixed and miked from the player's amp or from an isolated version of the player's setup. There are a number of reasons for this. The most important is that the effects will affect how the guitar player plays. If you add delays or even chorusing, and the player cannot hear them, it is unlikely that you will get it to sit the way you want it to. A footnote to this is if you have isolation boxes for the system, and your miked source includes delays, etc., as the delays die out the ratio of delays to stage noise or room ambience coming into the mic is very high. Another reason would be to take some of the pressure off me to perform all the guitar effects as well as the rest of the show. In effect then, the guitar player or his technician—whoever is doing the program changes—is like having a second set of hands on the console, and that can be very welcome.

Mix: Because so many players use programmable effect systems, might you work with them to fine-tune any presets that might be problematic in the house?

Scovill: Absolutely, because the guitar

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player is not listening to his effects in the context of the mix. A common problem here is with two guitar players, sometimes both will use a lot of chorusing, when in fact with two players you are going to get some natural chorusing anyway if they are playing unison parts, so you have to be a bit selective. But it is very important to get actively involved in it, and it takes a fair amount of time to get tweaked in.

Mix: Any anecdotes that might be interesting? For instance, the most effective way to ask a guitarist to turn his amp down?

Scovill: If you have a guitar player

that is out-of-bounds on the volume side of things, it is something you kind of need to get on as soon as possible if it looks like it is going to be a big problem. Once he works at a certain volume, even for a short time, it is virtually impossible to get him to turn down without seriously denting his ego as well as his vibe. I am usually pretty flexible on it, and I will feel out the player for any signs of common sense. Usually, something along the lines of, "The more I hear coming off the stage, the less I am likely to have in the P.A." tends to work pretty well. Now, one of two

things will generally happen next: We will find a happy medium, or I will be asked to look for other work. So far, so good. ☺

Ponczek

(Continued from page 7)

Clapton, Collins, Phillinganes and East—we stopped using it. All his sounds, the tones that he gets, are through his guitar and his fingers—that's it. There's only two effects—the wah-wah pedal and the chorus.

Mix: So now you're just miking his onstage amps?

Ponczek: That's right. There are two mics—a Shure SM57 and an Electro-Voice RE27. They're both placed in the same position, approximately a fist away from the grille cloth, as a rule of thumb. Not too close, not too far away.

Mix: Which mic is doing what?

Ponczek: They're two separate tones, and one serves as a backup for the other. The 57 is used exclusively in the monitors. I usually use the RE27 [in the house mix]. It's a much smoother tone, and the tone that it gives me is much more workable to EQ. You also have to look at what's placed next to it—in this band, there's a bass amp next to it. There's some shows where [bassist Nathan] East will play to the P.A. and turn his bass amp off. But sometimes [the bass amp is] quite loud, and there's good rejection with the RE27.

Mix: Any other stage conditions that you have to compensate for?

Ponczek: Eric sings quite a bit off-mic. With this setup here today (a shed show), 40 percent of the guitar is coming in though his vocal mic. If it was just his guitar it'd be great, but I have to compromise. If you were to go into a studio and mix down a live tape, you'd just have the vocal mic come up when he's singing, [otherwise] it'd be off. Here I have to roll a lot of the high end off the guitar mic to get a natural sound out here.

Mix: Do you ever add effects to his guitar sound?

Ponczek: In the more classic songs like "Badge," or even "Layla," I try to keep the sound of his guitar and the band [true to the original recording]. On the more modern sounds, I might add some effects, especially DDL, as he uses no delay onstage. ☺

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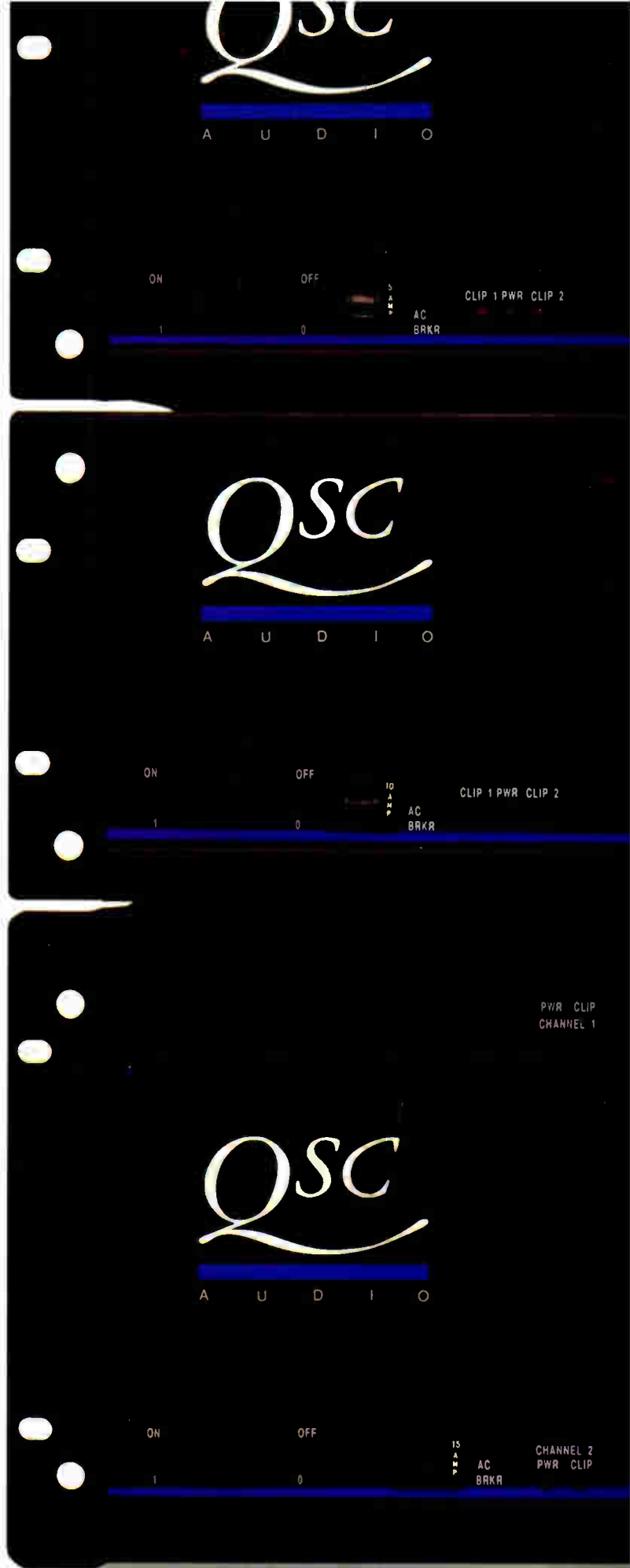
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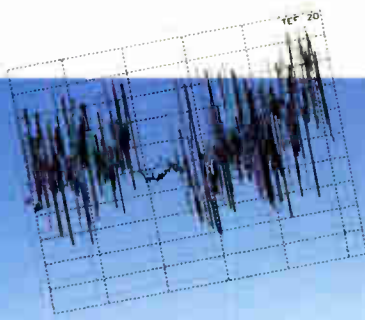


World Radio History

Noise Regulations And Sheds

Can the two peacefully coexist? Against the current backdrop of bewildering state and local ordinances, one often wonders...

BY GREGORY A. DETOGNE



Shoreline Amphitheater, Mountain View, CA

In the great dictionary of human conflict, the ongoing debate over how noise regulations should be applied to outdoor amphitheaters can be defined as a nebulous war at best. As battle lines are drawn between communities and various venues, each side is faced with confusion when it comes down to the rules of engagement. What is noise, after all, but a subjective experience? If anyone thinks they have an answer to that quandary, try tackling the issue of how much

noise is too much, and then come up with a way to measure that noise—providing, of course, that you can establish where the measurements should be made and over what length of time.

The question of whose ordinances actually apply is cause for additional discord in many disputes. In some cases, alleged violations occur in one jurisdiction, yet the complainants live in another where ordinances are different. To further complicate matters, some sheds are owned by a state agency, which brings up the question of whether state rules apply or those of the hosting municipality. Sometimes when litigation has been brought against a shed on the state level, it is done through an agency like a pollution control board, which has little experience in dealing with these kinds of cases. For the permanent record, then, it is apparent that the current situation represents a Pandora's box of complexities that have yet to be sorted out. The intent of this article is not to advocate an ultimate set of solutions, but to make an attempt at defining the real issues at hand and to offer the expert viewpoints of professionals who have been dealing with these problems in some of the major outdoor venues around the country.

That said, the best place to begin this discussion is with a general overview of the regulations most sheds are faced with at both a state and community level. To help distinguish the types of ordinances, *Mix* contacted Dr. Marshall Long of Marshall Long Acoustics, a firm that has worked with California's Pacific Amphitheatre and other prominent sheds facing noise problems. At the lowest end of the spectrum is what's commonly referred to as a "reasonable man" type of ordinance. Generally, a reasonable man ordinance will have a core section worded something like this: "It shall be unlawful for any person to willfully make, continue, or cause to be made any loud, unnecessary, or unusual noise that unreasonably disturbs the peace and quiet of any neighborhood or causes discomfort to any reasonable person of normal sensitivities." This type of clause is normally tacked onto other ordinances that mention specific dB levels and is favored by police organizations because it can be enforced without having to carry any measuring devices around. The problems with this type

of ordinance are obvious. First of all, who is this reasonable person? And even if you find one who is disturbed, it's hard to prove a violation occurred because no measurements are available. Primarily aimed at the noise offender level inhabited by garage bands, drunken parties and mufflerless cement trucks, this ordinance is of little use in regulating sheds, because it can easily be picked apart in court.

Moving up through the noise ordinance hierarchy, we come to a class that can be described as the "thou shalt not make more than (fill in amount here) dB" category. Like the reasonable man ordinance, these ordinances have many different structures. Most are similar to the City of Los Angeles ordinance that prohibits making five dB over the ambient level of noise at any location. The ambient, in turn, is defined as 50 dB or whatever the existing noise level is at the area in question. Therefore, if noise cops travel to a site in the daytime and it's quiet, the ambient is assumed to be 50 dB. As a producer of "noise," then, you can make 55 dB's worth before a violation occurs. If there's a high ambient at the site already—say 55 dB—you can make 60 dB, and so forth. The problem with this type of ordinance is that it does not define what a noise level is. Is it an average taken over a specific time period? If so, over what time period is it measured? Then again, it could be based upon a single measurement, but there's no definition as to what that measurement is.

About 15 years ago, the problems posed by the previously mentioned ordinances prompted the state of California to commission an acoustical consultant to provide a model ordinance for the state. The consultant came up with what is informally called a "stairstep" ordinance. In essence, a stairstep ordinance says, for example, that you can generate 50 dB for 30 minutes per hour, 55 dB for 15 minutes per hour, 60 dB for 7-1/2 minutes per hour and so on. With this type of

ordinance, at least an acknowledgment is made that noise isn't always steady, and higher SPLs are allowed for shorter periods of time. Where things get difficult is during enforcement, because very few people have the type of equipment needed to do the necessary monitoring. Providing

the tools are at hand, a measurement would have to be made over a 30-minute period in at least the lowest category to prove a violation existed. When these types of ordinances reach the courtroom, there is often misunderstanding regarding how they are applied and how ambient noise levels are measured.

Which brings us to the latest generation of ordinances, which are based upon L_{eq} s. "The nice thing about ordinances based upon L_{eq} s is that they can

be expressed both as a stairstep and a single-number metric," says Marshall Long "L_{eq}-based ordinances can also be written that prohibit specified dB levels above a certain L_{eq} . If you defend a case like this, however, you must make sure that the noise was measured from the source that is alleged to be in violation and not everything else. The ambient must be taken into account, or at least subtracted from the source that is being measured. A way to refine this type of ordinance would be to allow a specified L_{eq} above the ambient, which would also be measured in L_{eq} ."

To help sheds meet various ordinance requirements, Long and other consultants have developed noise-monitoring systems. At the Pacific Amphitheatre, Marshall Long Acoustics installed a permanent monitoring system that enables the operator to know what the actual noise levels in the community are. The system consists of microphones located on two poles, one by the nearest residence and the second at the rear of the Amphitheatre on top of the berm. These microphones are linked by dedicated lines to a computer located in the Amphitheatre office. The computer collects the stream of noise level

The "reasonable man" ordinance is favored by police organizations because it can be enforced without having to carry any SPL measuring devices around.

data, which can be analyzed in a number of ways to determine the various noise metrics that might apply. Because the data is stored as an ASCII file of consecutive levels, L_{eq} s can be calculated as well as any staircase ordinance for any given time period.

Located in Tinley Park, a suburban area southwest of Chicago, the World Music Theatre was first faced with a noise-related lawsuit early in this decade. Filed by the neighboring communities of Matteson and Country Club Hills, the suit was brought at a state level before the Illinois Pollution Control Board. In response, the board suggested that the World monitor sound pressure levels at two sites, one in each of the communities named in the suit. Eager to comply and work out an amicable solution with their neighbors, the World contracted Evanston, Illinois-based Electro Acoustic Systems Inc. to take the necessary measurements during the summer seasons of 1991 and 1992. "Taking standard measurements in the field isn't all that complicated," says EASI's Doug Jones. "Our problems with this project began when we took a look at the Illinois Environmental Protection Agency's regulations and the methodology that was required for measurements made in these types of cases. Recently, the rules were changed so that they required us to post one-hour L_{eq} s within specified octave bands. Generally speaking, however, L_{eq} s are taken in a broad-band fashion, and within integration periods much shorter than one hour. As a result, this was a fairly unusual assignment, and it wasn't immediately obvious how we would accomplish the task. We ended up this past summer making precision DAT recordings at each of the sites and then bringing them back to the lab where they were analyzed."

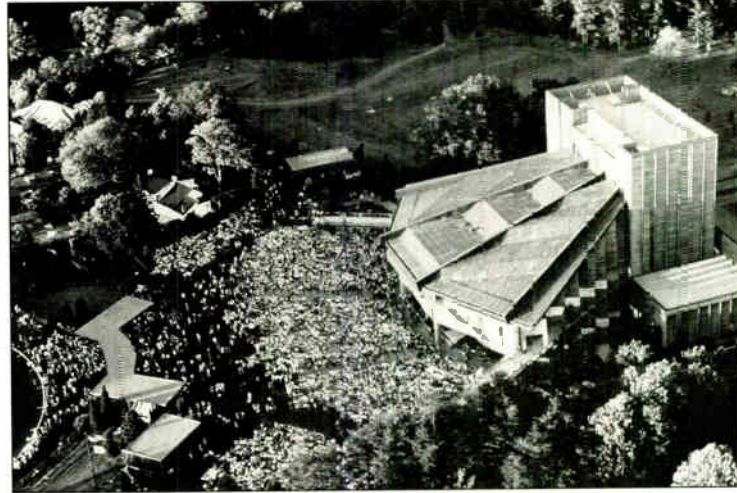
Jones, like other acoustical consultants who have found themselves in similar situations, feels that agencies like the Illinois Pollution Control Board suffer from lack of experience when hearing suits such as those filed against the World Music Theatre. "In most cases, agencies such as the IPCB deal with manufacturing noise, which is fairly constant. As a result, they are used to monitoring noises like those you get from a forging hammer going *thunk...thunk...thunk* steadily all day long. With noise like that, you can be fairly sure that if you go out and take a

sample of it and then integrate it over an hour or so, you'll get something meaningful. With music, it's not nearly as clean, so it's very hard to measure and make it relate to an annoyance factor."

After determining what the measurement protocol should be and obtaining the IPCB's blessing on proceeding with the project, EASI took to the field and began making DAT recordings on evenings when concerts were held at the World. One-hour L_{eq} s were to be used as measurement standards, but EASI technicians were only rarely able to collect more than a few minutes of audible noise coming from the World, and some of that was fragmented. Without enough source data to produce an hour-long L_{eq} , EASI was given a mathematical formula that would enable the creation of one from existing data. Then, if this corrected value of the one-hour L_{eq} was 10 dB or more above the legal limits, EASI was to correct them for ambient noise. In those cases where the final calculated one-hour L_{eq} was less than three dB above the existing ambient, it was determined that there was no contribution from the World, and the value was not reported.

"What we did took forever, and it was tedious and expensive," Jones adds. "Ultimately, the IPCB said enough was enough. We weren't producing the results they needed, and in a sense they were right. Even with continuous monitoring in the field, we weren't showing anything, because the problem is just too close to the ambient noise to get anything legitimate out of it. Overall, there were only about two times during the shows when we were in the field that we were actually able to report any levels at all that met the criteria for being worth reporting. And in those cases, the alleged violation barely squeaked above the ambient, so was it really a violation?"

Despite what some in the surrounding communities may think, the World Music Theatre seeks to maintain good relations with its neighbors



Wolf Trap Farm Park

by keeping a lid on disturbing SPLs. This thinking manifests itself across the country at most other sheds too, usually in the form of level restrictions that are placed upon visiting mixing engineers. Located in Vienna, Virginia, the Wolf Trap Farm Park for the Performing Arts is no exception. Owned by the National Park Service, Wolf Trap is a national park in the same sense that Yellowstone is, but it has the distinction of housing an outdoor amphitheater. "At Wolf Trap, there are guidelines for visiting artists with regard to sound pressure levels," relates John Gray, Wolf Trap's production manager and one of the few National Park Service employees to come to the agency with a theatrical background. "In a technical rider that is appended to an artist's contract, we ask that SPL not exceed 95 dBA at the house mixing console, as well as at a second location onstage. SPLs are monitored and displayed on a video screen at each location. Data appears as an integrated level in real time in bar graph form. There's also a numeric display that shows the integrated level over the last 30 seconds. We consider that if the level exceeds 95 dBA for three consecutive 30-second intervals, a violation of the contract clause has occurred."

Wolf Trap has experimented over the years with ways to deal with offenders. At one time a \$1,000 fine was levied for each violation. Today, however, Gray admits that a kinder, gentler enforcement technique has been established. "We've eliminated the fine but have made it clear that we will not be responsible for any damage



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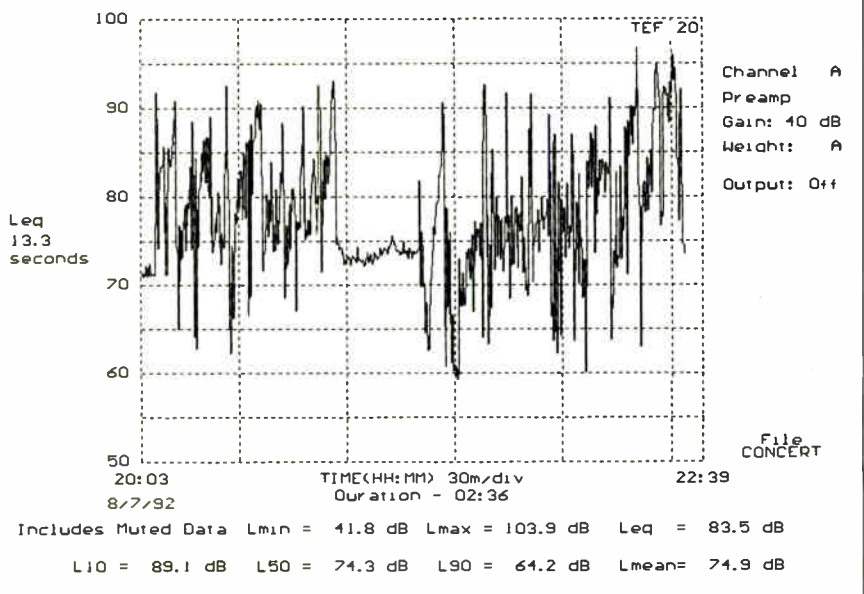
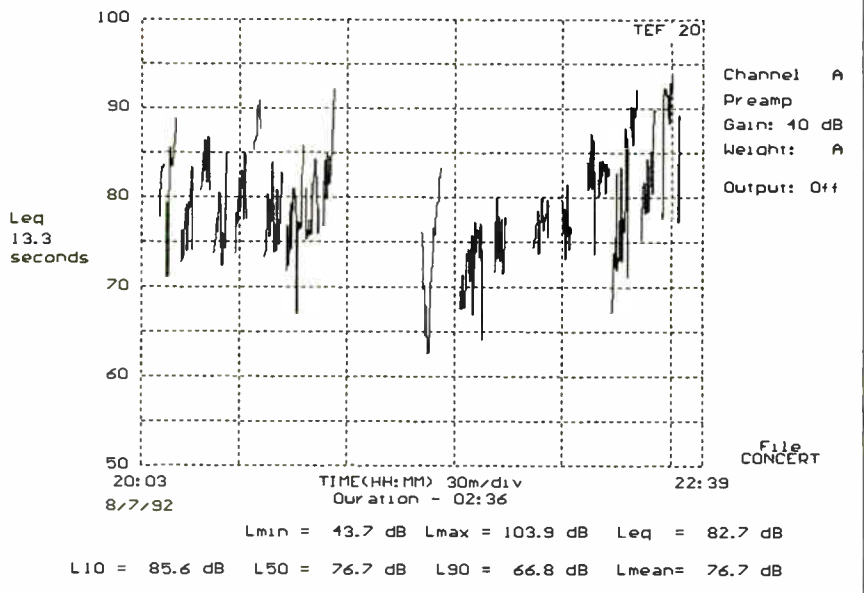


Figure 2



An entire concert is shown in Fig. 1, measured from the house mix position. Each horizontal division represents 30 minutes. An intermission and the gradual level buildup toward the end of the show can clearly be seen. The numerical data in Fig. 1 includes noise generated by the band as well as the audience. In Fig. 2, the audience noise is muted in the graphical and numeric display. Note that, although the band was responsible for loudest instantaneous peak (Lmax of 103.9 dB is unchanged), the crowd noise significantly raised the level of the loudest 10% of the show (L10 increases from 85.6 to 89.1 dB).

Reading the Plots:

Lmin: The lowest instantaneous noise level during the measurement period. **Lmax:** The highest instantaneous noise level during the measurement period. **Leq:** Averaged sound level derived from the Leq method. **L10:** During 10% of the measured period, the instantaneous level exceeded this value. If L10=85.6 dB, 10% of the total show was above 85.6 dB. **L50:** As above, 50% of the total show. **L90:** As above, 90%. **Lmean:** The statistical mean of the three previous values.

suits brought by anyone, that the artist is responsible for any refund requests and that the artist's return to this venue may be contingent upon dBA levels and sound quality during their performance."

With limits being imposed upon house and monitor engineers, new ways to monitor their work are being devised. "I've mixed at Wolf Trap and

elsewhere, and I know what it's like if someone tells me I can't exceed an Leq of 95 for the duration of the show," says Farrel Becker, an acoustical consultant and TEF programmer based in Laytonsville, Maryland. Of course, the subjective nature of hearing is at the root of this entire conflict, so playing it entirely by ear is probably insufficient. "To be fair," Becker contin-

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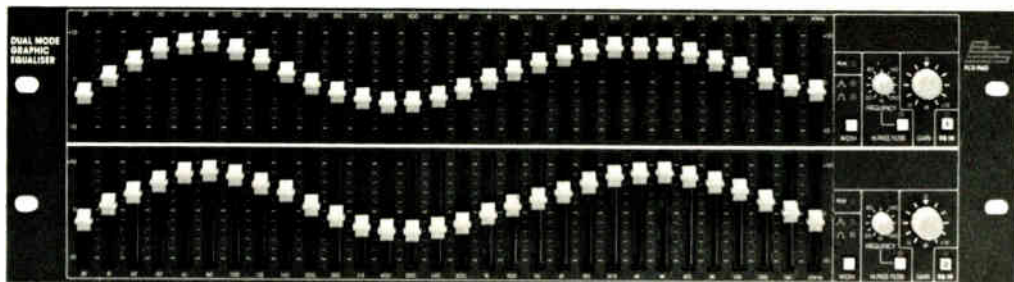
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ues, "[mixers must] be given a way to know what [their] levels are. Just as it would be unfair for the state police to tell me I couldn't drive faster than 55 miles per hour on the expressway and then provide me with a car without a speedometer, the same holds true for the engineer who is faced with limits on L_{eq} and finds he has no way of monitoring himself."

To create a proficient level-monitoring device, Becker first wrote Noise Level Analysis software about five years ago that was designed to run on Techron's TEF 10 analyzer. Extremely useful for recording sound levels, the original software could also be used for recording concert sound levels, but a few inherent glitches kept it from being ideal. All that changed recently, however, when he upgraded it specifically for use as a measurement device for concert levels, and it was incorporated into Techron's Sound Lab software for TEF 20 and TEF 20HI analyzers.

"When it came to measuring concert levels, one of the biggest problems with the NLA software I originally wrote was that you had to set it to run for the length of the concert. If you set it to run for a scheduled two-hour performance and the show ran for 2-1/2, you'd lose half an hour of data. Now, the NLA program will run in an auto-repeating mode. I usually set it to run for twelve minutes at a time. In that mode, it puts a data point on the screen once every second, so once per second you are shown the sound level. It does that for twelve minutes, saves the data, and starts over again, continuing until you stop it. At the end of a concert, you have stored a series of data files to disk that are each 12 minutes long. Another new NLA feature allows you to combine all of these files into a single overview showing all of the sound levels as a function of time, the equivalent level, minimum level, and maximum, mean and excessive levels too."

A pair of cursors can also be used to go to any particular point on the screen to see what the level was and at what time the level occurred. If the operator needs to see more detail, he or she can go back and pull up the file that was providing data once every second and zoom in on it anywhere on the screen.

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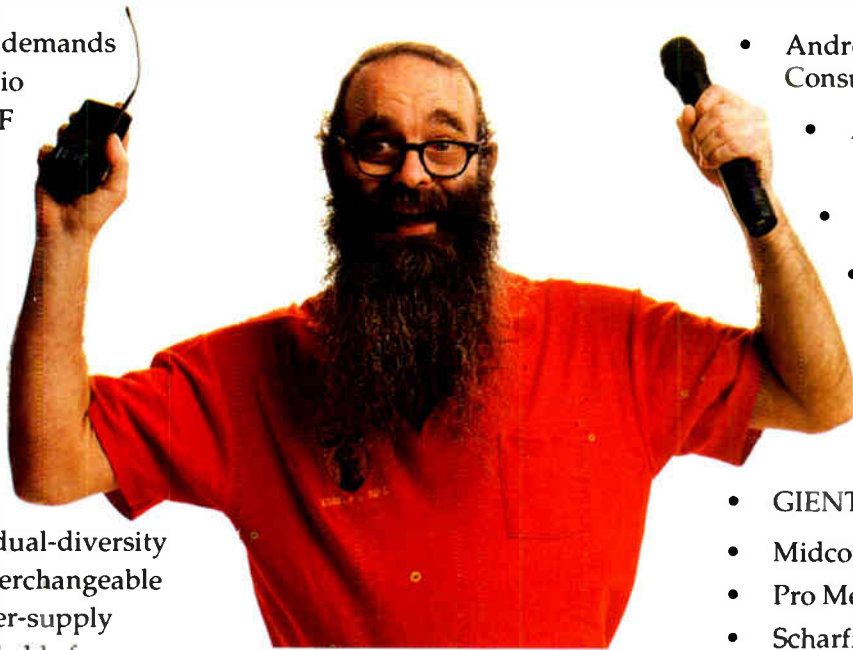
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“Many ordinances [require] that levels be turned down to the point where a performance can’t carry on.”

— Peter McDonald

the mixing engineer with equal benefits. As the engineer watches the program draw a graph at one data point per second, exact levels can be observed from moment to moment. But, more importantly, the engineer is able to view the maximum and minimum levels that have occurred so far, along with the L_{eq} up to that point, at the bottom of the screen. “Being able to view the L_{eq} in this fashion is the critical feature,” Becker says, “because if you’re told that you may not exceed an L_{eq} of 95 for the duration of a concert, and suddenly you see that the L_{eq} is at 95, and you still want to get louder for a finale or whatever, you’ll have the opportunity to let the L_{eq} drop for a few numbers to provide the headroom necessary. If the updating moment-to-moment graph is your speedometer, then the updating L_{eq} feature is your odometer, because it shows you how far you’ve gone. It provides you with an excellent way to monitor yourself and survive under the rules and regulations that will increasingly govern live performances.”

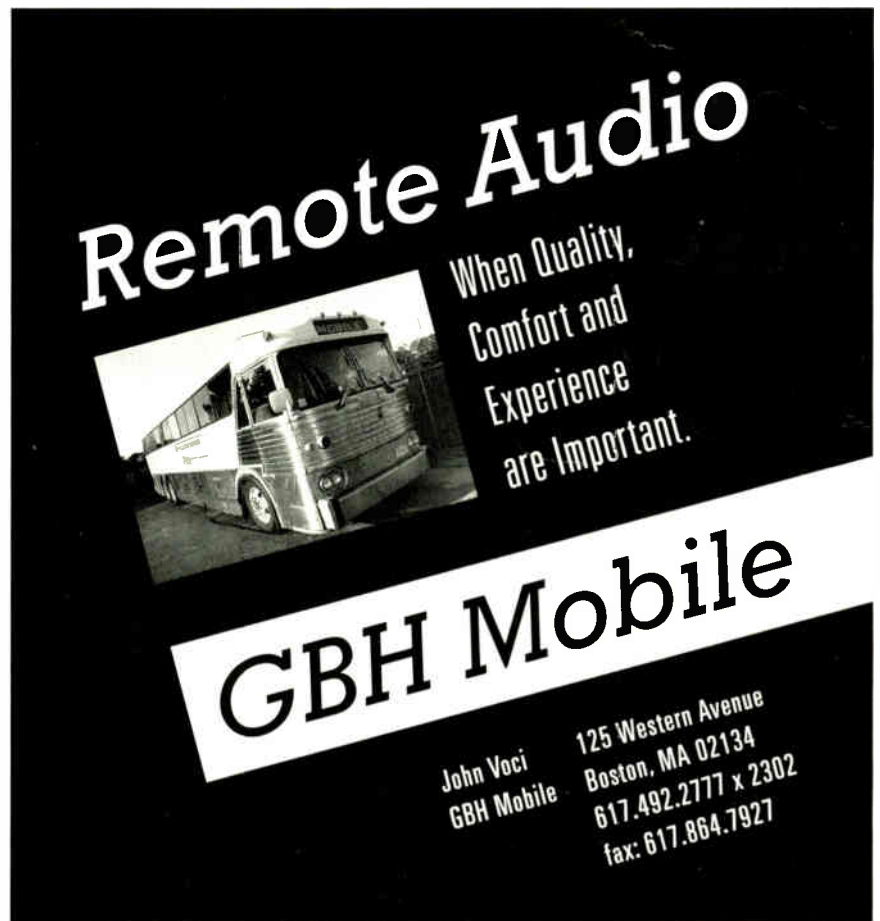
To compensate for the fact that the audience is oftentimes as loud or louder than a performance, Becker’s NLA program is equipped with a muting feature that can be used to exclude unwanted crowd noise from the L_{eq} data. “If you press ‘M’ on the keypad, the mute feature is activated,” Becker says. “When this function is working, NLA continues to run, but it draws the graph in a different color, and the data collected isn’t included in the L_{eq} or any other measurement. This feature provides an element of fairness to the mixer, who shouldn’t have to be held to an L_{eq} that includes crowd noise. However, if you should want to include this data later to see its effects, it can be done by setting a menu item.”

A s measurement and monitoring capabilities become more refined, others are looking at how existing noise ordinances governing sheds can be improved. Most notable is an AES study group officially known as Working Group WG-11, or the AES Working Group on Music Sound Levels, chaired by Jesse Klapholz. Among other volunteers on the committee is Peter McDonald, an acoustical engineer and member of the California firm Smith, Fuse and McDonald. McDonald feels that the audio industry has a vested interest in seeing that sheds don’t go the way of the dinosaur. “There are several ways to look at this issue,” he confides from his Bay Area office. “One of them is to try to describe what’s wrong with existing ordinances while recognizing that there is a unique aspect to music. It has been the collective experience of the committee that many local sound ordinances are asking that sound levels be turned down to the point where a performance can’t carry on. Therefore, one of the things we’ll try to accomplish is describing some of the typical levels

found in a typical shed, so that there is a standard reference available that lists levels at the house console and other appropriate points. When ordinances are considered against this reference, they can be compared with what has become a standard expectation for outdoor sound.”

McDonald feels that perhaps the key issue the committee will examine is how levels should be measured, both in the facility and out in the neighborhood. “We need to come up with a way that sound levels created by music can be described in an intelligible fashion to both the community noise control officer and the console operator,” he believes. “There needs to be a common language that both can agree upon and that isn’t excessively elaborate. With this accomplished, we can then move past the inappropriate ordinances that are on the books, and all will hopefully realize that these facilities are a good source of entertainment for the larger community around them.”

Greg DeTogne is a publicist and freelance writer in the Chicago area.



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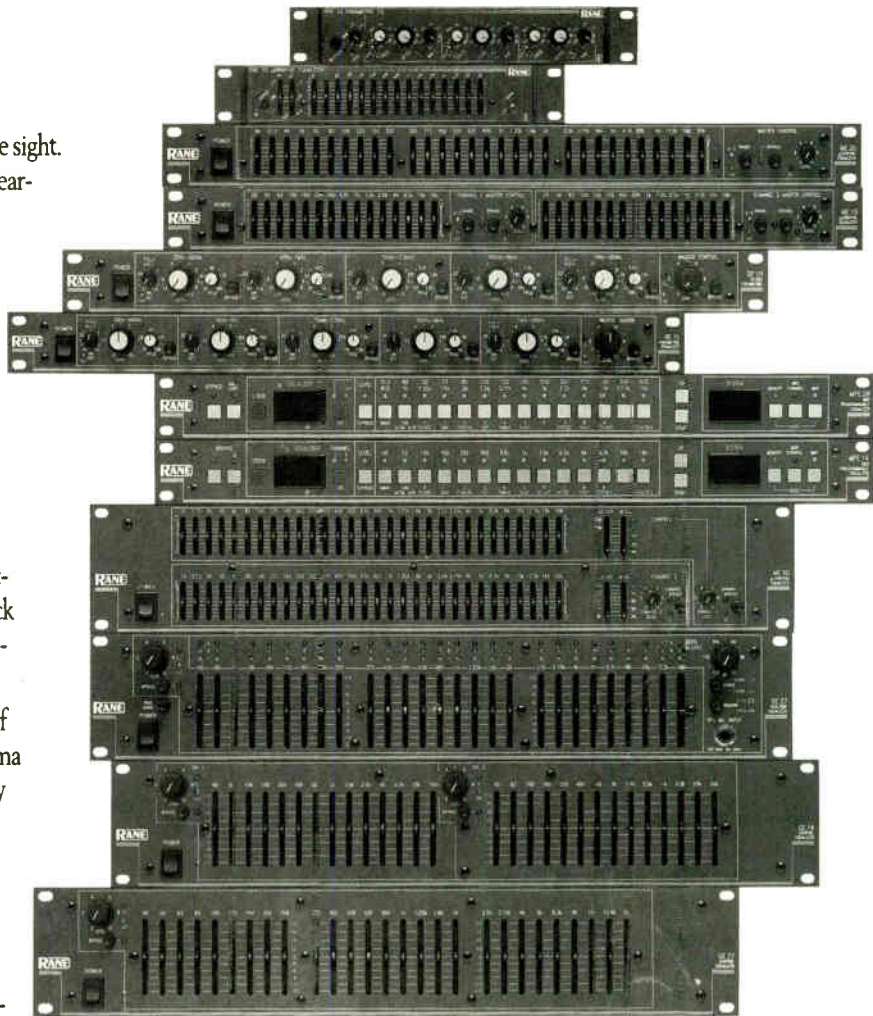
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Bruce Jackson

ON

Mic Splitting

BY DAVID (RUDY) TRUBITT

Every engineer pays attention to mic selection and placement. However, one often overlooked area of mic performance comes from the electrical connections downstream of the mic itself. "It's really important to see what the ultimate load is on all those microphones," says engineer Bruce Jackson, known in live sound circles for his long association with Bruce Springsteen and as co-founder of A/D converter manufacturer Apogee Electronics.

"Say you've got a main monitor mix on stage right and a smaller monitor mix for specific purposes on stage left," Jackson says regarding stage layout and its effect on mics. "There might even be another little submixer for the drummer. It also goes out over a couple hundred feet of snake to the house console. All those loads sitting across the microphones [if hard-wired in parallel] make the mics sound different. This shows up first with condenser or electret mics. Condensers are more sensitive to loading than dynamics are." The result? "The highs don't sound as open and clear. The mic just sounds squished and held down."

"A console," Jackson continues, "is usually designed to operate happily in its own little world but not necessarily in conjunction with other consoles. The situation gets even worse when the recording truck comes along. Often, they won't even know what they're loading you with. Even if

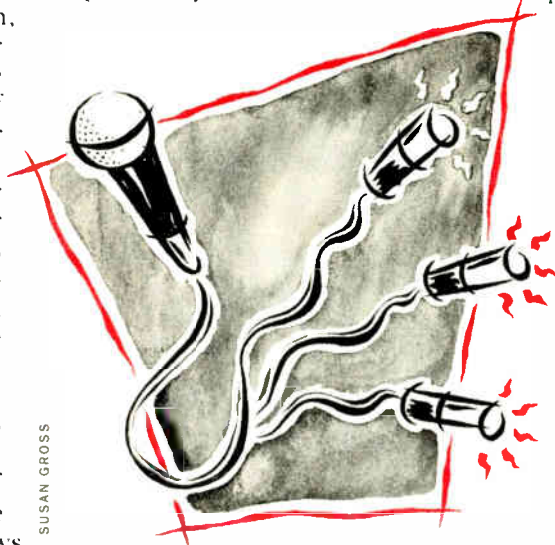
there's a transformer split box, they may try to tap off the microphone on the direct side but let you believe you've still got your normal setup. Then when the show starts, everyone goes crazy because the monitor and

300-ohm load will definitely compromise the sound of condenser microphones."

The obvious way to reduce load impedance (without eliminating consoles!) is to use transformers. "Although they're very expensive, there are advantages to having a transformer splitter," says Jackson. "Deane Jensen originally designed these three-way split transformers, so you come in with the mic and go out to three isolated outputs. The other big advantage with transformers is the control over grounding issues. With the 1988 Springsteen tour, I got fed up with the interconnection problems, which were even worse because we were carrying a big recording console that we only used on some nights. I wanted a very controlled situation, and I had the luxury of making a great big transformer split box. So we had a known situation every day and didn't have to chase our tails when someone plugged or didn't plug

something in. But a great big split box costs tens of thousands of dollars, which is a luxury most companies can't afford. Generally, they're just using hard-wired splits, and you end up tying all the grounds together. It becomes complicated deciding which becomes the master ground reference and which the slave off that reference."

Of course, transformers have long been used at the console input to address grounding concerns. "Even though active inputs offer a lot of



house levels are weird, some mics are hotter than others and so on. You have to have a close working relationship with everyone in that situation."

You also need to know what you're loading the mics with. This calculation starts at the input of each console. "When you just have one console with a bridging input," Jackson says, "it's probably got an input impedance over 1 kilohms. But with three of them in parallel it comes down to just a few hundred ohms. A

advantages, transformer-isolated inputs really help you out from a grounding point of view," Jackson says. But as you've probably guessed, you don't get something for nothing. "The trouble with transformer-isolated inputs," adds Jackson "is that it's hard to get high bridging impedance with them, which results in increased mic loading."

Another alternative is the use of active mic splitters, which present their own pros and cons. "The positive," says Jackson, "is that an active splitter loads the microphone correctly and distributes a buffered signal to the other consoles. The negative is, 'How do you control the gain?' Usually, you like to be able to tweak your gain to put it in the optimum position, but with an active split you have to optimize the sensitivity of the mic preamp at the split box, which is not located at the house position. Even though the monitor guy will probably be controlling the input gain of the

"An active splitter loads the microphone correctly and distributes a buffered signal to the other consoles. The negative is, 'How do you control the gain?'"



GEORGE PETERSEN

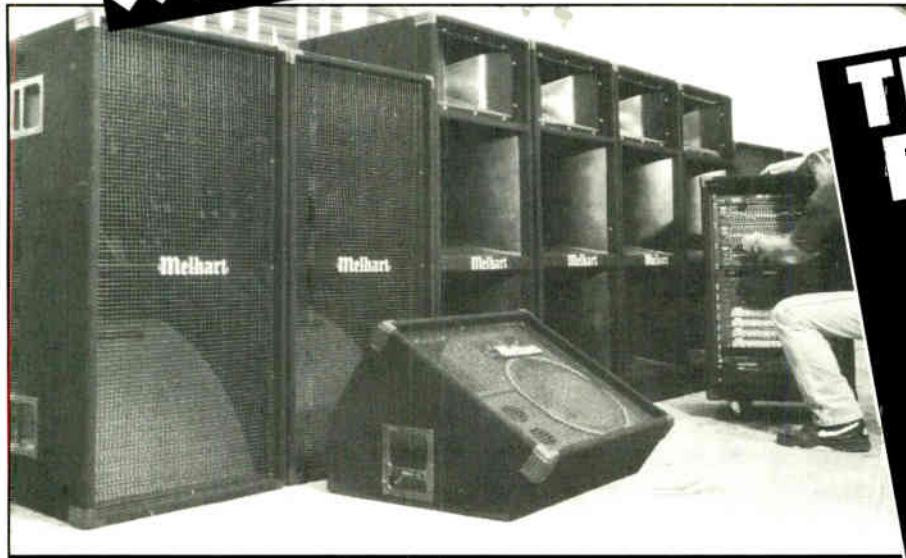
splitter, the output level that works for one console is probably different for another console. You have to

and remember that microphones usually sound better when they're lightly loaded." Ⓜ

make sure you're not compromising your dynamic range or raising the noise floor. You also need to consider the grounding for the splitter."

If you were looking for an easy answer to this problem, you'll leave disappointed. There's no one solution, just as there's no "best" microphone—it all depends. But next time you're wondering why a mic isn't delivering what you expected, consider that it might not be the mic or its placement. "Before you even get into the selection of microphones, you need to have a solid accounting of what's happening," Jackson concludes. "Try unplugging the monitor board and listening to what the mic sounds like in the house. Then listen to the level drop and the sound change when you plug it back in. See what happens,

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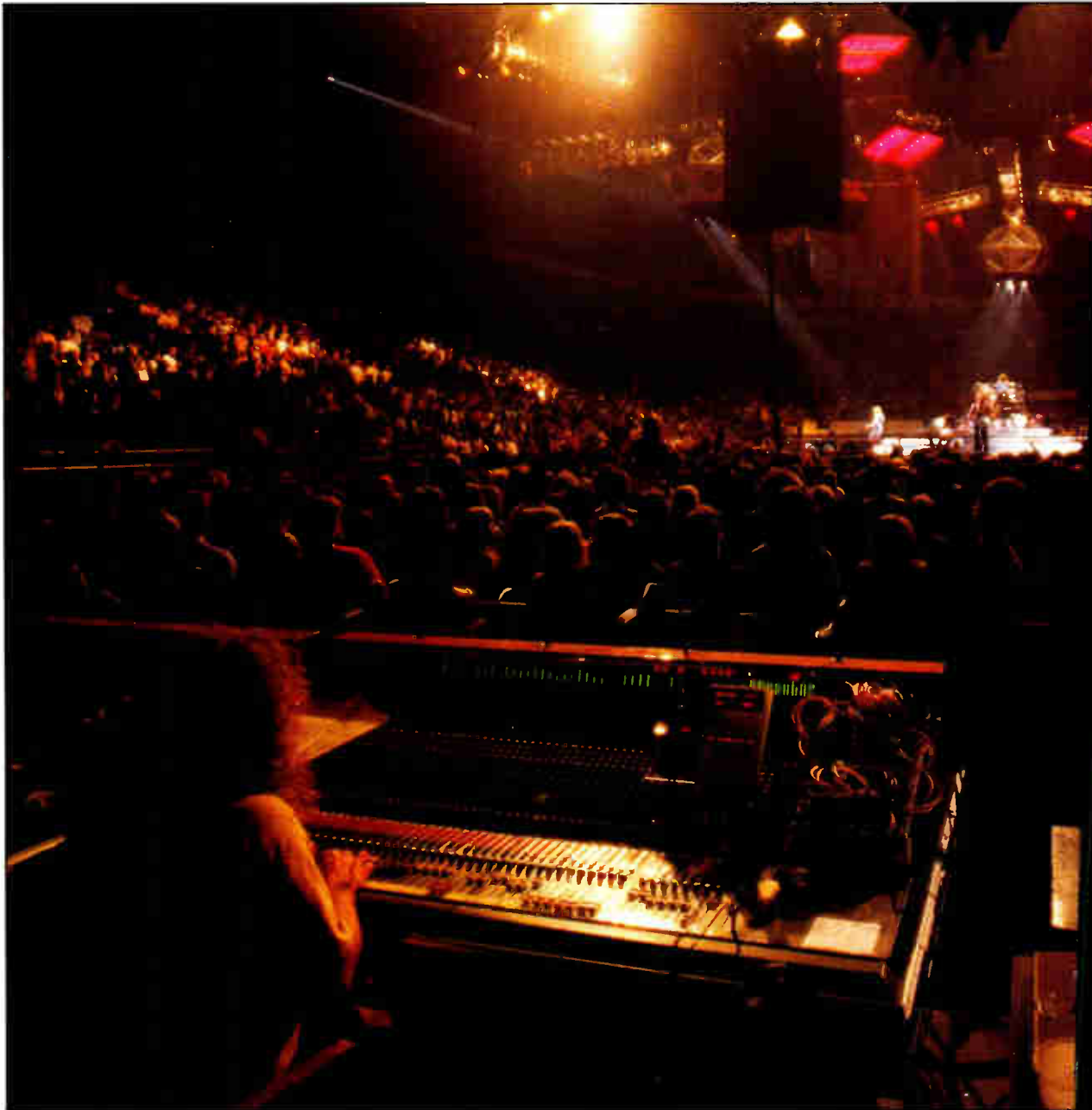
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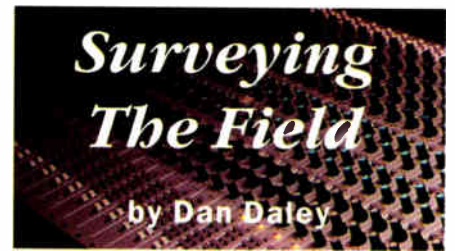
Large Sound Reinforcement CONSOLES



STEVE JENNINGS

(Above) Gamble E X56 with Rush and Robert Scovill. (Top to bottom, right) Crest Console Century GT, D&R Electronics Axion and Amek/TAC SR6000.

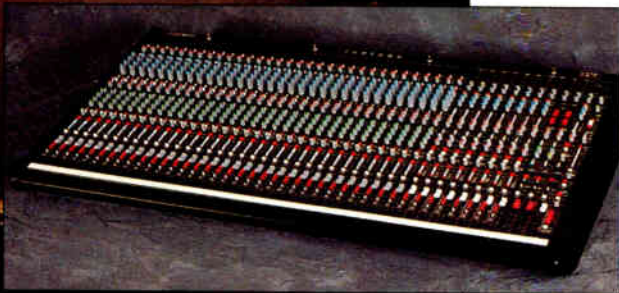
If you think that live sound consoles are getting more sophisticated, you've been hanging around the right venues lately. Paralleling other pro audio industry segments, such as film sound and video post-production, SR-oriented consoles have evolved. They've ridden the traditional coattails of studio console development, but their improvement is also



due to an increased emphasis on more sophisticated audio at live shows and the increased use of high-quality audio in more and more applications.

The most obvious change has been in the number of inputs. In this article, we've limited ourselves to front-of-house models with more than 32 inputs, and there's no shortage of contenders. Larger numbers of performing personnel, increased use of sound-generation modules (not only for keyboards but increasingly for guitar racks and percussion), theme parks and theaters using larger-than-life audio as an integral part of the total ride experience, and demand for more specific monitoring and more customization have all contributed to a need for additional channel strips. Stereo input channels are also becoming more common for the same reasons, potentially allowing tours to get by with a single console where two would have otherwise been required.

Flexibility is another key requirement. Since these consoles are used in an increasingly varied number of environments and applications, they need to be able to conform to any number of situations and users. One example of this trend is boards capable of doing double-duty as either a house or monitor console, such as the Midas XL3 or Allen and Heath's new GL3. Another increasingly common feature is the addition of a discrete mono bus, providing a convenient feed for front fill or center cluster feed without tying up matrix outputs.



Finally, to control all of this, simple automation on live sound consoles is becoming more common, mainly in the form of group muting and VCA control, although some, like the pricey TOA ix-9000, offer full digital signal paths and recall automation. While the emerging computer control technology (IQ, Medialink, NexSys, MindNet, etc.) is rare on mixing consoles, it is clearly waiting in the wings.

The following provides some basic information about a significant sampling of these consoles. Obviously, all of these consoles don't target the same level of users. Some of the models described are more commonly configured in smaller sizes, while 40-input or greater configurations are the starting points for others. Although retail list prices are shown, many of the boards are commonly available for significantly less.

Allen and Heath

Allen and Heath offers two large live desks, the **Saber Plus** P.A. console and the new **GL3**, which features six selectable aux buses (pre- or post-EQ and faders) with individual rotary pots on each input channel. The aux masters are selectively routable through the corresponding four subgroups and L/R path, allowing six discrete stage monitor mixes, each with its own 100mm fader. The desk has a four-band EQ with one band of fixed high-frequency shelving, two sweepable mids, and one low-frequency fixed shelving control. There is also a pre- or post-mono output in addition to L/R outputs, full-function talkback capabilities and separate 2-track in/out jacks with level controls as part of the extensive master control section. A full-function cue mix can be configured for monitor operation.

Price & Configuration: GL3: 40-input version is \$7,485. *Phone:* (800) 777-1363.

Amek/TAC

The TAC **SR 6000** is this manufacturer's mid-line console. The compact 40-input board features TAC hard busing structure and is designed to accommodate linkage of multiple consoles via bus input XLRs. Each input can separately address eight audio subgroups, all of which are overlapping. The main stereo output and the 10x8 output matrix allow multiple speaker array control, while the VCA master provides overall control of all ten main outputs. One unique feature of this board is its ability to split the eight send buses between the left and right sides of the console, which provides up to 16 auxiliary effects paths. EQ is four-band with parametric mids and swept high-pass filter. Four stereo

Mix Engineers on Mixers

Over the past year, I've had the pleasure of speaking with many leading engineers on the subject of house mixing consoles. In the following excerpts from those interviews, each engineer notes a few reasons they chose the boards they did.

Yamaha's PM4000 was eagerly anticipated when it shipped in 1992. Since that time, it has seen service in a number of high-profile tours. One of the more recent is Elton John. "The biggest advantage to it," says Clair Brothers system engineer Mike Wolf, "is the stereo input channel. We started [this tour] with a 3000 and another sideboard for effects returns. We're now down to one console, with some open channels."

Clearly, Yamaha paid attention to users of the workhorse PM3000. Elton John's long-time house mixer Clive Franks noticed an immediate improvement. "The EQ is so much better," says Franks. "It's still very sharp, but I can fine-tune it now and just get right in and pull out frequencies." The board's physical layout also suits Franks' mixing style. "I like working on the VCAs; they're right in front of me in the right spot. The whole mix is right there."

The **Midas XL3's** flexible bus/send architecture makes it suitable for both house and monitor duties and is one reason that this console was one of the success stories of the last year or two. However, there's more to this desk than an unconventional block diagram. "We picked this board because of its sound," says house mixer Rob Collins (Dire Straits, Eric Clapton). "Facilities on different boards may be better, may be worse, but when it comes down to it, it's the sound. We tried it up against quite a few desks, and we—not just myself, a committee—preferred the sound. (Dire Straits' sound was provided by Concert Sound and Britannia Row.) It's more natural, and the EQ is very precise and clean, which is what we wanted."

"They've done their homework on connecting two boards together," says Howard Page, Showco's VP and system engineer for Genesis' '92 stadium tour. "Having been a console designer back in the old days, the thing I notice is the interface to the world

is very constant. You can connect anything to anything and never get a ground loop or a problem. Everything is balanced with very good common-mode rejection. When you hook two of them together, the control voltages and signals that could potentially fight between the two power supplies for ground reference are opto-isolated."

The **Soundcraft Europa** is the company's top-of-the-line console, and it continues to evolve with a new automation package. The desk has found homes in numerous installs, including two at the Grand Palace in Branson, Missouri. The Europa's first U.S. tour was with the White Oak Dance Troupe and Mikhail Baryshnikov. Gear for the tour was provided by Promix. "The console has a lot of well-thought-out bells and whistles," says mixer Brian English. "The VCAs on this console have muting, which in essence gives you an additional eight master mutes so you wind up with 16 master mutes. In this show [a chamber string orchestra], it's great because they reconfigure the pit every movement. I double-mic a lot of the chairs, and you've got to be able to mute these guys out [because they'll hit the unused mic]. If you're running 40 or 50 channels on an orchestra, you don't want to do that manually. Also, this board has eight VCAs plus a grand master, so you don't have to give up one for [that purpose]," English continues. "And, there are 12 aux buses on this console and eight stereo returns—more than enough for what I'm doing."

The **ATI Paragon** offers the live engineer some facility that was previously available only in the studio. "I think it's a step in the right direction," says U2's Joe O'Herlihy. "The onboard dynamics give you everything right there in front of you. In my case I have to have visual contact with Bono at all times—he's a very active lead singer, and it's difficult to chase him if you're looking over your shoulder to a rack. It's very practical for the people who have to work and use these things. I find the EQ, for instance, to be very musical, very transparent. Some consoles you dial up +16 before you hear a hair of difference. [The Paragon] is right on the money—it's very good. It reminds me a bit of the Clair board in the

effects returns are fitted with EQ and fader level controls.

Metering: Seven stage LED meters for input, with 12 VU meters with multi-source input selection for output stages.

Price & Configuration: Ranges from \$34,000 to \$49,500. A monitor version, the SR 6500, is currently shipping at the same price. **Phone:** (818) 508-9788.

At the high end of AMEK/TAC's offering is the **SR 9000**. Its standard configuration consists of 42 inputs, 16 mono subgroups, 16 sends, eight mute groups and eight VCA groups. Each input channel has two switchable mic inputs and four-band parametric EQ with variable high-pass filters. All inputs and outputs are balanced with transformers as an option. Up to 384 patch points are available on a built-in patch bay. A 24-input extender is available as an option.

Price & Configuration: 42-input ver-

transparency of the EQ section.

Although fully automated consoles such as the **Saje Memory Console** are still on the pricey side for most applications, there are cases where the expense is clearly justified. Take live television award show broadcasts, for example. "Instead of having one console or a portion of one console reserved for each band, we can do the whole show with one console," says Jim Showker of Audio Tech, which provided sound for the Billboard and American Music Awards. "Before, some of these big shows would require seven or nine consoles at the FOH. This allows us to drop down to two boards." Over a three- or four-day period, Audio Tech soundchecks with each act and stores all console parameters. During the performance, each band's settings are recalled as a starting point for their performance. "I feel that programmable consoles are the future," adds Showker. "I absolutely believe that in five or ten years an automated console will be the only thing acceptable for a big show."

In the end, it all gets back to the basics, according to Robert Scovill. "I'll take a console any day that does three things great," he says. "It needs to meter great, have a great preamp section and a great EQ. That's why I choose the consoles I do (the **Crest/Gamble EX56**). A console can have all the bells and whistles in the world, but if it can't do those three things I don't want to have anything to do with it."

—Rudy Trubitt

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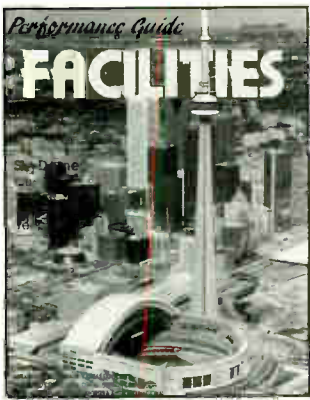
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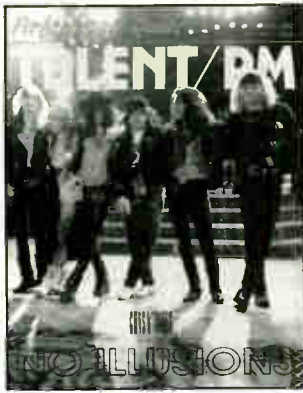
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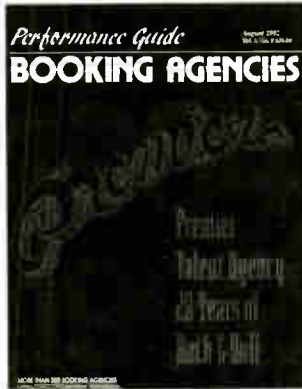
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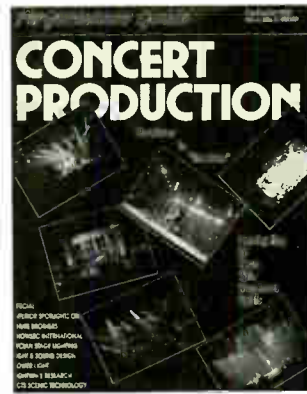
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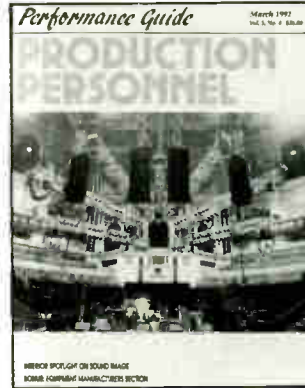


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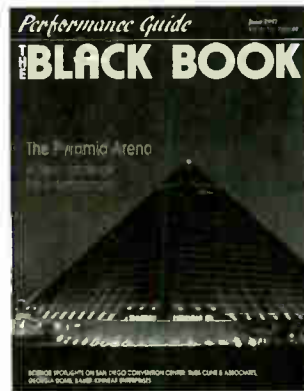
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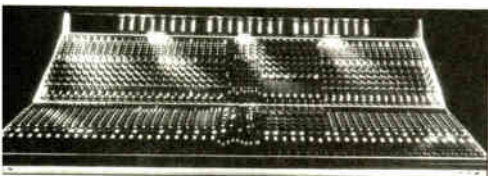
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sion is \$115,000.

The **Scorpion II** console, with an extended frame (XLF version), can hold up to 40 inputs with eight buses and eight aux sends. Various configurations are available, including EQ on the monitor section. EQ is four-band with swept mids.

Price and Configuration: \$21,680 with 40 inputs and 8x8 matrix and 8 aux sends. *Phone:* (818) 508-9788.



ATI Paragon

ATI

One of the **Paragon's** distinguishing features is extensive dynamics processing (both gates and compressors) as a standard feature on each input channel. The Paragon also offers 16 submasters (which can function as eight stereo), 16 aux sends, eight VCA groups with integrated muting, a VCA master, a stereo mix bus, eight stereo effects returns, and four stereo and four mono matrix outputs. A comprehensive priority cue system allows stereo monitoring of effects returns, submasters, stereo matrix outputs and the mix bus. Gates and compression/limiting onboard. Four-band parametric EQ with peak/shelving and variable Q.

Metering: VU meters.

Price & Configuration: 40 inputs, \$95,000. *Phone:* (503) 624-0405.

Biamp

The **Columbia** is available with up to 40 inputs. The board has four-band EQ with two sweepable frequencies on each input channel, eight aux send buses with six send controls, and an output assignment switch on each channel with eight mono and two stereo aux returns. Mic/Line, 20dB pad switches and long-throw faders are also on each channel. Solo switch and indicator on all input channels, submasters, aux sends and aux mains for individual monitoring. Separate stereo tape output with RCA jacks.

Metering: 11 LED meters assignable to all submasters, aux sends, L/R mains, mono main, aux mains, and solo.

Price & Configuration: 40-input, \$11,099. *Phone:* (800) 826-1457.

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Cadac

Most commonly found in theater applications, the **J-Type** live mixing console is available in 38-, 46-, 54- and 62-input configurations that can be enlarged up to 120 channels and four mixer frames. It features a maximum of 16 sub and 32 matrix group outputs, 12 aux group outputs, VCA channel faders controlled by any one of 15 DC master faders, four stereo returns and a dual power supply system. The stereo return contains four sections, each with stereo line input pot, balance pot, routing to the 16 sub-groups, PFL and mute.

Metering: 20-segment LED meter, reading a range of 57 dB on all outputs.

Automation: PC-based VCA fader groupings, fader mutes, MIDI program changes and relay closures. Up to 12 cues may be stored in a battery-backed memory in the board's central control module.

Price & Configuration: 40-input version with 8 sub/16 matrix groups and 8 DC master VCA faders is \$136,966. Double the sub/matrix groups and add four more DC master VCA faders for \$156,026.24. *Phone:* (914) 668-8886.

Crest Audio/Gamble

The **Gamble Series EX** house console is a full-stereo 56-channel console packed into a compact housing. Input modules feature P&G conductive plastic faders and sealed shutter-type push switches with gold-plated contacts and a comprehensive patch bay, all housed in a very road-worthy aircraft aluminum casing.

From a routing standpoint, 8 stereo sub groups are provided along with 8 scene mutes and 16 matrix outs. The matrix consists of 1-4 stereo pots, with the input and output jacks between the four stereo pots normalled from the stereo main output to matrices 1-4. Eight L/R jacks provide stereo summing of matrices 1-7 into matrix 8. Eight effect sends are available.

Price & Configuration: The 56-input's \$74,900 list price includes a power supply and a road case. Smaller frames and custom layouts are available. *Phone:* (201) 909-8700.

Crest Consoles

Among the newest players in the SR console market are Crest Audio's new Crest Console Division. The top of the line is the **GT Series**, which includes the Century GT 40x8x2, Century 44x8x2 and Century 52x8x2 consoles. The GT is a front-of-house design, intended for touring and theatrical applications. Module components include active TI high-performance circuitry. External power supply includes circuitry for running an optional parallel power supply. 48V phantom power is available on all input modules and talkback; transformers are optional on mic inputs and primary line outputs. Mono clean bus can feed any input or group signal to the mono output without being forced through any other section of the console. Eight aux mix buses for effects or monitor sends with balanced outputs. Selectable pre or post fader on front panel. Selectable pre or post EQ with internal jumpers. Four bands of sweepable EQ.

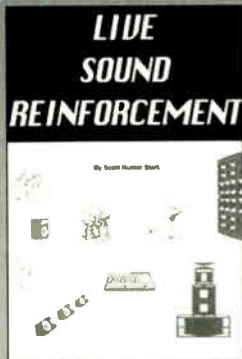
A Scene Mute System on channel and EFX inputs with four presets, plus a fifth Scene Mute preset for controlling aux send outputs is standard.

Metering: Dynamic Signal Present indicator varies in intensity as signal changes. Peak LEDs light whenever levels at any of several sample points reach 3 dB before clipping. LED meters give detailed readings for the Group and L/R signals as well as any PFL signals.

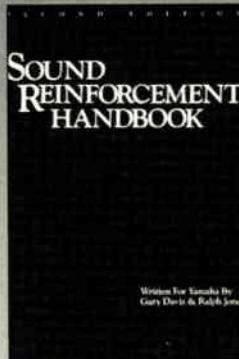
Books



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Price & Configuration: 40-, 44- and 52-input configurations available with various options. Representative prices for the GT include 44x4 for \$18,580, 40x8 for \$21,100, and 52x8 for \$26,560. *Phone:* (201) 909-8700.

D&R Electronics

The **Axion** (pronounced "Action") is a 12x8 matrix, 40- to 48-input console offering four-band parametric EQ (switchable Q), with 12 aux sends per module. Aux masters have pre and post switching globally for all inputs. Solo PFL or solo in place are available. Eight VCA channels and grand master VCA controls are standard, and each module can select any or all VCAs. The Axion has an extensive programmable muting system, which includes a Preview mode, that allows mute configuration to be displayed before recall. Muting can be under manual or MIDI Time Code control for theater or other highly scripted performances. An extensive talkback and intercom routing system is standard.

Metering: High-resolution PPM metering to +20 dB.

Price & Configuration: 40-input (48 usable inputs) with two redundant power supplies and auto-switching is available factory-direct for \$77,388.70. 56-input model factory-direct for \$99,584.74. *Phone:* (409) 588-3411.

Hill Audio

The compact **Datum** console offers 40- and 48-input versions with up to 12 buses. Inputs available include four-band EQ with two swept mids and up to eight aux sends. EQ and aux sends are available on all monitor returns. An FX return provides two mono and one stereo returns. Live consoles offer two options on output modules: The dual/group output module has two FX return sections with two-band shelving EQ, pan, mute, PFL, level control and routing to the subgroup section or to the mix. The dual subgroup section allows for sending one stereo or two mono signals to the left and right outputs. Or, for theater applications, the desk can be fitted with a matrix group module with LED output metering, full 8x8-way matrix with fader output and single subgroup section.

Metering: 12-segment LED.

Matrix: 8x8 optional.

Price & Configuration: 40x8x2,

\$14,775; with matrix, \$16,244. *Phone:* (817) 336-5144.

Mark IV Audio

A combination of DDA and Dynacord experience, the 40-input **Interface** features some clever new technological enhancements, such as improved attenuation in the panpots to prevent signal loss, and one-button switching on the Pro-Input module between direct output from the channel and adjustable output from an aux control. The board offers six aux buses and four-band EQ with two mid sweeps. Master module features BNC connector for gooseneck lamp, XLR connector for talkback mic, and a provision for balancing transformers on all the main outputs. Separate mono output for broadcast and cluster feeds.

Metering: Five-segment LED meters for both signal-present and peak indicating.

Price & Configuration: 40-input, \$20,930. *Phone:* (616) 695-6831.

Now distributed in the U.S. by the Mark IV Pro Audio Group, the **Midas XL3** is a 40-channel desk offering 18 mix sends with routing to mix outputs and masters via eight VCA groups and two VCA grand masters. A four-band EQ has a pair of two-octave parametric mid-range controls. The 16 mix buses can also be used as auxes, making this console suitable for both house and monitor applications.

Metering: Each input channel has a 10-segment LED, -12 to +15 in 3dB increments. Each output has a 20-segment LED, -36 to +21 in 3dB increments. A full meter bridge is available as an option.

Price & Configuration: 40-input, \$79,900. *Phone:* see above.

Also available through Mark IV Audio is the DDA **Forum**, an eight-bus board with up to 40 inputs. Each input includes a four-band EQ with shelving high and low frequencies and two swept mids, six aux sends fed from four switchable controls. Aux I may be switched to a direct output. A stereo input, six mics into one channel strip and an SPDIF digital input module are also available.

Price & Configuration: 40-input, \$16,500. 40-input with 8x8 matrix, \$17,750. *Phone:* see above.

Peavey

The **Mark VIII** uses a modular construction in which each channel module can be removed along with its input and insert rear-panel connectors. Eight sends (pre or post switchable in pairs) and eight returns (each with three-band EQ) are standard. Four-band sweepable EQ, high-pass filter, PFL and mute switches round out the input channels. Eight groups are provided as well as left, right and two mono outputs. Gold-plated interconnect and socketed ICs are used throughout.

Price & Configuration: 36-input, \$9,999. *Phone:* (601) 483-5365.



Ramsa WR-S852

Ramsa

The **WR-S840** series is designed as a simple, functional, reliable live board, emphasizing its low crosstalk performance via paired grounds and a chrome-plated solid copper ground bus. The desk features comprehensive four-band, state-variable sweep-frequency EQ with high-speed bi-FET ICs. Each EQ is accompanied by a 12 dB/octave highpass filter. The submix module has eight mic/line preamp circuits, each equipped with its own phantom power, phase reverse, assign in/off, direct out and PFL switches. The board has eight aux sends and a total of 18 buses.

Metering: 18 VU meters with LED peak indicators, switchable for matrix or group, as well as the stereo output and the eight auxes.

Price & Configuration: Configured as a 40x18 monitor board (**WR-S840F**), \$43,700. As a 52-input house console (**WR-S852**), \$40,700. A MIDI and manually controllable mute group retrofit is available for both configurations. *Phone:* (714) 373-7277.

Saje

The **Memory** console's primary feature is its extensive automation, which uses analog circuitry for the audio with digitally controlled

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parameters. This extensive automation has made it desirable in situations like broadcast TV awards shows, where the ability to recall the entire console's settings from the afternoon's soundcheck is a significant asset. The console is available in several configurations, including 40 and 48 inputs. Using several 68000-family processors, the Memory's automatic sequencing software can dynamically change numerous parameters, including fader levels and pans, and can load and recall scenes either randomly or via a "step" procedure. The console interfaces optionally with SMPTE/EBU time code and with MIDI. Interfaces with lighting consoles and with other memory desks are also provided for, as are external computer (via 3.5-inch floppies) and machine control.

Metering: Combination of VU and peak meters.

Automation: Extensive.

Price & Configuration: 40-input/16-output is \$295,360. The 48-input version lists for \$330,200. *Phone:* (514) 287-1684.



Soundcraft Vienna

Soundcraft

The **Europa** FOH console is designed for both touring and fixed installations. A reinforced frame is fitted with extruded handles to facilitate moving. Other features include Soundcraft patented padless mic preamp, noise gates on each input, 12 aux sends, four-band fully parametric EQ and high- and lowpass filters. Channel status is controlled from the separate fader module with large illuminated buttons. Cut, solo, mute group and VCA group controls are also provided, as is a global solo clear on the master module. The eight conventional and eight VCA sub-

group masters all have full cut and solo capabilities, as do the 12 aux masters.

Eight stereo effects returns are also usable as stereo inputs with a stereo image width control. A dual matrix and advanced stereo module are also available. Full VCA (including a VCA grand master) and mute master facilities are included as standard. A comprehensive Control Linking System allows two Europas to be linked together.

Automation: Optional moving faders.


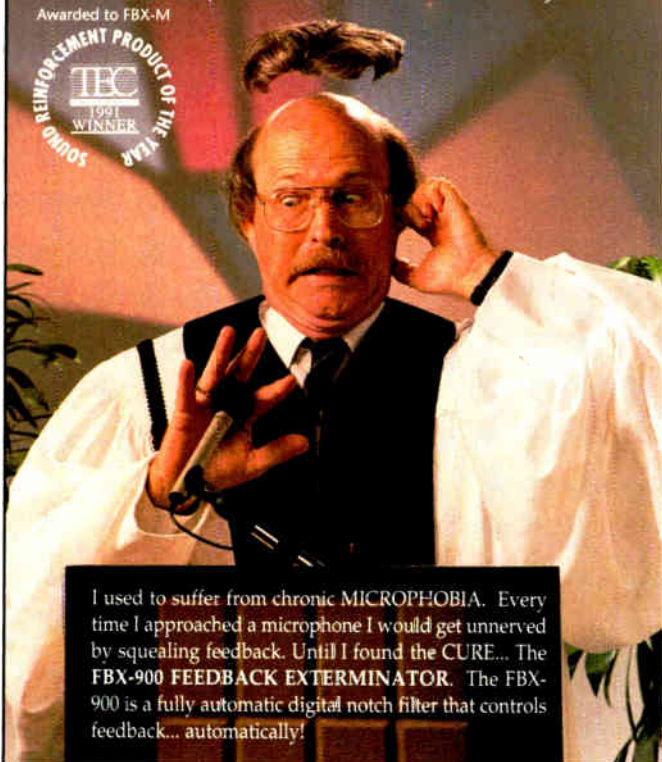
Price & Configuration: 40-input with matrix, \$62,950. A monitor version is also available. *Phone:* (818) 893-8411.

The **Vienna** is similar to the Europa in frame and circuitry design, offering eight mute groups with mute grouping, four-band sweepable EQ and two-position Q switches. The eight-bus house console has eight aux sends, eight VCA subgroups (a VCA grand master option was announced at January's NAMM show) and eight stereo effect returns. Each stereo input has two aux sends routable to four


Microphobia

(mī·krə·fō·bē·ə) n. — The fear of feedback.

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different aux buses. A console-linking function interconnects all bus and solo signals between two Viennas or a Vienna and a Europa. An 11x8 matrix is available as an option.

Metering: 16-segment input metering on a bridge. Prefader bus level monitored with a pair of LEDs. Post-fader output level monitored via LED bar graph.

Price & Configuration: 40-input with VCA grand masters and matrix, \$47,950. **Phone:** Same as above.

Rounding out the Soundcraft line is the eight-bus **Venue**, which can hold up to 40 inputs. Also added to the Venue line is the **Venue II**, which adds an optional LED meter bridge, direct out on Aux 6 and four mute groups. In addition, the **Venue Theater** has been introduced, which includes stereo input modules, illuminated status switches and dedicated theater matrix outputs.

Price & Configuration: \$22,750 to \$24,950. **Phone:** Same as above.

Studiomaster

The **Showmix** 40-input console comes in either a four- or eight-bus configuration. EQ is four-band semi-parametric with 16 dB of cut and boost and a two-band EQ on the L/R outputs. Four dedicated post-fader aux buses on each input and two additional aux for fold-back (pre-fader). Four stereo returns assigned to L/R bus.

Metering: 16-segment, three-color LEDs, L/R output VU meters, and PFL peak response.

Price & Configuration: 40-input, \$10,010. **Phone:** (714) 524-2227.

SoundTech

First shown at the January NAMM show is the **Panoramic** line, designed by John Orm (who designed Trident recording consoles for 14 years). The top of the line model is the **TJO 4024**, a 40-input, 24-bus board, scheduled to ship in March. Each input channel can provide individual level control for three inputs—one mic and two lines. A four-band EQ with two sweepable midrange controls, high-cut, swept low-cut and noise gate are provided on each channel. The board's six mono and two stereo sends are split three ways—from the left and right half of the console to separate aux masters—while the combined send

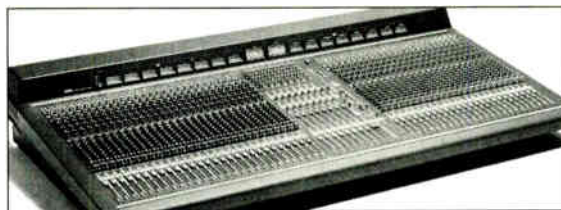
signals from all inputs feed a third discrete strip of aux send masters. A subwoofer output of the full mix is provided with a filter cut-off of 120 Hz.

Metering: Full meter bridge option, \$1,000.

Price & Configuration: 40-input, \$7,499. **Phone:** (708) 913-5511.

Soundtracs

The **Megas Stage** mixing console is a cost-sensitive board that can be loaded with both mono and stereo input modules, a maximum of four matrix modules providing up to an 11x8 matrix, plus up to four dual



Yamaha PM4000

group modules accommodating eight audio groups. The mono input module has input headroom of 22 dB, has a phase reverse switch and 48V phantom power. EQ is five-band comprehensive shelving type. The console features six aux sends, with Aux 6 assignable to a non-bused direct output on the rear panel for a "local aux." Solo PFL and in place. The stereo version of the module allows the stereo input to be either split or summed and can, via phase reversal, decode M-S signals. Six assignable mute groups are provided on each channel. The channel can be automatically muted via a single master group mute switch.

Matrix: 11x8.

Metering: Full VU metering is standard.

The SoundTracs **Sequel** console also offers both mono and stereo input operation. It has eight aux sends, switchable in pairs, pre and post. EQ is a four-band design with fixed frequency, shelving high- (12 kHz) and low- (50Hz) frequency bands. Mid-frequency controls are sweepable.

Price & Configuration: The Megas Stage 48-input, \$19,499. The Sequel 4000, \$39,750. **Phone:** (516) 932-3810.

TOA

The **ix-9000** is an all-digital live mixing console, digitizing analog signals on input using 16-bit linear PCM at 48 kHz. Eight processing

modules housed in two digital racks and separate from the control surface handle input, aux send, stereo aux return, group output, matrix output, stereo output, stereo cue and talkback. All console functions are digitally controlled via one of two interactive touch screen monitors in the console. The 80x68 system offers full scene store capability assigning switching, levels and EQ for all inputs. Eight programmable fader groups and eight programmable mute groups, along with high-speed motorized faders. The console is additionally equipped with 16 aux sends and a digital patch bay. Currently, the board is in use in fixed installations, awaiting an adventurous soul to take it on the road.

Metering: 12-segment LED with two clip LED's.


Price & Configuration: Fully loaded 80-input board is \$1,074,000. **Phone:** (800) 733-7088.

Yamaha

The **PM4000** console features electronically balanced XLR I/O's, continuously variable 50dB gain trim with switchable 30dB pad, eight mono aux mixing buses plus two pair of stereo aux mixing buses that can be used for dual mono for a total of 12 auxes, eight master mute groups. The console offers an extensive priority in-place cue system with a solo mode that mutes other channels. A master mute function facilitates scene changes and cueing. Each input channel has eight mute assign switches, permitting channel on/off function to be controlled by the eight master mute switches. A mute-safe switch is included on each channel. Dimmer-controlled LittLites and cover are standard equipment. Consoles are interconnectable for ganged operation.

Metering: Six-step LED meters on each input module, as well as large dedicated stereo VU meters, plus switchable VU meters for other buses.

Matrix: Yamaha Mix Matrix is an 11x8 configuration whose 11 sources can be mixed in eight different configurations across eight different modules, allowing easy creation of various subgroup mixes.

Price & Configuration: 40-input, \$57,000; 48-input, \$65,000. A monitor version is also available. **Phone:** (714) 522-9011. 

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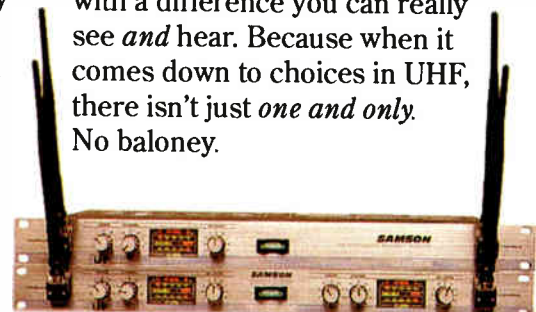
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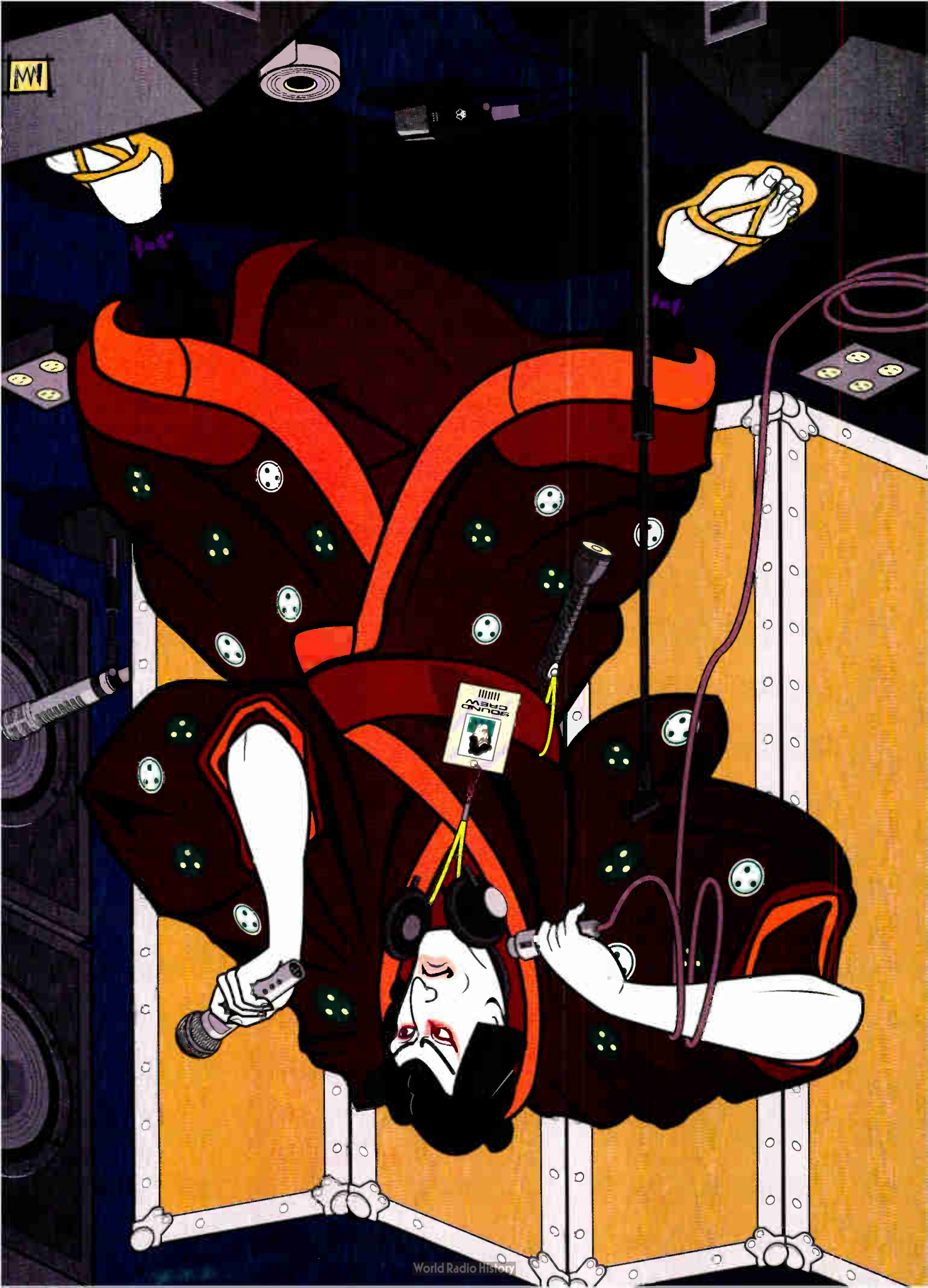
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“Are you a samurai or not?”

That's what someone from the crew at San Francisco's Warfield Theatre asked me once when I was complaining about a buzz in the system, or a visiting engineer, or why our company wouldn't buy me a new digital delay. His question meant "we know you're not in this for the money, that's for damn sure, so are you or are you not honored to be a member of an ancient order of beings, accepting the fate you have freely chosen, and walking a path of pain, learning, and the occasional awesome emotional reward?"

Funny how the ads in the magazines always portray the well-scrubbed youngsters at the SSL—the image of the engineer is never me fighting the wheel of an equipment truck as I hit sheet ice at dawn driving south from Seattle or looking up as the Midas board in the Anvil is let go by someone and nails me directly in the temple. Not too sexy, is it?

"After all, the record's the thing, isn't it?" asked one of my buddies at a studio in L.A. Not for all of us. The record can be a great thing, it can be an honest work of art, but to some of us the world is divided up into acts that can work their magic on a crowd and those that can't. My heroes are the likes of the Meat Puppets and Firehose, out there most of the year, driving around doing their thing for a bunch of fans who love them. Like the drummer for the Special Beat—when I said it's nice to see you guys again, he replied "It's nice to see you again, mate. Because that means we're still working!"

Originally I was hired by Paul Majeski to do monitors at the rehabilitated old Fillmore Auditorium, and I stayed on after we moved to the Warfield, where I eventually moved up to house mixer. The three years I've spent in the Warfield Theatre have been bizarre, sedate, stressed-out, relaxing, flattering, humiliating and most of all extremely instructive about the human animal. I have dealt with the full spectrum of visiting crews, from completely incompetent to some of the best mixers in the world. The smart ones were well aware of the topics below.

People Who Can't Afford to Carry Full Production Should Behave Reasonably

Once, when The Divinyls came through town, their engineer looked at our 12 MSLs and bitterly said, "Well, I can tell I'm going to hate this." He spent about five minutes decompressing but then was an absolute gem the rest of the night! In a situation like that, you've got to pick and choose and selectively amplify what you can. For bands with a singer/songwriter, projecting the voice out front may require sacrificing the kick drum that killed Chicago, raging guitars and full-bandwidth 3-D bass sound.

Don't Play Games!

When I go into an unfamiliar venue with a band, I get with the house guy and put on a CD or cassette that I bring with me. I don't look at the EQ, the compression or the amps before cranking up my source to a

level that approximates where I think I'll peak later, establishing a solid level for us to discuss. I don't play 10 seconds of one tune and then another, change CDs neurotically while twitching, or any of the other strange behaviors I've seen.

When I'm the house guy, I sometimes find myself wrangling with visiting engineers over things like compression before the amps. Some guys want to do a sound check quietly and then back-stab you during their band's set, slamming the needles on the board

and making the house engineer race to turn back the amps or compressors. After a few dozen laps to the amp loft, you start setting a safer level—and leaving it. I am responsible for my gear, and I have the final say.

You Want a Sound Designer? I'm a Sound Designer.

Levi Tecofsky with My Bloody Valentine listened to my recommendations for beefing up the system and said, "Right, then," and put his band's money where my mouth was. Levi and Paul [Majeski] had advanced the show and agreed that they would need extra Meyer 650 sub cabinets.

However, once he fired up the system, Levi decided he needed more full-range power. I brought up our pair of tri-amped Sound On Stage Cutlass cabinets and had SOS bring down another pair, which I positioned stacked inside our MSL3's. Later, we smiled as their feedback finale washed over the crowd without blowing up any amps or speakers.

Apparent Loudness Vs. dB Meters

Why does Mr. Big, through 12 MSLs and eight Sound On Stage cabinets, sound like they're playing through a no-expense-spared arena array? It's because they invested in a mad Scotsman named Frank Gallagher out in the house, who is aided and abetted by intelligent musicians who generate controlled tones onstage and create arrangements that showcase the players and singers, rather than musically fighting one another. Also deserving honorable mention in this category would be The Divinyls, the Neville Brothers and the Santana band. The engineer has a head start (and a fighting chance) if clarity exists in the music itself.

My, What a Nice Chip on Your Shoulder

One gig at the Warfield seemed like it would be easy—one of America's premier folk/country artists moving up from the clubs was booked. Her music is the type that our Meyer MSL-3s function best with—basic band, acoustic guitars, clear voice. What could be a problem? Her mixer walked in the door tight-jawed and scowling and left the same way 12 hours later. My SPX returns are not silent, and he would leave them jacked up high and buzzing instead of lowering them in between songs while

A Venue Soundman Makes Seven Points To Visiting Crews



BY CHRIS KATHMAN

the singer spoke. He was absolutely determined to make things ugly for everybody. As a postscript, their bus driver came back later with another band and said, "Yes, he was like that at every single show; we never could figure out why."

Are We Troubleshooting or Troublemaking?

We love Bill Rahmy, "El Gigante," who mixes and tour manages bands like Bob Mould and Sugar, the Beastie Boys and Suicidal Tendencies. The man has class—he can point out everything wrong with

your system without trying to make you feel like an idiot for not noticing dead components. Troubleshooting happens most effectively when it is a cooperative effort. Blaming and humiliating are for the psychological cripples. Is that your goal, or do you want a good show?

Calm is invaluable: Michelle Sabolchick, who mixes the Spin Doctors, asked me casually if I had remembered to switch back some inserts after the opening act. I had to hop to it and do it right before her band went on. She laughed off my embarrassed apologies—she just wanted it to be right.

Some guys want to do a sound check quietly and then slam the needles during their band's set. After a few dozen laps to the amp loft, you start setting a safer level—and leaving it.

This Is War, Not a Video Simulation

Some studio guys fall to pieces in a pressure situation at a show—you can't roll back tape and punch in. They can't handle a rapid sound-check, and they can't handle mixing with the sources (i.e., mics) being in the same room with their monitors (i.e., the P.A.). Considering that their income is probably eight times mine, yes, I do enjoy watching them crash and burn. Oh, is that too negative? You want positive? I got positive...

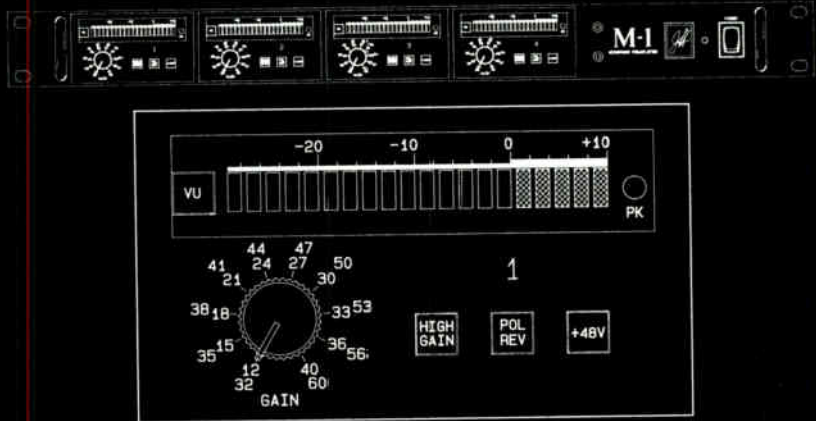
There are memories that stay with you over time, like one from when I spent two nights doing monitors for the Red Hot Chili Peppers. On the first night, Anthony Kiedis sprained his leg jumping around and showed up the second night with bandage and cane. In the middle of their set, when the lights went down between tunes, I saw him limping clear across the stage to lean over my board and politely ask me for some more vocal support in the wedges and sidefills. He didn't scream or curse or flip out, all of which I might have forgiven him for, but instead honored the rapport we had developed.

Ain't nobody holding a gun to my head, you know? So, one more time: Are you a samurai? ☺

Chris Kathman has been the on-call in-house soundman for San Francisco's Warfield Theatre since 1989.

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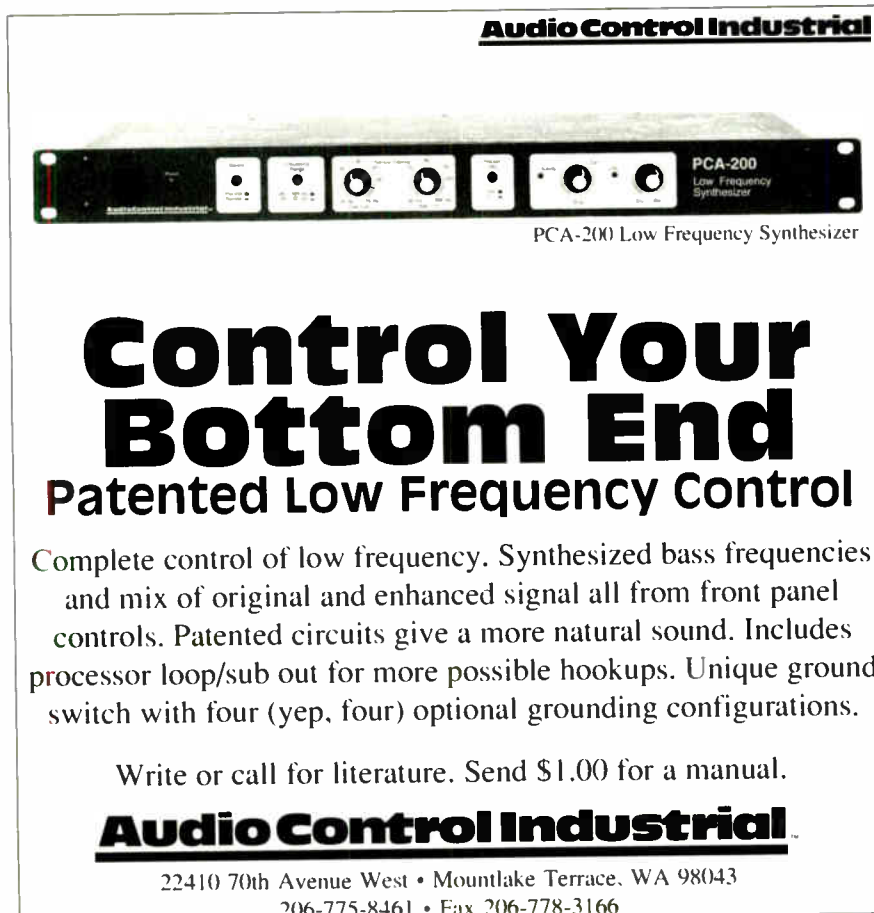
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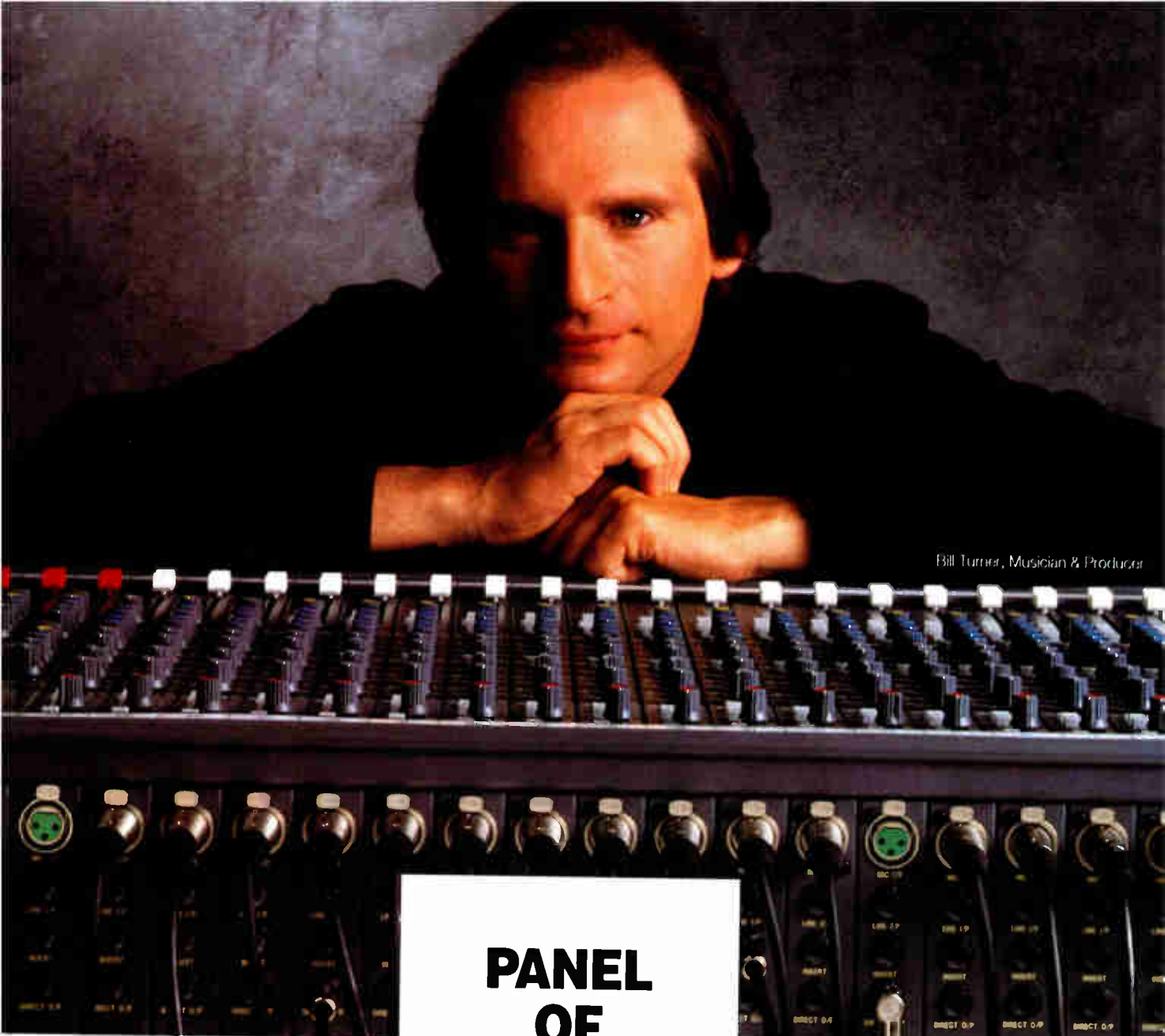
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Bill is equally talented as a producer in his Brooklyn, New York, studio, Bill Turner Productions (BTP). "Being an independent producer, we often have to create the product on location and many times outdoors. This is the trickiest...anything can happen outdoors. We eliminate a lot of the 'gremlins' by using only the parts and connectors we feel are the best...and that

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Pictured above, Array Series installation at the Grand Palace, Branson, Missouri.