

# MIX

**CONSOLE SPECIAL**  
· Design Evolution  
· The Top of the Line  
· Post-Production Choices

PROFESSIONAL RECORDING · SOUND AND MUSIC PRODUCTION

**DIRECTORIES: North Central  
and Canadian Studios**



**INTERVIEW: PRODUCER  
BRUCE FAIRBAIRN**



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MX SANDER008019109 1010 DIR  
MARK R SANDER  
JBL PROFESSIONAL  
2559 86L80A BLVD 8X2200  
NORTHBRIDGE CA 91329



# AudioFile Plus Points...

## New

1. **16 outputs** for the increased creative flexibility and larger storage you need for mixing stereo source material—and *without* increasing the size of the current AudioFile PLUS. The most compact hard disk editing system on the market stays that way. Delivering *now*.
2. With over 85 systems installed in the past 5 years—working and earning their way in major post houses throughout the U.S.—the AudioFile has established itself as the most reliable and efficient hard disk editing system available.
3. The fastest, most powerful hard disk editing system on the market is also a constantly evolving system, growing and changing to meet industry requirements... The system you invest in today makes money for you now, and 5 years from now.



And there's one more big point on the PLUS side. AMS technology, and the entire AMS line of products, is now backed by the strength of Siemens.

The new 16-output system is the first development to come to market from the AudioFile PLUS technology. Look for more in the near future.

Call us about the 16-output AudioFile PLUS. Make a point of it.

**ams**

A Siemens Company

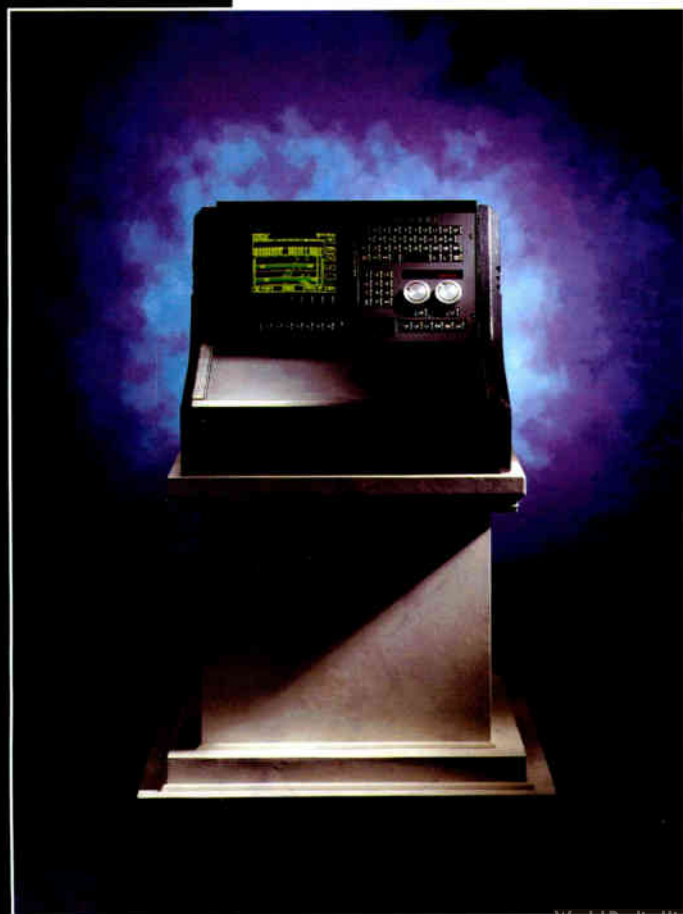
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- Nashville, TN: (615) 329-9584
- Toronto, Ontario:  
Soundings, Seattle, WA: (206) 624-1317

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# Post Logically

**In this business,  
you meet a lot of characters.  
Some animated, others less so.**

Post Logic's Studio B has seen a lot of them in the past few months . . . Studio B and the Neve VRP60 are booked around the clock, posting for the 4 major networks (on-air promos, series), film and home video projects, and for music recording dates.

The Neve VRP60 is a true multiformat console, with complete recall, capable of switching from video post operation to music recording—literally at the push of a button—

coupled with Flying Faders, the friendliest and most efficient automation system in the business.

In today's economic environment, you have to be ready to deal with whatever walks in the door—tracking, mixing, posting. So, apply a little Post Logic to the problem and use the one true multiformat console, the Neve VRP. It's the Post Logical solution, and it could work for you.

 **Neve**  
A Siemens Company  
(203) 744-6230

**POST LOGIC**  
MIX TO PICTURE

Hollywood, CA 213 • 461 • 7887

Photo By Ed Freeman • Illustrator by Jordan Bochanis

# MIX

PROFESSIONAL RECORDING • SOUND AND MUSIC PRODUCTION

NOVEMBER 1991, VOLUME 15, NUMBER 11

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**Cover:** Located in Alexandria, Indiana, Pinebrook Recording Studios features a 56-input, all-discrete API console with computerized Touch Reset and GML automation in its recently refurbished Control Room C. The 2,600 square feet of adjacent recording space consists of two iso rooms, random alcoves and an additional elevated iso area. **Photo:** Lightscapes/Mark Fronk. **Inset Photo:** Robert Karpa

## DIRECTORY

- 153 North Central**  
**Recording Studios**




# WORLD CLASS OF 48.



Get that all important decisive competitive edge. Choose Studer multitracks—the

Supermachines that deliver award-winning sound and attracts the top artists and the best

producers. **SUPERB SOUND** Team up with Studer's well earned international reputation for great sound, highest quality and outstanding reliability.  In the digital

world, no machine comes close to the superb sound of Studer's exclusive D820-48 recorder.

## D820-48

With 48 tracks and internal **TOP ARTISTS**

40-second 4-channel sound memory, digital editing is

incredibly quick and easy resulting in unprecedented

creativity and artistic freedom.

## OUTSTANDING PERFORMANCE



Trackslip, edit and re-edit, synchronize

with the built-in synchronizer, vary crossfade

times for perfect inserts, and experience the

awesome power of the fully DASH compatible

Studer D820-48. **AWARD-WINNING**

## ACHIEVEMENTS



Whether you choose Studer 48-track digital or 24-track analog, your choice is

World Class. And you get that all important competitive edge, helping you attract the top

artists and the best producers to your studio.  Experience excellence. Experience the

Supermachines. Call 800-776-3833 for friendly sales information.

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# STUDER

# ANALOG OR DIGITAL.

## STUDER TECHNOLOGY GIVES YOU THE DECISIVE COMPETITIVE EDGE.

Take the digital multitrack market. Is it oversold with the 24- and 32-track variety? Probably.

With 48-track DASH now a reality, it doesn't take a rocket scientist to figure out that the 24- and the 32-track digital formats are now ordinary. And, if history repeats itself, you need the extraordinary, like Studer's D820-48, to attract the top artists and producers.

The D820-48 is all new, with powerful features including built-in synchronizer, variable crossfade times, 40 second RAM sound memory for track slipping, and digital ping pong. And they say it's the best sounding digital multitrack around.

If you waited for the right time to invest in digital, the right time is now. And the right product is the Studer D820-48, the Digital Supermachine. The Decisive Competitive Edge—in limited supply.



*Studer D820-48. The Digital Supermachine.*

Or take the analog 24-track market (we're talking real professional studios) where 9 out of 10 major market studios are relying on Studer's great sound and unequalled reliability.

The flagship A820-24 with the optional built-in Dolby® SR (which includes SR auto alignment and switching) is the very best analog can offer, and the choice of most leading artists and producers who prefer analog over digital. And with dual machines, you get the flexibility of 48-track and 24-track.

Whatever your choice is, Studer will be there to give you the best value in equipment and in superior service. And, again, if history repeats itself, your Studer machines command the

highest resale values. You get The Decisive Competitive Edge.

Call today to receive our color brochures and detailed product information.

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# FROM THE EDITOR

The recording/mixing console is the single most critical equipment expense for today's studio owners. No longer just a means to route microphones to tape or recorded channels to a master mix, modern consoles are wizardry incarnate. With price tags of up to three-quarters-of-a-million dollars, top-of-the-line boards combine an incredible range of features and functions with awesome automation capabilities and massive computerization.

Still, the evolution of the console has forever begged the question, "How much is too much?" How much money can you spend before the limits of session-time revenue no longer make the board a good investment? How many inputs and features can be incorporated before the unit is too large for the space—or too extensive to be operated by one person? And how complex can the design and operation become before the manufacturer needs to supply a full-time technician just to operate it at full potential?

For those of you now facing these expensive decisions, perhaps this *Mix* can be of some value. To get started, look at Mel Lambert's "Juxtapositions" column, where he traces the development of today's design approaches and points out a few trends in digital assignment and control that will make boards viable well into the future. Then take a look at George Petersen's overview of top-of-the-line consoles from more than 30 manufacturers, which just may open your eyes to new possibilities. And if audio post is your bag, check out Iain Blair's "Post Script," where several post-production engineers describe what they went through in choosing the proper board for post work.

In these fragile economic times, the investment in a mixing console can make or break a studio. Are you buying too much board for the operation? Or are you moving the business into new areas, with new clients? It's as large a gamble as most studios are apt to make, and it's a choice that should be made with the highest degree of consideration and analysis.

Keep reading,



David Schwartz  
Editor-in-Chief



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Founded in 1977 by  
David Schwartz and Penny Riker Jacob

# The fact that Allen Sides bought our digital multitrack may be a good reason for you to consider buying one. Why he bought it is an even better reason.

According to an old bit of conventional wisdom, having a famous

celebrity endorse our product should convince everyone to simply run out and buy one.



Sony's PCM-3348 gives you 48-tracks in one machine. So you have a lot more options than ever before.

But in the case of legendary recording engineer,

anyone. Now you can get all 48 without synchronizers and all the other problems associated with locking up two or more decks."

Its transport is uncommonly fast. "The 3348 has the fastest transport I've ever used. Functionally, it's spectacular, and it punches impeccably."

producer and studio owner, Allen Sides, and the Sony PCM-3348 DASH 48-track recorder, the wisdom of buying one could hardly be called conventional.

After all, the 3348 offers a unique, 48-track capability. "Believe it or not, 32 tracks just aren't enough



Sony's reputation for reliability. "I've always had great experiences with Sony. In fact, I can hardly recall a time when a Sony machine wasn't functioning at a session. And that's a plus for any studio owner."

Rather impressive reasons, we



The PCM-3348's truly unique transport mechanism features a predictable response, consistent reliability and incredible speed.

Its user-friendly design is totally unique. "The 3348 is an ergonomic dream. Compact, easy to move around and extremely well-laid out.

I just took a quick look at it and got a good idea of how it functions."

It also has

You can see Allen Sides' love for quality sound in both his renowned collection of vintage microphones and in his PCM-3348.

think, to consider buying a 3348. To find out even more, call the Sony Professional Audio Group at 1-800-635-SONY, ext. 904.



## SONY®

BUSINESS AND PROFESSIONAL GROUP

# LOGIC 2

## The first all-digital, large format console in North America.

A completely digital audio console integrated with a familiar analog-style control surface for music recording, TV and film post production. Logic 2 from AMS.

- *Total Dynamic Automation* of virtually all channel parameters, including Read, Write, Update and Isolate for Fader, Mute. Up to 48 fully automated aux sends. External machine control provided as standard.
- *Multilayer In-Line operation.* Each channel strip controls 4 completely independent mono or stereo signal paths. 27 faders can control up to 108 fully equipped stereo channels, 63 up to 252. Logic 2 is a very large desk with a very small footprint.
- *Input/output circuitry completely user-configurable.* An electronic matrix allows individual assignment of inputs and outputs to any channel strip, group or main output, replacing much of the patchbay of the conventional analog desk.

- *A totally reconfigurable desk.* From recording to mixing, from TV show to film, Logic 2 can be completely reconfigured from stored setups.
- *Comprehensive signal processing.* 4-band, full parametric EQ, 2 band filters and a powerful 4-function dynamics section. *Logicator* rotary controls show settings at a glance, while alphanumeric displays give exact values.



Logic 2 integrates fully into the studio environment. Working with digital/analog multitracks and other digital/analog devices, Logic 2 keeps the signal entirely in the digital domain.

It's here. The first all-digital, large format desk in North America. From AMS.



A Siemens Company

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# CURRENT

## Studer Acquires Digitec

Studer Revox AG (Regensdorf, Switzerland) announced the acquisition of a majority interest in Digitec S.A. (Chatou, France), a move that would seem to strengthen Studer's presence in the European and North American broadcast markets.

Effective at the end of August, the Digitec organization changed its name to Studer Digitec S.A. and began making use of Studer's sales and service network. Digitec products include digital mixing consoles, digital routing switchers, radio automation systems, audio-visual systems and digital communication equipment.

"The Studer Digitec acquisition significantly widens the product offering of Studer Revox America Inc.," says Tore Nordahl, president of Studer Revox America, "especially in the areas of digital and analog console products for post-production and teleproduction, areas where we have already increased marketing and sales to prepare for an all-out market assault in 1992. With Studer's digitally controlled 990 analog console range and Digitec's DSP console system, the U.S. market can choose from a

full range of high-technology mixing products from one source."

Oldrich Mikoska, president of Studer France, was named president of Studer Digitec, Jean Schwob was named vice president, and Philippe Delacroix was named general director. Studer Digitec products will be distributed in North America exclusively by Studer Revox America Inc. of Nashville and Studer Revox Canada Ltd. of Toronto.

## WaveFrame and Magna-Tech Announce Joint Development Plans

The evolution of high-quality film sound took a big step forward in September when WaveFrame Corporation, the Boulder, Colorado-based makers of disk-based audio recorders, and Magna-Tech Electronics Co. Inc., the world leader in the manufacture of sprocketed film recording and playback equipment, announced plans for the joint development of a multitrack disk-based recorder/reproducer for film mixing applications.

The new product is expected to be available as an add-on extension to existing Magna-Tech units, 15,000 of which are in operation

worldwide. Development has already begun in the WaveFrame engineering offices in Long Beach, Calif. Manufacturing will take place in the Boulder plant, while distribution will be handled by Magna-Tech. No expected release date has been announced.

"This new equipment not only enhances our present product line, but also extends the useful life of analog systems in service around the world," says Magna-Tech CEO Ed Flinn. "It will allow Magna-Tech users an easy transition from analog to digital recording."

## SPARS Announcements

New officers and the board of directors of the Society of Professional Audio Recording Services were announced at the general membership meeting held during the AES convention:

Dick Trump, president of Triad Productions in Des Moines, Iowa, replaces Pete Caldwell as president, while Caldwell becomes the chairman of the board. Dwight Cook, of Cook Sound and Picture Works, Houston, becomes first vice president. Steve Lawson, of Steve Lawson Productions, Seattle, becomes treasurer. —CONTINUED ON PAGE 14

## TEC WINNERS ANNOUNCED

The winners of the 1991 Technical Excellence & Creativity Awards, voted on by the readers of *Mix* and announced at an awards ceremony at AES, October 5, are:

### Outstanding Creative Achievement

Recording Engineer: *Bob Clearmountain*; Remote Broadcast Engineer: *Bob Clearmountain*; Mastering Engineer: *Bernie Grundman*; Sound Reinforcement Engineer: *Mike Pomczek*; Audio Post-Production Engineer: *Ken Hahn*; Record Producer: *Nile Rodgers*.

### Outstanding Institutional Achievement

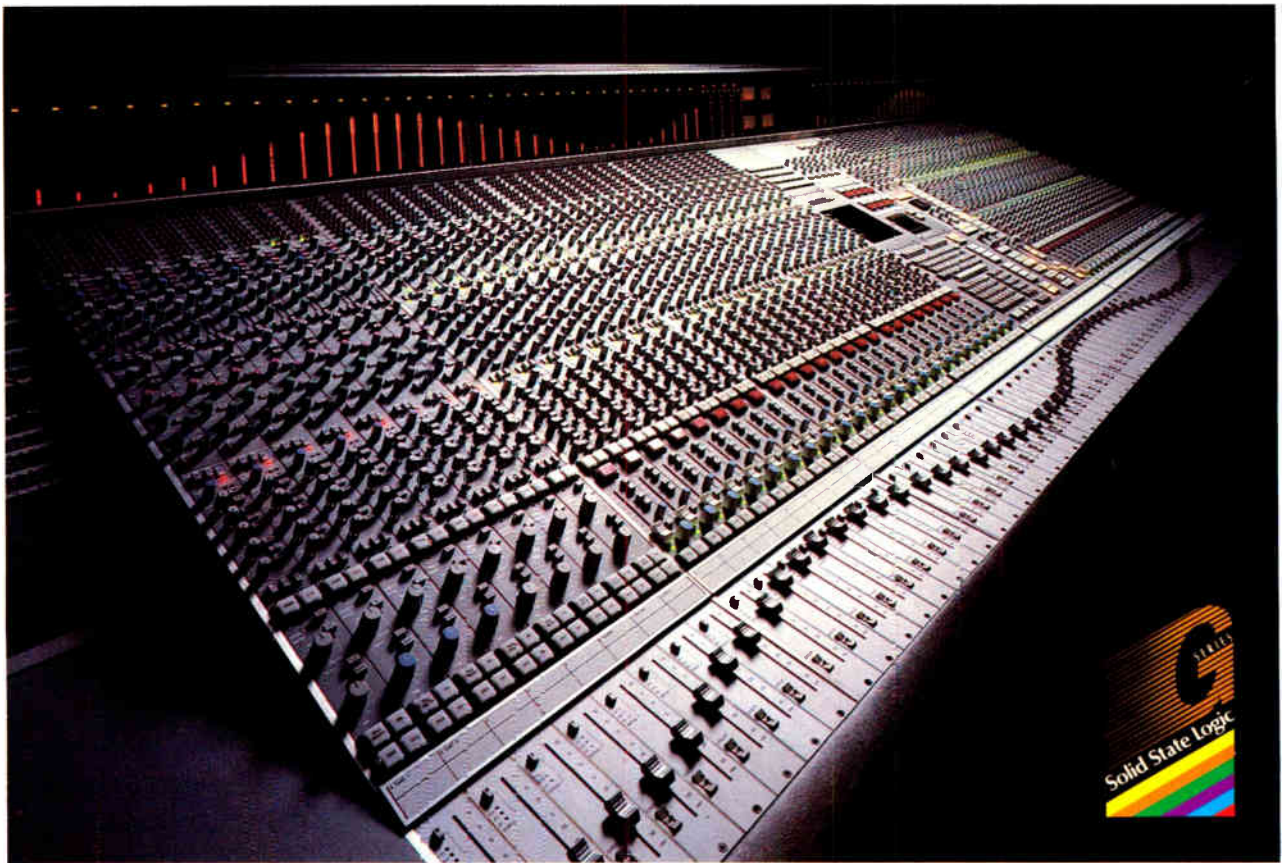
Acoustics/Facility Design: *Russ Berger Design Group Inc.* and *Walters-Storyk Design Group (tie)*; Recording Studio: *Ocean Way Recording*; Sound Reinforcement: *Shouco Inc.*; Mastering: *Masterdisk Corp.*; Audio Post-Production: *Post Logic*

*Inc.*; Remote Recording: *Westwood One Companies*; Recording School Program: *Full Sail Center for the Recording Arts*.

### Outstanding Technical Achievement

Signal Processing: *Lexicon 300*; Recording Devices Storage: *Panasonic SV-3700 DAT*; Console: *Harrison Series/Ten B*; Musical Instrument: *Alesis SR-16* and *Roland S-770 (tie)*; Transducer/Microphones: *Neumann TLM50*; Transducer/Loudspeakers: *Tannoy Monitor Series*; Computer Software/Peripherals: *Digidesign Sound Tools 2.0*; Ancillary Equipment: *Audio Precision Portable One*; Sound Reinforcement Product of the Year: *Sabine FBX Feedback Terminator* and *TC Electronic 6032/1128 Remote EQ (tie)*; Recording Product of the Year: *Digidesign Sound Tools 2.0*.

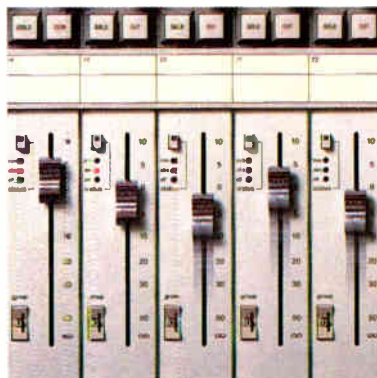
A full TEC Awards report will follow in the December *Mix*.



## Now the world's favourite recording console has added the ultimate moving fader system

**T**HE SUCCESS of Solid State Logic's SL 4000 Series console is legendary.

The system remains successful by growing alongside the creative individuals who use it. An example of this evolution was the introduction of G Series electronics, where new technology allowed subtle improvements to be made to the entire audio path. Now, SSL has changed the face of console automation by devising an automation system which combines the best features of both moving faders and VCAs.



Called ULTIMATION™, this unique dual automation system has been fully integrated with the G Series console. It reads existing G Series mix data, and its commands are immediately

familiar to all SSL users. The system's unique dual signal path circuitry allows the engineer to select operation – either as a full feature moving fader system, or as standard G Series automation. ULTIMATION even allows moving faders to perform SSL-style Trim updates without resorting to complex subgrouping software.

Today's G Series consoles, with ULTIMATION, take the art of recording one stage further. Together they set new standards, continuing in the innovative tradition of the world's most respected console system.

## Solid State Logic

International Headquarters: Begbroke, Oxford, England OX5 1RU · Tel: (0865) 842300

Paris (1) 34 60 46 66 · Milan (2) 612 17 20 · Tokyo (3) 54 74 11 44 · New York (212) 315 1111 · Los Angeles (213) 463 4444 · Toronto (416) 363 0101  
US Toll Free: 800-343 0101

# Digidesign Reinvents the



# Studio

## Introducing Pro Tools™

Pro Tools is professional recording's first completely integrated Multitrack Audio Production System.

In the future, *everyone* will be recording this way. But *you* can do it right now, with Pro Tools.

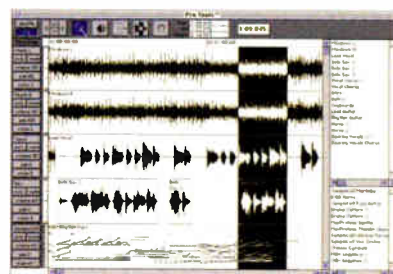
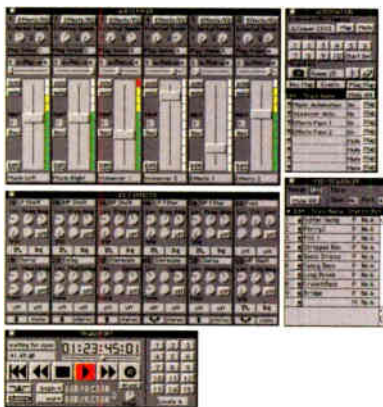
Pro Tools takes the three most important recording technologies of today—digital audio, MIDI, and mix automation—and combines them into a single revolutionary system. With even more of the advanced random access editing capabilities that made our Sound Tools™ the best selling direct to disk system in the world.

The time to reinvent *your* studio is now.

And with complete systems starting at less than \$6000,\* Pro Tools makes it easy.

We want you to be one of the first to experience Pro Tools. Call us at **(800) 333-2137** about an in-depth seminar happening now in your area. We'll also send you our full-color Pro Tools brochure.

### Pro Tools includes two powerful software applications for audio production:



*ProEDIT™ for fast, flexible graphic editing of both digital audio and MIDI*

*ProDECK™ for audio & MIDI recording, real-time effects and digital mixing with dynamic automation*

### Pro Tools features:

- Macintosh® II based system
- 4 to 16 independent channels of high fidelity recording/playback
- Balanced XLR analog I/O, AES/EBU & S/PDIF digital I/O
- Unlimited virtual tracks
- Real time parametric EQ & digital effects (completely automatable)
- Dynamic & state-based automation with instant update
- MIDI recording, playback & event editing
- Graphic non-destructive editing of multiple tracks of audio and MIDI with track slipping, region trimming, crossfades, etc.
- SMPTE synchronization
- Compatible with *SampleCell™*, *Pro Store™*, *Studio Vision™*, *Digital Performer™*, *CS-1* and *CS-10 Control Station™*

### Sound Tools Trade In Offer

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# INDUSTRY NOTES

E-mu Systems, Scotts Valley, CA, chose Peter A. Hayes to be vice president of marketing. Passport Designs named Kurt Chismark new vice president of sales. Chismark will direct overall sales management and will channel development. Passport is located in Half Moon Bay, CA, and may be reached at (415) 726-0280. Ampex Corporation (Redwood City, CA) and Sprague Magnetics (Van Nuys, CA) hammered out an agreement that allows Sprague to purchase all existing inventory of Ampex audio recorder parts and appoints Sprague as sole authorized source for recorder replacement parts. TOA Electronics of South San Francisco selected an engineered sound management team to provide product support from design and education through development and sales. The team includes product applications consultant Chuck McGregor, marketing development manager John Murray, and regional managers Walter Best, Robert Slaughter and Bill Ford. JL Cooper Electronics is expanding its operations; look for the company in a new and larger location at 12500 Beatrice St., Los Angeles, CA 90066. The telephone number, (213) 306-4131, and fax number, (213) 822-2252, remain the same. National Association of Broadcasters reports that Robert G. "Skip" Tash was named vice president of advertising. He is responsible for all of NAB's advertising and sponsorship sales. In the NAB Science and Technology department, John Marino is manager of technical and regulatory affairs, and Ken Springer is staff engineer, digital communications. Euphonix opened its Southern California office in North Hollywood, and is now set to conduct sales, service and marketing activities from the new headquarters. The office also has a demo suite for the CSII system. BASF Corporation Information Systems (Bedford, MA) appointed the Boston ad

agency Houston, Effler & Partners to handle its new audio/video products marketing plan. Leo Burnett continues to represent BASF's magnetics business outside of the U.S. The Fenton, MO, company Atlas/Soundolier recruited Tony Satariano and Jeff Garstick for the newly created positions of Eastern regional sales manager and Western regional sales manager, respectively. NVision formed an audio products division in order to offer affordable digital audio products. Also at NVision, Bob Mahoney was named director of marketing for the Nevada City, CA, company. Call (916) 265-1000 for details. Solid State Logic subsidiary Audio Processing Technology appointed Steve Cheung head of its international marketing operation. Cheung will be based in Belfast, Ireland, and may be reached at API Headquarters, 21 Stanmills Road, Belfast BT9 5AF. Gold Line, of West Redding, CT, chose William Ray & Associates as its rep in the Southeast. The reps will offer the entire Gold Line product line and cover North Carolina, South Carolina, Georgia, Tennessee, Mississippi, Alabama and Florida. Tannoy/TGI North America is now the exclusive U.S. distributor of Bruel & Kjaer pro audio products. Bill Calma at Tannoy/TGI has details at (519) 745-1158. Cal Vandegrift will now serve as director of export sales for Symetrix (Seattle). David P. Aucoin was promoted to vice president of customer services for Avid Technology Inc. Aucoin previously organized the Burlington, MA, company's customer service and support. USCO Audio Engineering of Hollywood appointed three new dealers for its line of reference loudspeakers: Sam Ash Pro Audio, Twenty First Century Limited and Audio Concept. International Music Company (Fort Worth, TX) appointed Mack Leathurby Eastern U.S. digital sales engineer for Akai Digital and Hill Audio Products. ■

—FROM PAGE 10, CURRENT

## Cirrus Logic Acquires Crystal Semiconductor

Cirrus Logic Inc. and Crystal Semiconductor Corporation, Austin, Texas, have signed a definitive agreement for merger, wherein Crystal Semiconductor will become a wholly owned subsidiary of Cirrus.

Crystal Semiconductor was founded in 1984 as a developer and supplier of advanced mixed analog and digital circuits. Currently, the company is a major supplier of chips and circuits for digital audio converters in use throughout the audio industry.

## Dun & Bradstreet Entertainment Study

According to a new study by Dun & Bradstreet Information Services, nearly half of the U.S. entertainment industry's revenues by the year 2000 will come from foreign sources. Industry segments covered by the study include film production, distribution and exhibition, prerecorded music, cable and network television, and radio broadcasting.

"Entertainment: An Industry Overview" is available for \$395 from Dun & Bradstreet Information Services, (908) 665-5224.

## Corrections

On our August cover caption, we misspelled the name of the designer for Chung King Studios, New York City. The correct spelling is Frank Comentale.

In September's New Products column, we listed an incorrect toll-free number for a sample CD of sound effects from The Hollywood Edge library, available free to post-production professionals. The correct number is (800) 292-3755, or (213) 466-6723.

Finally, in our September directory listing of Southwest studios, it should be noted that Powerhouse Recording of Las Vegas has a D&R Avalon 64x32x32 console, Panasonic 3700 DAT recorder, Yamaha NS-10M monitors, a Roland D-70 and Cakewalk V. 4.0 Sequencer. Our apologies. ■

# The Top 500



Play the D4 with its onboard trigger inputs.

Alesis drum machines are famous for their sounds. The HR-16's natural acoustic drums are still the standard for transparent rhythm tracks. The punchy aggressive samples of

the HR16:B redefine how to make rhythm tracks burn. The SR-16 is an instant hit with its sampled reverb and ambience techniques.

Now you can have all this and more with the new **Alesis D4 Drum Sound Module**. There's an incredible 500 sounds in all. Right at your fingertips.

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.™ Plus, stereo reverb and ambience are built into many of

the samples so you can keep your mind on the beat.

Using the D4 is a breeze with its large data entry knob and dedicated buttons for all major functions. There's even a touch-sensitive preview button and headphone output for instant gratification... and latenight drumset programming.

The D4's 21 user definable drumsets are accessible via MIDI or through the 12 onboard audio trigger inputs. You can even replace a wimpy drum sound on tape. Which you'll want to do if it didn't come from a D4. No rocket science here. Just pure honest incredible sound. The only reason to buy a drum sound module.

Everybody wants a hit. The D4 has 500 of them right now. At your Alesis dealer.



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12 audio trigger-to-MIDI inputs are built in for drum triggers, pads, or tape.



## ALESIS THE TOP 500 DRUM SOUNDS

THIS WEEK	LAST WEEK	WKS. ON CHART	TITLE ARTIST	DRUM PRODUCTION	THIS WEEK	LAST WEEK	WKS. ON CHART	TITLE ARTIST	DRUM PRODUCTION
1	2	208	HONEST SNARE HR-16	ALL WOOD-BRASS RIM	302	NEW	▶	RAW HIDE BRAND NEW D4	CUSTOM S
2	NEW	▶	STUDIO TOM BRAND NEW D4	16" MAPLE TOM w/VERB	303	450	52	HI ROOM TOM HR-16	10" MAPLE
3	NEW	▶	BIG "O" BRAND NEW D4	DOUBLE HEAD KICK w/VERB	304	NEW	▶	WET HALF BRAND NEW D4	HALF OPEN HA
4	5	52	RIM SHOT ROOM SR-16	BRASS PICCOLO w/VERB	305	327	52	RIM 2 CENTER SR-16	ARTIC
5	10	156	BIG FOOT HR-16:B	SINGLE HEAD 26" MAPLE	306	123	208	DOUBLE HEAD	DOUBLE HEAD KIC
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	5		
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		
			ARTICULATED HI HAT		311	NEW	▶		
			CLOSE TO OPEN		312	211			



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Alesis Corporation 17 Letchworth Point  
Letchworth, Hertfordshire SG6 1ND

by Stephen St. Croix



## SWEET SIXTEEN

**I**t was so cool to be 16 when I was in high school. Well, let me rephrase that a bit. It looked like it was *going to be* so cool to reach 16 while we were all 13 to 15 and waiting.

I went to a Native American public school in Arizona during my waiting period, and I remember that those few years immediately preceding that galactically recognized and unilaterally respected personal achievement of actually reaching the age of 16 were extremely difficult (and profoundly protracted).

Those who had gone before us had transcended the mundane status of kids. They had mystically evolved into something different, something we could only intellectually and emotionally relate to in the most remote sense. Almost every one of them had instantly, on their 16th birthday, trans-

formed into new and wondrous creatures that resembled those of us left behind in only the most superficial ways. Sort of like a butterfly resembles a multi-legged, slimy, crawling thing.

This metamorphosis basically produced three types of creatures, all sharing one fantastic ability: while butterflies could fly, 16-year-olds could *drive!* Sort of.

I will describe two of those three emerging life forms here.

The little girls turned into Grown Women, distant and totally unobtainable. Something bad apparently happened to their eyesight, because from that day on they couldn't see us at all. They could hear us if we were really loud, but it must have somehow hurt them, judging from their faces.

The boys turned into Men. Schwinn's turned into Triumphs or



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BSAs, five-horse scooters turned into Harleys. *Automobiles* spontaneously appeared as extensions to almost a quarter of those who passed through the change. We could never get a solid handle on just who was going to end up with a car, but it sure looked like it was basically the very bad and the very good that got them, and nobody in between.

So, after an eternity, most of us in my class finally did reach 16, and it turned out to be everything it was

supposed to be, and more.

It was then that I learned two important Truths Of Life. One: 17 is better than 16, 18 is better than 17, and so on. Two: It was so important to be 16 that people would even *lie* about it!

Well, it's been more than a few years since most of us hit our individual Sweet 16, but only recently have we as an industry tried for it.

### Every Bit Counts

No, you didn't miss anything. Yes, I suddenly made a sharp turn and got the column on track to an audio-re-

lated subject.

Those of you who are alert or even astute will remember that I already touched on the 16-bit myth about a year ago. Those of you who are alert and astute will also notice that very little has changed since then—amazingly little, actually.

It's just like high school. Everybody wants to be 16 (bit)—so much so that a lot of people lie about it and claim they are 16 when they are only 15, 14 or even 13. A lot of them get away with it, too, because, just like in high school, if they dress the part and are really clever, most people won't check up on it. The buyers just figure some 16s are a little less developed than others.

And just like in school, 17 is better than 16, and so on, but it seems that 16 itself is just out of reach for many manufacturers. Their converters simply don't deliver 16 bits, and the literature that says they do lies.

So, as you go through life looking for Mr. Goodbits, chasing those new 18- and the even newer 20-bit systems, just be real sure you have actually *heard* 16. A lot of people never have.

In case you've forgotten why every bit is so important, remember that every single bit *doubles* the dynamic range. A 16-bit converter has twice the dynamic range of a 15-bit one (or twice the resolution, if you wish). Every little bit counts, and the higher you count, the better you sound.

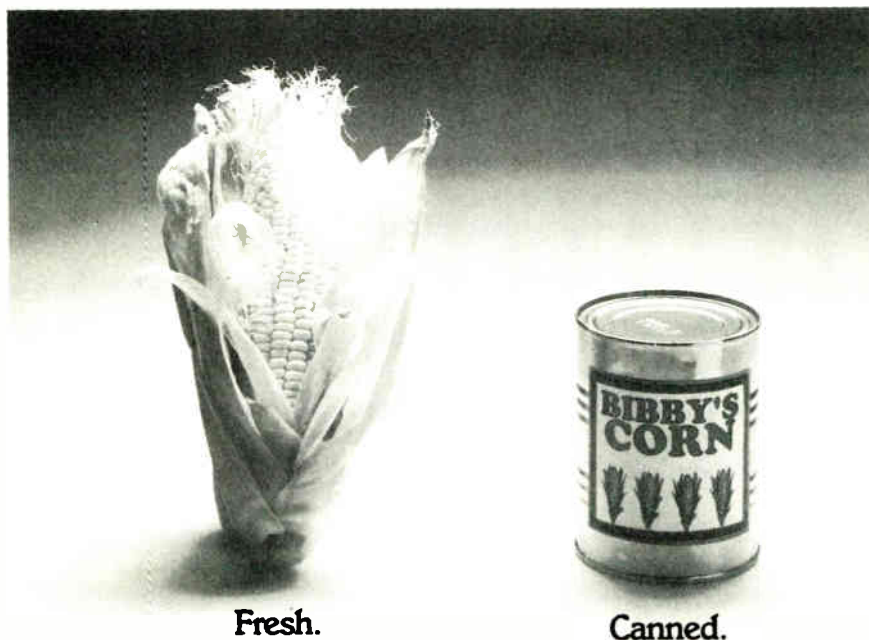
Here are a couple of secret hints:

1) Linearity is just as important as range. Even if a converter does hit 16, it isn't much good if it is severely warped. Did you listen to the severely warped 16-year-olds in school? Could you trust them? Of course not.

Well, if you were smart enough then to not listen to the warped 16s, you should be at least as smart now. If for some reason you have to listen to them (you know, a birthday present or something), at least don't trust them!

2) Some of the new 1-bit converters sound pretty good. Some sound *very* good. Although the early attempts at 1-bit, oversampled, noise-shaped conversion were pretty ratty, they have evolved tremendously in the last two years. At this time, they are clearly my favorites. One of my main reference systems even uses them.

Now that I'm sure you realize why every single bit is so important, I'd like to suggest a few new ways for you to get the analog end of your life quiet enough to actually enjoy 16 bits (or



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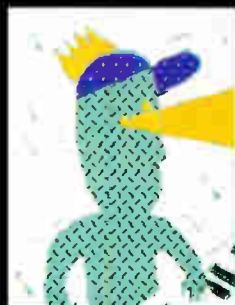
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more) if you actually do ever get there.

These are not the normal things that most people will tell you about, nor are they "plug-and-play" solutions. These will take a bit of searching and a small amount of general shop skill to apply, but the results can be quite dramatic.

After you are assured that all line driver and receiver circuits are optimum impedance and properly terminated, with their CMRs trimmed to the best possible figures; after you have rerouted all analog audio lines as far away as possible from digital data lines, isolated all power, analog and digital grounds, and replaced all main ground straps with multistrand braid, cleaned and tightened all ground connections, and eliminated all ground loops, you are ready.

Oh yes—if you are forced to use unbalanced lines anywhere, use only shielded line. In other words, use line with both the signal hot and the signal ground leads inside a separate shield, and ground *only one end* of this shield. I know, this all sounds obvious, but maybe one or two of you accidentally forgot.

All of your new digital gear does a fine job of spraying your room with a special kind of high-frequency hash that is quite capable of getting into lines that were fine just a few years ago, when 60 Hz and a few weak RF fields were all we had to worry about.

#### Here We Go

1) Here's a bit of very old technology that you might not know about: Mu metal. This stuff has been around for a long time. It is usually sold as a heavy "foil" that can be easily cut with scissors, bent, folded and shaped by hand, and even easily soldered with a conventional small iron. The stuff will rust, and it will surgically slice you open in a second if you are careless. It will also *stop* small electromagnetic fields! Since this year's airborne EM trash will get into anything—even a few centimeters of unshielded wire at the back of multipin connectors—this Mu metal can be very useful. Just form a little box to cover the rear of the connector (or the entire connector in severe cases), tack-solder it closed, tack a single ground lead onto it and become a happy person.

I have been using it for decades to

cover mic preamps and high-gain front ends in test gear. A-to-D converters love this stuff! When it comes to Mu metal and hum, the old adage becomes "use it and lose it."

2) And here's a bit of new technology that you might not know about: ferrite beads. These things can be black holes that you can dump all of your induced noise problems into forever.

Put in impressively unscientific terms, you just make a few loops with your problem signal lead through one of these little pressure-formed ferrite dust torroids, and they suck the noise right out. You don't ground them or anything.

You can use them on power leads, signal leads, data lines and even ground lines! They are easily available in sizes from this capital "O" to larger than a jelly donut.

I never leave home without them. Never. If anything will help you get to that elusive Sweet 16, these will, and they cost pennies.

They say that people will listen to a quiet person. Use these tricks and become one. ■

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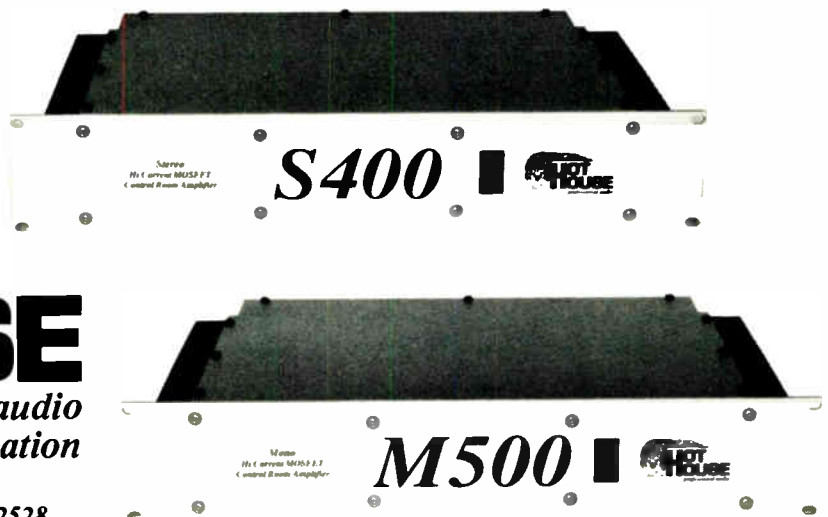
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# NOISE SHAPING

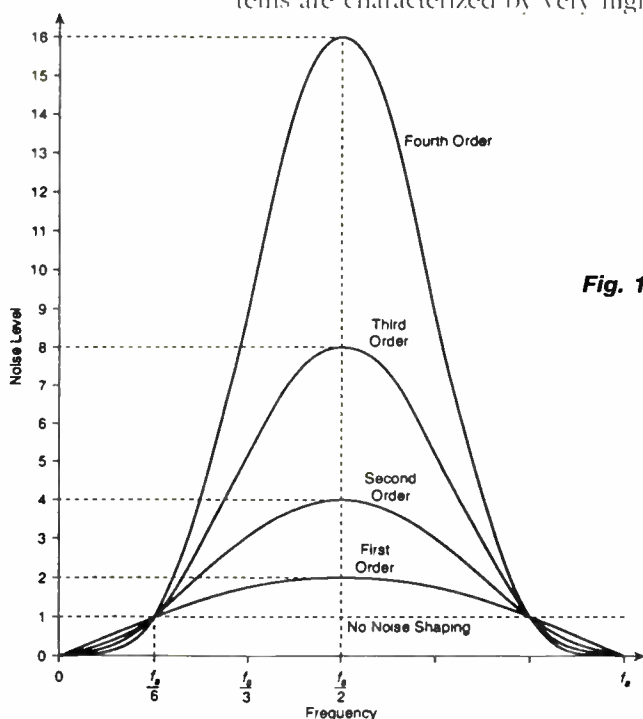
## PART 1

**A**lthough multibit linear PCM converters can be manipulated in a variety of ways to decrease zero-cross error and glitches, and improve low-level linearity, it can be argued that classical PCM architecture has reached the limit of its performance. This belief has stimulated development of low-bit A/D and D/A converters. These systems are characterized by very high

Low-bit conversion is a radical departure from multibit PCM conversion. A PCM converter processes the signal as amplitude steps—a method that is prone to errors. A low-bit converter processes the signal in terms of time, allowing errors to be more tightly controlled. Since the weighted bits of a binary sample are transformed into the low-bit datastream using digital methods, the major sources of non-linearity in conversion are avoided. Unlike multibit converters, the conversion accuracy of low-bit systems can be increased without trimming or regulation. Importantly, not only is the quantization error produced by low-bit converters lower than in multibit converters, the linearity is inherently greater.

On the other hand, considerable processing is required to implement noise shaping and decrease the high in-band noise levels otherwise present in low-bit conversion. A properly designed low-bit converter may be viewed as a wide-band, spectrally weighted noise source in which the noise is more benign than the error produced by multibit converter non-linearity. As its name implies, noise shaping shifts noise away from the audio band, thus lowering audio-band noise. With noise shaping, in-band noise is decreased and out-of-band noise is increased. In this way, a 16-bit signal can be represented with 16-bit performance (or much more) with a single bit.

Noise shaping reduces quantization error and improves differential linearity. The method uses the known characteristics of quantization error to modify the error and decrease its effect. Efficient noise-shaping algorithms use recursion to spread the noise power across a greater spectrum and to shape the noise spectrum. In particular, the method places the error information back into the signal, much



**Fig. 1**

**Fig. 1: Using first and second order noise-shaping algorithms, a series of noise-shaping curves can be generated.**

oversampling rates, conversion of wordlengths of one or a few bits, and noise shaping. Low-bit converters are highly complex and use both digital signal processing and code-to-voltage (current) conversion. Generally, any system with low-bit coding and noise shaping is colloquially known as a 1-bit system. In any case, these converters share the goal of translating non-ideal converter behavior into uncorrelated, benign noise and largely shifting it out of the range of human hearing—thanks to noise-shaping algorithms.

like negative feedback is used to reduce distortion in analog amplifiers. In effect, noise shaping attempts to cancel error by subtracting it from the input signal. Feedback in this discretely sampled system can operate only if a delay element with a duration of a

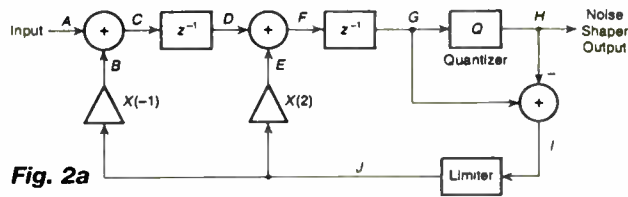


Fig. 2a

sample or more is placed in the feedback loop. In this case, by placing the quantization error signal in a feedback loop, the frequency response of the error signal is altered, shifting much of its energy outside the audio band. Moreover, the noise is shaped by the approximate inverse of the loop transfer function; when a lowpass filter is placed in the loop, the noise spectrum rises with frequency.

A variety of noise-shaping algorithms are employed in low-bit converters. Simply put, the more complex the algorithm, the lower the noise in the audio band. More specifically, higher orders of integration in noise shaping decrease the in-band noise level. The optimal noise-shaping characteristic is based on the sigma-delta formula:

$$NS(z) = [(z-1)/z]^n$$

	A	B	C	D	E	F	G	H	I	J
0.5	-0.4	0.1	0.5	0.8	1.3	-0.6	-1	0.4	0.4	
0.5	-0.3	0.2	0.1	0.6	0.7	1.3	+1	0.3	0.3	
0.5	0.3	0.8	0.2	-0.6	-0.4	0.7	+1	-0.3	-0.3	
0.5	-0.6	-0.1	0.8	1.2	2.0	-0.4	-1	0.6	0.6	
0.5	-1.0	-0.5	-0.1	2.0	1.9	2.0	+1	1.0	1.0	

Fig. 2b

where  $n$  is the order of noise shaping and  $NS$  is the noise-shaping characteristic.

As  $n$  increases, the slope in frequency of the noise-shaping function increases; thus it is more effective in suppressing low-frequency noise. This characteristic can effectively comprise  $n$  cascaded digital differentiators. Although theoretically correct, if such circuits are used at third order or higher, they could suffer operational instability. Thus, in practice, a multi-stage circuit is often employed, as in MASH and similar low-bit converter technologies.

Using first order and higher order noise-shaping algorithms, a series of

noise-shaping curves can be generated (see Fig. 1). Clearly, as higher orders of noise shaping are employed, the in-band noise level is decreased. Dynamic range can be increased through a combination of higher oversampling rates and higher-order noise-shaping filters. As the oversampling rate is increased, the portion of the curve in the audio band is relatively reduced—that is, moved toward 0

Hz. In other words, although the shape of the noise curve remains the same, high oversampling rates relatively decrease in-band noise. The input/output characteristics of a basic noise shaper of  $n$ th order are:

$$Y(z) = X(z) + (1-z^{-1})^n * N(z)$$

where  $Y(z)$  is the noise-shaped output,

$X(z)$  is the input signal,

$N(z)$  is the quantization noise (assumed to be white) and

$n$  is the order of differentiation.

As the order is increased, the noise-shaping characteristic changes and in-band requantization noise is decreased. However, out-of-band noise is greatly increased; this could overly burden subsequent analog filters. A successful noise-shaping circuit thus seeks to balance a high oversampling rate with noise-shaping in order to reduce in-band noise and shift it away from the audible range.

Noise shaping is complicated (it is an example of DSP at its best), but we can get a feel for its workings through Fig. 2a. This circuit performs noise shaping and generates a 1-bit signal for conversion into analog. In particular, this noise shaper consists of two integration (filter) loops to reduce in-band quantization noise. Although it's of different design from a sigma-delta modulator, it performs second-order noise shaping.

Operation of the circuit can be explained by following the values of audio samples during several sample periods, at various points in the noise shaper. These values are shown in Fig. 2b. In this example, a maximum 0dB value is represented by a 1. (In practice, an input must be scaled down in the digital filter to prevent overload.)

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\* Dolby is a registered trademark of Dolby Labs Licensing Corp.

The input in this example is a constant 0.5 (-6 dB); for correct operation, the output of the circuit should thus be a 1-bit output with an average value of 0.5. Arbitrarily, initial values for the contents of the delay registers are selected as  $D = 0.5$  and  $G = -0.6$ . Initially, the input is 0.5, the value at  $G$  is negative, thus the 1-bit output at  $H$  is -1. The output of the quantizer is +1 if its input is positive (Most Significant Bit = 0) and -1 if its input is negative (MSB = 1). The 1-bit code output from the quantizer is simply a sign bit; the remainder of the sample is fed back as a quantization error signal.

This signal is formed by taking  $G-H$ ; this error is fed back into the double integration loops. The value of  $I$  is 0.4 and  $J = -0.6 + 1 = 0.4$ . The value of  $E$  is  $2 * J = 0.8$  and  $C = A - J = 0.1$ . The value of  $F = D + E = 1.3$ . Similarly, values pass through the circuit at each sample time. For example,  $D$  takes the previous value of  $C$ . It can be seen that the values inside the loop are larger than the unit value; in other words, wider data buses are required. Also, if large values are input to the circuit, the limiter would be needed to prevent overloading of the loops. It is the accumulation and delay elements in the feedback loops that enable noise shapers to tailor the noise floor. Ideally, with no input signal, the coder should output only a tone at  $(R \times fs) / 2$ , where  $R$  is the oversampling rate and  $fs$  is the sampling frequency. However, noise-shaping processing also outputs signals at additional frequencies when idling. To overcome this, dither can be added to the input data so the circuit always operates with a changing signal even when the audio signal is zero or DC.

In some ways, the noise shaping used in low-bit converters is a simple application of DSP. However, for successful operation, there are a number of sticky issues that must be addressed. We'll consider those problems next month, along with a look at a bitstream D/A converter.

*[This material is adapted from Advanced Digital Audio, a new book edited and co-authored by Ken Pohlmann, and available from the Mix Bookshelf.—ed.]* ■

*Ken Pohlmann is a professor of music and director of Music Engineering at the University of Miami.*

## Patrick Leonard

### DEMANDS

# DOLBY SR



Alan Siffen

**“With Dolby SR, the music comes back the way I’m used to hearing it, but without the noise.”**

**Occupation** Producer, keyboardist, songwriter.

**Recent credits** Produced and/or co-wrote albums for Madonna, Julian Lennon, Bryan Ferry and many others. Composed film scores including “At Close Range”, “Nothing in Common”, and “Nameless” (due in early ’91). And recently released “Toy Matinee”, his own band project.

**On what he does** “I like it all, I have to do it all. I feel a need to challenge myself in areas I haven’t entered before.”

**On his technique** “I find the air and space around the principal elements in a recording are becoming more important to me. The music becomes more centered, with less need for effects and layering.”

**On Dolby SR** “I prefer and am accustomed to recording on analog tape. But I don’t like tape noise—who does? Dolby SR assures a quiet, transparent recording.”



*“Toy Matinee” (Reprise Records)  
recorded and mixed  
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*The 7110 combines the smooth predictable RMS style performance of the LA-4 with the precise automatic peak control of the 1176LN.*

threshold, attack, release time and output level—the 7110 automatically rides the gain with split second response.

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by Mel Lambert

# CONSOLE DESIGN

## CONSTANT EVOLUTION AND ENHANCEMENT

It's hardly surprising that our industry has witnessed more changes during the last half-decade than in the past 50 years. Audio technology has been developing by leaps and bounds. Today, our control rooms are equipped with recording and production hardware that is astonishing in its complexity, sonic quality and operational flexibility.

Nowhere have these developments been more dramatic than in console design. Given their central role in coordinating and organizing practically every task that takes place within the control room, modern consoles are indeed extremely sophisticated. During the past 20 years, we have seen a rapid evolution in both size and complexity; today their form and function pretty much define the types of sessions that can be handled by a facility.

In the early days, recording boards were derived from simple broadcast consoles, with rotary faders and simple mono routing. As more signal processing became necessary—including equalization and compression—it was added using an outboard patch bay. Complex routing was then handled on the same patch bay or, on more sophisticated designs, via a matrix of pushbuttons or rotary switches.

The advent of multitrack recording complicated life in the control room. With eight, then 16, followed by 24/32 available tape tracks, the number of input/output permutations rose geometrically. Designs evolved rapidly from the first split layouts—input/routing modules to the left, for example, and the tape return/monitor section to the right—which required a great deal of real estate but were simple to operate. To overcome the space problem (and also to allow more functionality to be coordinated from

the central “sweet spot”), in-line designs soon evolved, with input, multi-track routing and monitoring functions implemented from each channel module. A central communications- and tape machine-control section took care of the primary system functions.

As microprocessors became more affordable, snapshot/dynamic fader automation and recall entered our lives, allowing complex mixes to be developed, stored and edited as the session progressed. Automation of outboard signal processors via MIDI and

**The  
inside of a  
modern  
multitrack  
console is a  
relatively  
hostile  
environment.**

other serial-control protocols also became viable.

Both split and in-line designs suffer from major drawbacks, however. Not only do they take up a great deal of space in the control room—often compromising the acoustic design and monitor-system response—but their basic electronic layout also means that “function follows form.” In other words, if the engineer needs to route a signal through the mic preamplifier to the EQ section and then to a group or

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## JUXTAPOSITIONS

effects send—and simultaneously to the channel fader—then internal busing needs to be provided, with dedicated switches to perform each assignment. Also, because the signal connected to each input channel may need to be equalized (or, on some designs, processed through a dynamics section), individual controls need to be provided for each channel strip.

The bottom line is easy to understand. The majority of contemporary recording and production consoles provide a great deal of blindingly elegant mixing and signal processing power, but at the cost of functional simplicity and user convenience. And as more and more studios acknowledge that to survive in today's competitive business they need to diversify into other audio activities, the ability to handle a variety of sessions only adds to the complexity.

There is one new design approach that, to me at least, offers a great deal of creative potential. By removing the audio signals entirely from the control surface, a designer is free to lay out the various level-adjust, crosspoint switching and system controls in a more ergonomically sensible format. A relatively simple serial connection between the computer-scanned control surface and separate audio racks carries the various gain setting and switching information (plus machine-control and other functions, if appropriate). All static and dynamic mix, EQ and assignment data can be held within the control surface's onboard memory, or offloaded to a separate PC for permanent hard disk storage.

Within the separate audio racks, which can be located anywhere in a multiroom facility, various digitally controlled analog gain and switching elements take care of the myriad functions necessary during a session. Because each signal path can be kept reasonably short—maybe no more than a couple of feet from mic input to stereo master outputs—one obvious benefit to be gained from such a design is enhanced signal quality. The inside of a modern multitrack console is a relatively hostile environment. Digital switching signals, unless carefully screened and isolated, can bleed into the audio side of things, while DC power rails and long cable runs to and from the patch bays—and between modules—can result in increased

crosstalk and grounding problems.

In addition, the recall of every level, EQ, routing and control function opens the door for full dynamic automation against time code, plus instant reset of all primary input/output and monitoring assignments. Now, setting up a console for, let's say, a voice-over session in the morning, followed by a sweetening date in the afternoon, followed by a tracking date in the evening, is simply a matter of recalling the appropriate data from hard disk (or another medium) and loading it into the control surface. In particular, the ability to recall mic/line input gains can streamline the setting up of relative levels prior to a session.

Functional assignability is another advance that comes with the territory. A digitally controlled console *could* be run with just a single fader or knob, which would be remapped to control the appropriate levels or other functions. In the real world, however, it's pretty obvious that such a design, while simple in hardware terms, would be extremely difficult and slow to operate.

As we evolve from traditional to assignable designs, I suggest that the first essays into the subject will offer duplicate controls for channel-level, auxiliary sends and monitors—to provide simultaneous access to these important functions—while input/output routing, EQ and dynamics (where provided) might be handled by one or two assignable panels. After all, multitrack assignments are something we set up once at the beginning of a session, while EQ adjustments are normally made on no more than two signal sources at a time; recalling the appropriate channel, output or monitor channel can be done quickly via a simple "interrogate/adjust" button.

Digitally controlled designs are destined to be unveiled by an increasing number of console manufacturers. It behooves all of us to get up to speed as soon as possible with the sonic and operational advantages offered by such a dramatic advance in state-of-the-art recording and production technology. ■

*Drawing upon over 15 years of active experience with all dimensions of professional audio on both sides of the Atlantic, Mel Lambert now heads up Media&Marketing, a high-tech consulting and marketing service for pro audio firms and facilities.*



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# RECESSION

Blahs

**H**onestly, we want to be optimists. When the government made its predictions for the second quarter of 1991 and told us all that the recession was over, that the GNP and the economy in general were on the upswing, we wanted to believe it—even though a lot of what we'd been hearing from studios, manufacturers and retailers didn't exactly jibe with what President Bush's economists were saying. Certainly, releasing optimistic forecasts as a way of boosting confidence in the economy and stimulating growth is nothing new. But at some point the cold, hard truth always emerges, and in this case it was the late August announcement that the GNP had actually gone down, meaning the recession is not over. Surely you didn't think it was just *your* business that was hurting.

There is the odd studio here and manufacturer there that is actually *thriving* right now, but they are the exception, not the rule, and most of the rest of our industry is just holding on tight trying to weather the economic storm. *Mix* was interested in finding out how recording studios in

the heartland, the Midwest, are faring in these tough economic times, so we asked an assortment of studio owners and managers what their facilities have done to combat the recession blahs. Their answers form a mosaic that depicts a bleak picture of the current climate but also shows a number of gutsy, creative solutions some of these businesses have employed.

Fortunately for everyone, we hear the next quarter is going to be great. Just ask the government.

—BJ

**N**ORTH **C**ENTRAL **S**TUDIOS

LOOK FOR **C**REATIVE **S**OLUTIONS

TO THE **B**USINESS' **F**INANCIAL **W**OES

## Sweetwater Sound

Fort Wayne, Indiana

### Chuck Surack

Because of the success of our retail end, the studio has come along with it. Friday [September 6] we're moving into a brand-new facility, built from the ground floor up—5,000 square feet. We are the only commercial studio in the market right now—Fort Wayne's about 200,000 people. We've been doing less and less band stuff for the last 18 months and really been working hard on the corporate scene. In our new facility, we'll be running 20 hours a day, and we'll hire another engineer or two to do night-time, weekend-type sessions. Bands at night.

The control room is huge in the new facility—20-foot ceilings. The room is 24 by 30. We're putting in a Mac-based, desktop video room alongside it, with Video Toaster, online this fall. It's not that I want to be in the video business, but a lot of my corporate A/V clients are looking to do in-house projects that we're doing audio for already. The whole facility, from top to bottom is wired for MIDI—with three MIDI Time Pieces—to get MIDI from the studio to the control room to the machine room. We wired it to kill. Very sophisticated



**Sweetwater Sound's "old" facility in Fort Wayne, Indiana.**

credible thing; watching everything become MIDI-ized over the last couple of years.

If I don't sell customers recording studio time now, hopefully our retail division is selling them recording equipment—software, MIDI interfaces, Fostex or Tascam recorders. I've seen many of my clients buy home or corporate setups, and in most cases they come in and finish. It trains them to appreciate better audio. We do a lot of transfers. We had a patch bay wired specifically to get -10 kind of stuff into our console. Lots of customers with 8- and 16-track want to finish on 24 or interlock with SMPTE, whatever.

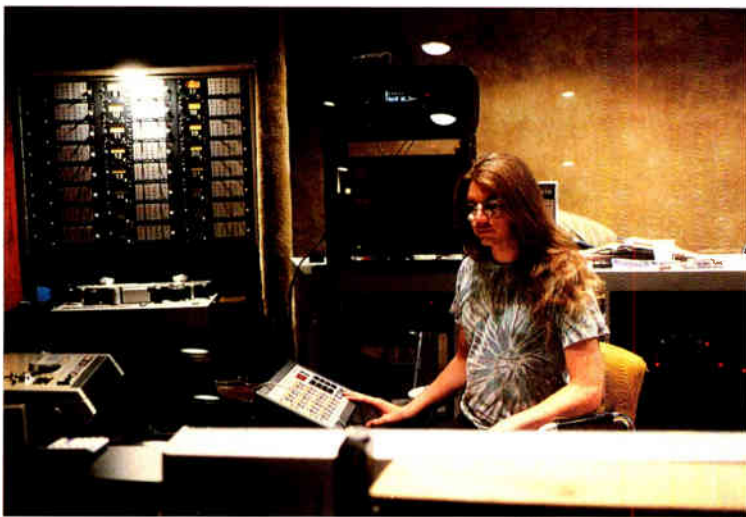


PHOTO: JENNIFER BAYNES

Northern Telecom, digital-based phone system, and Ethernet in the walls for all the computers and networking. It's interesting how the audio, MIDI, telephones and communications stuff is all tying together. I haven't seen any facility yet, in a secondary market, go to this level. That's the most in-

**Engineer Paul Mahern of September Recording, Indianapolis.**

## September Recording

Indianapolis

### Dean Lozow

In terms of the recording climate for music for bands—for CDs or demos—I'd say, "What recession?" Whatever the Hoosier frame of mind is, it's so clearly isolated from everything else here in the Midwest that a lot of things have reached maturity in almost complete isolation: it's grown up on its own. I see no cross-pollination going on with Chicago or Louisville. I'm beginning to think it's a good thing, because a lot of the good music out of here is not in any way homogenized. What comes out of here is a very strange, Midwesternized, eclectic pop music.

We couldn't be this busy if we were just based out of Indianapolis. We bring people down from Michigan, from Iowa, from Ohio and Pennsylvania, and from Tennessee. If you're not going to work

## **The Disc Ltd.**

*Detroit, Michigan*

### **Greg Reilly**

Up until a few weeks ago we were the busiest we've ever been, but unfortunately that's at least partly because a couple of other studios in the area went down. I don't think there's any question that people are being conservative in their spending right now.

The main reason we've been able to stay busy is we opened a new 24-track room in March, and it's turned out to be very successful. It's a real mid-priced to low-priced studio with a DDA AMR-12 console, which everyone seems to like a whole lot. The room is fairly small and oriented around MIDI—we do a ton of rap stuff in there. What we've found, too, is that some of the rockers we get in here will cut the drums and basics in our "A" room, which has an SSL console and is a real good rock room, but then do vocals and other things in the "B" room, where the rates are lower. Having the second studio has meant more different kinds of people can work here, and the profit margin is actually much higher in "B" than it is in "A."

The other thing that's helped us weather the storm is that we have the Recording Institute of Detroit in here, so that provides us with another steady source of income.

## **Sound Recorders**

*Kansas City, Missouri*

### **Ron Dabbs**

Frankly, the recording business climate in Kansas City is down from where it's been most of the last ten years. And I think the main reason for that is that the advertising business is down.

Because of that, we've tried to diversify a little bit and not count quite so much on advertising business. We've gotten more into internal projects—we have partnerships with a couple of production companies, and that's helped us go after other kinds of projects, such as talking books and seminars, both of which are growing areas.

One thing we did awhile back that has helped us during this period is we built a new facility in Omaha. It has an Otari digital 32-track and an MCI JH-636, which has been an excellent console for us. American Gramophone is in Omaha, and that's brought us some business there—Chip Davis [head of that label] was a staff writer for us at one point and is a longtime friend and client. So our Omaha studio has done well for us.

The other thing we're exploring here is creating our own music library that we'll sell. With more and more small studios coming up based around digital workstations, and not that geared to music recording, there's going to be a greater need for production music; so that could be a help to us down the road.

## **The Recording Workshop**

*Chillicothe, Ohio*

### **Brian Stritenberger**

[The Recording Workshop recently acquired Sound Tools.] If someone wants to do a client mix, and they know you have the ability to mix to DAT, and then you have the ability to edit that DAT in-house, that definitely is a plus. So we're able to offer the clients DAT mastering and any archival services that they might want—old master tapes that they want to archive to DAT, for example.

This past year we've also done [post for] about a half-dozen films, mainly independents, straight to video release—the idea being that the independent films, while the budgets may be lower in some areas, can still get an extremely high-quality soundtrack. While Ohio is not a major film center, some of that work is starting to come to us. Our hope is to cater to even more of the independent film folks. In one of

the studios, we have a full Foley stage, and in this area that's pretty unusual.

The recording school is the main focus of what we do, and [part of the school's efforts] is to keep tabs on the industry. When we see the Sound Tools system showing up every place else, we know that we need to teach that, and we also gain the benefit of being able to supply that service in our area. So our growth within both the industry and education go hand in hand.

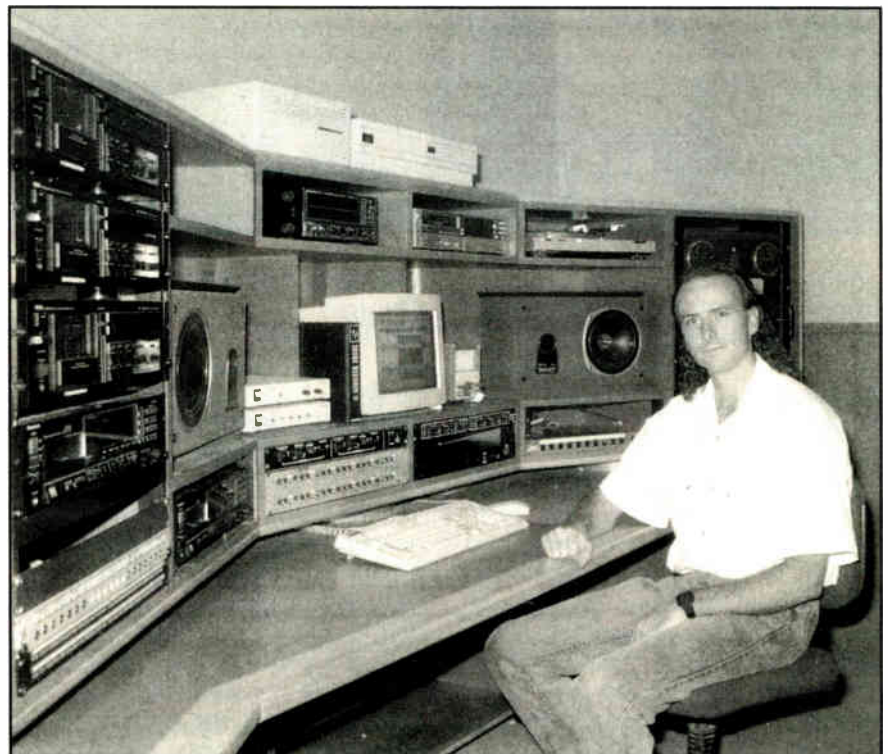
## **Joseph Productions**

*Southfield, Michigan*

### **Linda Kemp**

In general, we've been doing fairly well here. We have a few different parts to our business. We have a production that does shows, and that's been doing very well for us. We also do a lot of post for commercials, and that's been fairly slow recently. I'm not sure I can blame that on the economy, though. We've had some personnel changes—like we just got a new mixer—and it's taken us awhile to adjust.

One thing we did about a year ago that's definitely helped us through this period is we got an NED PostPro. That's helped quite a bit in our post business, and we're very happy with it. It looks like we're going to have a pretty good fall, so, basically, I'm optimistic about how things are going.



**Studio manager Brian Stritenberger in Studio B, The Recording Workshop, Chillicothe, Ohio.**

## Seagrape Recording

Chicago

### Mike Konopka

It's survival now because the people who pay our bills—the record companies, the artists and so forth—look at recording as not necessarily an essential service. It's not like food, shelter, water. When you look at Ampex, a tape manufacturer, laying off 250 people from their plant, it's not a good sign. It doesn't just reflect on Chicago.

The jingle scene is doing very badly. What's happening is the downtown, so-called jingle studios are now competing with music. You can get SSL time

for \$35 an hour in this town. We have to put the emphasis on people, on skills, on track record—not just on rates, not just on gear or gizmos.

I've been doing an MCA project all summer, so I've been lucky—the artist is Mr. Fingers. We also just finished the *Pretty Things* album, a group from England. Normally we'll have a couple of album projects going, but I also have a lot of independent things going, too, and that is what's been cut back. If it wasn't for these big projects, I'd really be struggling.

You look at the New York/L.A. connection. We're making a London/

Chicago connection. What we do here in Chicago goes over real big in London. It's house-flavored, but now the house thing is pretty much dead in Chicago. You know when Madonna is using the house sound it's gotta be dead. It's a little more R&B, a little more rap, fusion, new soul sound that's big in England. But they love the Chicago sound. The remix business is steady.

## Streeterville

Chicago

### Jimmy Dolan

Recession is part of the recipe that shows its head in different ways. I think what we are seeing, and what we've been seeing, is different than other times in the industry. It's multiple-level changes and developments. You've got economic conditions, technological conditions and, depending on the type of work you're talking about, you've got people changes. These things individually speak to dynamics of change, and then they interrelate to themselves. When you have technological and people changes, for example, you get techniques changing. Over the last 10 to 20 years, we've seen an influx of talented people in the ad agencies who are much more computer-literate.

I think there was an unwritten rule in the advertising business that said they could support any cost—that cost isn't a factor. I don't think that's true anymore. I think the technological advances in the production and post-production market for commercials speaks to the ability to do more for less money. That sort of goes against the whole flow of, "Well, if you're going to be serious and do it right, then it's going to cost you an arm and a leg." That's probably the biggest development we've seen in the commercial market.

In general, whether it's using old tracks or lower budgets, there's more creativity being used from the agency side in how to make things last longer. I think we've been in a downward spiral in terms of the number of spots being created for a few years now. I don't think that's a new scenario; it's just affecting certain people now.

There's definitely been a major effect in advertising music with work being done at home or office facilities—again, that's been going on for a few years now. If anything, we might be seeing a certain clearing of the air with that. As agencies have spent more time in office facilities, they know what work they want in those sorts of envi-

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ronments and what work they don't want in those sorts of environments.

The evaluation process is constant. You've got to make sure that what you decided two months ago is still valid today. To me, the "tough times" come out of trying to apply older thoughts and more traditional ways of approaching things, rather than looking for the new answers.

### Creative Communications Companies

*Sioux Falls, South Dakota*

#### Bill Prines

We've noticed that things like bank credit are getting tighter. Ordinarily, we would go to the bank and there wouldn't be a problem [to get a loan]. Over the past year or so, it's gotten increasingly tougher to receive loans. And I've noticed that they're cutting out a lot of things that they would have lent on before. Unfortunately, most of our equipment falls into that category. It's especially tough in this part of the country, where they're not real sure about what its value is—if you were talking about a loan for a tractor, they might be less hesitant.

We've moved into diversification—

**"People are being conservative in their spending right now." —Michael Henszey and Greg Reilly**

from straight recording projects into tape duplication. We've added 50 real-time decks, so that 35% to 40% of our business now is tape duplication.

Since February, we've seen a steady increase in pretty much everything. We've got a fertile climate in this area of the state. We're also a big medical center, and that brings in business. This region's climate has been supportive of business growth—there's no corporate income tax, the cost of labor is less than surrounding states and there's lots of room as far as putting in industry. Citibank's credit card branch moved in recently.

### Canton Music Center

*Canton, Ohio*

#### Joe Rogers

Most people don't have a lot of income to deal with today. I think that's where our studio capitalizes, because it was built on the premise of people not having a ton of cash to work with. In

one aspect, the recession is hurting us; in another, that's what we grew from.

We try to stay as versatile as possible, whether it's duping, overdubbing, doing commercial jingles, sequencing or even remixing the soundtrack to a cartoon.

I've recorded in most of the rooms in the area, and I think our product is at least as good as the studios that charge \$60 to \$80 an hour. Our base rate is \$35 an hour, and we come down with a bulk package. I think we're able to do that because the people who engineer in the studio also work in the music store. The studio's built right into the music store, and that serves several facets: It serves as a demo space, so people come in and actually see the equipment in operation—and sales occur from that. Plus, the studio being here generates more traffic for the store, so the studio is a feature of the store itself. It's not something that is forced to stand on its own. ■

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"Recording basic tracks, overdubbing sessions and final mixdowns are all handled with ease...a great deal of signal flow logic has been used in laying out the front of this console...usually recording/PA machines don't exhibit the kinds of signal-to-noise and distortion figures that I measured for this console."

—Len Feldman  
MX 88 test review.

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# TOP OF THE LINE RECORDING CONSOLES

by George Petersen

**Choosing a console for your facility is no easy task.**

There are dozens of factors to consider: Analog or digital? In-line or split monitoring? Eight, 16, 24 or 48 buses? MIDI or SMPTE control? Traditional or virtual? Long or short frame? Decked-out or short-loaded? VCA or moving faders? Discrete or hybrid? VU or LED meters? Stereo inputs? Onboard or external patch bay?



Yet decisions concerning technical points such as those listed above are fairly simple compared with the myriad logistical, financial and business possibilities. First and foremost on everyone's mind is the issue of affordability. Will the purchase bring in enough revenue and/or new clients to justify the cost? The answer requires some real soul searching, some serious market evaluations and perhaps a few sessions with a CPA.

Another issue is the console manufacturer itself, since a major console purchase is in many ways an investment in that company. Will the manufacturer be in business in three to five years? What about the availability of parts, service (in and out of warranty) and hardware/software updates? Will your staff require training—and if so, what is offered?

Logistical details are often overlooked. How will the

**Kevin Killen at The Looking Glass Studios in Manhattan on their new Solid State Logic SL 4000 G Series console.**

new console affect your control room's acoustics and ergonomic layout? What installation, wiring and AC changes are required? And don't forget the mundane details: What happens when a 22x8x8-foot crate is delivered to the front sidewalk and your facility is on the third floor?

Clearly, selecting the *right* console for your facility is a tough process and—since a console

**Capitol Studios (Hollywood), Studio A. Neve VR60 with Flying Faders. Jeff Minnich, director of studio operations at the board.**



PHOTO: TED HOROWITZ

is usually the most costly piece of gear in any studio—certainly an important decision for any studio owner. With that in mind, we present this look at top-of-the-line designs in multitrack music recording consoles from over two dozen manufacturers, listed alphabetically and representing a wide range of selections to fit nearly any

**Focusrite Studio Console, Studio Jive, Tokyo.**



budget. While the information presented in this article could not possibly address all aspects of console selection, it offers a first step in the process, and addresses are provided so that you can contact the manufacturers directly for more information. Due to the extremely wide range of versions available, pricing is omitted on some of the models.

### Allen & Heath Sigma

Sigma is a series of in-line consoles available in 32x24, 44x24 and 56x24 sizes, although each board is custom-configured to user requirements. Each I/O module can act as a twin-input device, and other features include 5-band EQ (switchable between the large and small fader), fader reverse, eight aux sends and 24-channel bar graph metering. Also standard is Allen & Heath's V4 mute automation, offering storage of mute events within the console

**96-Input Euphonix CSII at Dog House Studio, Tokyo.**

memory for later replay. Mute data can be manually recalled from 32 internal snapshot memories with onboard editing; events can also be controlled or edited via an external MIDI controller or sequencer.

The Sigma concept also allows users to add modules, expand the console frame and retrofit fader automation systems on-site at a later date. Sigma pricing begins at \$32,900 for a 32x24 version; options include patch bays, producer's desk and 12-input frame expanders.

Allen & Heath, distributed by DOD, 5639 South Riley Lane, Salt Lake City, UT 84107; (801) 268-8400.

### Amek APC1000

The APC1000 is an "all-input" design, with all identical, full-function input channels, rather than in-line or split monitoring. Analog electronics are under digital control: Central keyboard assignments of channel switching functions allow multiple console routing and switching setups to be recalled as Dynamic Reset snapshots or in Synchronous Reset code. A recall system stores the positioning of rotary controls.

The console is available in 32-, 48-, 64-, and 80-input chassis, with larger frames on a custom basis. Because the individual input modules are just over 30mm wide, 48 channels will fit into a width of six feet. Each input module features 4-band parametric EQ and four mono (assignable over eight buses) or four mono/two stereo aux sends. Additionally, the 48 console buses can be routed to serve as additional aux sends, and under Synchronous





**Trident Vector 432 at Studio Sound Recorders in North Hollywood, CA.**

Reset control the buses can function as a large signal patching matrix to external devices.

Pricing for a basic 40-input version with Diskmix VCA automation is \$309,371, including 52 plasma meters and four VU meters. Among the available options are GML moving fader automation and dynamics control modules.

Amek/TAC U.S., 10815 Burbank Blvd., North Hollywood, CA 91601; (818) 508-9788.

### AMS Logic 2

An all-digital design, Logic 2 features a multi-layer design where each channel strip controls four independent mono or stereo signal paths. A 28-fader console can handle 112 fully equipped, dynamically automated signal paths from a control surface less than two meters wide; a 63-fader version controls up to 252 channels. Moving faders are standard, as are the Logicator "moving" rotary controls that indicate settings at a glance, while extensive alphanumeric displays show exact values.

Other standard features include 4-band EQ, onboard compression/limiting/expansion/gating, external machine control, up to 48 fully automated aux sends, and user-configurable matrix routing of inputs and outputs to any point in the console.

AMS Industries Inc., 7 Parklawn Drive, Bethel CT 06801; (203) 730-8549.

### API Discrete Series

Featured on the cover of this month's *Mix* is the latest incarnation of API's Discrete Series console, which now offers Touch Reset, a computerized touch screen system that automatically resets and stores all console switches. Numerous configurations and versions of this in-line mixer

are available, up to 48 buses and 96 channels, providing 192 inputs. A few of the standard amenities include ten aux sends, 12 aux returns, three stereo buses, several equalization options and an advanced design employing API 2520 and 2510 discrete op amps.

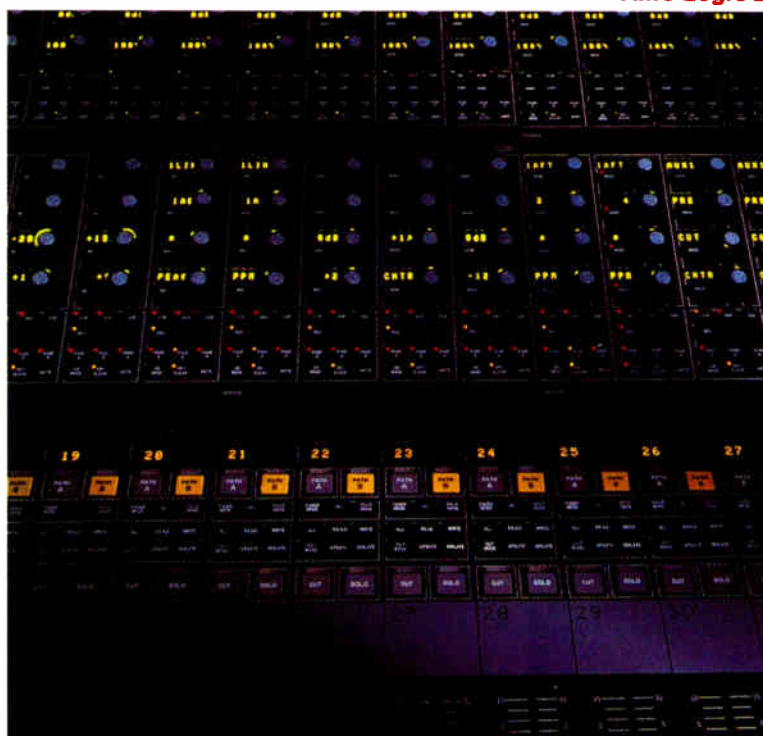
The API Discrete Series Touch Reset consoles are priced from \$190,000 for a 32-channel version. Options include GML moving fader automation and, according to a company representative, Neve Flying Faders can also be fitted.

API Audio Products, 7951 Twist Lane, Springfield, VA 22153; (703) 455-8188.

### Biamp Legend

The Legend is an in-line design available in three frame sizes, from eight to 32 inputs and four to 24 group outputs, and can be ordered in short-loaded versions. Features include discrete, transistorized preamp stages, 3-band sweepable EQ with highpass filter, four aux sends, 12-segment LED metering on all inputs/outputs, tape

### AMS Logic 2



return monitoring on each input channel, and balanced group outputs and tape returns. The external power supply and in-line design make for a compact mixer: a 20-input x 16-group-output model is just over three feet wide.

The top-of-the-line Legend 3224 (32 inputs, 24 group outputs) retails at \$15,999.

Biamp Systems, 14270 N.W. Science Park, Portland, OR 97229; (503) 641-7287.

### CAD Maxcon

The Maxcon "Multiple Application Mixing System" is an



**Otari Series 54**

in-line design, available in six frame styles, from compact rack-mount to 144-input (288 channels in mix) mainframe. Its servo circuitry eliminates coupling capacitors in the signal path, resulting in low distortion and broad bandwidth (3 Hz-150 kHz). A special global function allows single-button switching between channel and tape monitoring. Each channel features 3-band, constant-Q sweepable EQ, six mono aux sends, stereo aux I/O tape return and switchable LED ladder. Options include patch bays and CAD MegaMix automation.

Unveiled at last month's AES was Icon, Conneaut Audio Devices' new, high-end console design, but full details were unavailable at press time.

CAD/CTI Audio Inc., Box 120, Conneaut, OH 44030-0120; (216) 593-1111.

**Carvin MX-2488**

As the name implies, Carvin's MX-1688 and MX-2488 are 8-bus consoles available in 16- and 24-channel versions. Designed for 8-track recording applications, the boards feature 3-band sweepable EQ, four aux sends, two effects returns, balanced outputs on the eight subgroup outputs and 100mm faders throughout, including two on the control room level.

The 24-channel MX-2488 is available at a direct price of \$3,995, and can be purchased through the factory or at the company's showrooms in Santa Ana and Hollywood, California.

Carvin, 1155 Industrial Avenue, Escondido, CA 92025; (619) 747-1710 or (800) 854-2235.

**D&R Avalon**

Avalon, from Netherlands-based manufacturer D&R, is a 32-bus, in-line console design featuring three mute groups, a programmable solo system and an automation-ready, separate fader section. The console is available in two standard frame sizes—36 and 54 inputs, with larger frames on a custom-order basis. Standard amenities include internal or external patch bays, phase meter, eight aux sends and 4-band parametric EQ with variable Q on the mid bands. Each EQ band can be switched to operate with either the monitor or channel signals.

New for the Avalon this year is an optional module with two identical stereo return sections—each equipped with fader, 3-band EQ, mute grouping and width control—usable as stereo inputs or effects returns. Other options for the Avalon are higher-resolution LED meters or analog VU meters, Penny & Giles faders, and several automation packages: moving fader, Optifile or C-Mix. A standard 36x32 Avalon (80 usable inputs) has a factory-direct pricing of \$74,745.

D&R Electronics, Route 3, Box 184-A, Montgomery, TX 77356; (409) 588-3411.

**DDA Profile**

Designed for 24-bus recording applications is the DDA Profile. This compact (2.4 meters for 56 channels with patch bay) board uses a "Splint" design that combines aspects of both the split and in-line formats. Features include 4-band sweepable EQ, ten aux sends and aux return routing on every module, providing up to 136 inputs in remix.

Options include PC-based VCA automation for control of faders, mutes and eight switches on each channel, moving fader automation (with MIDI and tape machine control), and VU or bar-graph metering. A 56-channel Profile is \$75,000; the same console with moving faders is \$105,000.

DDA is distributed by Klark-Teknik Electronics, 200 Sea Lane, Farmingdale, NY 11735; (516) 249-3660.



**Tascam M-700**

# A·fa·na·si·eff (ə fə nə' sē ef), Walter

*v.i.p.* [Brazilian-born; Russian/American]  
**1. songwriter:** "Don't Make Me Wait For Love," "License to Kill," "Going Home," etc. **2. producer:** Mariah Carey, Michael Bolton, Peabo Bryson, etc. **3. relies on Peavey AMR Production Series™ 2400 Console** for production excellence and success **4. [Colloq.] mega-producer** —*adj.* state of the art; highly regarded; definitive.



The Production Series 2400™ Console features 4-band full sweepable EQ on each Input, 8 Aux-Efx Send>Returns, 92 Inputs with EQ available for mix-down, on-board MIDI command center for control of outboard devices, plus low-noise design and many additional production facilities.

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## Amek APC1000

### Focusrite Studio Console

Now distributed in the U.S. by George Massenburg Labs is the Focusrite Studio Console. Unique in many respects—including its curved design with castellated meter bridges—the console uses an open architecture combining the advantages of both split and in-line designs. The Studio Console can be configured with up to 96 channels, with 24 or 48 multitrack buses. Standard amenities include Rupert Neve-designed ISA 110 mic preamp/equalizer modules, 16 aux sends and a logic routing system offering comprehensive control over all console functions.

The console frame consists of interconnecting bays (which weigh



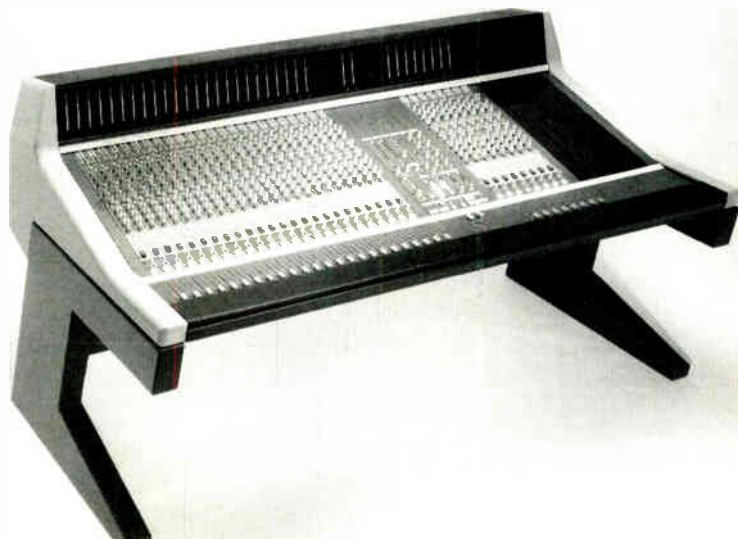
### Euphonix CSII

A second-generation design with upgraded audio performance, the Crescendo System II is a digitally controlled analog console offering SMPTE-based Dynamic Mix Automation™ of *all* mixer functions, such as faders, mutes, EQ, mic preamps and signal routing (even headphone and talkback levels). Snapshot Recall™ configures an entire console setup, which can be recalled in less than 30 milliseconds, stored to high-speed RAM and archived to disk. The system consists of a compact controller (56 faders, 56 mic inputs and 112 line inputs in a space under 4.5-foot wide) that connects to a main-frame audio rack, locatable up to 50 feet away.

Each input module can be mono or stereo, providing two LED bar graph meters with switchable characteristics, two mic/line preamps, upper and lower 100mm faders, four aux sends (assignable to eight aux buses), and two programmable 4-band equalizers. In addition to displaying track sheets and console

setup data, MixView™ software stores and displays EQ curves on a high-res color monitor; favorite settings can be recalled at any time.

The CSII pricing ranges from \$100,000 to \$300,000.



Euphonix, 220 Portage Avenue, Palo Alto, CA 94306; (415) 855-0400.

**D&R  
Avalon**

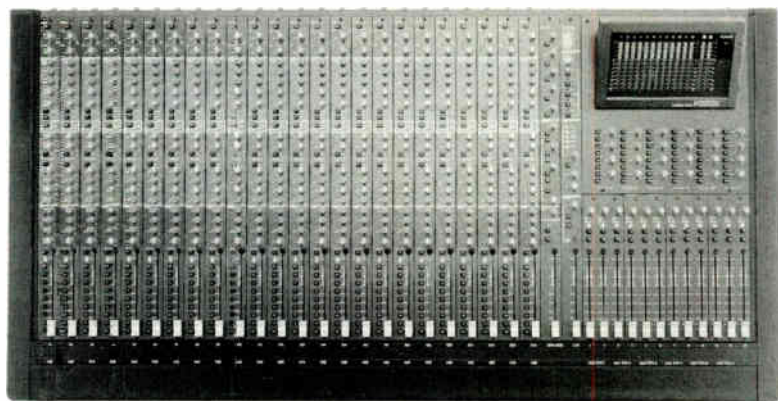
under 60 kg each and pass through a standard door for shipping); these bays attach to two steel rails that run the entire length of the console. A Mosses & Mitchell patch bay is standard; optional are dynamics modules, stereo inputs, PPM metering and a variety of automation packages, including GML moving faders.

GML, 7821 Burnet Avenue, Van Nuys, CA 91405; (818) 781-1022.

### Fostex 2412

Another unveiling at last month's AES was the Fostex 2412, a 24x12 console with 24 dual-path (48 channels on remix) line/tape/mic inputs with phantom power, up to two stereo and two mono effects sends, six stereo effects returns and 4-band EQ with

**Fostex 2412**





**Hill  
Concept  
400**

sweepable mid bands. Also standard is fluorescent metering on the subs and stereo buses, and four MIDI-controllable MIDI mute presets. Pricing was unavailable at press time.

Fostex Corp. of America, 15431 Blackburn Ave., Norwalk, CA 90650; (213) 921-1112.

### **Harrison SeriesTenB**

The SeriesTenB is the second generation of Harrison's 100% automated mixing console for music and video/film post-production applications. The design uses digitally controlled analog technology, where audio is handled by proprietary Harrison digitally controlled attenuators. Each input module in this 32-bus console can be configured to control a stereo signal or two mono inputs, each with independent equalization, gate, compressor, panning, level and routing.

The TenB's new Macintosh II-based automation allows the storage and retrieval of all console settings in under two seconds, and features snapshot automation and dynamic automation of all major functions. Other enhancements include a new mix editor with improved mix-merge utilities, and the ability to interface with Harrison's new ARS-9 audio

routing switcher. The ARS-9 is an expandable, automated router that can instantly reconfigure up to 256 inputs and 256 outputs.

The SeriesTen is available in standard frame sizes of up to 80 modules, where each module can function as a stereo input, stereo group or stereo program main output. Penny & Giles motorized faders are standard; options include TT or 1/4-inch electro-mechanical patch bays and the ARS-9 routing system.

Harrison by GLW, 437 Atlas Drive, Nashville, TN 37211; (615) 331-8800.

### **Hill Concept 400**

Available in 8-, 16- or 24-bus versions with up to 56 inputs and either 24- or

48-track monitoring is the Concept 400 Series. Two input modules are available: One has 4-band sweepable EQ, while the "Side Tracker" combines five bands of fixed  $\pm 12$ dB adjustment with one  $+6/-24$ dB control that is sweepable from 50-5k Hz. Twelve aux sends (six controls with A/B switching) are standard; optional are concentric aux controls of all 12 sends. The console includes an auto muting system with two programmable mute groups.

A 36x24 console retails at \$35,460. While Hill does not offer or specify any particular automation, all modules are set up for a VCA grouping option, so the mixer can easily be retrofitted with most popular systems. Other options are Penny & Giles faders and a 320-point TT patch bay.

Distributed in the U.S. by International Music Corp., 1316 E. Lancaster, Ft. Worth, TX 76102; (817) 336-5114.

### **Neotek Elite**

The Neotek Elite is a 26-bus console available in several frame sizes to accommodate 28- to 84-input modules. The board uses neither a split nor an in-line monitoring I/O approach. Each input module is based on two separate audio paths, which can be operated with a single signal split within the two, or used for monitoring applications or to double the input capacity. The audio pathway uses transformerless, hybrid circuitry combining transistors and IC amplifiers, and the master fader buffer is a servoed Class A, all-discrete design.

Elite's features include 4-band equalization, master group muting, 28 40-segment, high-resolution bar graph meters, patch bay and six aux sends (two as a stereo pair). The architecture of the input modules allows the multitrack buses to be used



**TOA ix-9000**



## “...performance that rivals digital, without the expense.”

If you're wrestling with the analog/digital question, these reports from Bill Koepnick, Emmy Award winning Sound Effects Designer, and Jim Hodson, Emmy Award winning Re-recording Mixer, both with *Advantage Audio* in Burbank, California, may help you with the answer.

Jim points out, *“Otari's MTR-100A gives me total flexibility in the audio post environment. From its auto alignment feature and responsive synchronization, to its sonic transparency and built-in Dolby\* noise reduction, the choice is very clear.”*

Bill says, *“We were looking for digital audio quality without the expense associated with going digital. The MTR-100A with its integral Dolby SR/A satisfied all of our criteria.”*

Together, the MTR-100A and Otari's Series 54 audio console deliver the performance, flexibility and sonic clarity that lets *Advantage Audio* and other studios around the world provide their clients with the ultimate audio environment.

The MTR-100A. *Just listen to it.*

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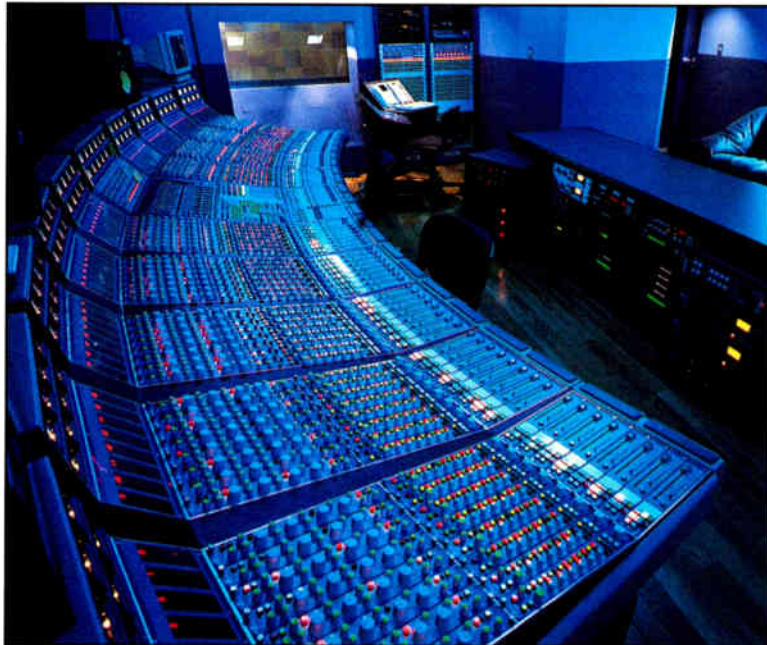


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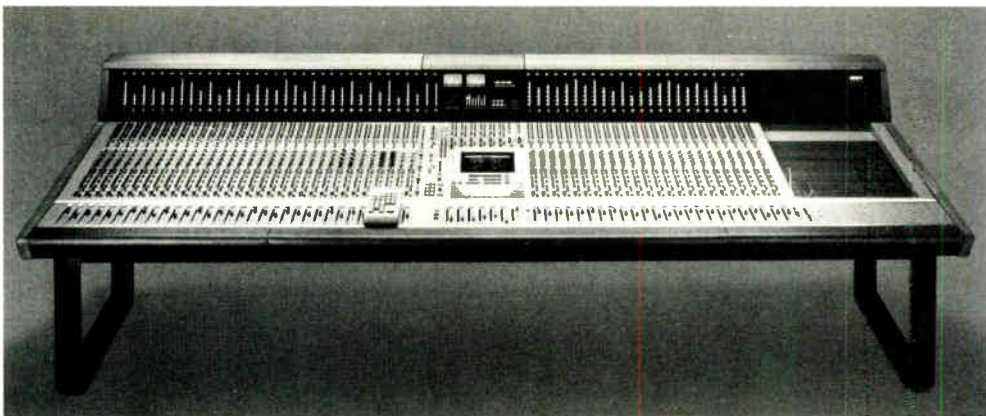
Electric Lady  
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# Focusrite

Technology and Distribution



**Sony MXP-3056**

Total Recall storage of all knob and button positions, onboard dynamics processing and integrated centralized synchronization control of tape transports—while adding new improvements. The input/output modules were re-designed with improved mic preamps and 4-band equalization, while the new G Series Studio Computer

uses a modular design, allowing field expandability/reconfiguring within a single day.

Virtuoso I/O modules can be fitted with a choice of four interchangeable equalizers: 10-band graphic, 4-band frequency selectable (four frequency choices on each band), 3-band precision EQ (fixed Q, 11 frequency detents on each band) and 4-band fully parametric (with continuously variable Q on each band). Four fader types (standard audio, VCA with group masters, Compumix PC-based and micro-processor-based Intelligent Digital Faders) are available. Standard amen-

ities include 60-segment LED bar graph meters, integral TT patch bay and interchangeable mic preamps.

A 36-input Virtuoso retails at \$96,000. Besides various preamp and EQ selections, options include limiter/compressor/expander/gate modules and a producer's desk.

Quad Eight Electronics, 27771 Avenue Hopkins, Valencia, CA 91355; (805) 295-1324.

VCA automation provides increased flexibility, including the ability to store mixes on floppy disks or 20MB removable data carts.

The latest option for G Series automation is Ultimatum (Ultimate Automation), which can operate as a VCA system, moving fader system or a combination of the two. Ultimatum uses existing G Series mix data and offers the ability to update fader moves without complex subgrouping routines. Other G Series options are stereo input channels, VU or plasma bar graph metering, 45 or 90 degree console wings, patch bays and an automated

**Solid State Logic SL 4000-G**

SSL's G Series retains many of the features of its successful E Series predecessor—such as in-line monitoring,

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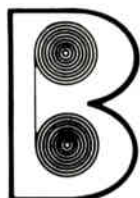
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Maxell XLII-S achieves new highs in Maximum Output Levels, offers wider dynamic range, along with significant reductions in AC Bias Noise and Modulation Noise. This is an all-new Maxell audiotape formulation capable of blowing you away like never before.

We started from scratch, creating



*Smooth Side. Rough Side.  
Maxell dual-surface base-film reduces tape jitter.*

XLII-S from the base-film up. In fact, the base-film is unlike anyone else's and our patent on it is pending.

We call it "dual-surface base-film." One side is smooth, the other rough. The smooth side provides the sound and the rough side provides a stable, non-sticky ride through the tape deck's transport mechanism with the least possible tape jitter.

Excessive tape jitter causes phase deviation which results in echo "shading"

Musically, this would make the violinists in a symphony orchestra sound as though they were strolling around the stage instead of sitting still. You don't want gypsy violinists wandering through your symphony.

The standard magnetic coating



*A powerful reason for trying Maxell XLII-S.*

on nearly all audiotapes today consists of gamma ferric oxide particles.

But standard wasn't what we were shooting for when we developed XLII-S. Instead, we harnessed a higher energy magnetic particle we call Black Magnetite. It has 13% greater magnetic power and is a major contributor to the outstanding MOL of this new tape.

Another is the superior dispersion technique we employ in placing the Black Magnetite particles onto the tape.



# MAXELL'S BLOW-AWAY SOUND.

During manufacture, some tapes are run through a magnetic field and the magnetic particles adhere to the film in a willy-nilly, helter-skelter pattern—similar to the arrangement you'd find on the end of a magnet if you dunked it into a bowl of metal filings.

At Maxell, we use a unique and complex process called "multi-orientation." Simply stated, it allows us to place smaller, Black Magnetite particles onto the tape in greater density, in near perfect alignment. The result is a smoother, more uniform coating which produces less AC Bias Noise.

Finally, there's a newly engineered cassette shell that doesn't merely house the tape. It contributes to the tape's outstanding performance.

Through the use of a new composite material—a blend of ceramic and polymer resins—we created a *high resonance-damping cassette shell*. More rigid and weightier than standard

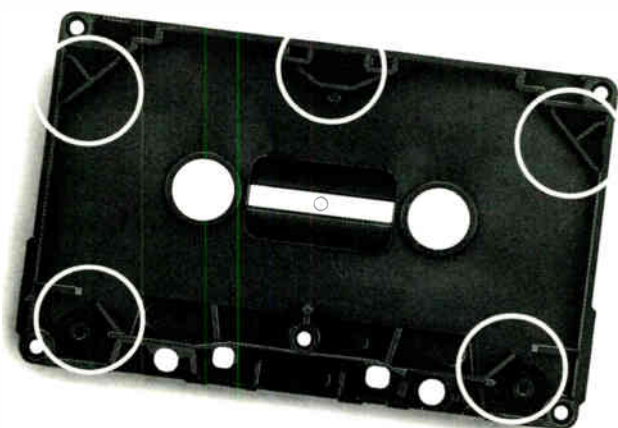
cassettes, it reduces modulation noise and helps maintain phase accuracy. Also, by making the window smaller, we were able to improve the cassette's overall structural integrity, building in five support points instead of the standard three.

All in all, we think you'll find that Maxell XLII-S is the finest High Bias audio cassette available today.

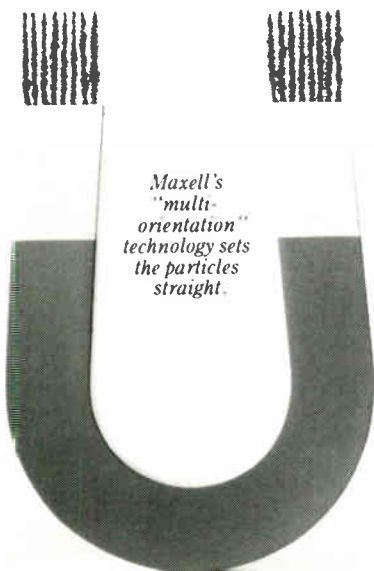
Make it your first choice for program material that demands the highest standards of performance. Buying anything less is like knowingly setting out to take your music to the min.

IEC Tape Specifications				
Tape Selector Position		Unit	IEC II High CrO <sub>2</sub> XLII-S 100	
Physical Properties	Backing Material		Dual Surface Tensitized Polyester Base Film	
	Tape Width	mm	3.81	
	Coating Thickness	μm	4.5	
	Total Thickness	μm	11.0	
	Yield Strength	N	5.5	
Magnetic Properties	Breaking Strength	N	10.5	
	Magnetic Material		Black Magnetite	
	Coercivity	iA/m (Oe)	58(720)	
	Retentivity	mT(G)	190(1900)	
Electro-acoustic Properties	Squareness		0.90	
	Optimum Bias	dB	+1.0	
	Sensitivity	315 Hz	dB	+0.5
		6,300 Hz	dB	+1.5
		12,500 Hz	dB	+3.0
		16,000 Hz	dB	+4.5
	Output Uniformity at 315 Hz	dB	0.3	
	Output Uniformity at 8 kHz	VU	0.4	
	Dynamic Range	315 Hz	dB	65.5
		10 kHz	dB	57.5
MOL (Maximum Output Level)	315 Hz	dB	+6.0	
AC Bias Noise	10,000 Hz	dB	-2.0	
Erasing Effect		dB	-59.5	
Print-Through		dB	70	
		dB	51	

The XLII-S Performance Story.



XLII-S vibration-damping cassette shell has five support points for increased rigidity and durability.



## TAKE YOUR MUSIC TO THE MAX.

send matrix that adds four sends per channel.

Solid State Logic, 320 West 46th Street, New York, NY 10036; (212) 315-1111.

### **Sony MXP-3056**

Sony's MXP-3000 Series of 24-bus, in-line consoles is available in 36- or 56-module mainframes. The I/O modules offer a choice of five interchangeable channel inputs (single and dual transformer or transformerless mic preamps and a line input module), as well as five equalizers (4-band fixed Q, 4-band switchable Q, 4-band variable Q, 10-band graphic, and 4-band LC type). In addition, aftermarket suppliers—such as The John Hardy Company and API—offer mic preamp and/or EQ modules to fit the 3000 Series.

Mainframes can be ordered with mechanical VU, PPM or 101-segment vacuum fluorescent (VF) metering. A bantam TT patch bay is standard, as are six aux sends (two mono pairs and a stereo pair). The longer MXP-3056 frame includes an X-Y phase display, while the MXP-3000 uses a mechanical phase meter. Numerous options are available, including stereo input modules, moving faders, Sony time code-based VCA automation and the MS-3000, a new Macintosh-based automation package from JL Cooper.

Sony Business and Professional Group, 3 Paragon Drive, Montvale, NJ 07645; (201) 358-4196.

### **Soundcraft 3200**

A split console design, the Soundcraft 3200 offers 32-track bussing with direct access to 64 tracks on tape. A maximum of 100 fader-controlled line inputs are available for mixdown, and up to 20 aux sends can be accessed by a routing mode, enabling buses 25 through 32 to be used as aux sends when not employed as multitrack buses.

Some of the 3200's other features are full-range, padless mic preamps, 12 independent aux sends (two stereo, eight mono), noise gates on each input module (with threshold, depth, attack and decay controls, and external keying) and 4-band sweepable EQ with fully parametric (variable Q) mid bands. The board uses a patented, active pan-pot system said to provide 90 dB of L/R separation and provide panning operation that follows theoretical sine/cosine characteristics. Monitoring the buses, auxes and stereo

outs are 46 VU meters, while a phase display tracks L/R correlation.

The 3200's separate fader panels allow the retrofit of a variety of optional automation systems, including GML moving faders. A 36x32 model retails for \$101,720 and new options include an LED meter bridge, stereo input modules and a remote patch bay.

Soundcraft, 8500 Balboa Blvd., Northridge, CA 91329; (818) 893-4351.

### **Soundtracs Eric**

Eric is a 24-bus split console available in 32-, 40- and 48-input frames. Inputs have eight aux sends and 4-band EQ; the groups have 24 additional line inputs with 4-band EQ, providing up to 72 inputs on remix; and the monitor section has dual line inputs for 48-track monitoring.

The Eric 2 automation package records all console recalls, setups, routing and mutes against time code, with half-frame accuracy. Data can be recorded and updated in real time for conventional mixing, or in step time for MIDI- and sequencer-based mixing.

The Eric console is available on a semi-custom basis; options include Traemix II, Soundtracs' latest VCA-based automation system, which now offers offline editing of mix and mute data, referenced to time code.

Soundtracs, distributed by Samson Technologies, 485-19 South Broadway, Hicksville, NY 11801; (516) 932-3810.

### **Speck M72**

Designed especially for electronic music production, the M72 has 72 input channels, eight stereo effects returns and 24-track monitoring; the S72 is similar but comes in a 48-input frame. Mic inputs are optional on these 8-bus boards, which feature 3-band sweep

EQ, eight effects sends and VU metering.

Sold direct, the M72 retails at \$21,440; the S72 is \$13,800.

Speck Electronics, 925 Main Street #255, Fallbrook, CA 92028; (619) 723-4281.

### **Studer 990**

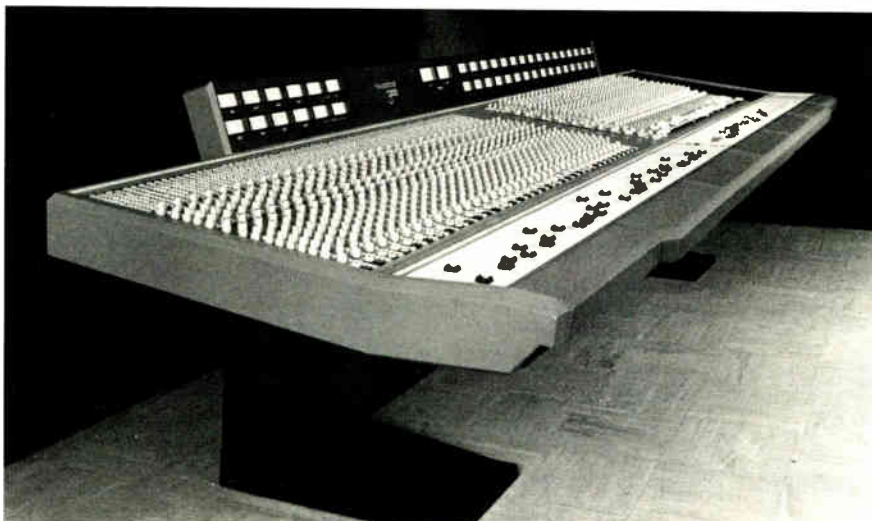
Over the past six months, Studer has been quietly delivering dozens of its new 990 digitally controlled analog consoles. Perhaps they've been *too* quiet about what is the most advanced console ever developed by Studer. Available in sizes from 20 to 80 inputs and up to 48 buses, the 990 offers a choice of mono or stereo input modules, bar graph or VU metering and in-line monitoring. Four-band EQ is standard, as are 16 aux sends (8 mono, 4 stereo).

A digitally controlled input stage eliminates all rotary switches and pots, enabling the storage and setting of all input parameters. The 990 can be equipped with a variety of automation systems, ranging from a "Snapshot Unit" (with storage of all VCA levels and switch settings and instantaneous resettability of multiple snapshots) to the "PC Graphic Control Unit," with static store/recall, snapshots and dynamic automation, including Studer's linear motor moving fader system.

Studer Revox America, 1425 Elm Hill Pike, Nashville, TN 37210; (615) 254-5651.

### **Studiomaster Trackmix**

Trackmix is a modular console available in 24x12x24 or 32x12x24 versions, with 50 or 58 inputs on mixdown, respectively. Features include MIDI muting, six aux sends, 24-track monitoring, 3-band EQ with sweepable MF/LF and 12 subgroups.



**Soundcraft 3200**



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A 32x12x24 Trackmix retails at \$11,095.

Studiomaster, 3941 Miraloma, Anaheim, CA 92807; (714) 524-2227.

### Tascam M-700

Also incorporating an in-line design is the Tascam M-700. Standard is a 40 I/O module version (where each module has two signal paths), although this 32-bus console is available in versions up to 128 inputs, and a 98-input console was recently delivered to a Tokyo studio.

Among the M-700's standard amenities are two stereo and eight mono aux sends, EQ assign to channel or monitor path, 4-band EQ with continuously variable Q on the two mid bands, adjustable 30-300Hz highpass filter, internal TT patch bay and three group mutes. The metering complement consists of 40 28-segment LED displays (one per module), with mechanical VU meters on the quad output buses.

A 40 I/O M-700 retails at \$79,000. Unveiled at last month's AES show is the MFA-700, an optional moving fader automation package that can be ordered with new M-700s or retrofitted into other boards.

Tascam, 7733 Telegraph Road, Montebello, CA 90640; (213) 726-0303.

### TOA ix-9000

Making its U.S. debut at October's AES was the ix-9000, which is in production with the first sale going to the State Opera House in Vienna, Austria. The ix-9000 is an all-digital console using 18-bit/64-times oversampling converter technology on the inputs; from that point, all processing is done within the digital domain. The system consists of a central console that controls the two remote racks where all signal manipulations are made. Module switching and control occurs via two large, interactive touch-screen monitors built into the console surface. The I/O configuration is 64x48, with a 256-input, 256-output digital matrix patching system. Equalization is 4-band parametric, adjustable in 1/6-octave steps with a Q range of 0.1 to 5.0.

Setups can be programmed and stored on disk, and all parameters can be recalled in 1/120 of a second. The ix-9000 has eight programmable fader groups and eight mute groups; the high-speed motorized faders can also be used manually to instantly override any programmed settings.

TOA Electronics, 601 Gateway,

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*Gordon Klimuck & Bart Chiate, Paramount TV*

**Ken Davis**

*"Finally, after looking at nearly all the disk recording and editing systems available...we found everything we needed and wanted in the Akai DD1000. Mass storage, removable media, rugged and very dependable."*

*Ken Davis, KFI/AM & KOST/FM*

**Steve Levine**

*"I use the DD1000 producing television scores because it works perfectly with every standard, from PAL to NTSC. One box does it all, it's a breeze to use and sounds splendid."*

*Steve Levine, Do Not Erase Productions*

**Alan Parsons**

*"The whole concept of the removable disk means hours saved... The DD1000 will find many a happy home among studios, musicians, post-production houses and in broadcasting."*

*Alan Parsons, MIX Magazine (February 1991)*

**Rick Schwartz**

*"Almost anything seems possible on the DD1000. The DD1000 is amazingly complete for a new product...all the bugs have been worked out. It's definitely worth checking out."*

*Rick Schwartz, Recording Engineer/Producer (October 1990)*

# SOME THOUGHTFUL NOTES FROM A FEW FRIENDLY USERS ON OUR DD1000.

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Heading a lengthy list of very useful operating capabilities is the DD1000's major asset: it is a completely self-contained unit, easy to hook-up and simple to transport. It can record up to 30 stereo minutes at 44.1 kHz sampling rate per side of a removable magneto-optical disk. Double that for mono. The sonic quality of its A/D and D/A converters will satisfy the pickiest professional.

With the immediate availability of our *DD-MacRemote™* and *DD-Q.MAC™* editing software, plus the DL1000 remote controller and DL500 MIDI trigger box, the system is truly a powerful tool. *DD-MacRemote*, full front panel emulation for your Macintosh, and the comprehensive editing capability of *DD-Q.MAC* combine to give you more creative control than ever before.

But you would expect us to be excited about the DD1000, it's our baby. Take a moment to read the comments at the left and see what others have to say about it. Then visit your Akai Digital dealer and test drive a DD1000 for yourself.

The screenshot displays the software interface for the DD1000. At the top, there's a menu bar with options: File, Edit, Display, Options, Windows, MD Drive, SCSI. Below this is a 'Cue List: QLIST 1' window showing a table of cues with columns for time, event type, and parameters. The table includes cues for 'CHICAGO', 'WHOLE', 'SIREN', and 'SAX'. Below the cue list is a 'Sound Cue' editing window for 'CHICAGO', showing a waveform and various editing parameters like 'TAKE', 'CUT', 'CUT LENGTH', and 'EVENT TIME'. The interface also includes playback controls and a 'Pan' section.



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Soundtracs distributed exclusively in the United States by: Samson Technologies Corp., PO. Box 9068, Hicksville, NY 11802-9068 TEL: (516) 932-3810 FAX: (516) 932-3815

\*Suggested retail price for the Model 24/24 Megas Studio console. Other prices will vary somewhat based on specific configuration and features.

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World Radio History

**MEGAS**  
**STUDIO**



Suite 300, South San Francisco, CA 94080; (415) 588-2538.

### Trident Vector 432

The Vector 432 is an in-line console in frame sizes to 72 inputs, with four stereo mix and 32 output buses (hence the 432 name). The onboard muting system can control up to 12 switches per I/O module, while aux and stereo masters are assignable to 16 automute groups—all triggered manually or automatable via SMPTE or MIDI. The central facilities section offers an extensive cue system, compressor/limiter on main stereo bus, phase metering and matrixing for multiple stereo mixes. A total of 44 VU meters monitor 32 group outs, stereo buses, main outs and one pair that is selectable to auxes/foldbacks or external sources.

Channel modules offer eight aux sends (two stereo/four mono) assignable to channel or monitor paths and 4-band EQ with variable Q on mid-range bands (splittable to channel or monitor paths). All buses, inputs and outputs are balanced; Penny & Giles faders are standard; and all Vectors include Mosses & Mitchell patch bay on the right side.

Vector 432 pricing on a 56-channel frame with 56 I/O modules is \$214,000. Options include Diskmix VCA or moving fader automation, onboard machine synchronization/control system, bar graph meters, stereo input modules, dynamics modules and transformer-balanced I/O. Also offered is a trade-up program for owners of other Trident consoles who are considering a Vector purchase.

Trident Audio USA, 2720 Monterey Street, Suite 403, Torrance, CA 90503; (213) 533-8900.

### Yamaha DMC1000

The DMC1000 is an all-digital console, offering a total of 22 inputs (eight mono channels, three stereo inputs and eight monitor channels usable as tape returns), with four aux sends, eight buses and a stereo bus. While the DMC is designed for use with the Yamaha DRU8 8-track digital recorder, the console also has digital I/O for connection to professional digital multi-tracks and 2-track machines. Bus outputs are SPDIF-2, ProDigi and Yamaha digital formats; channel inputs and program outputs are in the AES/EBU format. In addition, multiple DMC1000s

can be cascaded to provide more inputs.

The DMC1000's 14-input channels employ 100mm motorized, touch-sensitive faders, with a feel designed to emulate those on a high-end analog console. The automation system includes not only the faders and mutes, but all channel parameters, with real-time control of EQ, pan, aux sends and bus assignments. The time code-referenced mix data can be stored on 3.5-inch floppies, and static "scenes" can be stored on a RAM card for quick recall.

Other features include programmable, fully parametric 4-band EQ, analog and digital aux sends/returns, onboard digital effects processing, and up to 370 ms of delay on each channel.

The DMC1000 is priced at \$34,000. A fully digital 42x24 console could be assembled by cascading three units. Options include an 8-channel, 19-bit analog-to-digital converter; 8-channel, 20-bit digital-to-analog converter (required to change the eight output buses to analog) and digital patch bay systems.

Yamaha Professional Audio, Box 6600, Buena Park, CA 90622; (714) 522-9011. ■



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by Dan Daley



PHOTOS: JENNIFER GIRARD

**Top: CRC studio manager Hank Neuberger behind the 72-input Neve VR in Studio D. Bottom: Engineer Tim Butler in the "Tim Butler room," Studio C2.**

# IS BIGGER BETTER?

## CHICAGO'S CRC TRIES IT OUT

**L**ike cars and electronics, a new wave of studios—most prominently, project studios—have made downsizing a trend in the recording industry. Less expensive and more powerful technology, assisted by a push from a receding economy, have made smaller better to many minds. Smaller certainly has a lot going for it: less initial capital and regular overhead expenditures, an ability to concentrate more intensely on certain market segments, and the capacity to make sharper business turns in reaction to changes in either the markets, technology or both.

But you may have noticed, as you drive down the interstate, that the gas guzzlers are back. Let's face it, we're Americans, and we like big stuff. The same mentality that found 3-inch personal television sets cute can also beat its chest showing the neighbors the new 54-inch projection screen. In Kuwait, everything was operated by microprocessors, but what we really got off on were the F-16 Fighting Falcons.

In Chicago, a 16-year-old studio has evolved—purposefully—into an experiment in bigness. The Chicago Re-

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ording Company (CRC) started life as a one-room facility with owner Alan Kubicka and engineers Hank Neuberger and Chris Sabold. The Hidley-designed room housed the Windy City's first 24-track machine, according to Neuberger. They recorded commercials during the day and at night switched gears for acts like the Chicago Players. The addition of another room in the late '70s brought in more music acts, Midwest pop-rockers like Survivor, and local singer/songwriters such as Steve Goodman and John Prine.

Then things began getting big. Well, large, anyway. A couple of 4-track rooms were added to handle audio post-production, and, in a fit of optimism, the studio added film mag audio capability. But it backed away from that last excursion quickly, says Neuberger, as it became apparent that Chicago couldn't support film audio on a regular basis. "It was a slow progression to the 15 rooms we have now, but it certainly wasn't in a straight line," he says.

That's right—15 rooms, with a 16th on the way (the new arrival will be a satellite studio at advertising agency client Leo Burnett's downtown office building) and more than 40 employees. There are four multitrack music recording rooms, three interformat transfer studios for A/V, and eight audio post-production rooms, six of which are AMS AudioFile-equipped. The other two rooms work in the analog multitrack format; in this case, Studers. In addition, there are a pair of NED Synclaviers, ten automated consoles (including a Neve VR72, an SSL 6056E with G computer, and a Harrison SeriesTen), and 15 Panasonic and Sony DATs. That's pretty big for an independent facility these days.

"It's really 15 boutique studios under one roof," says Neuberger. It's not only a matter of size, nor of technology, but of approach. While CRC's music recording rooms tend to be occupied more often than not by freelance engineers, its post-production rooms, the ones that Neuberger says hold the most promise for expansion, are staffed by employees, staff engineers who are regarded as much as salesmen as creative technicians, and who are paid accordingly, with commissions supplementing—and, one can assume, in some cases surpassing—their base salary from CRC.

In exchange, CRC is willing and able to design and equip their rooms to their individual tastes.

"We rarely buy equipment just to suit the client," says Neuberger, "but we do it regularly to accommodate the engineers so that they can have the leading edge of technology to suit their individual clients. The engineers here are ambitious and motivated. Most of the clients are clients of the engineers

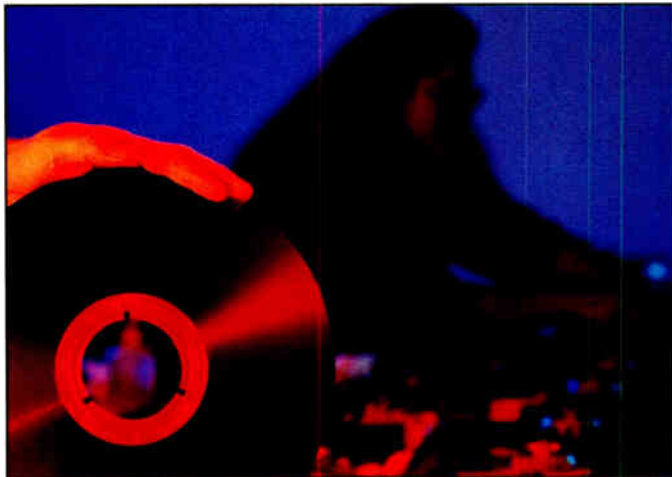
*"We've recognized  
that the engineer is  
the only and best  
salesperson for that  
particular room."*

as well as of the facility. We don't have reps or salespersons, and we don't do direct marketing mail. Our engineers are our salesmen."

The engineers in question—digital systems operators Tim Butler, Stanley Oda, Jeff Van Steen, Michael Coyle and the newly acquired (sounds like a baseball team, doesn't it?) Michael Mason, and analog operators Mark Ruff and John Titak—tend to personalize their respective facilities, reflecting an individual, specialized client base, be they commercials, audio-for-video or animation, within what Neuberger calls the "core facility." One has Nintendo video games available for clients; another has a personal stash of candy always at the ready; yet another decorates with Star Trek memorabilia. Whatever it takes to make their clients happy, says Neuberger. "[The engineer] manages the room. We've recognized that the engineer is the only and best salesperson for that particular room, and we support that by providing them with the tools to work and operate that room." Recession or no recession, Neuberger maintains that this policy will remain operant, with no plans to ask the individual engineers to put anything on the line but their time and their talents in return.

One is tempted to call Moscow and say, "Yo, here it is—a workers' paradise that works for the '90s." Central planning that allows for personal initiative. From each according to their means; to each according to their ability to read the manual. "It's the oppo-

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## STUDIO VIEW

site of a corporate culture." Neuberger asserts. "It's all booked and managed from a central office, but each engineer runs his room the way he wants." An assistant engineer is assigned to each room on a more or less dedicated basis. That, coupled with requesting intensive pre-session information from clients before their dates are loaded into the hard drives—and using the transfer rooms to change formats even as sessions are going on, Neuberger maintains—allows multiple sessions to be done back-to-back each day, despite the uploading and downloading the digital audio workstations require.

"We're at the other extreme from a project studio," says Neuberger, himself a mixer at the studio. "Instead of being one thing to one type of client, we're trying to be all things to everyone. We can handle over 20 formats in this facility. For instance, on a single session recently, I had a client bring in a 24-track tape and an analog cassette with a solo he wanted the band to hear to get a certain sound. We also listened to sounds from DAT and CD. From that session we generated a 4-track master, a 35 millimeter mag master at 30

frames, and a center-track time code master, as well as roughs on an analog cassette. This is all in a single room."

Neuberger acknowledges that the bigger rooms on the main axis—New York, Los Angeles and Nashville—have the luxury of specializing to a degree, whether they're commercial for-hire or project rooms. There is a certain truth to the notion that geography is destiny: New York gets the commercials and R&B dance work; L.A. gets the rock 'n' roll; Nashville gets the country stuff. Chicago gets the blues and Mark Farner. "Well, Chicago gets fewer superstars in their areas, but we do get more artists in the early stages of their development. And we do have to service a broader cross-section of the industry to remain competitive nationally—commercials, rock, alternative music, jazz, dance, rap and industrials. We have to be ready to handle all of it."

So does Boston, when you think about it. As do San Francisco, Denver, Miami, Dallas and a host of other secondary but substantial regional markets, all of which are participating in the increasingly fragmented audio and audio-for-video market. So is there the potential for a trend here? Possibly, but

a limited one. Neuberger says that CRC is as much a product of the synergy of its users as it is a creature of heavy technology investment. A number of facilities, especially audio post rooms, have lured high-profile engineers with a following to their doors by building custom rooms for them. But few of them have done it on this large a scale.

CRC is probably at the limit of its growth envelope at this point. Neuberger thinks. Project studios have eaten considerably into the music pre-production and initial recording stages, which is why he believes the audio post area is the one with any real potential for further growth, if there is any in the immediate future. "Music producers who did all of their recording here a few years ago now do it half and half between their own project rooms and here," he says. "or else they just come here to mix. But that's not all bad for the business. Project rooms have allowed a lot of new talent to develop, and they eventually need better facilities than they can put together themselves. They eventually need to come to a place like this." ■

*I'm Dan Daley... I'm Mix's East Coast editor... I work the waterfront.*

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by Paul Potyten

# MAGNETO-OPTICAL RECORDING

## A CLOSER LOOK

The plummeting cost-per-megabyte of large (600+ MB) magnetic hard disks has made them the logical choice for users of PC DAWs, who typically need a lot of disk space for manipulating CD-quality digital audio. And for anything but short (45MB or less) chunks of digital information, the logical choice for archiving digital audio has been DAT. However, recent refinements in recordable *optical* technology make it a candidate as a third potential alternative for storage and retrieval.

Several companies have now developed recordable magneto-optical

(MO) drives for Macintosh, IBM, Sun and DEC systems, including FWB, Pinnacle Micro, Storage Dimensions, Microtech International, TASS Optical World and Relax Technology. While these companies have marketed their products to users of large, business-oriented, networked computer systems, they recognize the importance of MO in the more vertical pro audio market. According to Scott Blum, marketing director at Pinnacle Micro, "Our largest market is in online computer storage, but we've sold to music producers, movie producers and to Fortune 500 high-tech companies."

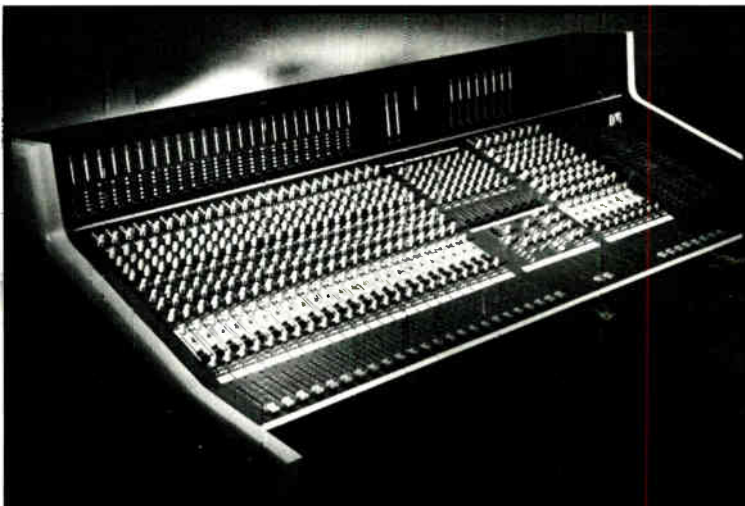


PHOTO: RON MILLER

*While CD-ROMs (left), audio CDs (center) and magneto-optical discs are similar visually, the nature of each medium's application and operating environment is unique.*



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**Marilon** (starting in the \$30's)



**Triton** (starting in the \$20's)

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So, is it time for you to consider MO for your digital audio needs? The short answer is an unequivocal "maybe."

**A Little Background**

MO is the leading form of rewritable optical storage available today, combining magnetic and laser technologies to accomplish the tasks of reading, writing, erasing and rewriting information. Introduced in 1988 by Sony, MO's combination of high capacity, erasability, removability and media durability makes it a strong contender for

any application requiring substantial amounts of disk space, such as digital audio. Dye-polymer and phase change technologies—two alternative rewritable optical technologies currently under development—have been reported to be considerably less durable, wearing out in as few as 10,000 cycles. (For a more complete technical background on recordable optical technology, see Ken Pohlmann's "Insider Audio" columns in the October 1988 and May 1990 issues of *Mix*.)

**The Pros and Cons**

You can divide the process of produc-

ing music audio on a PC/Mac into three parts: recording, editing (which for our purposes might include DSP and/or mixing) and archiving. And each of the three media—large conventional hard drives, DAT and recordable optical drives—has its advantages and disadvantages for each aspect of production. Obviously, magnetic hard drives offer the most flexibility of the three technologies in terms of speed and random access. But since the cost per megabyte of hard drives is significantly higher than either MO or DAT (see Table 1a), it's not an economically realistic archiving envi-

**Chip Shots**

**Hydra Systems Inc. Andor One**

The Andor One from Hydra Systems Inc. (San Jose, CA) is a plug-in PC board/software combination that allows IBM PCs and compatibles to run Apple Macintosh software. It works with XTs through 486s, allows for easy switching between PC and Mac platforms, and runs Mac software at about twice the speed of a Classic. The board is priced at \$995.

Circle #250 on Reader Service Card

**Mark of the Unicorn MIDI Mixer 7s Controller Software**

Mark of the Unicorn (Cambridge, MA) has introduced IBM software for controlling the MIDI Mixer 7s, its

**Anatek RT-120 Real Time Controller**

Creation Technologies (Vancouver, B.C.) has developed a controller



accessory for its Anatek SMP-16 and SMP-7 MIDI/audio patch bay/synchronizers. Designed for those who wish to do automated mixdown or controller moves using real faders instead of a mouse, the RT-120 Real Time Controller features six faders and six 1/4-inch inputs for foot-pedal control. Software resident in the SMP series allows simultaneous control for the 120 MIDI controllers. List price is \$199.99.

Circle #252 on Reader Service Card

**True Image MacSpeakerz 2.0**

True Image (Escondido, CA) has released Version 2.0 of MacSpeakerz, its loudspeaker design application for

the Macintosh. The new version calculates and displays cone excursion, impedance, phase and group delay responses in addition to frequency response for any loudspeaker driver in any closed or vented enclosure. Suggested retail price is \$299, with upgrades from

any previous version available to registered users at a substantial discount.

Circle #253 on Reader Service Card

**Dr. T's X-o-R**

X-o-R universal editor/librarian for the Macintosh is now available from Dr. T's Music Software (Needham, MA). The program comes with complete editing profiles for over 90

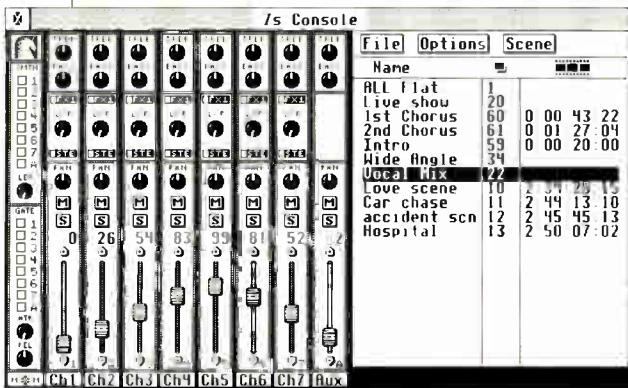
popular MIDI instruments, including the Yamaha SY77, Korg Wavestation, Ensoniq SQ1 and E-mu Proteus XR. It allows the user to take a snapshot of an entire MIDI setup for later recall. Compatible with MIDI Manager and Apple's System 7, X-o-R is now available for a suggested retail price of \$399.

Circle #254 on Reader Service Card

**Opcode Systems StudioVision Update**

Version 1.3 of StudioVision, the MIDI/digital audio sequencer for the Mac, is compatible with Digi-design's upcoming Pro Tools multitrack digital audio system. The new update from Opcode (Menlo Park, CA) can record and play back up to four simultaneous channels of digital audio, and includes several other new features, such as System 7 compatibility, 29.97 non-drop SMPTE compatibility, punch-in/out on the fly, and OMS compatibility for access to over 200 MIDI channels. The new version is priced at \$995; upgrades from earlier versions are \$29.

Circle #255 on Reader Service Card



single-space, rack-mount mixer. All parameters are accessible from the software's graphic interface. Console software is now available for IBM, Atari and Macintosh platforms, and is free to all registered MIDI Mixer 7s owners.

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ronment. On the other hand, while DAT offers none of the advantages of random access, it's a very affordable archiving alternative to conventional hard drives. In addition, companies like Digidesign offer DAT archiving software for their digital audio files, which typically copy sound-file data, including playlist information, at speeds that are nominally ten seconds longer than real time in most cases.

While MO drives are slower than their traditional magnetic counterparts,

cousin, the lowly floppy disk. Anyone who has used a floppy to perform word processing, database or MIDI composition knows that the process is slower than working directly from a magnetic hard drive. But it's a convenient method for archiving, and for transferring files from one computer to another. The same is true for optical discs when used in connection with digital audio, although on a considerably heavier scale.

Two distinct advantages MO drives have over their magnetic counterparts are their relative stability in the pres-

than from it, due to the fact that an erase cycle is necessary prior to recording to a given section of the disc.

**Criteria for Compatibility**

Recordable magneto-optical drives are found as standard or optional features on a variety of devices throughout the audio industry, including the Akai DD1000 magneto-optical disk recorder, the Lexicon Opus, the NED PostPro SD and others. The existence of MO drives in such diverse environments leads to the complex issue of compatibility. Theoretically, any drive that conforms to the ISO standard for magneto-optical should be able to recognize discs formatted on any other ISO-compatible drive. And most drive manufacturers—Sony, Canon, Ricoh and Maxtor, among them—do. But that hardly means that the data can be read. There are several criteria for compatibility, including the kind of interface (SCSI- or non-SCSI-based), media (MO drives do not read CD-Audio, CD-ROM or discs based on Panasonic's erasable phase-change technology), media formatting (ISO approved or not) and how the data itself is written on the disc. This last issue is one that has been raised in this magazine before (see "Juxtapositions," January 1991 and September 1991).

Now is the time to take a close look at these standardization issues for digital audio recording on magneto-optical media, which appears to be quickly emerging as a preferred storage media. (As I was finishing this column, I read an announcement of a new Ricoh MO drive mechanism with significant performance improvements over existing drives, which "approaches hard disk levels of performance.") I support the efforts of the AES and others who are currently addressing this matter, and encourage manufacturers and users to participate in the discussions.

In the meantime, anyone considering adding a magneto-optical drive would be well-advised to purchase the system from a pro audio dealer who has knowledge in this area. "It's not as simple as with a conventional hard drive," according to Pinnacle's Scott Blum. "You need [the help of] people in the industry who understand the technical issues." ■

*Paul Potyen is an associate editor at Mix, and a freelance composer/producer/musician.*

	conventional 650MB hard drive	magneto-optical drive	DAT
cost of hardware	\$1,770-\$3,000	\$3,000-\$5,000	\$1,500-\$2,500
cost/MB of media	\$2.80-\$5.00	\$.30	\$.01
max. length of continuous recording @ 44.1kHz	60 min.	30 min.	120 min.

**Table 1a: The economics of digital audio storage.**

	conventional 650MB hard drive	magneto-optical drive
time to transfer 36MB file from conventional hard drive	--	4:52
time to transfer 36MB file from magneto-optical drive	2:29	--
time to cut 3 seconds out of 36MB file	1:15	3:54

**Table 1b: Typical timing tests. The relationship between the timing figures are more significant than the numbers themselves.**

it is now possible, with careful design and software optimization, to use them to record and play back CD-quality, stereo digital audio. Version 2.02 of Digidesign's Sound Designer II (and Audiomedia) software incorporates features allowing it to be used with its Pro Store optical drive. Pre-allocating and increasing the buffer memory size will optimize your system, as will minimizing the number of SCSI devices and length of cables on the system. Recordable MO discs typically cost about \$200 and can store 300 MB of data per side (only one side can be accessed at a time, like a vinyl record).

I like to compare the advantages of the hybrid MO disc to those of its

enue of magnetic fields and dirt and their reliability in terms of performance. The latter is a natural consequence of the fact that the head never touches the media, as is the case with magnetic hard drives, whose heads have been known to crash, destroying large chunks of data in the process.

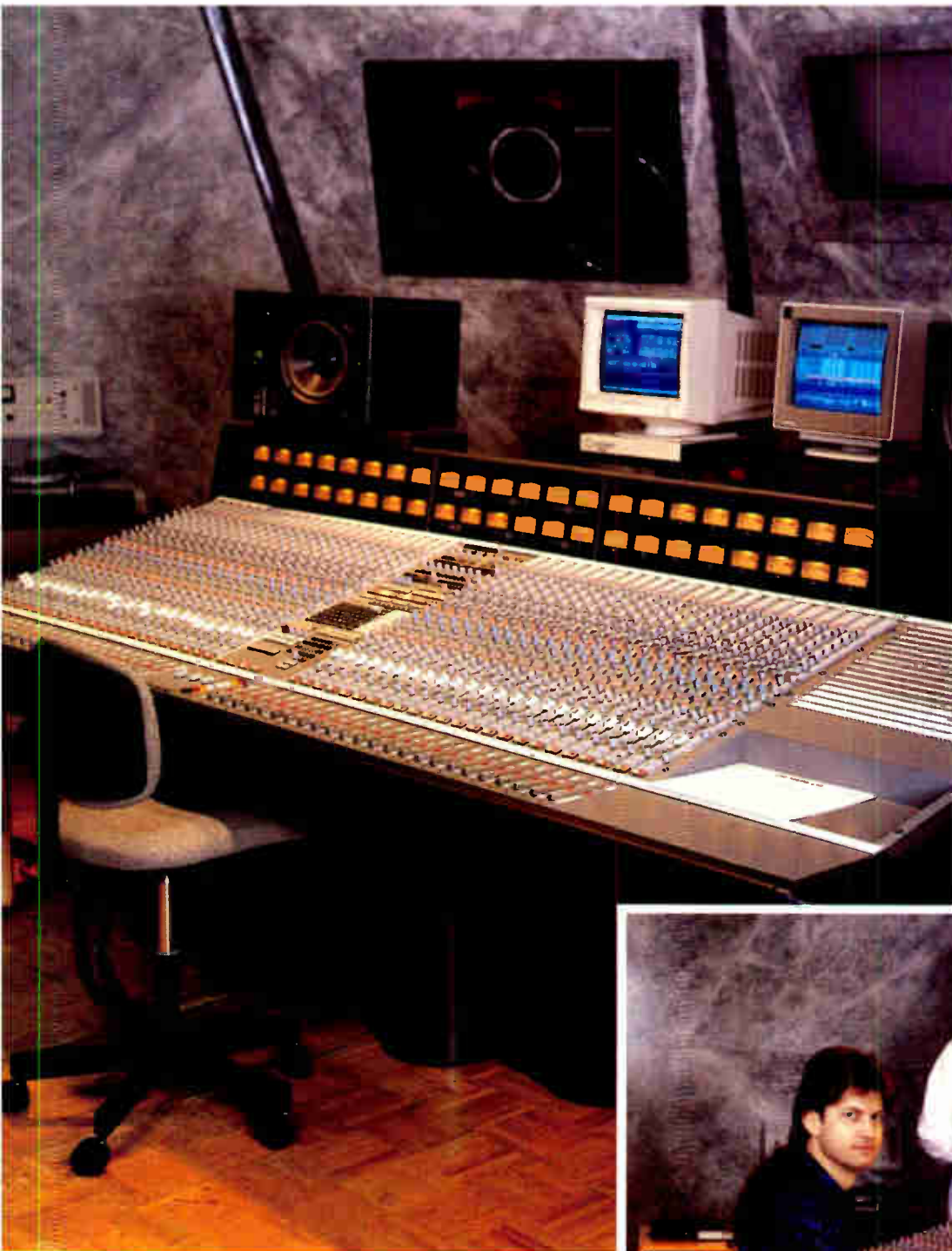
I made some "real-world" tests comparing the performance of a Pro Store optical drive with a 600MB Relax Technologies hard drive on a Mac II with 8 MB of RAM (see Table 1b). It took more than three times longer to perform a typical destructive edit on the MO drive than on the magnetic. File transfer times were also much slower when writing to the MO device

## NOTORIETY.

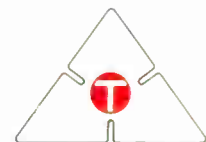
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The Mixing Lab / Garden Grove, CA  
Thom Roy, Studio Manager (standing). Dave Jahnsen, Mixing Engineer (sitting).



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by Mr. Bonzai

# CHRISTOPHER CURRELL

## VIRTUALLY YOURS



On the wall of Christopher Currell's studio is an autographed quadruple-platinum display of Michael Jackson's *Bad* album, inscribed simply, "Thank you for creating the magic." Currell is a musician with credits going all the way back to Question Mark & the Mysterians ("96 Tears"). He's played or recorded with such artists as Meat Loaf, Grand Funk Railroad, Bob Seger, Dokken and Stryper. For three years, he served as Jackson's Synclavier programmer and composer, culminating in performances seen by millions worldwide.

I was introduced to Currell by *Mix* colleague Linda Jacobson at this year's SIGGRAPH computer graphics convention in Las Vegas. Like a mischievous muse, she explained that we *had* to meet and then disappeared. Having just stumbled through an array of virtual reality exhibits, I was suitably disoriented and found myself chatting with Currell over a cup of espresso. Overwhelmed by the high technology whirling around, I discovered him to be not only knowledgeable on the subject, but also engaged in the spiritual quest of re-creating reality.

Currell owns a laboratory studio called Audio Cybernetics and has a trademark for Virtual Audio Systems, a three-dimensional system based on the psychoacoustic research of Dr. Klaus Genuit of Germany and funded by the Japanese.

I was invited to a demonstration of the system in his studio. Blindfolded and headphoned, I experienced a virtual control room sonically identical to the one I was sitting in, complete with doors opening and closing, printers printing and phones ringing, all in 360° perfection. I was there, but the "room" really wasn't. I've heard the future—it's

spooky, and it is virtually here.

Afterward, we stepped out to the garden for a snack of rice balls wrapped in seaweed, pickles and *tonkatsu* packed in an *obento* lunchbox prepared by Mrs. Bonzai.

**Bonzai:** Where did it all start for you? When did you realize you were inordinately preoccupied with sound?

**Currell:** The earliest sound that I can recall is a xylophone. I thought it was wonderful—magical, ethereal, yet it



PHOTO: RICHARD E. McDONALD

had a percussive tone. Earthy and spacy at the same time. That was the first sound that really grabbed me, when I was about two years old.

**Bonzai:** All these years later, is technology able to simulate the sound of a real xylophone?

**Currell:** Not really, but through the work that I've been exposed to—high-end research—I've heard things that are far more advanced than what we find in our normal audio business. I know there are things on the horizon that will be significant to our audio industry. Digital is starting to mature. I don't know if we really have the proper training yet for engineers in how to use digital, or even to understand its drawbacks and what to watch out for. But people are learning.

**Bonzai:** Can you point out a few technology leaps we can expect to see in the next decade?

**Currell:** I think virtual reality will be a major issue. It's starting to get a lot of promotion now, but most people don't have a clue as to what it is. Some of the people working on it don't even realize what it is yet. This is an area I've been working in for quite a while. It is going to significantly change everything in the next ten to 20 years—every industry on the planet will be revolutionized.

**Bonzai:** My few experiences with experimental virtual systems indicate that it isn't really here yet...it's still a little funky when compared with reality. How far away from perfect virtual reality are we?

**Currell:** I don't know if we will ever achieve such a thing, but we will be able to synthesize realities. Is it live or Memorex? We might have such systems in ten to 12 years, but it will only be done with massive supercomputers. For the virtual audio, I think we essentially have the technology now. We have the basic principles, but now we have to demystify it and package the tools that people can use in a real-world situation.

Our standards are not yet good enough. Scientists underestimate human perception by testing average people. The average person may not be able to directly perceive certain things, but they are subjectively aware of them; they can still feel them. Scientists should be testing professional people who are trained in the specific perception being tested. This would

raise the general standard, which I feel is necessary. Psychoacoustics also plays a major role in three-dimensional audio.

**Bonzai:** How do you define psychoacoustics?

**Currell:** It's the interaction of how sound is operating in the real world and the inner realm of the brain—how our brain is interpreting things as opposed to what's really happening. Sometimes they are the same; sometimes they are very different.

**Bonzai:** Is sound essentially in our brain, not outside?

**Currell:** Yes, because that is where it is encoded. Our ears are only re-

ceptors.

**Bonzai:** If we enter this future world of virtual reality, are we substituting the present for the virtual reality zone?

**Currell:** Absolutely not. It's an extension, an alternate reality. There are many realities within this reality. Walking into a new room is a different reality. We can view everything as one entire framework, and within this we find many different realities, environments. TV is another reality. When we talk about virtual reality, we are taking a step beyond the barriers of the overall picture and creating realities that we previously could only dream up in our minds. We will be able to manu-

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facture a reality that we see in our minds, and then walk into it and interact, communicate with real people through a network system, and have tactile experiences and audio, visual information—everything we have in our normal reality. We can function with the same rules, but we will eliminate much which hangs people up. Barriers are removed. For example, in a virtual world we can walk through a wall. In this world we would hurt ourselves.

**Bonzai:** We have five senses, and some believe we have intuitive and psychic senses. Can you imagine a new life-form with a sense we can't even imagine?

**Currell:** Well, in my work with virtual reality, we are trying to mimic what we perceive through our senses. That is our standard now. A thorough knowledge of how these perceptions work is vital. Much more work needs to be done here. In my studies, I have found at least 55 human senses. Some of these we will reproduce, some we won't. We need an understanding, and need to know the synergy of how they all work together. If we can re-create a few of them, and use them optimally, the brain will dub in the ones we can't create.

**Bonzai:** 55 senses! Can you name a few?

**Currell:** Well, location of sound is a distinct perception. You could group it within "hearing," but that isn't accurate enough for research. You have perceptions of rhythm, pitch, timbre, volume. These are different perceptions within the framework of sound. We perceive motion, electromagnetic fields—many, many things. We need to define these perceptions. We can't look at them as a large group if we want to understand them. We have to break them down into their basics.

**Bonzai:** I'm convinced we will create virtual worlds indistinguishable from the everyday world. But what is your ultimate goal?

**Currell:** From a technical, philosophical, ethical, political point of view, once virtual reality of a significant level of advancement is achieved—when it becomes available to the common person, like a CD player or a VCR—we are going to see a major evolution of the human race. Education will accelerate to 100 times what it is today.

Our world is experiencing overpopulation, especially in major cities like here in L.A. It takes forever to drive to work, and you can't predict when you will arrive. The results are pollution, frustration, inefficiency. People are tired of this. In the future, you will just walk into your virtual world and go to work. Traveling will be reduced to a minimum, because you can meet your friends in the virtual world and experience them. Of course, people will still like to get together in this reality, but the necessities of jobs and survival will be dealt with easily in a virtual reality. We will be much more efficient, without destroying the environment.

**Bonzai:** The Walkman first took off in Japan, where people desired an audio haven from the noise and confusion, a sense of identity and freedom. But some would say that this is isolating people from one another. Many people are vegetating in their own couch potato realms.

**Currell:** The problems are in our educational system. As technology goes through the roof, our educational system is failing us. This is a dangerous situation. Even the current technology could be used in much more creative ways. The missing ingredient is interactivity. Virtual reality incorporates interactivity. Video games are a small step beyond normal TV. You can interact. Kids appreciate this. They can make decisions and get responses. They are doing something.

**Bonzai:** Is this better than interacting with wooden blocks and real tools?

**Currell:** It depends on who is making the software. You can make brilliant computer tools for children. We just aren't using the tools well. When we have virtual reality, you will interact with the computer and with real people.

In the future you will turn on a movie and walk into it and play a role. Other characters will be other real people who have chosen to walk into that movie and play a role. Some of the characters may be computer programs. It's a big game, it's fun, and you are interacting, creating, communicating. We're not there yet, but it is theoretically possible, and visionaries see it happening.

**Bonzai:** Tell me about the actual hardware of virtual reality. I've worn the goggles and headsets and moved around in a virtual space. We have the data glove that lets us enter a virtual



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### LUNCHING WITH BONZAI

reality and move around. Will we eventually put on a body suit and enter this strange new world?

**Currell:** Actually, these forms of interfacing with the computer are very crude. Who would want to spend all that time suiting up like that? Ultimately, I think we will have sophisticated scanners which scan our motion, our facial expressions, etc. There is work being done with retina scanners and laser imagery projected directly into the retina. Television monitors will never get close to what we can see with our eyes. Lasers have the resolution and the dynamic range, and they can be mounted in very simple eyeglasses. At some point they could even be contact lenses. Eventually, we will have entire rooms scanned, and you will walk into them.

**Bonzai:** You have a trademark for Virtual Audio Systems—what distinguishes your work from others?

**Currell:** Perhaps the motivation is different—ultimately I want an end-user product, because I am an artist, and I want to be able to play with dimension as well as sound quality. I want to be able to play with space. We have it every day in our lives, but it is completely absent in our recorded material. People are missing a tremendous amount of emotional gratification because of this. I've been pursuing this for years, and I've worked with just about everyone who has done significant development at any given time. Most developments have had serious drawbacks for real work in broadcasting, record production and film. It has usually been hit-and-miss technology because it is not based on sound audio principles.

I hope that what I have accumulated in new technology will become a standard. Like mono was to stereo, I see virtual audio as the next step from stereo, because there is so much more depth and clarity. The selective hearing process is encoded; there are fewer technical barriers for emotional listening. You are immediately sucked in. Sounds flying around your head is cool, but ultimately you want to be emotionally involved. This is the key point.

The technology that I have been working with is based on solid audio principles, like a new audio measurement standard. With that foundation, we now have to demystify the subject

so real engineers can use it easily. The next step is to package it into tools that can be dealt with. Because of the complexities of adding the third dimension, it is vital to have user-friendly software. That is what I am working on.

**Bonzai:** The resulting experience will be achieved with headphones or with speakers?

**Currell:** Both. Again, if we are going to create a standard, it has to work uniformly in all audio situations. With two speakers, you will achieve increased spatial depth and enhancement beyond the speakers left and right, plus height and depth information. And you get a clarity that you can't get any other way. As an added bonus, if you wear headphones you get a complete 360° sound field.

We don't use transaural processing, which is a speaker crosstalk cancellation process. In my research, I've found that transaural processing doesn't translate accurately in all audio situations as something useful. In some situations, it goes the opposite way and creates listening problems. In an ideal situation, it sounds wonderful and should be an option in the user's home. There is work being done now on chips that will create this effect in VCRs and stereos. You have the option, but you have to have head-related recordings to take advantage of transaural processing.

**Bonzai:** Are you working on an inexpensive chip product?

**Currell:** Yes. The Sega game corporation in Japan is very interested in having my company develop a small virtual audio chip for their arcade games. I'm working on that with Scott Foster of Crystal River Engineering. We've joined forces to create a small, affordable chip, which will give spatial location.

**Bonzai:** You receive funding from the Japanese?

**Currell:** For this Virtual Audio System, yes. I am supported in my research by Bodysonics.

**Bonzai:** What is Technova?

**Currell:** Technova is a company I am working with on virtual reality development. Virtual audio is a distinct issue; it is the closest to being finished as far as the big picture of virtual reality. In the works is a 48-channel version of the current system, so that we can do a movie or a record in real time. Using some of the new virtual interfaces, it will be very easy to operate, including actual room environments in three di-

# mix•er

**(mik'sēr) noun.** An electronic device used to *mix* music. Must be clean, transparent and punchy. See Alesis 1622 Mixer. Better yet, listen to it.



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\* - Total Harmonic Distortion + Noise: too low to measure.\* Keyboard Magazine July 1990.



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mensions. Not only are you placing sounds, moving them around and automating them, but you can create the ambience of the room in 3-D. We immerse you in a three-dimensional virtual audio environment.

**Bonzai:** Are the Japanese more interested in this new technology than other countries?

**Currell:** I think all the major countries are interested. Basically, virtual reality started in this country, but since we are not real supportive with R&D money, a lot of the visionaries can't get the necessary funding. With limited funding, it pits the various players against each other, rather than uniting them.

that would be unaffordable to the common person. It's important that we show the common person the state of the art by direct application, so that there is a demand to keep it going.

**Bonzai:** How does all this new virtual technology connect with the music industry?

**Currell:** The first step is three-dimensional audio, the main step because our industry is based on sound. The standards must be very high—I'd like to push the standards through the roof, way beyond where currently people think is okay. Because I don't think they're okay.

**Bonzai:** Could you be more specific?

**Currell:** When it comes to digital audio, I'm concerned with how many bits



PHOTO: SAM EMERSON

**Currell onstage during Michael Jackson's "Bad" Tour.**

There is competition for survival. On the other hand, Japan is very big on R&D.

**Bonzai:** Does this have to do with the proliferation of theme parks?

**Currell:** Absolutely. The first place that high-end virtual technology will be exposed to the public will be in theme parks, because of the cost involved. As the power of the systems goes up and the costs come down, eventually it will move into arcade games and then into the home. There are perhaps 300 Japanese theme parks in the works, with at least 30 actually underway as we speak.

The Japanese have been working real hard for a long time, and now they need to relax and be entertained. And they have some money. So, it is a way of showcasing certain technologies

we're using, sampling rates, filters—the tech stuff.

**Bonzai:** So, it's not there yet.

**Currell:** It could be there, but the music industry can only generate so much money that can be cycled back into recording technology. Computers are changing this industry every day, so it's evolving—it's in motion right now. There is technology out there that can do some of the things we've been talking about, but it takes money and the right people putting their heads together and creating these new tools. That's how the Virtual Audio Processing System came about. Such things as higher sampling rates and more bits are possible, but they are expensive. You have to consider the practicality. Even when we build this 48-channel system, and the software is

really great, it will be so expensive that no normal studio could afford to buy it.

**Bonzai:** How expensive is expensive?

**Currell:** \$750,000, maybe more.

**Bonzai:** So, what are you going to do with the technology you develop? Will you sell it to big corporations?

**Currell:** Because virtual audio is only part of the big picture I have, I would like to see it become a standard. Building the 48-channel version is the right first step. We'll have to rent it to people, and this is not based on some money motivation on my part. It's purely practical, because nobody can afford this machine. If I build a few and house them somewhere, they could be rented at a reasonable rate. No royalties. Maybe some licensing fees, like Dolby. We can't price it out of what people can afford. If we can get some of these machines running for a few years, we'll have time for the computer power to go up and the cost to go down. Then we can think about a 24-channel version in a few years that could go for \$50,000 to \$75,000. It would essentially be an extension of the mixing console. Then we'll see some practical applications. In the meantime, if it's available for lease on major products, people will be educated and exposed to it in graduated steps.

**Bonzai:** Only one exists now?

**Currell:** Yes, and I have it right here in my studio. We just used it for a Japanese animated motion picture. I wrote some of the music along with my partner, Kevin Maloney, and processed it. We also processed all the dialog, sound effects and underscore.

**Bonzai:** This will play back on a standard system?

**Currell:** Yes, with no decoder. If you wear headphones, it's really great. But even on regular speakers, the sound doesn't seem to originate from the speakers themselves. It seems to come from the whole side of the room, but you can still pinpoint all the locations.

**Bonzai:** What's your average week like? Are you a musician, a producer, a composer, a scientist?

**Currell:** All of the above.

**Bonzai:** How do you pay the bills?

**Currell:** Producing is my day job. I produce a lot of records in Japan, like TM Network, one of the more successful groups. I'm known over there through my work with Michael Jackson. Since the tours ended, I've been spending half my time there producing records. I'm also involved in research

and development. One of the companies is Zoom—we collaborated on the 9002, the little Walkman-style guitar box that was a hit at the last NAMM show. Now we've come out with the 9010, a little digital studio processor. And there's my work with Technova, which is a think tank owned by the Toyota corporation. And Bodysonics is sponsoring my Virtual Audio System. They make chairs with speakers, and transducers that produce a physical sensation. They also make floors with subwoofers for applications like aerobics gyms. Very high-quality stuff. Bodysonics America opens here next year. They are also involved in theme park applications. Virtual audio applies, because their whole product uses sound. We've developed a virtual audio chair, which works without headphones.

**Bonzai:** How about the American music scene?

**Currell:** To tell you the truth, I don't feel very good about the American music scene. I think there is little worthwhile being said. There are exceptions, but generally, music has become a platform, a sounding board for people's problems. They grow up deprived, they have attitudes, they get a record deal, and they strike back. I understand that, but everyone has a responsibility to raise the quality of life—not lower it. We need to bring the less fortunate people up, not agree with a few and lower the standards of the whole society, based on the buck. It's not cool, and that's what we are experiencing.

**Bonzai:** Is this only true for America?

**Currell:** It's happening everywhere, but I think we are responsible for a majority of it.

**Bonzai:** I'd like to believe that one of the benefits of a virtual world would be a heightened experience, which we could take with us into our real world.

**Currell:** Ultimately, a virtual world agrees with our basic nature of being creative, spontaneous. If a person has an idea, they should be able to get it out into reality as quickly as they can think. That's why music is so wonderful, because we can improvise. The instant we think of something, we can do it. But all reality should be that way. ■

*Roving editor Mr. Bonzai's first forty into 3-D multimedia involved an Eich-a-Sketch, four transistor radios and a bowling pin. They wouldn't let him in the theme park.*

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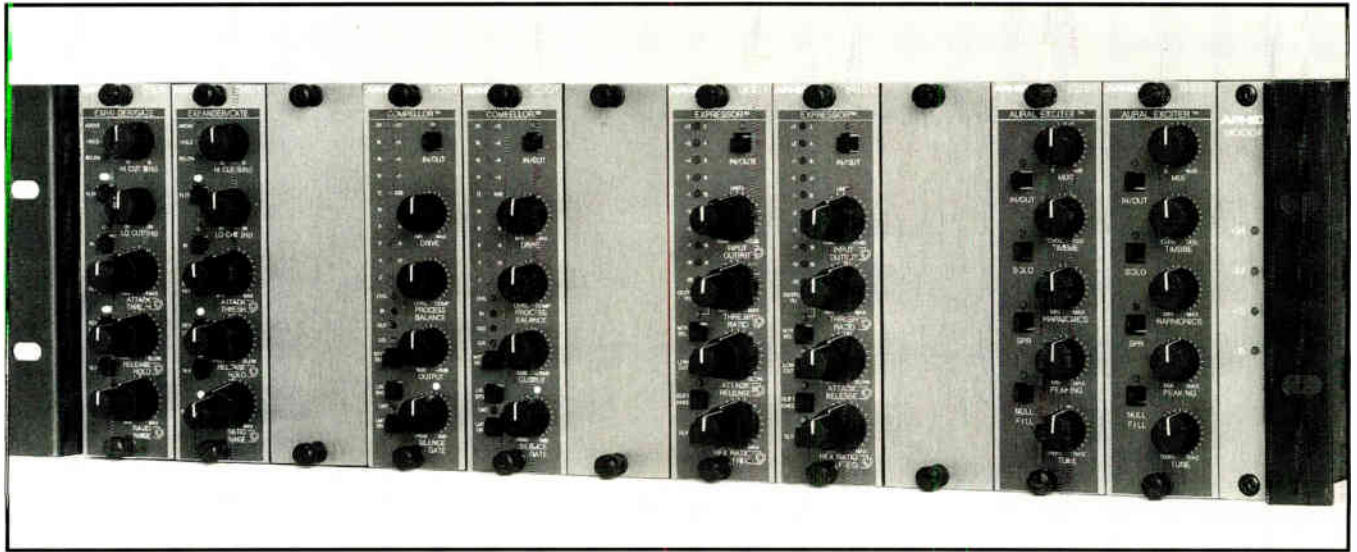
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World Radio History

and occasional producer) in a band called Prism. After recording five albums with the group, he slipped behind the board full time, and with the guidance of Vancouver mega-manager Bruce Allen, began producing a string of Canadian acts, including Loverboy, Strange Advance and Honeymoon Suite.

Fairbairn's place in rock history was cemented with the 1986 release of Bon Jovi's *Slippery When Wet*, which to date has sold more than 14 million copies worldwide, making it one of the biggest rock records ever. This was fol-

lowed up in 1987 by Aerosmith's *Permanent Vacation*, the smash that helped resuscitate the band's flagging career. All at once, Fairbairn was flavor-of-the-month in international pop circles, with bands left and right journeying to Little Mountain Studios, a comfortable (though certainly not ultra-luxurious) complex in downtown Vancouver where Fairbairn works almost exclusively.

More recently, Fairbairn produced follow-up records for Bon Jovi and Aerosmith (*New Jersey* and *Pump*, respectively), and teamed up for the first time with Krokus, the Dan Reed Network, Poison and AC/DC (on 1990's

*The Razor's Edge*). When we spoke with him recently, he had just wrapped a live AC/DC album, due out at the end of this year, and was returning from pre-production sessions for the next Aerosmith project, which will appear sometime in 1992.

**Mix:** Do you ever ponder what bands, managers and A&R people say about you when they're recommending a producer?

**Fairbairn:** I think I'd be happiest if bands just said, "We work with Fairbairn because he lets us make our record the way we want to make it." That's the best advertisement for my work. Basically, I like to be perceived as someone who facilitates the creative process. After all, you're making the record for the band. If I end up doing the songs, the arrangements and this 'n' that, then the band ends up thinking, "God, what can we do?" In a way, everything they get from me is something that they've taken from themselves.

**Mix:** If that's the case, what do you concentrate on?

**Fairbairn:** Production should always come secondary to capturing a moment. None of the songs on *Pump* would have flown if the guys in Aerosmith hadn't played them great initially. Once you have something good on tape, then you have a really solid basis to play around with, adding the production aspects, mixing in texture and color to the tracks. All those songs can be stripped down—you can get rid of the horns, the piano, the accordion—and still have a good album with great songs. The production is just there to enhance what the band has done. It's like baking a great cake with a lot of icing. I like a lot of icing! [Laughs]

In some cases, though, you just want the band to cook. AC/DC rocks using just the bare essentials. Their sounds are real separated, basic, strong, healthy, big, fat, aggressive sounds, so there's no need to mince around with production stuff. The production on their last record went into getting the sounds and actually keeping things *off* each track. These days, everybody's tendency is to double this or put harmonies on that. Working with AC/DC, I spent a lot of time questioning whether we needed to do certain things. I tried to stay true to the form, because that's what makes their magic, that straightforward, in-

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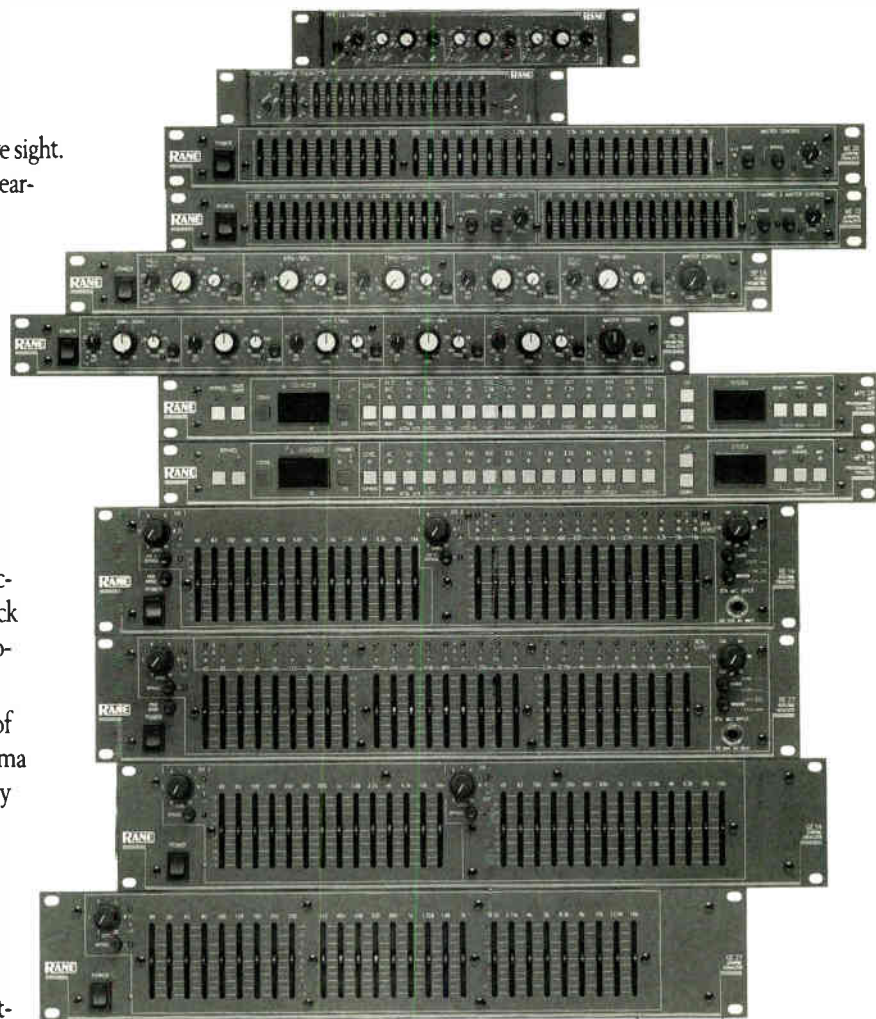
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your-face style.

**Mix:** So you sneak into a project as a creative nudge?

**Fairbairn:** Completely. I'm a lot more active when it comes to getting involved with a band's creative side. I'm more of a pot stirrer than someone who sits on the sidelines and waits to see what will happen. I like to get involved with a project right at the beginning, when the guys are still putting down their rough acoustic demos. At that point, I can identify those really strong ideas and encourage them, help them along, rather than wait until the last minute when it can become much more difficult to change things.

**Mix:** Does that ever pose a conflict of interest, to the extent that you become co-writer?

**Fairbairn:** Songwriting is not my job. Like I said, my job is to help a band create the album they want to make. If I do happen to contribute something writing-wise, unless it's a big, big deal, I'll let it go. If I have an idea and it's going to make for a better song, then it's worth incorporating it. I'm not re-writing choruses for these guys, and I don't take songwriting credit. I'm more involved in structuring and arranging the song.

You've got to work that way, though. If you bring up an idea and the guys in the band aren't threatened that they're going to lose ten percent of a song over it, they'll be much more inclined to listen to what you have to say. If you start arguing over every chord change or bridge or word, then that's just counterproductive to the project.

**Mix:** You did a behind-the-scenes videotape with Aerosmith while they were working on their last record, and there are plenty of creative differences to be seen throughout.

**Fairbairn:** Yeah, that tape, *The Making of Pump*, was a bold move for the band to put out. I've found many people who have been interested in it. The band pretty much bares all, and it gives a glimpse into the studio process, for better or worse. They're not trying to hide anything. If you've seen the video, you'll notice that there were a lot of stumbles along the way. But that's the reality of making a record.

**Mix:** And, of course, some of the best records ever made came out of heated sessions.

**Fairbairn:** Sure. Conflicts are good. A lot of times, if you don't have any



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sparks flying at rehearsal or in the studio, chances are you'll end up with a pretty dull kind of record. When you get creative people together with different ideas and attitudes, some sort of friction is bound to result. But I think that friction can be guided to positive outcomes.

**Mix:** So, do you ever find yourself running interceptions?

**Fairbairn:** It's more like being a referee, actually. I'd rather bring a problem out into the open, so we can all do something about it together. If I don't have to say anything, then that's great; the best ref is one who you don't even know is there. However, if a discussion starts going the wrong way and could be damaging to the album or to a guy's relationship with the rest of the band, then that's where I have to step in and play the psychologist or counselor, and work toward a positive ending.

You really have to be able to separate the wheat from the chaff in terms of their comments, and you have to rely on your own instincts to know when things are falling off track. For example, if someone wants to put a 64-bar kazoo solo in the middle of the song and you sense that it may not be the right thing to do, you must question the validity of that move.

**Mix:** Does that extend to picking the songs that go onto an album?

**Fairbairn:** All the time. I mean, you get a pretty good feel for which songs make the "A" list after you've spent a bunch of time in rehearsals playing them. There are usually six or seven songs that the band loves, enjoys playing and is comfortable with. These are the easy ones to agree on. It's the other five or six needed to round out the album that are the tricky ones. Those will be the songs that may be more outside in terms of their musicality, or may be more esoteric, style-wise. They're the ones where the discussions always go down.

**Mix:** What do you look for in a song?

**Fairbairn:** The thing that got Aerosmith's "Love in an Elevator" going for me was the lyric. The whole concept was different in terms of a pop song, and the strength of the riff also gave it some credibility as an Aerosmith song. There are a few guys, and [Aerosmith lead singer] Steven Tyler happens to be one of them, who have the ability to talk about something in a way nobody

—CONTINUED ON PAGE 138

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# CANADIAN NOTES

## NEWS BRIEFS

### **Salter Street Digital Opens in Halifax**

Work was completed earlier this year at Salter Street Digital, a Halifax, Nova Scotia, facility serving the needs of the film post-production and music recording communities.

All work at Salter Street takes place

studios and audio editing suites with automated multitrack recording and mixing suites.

Studio Centre is housed in a renovated five-story schoolhouse in the heart of Montreal. Studer recording machines are used throughout the complex, and with the latest expansion, two automated Solid State Logic

G Series mixing consoles have been incorporated. "Having two consoles makes the two rooms compatible and truly increases the flexibility of our working environment," says chief engineer Francois Deschamps. "The routing is especially flexible for doing split mixes, voice, music and sound effects."

The expansion work was conducted under the supervision of Patrick Bernsen, a specialist in the acoustic design of recording studios and a colleague of Tom Hidley, who designed the original Cinar Studio Centre in 1988.

Today, Studio Centre operates at near-full capacity, handling all the post work for the Cinar Group, a producer



**Above: Halifax, Nova Scotia's, Salter Street Digital Studio is set up for digital film post-production and music recording.**

in the digital domain, incorporating fully automated, 20-bit digital recording and mixing with instant-access electronic editing. Following a single analog-to-digital conversion process using Apogee AD-500 audiophile converters, all audio information is edited, enhanced with DSP and digitally mixed. Equipment includes a fully automated Yamaha DMC-1000 digital console, two Yamaha DRU-8 20-bit digital recorders, a Studer Editech Dyaxis 4-channel hard disk recorder/editor with a 1.2-Gigabyte hard disk and 600MB recordable magneto-optical drive. A Digidesign Sound Tools system and a Roland S-770 sampler are also used for sound effects editing.

### **Cinar Group Completes Studio Centre**

Now into its third year of operation, the newly expanded Cinar Studio Centre boasts three fully equipped sound



**Left: Studio 3 at Cinar Studio Centre's expanded Montreal facility.**

## Studio Spotlight: Winfield Sound

The recently completed control room at Winfield Sound in Toronto was designed by Pilchner Associates, and incorporates a diffractal rear wall designed by RPG Diffuser Systems and custom-designed Quested main monitors. Also featured are a Solid State Logic 4040E console, Studer tape machines and a Studer Editech Dyaxis digital audio workstation.

An APACS (Automated Parametric Acoustic Control System) allows electronic enhancement of the reverberant field in the studio, as well as variable ceiling angle and height—all under Macintosh control. Developed by Pilchner and Technovision—a Toronto company that handled the control electronics



PHOTO: RITA PINE-HERZOG/ISS

design—the Winfield APACS is the first such installation in the world.

The new Winfield facility was completed in December 1990 and is linked to video editing suites of Motion Picture Video Corporation, which is located in the same building.

way and Safeway Stores.

### Canadian Music Industry Directories

The fifth edition of *Music Directory Canada* contains more than 600 pages of listings for the Canadian music and recording industry. Among the more than 50 categories included in this edition are Recording Studios, Video Production Companies, Management Companies, Sound & Lighting Companies, Music Education and Associations. *Music Directory Canada* is published semi-annually, with the sixth edition planned for the spring of 1992. For more information, contact CM Books, Toronto, at (416) 486-1049.

AMI, *The Multimedia Directory*, from AMI Publishing (Concord, Ontario) contains 9,000 Canadian listings in seven sections, covering all aspects of media production. Published twice a year, the fall 1991 edition of the directory is now available. For more information, call (416) 841-5200.

### Centre for Image and Sound Research Established

Based in the Vancouver area, the Centre for Image and Sound Research is a

—CONTINUED ON PAGE 96

## Vancouver's Odds Have the Goods

by Blair Jackson

Bands hate it when you make comparisons between their music and other groups'. After all, with a few exceptions, they're trying to sound original. And in the case of the Vancouver "alternative" band The Odds, whose major label debut, *Neopolitan* (like the tri-flavored ice cream), was just released by Zoo Entertainment, we're talking about a band that really does have its own sound. That said, there are points of reference we could make without insulting them: early Elvis Costello. The Beatles (John Lennon, really). Crowded House, maybe even The Plimsouls, the great unheralded L.A. band led by Peter Case. Just don't ask *them* who they've been compared to: "I've heard it said we sound like a cross between Bob Marley and King Crimson," deadpans Craig Northey, who, with fellow guitarist/singer/songwriter Steven Drake, talked to *Mix* about the foursome's remarkable disc. (Rounding out the band and sharing in some of the songwriting are bassist Doug Elliott and drummer Paul Brennan.)

Since their formation in 1987, The Odds have played some 700 gigs, mainly in British Columbia, so their identity is well-established. "When you've played that much, after a while you get to a level of ESP in the band where everyone knows intuitively where the music's heading," says Northey. So it's not surprising that when the time came to cut their album, they were adamant about producing it themselves.

"We've always had a vision of what we wanted our record to be," Drake says. "I think a lot of records today are missing something, and part of it is that so much time goes into polishing things in the studio that the music doesn't create the illusion of standing in the room listening to the music happening. I really like a lot of the early stereo records from the late '50s and early '60s, because the engineers had a lot less to work with, so they became

—CONTINUED ON PAGE 97

and distributor of family programming for the Canadian and international broadcast and home video markets. In addition, Studio Centre makes its post facilities available to outside clients. Recent projects include music recording and mixing of the soundtracks for *Moody Beach* and the Oscar-nominated feature *Jesus of Montreal*, as well as the mixing of the recent platinum-selling LP by Kashtin.

### Vancouver's Ocean Group Expands

Following its transition in late 1990 to digital production, the Ocean Group, western Canada's largest audio post-production company, has expanded its services to accommodate increased business. Three individually specialized studio centers have been built—each featuring a DAR SoundStation II Digital Audio Production System—for various aspects of audio post.

Although well-known for its work in film and TV animation and live action ADR for a large international clientele, the Ocean Group is also active in post-production for TV and radio commercials for Canadian broadcast. Recent credits include McDonald's, Nissan, the Canadian National Rail-

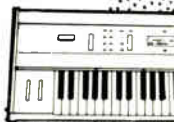
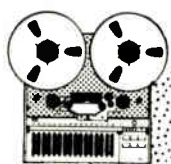
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—FROM PAGE 95, NEWS BRIEFS

recently established nonprofit group whose goal is “to conduct applied research into the artistic and technological aspects of image and sound, contributing to the development of communication technology, and the commercialization of related products through a process of technology transfer to industry.”

CISR membership is open to individuals and groups from industry, government, and the artistic and academic communities. Its establishment is a direct response to the ongoing technological and sociological transformation of communication technologies.

Of particular interest to the pro audio community is a project on spatial audio, which focuses on the investigation of the desired audio capabilities of High Definition Television (HDTV). The goal is to get a measure of listener preference regarding various configurations of multichannel audio in the listening environment. The results can then be used in evaluating proposed standards against cost and feasibility—both in the final presentation systems and in the production process.

For information about membership in CISR, contact Frannie Titosky at (604) 669-7943.

## Industry News

In Toronto, Manta Sound and Eastern Sound have entered into a joint venture resulting in the creation of Manta Eastern Sound Company Inc., with control held by Standard Broadcasting Corporation Ltd. The new operation will be housed in the existing Manta Sound complex, with plans for expansion at that site...Neve has named Leader Sound Technologies as its new representatives for the Neve and Mitsubishi line of products in British Columbia, Alberta and Saskatchewan. The Vancouver-based Leader supplies turnkey systems that incorporate advanced audio and video technology to the broadcast, post-production and corporate markets, and advanced high-resolution cinema systems for EDTV, HDTV and HDTV applications... Speaker and microphone manufacturer Audio-Technica, based in Stow, Ohio, recently expanded its distribution network to pro audio dealers in Canada...Curt Smith, former VP of Soundmaster International Inc., re-

cently launched Sascom Management Inc. Located in Pickering, Ontario, Sascom provides marketing and management consulting services exclusively to companies within the pro audio, video and music industries... Shelley Deslauriers has been appointed to the position of operations manager of Magnetic South in Toronto. Magnetic South is a member of the Magnetic Enterprises group of companies, which provides video and audio post-production, computer graphics and music production services for the film, television and corporate sectors...Several facilities have selected Solid State Logic equipment to satisfy their recording and mixing needs. Vancouver Studios, Reaction Studios (Toronto) and the CBC all purchased SL 4000 consoles, while Sounds Interchange (Toronto) and Vancouver Studios each incorporated SSL's SoundNet digital audio network system to augment their ScreenSounds. ■

## Into the Fire with Sarah McLachlan

by Blair Jackson

Considering the embarrassingly myopic state of American radio programming, it's not too surprising that Sarah McLachlan, a remarkable 23-year-old singer/songwriter from Halifax, Nova Scotia, has yet to be embraced by



Stateside listeners. In Canada, however, her first album, *Touch*, went gold, and her new one, *Solace* (on Arista Records), has already yielded a pair of popular radio songs, “The Path of Thorns” and “Into the Fire,” and has drawn critical raves. It's easy to see why: McLachlan's moody, ethereal

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music is strangely compelling, and her lyrics evince a maturity that belies her youth. But it's not exactly radio fodder—though I thought the same about Sinéad O'Connor, whose singing style is not terribly dissimilar to McLachlan's (Sarah's voice is stronger, technically), and look what happened to her.

"I've never tried to get a 'radio sound,'" says McLachlan's Montreal-based producer, Pierre Marchand, whose best-known previous work was with Kate and Anna McGarrigle. "I've always thought that good music should get played on the radio, so I just worry about making the music sound good." While McLachlan has what might be termed a folk singer's voice, her songs are not so neatly categorized, and most of the arrangements on *Solace* are unusual, with fairly unconventional instrumentation and multiple layers of her own stacked vocals.

According to Marchand, when the project came to him, McLachlan had very elaborately produced demos of the album's songs, "but I didn't like them at all, so I stopped listening to them. I asked Sarah to just sing the songs with guitar," he continues, "and then wherever I saw structural problems or whatever, we worked on them and then arranged the songs from there."

On a tune like the largely *a cappella* "Mercy," that process became quite complex: "After she sang through the melody with guitar," Marchand says, "I had her go back and then improvise harmonies on top of it, each time just referring to her original vocal, so we got all these interesting variations. We had eight tracks like that, and then I took out the ones that weren't quite right for whatever reason. Then I put all the faders up and that became the arrangement. Some phrases had a lot of harmony and some didn't. At the end, it all sounded very classical, so we added a last main vocal that was more bluesy, for contrast."

With its subtle use of drones and its airy, spacious, atmospheric feeling, the album recalls productions by another Canadian native, Daniel Lanois. In fact, Lanois and Marchand have worked together in the past, and Marchand sees Lanois' success as an affirmation that the slightly unorthodox approach to sonics the two share is commercially valid. Like Lanois, Marchand prefers working outside of regular studios. The first sessions for *Solace* took place in a house in Morin Heights (outside of

Montreal), and the bulk of the recording was done in two houses in New Orleans—including Lanois' abode there: "We set up a 24-track in his den, and it sounded great," Marchand says.

Marchand likes to engineer the projects he produces because "fewer people in the control room creates more focus," he says. "But I'm a musician before I'm an engineer, and the song is what is most important to me." And on that level he was very impressed with McLachlan. "She's very talented—obviously!—and she was great to work with, very open to ideas. And really, she's just beginning. She's going to get better." ■

—FROM PAGE 95, *THE ODDS*

real experts in where to place mics—and where to put the musicians in relation to the mics—and get a sound that's lively and convincing. We're trying to make records that have that kind of *life*, because it delivers more of an emotional response."

"We tried hard to capture the moment," adds Northey. "That sometimes gets sacrificed by people who spend a lot of time worrying about how they're using the tools of recording."

*Neopolitan* was cut at Crosstown Studios, a small Vancouver studio equipped with an MCI J11-600, Otari MTR-90 24-track, some old and new outboard gear, and a fine selection of mics, including a virtually mint 1951 U47 that engineer Al Roger bought from a church group awhile back. That served as the main vocal mic for The Odds. The guitars were recorded using Sennheiser 421s on the Vox and Fender amps. Drummer Paul Brennan's simple but very effective drum work was captured by a Shure SM57 on the snare, 421s on the toms, and an AKG D-12 on the kick. They recorded the album on 24-track, with Dolby SR, on 3M 996 tape at 15 ips.

Most of the album was recorded live in the studio, with the guitarists right in there with the drummer. "Paul [the drummer] had a saying: 'Leakage is our friend,'" Drake says with a laugh. "We had guitars coming through the drum mics and all sorts of stuff that

some other people probably wouldn't like, but what we were after was *presence*, and I think we got it." Most of Northey's and Drake's tight harmonies were added later.

"Crosstown's been a good studio for us," Northey says. "We've worked there a lot in the past, on demos and so forth, so it's sort of like our living room. When we went in to make the record, we already had everything out of the way in terms of the distractions of getting to know the room. We felt real comfortable."

Susan Rogers, an engineer who has done excellent mixing work for everyone from Prince to Michael Penn, was brought in to mix most of the project. "We're big fans of engineers and producers," Drake says, "and she was our first choice to mix the record. We know how to record pretty well, but she was able to get what we did away from that two-dimensional demo quality. She was able to place things in space so well using just the ambience we had and working it into three dimensions."

Somehow, Rogers managed to give *everything*—vocals, guitars, drums—an immediate, in-your-face quality that wonderfully showcases the strength of the tunes and the performances. This won't appeal to everyone—it's defi-



(L to R) Steven Drake, Craig Northey, Doug Elliott and Paul Brennan constitute the Vancouver "alternative" band The Odds.

nately quirky and idiosyncratic (but in a good way)—but for listeners who take the time to enter into the 13 distinct worlds created on this album, there are great rewards: catchy but subtle melodies, emotive lead vocals, excellent harmony work and, above all, lyrics with unfailingly interesting perspectives.

Whether it breaks through to a mass audience or not, one senses this band will be around for a while. Certainly, it's a *very* auspicious debut. ■

# CANADIAN STUDIOS

## 24-TRACK

[24+] **AMBIANCE (A.R.P. TRACK PRODUCTIONS);** 34 Chemin des Ormes; Ste-Anne-des-Lacs, Quebec, J0R 1B0; (514) 224-8363. **Owner:** Nick Keca. **Manager:** Nick Keca. **Engineers:** Freelancers. **Dimensions:** Room 1: studio 20x30, control 20x26. Several other recording rooms of various sizes. **Mixing Consoles:** Vintage Neve 36 input, 60 channels in remix. **Audio Recorders:** Studer A80 Mark IV 24-track, MCI JH-110 C 2-track. **Cassette Recorders/Duplicators:** TEAC. **Synchronization Systems:** Cipher Digital Shadows and Cipher Digital Softouch editing system, JVC CR-6650 VTR, various SFX libraries. **Echo, Reverb & Delay Systems:** Lexicon 480L, Lexicon PCM70, Lexicon PCM42, (2) Lexicon LXP 5 and LXP-1, (2) UREI LA-4 compressor, Drawmer DS-201 gate, Drawmer DS-231 compressor. **Microphones:** AKG, Neumann, Sennheiser, Shure. **Monitor Amplifiers:** QSC. **Monitor Speakers:** UREI 813C, Yamaha NS-10. **Musical Instruments:** Akaï S1000, E-II, E-mu Proteus XR, Roland D-110, Roland Super-Jupiter, various other Yamaha and E-mu products. **Other MIDI Equipment:** Macintosh IIX-based sequencing system w/Opcode Studio 3 and various programs, hard disk recording system—Digidesign Sound Tools w/Mac IIX. **Rates:** Please call for more information. **Specialization & Credits:** Ambiance is a live-in project studio in the beautiful Laurentian mountains, 40 minutes north of Montreal. Lakes, ski resorts and premium restaurants all within five minutes of the studio give this creative environment an "Old European" charm. A classic Neve/Studer studio, Ambiance is a two-story chalet that houses a traditional studio on the first floor and a beautiful rustic chalet setting on the second floor. Both floors are totally interaced, providing several different acoustical environments to record in. Ideal for album work, film, scoring and mixing. With a favorable rate of exchange and no hold-back tax for American artists, Ambiance is an attractive option. Recent clients include New World Pictures and Honeymoon Suite.

[24+] **BASTION CITY MOBILE RECORDING LTD.;** also REMOTE RECORDING; 3760 Departure Bay Rd.; Nanaimo, B.C., V9T 1C4; (604) 758-3424. **Owner:** B.C. Recording Ltd. **Manager:** Scott Littlejohn.

[24+] **BETA SOUND RECORDERS LTD.;** also REMOTE RECORDING; 10534 109 St.; Edmonton, Alberta, T5H 3B2; (403) 424-3063; FAX: (403) 425-2789. **Owner:** Gary Koliger. **Manager:** Gary Koliger.

[24+] **BLUE WAVE PRODUCTIONS LTD.;** also REMOTE RECORDING; 34 West 8th Ave; Vancouver, B.C., V5Y 1M7; (604) 873-3388; FAX: (604) 873-0674. **Owner:** Tom Lavin. **Manager:** Diane Harris/Brad Belcher.

[24+] **CHALET STUDIO; RR #1; Claremont (Toronto) Ontario, L0H 1E0; (416) 649-1360; FAX: (416) 649-2951. Owner:** David Chester. **Manager:** Everett Ravestien.

[24+] **CINAR STUDIOS INC.;** 1207 St. Andre; Montreal, Quebec, H2L 3S8; (514) 843-7070; FAX: (514) 843-7080. **Manager:** Barbara Parker. **Engineers:** Francois Deschamps.

Alain Roy, John Nestorowich, Pierre L'Abbe'. **Dimensions:** Room 1: studio 25x15, control room 18x18. Room 2: studio 25x15. Room 3: control room 15x15. **Mixing Consoles:** SSL 6056G w/Total Recall, Neotek Essence, SSL 4040G. **Audio Recorders:** (4) Studer A820 24-track, Studer A820 8-track, (2) Studer A820 2-track 1/4"/1/2". (4) Studer A812 2-track. **Noise Reduction Equipment:** Dolby SR (127) card. **Synchronization Systems:** Studer TLS system, Soundmaster, Audio Kinetics, ES Eclipse (ESbus). **Echo, Reverb & Delay Systems:** (2) Lexicon 480L, (6) TC Electronic TC 2290, (2) Aphex Compellor, Aphex Aural Exciter, (3) Drawmer M500, Publison IM90, (4) Lexicon PCM70, (8) various processors, Yamaha SPX150, (2) Yamaha REV5, (2) Yamaha SPX9011, (6) Alesis MIDiverb II. **Microphones:** (48) AKG, Neumann, Sanken, Schoeps, Shure, etc. **Monitor Amplifiers:** (2) FM Acoustic Model 1000, Robertson 60110, (2) Denon, (12) QSC. **Monitor Speakers:** (2) Hidley/Kinoshita, (2) B&W 808, (2) B&W 801, (6) EV Sentry 100, (2) Yamaha NS-10M. **Other MIDI Equipment:** (2) Dyaxis hard disk editing systems by Studer/Editech. **Video Equipment:** (3) ESP projector, (5) Sony TV monitor, JVC 850 VCR, (16) JVC 6650 VCR.

[24+] **COMFORT SOUND AUDIO MOBILE;** only REMOTE RECORDING; 26 Soho St., Ste. 390; Toronto, Ontario, M5T 1Z7; (416) 593-7992. **Owner:** Doug McClement. **Manager:** Doug McClement.

[24+] **CREATION STUDIOS LTD.;** also REMOTE RECORDING; 7490 Edmonds St.; Burnaby, B.C., V3N 1B4; (604) 525-3422; FAX: (604) 525-3234. **Owner:** Barry Henderson and Paul Dean. **Manager:** Lisa Barton.



dB RECORDING STUDIOS  
London, Ontario

[24+] **dB RECORDING STUDIOS;** also REMOTE RECORDING; 46 Charterhouse Cr.; London, Ontario, N5W 5V5; (519) 659-9529; FAX: (519) 663-8074. **Owner:** Dan Brodbeck.

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CANADIAN

STUDIOS

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Trevor Morris, Rick Brodbeck. **Manager:** Dan Brodbeck. **Engineers:** Trevor Morris, Dan Brodbeck, Bill Cox (maintenance). **Dimensions:** Studio 35x22, control room 19x21. **Mixing Consoles:** D&R Dayner 42x36. **Audio Recorders:** Sony/MCI JH-24 24-track w/autolocator, Tascam MSR-16 16-track w/autolocator, Otari MX-5050B 2-track, Tascam DA-30 R-DAT w/remote. **Cassette Recorders/Duplicators:** (2) Nikko D-60W. **Noise Reduction Equipment:** Tascam DX-2D 2-track dbx Type I. **Synchronization Systems:** Adams-Smith Zeta-3. **Echo, Reverb & Delay Systems:** Roland R-880 w/remote, (2) Yamaha REV-7, (2) Roland SRV-2000, Roland DEP-5, Roland SDE-2500, Alessi Quadraverb. **Other Outboard Equipment:** Roland E-660 digital parametric EQ, Rane RE-27 1/3-octave EQ, Rane RE-14 stereo 15-band EQ, Akai PEQ-6 programmable EQ, Tascam PE-4 parametric EQ (4 band), Roland VP-70 harmonizer/vocoder, Akai ME-35T audio-to-MIDI trigger, dbx 120X-DS sub-sonic synthesizer, (2) Symetrix 522 comp/exp/gate/ducker, Symetrix CL-150 comp., Symetrix CL-150B comp/de-esser, Symetrix 501 comp/peak/limiter, Furman LA-3 comp., Aphex, Furman QN-4. **Microphones:** AKG C-414, CAD Equitek II, AKG 451 w/CK1, AKG 451 w/CK2, (2) AKG 535, (2) AKG D-112, AKG D-12E, (4) Sennheiser 421, Sennheiser 409, Sennheiser 441, (2) Shure SM57, (4) Crown PZM, EV 308 N/Dym. **Monitor Amplifiers:** (3) Bryston 4B, Bryston 2B, (2) AMR PMA-70. **Monitor Speakers:** Tannoy 215 DMT, Tannoy PBM-6.5, Yamaha NS-10M. **Musical Instruments:** Yamaha upright grand piano, Pearl 6-piece drum kit, Roland RD-1000 digital piano, Sequential Circuits Prophet-VS. **Other MIDI Equipment:** Akai MPC-60, (2) Roland D-550 synth module, (2) Roland MKS-20 digital piano module, Roland S-550 digital sampler, Roland MKS-80 Jupiter module w/Programmer, Roland MKS-50 synth module, Roland A-880 MIDI patch bay, Roland A-110 MIDI display/filter. **Video Equipment:** Niles Audio A/V switcher, MVR-4000 video monitor, 3/4" VTR machine. **Other:** SoundTools digital editing software, 1963 Vox AC-30 guitar amp, custom guitar rack w/4x10 Hartke cabinet. **Rates:** Please call.

[24+] **E.M.A.C. RECORDING STUDIOS;** 432 Rectory St.; London, Ontario, N5W 3W4; (519) 667-3622; FAX: (519) 642-7453. **Owner:** Electronic Media Arts Corp. **Manager:** Robert Nation.

[24+] **INCEPTION SOUND STUDIO;** 3876 Chesswood Dr.; Toronto, Ontario, M3J 2W6; (416) 630-7150; FAX: (416) 630-7157. **Owner:** Chad Irshick, Jeff Wolpert, Harold Kilianski. **Manager:** Harold Kilianski. **Engineers:** Chad Irshick, Jeff Wolpert, Harold Kilianski. **Dimensions:** Room 1: studio 20x30, control room 19x22. Room 2: studio 18x26, control room 19x17. **Mixing Consoles:** (2) MCI JH-536 36x32 w/Diskmix automation. **Audio Recorders:** (2) MCI JH-24 24-track, MCI JH-110 2-track, Ampex ATR-102 2-track, Otari MTR-12 2-track/4-track, Sony PCM-701 2-track digital, (2) MCI JH-536 36 x 32 (John Hardy mic preamp), Sony DTC-1000 2-track digital with Apogee filters, (2) Awa HD-X1, Panasonic 3700 DAT, Sony 5003 2-track w/time code. **Cassette Recorders/Duplicators:** (3) Sony TC-K777. **Noise Reduction Equipment:** Dolby SR 24-track, 1/4 2-track Dolby SR. **Synchronization Systems:** Adams-Smith 2600 with controller (5 machine look-up). **Echo, Reverb & Delay Systems:** (2) AMS RMX 16, Publison America IM90, (2) Klark-Teknik DN780, EMT 240, (4) Roland DEP-5, (2) Lexicon Prime Time, Yamaha REV7, (4) Efectron 1024, Echolon 4096, Yamaha REV5, Lexicon 480. **Other Outboard Equipment:** GML compressor, GML EQ, GML mic preamps, Tube-Tech Lydcraft EQ, Eventide 949 Harmonizer, Aphex Compellor, Publison America CL-20C compressor, Valley People 610, Orange County CLX, (2) dbx 160, UREI 1176, UREI LA-4, (4) Kepex II, Trident CB9066 EQ, (2) UREI para EQ, (2) UREI 546 EQ, Ashly Audio SC-66 EQ, dbx 263X de-esser, (14) John Hardy mic preamps, Tubetech Lydcraft compressor. **Microphones:** Neumann, Telefunken, AKG, Sony, B&K, Sanken, Shure, Beyer, Crown, EV, Telefunken U-47, Stephen Paul modified, Neumann SM68 stereo. **Monitor Amplifiers:** Bryston, BGW, Crown, AB Systems, QSC. **Mon-**

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itor Speakers: JEL 4430, Yamaha NS-10, Auratone, Sota CF-750. **Musical Instruments:** Steinway 1929 9' grand piano with MIDI interface, (2) Slingerland snare. **Other MIDI Equipment:** Atari 1040ST with Notator, Aphex studio clock, Alessi HF-16 drum machine, Rcanal PM 16+ drum kit. **Video Equipment:** (2) JVC 3650 3/4" VCR, (3) color monitor. **Other:** Sony CDP-302, Sound Ideas CD sound effects library. **Rates:** On request.

[24+] **LE STUDIO MOBILE;** only REMOTE RECORDING; PO Box 367, Outremont Station; Montreal, Quebec, H2V 4N3; (514) 273-6861; FAX: (514) 273-4605. **Owner:** Guilaurme Bergle.



**MANTA/EASTERN SOUND**  
Toronto, Ontario

[24+] **MANTA/EASTERN SOUND;** 311 Adelaide St. E.; Toronto, Ontario, M5A 1N2; (416) 863-9316; FAX: (416) 863-1448. **Manager:** Kevin Evans. **Engineers:** Gary Gray, John Naslan, Ron Searles, Rick Starks, Mike Duncan, Andy Hermant, Mike Baskeville. **Dimensions:** Room 1: studio 30x13, control room 26x20. Room 2: studio 60x44, control room 26x20. Room 3: studio 24x20, control room 20x15. Room 4: studio 12x10, control room 20x13. **Mixing Consoles:** Amek APC 1000/56 w/GML Mvbr g Fader automation, Neve V Series/52 w/GML automator, Westar 36 w/Compumix PD automator. **Audio Recorders:** (2) Sony 3348 48-track, (3) Mitsubishi X-85 (32-track digital), (2) Sony 3348 48-track, (3) Studer A820 24-track. **Other:** Studer A827 24-track, AMS AudioFile harddisk recorder various Studer A80 and A810 2-track. **Synchronization Systems:** Soundmaster systems in all rooms. **Microphones:** (1) E.O. Neumann U47, U67, U49, Schoeps, AKG, Sennheiser and many vintage tube condensers. **Rates:** Please contact studio manager.

[24+] **MARGAREE SOUND;** 225 The Lake Driveway West; Ajax, Ontario, L1S 5A3; (416) 683-5680; FAX: (416) 281-8842. **Owner:** Russell Daigle. **Manager:** Russell Daigle. **Engineers:** Russell Daigle, Murray Daigle, George Graves. **Dimensions:** Room 1: studio 12x14, control 12x23. Room 2: studio 14x16. **Mixing Consoles:** Tascam M600 32x24x2. **Audio Recorders:** Tascam MSR-24 24-track, Tascam 52 2-track, Tascam DA-30 DAT. **Cassette Recorders/Duplicators:** Nakamichi MR1, Tascam 122 MkII. **Noise Reduction Equipment:** Tascam DX-2D dbx Type I, MSR-24 24-track dbx Type I. **Echo, Reverb & Delay Systems:** (2) Alessi Midverb II, Alessi Quadraverb, Yamaha REV5 reverb, Lexicon PCM60 reverb. **Other Outboard Equipment:** Drawner DL221 compressor/limiter, Ashly Audio CL52 compressor/limiter, Paramedics CGM-2 compressor Dynex, dbx 1531P graphic equalizer, Paramedics DGM-2 compressor Dynex, dbx 1531P graphic equalizer, Yamaha Q2031A graphic equalizer, BBE B22-A. **Microphones:** Electro-Voice PL20, Shure SM58, Shure SM57, AKG D-535 EB, AKG C-1000S, AKG 114, AKG D-112, Sennheiser MD441, AMR EFC-12, Neumann U87i. **Monitor Amplifiers:** Yamaha 2150C, Peavey CS-400, Tascam MH-40 headphone amp. **Monitor Speakers:** RCF SCD 6000, Yamaha NS-10, Klipsch Heresy. **Musical Instruments:** Yamaha DX7iIFD synthesizer, Yamaha TX802 FM tone generator, Yamaha QX5 sequencer, Yamaha RX5 drum machine, Premier Resonator 7 pc. drum kit, Martin D28 guitar, Ibanez SDGR bass, Fender strat guitar, Godin LR Eaggs guitar, Charvel Mark I guitar, Ibanez George Benson guitar, Bialwin Hamilton studio piano, Fender Reverb II guitar amp, Crate CR-285B bass amp. **Other MIDI Equipment:** Atari 1040ST w/Notator and Untor.

[24+] **MASTER'S WORKSHOP;** also REMOTE RECORDING; 306 Rexdale Blvd., Ste. 7; Rexdale, Ontario, M9W 1S6; (416) 741-1312. **Owner:** Division of Magnetic Enterprises. **Manager:** Bob Predovich.

[24+] **MASTERTRACK LTD.;** 35A Hazelton Ave.; Toronto, Ontario, M5R 2E3; (416) 922-4004; FAX: (416) 922-8634. **Owner:** Ken Burgess. **Manager:** Jim McBride.

[24+] **MCCLEAR PLACE STUDIOS LTD.;** 225 Mutual St.; Toronto, Ontario, M5B 2B4; (416) 977-9740; FAX: (416) 977-7147. **Owner:** Bob Richards. **Manager:** Jane Rcanan.



[24+] **METALWORKS RECORDING STUDIOS**; also *REMOTE RECORDING*; 3611 Mavis Rd., Unit #5; Mississauga, Ontario, L5C 1T7; (416) 279-4008; FAX: (416) 279-4006. Owner: Gil Moore. Manager: Alex Andronache.

[24+] **MUSHROOM STUDIOS**; 1234 W. 6th Ave.; Vancouver, B.C., V6H 1A5; (604) 734-1217. Owner: Charles Richmond. Manager: Linda Nicol Rosenbaum. Engineers: Dave Ogilvie, Greg Reely, Dale Penner, Rob Porter, Rolf Hennemann, Keith Stein, Ken Marshall. Dimensions: Room 1: studio 50x30, control room 15x20. Room 2: studio 14x20. Room 3: studio 15x11. Mixing Consoles: Richmond Sound Design 48x22x8 VCA subgroups w/optional tube preamp. Audio Recorders: Studer A80 III 24-track, Studer A80 II 16-track, Studer B67 2-track, Ampex ATR-100 2-track (1/4" or 1/2" heads), Revox A77 1/2-track, Revox A77 1/4-track, (2) Sony PCM 2-track digital, Nagral III mono film sync, Panasonic DAT SV-3700. Cassette Recorders/Duplicators: (6) JVC KD-A11, JVC DD-9. Noise Reduction Equipment: (2) Dolby 361, (10) RSD VCF noise gate/filter, (5) Allison Kexep noise gate, (10) RSD VCA noise gate, (3) Roger Mayer RMB0X noise gate, Burwen DNF-1200A dynamic noise filter, (2) dbx 904 noise gate. Synchronization Systems: Q.Lock. Echo, Reverb & Delay Systems: EMT 240 Gold Foil plate reverb w/remote, Eventide H910 Harmonizer, Lexicon 224 4.4 digital reverb w/13 programs, Lexicon Prime Time 93 digital effects, Lexicon 480L digital reverb, Yamaha SPX90, Lexicon 224XL w/LARC, MICMIX Master-room reverb, Yamaha REV7, (2) acoustical echo chamber, UREI Time Cube analog delay unit, Korg SDD-2000 programmable MIDI sampling delay, Roland SRV-2000 digital reverb, DigTech DSP 128 multi-effects, ART MIDverb digital multi-effects, Lexicon LXP-1, Lexicon LXP-5, Lexicon MCRMIDI controller. Other Outboard Equipment: (2) dbx 905 parametric equalizer, (3) Furman PQ-3 parametric EQ, (3) Langevin graphic EQ, (2) Neve 1081 input module w/4-band EQ, dbx 902 de-esser, Orban Parasound 516EC de-esser (3 channels), (2) Allison Research Gain Brain comp/limiter, (4) dbx 903 compressor/limiter, Universal Audio 175B tube limiter, Universal Audio 176 tube limiter, (3) UREI 1176LN compressor/limiter, dbx 120X-DS sub-harmonic synthesizer, (2) MXR auto flanger. Microphones: AKG C-12 and others, (2) Beyer MCT13, (2) B&K 4007, (4) EV RE15, (3) Neumann U47, (7) Neumann U87, PZM condenser, (8) Sennheiser MD-421, (3) Shure SM57, (3) Shure SM58, Sony C-57, Neumann KM84, KM85, (2) Beta 58 and many others. Monitor Amplifiers: (2) RSD APA-36B 180-watt amplifier, (8) RSD APA-128 60-watt amplifier. Monitor Speakers: (2) Altec 604E w/Time Aligned horns, (4) Mastering Lab crossovers for all 604Es, (2) Altec 604E studio playback loudspeaker, (2) Auratone 5C Super Sound Cube, (2) Yamaha NS-10. Musical Instruments: Yamaha C7 7' grand piano, Fuehr & Stemmer upright piano, Marshall 4x12" loudspeaker cabinet, Tama drum kit including Ludwig 402 snare, Paiste 2002 hi-hat, Traynor Mate bass amplifier. Video Equipment: Electrohome ECD-2504 25" color monitor, Sony 3/4" video player, Sony Beta VCR, Sharp VHS. Other: (50) headset, (2) compact disc player.

[24+] **PIAZZAUDIO**; 3615 Weston Rd., Unit 10; Weston, Ontario, M9L 1V8; (416) 748-7440; FAX: (416) 748-6146. Owner: Barry Lubotta. Manager: Barry Lubotta, Rob White. Engineers: Barry Lubotta, Rob White. Dimensions: Studio 22x14, control room 22x16. Mixing Consoles: CAD Maxcon Mixing System 56x56 w/Type 2 master module. Audio Recorders: (2) Akai A-DAM synched for 24-track digital recording, Fostex E22 1/2" 30 ips 2-track w/center time code, Fostex M20 1/4" 15 ips 2-track w/center time code, Panasonic SV-3500 DAT, Sony DTC-1000 DAT w/Apogee filters. Cassette Recorders/Duplicators: JVC DD9, Denon M44-HX, Aiwa AD WX 808 double deck. Synchronization Systems: Opcode Studio 3. Echo, Reverb & Delay Systems: Lexicon 300, Lexicon PCM70, Lexicon PCM60, Lexicon LXP-15, Yamaha SPX900, Alesis Quadverb, Korg A3. Other Outboard Equipment: Summit Audio tube compressor, Drawmer M-500 dynamic processor, Drawmer DL241 compressor, Drawmer DS404 Quad gate, Valley Audio compressor, Proceed digital-to-analog converter, Loft EQ. Microphones: Neumann U87 modified by Stephen Paul, AKG The Tube, CAD Equitek 2, (2) Calrec CM 1050C, (2) AKG 451, (2) Sennheiser 451, (2) Shure SM58, Shure SM57, Shure SM57 Beta, RCA BK5, Beyer M88, (3) Electro-Voice 408. Monitor Amplifiers: Studer A68, Bryston 4B. Monitor Speakers: Tannoy DMT 15 (mains), Hartman near-fields, Phoenix near-fields, Tannoy PBM-6.5 near-fields. Musical Instruments: Fender guitars, Guild bass, Fender Super Champ, Mesa/Boogie cabinet, Celestion Legend cabinet, R-8 drum machine, Alesis HR-16 drum machine, Yamaha TG77, Ensoniq SQ80, Roland D-550, Roland S-550, Roland A-880 MIDI patch bay, Roland RA-50 real-time arranger, Yamaha TX-802, Yamaha TX-812, Oberheim Matrix 1000. Other: TEAC CD player, Technics record player, Macintosh IIfx w/5 meg RAM, 100 meg hard drive, Vision 1.3 sequencing software, laser printer fax photocopier. Rates: \$100/hour, less for block rates.

[24+] **REACTION STUDIOS**; 48 McGee St.; Toronto, Ontario, M4M 2K9; (416) 461-7869. Manager: Ormond Jobin. Engineers: Ormond Jobin, Matthew Dematteo, James Stewart. Dimensions: Studio 36x22, control room 24x19. Room 2: control room 17x14. Mixing Consoles: Solid State Logic SL4040 G, Soundcraft 1600 Series 24x16x8. Audio Recorders: Studer A80 MkIV 24-track, Studer A807 2-track, Studer Dyaxis, MCI JH-110B 2-track, Sony DTC-1000 DAT with Apogee filters, Sony PCM-601 ESD digital, Sony SLHF—LISTING CONTINUED TOP OF NEXT COLUMN

900 2-track Beta Hi-fi. Cassette Recorders/Duplicators: Nakamichi MR-2, Luxman K-112, Luxman K-111. Noise Reduction Equipment: Dolby Xp-SR 24-channels, Dolby SR 363. Synchronization Systems: Adams-Smith. Echo, Reverb & Delay Systems: Lexicon 480L vs.3, Lexicon 300, Lexicon PCM70, Lexicon LXP-15, Lexicon PCM60, Lexicon PCM42, Eventide H3000 Ultra-Harmonizer, Yamaha REV7, Roland GP-8. Other Outboard Equipment: (2) Neve Prism input and dynamics module, (2) Neve Prism EQ, Aphex Aural Exciter III, Aphex expander/gates, (2) dbx 160X comp/limiter, (2) UREI 1176, (2) Pultec HQ-Z tube EQ, (2) API 550 EQ, Valley People GateX. Microphones: Neumann U47, (2) Neumann U87, Neumann U89, (2) Neumann U84, (2) AKG 414, (2) AKG C-451, (3) AKG C-460, AKG D-112, (4) Sennheiser MD-421, Sennheiser 441, (2) Sennheiser 409, Sony 37P, (6) Shure SM57, (2) Shure Beta 57. Monitor Amplifiers: (8) Bryston, AB Systems. Monitor Speakers: State-of-the-Art Electronics CF-2500, Yamaha NS-10M, Tannoy PBM-6.5. Musical Instruments: Roland S-770, Roland D-50, Roland R-8, Roland D-110, Korg M1, Korg M3R, Yamaha RX5, Yamaha TX81Z, Yamaha Power "V" drum, Hammond organ w/Leslie, Lester grand piano, Roland Jazz Chorus amp, Trace Elliot and Hartke 410B bass cabinet. Other MIDI Equipment: Mac IIsi w/Performer software, Mac Plus w/Performer software. Rates: \$90/hr. to \$135/hr. Call for details.

[24+] **ROUND SOUND STUDIOS INC.**; also *REMOTE RECORDING*; 357 Ormont Dr.; Weston, Ontario, M9L 1N8; (416) 743-9979; FAX: (416) 463-8233. Owner: Gina Troiano. Manager: Bob Federer.

[24+] **SOUNDS INTERCHANGE LIMITED**; also *REMOTE RECORDING*; 49 Ontario St.; Toronto, Ontario, M5A 2V1; (416) 364-8512; FAX: (416) 364-1585. Owner: Supercorp. Manager: Peter Mann.

[24+] **SOUNDWERKS STUDIOS**; 1965 Pandora Street; Vancouver, B.C., V5L 5B2; (604) 255-3536; FAX: (604) 255-8711. Owner: Brian Wadsworth. Manager: Brian Wadsworth.

[24+] **SOUNDWORKS INC.**; also *REMOTE RECORDING*; 500 Newbold St.; London, Ontario, N6E 1K6; (519) 686-5060. Owner: Geoff Keymer. Manager: Geoff Keymer.

[24+] **STARBASE**; 2121 Hingston Avenue; Montreal, Quebec, H4A 2H9; (514) 486-0876; FAX: (514) 335-6891. Owner: Frank Marino. Manager: Denyse Bauset.



STUDIO MORIN HEIGHTS  
Morin Heights, Quebec

[24+] **STUDIO MORIN HEIGHTS**; 201 Perry; Morin Heights, Quebec, J0R 1H0; (514) 226-2419; FAX: (514) 226-5409. Owner: Studios Audiogram/Spectel. Manager: Mario Rachiele. Dimensions: Studio 40x40, control room 20x20. Mixing Consoles: Solid State Logic 4050G Series w/Total Recall and G Series automation computer, 8 extra stereo VCA line amps with computer controlled faders assignable to the stereo bus, SSL events controller, remote computer keyboard and remote patch bay. Audio Recorders: Studer A800, Otari MTR 90-24, Studer A80 1/2" 2-track, (2) Studer B67 1/4" 2-track, Panasonic 3700 & 3500 DAT, Studer A68. Cassette Recorders/Duplicators: (2) Studer cassettes and CD players. Noise Reduction Equipment: (2) Dolby 360 w/A or SR. Synchronization Systems: (4) Lynx TimeLine. Echo, Reverb & Delay Systems: Lexicon 224 XL reverb, AMS RMX 16 reverb, (2) Yamaha REV5 reverb, Yamaha REV7 reverb, Ursa Major Space Station, EMT 140 stereo plate, (2) EMT 140 mono tube plates, AMS DMX delay/harmonizer, (2) Yamaha SPX90, Lexicon PCM-41, Alesis MIDverb, (2) DeltaLab Effectrons ADM 1024, (2) DeltaLab Compu-Effectron CE 1700. Other Outboard Equipment: (8) Focusrite 110 EQ, (4) Advision fixed frequency EQ, BBE 802, —LISTING CONTINUED ON NEXT PAGE



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World Radio History

# CANADIAN STUDIOS

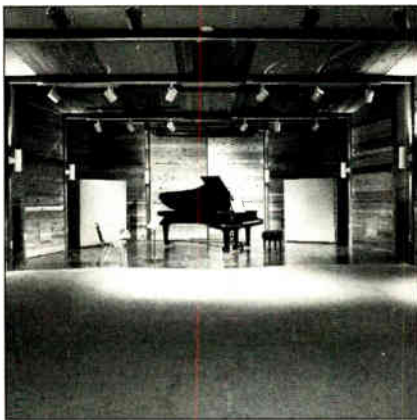
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(3) RCA tube limiters BA6A, (7) Le Studio custom tube EQ, (2) dbx 161 limiters, (2) Neve 2254 compressor, Altec 9473 A limiter, Gates M3529B tube limiter, (2) UREI LA-3A limiters, (2) UREI 1176N compressors, Roger Mayer RM59, Survival Project panner, Orban Sibilance Controller, (4) LeStudio trigger units, (2) SSL Listen mic preamp/limiter, (3) White Instruments 4001 graphic EQ, SSL Quad Comp. E Series (pair stereo). **Microphones:** (4) Neumann U67, (2) Neumann U47, (3) Neumann U87, Neumann KM831, (3) AKG C451, AKG D12E, (3) AKG C414, Studer SKM 5V, Shure SM81, (6) Shure SM58, (2) Shure SM57, (5) Beyer M500, (8) Sennheiser MD421, (2) Sennheiser MD441, (4) Electro-Voice RE20. **Monitor Amplifiers:** (2) Quedstedt 275 watt, Quedstedt 1500 watt, McIntosh Mc2505, McIntosh Mc2300. **Monitor Speakers:** (2) Quedstedt 412 MkII, (2) Yamaha NS-10M, (2) Acoustic Research 18S, (2) Tannoy 3233 15" Gold monitor. **Musical Instruments:** Yamaha 9' concert grand piano, Hammond B3 w/Leslie. **Specialization & Credits:** Studio Morin Heights is on the outskirts of the village of Morin Heights, in the heart of Quebec's Laurentian Mountain resort area. Located on 225 acres of land, overlooking a private lake, it offers a tranquil working environment perfect for the creative process necessary in recording an album. Across the lake from the studio are the guest accommodations. Major records: The Police *Ghost In the Machine/Synchronicity*, Asia *Alpha*, David Bowie *Tonight*, Sting *Dream of the Blue Turtles*, Keith Richards *Talk is Cheap*, Queensryche *Operation Mindcrime*, Bryan Adams *You Want It You Got It/Cuts Like a Knife*, Rush *Moving Pictures/Signals/Permanent Waves/Exit Stage Left/Grace Under Pressure/Presto/Roll the Bones*, Kim Mitchell *Shaken Like a Human Being*, A-Ha *East of the Sun, West of the Moon*.

**[24+] STUDIO MULTISONS INC.,** also REMOTE RECORDING; 1208 Beaubien St. E., Rm. 101; Montreal, Quebec, H2S 1T7; (514) 272-7641; FAX: (514) 272-3191. **Owner:** Raymond Du Berger, Jacques Bigras. **Manager:** Raymond Du Berger.

**[24+] STUDIO PLACE ROYALE INC.,** 640 St. Paul W., Ste. 600; Montreal, Quebec, H3C 1L9; (514) 866-6074; FAX: (514) 866-6147. **Owner:** S. Brown & N. Rodrigue. **Engineers:** N. Rodrigue, B. Landry, J. Smith, S. Brown, G. Fernandes. **Dimensions:** Room 1: studio 25x16, control room 20x15. Room 2: studio 25x16, control room 14x16. Room 3: studio 18x20, control room 16x20. **Mixing Consoles:** Anek Angela 28 x 24, A&H Syncon 16 x 16, A&H 12 x 2, Soundcraft TS 12. **Audio Recorders:** Otari MTR-90 24-track, Otari MX-70 8-track, (2) Otari MTR-12 2-track CTTC, Otari 5050 4-track, Scully 280 2-track, (2) Revox 2-track, Sony/MCI JH-110 1" layback, Otari MT55, Dyaxis digital recording 640, DAR Soundstation II digital recording. **Cassette Recorders/Duplicators:** Akai, Sony. **Synchronization Systems:** Soundmaster CMX, Dyaxis. **Echo, Reverb & Delay Systems:** Lexicon PCM60, Lexicon PCM70, (2) Neve compressor/limiter, Ursa Major Space Station, (4) Kepex audio gate, UREI audio filter set, Orban de-esser, MCS Powertran, (2) dbx compressor, (2) Harmonizer, Aphex, Hardy preamps. **Other Outboard Equipment:** (3) Technics turntable, (3) Technics CD player, Dolby SR. **Microphones:** (2) Neumann U87, (2) Neumann U67, (2) AKG 414EB, Shure SM81, Sennheiser 415, (6) various dynamic. **Monitor Amplifiers:** (2) Bryston 4B, (2) Bryston 2B, (2) QSC, Quad. **Monitor Speakers:** (2) Tannoy HPD 16", (2) Tannoy NFM-8, (2) Tannoy PBM-6.5, (2) Studer 2706, (2) Tannoy LGM. **Musical Instruments:** Roland S-50, Roland Juno-106, Roland W-30. **Video Equipment:** JVC 6650 VCR 3/4", (2) JVC 8500 VCR 1/4", (2) JVC monitor, Sony monitor, (3) Hitachi monitor. **Rates:** \$80 min. wild recording, \$125 to \$150 video sync.

Pro Audio dictionaries and technical reference guides are available through the Mix Bookshelf catalog. Call toll-free (800) 233-9604 for your free copy.



**STUDIO SAINT-CHARLES**  
Longueuil, Quebec

**[24+] STUDIO SAINT-CHARLES;** 85 Grant St.; Longueuil, Quebec, J4H 3H4; (514) 674-4927; (514) 526-6043; FAX: (514) 674-6929. **Owner:** Tele Metropole Inc. **Manager:** Yves E. Senechal. **Engineers:** Clement Chateau, Martin Lizbe, Paul Page (chief engineer). **Dimensions:** Room A: studio 55x27, control room 15x27. Room B: studio 11x25, control room 10x12. **Mixing Consoles:** Trident TSM 32x24 modified PSM modules, Soundtracs PC 16x16. **Audio Recorders:** Studer A827 24-track w/remote, Studer A80-8 MkIII 8-track transformerless, Studer A80RC 2-track 1/2" super analog, Studer A80-2 2-track, Studer A820 2-track w/center-track time code, Studer A810 2-track w/center-track time code, Panasonic SV-3700. **Cassette Recorders/Duplicators:** (4) Nakamichi MF-1, Technics RM85. **Noise Reduction Equipment:** (2) Dolby SR and A. **Synchronization Systems:** (2) CMX S-600 Triconcept Scimitar (Class 4) audio editors, (6) TimeLine Lynx w/updated chips. **Echo, Reverb & Delay Systems:** Lexicon 480L (with LARC), Lexicon PCM70 Version 3.01, Lexicon 224, (2) Lexicon Prime Time 93, AKG ADR-68K, TC Electronic 2290 (32-sec. sampling), Alesis MIDverb II, Roland DEP-5, Yamaha SPX90II, SPX1003, Eventide H-3000SE, Lexicon LXP-5, Lexicon LXP-1. **Other Outboard Equipment:** Focusrite 18A 1.5HD EG, Pelebis RA701 gate, (2) Valley People Dyna-Mite comp/limiter/expander/gate, Orban 516EC de-esser, Orban 622B stereo parametric EQ, (2) dbx 160 comp/limiter, (2) dbx 165 comp/limiter, dbx 166, (4) Scamp F410 expander gate, (4) Scamp S05/S06 dynamic noise filter, (2) 823 automatic pan, Eventide H910 Harmonizer, Eventide FL201 Instant Flanger and much more. **Microphones:** Neumann U87, U47, AKG Le Tube, 451, 452, 414, 422; Crown, Shure, Sennheiser, etc. **Monitor Amplifiers:** Crown DC-300, (16) Quad Eight 303, Quad Eight 405, Quedstedt A900 E, Quedstedt DX3000 E. **Monitor Speakers:** Quedstedt 412B, Quedstedt 108, JBL 4408, Yamaha NS-10M, Radian MM8. **Musical Instruments:** Baldwin SD-109' concert grand, (2) French hunting horn (D). **Other MIDI Equipment:** Macintosh SE w/Performer, MIDI Paint and Professional Composer software, Southworth Jam Box 4+, Garfield Master Beat synchronizer, (2) Digital Creator's MX-8 MIDI processor. **Video Equipment:** (2) JVC CR600 3/4" VCR time code JVC BR6400U 1/2" VHS videocassette recorder, Skotel TCR-80V TC reacer/generator, Leitch SPG-120N sync pulse generator, Sanyo VHS VCR 9401. **Other:** (2) Technic: SL-4200 CD player, (6) JVC video monitor 8", 12" and (4) 21", (2) dbx 903, (2) dbx 904, (2) dbx 905, (12) Sony MDR-V7 headphones, Brainstorm remote talkback, Technics SAGX100 amplifier, Nikko NP-750 turntable. **Free parking. Rates:** Studio 1 (8-track) \$100/\$175 (cdn) interlock. Studio 2 (24-track) \$70/\$225 (cdn) interlock.

**[24+] STUDIO TEMPO INC.,** 0707 Chavevoix St.; Montreal, Quebec, H3K 2Y1; (514) 937-9571; FAX: (514) 937-8207. **Owner:** Yves Lapierre, president. **Manager:** Carl Alexander. **Engineers:** Ian Terry, Denis Barsalo, Michel Lachance, Francois Arbour, Denis Cadieux, Martin Pratte. **Dimensions:** Room 1: studio 12.3m x 9.2m, control room 7.7m x 6.5m. Room 2: studio 9.8m x 6.1 m, control room 9.8m x 6.7m. **Mixing Consoles:** Anek Q2520 28 x 24, AMR 24-track 44/24/2. **Audio Recorders:** Studer A827 24-track 2-inch, Studer 800 MkIII, 24-track 2-inch, (3) Otari MTR-12 2-track CTTC 1/4-inch and 4-track, 1/2-inch and 2-track, Studer A812 2-track 1/4-inch and mono full track, (2) Studer BB7 2-track 1/4-inch, Studer PR99 stereo and mono. **Cassette Recorders/Duplicators:** Technics, Yamaha, Nikko, Alva, Nakamichi. **Noise Reduction Equipment:** (3) Dolby SR/A 363 2-track, Dolby A M16 16-track. **Synchronization Systems:** (2) CMX CASSI, (3) Adams-Smith. **Echo, Reverb & Delay Systems:** Lexicon 224, Lexicon PCM70, (2) Lexicon PCM42, Lexicon Prime Time, (3) Yamaha SPX90, (2) Yamaha REV7, Roland SDE-2000, Roland SRV-2000, EMT 140, Loft 450, Master-Room, etc. Lexicon 480L, Yamaha REV5, Roland DEP-5, EBE 8t2, Quacravverb. **Other Outboard Equipment:** dbx 166, dbx 160, UREI, Eventide, Allison Research Kepex, Allison Research Gair Brain, Aphex Compellor, Drawmer 1960, Valley People compressor, etc. **Microphones:** AKG, Crown, Electro-Voice, Neumann, Sennheiser, Shure, Studer, etc. **Monitor Amplifiers:** Quedstedt, QSC, Quad Eight, Crown. **Monitor Speakers:** Quedstedt, Studer.

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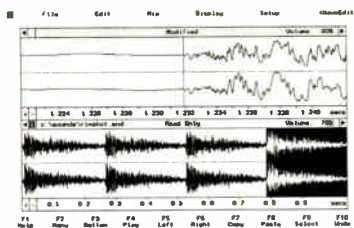
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# CANADIAN

## STUDIOS

—LISTING CONTINUED FROM PREVIOUS PAGE

er, JBL, Auratone, Westlake, Yamaha. **Musical Instruments:** Yamaha acoustic 7' grand piano, Oberheim DPX, Roland S-330, Roland S-550, MKS 70, MKS 80, MKS 20, MPG 80, PG 800, Korg M, Akai 5950, S1000 MB, Yamaha TX 816/DX7, Roland Octapad/R8. **Other MIDI Equipment:** Complete MIDI setup, patch bays, Macintosh II Plus full synthesizer setup. **Video Equipment:** (2) JVC U-matic 3-4" VCR. **Other:** CMX CASS I automation system, (4) TV monitor, sound effects and stock music library (CD format), Audio Kinetics, Reflex G4 automation. **Rates:** 24-track \$195/hr. with interlock \$245/hr., 8-track \$140/hr. with interlock \$190/hr., 2/4-track \$110/hr. with interlock \$160/hr. Editing and or mixing by computer (CMX Cass1) \$180/hr. with interlock \$230/hr. editing.

[24+] **STUDIO 270; 270 Outremont Ave., Montreal, Quebec, H2V 3M1; (514) 270-4918; FAX: (514) 733-4760. Owner:** 270 Corporation. **Manager:** Robert Langlois. **Engineers:** Robert Langlois, Luciano Arcarese. **Dimensions:** Room 1: studio 20x12, control room 12x12. **Mixing Consoles:** Soundcraft 6000 52 inputs. **Audio Recorders:** Otari MX-80 24-track, Tascam MS-16 16-track, Otari MTR-12-CT 2-track, Panasonic SV-3500 2-track, Sony PCM-601 2-track. **Cassette Recorders/Duplicators:** (2) Nakamichi MF-1. **Noise Reduction Equipment:** Dolby XP-24 SR 24-track, Dolby 363 A/SR 2-track, dbx 16-track. **Synchronization Systems:** Fostex 4030, Fostex 4035. **Echo, Reverb & Delay Systems:** TC Electronic 2290, Lexicon PCM70, Lexicon PCM60, Klark-Teknik DN780, Eventide H3000, Lexicon Prime Time, Lexicon LXP-1, Lexicon LXP-5, Roland DEP-5, Yamaha SPX90, Alesis MIDverb II, Alessi XTC, (2) Yamaha REV7, Orban IIB, (3) Drawmer DS-201, Drawmer DL-241, (4) dbx 160X, (2) UREI LN1176, (2) Drawmer 1960 tube, Orban 536A, Aphex Exciter Type B, Barcus-Berry 802, (2) Tube-Tech PE-1C, Tube-Tech MP-1B, (2) Orban 642B, (2) Loft 401. **Other Outboard Equipment:** (2) Rane GE30, (2) Rane HC-6. **Microphones:** AKG Tube, (3) AKG 414EB, (2) AKG 451/CK1/CK3, AKG D-12E, AKG D112, (2) AKG C-535EB, Beyer DN740N, Neumann U47 FET, (3) Neumann U87, Neumann U89, Neumann TLM-170i, Neumann KM84, Shure SM7, (7) Sennheiser, (7) Shure. **Monitor Amplifiers:** Bryston 2B, Bryston 3B, Bryston 4B. **Monitor Speakers:** (2) UREI 809, (2) Yamaha NS-10M, (2) Tannoy PBM-6.5. **Musical Instruments:** Yamaha DX7, Kurzweil 1000PX Roland R-8 drum machine, Yamaha KX-88 controller, PROTEUS I. **Video Equipment:** JL Cooper PPS-100 SMPTE/MIDI, JVC BR8600U 1/2" Pro VHS. **Other:** Philips CD-473 CD player. **Rates:** Call, upon request.

[24+] **TURTLE MOBILE RECORDING LTD.; only REMOTE RECORDING; 1505 W. 2nd Ave., Ste. 202; Vancouver, BC, V6H 3Y4; (604) 731-2446; FAX: (604) 732-0922. Owner:** Larry Anshell, Dave Trgovcic. **Manager:** Larry Anshell.

[24+] **VANCOUVER STUDIOS INC.; 3955 Graveley Street; Burnaby, BC, V5C 3T4; (604) 291-0978; FAX: (604) 291-6909. Manager:** R.H. (Ray) Gachardi, Bruce Levens. **Engineers:** Marc Ramaer, Steve Royea. **Dimensions:** Room 1: studio 45x30x18, control room 23x25x16. Room 2: studio 28x34, control room 21x22. Room 3: studio 13x24, control room 18x24. **Mixing Consoles:** SSL 4036 G Series w/Total Recall and bar graphs, SSL 4048G Series, MCI 528 w/automation. **Audio Recorders:** (3) Otari MTR 100 24-track, Otari MX80 24-track, Otari MTR-12 1/2" 2-track, Otari MTR-12 1/4" 2-track w/center track time code, Otari MX-55 1/4" 2-track w/center track time code, Panasonic SV-3500 DAT, Sony 500 ES DAT. **Cassette Recorders/Duplicators:** (2) Nakamichi MR2. **Noise Reduction Equipment:** (2) Dolby 363 SFA, Dolby XP24 SR. **Synchronization Systems:** (5) TimeLine Lynx modules, TimeLine Lynx KCU controller. **Echo, Reverb & Delay Systems:** Lexicon 480L, (2) AMS 16, (2) Lexicon PCM 70, (2) Lexicon PCM 42, (2) TC 2290, (2) Eventide H3000, Korg DRV-3000, Roland DRV1000, Yamaha SPX90, Lexicon LXP-15. **Other Outboard Equipment:** GML 820Q parametric EQ, (2) Tube-Tech PEO 1 tube EQ, TC 2240 parametric EQ, (2) Drawmer D5201 dual channel noise gates, Aphex expander/

—LISTING AND PHOTOLOGO CONTINUED TOP OF NEXT COLUMN



## Vancouver Studios

VANCOUVER STUDIOS INC.  
Burnaby, BC

gates dual channel, (4) Valley People Kepex II, Valley People Gain Brain II, UREI 1176 LN compressor, Drawmer 1960 dual channel tube compressor, (4) dbx 160X compressor/limiters, (2) dbx 166X compressor/limiter, Valley People Dynamite gate/compressor, Aphex Aural Exciter, (16) Soko DI, (5) Brooke-Siren DI, (5) Countryman DI. **Microphones:** Various Neumann, AKG, Sennheiser, Shure, Calrec. **Monitor Amplifiers:** UREI/JBL, Crown. **Monitor Speakers:** (2) UREI 813C, Tannoy ESM, (6) Yamaha NS-10, JBL 4406. **Video Equipment:** (2) SSL Screensounds (w/1 hr. and 3 hr. drive), Evert Time Code Serial interface, (2) large screen projection TV (JBL), (2) Sony BVU-950 3/4" video recorder, (3) Sony PVM-2020 TV monitor, (4) Sony PVM-1342 TV monitor, Sony BVU-900 3/4" video player. **Other:** (2) Audio post-edit suites (Screen Sound), (12) Foley Pits. **Specialization & Credits:** Recent album credits: Queensryche *Empire*, eng. Jimbo Barton, prod. Peter Collins. The Odds *Neapolitan*, mixed by Susan Rogers. kd lang *Torch & Twang*, eng. Joe Seta, prod. Greg Penny. *Spirit of the West Go Figure*, eng. Greg Peely, prod. Joe Ciccarelli. Recent film credits: ADR/ Foley and editorial facilities: *Chain Dance*, prod. Richard Davies, dir. Alan Goldstein. *Morning Glory* prod. Steven Stern/Michael Vinger, dir. Steven Stern. *Cafe Romeo* prod. William Vince/Richard Davis, dir. Rex Bromfield. Recent TV credits: ADR/ Foley/editorial facilities/mix. 3 series NHK/NHK International Japan.

[24+] **WELLESLEY SOUND STUDIOS; 106 Ontario St., Toronto, Ontario, M5A 2V4; (416) 364-9533; FAX: (416) 364-7815. Owner:** Roger Slein, Jeff McCulloch. **Manager:** Dianne Wilding.

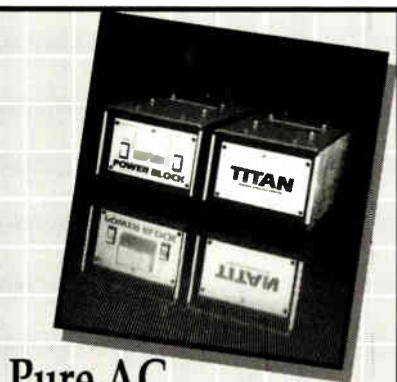
[24+] **WEST 11TH AUDIO; also REMOTE RECORDING; 822 11th Ave. SW; Calgary, Alberta, T2R 0E5; (403) 265-0258; FAX: (403) 265-4012. Owner:** L.J. Williamson. **Manager:** Chris McIntosh.



THE WINFIELD SOUND CORPORATION  
Toronto, Ontario

[24+] **THE WINFIELD SOUND CORPORATION; also REMOTE RECORDING; 189 Church Street; Toronto, Ontario, M5B 1Y7; (416) 363-3472 (DISC); FAX: (416) 363-3907. Owner:** Aubrey Winfield, Nick DeSante. **Manager:** Aubrey & Mari Winfield. **Engineers:** Earl Torno, Bob Bartolucci, Eric Apps, Dave Antonacci, Aubrey Winfield. **Mixing Consoles:** SSL 4040 E/G. **Audio Recorders:** Studer A827 24-track, Studer A807 2-track 1/4-inch, Studer Dyaxis, Sony DAT, Sony PCM 701ES. **Cassette Recorders/Duplicators:** Various. **Synchronization Systems:** Adams-Smith 2600 w/AV editor. **Echo, Reverb & Delay Systems:** Lexicon 480L LARC, Lexicon PCM60, (2) Lexicon LXP-1, Yamaha REV7, Eventide H3000 Ultra Harmonizer, Lexicon PCM42, Korg SDD-3000. **Other Outboard Equipment:** Teletronix LA-2A tube compressor/limiter, (8)

—LISTING CONTINUED TOP OF NEXT PAGE



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Neve 1073 preamp equalizer, (2) API 550 equalizer, (2) API compressor, (2) Tube-Tech PE 1B tube equalizer, (2) Tube-Tech CL1A tube compressor, (2) dbx 160X compressor/limiter, (2) dbx 166 comp/gate, (2) Ashly Audio SC33 noise gate, Drawmer noise gate, Symetrix noise gate, Loft noise gate, BBE 802. Microphones: Neuman, EV, AKG, Calrec, Crown, SASS, Milab, B&K, Shure, Sony. Monitor Amplifiers: Quesled, Monitor Speakers: Quesled Q212B, Yamaha NS-10M, Tannoy NFM-88, Tannoy PBM-6.5. Video Equipment: Various. Rates: Call for rates. Specialization & Credits: Winfield Sound, operating in the same complex as Motion Picture Video Corporation, is a full-service facility. The studio features an RFZ control room, and multilevel studio proper designed by Pilchner Associates. The control room incorporates a diffractal rear wall designed by RPG Difusor Systems. Exclusive features include an APACS (automated parametric acoustic control system) where the reverberant field in the studio is enhanced electronically, as well as the ceiling angle and height being physically variable. The control room features an SSL 4040E console and Studer tape machines, plus a full array of signal processing equipment, MIDI equipment and microphones. Tielines link the facility to video editing suites of all formats in the building enabling full audio/video/film interlock.

## 16-TRACK

[16] **BROCK SOUND PRODUCTIONS**; 576 Manning Ave.; Toronto, Ontario, M6G 2V9; (416) 534-7464; FAX: (416) 538-2563. Owner: Brock Fricker. Manager: Brock Fricker.

[16] **BULLFROG RECORDING STUDIOS**; also REMOTE RECORDING; 2475 Dunbar St.; Vancouver, BC, V6R 3N2; (604) 734-4617; FAX: (604) 733-0840. Owner: Bullfrog Recording Company Ltd. Manager: Maggie Scherf.

[16] **EXPERIMENT IV RECORDING STUDIOS**; 133 Lawson Road; Scarborough, Ontario, M1C 2J3; (416) 284-3794. Manager: Edward Agabeg.

[16] **POWERLINES RECORDING FACILITY**; also REMOTE RECORDING; 51 Kingspark Blvd.; Toronto, Ontario, M4J 2B9; (416) 466-6517. Owner: Fred Duvall. Manager: Fred Duvall.

[16] **PYRAMID PRODUCTIONS**; 128 Hartzel Rd.; St. Catharines, Ontario, L2P 1N7; (416) 641-0292; FAX: (416) 641-0292. Owner: Fraser Kaufman. Manager: Paul Rozon, Mike Corrigan.

[16] **RIGHT TRACKS SOUND STUDIO**; also REMOTE RECORDING; 226 B Portage Ave., Sub PO 18; Saskatoon, Saskatchewan, S7H 0Y0; (306) 933-4949; FAX: (306) 664-2064. Owner: Lyndon Smith. Manager: Lyndon Smith.

[16] **SHAG SOUND STUDIO**; also REMOTE RECORDING; PO Box 518, Postal Station W., #16 Nashville Ave.; Toronto, Ontario, M6M 5C2; (416) 652-5485. Owner: Dennis Brunet. Manager: Dennis Brunet.

## 8-TRACK

[8] **AIRBOURNE AUDIO**; also REMOTE RECORDING; 316 Challenger Crt.; New Castle, Ontario, L1B 1K4; (416) 987-0771. Owner: Mel Kay.

[8] **EDDY BALTIMORE PRODUCTIONS**; also REMOTE RECORDING; 439 King St. E. #5; Toronto, Ontario, M5A 1L5; (416) 364-9813. Owner: Edward Hutchison. Manager: Eddy Baltimore.

[8] **MUSIC GALLERY**; also REMOTE RECORDING; 1087 Queen St. W.; Toronto, Ontario, M6J 1H3; (416) 534-6311. Manager: Paul Hodge.

[8] **REEL TIME RECORDERS LTD.**; also REMOTE RECORDING; 1489 Hollis St.; Halifax, Nova Scotia, B3J 3M5; (902) 422-8567. Owner: Chuck and Mary O'Hara. Manager: Chuck O'Hara.

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by George Petersen

# YAMAHA DMR8 DIGITAL MIXER/RECORDER



I have seen the future and it is digital. Not 16-bit, but *real* 20-bit stuff. And not five years from now, but right here, right now, in the form of the Yamaha DMR8 Digital Mixer/Recorder. Actually, this development shouldn't be too much of a surprise—since Yamaha's introduction of the DMP7 and DMP7D digital mixers some years back, you had to figure they were up to something big, and the DMR8 is that something.

Outwardly, the DMR8 seems pretty simple: an 8-track digital recorder and mixer combination in a compact package. However, the DMR8 is just the tip of the iceberg. It forms the basis of an expandable, digital production package with eight, 16 or 24 tracks of recording and 24-track digital mixing capability (with the clarity of 24-bit mixer resolution) in a virtual console design, with snapshot recall of all console parameters, moving fader au-

tomation and onboard digital effects (reverb, delay, chorus, EQ, compression, etc.).

Along with the eight digital audio tracks, two aux audio cue tracks and a time code track are provided. The DMR8 can chase-lock to incoming SMPTE time code; additionally, the unit will slave to the DRU8 8-track recorder/system expanders with sample accuracy.

The system tape format is Yamaha's proprietary M20P metal particle cassette, which records 22 minutes at 44.1 kHz or 20 minutes at 48 kHz. Longer 8-track record times can be achieved through a serial slave mode; this automatically starts a second 8-track transport to provide continuous recording when the tape on the first deck runs out. The tape's running time of over 20 minutes is 20% longer than a 10.5-inch reel of analog running at 30 ips. One nice touch is a pair of erase-protect

# If Michelangelo had a QUADRAVERB, he might have mixed music instead of paint.



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## FIELD TEST

notches on the cassette for tracks 1-4 and tracks 5-8, so the vocal or rhythm tracks you spent hours assembling can be protected while overdubbing continues.

Audio data is recorded via a stationary head block, so the transport is much simpler mechanically than rotary head schemes such as DATs or VCRs. Aware that the proprietary tape format is presently available only through Yamaha and a handful of dealers nationwide, Yamaha plans to offer a program whereby users can order tapes directly, with overnight delivery, if required. So what happens if you run out of tapes at 3 a.m. on a Saturday? You wait until Monday, just as you would if you ran out of 1- or 2-inch analog tape at some inopportune time. Analog or digital, some things never change.

Before recording, the tapes should be formatted—much in the same manner that one would initialize or format a floppy disk before inserting it in a computer or sampler—ideally in real time. However, the DMR8 can format while recording, although this will omit the table of contents section

at the start of the tape, where automation, routing, setup and autolocation data can be stored. Alternatively, you can take 30 seconds to format the TOC section, and then let the rest of the tape format itself as it records.

The DMR8's rear panel is packed with connectors of all sorts: digital, analog, MIDI, time code, word clock, video sync and "video superimpose" jacks. The latter are two BNC in/out connectors used to superimpose the DMR8 LCD-status display's data over a video picture. One minor quirk is the placement of the control room and cue headphone outputs on the rear panel, which is somewhat inconvenient. There are lots of connections here, but you won't find any analog audio inputs, except for the aux cueing tracks and a 2-track input that can be switched for playback through the control room outputs. Yamaha offers the optional 8-channel AD8X analog-to-digital converter, with analog line inputs and Yamaha-format digital output; an 8-channel mic preamp (Model HA8) is also available.

Interfacing the DMR8 to external digital devices—that is, those devices that are *not* equipped with Yamaha-format I/O—can at the same time be

both simple and convoluted. During one session, I wanted to transfer a stereo DAT recording to the DMR8 via the S/PDIF "DAT Input" port, which only routes to the control room monitor bus. No problem hearing the track in the control room, but getting it to tape required connecting an 8-pin DIN cable (Yamaha format) from the "out insert" point to the "sub in" return jack.

On the other hand, other digital routings can be extraordinarily flexible. For example, both the control room and cue monitor outs are available as analog XLR pairs, as well as digital AES/EBU and S/PDIF ports. Normally, a cue system wouldn't be used during mixdown, but the DMR8 offers other possibilities: a cue mix could be employed for submixes or simply as an additional routing bus—with multiple analog and digital outputs. On a pop project I produced with the DMR8, I wanted to use a Summit tube equalizer (a definitely non-digital device) on vocals, so I used the analog cue mix out as an effects send and returned the signal back into the DMR8 via the AD8X A/D converter. The results were fine, although using a lot of analog outboard gear with the

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If you're planning to build a 24-track development studio, here's another advantage: The M3500 is the perfect match for the MSR-24, Tascam's one-inch 24-track recorder. Together, they make the most cost effective studio available.

It just may be that you don't need a huge console to enlarge your capabilities. The M3500 offers you a new, more effective approach to traditional mixing that is both compact and low cost. And when you need more inputs, all you'll have to do is switch channels. From 24 to 48. Or from 32 to 64.

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## FIELD TEST

the frame while the fingers do the walking. In any case, punches were seamless, and crossfade times adjust from 1.33 to 2.730 milliseconds, with a default of 23 ms.

Several track-bouncing modes are offered, allowing users to perform assembly edits, such as combining different takes of solo or vocal lines into one seamless track, or digital ping-ponging, where several tracks can be mixed internally to other tracks (with or without external sources). The DMR8 has write-after-read capability, so it is possible to record eight tracks and ping-pong them onto any two tracks, although this is a destructive edit. Fortunately, mixes and effects can be automated, providing ample opportunity to get it right before making any irreversible track bounces.

The moving faders are a definite plus, yet it must be understood that the faders only indicate *relative* positioning—the digital mixing and processing happens instantaneously within the DMR8 and is not limited by the mechanical speed of the faders themselves.

The DMR8's audio quality is superb.

After spending a week listening to 20-bit reproduction, going back to the 16-bit digital recording system in my studio was quite a shock. Certainly, the days of using the phrase "CD quality" as a synonym for excellence are over—just ask anyone who's heard Mitsubishi's 20-bit PDX-8620 2-track recorder. If you want to hear how good the DMR8 really sounds, check out the new release by The Bob Smith Band, *Radio Face* (DMP Records CD-483), which was engineered and mixed by Tom Jung and produced entirely on the DMR8.

There could be quite a future in store for the DMR8. As a modular system, it allows users to start out with the basic recorder/mixer unit, and then add DRU8 8-track recorder expanders as necessary to form a complete 8-, 16- or 24-track production environment, with the ability to digitally transfer to/from other digital multitrack systems (PD, DASH, etc.). And since all the automation parameters are controllable via MIDI, enterprising third parties could develop new software enhancements, such as editor/librarians and possibly PC-based control systems.

The DMR8 is priced at \$34,000,

which may limit its appeal to the masses, but when you consider what comes with the package (digital recording, digital domain mixing, dynamic moving fader automation, onboard effects processing, SMPTE chase-lock, MIDI sync, etc.), it becomes an affordable step toward assembling a powerful, expandable production system.

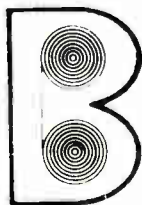
Beyond Yamaha's original intended market—project studios and professional musician/composers—the DMR8 would certainly appeal to the video/film post market and pro audio studios, who might make the system the centerpiece of a "B" or "C" room. In the latter, the DMR8 would provide an invaluable tool for doing overdubs on a digital project. Why tie up the main room, big console and megabuck digital multitrack when the DMR8 could handle the same tasks—with better sound quality—at a lower price? In these belt-tightening, recessionary times, Yamaha's DMR8 is a sensible approach that offers a lot for the money.

Yamaha Corporation of America, Pro Digital Products, 6600 Orange-thorpe Avenue, Buena Park, CA 90620; (714) 522-9011. ■



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# NEW PRODUCTS

## DYNAUDIO MONITORS

From Denmark comes the Dynaudio studio monitor line, providing high SPL performance from compact enclosures. Unveiled at AES and distributed in the U.S. by 21st Century Ltd. of Los Angeles, the series includes the 115dB M1 desktop model, C2 classical music monitor, M2 mid-field speaker and the M3 flush-mounting mains system. All feature hand-built drivers and distortion figures (at full output) claiming to be one-tenth that of competing models.

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## PUBLISON WORKSTATION 8000

Publison, of Bagnolet, France (near Paris), offers the Infernal Workstation 8000, a disk-based multi-track recording/editing system with a recording capacity of eight to 48 track-hours. The 8000 is available in 4-in/8-out, 8-in/8-out and 12-in/12-out versions, and standard features include self-sync to VITC or LTC time code, time compression/expansion, pitch control on each track, RS-422 VTR or video editor control interface, automated mixing, electronic tablet/pen control, and extensive non-destructive editing functions.

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## DIGIDESIGN PRO TOOLS

Pro Tools™ from Digidesign (Menlo Park, CA) combines multitrack recording and editing, MIDI sequencing, signal processing and automated digital mixing into a disk-based workstation using the Mac II platform. Expandable from four to 16 record/play tracks, Pro Tools can instantly recall from any number of virtual tracks, each with real-time digital effects and parametric EQ. MIDI sequences can be recorded, edited and played separately or in sync with the audio tracks. Other features include XLR analog inputs and support for AES/EBU and S/PDIF digital formats. Prices for 4-channel systems begin at \$5,995—not including the Mac or hard disk.

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## DIGITAL DOMAIN FORMAT CONVERTER

New from Digital Domain of New York City is the FCN-1, a versatile, low-cost (\$450) device that converts digital data streams from S/PDIF consumer-type to pro AES/EBU, and vice-versa. The FCN-1 can also act as a digital distribution amplifier for feeding four digital devices simultaneously.

Circle #278 on Reader Service Card

## ▼ SUMMIT DUAL COMP/LIMITER

Summit Audio, Los Gatos, CA, presents the DCL-200, a dual-channel compressor/limiter incorporating a modern vacuum tube design. Each channel features individual gain, threshold, slope, attack, release and bypass controls, as well as LED clip indicator and switchable

output level/gain reduction VU metering. XLR inputs and outputs are standard, as is a link switch for selecting stereo or dual mono modes.

Circle #279 on Reader Service Card

## K-T DN735 UPDATE

Klark-Teknik (Farmingdale, NY) announces a software update for its DN735 solid state recorder, a one-rackspace unit that records and plays back up to 175 seconds of stereo—or 350 seconds of mono—48kHz digital audio in sync to SMPTE time code.

The revision supports Ampex VPR3 and Sony video editor protocols. Audio events can be triggered manually from the front panel or via a compact remote controller.

Circle #280 on Reader Service Card

## DIGITECH VOCALIST

The Vocalist from DigiTech (Salt Lake City) is a digital processor designed exclusively for vocal applications, generating up to five-part harmonies, including chromatic and intelligent harmonies. The Vocalist also features MIDI or manual control, 128 factory settings, 128 user slots, XLR mic and 1/4-inch line inputs, a vocoder mode and four additional effects (chorus, vibrato, portamento and "DJ voice").

Circle #281 on Reader Service Card

## MASES RETROFIT EQ FOR SSLs

Distributed in North America by QMI (Natick, MA) is the Mases Maselec 9001, a 4-band parametric EQ for Solid State Logic 4000/6000 Series consoles. Said to offer a "vintage" sound, the 9001 provides low-noise/low-distortion performance. The EQ modules function with the console recall system, and the plug-in installation takes only a few minutes.

Circle #282 on Reader Service Card





### ◀ NADY 750 VHF WIRELESS

The 750 VHF system from Nady Systems (Emeryville, CA) features two complete, true-diversity receivers operating on two different VHF high-band frequencies (171-216 MHz) in a single-rackspace unit. Priced from \$1,199.95, the system includes two transmitters, which can be any combination of lavalier, handheld mic or musical instrument bodypacks. Specs include a 120dB dynamic range and transmission distances of up to 1,500 feet.

Circle #283 on Reader Service Card

### REAL TIME EVENT SEQUENCER

Circuit Research Labs (Tempe, AZ) offers the Real Time Event Sequencer, a single-rackspace, programmable event timer that can control any combination of one of eight or one of 255 outputs (binary-encoded) via a rear panel connector. The unit can store 200 events, programmed to latch on or provide half- or one-second closures.

Circle #284 on Reader Service Card

### JL COOPER MIXMASTER

MixMaster™ from JL Cooper Electronics, Marina Del Rey, CA, is an affordable automation system that can interface with any console or be used as a stand-alone 8x1 or dual 4x2 MIDI automated line- or sub-mixer. The \$499.95 unit can be controlled by sequencers, computers or the JLC FaderMaster, and multiple MixMasters can be cascaded to form a larger system.

Circle #285 on Reader Service Card



### WHIRLWIND ▲ HOTBOX

Whirlwind (Rochester, NY) offers the HotBox™ Active Reference DI, a transformerless direct box with advanced active design said to eliminate low-end saturation while providing plenty of headroom. HotBox can be powered by batteries or 48V phantom power, and has switches for ground lift and instrument/speaker/line input select.

Circle #286 on Reader Service Card

### ROLAND S-750

The S-750 Stereo Digital Sampler (\$4,995) from Roland, Los Angeles, offers 20-bit DACs and 16-bit linear sampling quality, along with 24-voice polyphony, 44.1/48kHz sampling rates, seven looping modes, CRT interface, and memory expansion to 18 MB using standard Macintosh SIMMs. The S-750 also features a 1MB/IDD or 2MB/IDD floppy drive, SCSI port, stereo L/R and six individual outputs.

Circle #287 on Reader Service Card

### TAD TD-4002 HF DRIVER

The first U.S.-made product from Technical Audio Devices, Long Beach, CA, is the TD-4002 HF driver, featuring a neodymium magnet structure for lower weight and a 100mm beryllium diaphragm with a resonant frequency extending beyond 20 kHz. Power handling is 60 watts with a 600Hz (12dB/octave) crossover; impedance is 16 ohms and sensitivity is 110 dB 1W/1m.

Circle #288 on Reader Service Card

### HOT OFF THE SHELF

A retrofit kit for the Sony PCM-3348 digital 48-track adds time code chase sync capability, 40-second mono/20-second stereo sampling, digital ping-pong on all tracks, reverse sample playback, looping and more. Call (800) 635-SONY, ext. 902 for details...Tice Audio's Power Block is an 1,875-watt power conditioner/FMI/RFI filter designed for audio applications. Call (516) 467-5254...The Gold Line DSP-30 portable RTA has been updated with a 90dB window and selectable ANSI Class 0 or Class 1 filters. Call (203) 938-2588...The Ariel MP3210 digital signal processing system—based on AT&T's DSP3210 32-bit DSP chip—provides digital I/O, pro-quality analog I/O, control of up to seven SCSI devices and more, all on an IBM AT-style card...Le Cover has a complete line of industrial-grade pro air filtration systems for the studio or edit suite in portable and permanent installation versions. Call (800) 228-DUST or (708) 790-9249...Just out: a new series of WSC Sound Cards for the Korg Wavestation, including drums, piano, brass, EFX and synth patches. At your dealer

now or call (516) 333-9100 for info...Manhattan Production Music's Audio-ophile Sound Effects Series has 495 digitally recorded EFX for radio, film and video on five CDs. Call (212) 333-5766 or (800) 227-1954...Northstar's "Drumscapes" is an all-digital collection of rock, country, R&B and pop drum tracks in complete song forms (intros, verses, choruses, etc.), along with 450 samples of each drum sound used, allowing users to create their own grooves. Call (503) 281-4964 for a demo...The Akai S1100EX (\$3,499) is a 16-voice expander for the Akai S1100 sampler, offering 16-bit sampling, polyphonic audio outs and memory capacity from 2 to 32 MB. A SMPTE interface board (for triggering sounds from time code locations) is optional. At your dealer or call (817) 336-5114 for details...AD Systems' Optiview provides a 7-second warning of upcoming audio cues, indicated on a video screen. Cues can be entered on the fly or spotted offline via a remote jog/shuttle control. The system handles up to 24 tracks; any 12 can be displayed simultaneously. Call (416) 420-0718 for info.

by George Petersen

# PRODUCT

## CRITIQUES AND COMMENTS

**Y**orkville **YSM-1 Studio Monitors**  
I was skeptical. There are a lot of companies that have been manufacturing studio monitors for years and even decades, so when Yorkville Sound (a company with 28 years of experience building sound reinforcement systems) unveiled plans for an inexpensive studio monitor, I wasn't sure what to expect.

With an admittedly jaundiced eye, I decided to check out the YSM-1s, Yorkville's debut entry into the realm of close-field studio monitors. Another item that piqued my curiosity is the fact that Yorkville is a Canadian-based company, and over the past few years, our northern neighbors have been turning out some superb transducer products, such as Tannoy's PBM Series, Adamson's high-end pro touring systems and Paradigm's line of home and studio speakers.

Physically, the Yorkville YSM-1s are straightforward—a two-way design with a 6.5-inch woofer and 1-inch dome tweeter in a symmetrical (non-mirror imaged) front-ported cabinet with removable grilles. On the back

panel, five-way binding post inputs are set into a recessed panel. Inside the enclosure, a simple 6dB/octave network handles crossover chores.

Since the YSM-1s are rated for use with program material of up to 70 watts, I began my listening tests with a 60 watt/channel power amp, which proved inadequate. While the speakers have a sensitivity of 90 dB at 1W/1m—about average for small-cone systems—these monitors really come alive when driven by an amplifier in the 100-watt and higher range. This proved to be an audible, quite noticeable difference, especially with transients. On the latter, the YSM-1's Danish-made dome tweeter was excellent—crisp and natural without being harsh.

On the opposite end of the frequency scale, the YSM-1s performed equally well, with nicely balanced bass that was free of excessive boominess. Part of the reason for this lies in the cabinet design, which at 16.25 x 9.75 x 8.75-inches is not large, but is significantly more sizable than most monitors with 6.5-inch woofers. Internally,



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## The Symetrix 564E

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**O**ut in the real world, sonic chaos tends to be the order of the day. Drum mics leak. Location tapes of intimate dialog get drenched in ambience. Stage noise bleeds into backup vocal mics.

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Everyone knows digital makes tough demands. The Symetrix 564E stands up to them with uncompromising transient accuracy and unrestricted dynamic range. Specially developed sensors track audio signals down to 20 Hz, locate the first zero crossing and open the gate in under 50 microseconds. Rigorous circuit design, incorporating a toroidal transformer, minimizes both electric and acoustic noise so the 564E fits into the quietest control rooms.

The 564E is equally at home on the road, thanks to its rugged steel chassis, industrial-grade PC boards and wide input voltage power supply. The XLR connectors accept balanced or unbalanced line level signals, so your lines will never be left hanging.

Looking for faster, smarter, cleaner gates? Ask your Symetrix dealer to demo the new 564E Quad Expander/Gate. Once you hear it in action, picking your next gate should be an open and shut case.



## Symetrix

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## AUDITIONS

the enclosure is center-braced and packed with a good dose of cotton batting, which properly damps the enclosure for solid bass response.

Over a period of weeks, I used the YSM-1s on a number of tracking and mixing projects, and was impressed with their performance. Stereo imaging was realistic, with a nicely focused soundstage, and mixes translated well to other systems. At a list price of only \$280/pair, Yorkville's YSM-1s are an affordable package, suitable as main monitors in the home/project studio or as secondary references in larger facilities.

Yorkville Sound Inc., 4600 Witmer Industrial Estate, Unit 1, Niagara Falls, NY 14305; (716) 297-2920.

### Marshall SE100 Speaker Emulation System

Achieving the ultimate guitar sound in the studio or on the road is no easy task. Mic placement and selection are critical, and trying to consistently duplicate any particular sound—night after night, on the road—can be just about impossible. And attempts at taking a direct feed from an amp out-

put usually provides results that are disappointing at best. So with this dilemma in mind, Jim Marshall (the Marshall amp man) came up with the SE100, a system that combines a reactive load, guitar speaker emulator, power attenuator and balanced line output in a rugged, rack-mount unit.

The SE100 is placed in-line between any guitar preamp or amp head (up to 100 watts) and the P.A. feed, recording console and the guitar speakers. Any combination can be used simultaneously, although the SE100 works perfectly well with or without a speaker cabinet: The unit incorporates an inductive load that reacts in much the same way as an actual speaker.

Front panel controls are provided for 0/6/12/18dB attenuation between the amp input and the speaker output, level controls for the balanced and unbalanced outputs, headphone output level, cabinet type (this simulates the sound of open- or closed-back cabinets) and axial response switches. The latter are designed to give the effect of placing a microphone 0°, 30° or 60° from the central axis of the cabinet. The open/closed cabinet selector switch was a useful touch, although I wasn't wowed by the axial response switch-

es—I got my best results by leaving the control on the 0° position and using a bit of parametric EQ in the 2.5kHz range.

Connections on the rear panel include inputs for speaker and line level signals, speaker output, unfiltered line output and balanced XLR and unbalanced 1/4-inch "compensated" outputs that provide an emulation of the speaker sound.

Power to the SE100 is supplied by an external 15-volt adapter; this connects to the back panel via an ill-fitting connector, which usually fell out of the socket whenever the SE100 was bumped or moved. A couple of inches of gaffer's tape solved the problem, but it seems somewhat ironic that this solid Marshall product—with massive internal heat sinks, gargantuan lug resistors and bullet-proof case—would play host to this cheesy power adapter.

I used the SE100 over a period of weeks with all types of amp heads: Marshall, Mesa Boogie, Fender, Peavey, Danelectro and others—including both tube and solid state designs—with superb results. And while the session guitarists were suspicious at first, they were all pleased with the sound.



# Set It And

## INTRODUCING THE SHURE FP410; THE "HANDS OFF" MIXER THAT DELIVERS PERFECT SOUND AUTOMATICALLY.

The new Shure FP410 is not just another pretty face. It's a whole new concept in portable mixing; one that forever solves the nagging problems of multiple open microphones. By automatically keeping unused microphones turned down, the FP410 dramatically improves your audio quality.

The secret: Shure IntelliMix — the patented operational concept behind the revolutionary FP410. It thoroughly shatters existing standards for portable mixer performance and ease of operation.

Just set your levels and flip the switch to "Automatic" Shure IntelliMix does the rest.

□ Its Noise Adaptive Threshold activates microphones for speech but not for constant room noise, such as air conditioning.

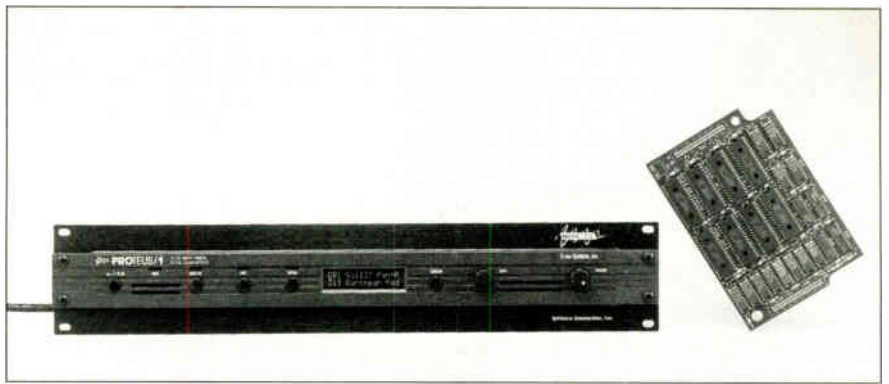
Best of all, the SE100 really captures the flavor, crunch and sustain of a guitar cabinet—without the hassles—and the convenience of overdubbing guitar parts in the control room is a definite plus. At \$650, the SE100 is not cheap, but it's a powerful tool for anyone who's serious about guitar sounds.

Marshall Amplification, 89 Frost Street, Westbury, NY 11590; (516) 333-9100.

### InVision Protologic

Unless you've been living in a cave for the past couple of years, you've probably heard about Proteus, E-mu's award-winning MIDI sound module. With six assignable outputs, 32-voice polyphony and sparkling 16-bit sound quality, it's no surprise that Proteus units soon became adopted by thousands of musicians worldwide.

InVision Interactive (a third-party company that developed the Lightware CD-ROM sample discs for the Akai S1000/S1100, Emulator III and Emax II samplers) offers Protologic™, a 4MB expansion board with 128 additional instrument sounds for the Proteus 1 and Proteus 1/XR sample players. Protologic is priced at \$495 (not including installation) and if in-



### Invision Protologic

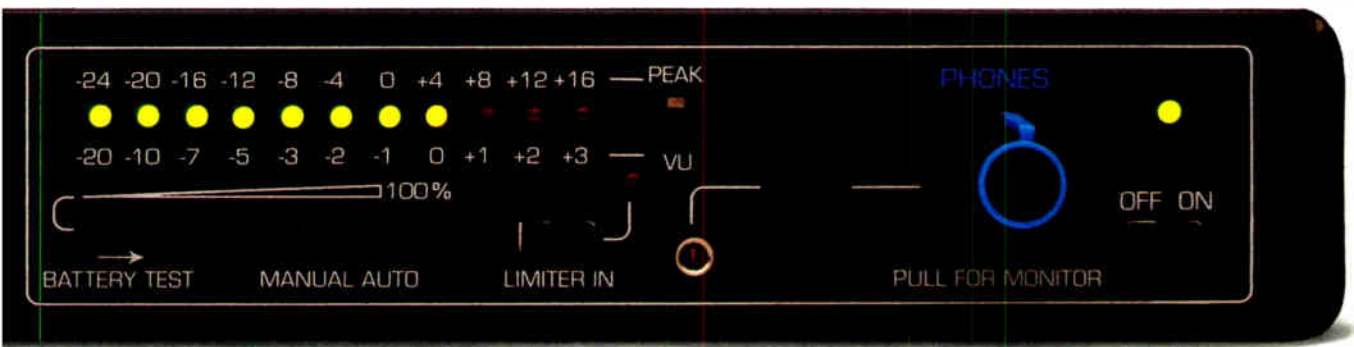
stalled by an authorized E-mu service center, the Protologic board does not void the original Proteus warranty.

One unusual aspect of Protologic is that it includes a rack-adaptor panel that converts the Proteus from a single- to a double-rack-space unit. This is supplied to provide more cooling space above and below the Proteus, although the unit I tested didn't seem to run any hotter than the stock version.

The 128 sounds that Protologic adds are designed to complement—rather than supplant—the factory Proteus sounds, so the folks at InVision surveyed hundreds of Proteus owners before deciding what to offer. Overall,

the combination works quite well, with the Protologic sounds doing a fine job of filling in those gaps in the original Proteus sound offerings. Particularly useful are 15 drum kits, five organs, and 13 electric and synth basses. The strings and orchestra ensemble are a definite plus, as are the 38 analog and digital synth patches. Of the synth sounds, about two-thirds seemed usable, which, when compared to most of the synths I've heard, is a pretty good batting average.

Note: InVision recently announced a program to distribute free downloader software and additional Protologic patches (in Mac, IBM, Atari and



FP410 Mixer shown actual size.

# Forget It.

□ Its MaxBus limits the number of activated microphones to one per talker.

□ And its Last Mic Lock-On keeps the most recently activated microphone open until a newly activated microphone takes its place.

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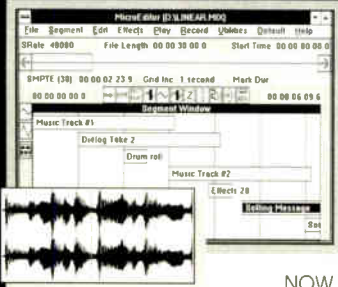
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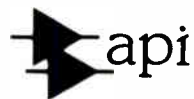


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## Sound Ideas "Wheels" SFX Library

Sound effects libraries keep getting more and more specialized, catering to the needs of those who need a large number of sounds in any particular genre. A few examples I've noticed over the past year are collections of gun sounds, urban noises and cartoon effects. The most recent collection of specialized sound effects to emerge is "Wheels," a set of automobile, truck and motorcycle sounds from Sound Ideas, the company that pioneered the use of the CD medium for sound effects libraries.

Without a doubt, the "Wheels" collection is extensive and complete. Discs 1 through 21 are organized with a different vehicle spotlighted on each disc, including Dodge, Ford, Chrysler, Toyota, Cadillac, Mercedes, Porsche, Jeep and Alfa-Romeo cars; hot rods, jalopies, pickups, vans, semis and buses; and vintage cars, such as a Ford Model T, a '38 Chevy coupe and the classic '56 Chevy Bel Air. Each CD is organized with the effects in a similar order, beginning with start-ups, revs and idles, progressing into pull-ups/aways (fast, slow and medium), driving in reverse, mechanical sounds (wiper motors, horns, power windows/antennas, etc.) and Foley effects, such as door/trunk slams, headlight switches, locks, parking brakes and more.

But don't order yet, because many of the sounds on "Wheels" offer different perspectives—recorded close-up and from a distance, from the interior or outside of the vehicle, etc. Also included is a disc of miscellaneous effects: backfires, bad starters, flat tires and the sounds of driving over various surfaces (e.g., shoulders, gratings, railroad tracks).

The sound quality is first-rate throughout, just as one would expect from Sound Ideas, and pass-bys and ambiences are recorded in long lengths, which should make any editor's life easier. Also appreciated is the fact that all of the effects in the library were recorded at night, in a re-



mote desert location, so there are no disturbing background ambiences.

By now, you should get the idea that this is obviously an exhaustive (pun intended) collection with over 3,000 sounds. Need a glove box closing from a 1990 Buick Le Sabre? No problem. About the only thing missing is the sound of a gas cap being replaced from the perspective of someone hiding inside the tank (these are provided from exterior recordings), but maybe we'll have to wait for Volume II. In the meantime, "Wheels" is \$775, including 24 CDs, storage box and index catalog.

Sound Ideas, 105 West Beaver Creek Road, Suite 4, Richmond Hill, Ontario, L4B 1C6 Canada; (416) 886-5000 or (800) 387-3030.

### DAT: The Complete Guide to Digital Audio Tape

When I first got the pre-publication notice about this book, I was excited by the idea that someone was finally going to write a timely, informative and in-depth examination of this format that touches all of our lives. Unfortunately, *DAT: The Complete Guide to Digital Audio Tape*, written by Delton T. Horn and published by TAB Books, doesn't succeed in any of the above areas.

Nearly a third of the 254-page text delves into the history of audio and analog recording. Next, there are 34 pages on the "Basics of Digital Recording," followed by a long section on compact discs. Finally, well into the book's second half, are 30 pages on the "Basics of DAT." The rest of the text deals with peripheral topics, such as legal aspects and other whimsy. In fact, the section on DAT hardware devotes an equal portion to auto DAT players—hardly a booming market—and home DAT recorders. By the way, those ten pages on consumer DAT recorders include a hefty chunk that looks like it was reprinted out of the Nakamichi 1000 manual.

If you're looking for solid facts about pro and consumer DAT recorders, DAT interfacing, time code, AES/EBU versus S/PDIF, and the like, you won't find it in this text. Too bad. ■

*George Petersen operates a Third World-class recording facility in the San Francisco Bay Area and recently completed Livin' With The Blues, a solo album for blues legend Danny Kalb.*

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- ◆ 3-way indicator for signal presence, absence, & overload
- ◆ Extensive magnetic shielding
- ◆ Variety of multi-input and switching options
- ◆ Quick and easy installation in 2 R.U. rack space

The slimmer AMP-1A fits in a single rack space and offers most of the same features and options. Ideal for VTR bays, both units are widely used by the major U.S. networks. Call today for full details.



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by Iain Blair

# SELECTING CONSOLES FOR AUDIO-FOR-VIDEO

## SIX CASE STUDIES

**W**hat do today's video post-production studios look for in choosing a console? Perhaps Tom Miller, chief engineer at Chicago's Universal Recording Corporation, sums it up best when he reports that his three main criteria are price, quality and reliability.

"Obviously, price is a major factor—you don't have the unlimited budgets there once were," Miller says. "And any board for post applications still has to have the same quality you'd want in a music console, although the emphasis is more on line-level signals rather than mic-level signals. The newer boards have additional line inputs, which are useful for handling the number of synthesizer and sampler inputs used in creating sound effects today."

EQ needs are also different. "You generally want nice, broad EQ in a music console," Miller explains, "while in post it's often more useful to have 'audio knives'—sharp, narrow equalizers you can use for repairing tracks, assuming the music was originally recorded correctly."

"Now that surround sound is becoming more popular, there are some post consoles that handle 4-channel monitoring, but it hasn't been a big concern with us. We've dealt mainly with matrixed stereo pairs with four channels already encoded down to two, systems such as Shure HTS and Dolby Surround. If you're doing feature films, Ultra-stereo is also a compatible system. With surround sound work, we're usually dealing with just 2-channel pairs of material in our monitoring section, so we don't need an all-new, 4-channel monitoring section."



"It's useful to have a link between the video editor and the audio board to do crossfades at the edits," says Miller, who reports that most of Universal's work is done using digital audio workstations. "All the editing is being done within the workstations, without any video editing equipment in the room."

Universal operates three rooms with AMS AudioFile hard disk recording/editing systems and three with NED PostPro systems. "The bulk of a session is spent in the workstation environment, and they require very little in the way of a console," he notes. "You just need to get a couple of channels into the workstation and then be able to monitor eight or 16 channels

**Glenn Laredo**  
of *East Side*  
*Film & Video*.

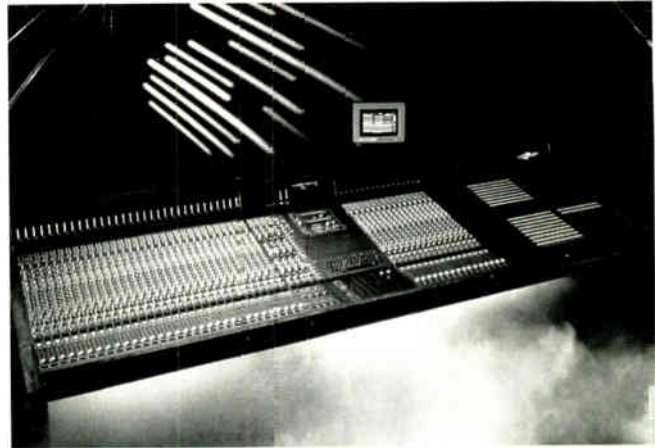
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SOUNDTRACS IL3632 (pictured) also available.



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of audio while you edit."

Stationed in the three audio-for-video rooms, Universal's consoles include an MCI 500 Series, Harrison Raven and Solid State Logic 4000 with G Series computer. A smaller post room has a 24-channel Ramsa board. An ADM console and an Amek Angela can be found in Universal's two film mix suites, and a vintage Neve 8078 board is offered in its music room.

Lastly, Miller feels reliability is extremely important, although "that's hard to determine before you buy. My answer is to stick with the big-name

brands. You're better off."

Burbank's Compact Video is one of several Southern California video post houses that have opted for the new Neve VRP. Says Gary Wells, chief engineer of sound services at Compact, "We've had the Neve VRP60 console in our Studio D for about eight months. We do music specials, situation comedies, movies of the week and weekly dramatic series—pretty much all broadcast television."

Compact Video has four mixdown rooms in all: Studio A is fitted with a Neve 5106 Series custom console, with an 8232 Series in Studio C and an API console in B. In addition, there are

three dialog cutting rooms, an ADR/Foley/narration room, three pre-learn rooms for music and sound effects, and two layback rooms for doing transfers, standards conversions, laydowns and laybacks from 1-inch, 3/4-inch, Beta SP and D-2. A network is in place for synchronizing and patching 1-inch videotape and D-2 machines into the mixdown rooms.

"We bought the Neve for its clean sound, first of all," says Wells, "and it's also a very low-maintenance console. We've done some of our own modifications, such as a reassign matrix for different track configurations for versatility and inserting outboard gear. It allows us to push a button instead of repatching."

Why the VRP as opposed to the V Series? "We like it because of its film and tape applications. With the VRP, you can monitor for mixing to a film mag machine, to a mono tape machine, to a stereo tape machine; or you can mix using Dolby Stereo DS-4 matrix—there are several monitoring configurations for surround sound. The VRP has all these capabilities available at the punch of a button."

At the Enterprise Recording Studio, also in Burbank, chief engineer Dan Shimiaei reports that the facility offers a choice of three main consoles: Studio A is equipped with a 72-channel Neve VR, and Studios B and C are equipped with 80-channel SSL G Series 4000s, with Studio C's board recently retrofitted with Ultimotion.

"The main concern for us is adaptability," says Shimiaei, "because we do both record mixes and audio-for-video/film and commercial projects. We could have gone with either the Neve VRP console, which has the post-production panel in it, or the SSL 6000 Series, which is 'film ready,' with its three mix buses."

Instead, Enterprise opted for its current package. Shimiaei explains, "A lot of the projects that come here demand flexibility, and the consoles we have are perfect for our needs. For instance, with the 6000, you have three separate mix buses that you can monitor and do separate sound effects and dialog. But you can achieve the same goals with the 4000 by just not going through the 4-track bus, because it's a quad console. So you can use buses for sending out of the console and routing to whatever machine you're recording into, and then returning to the console to preset faders."

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According to Shimiaei, this is how most of the mixes for film and video are done at the Enterprise. "That gives us more flexibility, because we can stay with a console that a greater number of engineers are familiar with," he adds.

Versatility is also the key word over at EFX Systems, another Burbank studio, which offers its clients a choice between a Harrison Series Ten in the main room and two 36-input Sony MXP-3000 consoles in the smaller rooms. According to Paul Key, head of technical services, the Sony consoles were chosen for their "extreme quietness. All of our multitracks are digital, so quiet is important."

With regard to the Harrison, Key states, "We picked it because of its great flexibility. Our whole system is based on that premise, so we've taken all our digital workstations and centralized them. And with the Harrison, we have no barriers. Its EQ in and out is automated, as is the EQ itself. Its sends are all automated, and you can switch the assignments and what tracks you're going to automatically."

Key adds that "each console module can be either bused to stereo tracks, left and right, or we can switch to left, center, right, do mono, quad or what-



**Compact Video of Burbank, Calif., features the Neve VRP console.**

ever we need. The console can even pan three across the front with split surround by just pushing a button, and even that change is automated. So the complete setup of every module is automated."


Besides film and television work, "where the console has to be a stereo console one day and then a left, center, right and surround the next day," EFX also does a lot of projects for theme parks and special venues. "This often requires five across the front, two front surrounds, an overhead and a rear surround. The Harrison is the only

console we've found with the sort of adaptability and power we need."

At East Side Film & Video in New York City, the studios are currently being renovated and upgraded, with expanded digital capability. In addition to the digital audio workstations, East Side is installing multitrack digital recorders, according to engineer Glenn Laredo.


"We also needed larger and more versatile consoles to accommodate our clients who are demanding greater adaptability in mixing styles," says

—CONTINUED ON PAGE 150



# Chameleon

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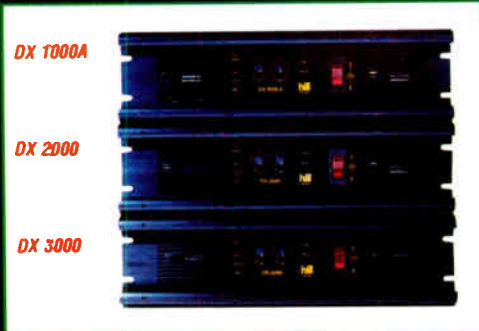
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by David (Rudy) Trubitt

# SOUND CHECK



*Left: Lollapalooza monitor crew (left to right): Gerry Gerorettis, Jane's Addiction/Rollins Band; Fritz Michaud, Nine Inch Nails; Pete Buess, Living Colour; Eddie Richardson, Siouxsie and the Banshees; Jim Berry, the Butthole Surfers. Below: Lollapalooza FOH crew (rear to front, left to right): Ric Wallace, the Butthole Surfers; Sean Beavan, Nine Inch Nails; Tracy Kunstmann, Jane's Addiction; Theo Van Rock, Rollins Band; Mike Horn, Delicate Productions; Greg Smith, Living Colour; Moray McMillin, Siouxsie and the Banshees; Graham Thornton, Delicate; (inset) Troy Stanton, Ice-T.*

## Festival Sound: Lollapalooza

The Lollapalooza touring festival came to the Bay Area's Shoreline Amphitheater at the end of July, giving us a look at the logistics of this sort of tour. The eight-hour show included performances by seven bands, most of whom were traveling with their own house and monitor engineers. To facilitate changeovers between acts, the Delicate Productions Martin system included two Yamaha PM3000 house consoles (feeding a Midas XL88 matrix mixer) and two Soundcraft Series 4 monitor boards (Siouxsie and the Banshees have their own Midas XL3 monitor desk). However, the glue that held the show together was the high level of cooperation among the bands' mixers.

"People have been fantastic about getting along and working together," said Jane's Addiction's FOH mixer Tracy Kunstmann.



"The biggest compromise is no soundchecks. It means everybody starts from a tough position and has to dig themselves out." Making everything run smoothly was Delicate's house system engineer, Graham Thornton. "We always try to keep to our schedule," Thornton noted, "because if we lose five minutes anywhere it

—CONTINUED ON PAGE 130

PHOTOS: JAY BLAKESBFG

**Performer:** Gloria Estefan  
**Venue:** Oakland Coliseum,  
 July 23, 1991  
**Sound Company:**  
 Maryland Sound Industries  
**FOH Mixer:** Mark Dowdle (MSI)  
**Monitor Mixer:**  
 Craig Melvin (MSI)

Gloria Estefan's "Into The Light" tour began in Florida early this year, hopped to Japan and Europe and then began working the States in June. The most obvious piece of tour equipment from the audience's perspective is probably the huge stage, which includes a large, second-story catwalk, part of which separates and flies forward over the crowd. In contrast, the biggest impact on the sound system has probably come from its smallest component, the in-the-ear Ear Monitors™ made by Future Sonics (Newton, PA). These devices are custom-molded to each individual performer's ear. The devices are run via wires to the band's drummer and percussionist, and wireless for Estefan and the four background singers.

Although initially skeptical, Estefan quickly became a fan of the Ear Monitors. "They're great," she says. "They've saved my voice, that's for sure. My voice is right there. One of the main

# MIAMI SOUND MACHINE



problems you have as a singer is fighting everything onstage. Especially in this show, where I have to be in so many different places—we'd be looking at a nightmare of monitors, from sidefills hanging up on top, across the whole front and side [of the stage], and that would have just increased the noise level 5,000%."

"Stage level has become much less of a problem with the wireless Ear Monitors," says FOH mixer Mark Dowdle. "The drummer and percussionist play on them with no wedges. That allows us to have open condenser microphones all over the drums and percussion without a lot of bleed. Also, the vocalists use them, so there's no real sidefill volume. The rest of the wedges [Meyer UMs] are for the keyboard and horn players, and they don't amount to much, volume-wise."

MSI monitor engineer Craig Melvin concurs: "It's brought the overall stage level down. The previous tour had pretty big sidefills—four TMS3s per side, or double [MSI] high-pack/low-packs per side. Her voice was loud, and that

*Left: Gloria Estefan.  
 Below: (left to right) Future  
 Sonics' Ear Monitors, FOH  
 mixer Mark Dowdle, monitor  
 mixer Craig Melvin.*



PHOTOS: STEVE JENNINGS

drove up the level overall. It's changed things a lot onstage; it's really comfortable. Not only that, it's given us the ability to get great audio out front."

The tour is extensively wireless (mostly using Audio-Technica wireless equipment), including Estefan's vocal mic, four backing vocalists, three horn players (each with several packs), bass and guitar. On top of that are two channels for two wireless Ear Monitor mixes, bringing the total to 14 working frequencies on a given night (not including six spares). Assistant monitor engineer Mark Bradley mans the wireless rigs.

The 13-piece band requires a lot of inputs. "What I really needed," says Melvin, "was a 60x24 console, but I couldn't find anything that would do it, so I made the two Ramsa 40x18s work. Basically, one console is a wedge console, and the other is an Ear Monitor console—I needed different processing for each. The Ear Monitors require a lot more compression, for instance. I normally wouldn't compress drums for monitors, but it's needed to get it present in the Ear Monitors and to avoid overloading the transmitter.

"It took me awhile to sort out the routing to make this work," Melvin continues. "For instance, I've got Gloria separate for anyone with Ear Monitors—it's de-essed and compressed with a BSS 402. I ride her gain naturally for ballads, and that works well for the drummer and percussionist, who don't want to hear her too loud [in the Ear Monitors] all the time. On the wedges, I've got some outboard EQ but no compression. There's tons of these sorts of splits and mixes, back and forth between the two consoles." Input to both monitor consoles comes from 96 channels of Brooke-Siren active mic splitters.

The Ear Monitors have removable ports, which come in different sizes. "The smaller port appears to load the transducer better," Melvin notes, "which gives a little more output and slightly brighter sound. But rather than going with both small ports, which would be a little too bright,

I've got one of each [a smaller and larger port in either ear]."

A hard limiter is utilized for protection on all the Ear Monitor mixes. Melvin uses old- and new-model Aphex Dominators, although he prefers the sound of the original unit, which is no longer made. "I spent some time playing with the new one before I was comfortable with it, where the old one was kind of idiot-proof. I talked with Aphex at some length, because I really wanted the old one. They said, 'give this a try,' and it's working fine for me now. I was concerned about protecting Gloria's hearing, and the Dominator's the best device I could find for the job."



**Audience view of Estefan/MSI stage.**

Using a combination of in-the-ear and conventional monitors created some interesting challenges. For instance, the physical distance between wedge and Ear Monitors resulted in a short delay, creating an undesired small room sound. By reducing the overall vocal level in the monitors, wedge leakage into the lead vocal mic was reduced, and that problem was solved.

On the other hand, vocal mic pickup of the stage sound (and the ports in the Ear Monitors themselves) provides a natural mix of the band for Gloria. However, this is lost when she moves onto the stage's upper level. To compensate, Melvin creates a stereo submix of the entire band, which he rides up and down as she travels the large stage's two

floors. It's proved an interesting challenge, according to Melvin. "It's all very different—combining the Ear Monitor with regular wedges has been a learning experience for me."

Mark Dowdle was on the group's last tour, but this time around his FOH equipment roster is quite different. "The high points out front are the two Gamble EX consoles and everything that goes along with them, insert- and effects-wise," Dowdle says. "It's the first time that the consoles have been linked so that you can use the muting, auxes and subgroups in tandem."

Again, spare inputs are at a premium. "They are doing some

[sub]mixing up there with the key-boards, which helps me out," Dowdle continues, who notes that his 112 inputs are full. "I get a left and right feed from the keyboard player. The horn players also play keys through the

same rack and another mixer, and then give me a feed from that. Because we have so many inputs onstage, we've got two snakes running down to me with inputs. And those inputs don't necessarily go to one particular console. I had an XLR mic scrambler built [housed inside the rack], so I can patch any input to either console. Once that's done, it remains that way through the entire tour. The only mic cables involved [outside the scrambler] are talkback and intercom. It all goes together in a matter of minutes."

The Ear Monitors create new opportunities for drum miking by removing feedback and leakage concerns. "Most of the drums are miked with Ramsa S5s: snare, top and bottom; piccolo snare; all the rack toms; the congas and bongos. You can't see it—it clips on the rim—and it's shock-mounted. It's a wonderful microphone," ac-



ording to Dowdle. "In the kick, I've got a B&K and a Shure SM91 PZM. You get the attack from the 91 and the roundness from the B&K." AKG 414s are used for drum overheads and Sennheiser 421s on timbales.

Horns are miked with more R5 capsules adapted to Audio-Technica belt packs, and run through Summit Tube leveling amps. "[The Summits] do a fine job," Dowdle continues. "They smooth out the section very well

and make it easy to get a nice blend. There's a sweet spot with these units, around -7. Anywhere [on] either side of it, you start lopping off the high end a little. At the shop, we analyzed these and found that we could actually see what we were hearing."

The AT vocal mics have updated capsules, which everyone agreed were smoother and warmer than the previous version that had a peak in the 4kHz region. Vocals run through Drawmer 1960 tube compressor/limiters. "These

make it easy for me to get a nice, smooth vocal sound," says Dowdle, "because you can't hear them working at all. She [Estefan] can max them right down, and you can't hear the compressor at all."

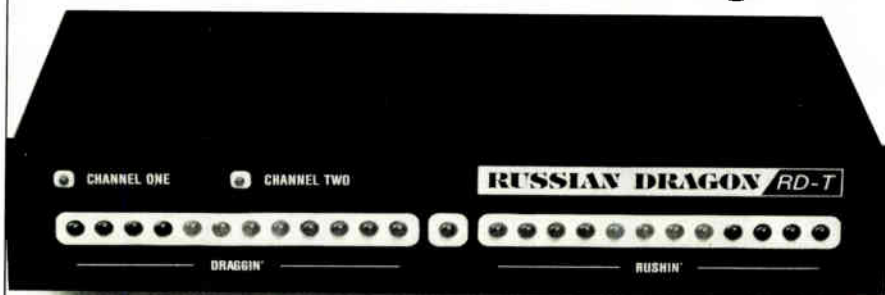
Dowdle describes his room-handling philosophy: "A room like this is approached with caution. You try to anticipate what you'll run into, as far as resonant frequencies are concerned. To start with, [it's important to] aim speakers properly and trim them at the right height to give you optimum results before you even get into tuning [the room]."

The FOH system is MSI's high-pack/low-pack system, loaded with TAD 4001s on the high end, followed by JBL 12-, 15- and 18-inch subs. Crest power amps are used for everything except the highs, which are covered with Ramsa amps. Dowdle is pleased with the new TAD drivers. "They're really nice," he says, "and our own horn design augments them to a point where it works out very nicely."

The high/mid and low FOH cabinets were arrayed in vertical columns. The sidewrap is arranged in a checkerboard configuration to break things up for the closer side seats. The system is run stereo, with the sidewrap being fed signal from the opposite side of the rig, providing stereo (albeit reversed image) for those on the fringe. Dual-ported, 18-inch subs were stacked on the floor, along with a few more high and low cabinets to fill the floor seats closest to the stage.

Overall sound for the Oakland show was clean, although a little on the bright side for my taste. The enthusiastic-but-seated audience made it easy for me to walk the room during the show, which highlighted the smooth transition between long- and short-throw sections of the FOH rig (even right up under the stage). Stage level was noticeably lower than one would expect, especially considering the size of the band. And the Ear Monitors did their thing. "I think they're the future of performing," concludes Estefan, "because they're great for your voice, and that's the bottom line." ■

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—FROM PAGE 124, SOUND CHECK  
just escalates.”

Ice-T's house mixer, Troy Stanton, had almost two bands to mix: Ice-T turned into Body Count for the last third of their set, replacing DAT playback and turntables with live drums, bass and guitars. For many of the lesser-known bands, the tour provided an opportunity to work with higher-end equipment in larger venues than usual. "This is probably the easiest tour I've

done," said Nine Inch Nails' Fritz Michaud, "because we have the best gear I've worked with."

#### More Festival Sound: Monsters of Rock

SSE Hire Ltd. and dB Sound jointly provided a huge system for the 72,000 spectators at this summer's "Monsters of Rock" show at Castle Donington in the East Midlands of Great Britain. The bill included AC/DC, Metallica, Motley Crüe, Queensryche and the Black Crowes. A total of 212 EV MT-4

cabinets were used along with 204 Crest 8001 and 6001 amplifiers. Crest provided special-model amps with a switchable transformer, allowing 100- or 240-volt operation. SSE and dB 3-amp racks were themselves housed within six still larger racks, each of which were supplied with 3-phase, 63-amp AC.

The FOH system was flown nine cabinets wide and eight deep, tapering to six deep on the outside. In addition to the FOH system, a separate front fill was fed from the Midas matrix mixer. Sixteen MT-2 cabinets were used. Delay towers and an additional downfield delay system completed the extensive loud-speaker setup.

FOH equipment centered around two TAC SR9000 consoles, each with a 24-channel extender. Outboard equipment included Drawmer gates, BSS compressors, Lexicon 480L, two Eventide H3000 SE Harmonizers, AMS RMX 16 and AMS DMX-1580S, and Roland SDE-3000 and Klark-Teknik DH410 equalizers. Monitor duties were covered by three Midas XL3 consoles. A total of 32 Electro-Voice DML-1152MCs and 12 Electro-Voice FS-212 wedges were used. Sidefills came from three MTL-4 and three MTH-4s per side upstage, with two MTL-2s and two MTH-2s per side downstage, as well as further MT-2 systems for drumfills. All monitors were powered by Crown Macrotec 2400 amplifiers.

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## NEWS FLASHES

Shure Brothers (Evanston, IL) announced the availability of its new publication, *Microphone Selection and Application for Church Sound Systems*. Although the 40-page book includes a brief summary of Shure products, the great bulk of the information presented is not brand-specific and is informative while remaining accessible. Call (800) 25-SHURE for information on getting your copy...Carey Sound (Greensboro,

**August's  
Monsters of  
Rock show at  
Castle  
Donington,  
England (see  
page 130).**



NC) has added QSC EX 4000 and MX 1500 amplifiers to drive its EV MT-4 rig. The regional company has been using QSC amps for six years. Company president Ken Carey cites the unit's weight, cost-effectiveness and reliability as key factors in the decision...Sound Production (Dallas, TX) supplied a TAC/EAW/Carver system to Fort Worth's Caravan of Dreams nightclub/theater. Making its American

installation debut is a 40-input TAC SR6000, which covers FOH duties. A Scorpion II console is used for monitors...Sterling Sound (Salisbury, NC) supplied a Peavey system to the Planetarium at the Scheille Museum of Natural History in Gastonia, NC. The system includes two CS800 amplifiers, two automated equalizers, two 118 Sub+ and four SP 5TI enclosures...Total Acoustic Designs Co.

Ltd. (Korea) will provide a complete ARX loudspeaker and electronics system to the Performing Arts Center of Seoul, Korea. The system will include eight full-range 1812 cabinets, 15 amplifiers and a wedge monitor system...ProMix (New Rochelle, NY) provided a full Apogee system for the White Oak Dance Project tour, which features Mikhail Baryshnikov. The Apogee system was designed and engineered by Brian English, and includes Apogee 3x3s and AE5s. A total of 12 matrices are provided by Meridian Communication's Distrmix expandable 8x8 mix matrix...Third Ear Sound (Richmond, CA) used a rented ATI Paragon console on a few gigs recently, including a Metallica show at the 1,000-seat Phoenix Theater in Petaluma, CA, and Eddie Money's concert at Marriott's Great America in Santa Clara, CA... ■

*David (Rudy) Trubitt's love affair with sound began with a Panasonic cassette deck in 1971.*

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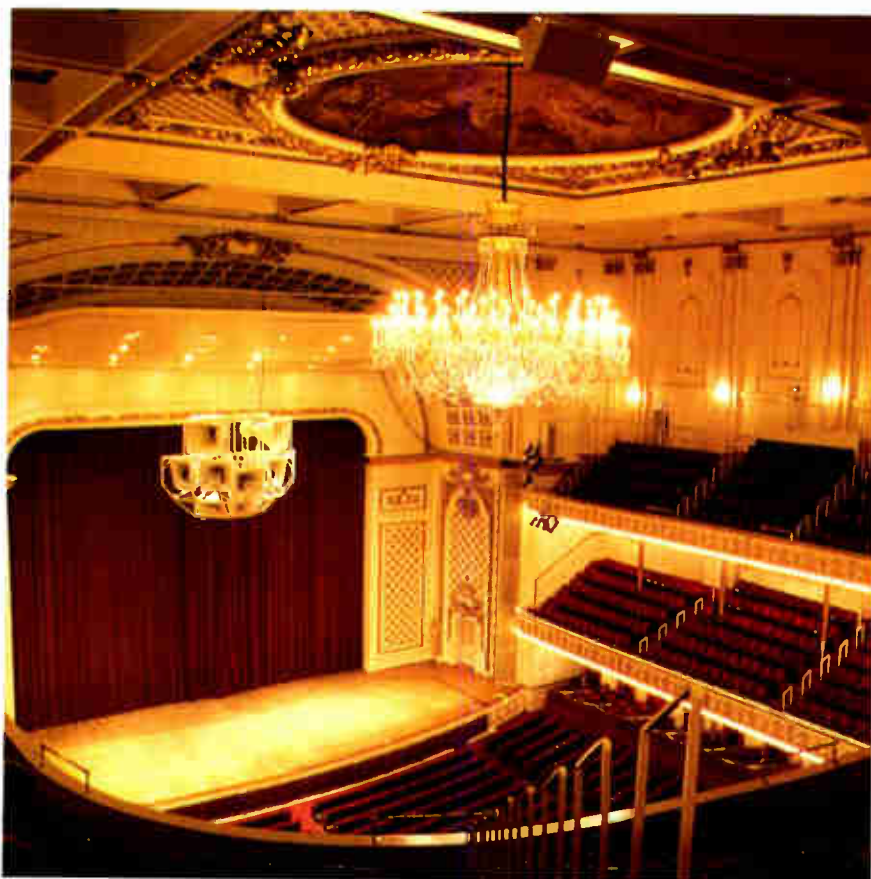
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by Gregory A. DeTogne

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*Above:*  
Cincinnati  
Music Hall.  
*Right:* Main  
speaker  
configuration.

Not far from downtown Cincinnati, an elegant Victorian structure stands at the corner of 14th and Elm. The Cincinnati Music Hall was originally built in 1878, and today the venerable facility is the home of the Cincinnati Symphony Pops Orchestra, after having undergone a five-year renovation project that included a new sound system designed and installed by Midwest Communications Corporation.

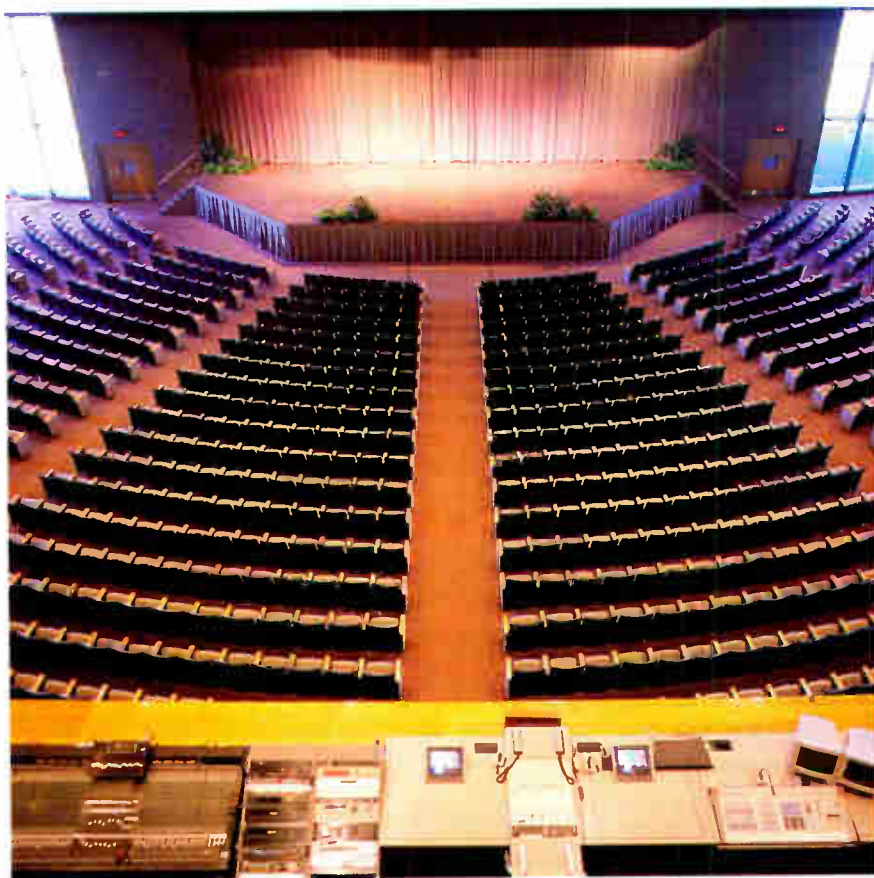
Serving as a replacement for an aging, 15-year-old columnar

—CONTINUED ON PAGE 134



by David (Rudy) Trubbitt

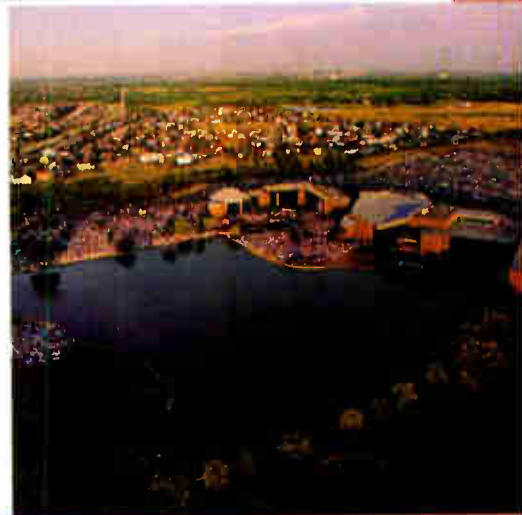
# A NEW DAY FOR WILLOW CREEK CHURCH

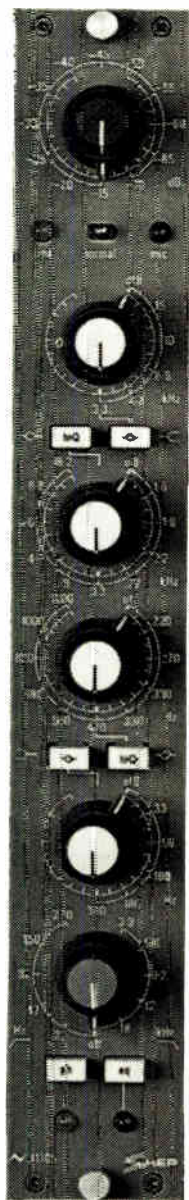


*Above: Willow Creek's main hall with flown R4-Ts above stage. Right: Bird's-eye view of Willow Creek grounds.*

The Willow Creek Church, located near Chicago, has been called the fastest-growing church in the United States. One part of the church's appeal is the emphasis placed on high-quality music (and music reproduction). A huge variety of music is presented weekly, ranging from string orchestras to country and western to 200-voice choirs to contemporary dance-oriented sounds, not to mention the all-important spoken-word portion of the programs. The facility has just received a major overhaul

—CONTINUED ON PAGE 136





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—FROM PAGE 132, CINCINNATI MUSIC HALL system that regularly drew complaints about uneven coverage, poor frequency response, lack of intelligibility, high distortion and not enough SPL, the new sound system comprises an attractive central cluster complemented by under- and over-balcony, delayed satellite loudspeakers.

The central cluster is suspended 31 feet over the stage by two steel cables, while its center hangs 35 feet above the 3,600 seats found on the main floor. At the low end, bass frequencies up to 250 Hz are projected by two of Community Light & Sound's long-throw CB594 bass horns loaded with single, 18-inch JBL drivers. Bass front-fill is handled by a single Community VB664 cabinet. Within the midrange frequency spectrum of 250 to 1,250 Hz, the cluster relies on five of Community's PC 1542M 40 x 20 horns with mouth extensions and two PC 1564M 60 x 40 horns with mouth extensions, while the latter pair is used for front-fill.

All seven midrange horns are equipped with 4-inch throats and coupled with Community's powerful M4 compression drivers. High frequencies over 1,250 Hz are managed by seven 2-inch throat horns, which are mounted coaxially in a signal-aligned fashion within the mouths of the midrange horns. A Community subwoofer (model VBS-415RG) additionally supplements the system as required and is operated from an effects channel on the house console.

Power for the system is supplied by Crown and Yamaha. With a total reading of 6,620 watts at the cluster, Crown Com-Tech 1600 amplifiers power the bass section, while Yamaha PC2602 amplifiers drive the mid- and high-frequency horns. For the subwoofer, a Crown CT-1600 amp once again sees service.

Thirty satellite speakers were used in the installation for the area under the balcony on the

main floor, as well as for the two balconies above. Thiele-Small bass reflex cabinets loaded with 8-inch coaxial speakers were selected for the job and surface-mounted; 900 watts of Crown Com-Tech amplification drive these enclosures through separate equalizers and ten zones of signal delay.

High above the main floor, in the upper balcony, the main console for the system is a DDA S-Series 24 with 24 inputs and 21 outputs. The house receives its signals from the board's left main output, which routes everything through the signal processing gear and then to a distribution amplifier for the other systems within the structure. All electronics are tucked neatly out of the way in four racks backstage.

Microphone inputs on the stage number 72 in all. Access is provided from floor pockets and an assortment of panels located around the stage and proscenium. To make the sound crew's job easier, six tielines were thoughtfully added, running from panels on the proscenium wall from stage right to stage left and terminating in both male and female XLR connectors at each end.

Installing the system in the ancient building offered more than a few logistical challenges. Practically every inch of the ten miles of cable runs had to be carefully thought out beforehand, and, because the hall is one giant room, the most direct runs often meant that the crew had to find its way through walls 3 feet thick or more. Compounding the wiring headaches was the fact that since the cluster is not used for every Music Hall performance, it had to be able to be lowered and passed through a double-door about 6 feet high into a storage area underneath the stage. All in all, that may not sound like a difficult task, but consider this: The cluster is 16 feet wide by 12 feet high by 8 feet deep and weighs 2,300 lbs.

To solve the dilemma, Midwest Communications designed a cluster for the framework that

broke down into eight large pieces, which could be wheeled around on carts. After being envisioned on paper, the actual construction was carried out by a Columbus, Ohio-based firm called The GS Workshop. Once completed, a system using twist-lock bolts was employed that allowed the cluster to be put back together within less than one-eighth of an inch of tolerance to preserve the signal coherency of all the elements.

After the cluster is disassembled, it takes two men about an hour to wheel the components out onto the stage, assemble them on the floor and make all necessary connections via a single panel on the back. To interface this entire affair with the electronics, a single cable is dropped from the Music Hall's attic and attached with a single connector. Then the cluster is hoisted into place with a winch.

Enough about the nuts and bolts of the system. How does it sound? According to Midwest Communication's systems engineer and designer Charles C. Baxley, both professional and non-professional listeners have said that the new system offers directional realism, intelligibility and a lack of distortion across the board. As testimony to these opinions, acoustical measurements have shown that all seating areas are covered nominally to  $\pm 1.5$  dB, with the maximum variation from the best to worst seats not exceeding  $\pm 3$  dB. As for the former SPL problem, now the house level averages 100 dB, with undistorted peaks reaching 115 dB. In short, the problems of the old system have been remedied, and the grand old Music Hall has made a quantum leap into the late 20th century, fully poised for many active decades to come. ■

*Gregory DeTogne is an Illinois-based writer who frequently contributes to Mix.*

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## LIVE SOUND

—FROM PAGE 133. WILLOW CREEK CHURCH of its previous Ancha-designed system (profiled in *Mix* way back in March 1983). The new system was designed and installed by Clair Brothers Audio Systems.

At first glance, the Willow Creek Church looks more like a corporate media center than a church. The facility's main auditorium is a 4,550-seat, fan-shaped room with a 4-foot rise from front to rear. Seating extends almost 180° around the stage area. Below the main room's balconies, at the back of the main hall, two multipurpose auxiliary rooms are attached perpendicularly. Each holds a full-sized NBA basketball court and contains theater-style bleachers that are folded out for services. Each also has its own sound system, which is time-delayed relative to the main room's system. Although the balconies receive some of the main floor's sound, they each have their own fill systems, also on delays. The house mix position (with Yamaha PM3000) is near the center of the main room.

But what led to the overhaul in the first place? Willow Creek technical director Marty O'Connor explains: "I heard Janet Jackson with Clair here in Chicago and thought it was phenomenal. The sound engineer was [Clair's] Chris Taylor—I wound up retaining him as a consultant when he got off the tour. We have a very contemporary program here for high school kids—about 1,500 to 1,700 kids who meet every Tuesday night. So we had Chris Taylor come in and spend some time with our mixers who do that program. Music has really changed since the original system was installed, and Chris felt the old system was holding us back."

Willow contacted a number of consultants and manufacturers, and asked each to show a comparable room they had done. No matches were offered, but Clair invited the Willow staff to visit its facility, where they assembled a mock-up of the system proposed. "Other manufacturers sent me boxes and were very cordial," says O'Connor, "but Clair de-

signed and built a system for me before I gave them a dime."

Clair was also pleased with its initial contact with the Willow staff. "It was refreshing that one of the first words out of their mouths was 'audio,'" says Ron Borthwick, Clair's chief engineer. "They were real critical about what they wanted."

"We were looking for a system for the main floor," O'Connor says. "We couldn't afford to replace the sound systems in the multipurpose rooms and the balconies. So, they had to integrate their new system with the existing equipment, while increasing the perceived quality of sound [everywhere]. It's very important to spend the money wisely. People have trusted us with their hard-earned money, and if we're not going to put in a system that makes a substantial difference, it's not worth it to them."

"One of our philosophies here," O'Connor continues, "is that we're a church for the non-churched. If I was your neighbor and I'd been inviting you to church for six months and you finally agreed to come, do I want you sitting in a cheap seat? No! I want to make sure that the one time I've got you here you can see well, hear well, and that you're comfortable. We try to make every seat count."

Counting each seat was the responsibility of the Clair design team. "In walking around the facility," Borthwick says, "it was pretty obvious that the seating plane was such that you could deal with six individual sections." Clair's R4-T three-way enclosures are flown in six groups of cabinets, hung horizontally and angled for short, medium or long-throw coverage. Six EV NEQ3 three-way crossovers are used for the R4-Ts, which in turn drive the Carver/Clair-modified amplifiers typical in Clair systems. Audio Digital delays and Court GE60 dual-channel, 1/3-octave EQs are used to tune the system.

A front-fill system was also deemed necessary, both to improve sound for the first few rows, and to allow the main hang to be moved forward to

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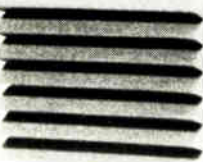
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avoid potential feedback problems onstage. A custom, active two-way cabinet was designed to fit under the thrust of the 4-foot-high stage. A short delay moves the apparent source of the sound to a point six feet above the stage. dbx limiters and Rane EQ round out the front-fill drive system.

The system was designed for stereo operation, but it can be grouped in several ways. A single switch at the mix position changes the system from left/right to near-field/far-field operation. (With a little re-patching, a non-alternating left/right configuration is possible for those cases when the ability to "move" sound across the room is more important than imaging coverage.)

The near/far configuration was used to compensate for louder musician's amps on the backline. Amplified instruments are "panned" toward the far-field speakers, while vocals are left "centered." This provides a good vocal/instrumental balance for the back of the room, while listeners up front get a reduced instrument mix in the near-field mains. Direct stage rounds out the mix for the front of the room.

Clair was pleased with the opportunity to put the R4 through its paces. Clair installations manager Gene Pelland: "It's the first time, other than the [smaller] Lewisham Theater in London, that we've been able to use the R4 in such a variety of musical requirements."

"Our service could start with a full rhythm section and horns," O'Connor explains, "then go to an up-tempo ensemble with vocal, then one lavalier, then seven or eight wireless lavaliers. From that we'll go to a full orchestra piece, to an acoustic guitar and vocal only, and back to a single lavalier. Developing one EQ curve that's going to take care of all of that isn't realistic."

The solution? Two TC Electronic 1128C 1/3-octave programmable EQs and the TC

—CONTINUED ON PAGE 169

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—FROM PAGE 92, FAIRBAIRN

else would talk about it. It lends a really unique perspective to a song.

That's why I respect Steven's lyrics so much. He sweats blood to get them. I'm willing to give him the space and time to do it, because I know he'll come up with something that's really neat and interesting. It's a little nerve-racking to all concerned when he hasn't finished the lyric until he gets into the studio, but those ideas don't happen on demand—they just happen when they happen.

**Mix:** You've taken a very strong anti-drug stand with the groups you work with, which is somewhat at odds with the excessive life so many of them have lived.

**Fairbairn:** The proof's in the pudding when it comes to drugs and alcohol in the studio. There are bands out there that are smart enough to stay sober and make good music. Those bands are the ones that I've found have the best people in them, are the most successful and are the most genuine, sincere people to work with.

All I ask when a band does an album and I'm involved, is to try and do it the right way. It can only help. What they do after they finish the record is their business. But if they feel they can't make a good record unless they're high, I tell them to find somebody else to get high with and make the record with.

**Mix:** For a guy with your background, it must have been a kick to work with AC/DC.

**Fairbairn:** They were a wonderful band to work for, because I was a big fan of their guitar sounds for a long time. I don't know how many times I've been working on another project and dragged out *Highway to Hell* or *Back in Black* just to listen to Malcolm and Angus Young's sounds, to see how my own guitar tracks were holding up. So it was a lot of fun for me to get in the studio with those guys and work with them and find out what in fact makes those guitars tick.

Some people tend to think that if a guy's only playing three chords in a song, the musicianship is somehow not as advanced. But I learned from working with those guys that it takes a great musician with a wonderful touch and sense of the music to make those three chords sound like AC/DC do, and make music out of those three chords.

There's nobody in the world that can hit a stronger, better, first-position E chord than Malcolm. It's how his fingers hold the strings and how he hits it. That's what makes those guitars sound so good.

**Mix:** Was it challenging to get something new out of Angus Young, who by now must have played just about every solo ever invented?

**Fairbairn:** Actually, Angus is such a beautiful lead player. There are two types of lead guitar players: one type plays from the heart, and the other type learns what they're going to do, practices it and then performs it note for note when they record it. Angus is in the first category, the kind of guy who plugs in his guitar and whips a solo off, then stands there and goes, "You want another one? Okay, sure." Open up another track and he gives you another one, completely different.

He'll do that for an hour if you want.

**P**roduction is there to enhance what the band has done. It's like baking a great cake with a lot of icing. I like a lot of icing!

and you'll have 20 solos with different ideas and everything. He never plays anything the same way twice, but they all come from the heart. He's a wonderful improviser. I love working with guitar players like that, because they make the process so easy.

**Mix:** That's true. And then your first single from *The Razor's Edge*, "Thunderstruck," took the band in a whole new direction...

**Fairbairn:** Yeah, the first time I heard "Thunderstruck," I was intrigued by it because it was a little different for AC/DC. It had several different rhythm feels going on all at the same time, as opposed to some of their songs, which focus on one particular feel. It appealed to me because it was a bit more complex.

We built up the "Thunder!" vocal

theme at the beginning, and at some point we all looked at each other and said, "This would be a great opener in concert," and the band's manager agreed. We thought it would be great for the kids to sing along with.

**Mix:** So, in this case you planned the track around their live show.

**Fairbairn:** Right, but usually you don't think about how something will work out in a live performance when you're working on the record. It was just one of those things, and I'm thankful that it worked out so well.

You know, though, there are times that I'll say to myself, "If we do this, it will be a great thing for these guys when they play it live." The intro to Bon Jovi's "Lay Your Hands on Me" was kind of my contribution to their live show, and they played it up even more when they did the video for that song. I like to think that way—there are things that the kids can latch on to, and the band can use them live to translate the album into a performance.

**Mix:** Sounds like you've always got your audience firmly in mind.

**Fairbairn:** Let's face it—the fans are who we're doing this for. I think a lot of people actually forget that. It was driven home for me when I worked with Jon Bon Jovi. He always would question whether particular things served his fans. We're making these records for kids, not for us. Otherwise, we might play a totally different type of music, like jazz or something.

That's not to say we don't want to try and give the audience something different, or take them on a trip, like we did with *Pump*. But just because somebody in the band woke up in the country one morning and dropped acid doesn't mean we should make some weird acoustic record that nobody will relate to. People have done that, and boy, what a rude awakening for the kids when they buy this record that's nothing like the band they know.

**Mix:** Does the record company have any say?

**Fairbairn:** We're certainly not making albums for record companies, because those guys never pay for the records anyway. [Laughs] We make them for the kids who buy the albums, spend money on T-shirts and come to our shows. For God's sake, let's make a record that they're going to enjoy! ■

*Nick Armington and Lars Lofas are film and record producers who live and work in New York City.*

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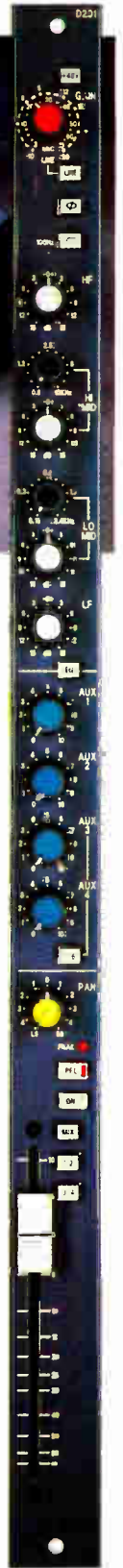
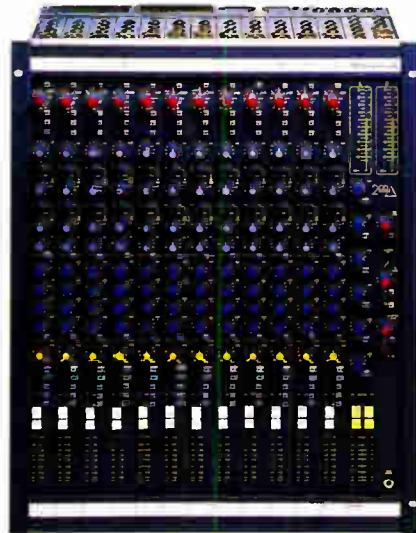
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# GEARING UP FOR DCC

## DUPLICATION VENDORS READY THEIR WARES

*Top and bottom views of DCC, with conventional cassette for comparison (rear).*



It's been nearly a year since Philips publicly acknowledged its efforts to upgrade the analog cassette into the Digital Compact Cassette ("Tape & Disc," January 1991). Philips initially took a fairly cautious approach to readying the new product for market, which has led to slower progress than might otherwise have been expected. Nonetheless, the company does seem to be putting the necessary pieces in place as it moves toward its projected April-June 1992 launch window.

The major labels, some of which were consulted during product development, have (with the exception of Sony) responded positively to DCC, conditioned on resolution of the home-taping controversy. That hurdle seems to have been removed by July's hardware/software accord, which should firm up label support for the new format.

Response on the hardware side has been cautious. Tandy was the only manufacturer to commit to DCC when it was first announced. But things may pick up now that Matsushita (Pioneer/

Technics), which was widely known to have worked with Philips on the system, has finally publicly confirmed that it will market DCC, starting in Japan in the spring of 1992.

The biggest wrinkle in Philips' plans is Sony's Mini Disc ("Tape & Disc News," August 1991), which is to be marketed to the same portable-oriented, cassette-system replacement market as DCC. The 2.5-inch recordable magneto-optical disc isn't expected to be available until the end of 1992. But by announcing the format, Sony has succeeded in raising doubts in the market—doubts that may slow acceptance of DCC, and thus minimize any advantage gained from its earlier introduction.

Publicly, Philips is downplaying the importance of Mini Disc. "We definitely don't foresee anything that could alter our commitment to DCC," says the company's Audio Mastering Group manager, Jaap Stulp. "We will not change our strategies. We don't see the conflict [between the new formats]."

Stulp's statements notwithstanding,

Sony's move does magnify the importance of orchestrating a roll-out that is swift and decisive. Philips has enlisted Dire Straits in the effort by partially sponsoring the band's upcoming world tour. But beyond raising awareness of the format among music lovers, Philips will have to be able to meet the demand it hopes to stimulate. That includes not only hardware manufacturing capacity, but also providing for software availability as well.

### Philips' Equipment

In conjunction with its software arm, PolyGram, Philips has already devised the techniques and equipment with which DCCs will be mastered and duplicated (see last month's "Tape & Disc"). These processes will first see large-scale action when PolyGram brings its DCC plant online at year's end in Amersfoort, the Netherlands. But so far, the Amersfoort facility is the only confirmed DCC plant planned. According to *Billboard*, that's raised some concern among industry observers about Philips' software roll-out capacity.

Stulp says the company "wants to have a few more locations" in different markets, and is "negotiating with a few people." That obviously means that Philips intends to ensure that duplication gear is available. The company expects to be able to furnish its own initial systems by the beginning of next year, at prices that have yet to be finalized. But *Billboard* reports that some industry observers wonder if the equipment can really be ready for sale to outsiders that soon.

"If you ask when we are going to have a stabilized product in the marketplace, then I would say it might take two years," Stulp responds. "But if you ask when DCC equipment—whatever

—CONTINUED ON PAGE 144

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# Tape & Disc News

## Digital Bin Battle Continues

The U.S. Patent Office has issued a preliminary ruling on patent claims related to the use of digital master reproducers in high-speed duplication of prerecorded audio cassettes. Two U.S. manufacturers of the digital bins are embroiled in suits and countersuits over the claims (see "Tape & Disc News," August 1991). Duplitrionics maintains that the sale and use of Concept Design's DAAD bins is an infringement of a patent issued in 1983 to Ron Newdollar, of which it is the assignee. Concept Design disagrees, asserting that its designs are fully covered by a 1982 patent assigned to Nippon Columbia (the "Yamamoto patent"), of which it is a licensee.

The Patent Office ruling results from

a request by Concept Design for a re-examination of the Newdollar patent. The patent examiner upheld six of the patent's original 34 claims, leaving the remaining 28 in doubt. But Duplitrionics' Jeff Binder points out that the position taken by the Patent Office so far is based only on arguments provided by Concept Design. Duplitrionics has 60 days within which to respond to the action. The company could argue for reinstatement of certain claims as originally filed, while modifying others to address Patent Office objections.

Concept's Bob Farrow acknowledges that Duplitrionics "still has opportunities to argue with the examiner." But, he says, "That's typically a no-win situation." And whatever the final ruling on the 28 disallowed claims, the court battles, which are currently in the discovery phase, are likely to go on. Farrow says that Concept's original suit, which alleged the use by Duplitrionics of the Newdollar patent to intimidate potential DAAD customers, would proceed because "the damage has already been done."

Duplitrionics, meanwhile, intends to carry on its infringement countersuit. According to Binder, "Three of the six

confirmed patent claims are claims that we are alleging infringement on, and are the basis for the majority of claims in our lawsuit." Concept Design apparently argues that point. Its press release describing the preliminary patent decision states that DAAD systems "have never contained the element described" in the claims that were upheld.

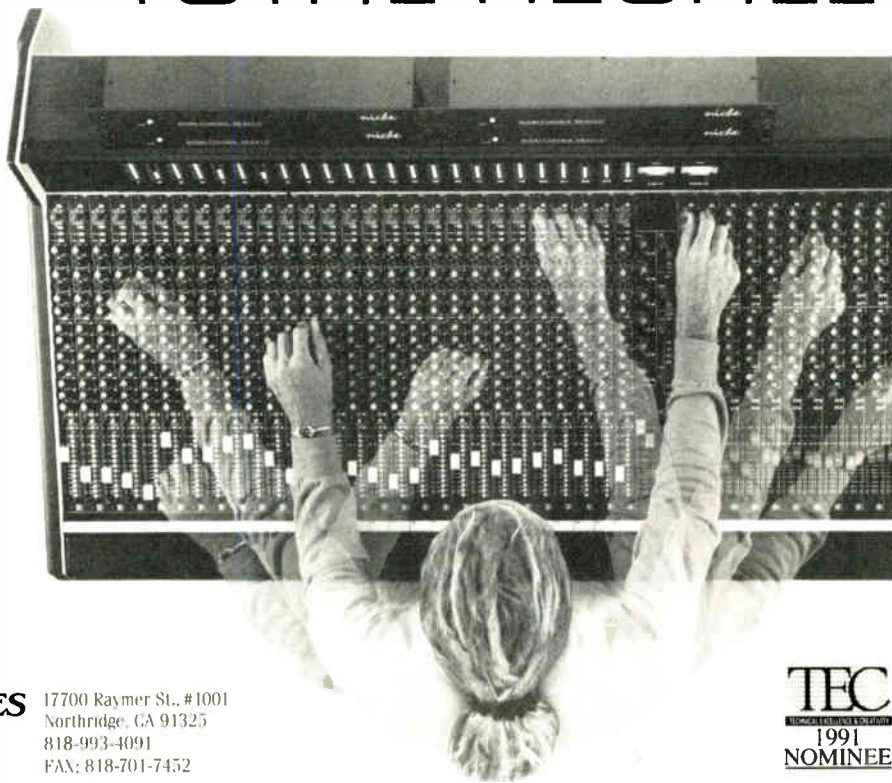
To make matters more complicated, the companies have added another suit/countersuit set to their original actions. The new suits relate to a Duplitrionics patent issued in June 1991. Once again, Concept Design claims that Duplitrionics is using the patent to intimidate, while Duplitrionics is cross-complaining about infringement by Concept Design. As of this writing, the four actions have been stayed pending final word from the Patent Office.

## New Bins on Horizon

Despite the proceedings described above, more bins are expected on the market soon. Gauss/Electro Sound president Jim Williams says his company has developed a solid state bin, which he expects to make available for

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delivery "shortly after the first of the year." Specifics on the system's design and operation are not currently being made public.

Concept Design, meanwhile, plans to introduce a new DAAD system. According to president Bob Farrow, "We've long known that the time would come when all the potential big DAAD customers would be satisfied. So the next thing to do was to figure out what the other duplicators in the market could use." The result is DAAD-R<sup>2</sup>, which Farrow says will "yield the exact same quality cassette, [but with] an amazing cost/performance improvement." Details on the new system are not yet available.

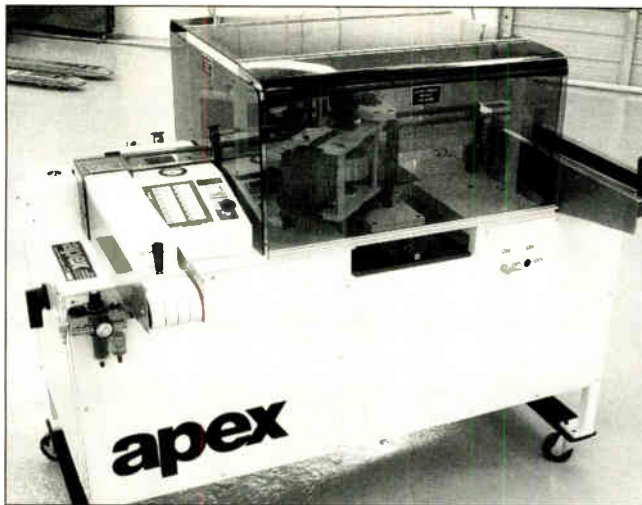
### ITA Seminar Update

The ITA has scheduled its annual Magnetic and Optical Media Seminar for December 10-11, 1991. The meeting, which explores the outlook for present and future information storage technologies, will be held at the Biltmore Hotel in downtown Los Angeles.

Meanwhile, the group's seventh annual "How and Why" seminar is planned for May in the Atlanta area. The event has previously focused exclusively on duplication for prerecorded audio—primarily analog cassettes. But the plan for 1992 is to run the audio meeting concurrently with a similar gathering on video duplication, perhaps with some joint sessions. The seminar is expected to include an optional tour of Sony Music's duplication plant in Carrolton, Ga. Exact dates and venue have yet to be finalized.

### SPLICES

Apex Machine Company (Fort Lauderdale, FL) is introducing several new cassette-printing machines. The CA-20 is a dry offset printer that automatically feeds, prints (one color/both sides), UV dries and restacks up to 150 audio cassettes per minute. The company also has two new video printers, the RS-100 and the RG-1000, as well as the Z-90 automatic-insert machine and Z-100 automatic-overwrap machine. Recorded Music Services of Aiea, HI, expanded its production capacity with the addition of a Versadyne 1500 Series high-speed duplication system. The company also purchased an Otari master recorder, a Concept Design loader and a Roldex printer. Davkore is expanding its Mountain View, CA, audio and video duplication facilities with the

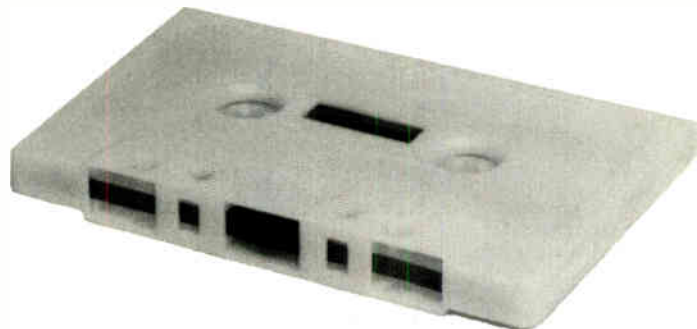


**Apex CA-20 with optional ultraviolet drier.**

addition of 3,000 square feet and an audio lab upgrade...Digital House of New York, NY, reports that it handled duplication and replication for the release of Lee Luvisi's performance of Beethoven's last three piano sonatas. The project benefits public radio station WUOL of Louisville, KY...Chop Em Out (London, UK) has added a second Sonic Solutions hard disk recording and editing system. In addition to the two Sonic Solutions rooms, the facility currently includes two rooms with

Sony DAE-1100/PCM-1630 CD Mastering Systems and another with a Sony DAE-3000-based configuration...Martin Audio Group (Seattle, WA) has expanded its real-time cassette capacity with the addition of 14 copy positions to its KABA real-time duplication system. The system now has a total of 50 copy positions. Additionally, the company has incorporated a Spectral Synthesis 4-track, hard disk digital workstation for use as a tapeless master with the KABA duplication system. ■

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—FROM PAGE 140, GEARING UP FOR DCC

it is—will be ready, then I say January of next year. Of course, it depends a little bit on how many people want to buy. But if somebody really wants to start DCC at that point, they will be able to. And most of these products will remain stable, especially the mastering set."

On the slave end of the chain, Philips has no plans to actually manufacture dedicated DCC slaves. The company believes that most existing slaves in the field are potentially convertible to the new format. "As I see it now," Stulp says, "there will be no problem to upgrade old slaves. That's what PolyGram did. So we are thinking of making conversion kits for several different models." Stulp expects these also to be ready for sale early next year.

### Caution Advised

Even if Philips does have the DCC gear ready, acquiring DCC capacity will require a healthy investment. Given the format's uncertain future, prospective duplicators are likely to be cautious. Many will be looking to the independent equipment suppliers they are used to dealing with for an indication of how to proceed. If they see gear makers investing in development for DCC, they may be reassured. But if the gear is only available from Philips, their caution might be reinforced.

So what's the outlook of duplication equipment makers toward DCC? Even before Sony announced Mini Disc, a panel of manufacturers at May's ITA cassette seminar seemed to agree that a gradual approach was in order. For one thing, as pointed out by Orjan Svedberg of Lyrec, the analog cassette can be expected to continue to do well for many years to come. And if the cassette has the potential to deliver "CD-equivalent" sound, as claimed by Duplitrionics' Jeff Binder, it might be sonically competitive with DCC.

Bob Farrow of Concept Design says he expects that dupers will be making some form of consumer digital tape before the end of the decade. But he also noted that it may not turn out to be DCC. So going too far too fast has its dangers, as those who invested in DAT duplication are finding out. But he stressed that caution doesn't necessarily mean inaction, since dupers face a risk of being left behind if they do nothing to prepare for the future.

### DCC Bins

The same logic apparently applies to the manufacturers themselves. At least three of the ITA panelists are involved in talks with Philips regarding products for DCC duplication, including both Farrow and Binder, whose companies make digital bins. Philips is apparently open to the possibility of outside bins being used in place of its own SSM.

"Basically, a digital bin is nothing more than a huge memory that you can get your data out of at high speed," Stulp says. "There is no reason that you couldn't use other bins for DCC, but the I/O (input/output) has to be completely altered. To get your data in you need an interface that you can connect to a DCC downloader. And on the other side, you need your DCC 9-track output."

Of course, outside vendors can't really proceed with interface design without access to a certain amount of technical information. "If you look at the DCC standard," Stulp says, "you can imagine at once what your digital bin should be like. The standard will be available to everybody who gets a license." As far as interfacing with the Philips downloader, however, "That would be something we would have to talk about, because that's a special interface right now."

The company has apparently become significantly more open in recent months than it was in May, when complaints about a lack of information from Philips were nearly universal on the ITA panel. Stulp notes that Philips isn't the only party being "careful." But while the company still has no formal program set up for information distribution, he foresees eventually "getting other suppliers on the same track."

That assessment is borne out by the experience of Farrow, who was surprised with the degree of candor with which his questions were answered when he visited Philips' Eindhoven headquarters in July. Summarizing Concept Design's current relationship with Philips, he says, "We're keeping in very close communication with people at Philips, and we've agreed to sign a license agreement that would allow us to receive a copy of the DCC standards."

Farrow concurs with Stulp that the main challenge for bin makers will be to interface with Philips' downloader. But there's no question that it's doable,

which is good news for current or prospective DAAD users. Farrow touts digital bins as the safest way to begin the transition to DCC, since they can be used for analog duplication now and DCC later.

"The controllers we use to receive the digital information," he explains, "are programmable gate arrays, so we can tell them to change the format they are now receiving—which is serial SDIF-2—to something else." On the output side of the bin, Farrow notes, "You take out the D/A converters, and put in the EPROMs or ROMs that do eight-to-ten modulation, which is used to ensure that no DC is recorded on tape. Then you transmit the information serially out to the slaves."

Duplitrionics also is confident that it will be able to supply bins for DCC. At the seminar, Binder guaranteed that his company's DHS bin system would be "fully convertible to DCC as presently specified by Philips." And he noted that only 10%–20% of the DHS's capabilities are used in analog duping, making it easy to incorporate DCC into the same unit.

Contacted more recently, Binder says Duplitrionics is "in receipt of all the information that we would need to have from Philips to do it." Regarding licensing, his response was guarded, probably because Duplitrionics claims patent rights to the use of solid state memory devices in the duplication of audio tapes (see "Tape & Disc News"): "Negotiations regarding the intellectual property rights of both parties are underway with reference to DCC."

### High-Speed Load

One area in which both DAAD and DHS would seem to have the jump on Philips' SSM is loading speed. "We've chosen to load from a DCC master," Stulp says, "because it has many advantages. But the disadvantage is that really high-speed loading is not possible. It could load at a slightly higher rate than real time, but not much. One of the solutions could be a Honeywell VLDS system. But there are several other solutions, including solid state."

The Honeywell VLDS system is already in use by Duplitrionics and Concept Design. But Farrow doesn't see Philips' real-time approach as being a major factor. "I understand they are working on something to play the DCC master at two times real time," he

says. "And since they play A and B sides simultaneously, that's really equivalent to four times." Since the SSM is actually two bins in one, allowing the duplication of one program while loading the next, Farrow says, "The only time you would really need high-speed load is when your job is so short that you don't have time to fill the next bin."

Nevertheless, Farrow thinks his larger customers who already have high-speed load are probably going to want to stick with it. Before loading, they would convert DCC information in their plant's mastering room into the 8-bit format accepted by VLDS.

### Slaves and Loaders

Naturally, bins aren't the only area of interest to dupe gear manufacturers. Gauss/Electro Sound, for instance, has plans to market a digital bin (see "Tape & Disc News"), but the company is also the world's largest supplier of slaves. Asked about his company's progress on DCC slaves, president Jim Williams says that "a good 75% of building a DCC slave is in the high-speed tape mechanisms. Much of what we do will come from our existing high-end transports. The tolerances will be even tighter, and we have to interface into the design things like laminate airflows to provide a reasonably clean environment. But you don't need very specific information for that, so work in that area has been ongoing.

"Where we do need specific information is about things like record heads and bus structure. And that's what Philips is not giving out. We are negotiating with them to be licensees to manufacture and sell to high-speed duplicators who are licensed to produce DCC. Those negotiations are very near the end, and, in principle, it looks like we have an agreement. We need that final agreement before we can have access to all the data on the digital electronics."

Initially, Williams expects that the 18-track heads for his slaves will come from the same source as those used on PolyGram's gear. The thin-film heads are made by Ferroxcube, a Philips-owned company. But once Williams has access to detailed specifications, he could begin looking for additional sources. "We understand from head experts, with whom we've consulted, that there are methods of producing these heads other than thin-film," he

says. "These situations usually start out with just one source, and then develop rapidly as people want to join the bandwagon."

### Converting to DCC

Assuming that the bandwagon does get rolling, the analog-to-DCC transition won't take place overnight. Lyrec's Svedberg said at the ITA that he expects to see duplicators adopt a dual-line setup at first, in which plants will continue to make cassettes on existing gear, while adding dedicated DCC capacity. Only later, as orders increase, does he think it will make sense to convert analog capacity over to DCC.

According to Williams, conversion costs for a slave might be expected to run in the range of 30%–35% of the price of new gear. Retrofitting existing gear to switch back and forth between DCC and analog is probably not feasible, though that capability can be engineered into new gear.

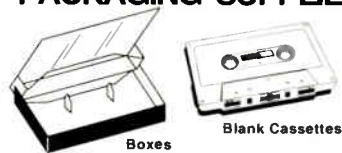
One example of dual-application design is the new Tapecentre 4000 loader from Tapematic. The machine loads from the left (a DCC requirement), and it may be enclosed for dust protection and outfitted with a device to hold open the DCC shell's gate. Tom Burrows of Otari says his company is also considering the possibility of a dual-application loader.

With all of this development work in progress, it's clear that dupe gear manufacturers—in spite of their cautious words—have been proceeding as if they expect DCC to become an important force in the prerecorded music market. Has Mini Disc shaken this assumption? "It certainly hasn't made the picture any clearer," Williams says. But he hasn't noticed any dwindling of interest in DCC among duplicators.

"Every customer and potential customer that we have is interested in being able to produce the product," Williams says. "Most of the major labels are making their plans to be online with a small pilot system as early as possible. And there are also a couple of independents who want to be first on the block. Everyone we communicate with sees DCC as the next step in their livelihood." ■

*Tape & Disc editor Phil De Lancie is a mastering engineer at Fantasy Studios in Berkeley, Calif.*

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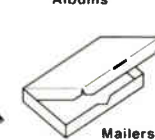
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# C O A S T

## L.A. GRAPEVINE

by Amy Ziffer

In the ongoing transition from analog to digital recording, SSL's ScreenSound hard disk-based recorder/editor is making headway. Recently, Soundcastle purchased its second system and L.A.'s first SoundNet digital audio network, which will allow the studio to gang the two units together, interface up to 16 SCSI devices and perform offline tasks independently. Fox Television became the second Los Angeles site for installation of SoundNet, and Burbank's B&B Studios also chose ScreenSound as part of its general overhaul.

B&B is a 27-year-old facility that focused on post-production of trailers and commercials for television until the late 1980s. "It's only in the last four years that we've gotten into film post," says studio manager Dan Ortiz, "and in the last two years we've turned our clientele around immensely." Ortiz says episodic TV is the next area in which they plan to put their energies.

"Eventually, what we're looking at is not doing any analog prelay," Ortiz predicts. "There seems to be more flexibility for us that way. Plus, just like in the music industry, everybody wants all the newest goodies. Without them, you're hard-pressed to compete."

B&B consists of a main film dubbing stage with THX and a highly modified Neotek board, video-based Foley and ADR stages with DDA and Harrison boards, a small video dubbing

—CONTINUED ON PAGE 148

## SESSIONS & STUDIO NEWS

by Jeff Forlenza

### NORTH CENTRAL

Motor City, Second City, the Twin Cities—this month we Coast into the heartland for some late-night barbecue and session updates.

United Sound Systems of Detroit has been very busy of late with some soulful sessions: Patti LaBelle was in Studio A with producer Michael Powell and engineer Michael Iacopelli; the Four Tops worked with producer Grover Washington, Jr.; George Clinton, Mr. P-Funk himself, produced Trey Lewd with Steve King working the board; engineer Michael Moore worked with the New Kids On The Block; and Tony! Toni! Tone! locked out Studio A with producer Raphael Wiggins and engineer Iacopelli.

Gary Schatelein, studio manager at TRC Studios, Indianapolis, reports the following activity: Engineers Steve McQueary and Alan Johnson completed audio post-production on the "Garfield Christmas Special." Larry Crane, former guitarist with John Mellencamp, continued work on his solo project with

engineer Johnson. Hillbilly Central completed their self-titled project with producer Frank Dean; Johnson was again behind the console.

Royal Recorders of Lake Geneva, WI, has a new general manager—Richard Ealey. Some recent sessions include the mix of the Blackeyed Susan's *Electric Rattlebone* album for PolyGram NY, Last Gentlemen re-recording and mixing their album *The World Behind Your Back* for Zoo Entertainment, and Guns N' Roses stopping in to finish up vocals for their new albums, *Use Your Illusion, I & II*.

Paisley Park Studios of Chanhassen, MN, had MC Hammer tracking and mixing in Studio B, with his producer Felton Pilate and engineers Tom Garneau, Mike Koppelman and Ray Hahnfeldt, for his upcoming *Bust It*/Capitol release. Kenny Loggins was using the rehearsal space in preparation for his tour. Terri Nunn was

**The Kingsnake and friends during Mr. Lucky sessions: In Russian Hill Recording's Studio A (L to R)—slide guitarist Roy Rogers, bassist Larry Taylor, John Lee Hooker, Keith Richards and drummer Scott Matthews.**



# C O A S T

working with producer/engineer David Z and assistant Tom Garneau on a project for Geffen Records.

Paragon Recording Studios, Chicago, had Gary Filip in recording and mixing two new songs that were requested by country singer Crystal Gayle. Filip wrote and produced the songs, with Jim Franke engineering and Tony Poe assisting...At Sella Sound Studio in Detroit, Erica Smith put the finishing touches on her new release for Baltic Records, which was produced, engineered and mixed by Gary Spaniola for

engineer Brian Anderson, and Australia's Cosmic Psychos worked with producer/engineer Butch Vig...

## NORTHEAST

Rik Tinory Productions, a Cohasset, MA, 24-track studio, completed a five-month session with Aerosmith for their album *Aerosmith 1991*. Aerosmith also recorded soundtracks for *The Simpsons* to be aired sometime this winter...Sigma Sound Studios of New York had Southside Johnny, David Byrne, Jesus Jones, drummer Paul Motian and pro-



**C. Wheeler (left) of Tony! Toni! Tone! and producer Raphael Wiggins at United Sound Systems (Detroit).**

PAW Production Inc...In Indianapolis, Caboose Productions worked on the soundtrack for "Physics of the Indy 500." Brice Bowman engineered the soundtrack, and Jeff Gerson composed the original score for the interactive video that illustrates the principles of physics at work in the 500-mile race. The project is presented by the Indianapolis Children's Museum in conjunction with Ball State University...Smart Studios of Madison, WI, reports some international sessions: Japan's female punk band Sekiri recorded with

ducer Nat Adderley working on individual projects recently...Meanwhile, over at Sigma Sound Philly, engineers Mike Tarsia, Frank McNulty and Brian Wittmer worked with Patti LaBelle, along with producers Bunny Sigler and Bud Ellison; and Frankie Avalon was recording again for his album of love tunes with Joseph Tarsia, McNulty and Ron Shaffer engineering, and Bill Terrel producing...Acme Recording Studios of Mamaroneck, NY, had New York jamsters the Spin Doctors recording their debut album for Epic-Sony, with Peter Denenberg co-producing and engineering, and Thom Leinbach assisting...

—CONTINUED ON PAGE 149

## N.Y. METRO REPORT

by Dan Daley

While the local studio scene is manifesting its economic recovery via expansions and upgrades of existing facilities, the year's first significant new-from-the-ground-up installation opened in September on Manhattan's East 95th Street. River Sound is owned jointly by Steely Dan alumnus Donald Fagen and producer Gary Katz. The single-room facility is based on a Frank Comentale design, modified by the staff, according to Todd Alan, River Sound's manager. The recording room is loft-like, built from what was once a stable; the control room is outfitted with a 46-input Neve 8078 with Flying Faders automation and two rare 3M digital 32-track decks.

Fagen and Katz spent the last six months streamlining the room and working on several projects individually, including Fagen's own recording (produced by erstwhile SD partner Walter Becker). The studio was intended to be open to the public for commercial rental right from the beginning, according to Alan. Neil Dorfsman and Elliot Schiener were the first outside producers to use the room, which has a card rate of \$175 per hour and a lockout rate of \$2,400 per day. Other recent clients include Roger Daltrey and a reconstituted 10cc. Alan says that an additional studio is expected to be built on the site at some point in the future.

Dave Amlen, owner of Sound On Sound, has chosen John Stork to design his second room.

—CONTINUED ON PAGE 148

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—FROM PAGE 147, N.Y. METRO

"I sat down and met with him, and it just clicked," says Amilen of the meeting, which was arranged at the suggestion of Amilen's friend Chris Bowman, a contractor who worked with Storyk on other studios in town, including JSM. Bowman will also implement the new design at Sound On Sound. Construction is expected to be completed in time for a February opening.

The new room will hold a 72-input Neve VR with Flying Faders, some type of digital multitrack, and either UREI or Tannoy main monitors.

Amilen says that the range of his client base motivated the approximately \$1.25 million upgrade. "I've got record clients who book weeks in advance and do lockouts, advertising clients who call the day before and just need the morning, and a lot of jazz acts who want to come in at night," he says. "It's difficult to make everyone happy with just one room."

More upgrades—Manhattan Center Recording, noted for its Neve-equipped control room adjacent to a large, staged ballroom (where the TEC Awards were held in 1989) is adding a third room, which will house New York's largest Neve, a 72-input with the last 12 modules being moded for stereo, producing, in effect, an 84-input configuration, according to studio manager Robert Carvell. The studio design is essentially in-house, with input from Ed Evans and Frank Comentale. The recording room will be about 24x24, and will also hold a Sony 3348 and NED's PostPro and Synclavier systems.

Carvell notes that the studio's clients vary from rock to jingles to opera, and they've used the studio extensively for their in-house production company, Manhattan Center Records. The Neve VR- and Sony 3348-equipped location bus has also been busy, doing the Westwood One audio feed for Paul Simon's August free concert in Central Park and shows with INXS in Chicago and Detroit.

And he's not even French...Lou Bruno has mixed the audio on Jerry Lewis' perennial fundraiser for the entire 26 years its been airing live on Labor Day. Out at WWOR's Secaucus, NJ, studios, Bruno handles over 50 live, wired and wireless, microphones using a Soundcraft Sapphire 44-input console and a Soundcraft 16-input 200 Series desk with a Yamaha 40-input mixer for the on-air mix. "It's a wacky mix," he says of the 22-hour, non-stop broadcast, and it no doubt gets wackier

still toward the end. Best moment in 26 years? When Stephanie Mills came out to sing, and the second-shift A2 got her music-minus tracks mixed up with those of another singer. "Stephanie just kept waving her arms while the tracks played on-air until someone caught it," Bruno says.

Acoustician Francis Daniel and architect Victor Schwartz, along with contractor Ed Kaczmarek, have formed ARcoustics, a studio design and consulting firm. The company formalizes over two years of collaboration on several studio design projects, including Brielle Music's lower Manhattan facility, PolyGram Records' mastering facility in New Jersey, and Musicworks Recording Studio, now under construction in Kingston, Jamaica. "This arrangement can really enhance the speed at which things get done," Schwartz comments. "Because we have all the elements ready, we can hit the job on a run." ARcoustics is located at 720 Greenwich Street, Suite 2C, New York, NY 10014. They can be reached at (212) 727-9645 or via fax at (212) 206-7320.

Hey, kids! Fax yer New Yawk stuff to Daley at (212) 889-8874. ■

—FROM PAGE 146, L.A. GRAPEVINE

stage, and two prelay rooms—one analog and one with ScreenSound—plus a transfer department. Multitrack machines are Otari, and projectors are from Magna-Tech. Post-production supervisor Steve Williams and chief engineer Randy Honaker direct a staff of more than a dozen.

The education committee of the Los Angeles chapter of NARAS, with support from A&M Records, ASCAP and BMI, has developed a series of Monday evening symposiums this fall on "the current state of music recording," suitably called "From the Studio to the Store." October 21, the topic was "A&R Reps: What They Look For and How They Find It." November 18: "Personal Management: Necessity or Extravagance?" December 16: "Promotion and Marketing: The Record's Delivered—Now What?" Studio Instrument Rentals, better known as SIR, is providing audio equipment for the programs. Admission is free, but reservations are strongly suggested. Each colloquium begins at 7:00 p.m. Call (818) 843-8253 to secure a seat.

In the past few weeks, Los Angeles has been host to several fun events. Yamaha's fifth annual Soundcheck took

place September 6 at Third Encore Studios, a large rehearsal complex in North Hollywood. Third Encore is only a few years old, but has already established a reputation as a facility that can accommodate the audition and rehearsal needs of big-name recording artists with sizable productions. Soundcheck is Yamaha's showcase for unsigned bands, and this year five groups from different corners of the country battled it out in front of a judging panel that included John Entwistle, Chris Lord-Alge, Jeff Baxter, Cheap Trick vocalist Robin Zander, Columbia Records A&R VP and former Journey bass player Randy Jackson, and Warner Bros. Records A&R Director Barry Squire. The Green House, from Philadelphia, came away the winner and will go on to represent the U.S. at Band Explosion, Yamaha's even larger showcase in Japan. Third Encore's largest stage, in which the competition was held, can be seen by all when the taped Soundcheck show airs nationwide around New Year's.

The Emmy Awards also emanated from Los Angeles, and this year the Creative Arts Emmys got some special attention...at least in the L.A. and New York television markets. (As distinguished from the Prime Time Awards, which honor performance, writing and directing, the Creative Arts Awards are for sound mixing, lighting, costume design and the multitudes of other talents that don't usually get adequate recognition.) The Academy of Television Arts & Sciences developed a special one-hour show that aired on September 2, on which *Cheers* sound mixer Robert Crosby Jr. demonstrated his skills recording dialog. Thank you, ATAS—it's about time folks behind the scenes got more appreciation!

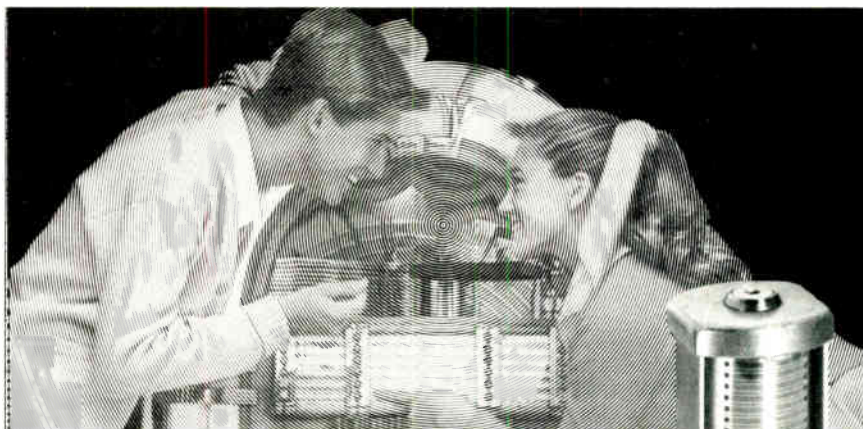
Send studio news to Amy Ziffer, c/o *Mix* magazine, 19725 Sherman Way, Suite 380, Canoga Park, CA 91306; or call (818) 567-1429 or fax (818) 709-6773. ■

—FROM PAGE 147, SESSIONS & STUDIO NEWS

#### SOUTHEAST

Ultrasonic Studios, New Orleans, acquired a Studer 827 24-track recorder and 24 channels of Dolby SR. Artists who have used the new equipment include Fats Domino and Clarence Gatemouth Brown, each working on a new album, and singer/songwriter Shad Weathersy working on his new release with producer Frosty Horton...At

—CONTINUED ON PAGE 150



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—FROM PAGE 149, SESSIONS & STUDIO NEWS

Maxwell Sound in Athens, GA, Kansas violinist David Ragsdale played parts and solos for the debut album from Atlanta-favorite Peter Vogel...

## SOUTHERN CALIFORNIA

Sound Image Studio of North Hollywood had Fishbone in doing pre-production for their current Columbia release with Glen Matosoff at the controls, and Dread Zeppelin were in overdubbing with producers Jah Paul Jo and Rasta Li-Mon and engineer Lee Manning... Devonshire Audio & Video Studios of North Hollywood had Mark Dodson producing Electric Love Hog's PolyGram release, with help from Motley Crüe drummer Tommy Lee... Barry White was at Lion Share Recording (L.A.) mixing and overdubbing for a release on A&M Records. White co-produced with J. Perry, while Joe Schiff engineered...

## SOUTHWEST

At Sound Arts Recording Studio, Houston, The Geto Boys recorded and mixed their album *We Can't Be Stopped*, which reached gold status as of September, with engineer Doug King. Their video "My Mind's Playing Tricks On Me" was also filmed at Sound Arts... Kevin Black (brother of RCA artist Clint Black) and the Kevin Black Band were in at Studio West (Houston) doing a two-song demo for an upcoming video shoot. The sessions were produced and engineered by J.R. Kuzniar...

## NORTHWEST

Slide guitarist Roy Rogers produced and played on John Lee Hooker's album *Mir. Lucky* at Russian Hill Recording (San Francisco). Sam Lehmer recorded and mixed the project... At Brilliant Studios (San Francisco), local bands were tracking: Hoi Polloi, Flying Monkeys and You and What Army all worked at producer Norm Kerner's studio...

## STUDIO NEWS

W.L.D. Recording Studio has opened a studio in the Missouri Ozarks near Poplar Bluff to pursue the jingle business and other activities... City Spark Studios of Kansas City, MO, shifted its focus from the studio business to the independent record business, and will now be known as City Spark Records. Upcoming City Spark releases include an album from Scartaglen, an American Celtic band; and B.C.R., Kansas City's world beat ambassadors.

## POST SCRIPT

—FROM PAGE 123

Laredo. "In choosing audio-for-video consoles, we looked for several things, including versatility and audio quality."

According to Laredo, East Side decided to go with Solid State Logic because it "offered us features we haven't been able to find in other consoles, such as Ultimotion, SSL's new fader automation system." East Side's three new consoles are all SSL 4000 Series, custom-configured with 5000 Series monitor sections to provide unique monitoring capabilities. These hybrid mixers also contain the 5000 Series machine control system.

The overall system interfaces film dubbers, multitrack audio, digital workstations and console automation, thus allowing clients to mix in any style they require.

"Another reason we went with SSL is that they provide a strong technical support team," adds East Side's chief maintenance engineer, Jim Williamson, who is overseeing the studio renovations. "This isn't your typical installation, so support is really important. These are completely unique custom consoles—no one else will be able to offer the same capabilities."

A few blocks away, at Editel/New York, the main mix room also features an SSL console. "It's a 6000 G Series, fully automated recording and mixing console with 32 inputs, a Sony PCM-3324 digital 24-track and Studer analog 24-track," says sound designer/mixer/composer Bob Schott. "We also have a Soundcraft console in our Synclavier/PostPro room."

According to Schott, the bulk of Editel/New York's work consists of television shows for such clients as NBC, MTV and A&E, and a large number of commercials. "They're our primary business, and we mix everything film-style, meaning a split mix that is usually six or eight channels," he continues. "That makes all future mixing easy. We commit every mix to tape, and if a year or so later a show or commercial has to be remixed or have narration muted, you can easily remix for the international market. In addition, someone else can pick up where you left off, and that's a big advantage. Since we work that way, the SSL is perfect for our needs."

Schott adds that he likes having dynamics controls—limiting, compression and gating—on every chan-

nel. "Having that ability at the push of a button is very useful in post, because it really speeds up a mix. And our clients don't have a lot of time to waste, especially when rates are \$300 to \$400 an hour. Clients come to us because we're fast and efficient."

Schott also stresses the value of automation on the SSL console. "It's very important in post that automation can follow time code," he states. "We don't need it on some shows. Shows that are basically dialog are easy to mix. But if you need it, you want to be able to hit a button and have it there, mindlessly following time code. And the G Series automation doesn't want to control the tape machines."

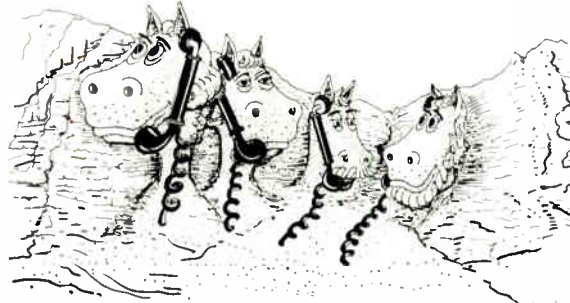
In terms of equalization, Schott agrees with Universal's Tom Miller, pointing out that "post often has very different demands from music recording. While music EQ is usually used to beautify the sound, we more often use EQ to perform some kind of surgery, such as cutting unwanted resonances that might have been picked up during the original recording." ■

*Post-production editor Iain Blair is a freelance writer based in Southern California.*

## Post Briefs

Video Expo, the leading trade show for video production professionals, will take place February 18-20, 1992, at the Infomart in Dallas. Over 6,000 professionals in the video and audio-for-video industries are expected to attend the event. For more information, contact (800) 800-5474. . . Robert Pomann of Pomann Sound (New York City) completed sound design and editing work on *Doug*, the first animated series produced by the Nickelodeon cable network. The series was produced by Jumbo Pictures. Audio work was accomplished with Pomann's SSL ScreenSound digital audio-for-video system. . . HBO Studio Productions (New York City) used its newly opened composite digital editing suite to complete an infomercial for the Time-Life *Civil War* home video series. The 30-minute tape was edited entirely on D-2, using Ampex tape machines and the VGV composite digital switcher. . . Coast Digital Productions (Primos, PA) is now part of Stewart Digital Audio. The new alliance gives customers the benefits of D-2 digital video editing and

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mammoth studio shoots, along with its AMS AudioFile-based soundtrack and commercial production services... New York's EDL announced the acquisition of an Avid non-linear editing system as part of a general facility upgrade that also includes the installation of a JVC multiformat frame synchronizer and increased Betacam SP to 1-inch editing capability... With the addition of a Lexicon Opus digital audio production system, **Henninger Video** (Arlington, VA) became the mid-Atlantic's first fully digital post-production facility, offering six video editing rooms, graphic design and compositing, daVinci video enhancement, and Laserdisc recording... Cleveland-based **Commercial Recording** also installed an Opus. The four-studio complex serves a wide range of advertising agencies and specializes in radio and television commercials... SFPG (San Francisco) completed post work with InCA on *Dangerous Years: President Eisenhower and the Cold War* for a November airing on the Discovery Channel. All graphics were created on the Quantel PaintBox... Paul Rodriguez, VP and general manager of EFX Systems (Burbank, CA), announced the appointment of Steve Mullinix to the position of account executive. Mullinix migrated from a similar position at Columbia Pictures Entertainment, and was previously owner of The Sound Room, a post studio in Atlanta... Greg Rike Productions (Altamonte Springs, FL) acquired 5,000 square feet of additional floor space to be used for a new video/audio studio and additional offices. GRP has just finished posting for "The Great Shark Hunt," to be aired on the Discovery Channel... B&B Studios (Burbank, CA) added a Solid State Logic ScreenSound audio-for-video system for the variety of post-production assignments the facility handles for clients such as Walt Disney, Warner Bros. and Paramount. B&B recently used the new ScreenSound system for the Paramount feature *Body Parts*... Laube-Roth, the Burbank-based commercial editing house, installed its own sound design studio. According to company principal Greg Laube, the new Mac-based, 16-bit sampling studio enables clients to hear all the sound elements prior to the mix stage: "Not only do producers save time and money, but they get maximum creative input." ■

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# NORTH CENTRAL STUDIOS

Information in the following directory section is based on listing applications 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.



Astute *Mix* readers will recognize the striking resemblance of this month's Directory cover photo to the November '87 cover photo. Designed by Bret Thoeny of BOTO Design, Studio B at Prince's Paisley Park Studios near Minneapolis differs from the '87 cover (Studio A at Paisley Park) mainly in its console, a custom 48-input API/De Medio design with GML Moving Fader automation and all-discrete components. The room is used for tracking as well as mixing.  
Photo: John Lehn.

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### Upcoming Directory Deadlines:

Recording Schools, Seminars & Programs: **November 15, 1991**  
Northwest Studios: **December 16, 1991**  
Video Production, Post-Production Facilities: **January 15, 1991**

*Mix* listings procedure: Every month, *Mix* mails listing applications to recording studios and/or other vital facilities and services for the recording, sound and video production industries. There is a charge to list a **Booth-Place 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 (5478).

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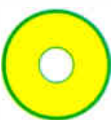
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## MIXING

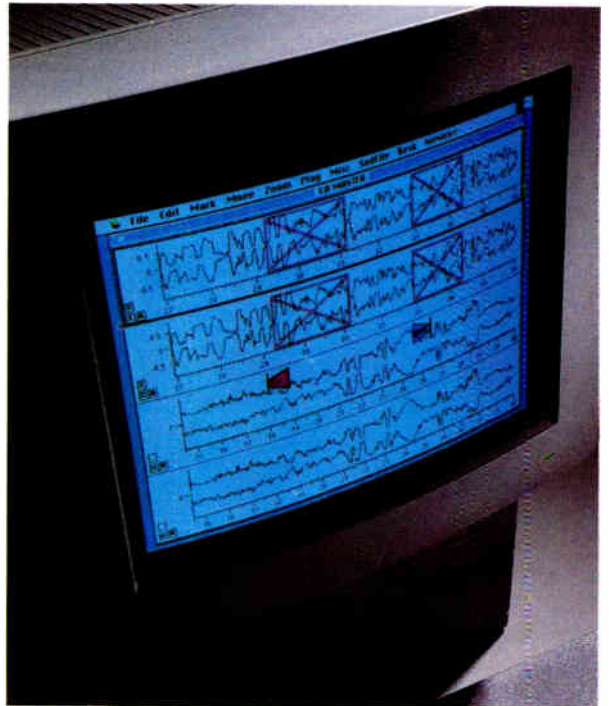


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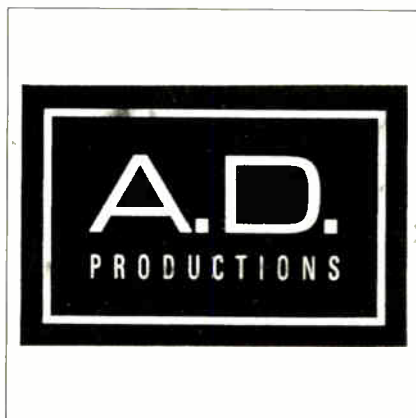
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A.D. PRODUCTIONS INC.  
Milwaukee, WI

[24+] **A.D. PRODUCTIONS INC.**; also **REMOTE RECORDING**; 411 E. Wisconsin Ave., Ste. 1001, Milwaukee, WI 53202; (414) 278-7999; FAX: (414) 278-1159. **Owner:** Corporation. **Manager:** Michael M. Henszey. **Engineers:** David G. Henszey, Jay Mark, Larry Hinds. **Dimensions:** Room 1: studio 720 sq. ft., control room 30x30. Room 2: control room 12x12. **Mixing Consoles:** Neve V Series 48 w/Necam 96 automation. (2) Yamaha DMP7 8x2 digital mixer/FX. **Audio Recorders:** Mitsubishi X-850 multitrack, Mitsubishi X-86 2-track, Tascam ATR-60 center track. **Cassette Recorders/Duplicators:** TEAC W990. **Synchronization Systems:** Adams Smith System 2600, Adams-Smith compact controller, Sigma C.B.G. **Echo, Reverb & Delay Systems:** (2) Lexicon 480L w/LARC, Lexicon 224X w/LARC, Eventide H-D300B, Publison Infernal 90. (3) Lexicon PCM42 delay, AMS S-DMX delay, Roland Dimension D, Roland 5C1 chorus echo, T.C. 2290 delay. **Other Outboard Equipment:** BBE 832 Sonic Max, (2) Focusrite ISA 110 EQ, Massenburg stereo parametric EQ, (2) Klark-Teknik 1/3-octave EQ, Aphex 250 Expander, (2) Focusrite ISA 130, Drawmer M500, Drawmer DL-231 Korg A3, Korg DT-1 digital tuner. **Microphones:** Calrec Sound Field MkIV, (2) Neumann U87, (2) Neumann KM84, (2) AKG 414 (6) Sennheiser MDM-421, (3) Shure SM58, Crown PZM Shure SM97, AKG D 12E. **Monitor Amplifiers:** (2) QSC MC-140Q, (2) Ramsa WP-940, Ramsa WP-9055, Bellies 450. **Monitor Speakers:** Tannoy FSM, Tannoy NFM-8, Yamaha NS 10M. **Musical Instruments:** Yamaha 6' grand piano, Yamaha Rec. Ses drums set, E-mu Emulator III w/300MB HD, E-mu Emulator Proteus, E-mu Emax HD/SE, E-mu Emax, Kurzweil PX-1000, Oberheim Matrix-6, Roland D 5D, Roland D 110 (ESO VFX), Kurzweil MIDIboard, Macintosh IIx/19" screen, Macintosh II SX w/full base screen, Ensoniq VFX. **Other MIDI Equipment:** (2) J.L. Cooper MSB+MUP, Mark of the Unicorn Performer 3.0 software, Roland D-50 and other editor/librarians, Professional Composer software, Alchemy, Ellii Digidesign Emax. **Video Equipment:** Sony PVM-2530, Sony PVM-1371Q, Sony SP-9600 3/4" U-matic, VTC time prec., G-Sheet A/V software, Sony PCM 2500 R-DAT prof. recorder w/DIF. **Rates:** \$150 per hour, \$2,000 per day. **Specialization & Credits:** A.D. Productions Inc. is a full-service digital recording facility located in downtown Milwaukee, A.D. features a Neve V Series 48-channel console with Necam 96 automation and Mitsubishi digital tape machines, and is designed by renowned studio architect Steven Durr. Enjoy writing music in a spacious 30x30 control room with scenic view of Lake Michigan. Utilize a powerful MIDI suite for pre-production and music composition with all the hottest toys. "A.D. is a gem, because it is small and personal. There is so much to like about the place. I highly rec-

ommend A.D."—Robin Zander of Cheap Trick, Milwaukee Journal. The facility also has a health spa with indoor running track, restaurant, bar, banking, and 24-hour security on-site. Adjacent to the landmark Pfister Hotel and walking distance to the lakefront. Credits include Cheap Trick: Busted/Epic, Jerry Harrison: Walk on Water/Warner Spanic Boys/Rounder, #1 dance hit Uh-Ooh-Ooh Look Out (Here It Comes); Roberta Flack/Atlantic; #1 new age album David Arkenstone: In the Wake of the Wind/Narada Mystique. For more information, please contact Michael Henszey at (414) 278-7999. That's (414) 278-7999, call now! Operators are standing by.

[24+] **AIRE BORN INC.**; also **REVOTE RECORDING**; 4700 Northwest Plaza, W. Dr.; Zionsville, IN 46077; (317) 876-1556; FAX: (317) 879-9814. **Owner:** John Boll, Mike Wilson. **Manager:** Mike Wilson.

[24+] **AIRWAVE RECORDING STUDIOS INC.**; also **REMOTE RECORDING**; 2108W Roscoe St.; Chicago, IL 60618; (312) 404-0453. **Owner:** John McCortney, Paul Grigonis. **Manager:** Nellie McCortney. **Engineers:** John McCortney, Paul Grigonis. **Dimensions:** Room 1: studio 55x25, control room 24x22. Room 2: studio 16x16, control room 20x16. Remote van: control 9x6. **Mixing Consoles:** TAC Matchless 36x24x8x2, Biamp Systems 2016 20x16x2, Revox C-279 6x2, Audio Development AD-145 6x2. **Audio Recorders:** Studer A-80 24-track, Otari MX-70 16-track, Otari 5050 8-track, Studer A-810 2-track with time code center track, Otari 5050 2-track, Revox A-77 2-track, Revox A-77 1/4-track stereo recorder, Panasonic SV-255 DAT, Sony DTC-1000 DAT, Sony PCM-501 F-1 digital processor, Technics SV-100 F1 digital processor. **Cassette Recorders/Duplicators:** (2) Sony TCD-5, (2) Yamaha C-300, (26) Denon D3M-10, (3) Denon DRM-12, (4) Yamaha K-340, (3) Yamaha K-220. **Noise Reduction Equipment:** (6) dbx 150X 2-channel, **Synchronization Systems:** Audio Kinetics Pacer. **Echo, Reverb & Delay Systems:** Korg DRV-3000 digital reverb, Korg DRV-1000 digital reverb, (2) custom 12'x14' reverb chambers, (3) Yamaha SPX90, Lexicon PCM42 digital delay, Deltalab ADM 1024 digital delay, (3) dbx 160X compressor, dbx 1166 compressor, dbx 263X de-esser, MICMIX XL-210 spring reverb, Sound Workshop 242A spring reverb. **Other Outboard Equipment:** (2) Hardy M-1 mic preamps, Megamix console automation, (2) Tascam Model 118x2 line mixer, TEAC CR-20 graphic equalizer, Symetrix SX-202 2-channel mic preamp, Denon DCD-600 CD player. **Microphones:** Telefunken U47, (2) Bruel & Kjaer 4006, (2) Schoeps MK 21, (2) Neumann KM84, (2) Neumann KM83, (2) AKG C-414, (3) Sennheiser 421, (2) Sennheiser 421, (6) Shure SM81, Electro-Voice RE20, (4) Electro-Voice RE16, (4) Beyer M26C, Crown PZM. **Monitor Amplifiers:** Carver 1.0T, Hafler 500, Ramsa 500, Ramsa WP9055. **Monitor Speakers:** (2) Tannoy 215, (4) Norberg BCS-16, (2) Electro-Voice S-100A, (2) Fostex RM-756. **Other MIDI Equipment:** Macintosh SE30, Passport Pro-4 sequencer, Southworth Jam Box. **Video Equipment:** Sony VO-5600, (2) Sony VO-2860, Sony VP-2260, Sony RM-430 remote edit controller, Commodore 1701 13" video monitor, TMK 755C 5" video monitor. **Rates:** Rates on request.

[24+] **ALLIANCE RECORDING CO. INC.**; also **REMOTE RECORDING**; 8449 Parrshallville Rd.; Fenton, MI 48430; (313) 632-5653. **Owner:** Al Hirschman, Dee Hirschman. **Manager:** Al Hirschman. **Engineers:** Al Hirschman, Dee Hirschman, Don Pushies, Jacques Mersereau. **Dimensions:** Room 1: studio 36x40, control room 20x24. Room 2: control room 18x20. **Mixing Consoles:** Neotek IIIc 56x24 with Twist-Automatic. **Audio Recorders:** (2) MCI 110 2-track, Scully 280B 2-track, Sony JH-24 24-track, Tascam DA-30. **Noise Reduction Equipment:** (30) dbx Pro all tracks. **Synchronization Systems:** AMR sync controller. **Echo, Reverb & Delay Systems:** Lexicon 224XL EMT-40 TS, Sound Workshop 262, Eventide Harmonizer, Lexicon LXP-1, Lexicon LXP-5, TC Electronic 2290 DDL, UltraVerb, Yamaha SPX900I, Deltalab

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DL-2, Dynacord tape delay, Marshall time modulator. **Other Outboard Equipment:** (2) UREI 1176, (2) dbx 165, (2) Scamp rack w/limiter, (8) Scamp rack w/gate, Scamp rack w/EQ, Orban 418A, Teletronix LA-2A, Valley People dual Dyna-Mite, Omni Craft noise gate, Aphex 111 Exciter. **Microphones:** (2) Neumann U89, (4) Neumann U87, (2) Neumann KM84, (2) Neumann KM56 tube, (2) Neumann U47 tube, (2) AKG 414, (2) AKG 452, (2) AKG C-28 tube, AKG 190, (4) EV RE20, (2) EV CS15, (4) EV RE15, EV RE666, (6) Sennheiser 421, (2) Sennheiser 441, (2) Beyer 500, (2) Beyer 260, (2) Beyer 101, (2) Shure SM81, (6) Shure SM57, (2) Altec M-30 tube, Crown PZM, (2) Peavey PVM-45. **Monitor Amplifiers:** AB Systems, (3) SAE, (2) Crown, McIntosh. **Monitor Speakers:** (2) UREI 813B, (2) JBL 4311, (2) JBL 4301, (2) Yamaha NS-10M, (2) Auratone. **Musical Instruments:** Ensoniq Mirage, Yamaha DX7, Yamaha RX5, Ludwig drums, Oberheim Matrix-6, (7) instrument amp, Roland D-50. **Other MIDI Equipment:** (2) Macintosh Plus, (2) Southworth Jam Box/4+. **Video Equipment:** 3/4" video setup.

**[24+] ARS RECORDING STUDIO & TAPE DUPLICATION;** also REMOTE RECORDING; 11626 S. Pulaski Rd.; Alsip, IL 60658; (708) 371-8424; FAX: (708) 371-3958. Owner: Gary A. Cobb. Manager: Gary A. Cobb.

**[24+] AUDIO ART RECORDING STUDIOS INC.;** also REMOTE RECORDING; 403 S.W. 8th St.; Des Moines, IA 50309-4615; (515) 282-3223. Owner: Patrick McManus. Manager: Keith Brown.

**[24+] AUDIO RECORDING STUDIOS INC.;** also REMOTE RECORDING; 601 Rockwell Ave.; Cleveland, OH 44114; (216) 771-5112; FAX: (216) 771-1972. Manager: Heather Copper.

**[24+] AUDIO RECORDING UNLIMITED INC.;** 400 N. Michigan Ave., Ste. 1900; Chicago, IL 60611; (312) 527-7000; FAX: (312) 527-3360. Owner: J. Michael King. Manager: Betty Rake.

**[24+] BARN BURNER RECORDING STUDIO;** also REMOTE RECORDING; Rt. 1 Box 137; Annawan, IL 61234; (309) 935-6181. Owner: Heath Audio Associates Inc. Manager: Harry Heath.

**[24+] BROWN & BROWN RECORDING AND MUSIC PRODUCTIONS;** also REMOTE RECORDING; PO Box 224; Portage, MI 49081; (616) 327-8352; FAX: (616) 327-8352. Owner: Kevin and Deborah Brown. Manager: Tim Brown. **Specialization & Credits:** Brown & Brown is located precisely between Detroit and Chicago, specializing in original music for broadcast production, record class, multitrack recording, voice-over and A/V soundtracking. In addition to 2-track digital remote recording, we offer a well-appointed control room using the MCI JH-24 (2" 24/16-track) and Soundcraft 2400 32x24x24 classic split console. Clients appreciate our large recording room, digital mixdown, well-stocked processing racks and experienced engineers (all are NARAS members with national release credits). Original award-winning Musicimage™ packages are airing in the Midwest and across the U.S. We are always producing demos and album projects for our clients and can help with project presentation and packaging for CD, cassette and vinyl release. Some recent clients include Motown legend Jr. Walker, from the "TAWC" label Tim Cunningham; gospel artist Zion, The Walkers; comedy/piano great Steve Allen; "JaMart" artists 2/11; corporate clients Post Cereals, Kraft, General Foods, Kellogg, Upjohn, Stryker Corp., Western Mich. University and Hope Health Letter. Call for a complete client list.

**[24+] CATAMOUNT RECORDING INC.;** 1005 W. 23rd; Cedar Falls, IA 50613; (319) 235-6517. Owner: Tom Tatman, Rick Bisbey. Manager: Tom Tatman. Engineers: Tom Tatman, John Thomson, Rick Bisbey, and outside producers and engineers welcome. **Dimensions:** Studio: 30x40, control room 20x22. **Mixing Consoles:** Automated Neotek Series Ilc. **Audio Recorders:** Otari MX-80 24-track, Otari 5050B II 2-track with SAI heads & Dolby SR, Panasonic SV-3500 DAT. **Cassette Recorders/Duplicators:** (6) TEAC V-670 3-head cassettes. **Noise Reduction Equipment:** Dolby SR 363, dbx 160x. **Echo, Reverb & Delay Systems:** Lexicon PCM70, Lexicon LXP-5, Yamaha SPX900, Lexicon digital effects, Lexicon PCM60, Lexicon LXP-1, Lexicon MRC, Yamaha SPX9000, Yamaha SPX90, Alesis Quadverb, T.C. Electronic 2290 (32 sec), Roland SDE-1000 delay, DeltaLab DL-1 stereo delay, ART pitch transposer. **Other Outboard Equipment:** API 3124 quad mic preamp, (2) UREI LA-4 comp/limiter, (2) Drawmer DL-241 stereo compressor/limiter/gate, (2) dbx 166 stereo compressor/limiter/gate, dbx 160 limiter, USAudio GateX, (2) Omnicraft GT-4 quad gates, Orban 622B stereo parametric EQ, Orban 516EC 3-channel Sibilance Controller, Aphex Aural Exciter. **Microphones:** Neumann U87, (2) Neumann KM84, (2) AKG C-414EB, (2) AKG C-501E, AKG D-112, (4) Sennheiser 421, (4) Sennheiser 441, (2) Sennheiser 402U, (2) TOA K-11, (6) Shure SM57. **Monitor Amplifiers:** Crest 300, SAE 3100, Phase Linear 400 Series II. **Monitor Speakers:** Tannoy SRM 15X, Yamaha NS-10M, JBL 4311 WX, Auratone Super Cubes. (8) Beyer DT-220 headsets. **Musical Instruments:** 1902 Kimball 6'4" grand piano, Yamaha Power Tour drums w/Rims system, Pearl free-floating snare, Fender Champ amp (tube), Fender Sidekick 15 amp, Fender Stratocaster, Scholz Rockman. Rates: \$35 per hour, 8 hr/day minimum.

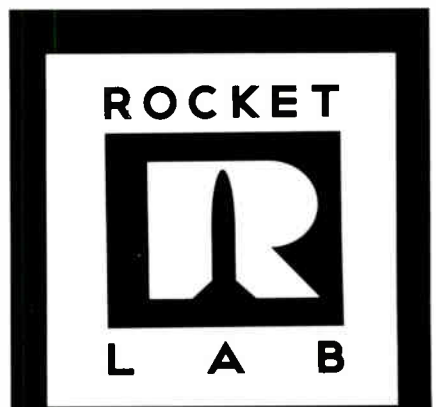


CHICAGO RECORDING CO.  
Chicago, IL

**[24+] CHICAGO RECORDING CO.;** 232 E. Ohio St.; Chicago, IL 60611; (312) 822-9333; FAX: (312) 822-9189. Owner: Alan Kubicka. Manager: Hank Neuberger. Engineers: Phil Bonanno, Chris Sabold, Gus Mossler, Tim Butler, Bill Kovach, John Titak, Jeff Van Steen, Stanley Oda, Mike Coyle, Mark Ruff, Michael Mason. **Dimensions:** Room 1: studio 75x32, control room 28x28. Room 2: studio 75x32, control room 28x27. Room 3: studio 67x37, control room 26x26. Room 4: studio 20x12, control room 26x26 and ten other studios. **Mixing Consoles:** Neve VR 72-input w/Flying Faders, SSL 6000E 48 x 48 w/Total Recall, (2) MCI 556 56 x 48 w/DiskMix, Harrison 10, (2) Sony 3000. Sphere, Trident, Neotek. **Audio Recorders:** Mitsubishi X-850 32-track digital, Studer A800 24-track, (2) Studer A827 24-track, (4) AMS AudioFile digital workstation, Mitsubishi X-862-track digital, (6) MCI JH-24 24-track, (5) Sony 2500 R-DAT, Studer A-80 24-track. **Cassette Recorders/Duplicators:** (12) Yamaha, (4) Nakamichi. **Noise Reduction Equipment:** Dolby A 48 tracks, Dolby SR 2 tracks. **Synchronization Systems:** (8) BTX Softouch, (3) TimeLine Lynx. **Echo, Reverb & Delay Systems:** Lexicon 480L, (3) AMS 15-80S, AMS RMX 16, (8) Lexicon PCM70, EMT 251, (5) EMT plate, (12) Lexicon PCM42, Lexicon 200, Drawmer 5000, Eventide Ultra-Harmonizer, (6) Yamaha REV7, (9) Yamaha SPX900, Yamaha SPX90. **Other Outboard Equipment:** Wendel Jr. drum sampler, (60) Focusrite EO and dynamics, (12) Drawmer gate, (8) API graphic EQ, Fairchild limiter (tube), (2) Tube-Tech EQ/limiter, (2) Aphex, (3) BBE Sonic Maximizer, (10) dbx 160X limiter. **Microphones:** (10) Neumann tube, (8) AKG tube, (12) Sennheiser, (12) Shure, etc. **Monitor Amplifiers:** (2) Times One, (4) Tannoy, (30) Crown. **Monitor Speakers:** Lakeside TAD, (2) Tannoy Dreadnought, (15) Yamaha NS-10, (15) Auratone. **Musical Instruments:** Bosendorfer grand piano, Bechstein grand piano, (2) Steinway grand w/MIDI interface, (4) Hammond organ, (4) Fender Rhodes electric piano, (4) timpani, Sonor drums, Rogers drums, Roland D-550, Roland D-110 multitrack. **Other MIDI Equipment:** (2) Akai sampler, (2) E-mu Emulator III, (2) Yamaha TX802, Ensoniq Mirage. **Video Equipment:** (12) JVC recorders 3/4", (2) Sony 1" Type C master recorder. Rates: Call Hank for information. **Specialization & Credits:** Since we opened our doors in 1975, we have grown from one studio to 15 and remain Chicago's world-class facility. We continue to lead the way with one of the world's only 72-input Neve VR consoles. We are in the final stages of a \$4 million expansion, that has resulted in seven new studios so far, with more under construction. Recent clients include Cheap Trick, Nikki, Janet Jackson, Sting, Styx, LaTour, Enuf 'Z' Nuff, Ramsey Lewis, Pixies, Paul Shaffer & the World's Most Dangerous Band. After working with Grammy, platinum and Clio-winning clients, we know how to provide the best.

**[24+] CHICAGO TRAX RECORDING;** also REMOTE RECORDING; 3347 N. Halsted; Chicago, IL 60657; (312) 525-6565. Owner: Chicago Trax Inc. Manager: Reid Hyams, Debbie Connors. Engineers: Al Ursini, Julian Herzfeld, Dave Sears, Chuck Kawal, Keith Auerbach, Keith Mestl, Jessica Villines, Paul Khoury, Dave Levit, Steve Levy, Tim Titworth, Jim Romano, Vandy Christie, Jeff Newell. **Dimensions:** Room 1: studio 35x24, control room 24x18. Room 2: studio 16x11, control room 14x13. Room 3: control room 8x7. Room 4: control room 11x9. **Mixing Consoles:** SSL 4040E Series w/SSL studio computer G Series, EQ and mic pre, Harrison MR4 32x24 w/Audio Kinetic MasterMix automation. **Audio Recorders:** (2) Otari MX-80 24-track, (2) Studer A810 2-track, Studer B67 2-track, Tascam 4-track. **Cassette Recorders/Duplicators:** (12) Tascam 122 MkII, Panasonic 3500 DAT, JVC DT900N DAT. **Noise Reduction Equipment:** dbx 155, others available. **Synchronization Systems:** (2) TimeLine Lynx, Sony BVM monitor, various 3/4" playback units available. **Echo, Reverb & Delay Systems:** AMS DMX 15-80S dual delay/stereo sampler/pitch shifter, AMS RMX-16 digital reverb, Lexicon Prime Time I, Lexicon Prime Time II, (2) Lexicon 200 digital reverb, (4) Lexicon PCM42, Lexicon PCM60 digital reverb, Klark-Teknik 780 digital reverb, Ecoplate reverb, (4) Yamaha SPX90, Yamaha REV7, Eventide Ultra-Harmonizer. **Other Outboard Equipment:** Akai S900 digital sampler, Aphex

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# North Central

## 24-track studios

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II Aural Exciter, (3) Aphex 612 expander/gate, (4) Drawmer DS201 dual gate, (9) Omni Craft GT-4A gate, (2) Valley International Dyna-Mite, (4) dbx 165 comp/limiter, (2) dbx 160X comp/limiter, (4) dbx 166 comp/gate, (4) dbx 263 de-esser, (2) Teletronix LA-2A comp/limiter, (2) UREI LA-4A comp/limiter, (2) Tube-Tech EQ, (2) Pultec EQ, (2) UREI parametric EQ, (2) UREI graphic EQ, GML EQ. **Microphones:** Neumann U47, (2) Neumann U87, (2) Neumann KM84, (2) AKG C-12A, (2) AKG 414, (2) AKG 451, (5) Sennheiser 421, (2) Sennheiser 441, (2) EV RE20, (2) Beyers M260, (2) Crown PZM, (2) Shure SM57. **Monitor Amplifiers:** (4) Crown Micro-Tech 1200, (2) Haller P-500, UREI 6250, (2) UREI 813, (2) UREI 811, (2) UREI 809, (8) Yamaha NS-10M, (4) Auratone, (2) Genelec 1019A. **Musical Instruments:** Yamaha C5 grand piano, Sonor drum kit w/(4) snare drum, E-mu Emulator II+HD, Yamaha DX7, Roland D-50, Oberheim OB-8, Korg T-1, MAC 60. **Rates:** Upon Request. **Specialization & Credits:** Specializing in the production of records and commercials; 32-track and 48-track digital capabilities; in-house music production company "Music Chicago Inc." w/Synclavier system, Chicago Trax has done record work for every major label. Recent clients: Records: Duran Duran, Capitol; Ministry, Sire; Hiroshima, Epic; Ramsey Lewis, Columbia; Ten City, Atlantic; Blondie, Chrysalis; Jonathan Brandmeier, BPI-WLUP; Angela Bofill, Capitol; Skinny Puppy, Capitol; Gavin Christopher, Manhattan; Cabaret Voltaire, Atlantic; Michelle Shocked, Ivan Neville, Warner Eros; Insiders, Erasure, Mute; Nicholas Tremulis, Island; Bang Orchestra, Geffen; Slammin' Watusis, Epic; Patrick Moraz, Moody Blues, Yes; Die Warsaw Symphony, Fiction-PolyGram. **Destry, Fiction-PolyGram, Music houses:** Mi Mitran Music; Music Chicago Inc., Lil Louis, Epic; Vicky Ryan, EMI; Marshall Jefferson. **Film work:** *Robo Cop, Girls Just Want to Have Fun, Hunchback of UCLA*. **Commercials:** Coca-Cola, USA; McDonald's; WMAQ/NBC; Huffy Bikes; Jewel Foods; Alberto Culver; Il Belli; Channel 9, WGN; Chicago Cubs; Bozo the Clown.

[24+] **DIAMOND MINE RECORDING STUDIO;** 3115 Bremen Dr.; Columbus, OH 43224; (614) 268-4792. **Owner:** Bright Moon Productions. **Manager:** Chris Nye.

[24+] **DIGISOUND INC.;** also REMOTE RECORDING; 206 S. 44th St.; Omaha, NE 68131; (402) 553-8523; FAX: same. **Owner:** Jim & Laurie Sample. **Manager:** Tom Ware. **Engineers:** Tom Ware, Jim Morgan. **Dimensions:** Room 1: studio 49x39, control room 17x20. **Mixing Consoles:** Soundcraft 6000 48x24 modified. **Audio Recorders:** Tascam ATR-8024 track, Studer A-810 2-track w/TC, Studer A-80 layback, Sony 5002 2-track, (2) Sony PCM-2500 DAT, Panasonic SV-255 DAT, Studer Dyaaxis 2 plus 2 digital workstations. **Cassette Recorders/Duplicators:** (2) Nakamichi MR-1. **Noise Reduction Equipment:** dbx Type One 36 channels, Dolby SRXP 24, Drawmer 320 2 channel noise system. **Synchronization Systems:** Fostex 4-machine 4010/4030/4035 system. **Echo, Reverb & Delay Systems:** Lexicon 480L w/digital I/O, (4) AKG ADR 68K, Roland DEP-5, Eventide H3000 SE, ADA 2FX, ADA Digrizer 4, Summit Audio Tube EQ and compressors, (2) Drawmer DS-301, (3) Drawmer D2-201, (2) Drawmer M 500. **Other Outboard Equipment:** (2) Drawmer 1960, (2) Drawmer 241B, BBE Sonic Maximizer 822, (2) Klark-Teknik DN-410 parametric EQ, Studer CD player, Onkyo DX-7500 CD player, Klark-Teknik DN-60 audio spectrum analyzer system, (2) Drawmer DS-221X. **Microphones:** (2) Neumann U47 FET, (2) AKG The Tube, AKG C 426 stereo, AKG D-12 & D-112, (4) AKG 451, (2) Sony C-48, Shure 57s/58s/BETA 57s/BETA 58s, EV PL77/PL78/RE10/RE20/PL15/PL10/RE15, RCA 77-DX, Fostex stereo & mono ribbons, (3) EV N/DYM series, AKG 408/409/410/C747, Shure SM81/SM85. **Monitor Amplifiers:** (2) OSC 3200. **Monitor Speakers:** Genelec S30-FN near-field, Genelec 1033 "A", EV MS-802, Yamaha NS-10M, JBL 4412, Auratone C-5 cubes, (2) Smithline near-fields. **Musical Instruments:** Guitars by Fender, Ibanez, Martin Acoustic, E.S.P., Full Rogers drum kit w/ 4 snares & 6/toms & Zildjian cymbals & hats, Fender Rhodes 55 stage piano, Korg T-3 and Korg Wavestation, Proteus rack synth, Kurzweil K1200 Pro, Akai S-100P HD sampler, Roland MC-500 MK-2 sequencer, Proteus & other sounds sampler libraries. Access for Yamaha 9' & 7.6'C & G series concert grand pianos, Alesis HR 16 drum machine and various percussion pieces. **Video Equipment:** JVC CR 850 U 3/4" VCR, JVC BR-7000 U S-VHS rec/play, JVC, Sony, RCA. **Other:** Complete 6-station AKG custom headphone system, Sennheiser, Beyers, Stanton headphones. **Specialization & Credits:** Digisound Recording studios offers one of the Midwest's finest studios and

features one of the two remaining "Bill Putman" designed studios in the USA. The controls and studios were updated in June 1991 with designs by Steve Durr & Associates and D.A. Petersen construction. Digisound features the Midwest's only Genelec studio monitor system, the 1033 "A", installed by Genelec's president, Ippo Martikian. Digisound's in-house producers & engineers have over 35 regional & national album credits on the past six years and thousands of local, regional & national commercials to their credit, plus offers in-house commercial and A/V scripting and voice-overs, with voice-overs reads by one of the Midwest's finest announcers, Jim Morgan. Jim has over 300 Addys, BPME Gold medallions and more to his credit since 1984. We also offer block rates and lockouts for privacy.



THE DISC LTD.  
East Detroit, MI

[24+] **THE DISC LTD.;** 14611 E. Nine Mile Rd.; East Detroit, MI 48021; (313) 779-1380; FAX: (313) 772-4320. **Owner:** Greg Reilly. **Manager:** Greg Reilly, Bob Dennis, Tom Gelan. **Engineers:** Greg Reilly, Greg Kutcher, Bob Dennis, Scott Sumner. **Dimensions:** Room 1: studio 20x40, control room 20x18. Room 2: studio 18x16. Room 3: studio 12x14, control room 12x15. **Mixing Consoles:** SSL G Series 32x32, API 32x24 custom, DDA 20x36. **Audio Recorders:** Otari MTR-90 II, Ampex MM-1000 24-track, Mitsubishi 2-track digital, Ampex ATR-102 2-track, MCI JH 110B 2-track, Tascam 24-track, Panasonic 3500 DAT, Tascam DA-30, Digidesign Sound Tools digital hard disk recorder and editor, **Cassette Recorders/Duplicators:** Awa, Technics, Tascam. **Noise Reduction Equipment:** dbx for 24- and 2-track, Dolby for 24- and 2-track. **Synchronization Systems:** BTX 4600. **Echo, Reverb & Delay Systems:** Lexicon 200, (2) EMT plate, Lexicon PCM70, Lexicon PCM42, Lexicon PCM41, Yamaha REV5, Yamaha REV7, (3) Yamaha SPX90, DeltaLab DDL-1, Lexicon 480, Lexicon 224X, (2) SPX 900, ART DRX & Multiverb III. **Other Outboard Equipment:** Aphex Aural Exciter, TC Electronic 2290 (sampler delay), Valley People Dyna-Mite (compressor/gate), dbx 166, Loft delay/flanger, (2) Teletronix compressor, Pultec EQ, Orban parametric EQ, Harmonizer, (8) Rane EQ, (2) dbx 160X. **Microphones:** AKG 414 transformerless, Neumann U47 tube, Neumann U67 tube, Neumann U87, Neumann U85, EV RE20, EV RE15, EV RE10, EV RE55, AKG 635 A, Sennheiser MD-421, Beyers. **Monitor Amplifiers:** McIntosh, Crown. **Monitor Speakers:** DLC Design ACU w/UREI horn, Acoustic Research modified, Yamaha NS-10, Auratone, TOC studio monitor, UREI 809. **Musical Instruments:** Akai MPC drum computer, E-mu Emax, Roland D-50, E-mu Emulator III, Roland Super Jupiter, Yamaha grand piano, (3) Yamaha TX7 w/sounds stored on Mac, Ensoniq Mirage, Sequential Circuits Prophet-5, timpanis, vbbs, manmbas, chimes, glockenspiel, E-mu Proteus, Roland JX-10, Pearl custom Z drums, MiniMoog. **Other MIDI Equipment:** Macintosh SE w/Opcode Vision & Performer software, Opcode sound libraries, Yamaha MIDI patch bay, Yamaha X76 controller, MIDI Time Piece Studio 3, Macintosh SE30. **Video Equipment:** Sony BVU-800 3/4", BTX synchronizers and tape controller, BTX time code generator, Panasonic color monitor. **Specialization & Credits:** We have recently installed our third 24-track studio. This MIDI-oriented room features a DDA MR12 console and a Tascam ATR 80 24-track. Available in this room is an Emulator 3, Akai MPC drum machine, D50, JX10, Proteus and other modules. We use Vision on the Macintosh for sequencing with Opcode Sound Libraries. This room was designed by Dave Clark and built by Jim Orzell. We are very pleased with the combination of technical excellence in design in a beautiful, creative atmosphere. We also have Digidesign's Sound Tool for digital 2-track mixing and editing with which we can also premaster DATs for CDs. We are licensed by the State of Michigan to teach recording engineering, music theory and MIDI production under the name Recording Institute of Detroit.

[24+] **FAST TRAX RECORDING STUDIO;** also REMOTE RECORDING; 2737 Baldwin St.; Jenison, MI 49428; (616) 669-3400. **Owner:** Robert B. Reister. **Manager:** Colleen M. Horgan.

[24+] **45 RPM RECORDING;** 1401 Park Rd.; Chanhassen, MN 55317; (612) 474-4704; FAX: (612) 474-6623. **Owner:** Brojo Sound Co. **Manager:** Barry Maloney.

[24+] **GALT STUDIOS**; also *REMOTE RECORDING*; 139 W. Shore; Culver, IN 46511; (219) 842-4422. **Owner:** Brian Galt. **Manager:** Pat Renneker. **Engineers:** Pat Renneker, Paul Mahern, Brian McCormack. **Dimensions:** Room 1: studio 14x44, control room 13x25. **Mixing Consoles:** Soundcraft 600. **Audio Recorders:** Otari MTR-90 24-track w/autolocator, Akai MG14D 12-track w/autolocator, Panasonic 1300 DAT, TEAC 31 2-track. **Synchronization Systems:** Peavey controller. **Echo, Reverb & Delay Systems:** (2) Neve 1079 EQ, (2) Neve 2254 limiter/compressor, (10) UREI tube mic preamp, (4) Sontec MPA-1 mic preamp, (2) TEAC 31 tube mic preamp, (2) Hafler T2 tube mic preamp, Yamaha SPX900, Yamaha GEP50, Roland DSP-2000, Alesis QuadraVerb, Peavey CDS-2 compressor/limiter/de-esser, MXR dual limiter, (2) Ibanez UE-400, Rocktron Pro G.A.P., Lexicon PCM70. **Microphones:** Neumann U86, (2) AKG 414, (2) Sennheiser 421, (2) EV U57, (2) Shure SM58, (4) Shure SM57, Crown PZM, EV N/D 757. **Monitor Amplifiers:** Hafler 500, Crown Power Base-1. **Monitor Speakers:** (2) JBL Control-10 studio, (2) Yamaha NS-10M studio near-fields, (2) Klipsch Heresy studio. **Musical Instruments:** Yamaha KX88 keyboard controller, Korg M1, Korg Wavestation, Korg M-500, Kurzweil 1000PX, Yamaha TX7, Roland R-8 drum machine. **Other MIDI Equipment:** Macintosh IIcx 5/170, Macintosh SE-20 HD. **Video Equipment:** JVC KY-17 3-CCD color video camera, JVC BR-S411U S-VHS recorder, JVC BR-S611U S-VHS recorder, JVC KR-M800U MII recorder, JVC RM-G810U editing controller, Sony PVM-1380 color monitor, JVC TM-22U color monitor, Truevision NuVistat video production card. **Rates:** 24-track—\$50/hr. 12-track mobile rental—\$50/hr. Video production—\$500/finished minute. Video post-production—\$100.

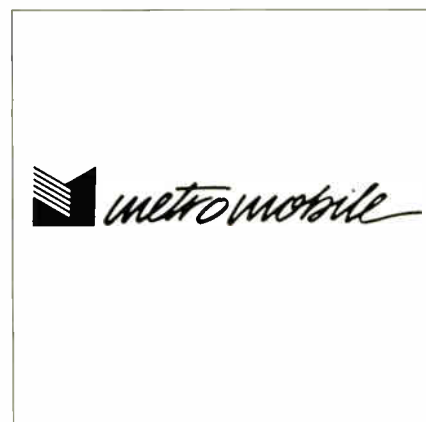
[24+] **HG STUDIO**; also *REMOTE RECORDING*; 21332 7 Mile Rd.; Franksville, WI 53126; (414) 425-3885; FAX: (414) 425-3885. **Owner:** Don Hunjadi, Gordon Hartmann. **Manager:** Don Hunjadi.

[24+] **ICON STUDIO**; 5089 Waterman Blvd.; St. Louis, MO 63108; (314) 367-3121. **Owner:** Perry Emge. **Manager:** Perry Emge. **Engineers:** Mark Behl, Hunter Sprenger, Perry Emge. **Dimensions:** Studio 24x20x19H, control room 29x22. **Mixing Consoles:** Soundcraft 6000 44x24 w/automation. **Audio Recorders:** MCI JH 24/24, Tascam 42B, Tascam 34, Tascam DA30, Panasonic SV-3500. **Cassette Recorders/Duplicators:** Technics 555. **Synchronization Systems:** PPS-100 MIDI/SMPTE. **Echo, Reverb & Delay Systems:** (2) Yamaha SPX900II, (2) Lexicon LXP-1 w/MRC remote, Lexicon PCM42, Roland SE-50, ART Multiverb, ADA STD I, Zoom 9002, BBE 402, Aphex Expressor, dbx 166, dbx 160, (2) dbx 363. **Microphones:** AKG 414, AKG D12, Neumann KM84, (5) N DYN 408, (5) Shure SM57, (3) Shure SM85 and many other available. **Monitor Amplifiers:** Crest FA2401, QSC 5.1. **Monitor Speakers:** JBL 4408, Tannoy NFM8, UREI 815, Minimis 7. **Musical Instruments:** Roland D70, Proteus, (2) TX7, EPS-M, Yamaha TX81Z, FB01, RX5, HR16B. **Other MIDI Equipment:** MX8 MIDI patch bay, Atari 1040, Mac Classic, Stenberg PRO24, Vision.

[24+] **MIKE JONES FILM CORP.**; 5250 W. 74th St.; Minneapolis, MN 55439; (612) 835-4490; FAX: (612) 835-3413. **Owner:** Mike Jones. **Manager:** Bryan Forrester.

[24+] **JOR-DAN RECORDING INC.**; 1100 Wheaton Oaks Ct.; Wheaton, IL 60187; (708) 653-1919; FAX: (708) 665-4966. **Owner:** Corporation. **Manager:** Kelly Lovett.

[24+] **LANDMARK RECORDING STUDIOS**; also *REMOTE RECORDING*; P.O. Box 179; Chesapeake, OH 45619-0179; (614) 867-5594. **Owner:** Stephen Hoffman. **Manager:** Stephen Hoffman.



METRO MOBILE RECORDING  
Glenview, IL

[24+] **METRO MOBILE RECORDING**; only *REMOTE RECORDING*; 2097 John's Ct.; Glenview, IL 60025; (708) 998-6420; FAX: (708) 998-6421. **Owner:** Timothy R. Powell. **Engineers:** Timothy R. Powell, Kathy Yore, Lawrence Whipple, Mark Harder. **Dimensions:** Remote truck 14'x8'. **Mixing**

Consoles: Neotek Elite 50x26, (2) Hill Multmix 16x4, Hardy M1 4x4 mic preamp, Valley People Dyna-Mic 4x2 mixer, 32-channel Pro-Mix MIDI-based VCA automation system. **Audio Recorders:** (2) Sony/MCI JH-24 24-track, Panasonic SV-3500 DAT, Sony TCD-10 portable DAT, Sony 300ES DAT, Fostex E-16 1/2" 16-track, Tascam 40-4 1/4" 4-track, Scully 280B 1/4" 2-track, (2) Technics 1500 2-track 1/4", Sony 601 PCM digital processor w/Sony SLHF-900 and SLHF-450 Beta recorders. **Cassette Recorders/Duplicators:** (2) Tascam 112R, Nakamichi MR-2, (10) Yamaha KX630. **Noise Reduction Equipment:** dbx 8 channels, Dolby C 16 channels. **Synchronization Systems:** Adams-Smith Zeta-3 transport synchronizer with SMPTE reader/generator. **Echo, Reverb & Delay Systems:** Eventide H3000 Ultra-Harmonizer w/sample card, Lexicon PCM60, Lexicon Prime Time, (2) Yamaha SPX90, Yamaha REV7, SPX90, SPX90II digital delay, (4) Yamaha D1500 digital delay, DeltaLab ADM-256 digital delays, Sound Workshop 262 stereo spring reverb, Roland SRV 2000 Dimension "D", Alesis Microverb II digital reverb. **Other Outboard Equipment:** (2) Studio Technologies AN-2 stereo simulators, Aphex Compeller, Aphex Aural Exciter Type C, (5) dbx 160X, (5) dbx 166, dbx 165A, dbx 163X limiters, (2) dbx 463X gate, (2) dbx 263X de-esser, (2) dbx 563X silencer, UREI 1176LN, (2) UREI LA-4 limiters, Burwen DNF-1201A dynamic noise filter, Phase Linear 1000 auto-correlator, Drawmer DS-201 gate, USAudio Gate gate, Omni Craft GT-4 gate, MXR dual limiter, NAD 4300 AM/FM tuner, Eventide Omnipressor. **Microphones:** Over 130 microphones available. From Bruel & Kjaer, Schoeps, Sennheiser, Neumann, Sony, AKG, Electro-Voice, Shure, Beyer, Fostex, Milab, RCA, Audio-Technica. **Monitor Amplifiers:** Bryston 4B, Carver 10T, Crown D150, (2) Crown D-75, Yamaha P2075, Sony TAN-5550, Rane HC-6, Marantz 8B, Marantz 5C. **Monitor Speakers:** UREI 809, Yamaha NS-10, AR Red Box II, Tannoy PBM 6.5, JBL 4313, Fostex RM-780, MDM-4, Auratone 5C. **Video Equipment:** (2) Sony CVM-1270 color monitor, Panasonic WV-F2 CCD color camera, Toshiba IK-2000 color camera, Otari EC-201 SMPTE time code reader. **Other:** 120 AMP single phase power distribution with 350 feet of cable, 48-channel three way transformer splitter, 32-channel multipair snake system with 275 feet of cable, Clearcom intercom system with 5 beltpack/headsets, Talkman wireless intercom, direct boxes, (8) Missing link active, (2) Stewart active, (8) Pro-Co passive, (5) Sescam passive, plus cables, stands, subsnakes, headphones and more. **Rates:** Day Rates available upon request. **Specialization & Credits:** Featuring Chicago's first and only 48-track audio truck, Metro Mobile offers the finest in location audio services for live radio & TV broadcasts, audio-for-video & film production, on-location commercial, recording and live album and CD production. Recent clients include David Bowie, The BoDeans, Indigo Girls, John Cougar Mellencamp, the Replacements, Living Colour, Chicago Blues, Jazz and Gospel festivals, Eleventh Dream Day, Poi Dog Pondering, Jesus Jones, Don Dixon, Circus of Power, The Descendants, Ministry, Revolting Cocks, Tattoo, Big Bash, The Drovers, Material Issue, Free Hot Lunch Band, Dream Syndicate, Adrian Belew, Soul Asylum, John Hiatt, KISS, Robert Cray, Lonnie Brooks, Lonnie Mack, Shrekback, The Nyons, Houses of Love, The Pixies, Neville Bros., REO Speedwagon, Jonathon Brandmeier, Kevin Matthews and Ed Zeppelin, The Church, The Winans, Edwin Hawkins, Santana, WXRT's Sunday Night Concerts, WLUP, WFMT, WBBM-TV, WBEZ, HBO, MTV, Showtime, Westwood One, The A&E Network, PBS, National Public Radio, The Disney Channel, A&M, MCA, Alligator, Polygram, CBS, Atlantic, Island, Elektra, Warner Bros. and Geffen Records.

[24+] **MIAMI STREET STUDIOS**; also *REMOTE RECORDING*; 1619 Miami St.; South Bend, IN 46613; (219) 288-TAPE. **Owner:** John and Jackie Nuner. **Manager:** Earl Scott.

[24+] **MILLER MIDI PRODUCTIONS**; also *REMOTE RECORDING*; 4662 E. Nine Mile Rd.; Warren, MI 48091; (313) 754-0236. **Owner:** Chuck Miller. **Manager:** Gennelle Miller.

[24+] **MUS-I-COL RECORDING STUDIOS**; also *REMOTE RECORDING*; 780 Oakland Park Ave.; Columbus, OH 43224; (614) 267-3133; FAX: (614) 261-7069. **Owner:** John Hull. **Manager:** Doug Edwards.

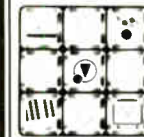
[24+] **NUMARK INC.**; also *REMOTE RECORDING*; 51308 Peachtree Ln.; Shelby Twp., MI 48316; (313) 739-6940. **Owner:** John Antos, Mark Antos. **Manager:** Mark Antos.

[24+] **PAISLEY PARK STUDIOS**; 7801 Audubon Rd.; Chanhassen, MN 55317; (612) 474-8555; FAX: (612) 474-6328. **Manager:** Tom Tucker, dir. studio operations. **Engineers:** Sal Greco—chief technical engineer, Dave Friedlander, Tom Garneau, Mike Koppelman, Brian Poer, Ray Hahnfeldt, Steve Noonan, Mitch Mortenson. **Dimensions:** Room 1: studio 35x50, control room 32x25. Room 2: studio 35x35, control room 32x25. Room 3: studio 32x46, control room 14x16. **Mixing Consoles:** SSL 6064 64-channel w/G Series automation, Custom API/DeMedio 48x24x24 w/Massenburg Moving Fader automation, Soundcraft TS 24 32x32x24. **Audio Recorders:** (4) Studer A800 24-track, Sony JH-24 24-track, (7) Studer A820 2-track w/center channel time code, Ampex ATR-104 4-track, Studer D820 2-track digital, (2) Sony PCM-2500 DAT w/Apogee filters, Panasonic 3700 DAT, digital multitracks available on request. **Cassette Recorders/Duplicators:** (14) Yamaha C300. **Noise Reduction Equipment:** Dolby B, Dolby SR. **Synchronization Systems:** (6) TimeLine Lynx, Adams-

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Smith, Studer TL-S, Echo, Reverb & Delay Systems: (2) Lexicon 480L w/LARC, (2) Lexicon 224XL w/LARC, (4) AMS DMX 16, (4) AMS DMX 15-80S, (3) Quantec QRS, (3) Eventide H3000 w/SE upgrades, (2) Yamaha REV5, (2) Yamaha REV7, (2) Publison Internal Machine 90, (3) Lexicon PCM70, (6) Yamaha SPX90II, (2) Lexicon Prime Time II, (4) EMT 140S plate reverb, EMT Gold Foil reverb, (8) Lexicon PCM42, (2) Lexicon PCM41, (2) Eventide SP-2016, (3) Dimension D. **Other Outboard Equipment:** Akai S1100 w/removable hard drive, Akai S1000 w/hard drive, Cyclotronix auto-panner, (2) Neve 33609 stereo compressor/limiter, (8) Focusrite 110 mic pre & EQ, (5) Summit TLA-100A tube compressor/limiter, (4) Pultec EQ, (3) GML 4-channel mic pre, (5) GML 8200 dual parametric EQ, (2) Klark-Teknik DN-360 dual graphic EQ, (7) Teletronix LA-2A, (10) dbx 160X, (4) dbx 165A, (2) UREI 1176, (2) UREI 1178, (6) Drawmer DS-210 dual gate, (25) Kepex II, dbx 900 rack (full), (4) dbx 902 de-esser, (2) Orban de-esser, (2) tube DI boxes. **Microphones:** Lots! **Monitor Amplifiers:** Crown. **Monitor Speakers:** Westlake SM-1.5-channel w/TAD drivers (Studio A and B), Tannoy FSM (Studio C), Yamaha NS-1GM, Westlake BBSM-4, Tannoy PBM-6.5. **Musical Instruments:** (3) Yamaha grand pianos. **Video Equipment:** House sync, (2) BVU-800 3/4" recorder. **Other:** (10) 8-channel mixer & amp cue stations.

[24+] **PARAGON RECORDING STUDIOS INC.**; also REMOTE RECORDING; 9 E. Huron St.; Chicago, IL 60611; (312) 266-0075; FAX: (312) 642-6688. **Owner:** Marty Feldman. **Manager:** Nancy Gardner-Feldman.

[24+] **PEARL SOUND STUDIOS**; 47360 Ford Rd.; Canton, MI 48187; (313) 455-7606. **Owner:** Ben Grosse.

[24+] **PEGASUS RECORDING**; 1412 W. Belmont; Chicago, IL 60657; (312) 880-5000 (evening). **Owner:** Gary Khan. **Manager:** Carol Sopkin.

[24+] **PENGUIN PRODUCTIONS**; 1026 Carole; St. Louis, MO 63021; (314) 394-0267; FAX: (314) 394-0860. **Owner:** Richard Byron. **Manager:** Frank Gagliano.

[24+] **PRIVATE STUDIOS**; also REMOTE RECORDING; 705 Western Ave.; Urbana, IL 61801; (217) 367-3530. **Owner:** Rex Anderson, Jonathan Pines. **Manager:** Johathan Pines.

[24+] **PRODUCERS COLOR SERVICE INC.**; also REMOTE RECORDING; 24242 Northwestern Hwy.; Southfield, MI 48075; (313) 352-5353; FAX: (313) 358-1767. **Owner:** Ronald R. Balousek. **Manager:** Ben Thomas.

**THE  
RECORDING  
WORKSHOP**

THE RECORDING WORKSHOP  
Chillicothe, OH

[24+] **THE RECORDING WORKSHOP**; also REMOTE RECORDING; 455 Massieville Rd.; Chillicothe, OH 45601; (800) 848-9900. **Manager:** Jim Rosebrook, director; Brian Stritenberger, studio manager. **Engineers:** Jeff Ling, Brian Stritenberger, Dan Smart, Eric Brown, Tony Cottrill, Rob Gough, Larry Pester, Chris Breck, John Hughes, Kirk Sharrock, Steve Albanese, Greg Jennings, Kurt Zwanzig. **Dimensions:** Room

1: studio 30x35, control room 30x27. Room 2: control room 25x24, control room 15x16. Room 3: studio 30x40, control room 30x20. Room 4: studio 15x20, control room 15x17. **Mixing Consoles:** (2) Sony/MCI 600 Series, (2) Amek/TAC Scorpion 16x16, Sound Workshop Logex 20x8. **Audio Recorders:** (2) Sony/MCI JH-24 24-track, Sony/MCI JH-110 2-track, (2) Otari MX-70 16-track, (12) Otari 5050 2-track, Fostex E8 8-track, (2) Digidesign/Mac Ili 4-track hard disk, Digidesign Pro-Tools/Mac FX. **Cassette Recorders/Duplicators:** (6) Panasonic 3500 DAT, (2) Nakamichi MR-1, (2) Nakamichi MR-2, (2) Tascam 122, (3) Yamaha C300. **Noise Reduction Equipment:** Drawmer DF-320. **Synchronization Systems:** Fostex 4030/4035. **Echo, Reverb & Delay Systems:** Lexicon 224XL, (6) Lexicon PCM70, (2) Lexicon PCM60, Lexicon PCM41, Klark-Teknik DN780, (6) Yamaha SPX90, Eventide H910 Harmonizer, Eventide FL210 instant flanger, MICMIX Super C, Ecoplate II. **Other Outboard Equipment:** Pultec EQH-2, Teletronix LA-2A, (4) dbx 903, (4) dbx 904, (2) UREI 1176, Orban EQ-621B, Scholz Rock Module, (3) Gatec, (2) Rane GE-14, BBE 822 Sonic Maximizer, (2) Aphex Aural Exciter, Drawmer DL-231, (4) dbx 160X, (4) dbx 166, dbx 165A, (2) dbx 263X, Dyno-My-Piano tri-chorus, (2) Gains Audio MP-2 mic preamp. **Microphones:** (100+) virtually all major manufacturers and models. **Monitor Amplifiers:** (6) Crown, (2) McIntosh, (6) QSC. **Monitor Speakers:** (2) UREI 813, (2) UREI 815, (2) Durr custom, (4) JBL 4312, (4) Yamaha NS-10, (6) Fostex RM-780, (4) JBL Control 10, (2) Tannoy PBM-8, (2) Eastern Acoustic Works. **Musical Instruments:** Yamaha contemporary grand piano, Roland RD-1000 digital piano, Yamaha KX88 controller, Yamaha TX416, Roland S-550 sampler, Roland MKS-20, Ensoniq ESQ-1, Yamaha DX7. **Other MIDI Equipment:** (2) Atari 1040ST, (2) Hybrid Arts MIDI track ST/SMPTe, Opcode Studio 3. **Rates:** Available upon request. **Specialization & Credits:** The Recording Workshop offers an intensive, 300-hour training program in audio recording. We are the original "hands-on" school for students seeking education in the creative operation of professional recording equipment. Over 200 hours are spent in-studio. This experience includes session setup, mixing technique, recording, mixing, studio etiquette, song production, commercial and audio-for-video production, editing and equipment maintenance. In lecture, students receive a broader study of audio engineering and music business practices. Our 6-studio recording complex features two automated 24-track studios, two 16-track studios, and 8-track commercial/MIDI production studio, a hard disk digital editing/DAT mastering studio and a conventional editing lab. In-studio class size is three to six students, lecture class size is 48. We have internship and job placement services. We offer low-cost, on-campus housing. Financial aid is available. The Workshop is a TEC Award nominee and is approved by State Board of Proprietary School Registration. Please call for a free brochure.

[24+] **REFRAZE RECORDING STUDIO**; also REMOTE RECORDING; 2727 Gaylord Ave.; Dayton, OH 45419; (513) 298-2727; FAX: (513) 298-2550. **Owner:** Mark Frazee, Jane Frazee. **Manager:** Gary King.

[24+] **ROME RECORDING CO.**; also REMOTE RECORDING; 3970 S. High St.; Columbus, OH 43207; (614) 497-3970; FAX: (614) 497-1012. **Owner:** Jack Casey. **Manager:** Jack Casey.

[24+] **ROYAL RECORDERS**; c/o Americana Resort; PO 1089; Lake Geneva, WI 53147; (414) 248-9100; FAX: (414) 248-9641. **Owner:** Ron Fajerstein. **Manager:** Richard Ealey. **Specialization & Credits:** Royal Recorders offers one of the finest recording environments in the world. Located in Chicago's playground—Lake Geneva, Wisconsin. Royal is only an hour from either O'Hare or Milwaukee's airport. We include luxury accommodations on the lake as well as the amenities of the Americana Resort Hotel. In addition to the studio's 80-input SSL 4072E console with G Series computer and Mitsubishi 64-track digital/Studer 48-track analog, Royal offers a full complement of outboard gear including: (8) Focusrite EQs, (8) Neve EQs, (10) API EQs, (2) GML EQs, (5) LA2A, (8) Pultecs, (2) AMS DMX, (2) AMS RMX, 224XL, 480 and Publison. We also have one of the largest vintage Tube mic collections in the world. Album projects include: Queensryche, Skid Row, Red Hot Chili Peppers, Guns N' Roses, Adrian Belew, Robert Plant, Cheap Trick, Survivor, The Bears and more.

[24+] **RTG MUSIC**; 130 E. 6th St.; Cincinnati, OH 45202; (513) 381-0506. **Owner:** Edward O'Donnell. **Manager:** Robin Jenney.

[24+] **SEPTEMBER RECORDING**; also REMOTE RECORDING; 5210 E. 65th St.; Indianapolis, IN 46220; (317) 842-4955; FAX: (317) 579-7774. **Owner:** ASA Productions. **Manager:** Dean Lozow. **Engineers:** Mark Hood, Chris Lieber, Chip Birge, Paul Mahern, Geoff Bushor, Kirk Butler. **Dimensions:** Room 1: studio 24x30, control 12x16. Room 2: studio 6x8, control 14x18. Room 3: 10x12, control 10x12. Room 4: studio 6x12, control 6x12. **Mixing Consoles:** Neotek Elite 40x24, Audio Kinetics Reflex Automation, TAC Scorpion 24x16, Allen and Heath System 8 12x8. **Audio Recorders:** Studer A 80 24-track, Otari MX-70 16-track, Otari MX-5050B 8-track, Macintosh/Digidesign hard disk 4/2-track digital recorder/editor, Panasonic SV-3500 2-track digital, Sony CD-10 2-track digital, (3) Otari MTR-12 2-track with center track SMPTE time code, (3) Otari MX-5050B 2-track. **Synchronization Systems:** (2) Adams-Smith 2600 SMPTe. **Echo, Reverb & Delay Systems:** Lexicon 224XL digital reverb, Lexicon 200 reverb, (4) Lexicon LXP-1 digital reverb, Lexicon PCM70

digital reverb, Roland SRV-200 digital reverb, (3) Yamaha SPX90 digital effects processor, Lexicon Prime Time digital delay, Ecoplate II reverb, Scamp rack, Fairchild 670 tube stereo compressor, (2) UREI 1176 peak limiter, dbx 160 limiter, (6) Symetrix 501 limiter, (2) Symetrix 522 limiter, Eventide H910 Harmonizer, (2) Sontec mic preamp, (6) Fairchild and Altec tube mic preamp. **Microphones:** (4) Neumann U87, Neumann U47, (4) Neumann KM84, (5) AKG 414, (5) AKG 452, AKG D-12, (2) Milab DC96B, (5) Sennheiser 421, Electro-Voice (lots), Shure dynamics (lots), (2) PZM, (3) Sony C-37A tube, Neumann UN-57 tube, Sony ECM-MS 5 stereo condenser mic. **Musical Instruments:** (2) E-mu SP-1200 sampling drum machine/sequencer, (2) E-mu SP-12 sampling drum machine/sequencer, E-mu Emulator II+ sampler, (2) Oberheim DPX-1 sample player, Yamaha DX-7, Korg SG-1 sampling grand, (2) Proteus I, (3) Roland D-550, Roland MKS-70, Roland JX-8P, Roland MKS-20, Yamaha TX-816, Yamaha TX-7, Yamaha C7D grand piano, Hammond B-3 organ, Ludwig timpani, (50) miscellaneous percussion. **Other MIDI Equipment:** Linn/Akai MPC-60 sequencer/sampler/drum machine, Macintosh SE-30 running Performer sequencing. **Video Equipment:** JVC CR-850 V3/4\* U-matic editing video recorder, JVC CR-6650 V3/4\* U-matic video recorder. **Other:** Leslie speaker cabinet 145, (2) Symetrix TL 101 telephone interface. **Rates:** Rates quoted individually for jingles, film scoring, film and video posting, label and independent record production.

[24+] **SIDESTICK RECORDING STUDIO;** 14611 E. Nine Mile Rd.; East Detroit, MI 48021; (313) 779-1388. **Owner:** Robert Dennis. **Manager:** Ben Blau.

[24+] **SISAPA STUDIOS INC.;** 394 Mt. Vernon; Columbus, OH 43215; (614) 228-2228; FAX: (614) 228-2422. **Owner:** J. D. Blackfoot. **Manager:** Brian Gerstner. **Engineers:** Joe Viers, Brian Lytle. **Dimensions:** Room 1: studio 34x57, control room 21x22. Room 2: studio 10x12, control room 24x13. **Mixing Consoles:** Neve V60 with GML automation, Neve 8232. **Audio Recorders:** (2) Studer A820 24-track equipped w/Dolby SR, Sony 3324 w/Apogee filters, Studer A820 2-track w/center track SMPTE time code and Dolby SR, Studer A820 2-track w/Dolby SR, (3) Panasonic SV-3500 DAT. **Cassette Recorders/Duplicators:** (3) Studer 721, (10) Nakamichi MR-1B. **Synchronization Systems:** (2) Lynx TimeLine. **Echo, Reverb & Delay Systems:** (2) AMS S-DMX, AMS RMX-16, Lexicon 480L, (2) Lexicon PCM70, (2) Yamaha REV5, TC Electronic TC 2290, Eventide H3000, Klark-Teknik DN-780, Aphex Aural Exciter Type III, Lexicon LXP-1, Lexicon LXP-5. **Other Outboard Equipment:** Drawmer 1960 compressor amp., (2) Drawmer DS-201 gates, (3) Summit Audio compressor/EQs. **Microphones:** AKG Tube, (6) AKG C-414, Neumann TML170, (2) Neumann U87, Neumann U89, (6) Neumann KM84, (6) Shure SM57, (6) Sennheiser 421, (4) AKG C-460, Beyer 380, Beyer M700. **Monitor Amplifiers:** (3) Hafler, Bryston 3B, Bryston 4B. **Monitor Speakers:** Genelec 1025B, Genelec 1024B, Yamaha NS-10. **Musical Instruments:** Korg M-1, Roland D-50, Yamaha DX7 II, Akai/Linn MPC-60, Yamaha C-7 piano, Pearl 6-piece drum kit w/Sabian cymbals. **Other:** (3) Marshall Silver Anniv. 50-watt heads, (6) Marshall Silver Anniv. cabinets, Ampex JUT-II amp., Peavey Mega bass amp., Fender Twin amp., Mesa/Boogie .22 caliber combo amp. **Rates:** Low enough to keep you coming back to Columbus.

[24+] **SKYVIEW FILM & VIDEO;** 541 N. Fairbanks; Chicago, IL 60611; (312) 670-2020; (312) 670-4520. **Owner:** Jack Tohtz. **Manager:** Vivian Craig.

[24+] **SMITH/LEE PRODUCTIONS INC.;** also REMOTE RECORDING; 7420 Manchester Rd.; St. Louis, MO 63110; (314) 647-3900; FAX: (314) 647-3959. **Owner:** David Smith, Barry Lee. **Manager:** David Smith.

[24+] **SOLID SOUND INC.;** also REMOTE RECORDING; PO Box 7611; Ann Arbor, MI 48107; (313) 662-0667; FAX: (313) 662-0997. **Owner:** Robert G. Martens. **Manager:** J. W. Spencer.

[24+] **SOLID SOUND RECORDING STUDIO INC.;** also REMOTE RECORDING; 2400 W. Hassell Rd., Ste. 430; Hoffman Estates, IL 60195; (708) 882-7446. **Owner:** Judd Sager. **Manager:** John Towner, Phil Bonnet.

[24+] **SOUND IMAGES INC.;** 602 Main St.; Cincinnati, OH 45202; (513) 241-7475; FAX: (513) 241-4791. **Owner:** Jack Streitmar. **Manager:** Gina Stetler.

[24+] **SOUND RECORDERS;** also REMOTE RECORDING; 9136 Morman Bridge Rd.; Omaha, NE 68152; (402) 455-3000; FAX: (402) 455-8269. **Owner:** John M. Boyd. **Manager:** Marty Boyd.

[24+] **SOUNDSPACE INC.;** also REMOTE RECORDING; 845 Dayton St.; Yellow Springs, OH 45387; (513) 767-7353. **Owner:** Chris Hertzler. **Manager:** Chris Hertzler.

[24+] **SOUNDSTAGE I PRODUCTIONS;** also REMOTE RECORDING; 1800 35th St.; Galesburg, MI 49053; (616) 665-7025; FAX: (616) 665-7046. **Owner:** J.R. Cummings. **Manager:** Kim Parker.

[24+] **SR AUDIO PRODUCTIONS AND RECORDING STUDIOS;** also REMOTE RECORDING; 1395 Hwy. 65/69; Indianola, IA 50125; (515) 961-3925. **Owner:** Michael Lawyer. **Manager:** Michael Lawyer.

[24+] **STARSOUND & RECORDING;** 618 Georgia St.; Bethalto, IL 62010; (618) 377-5569. **Owner:** Fred Church. **Manager:** Mark Church.

[24+] **STARTRACKER RECORDING STUDIO;** also REMOTE RECORDING; 933 N. 45th; Lincoln, NE 68503; (402) 466-7623. **Owner:** Brett Hohman. **Manager:** Sandy Batten.

[24+] **STATION C STUDIOS INC.;** also REMOTE RECORDING; 941 Wealthy SE; Grand Rapids, MI 49506; (616) 235-3813; FAX: (616) 459-2591. **Owner:** Thomas Jansen. **Manager:** Jonathan Frazer.



**STREETERVILLE STUDIOS**  
Chicago, IL

[24+] **STREETERVILLE STUDIOS;** 161 E. Grand Ave.; Chicago, IL 60611; (312) 644-1666. **Owner:** James C. Dolan. **Manager:** Bob Dolan. **Engineers:** Steve Kusciel, Fred Breitberg, David Axelbaum, Steve Frisk, Bob Kruger, Bob Miller. **Dimensions:** Studios: (1) 47x27x14, (2) 37x27x12, (The Suite) 14x15x12, (5) 14x13x8.75, (6) 14x10x8.75, (7) 10x10.5x8.75; Control rooms: (1) 25x16x5x11.5, (2) 24x18x10, (Suite) 21x22x10, (5) 20x16x8.75, (7) 18x13.5x8.22. **Mixing Consoles:** Neve VR 48x48x48 w/Flying Faders, Neve VR 48x48x60 w/Flying Fader, SSL 6048E 48x48 w/Total Recall and programming EQ, SSL 4040E 24x24 w/Total Recall, Neve 8128 48x32x48 w/Necam II, (2) Harrison 4032 32x32x40 w/Autoset I, Neve 2118 6x4x2 w/custom discrete circuitry. **Audio Recorders:** (3) Otari MTR-90 24-track, (5) MCI JH-24 24-track, (2) Studer A80 4-track, (2) Otari MTR-10 4-track, Otari MTR-12 4-track, (4) Otari MTR-1C 2-track ctc, (17) Studer B67 2-track, (2) Studer B77 2-track. **Echo, Reverb & Delay Systems:** (3) Lexicon 480L w/LARC, (3) Lexicon 224X w/LARC, (5) Lexicon PCM60, (2) Lexicon Prime Time, Lexicon 92, (3) EMT 140, (2) EMT 240 Gold Foil, (2) MZR digital delay, Eventide 1745, (2) Korg SDD-2000, (3) Yamaha REV7, (3) Yamaha SPX90, TC Electronic 22 (4) AMS SDMX delay/sampler, (2) Yamaha 1500, AMS RMX 16. **Other Outboard Equipment:** UREI 962 digital metronome, (4) UREI LA-4, UREI LA-2A, (6) UREI 1176LN, Allison Gain Brain, Kepex, Orban/Parasound 516C dynamic sibilance controller, Orban 6221B parametric EQ, Pultec EQP-15 EQ, Lang PEQ-1 program EQ, White 1/3-octave EQ, EXR Exciter, Aphex Aural Exciter MXR Pitch Transposer, Eventide Harmonizer, Dolby SR 52-channel noise reduction, (8) Focusrite EQ/mic pre, Hardy M-1 mic pre, (2) Wendel jr., (3) Drawmer gate, (4) Aphex Studio Dominator, (12) dbx 463X gate, (9) dbx 263X de-esser. **Microphones:** Over 100 new and vintage. **Monitor Amplifiers:** UREI, Hafler, BGW, Crown. **Monitor Speakers:** All rooms UREI Time Align 813, 811, 809, Yamaha NS-10, Auratone, Rogers, JBL, Tannoy, MIDY-4, EV 100, others. **Musical Instruments:** Synclavier digital music system, Steinway 6'4" grand, Yamaha 7'4" grand, Hammond B-3 organ w/Leslie, Musser "One-Niter" vibes, Ludwig 25"/27"/28"/29" timpani, (2) Sonor Signature drum set, E-mu Emulator II, large complement of MIDI instruments. **Video Equipment:** Complete audio-for-video services available, (7) TimeLine Lynx, Synclavier, Adams-Smith 2600 5-machine, Adams-Smith 2600 3-machine synchronizer, Audio Kinetics Q.Lock 3.1C, BTX 4600 synchronizer, BTX 4500 controller, Sony/MCI Type C 1" layback machine, Sony BVU-800 3/4" VCR, JVC CR850 3/4" VCR, (6) Sony 5800 VCR. **Rates:** Negotiable. **Specialization & Credits:** Streeterville offers AMS AudioFile II systems in all studios for pre-production, in-session manipulation, and processing, as well as for mixdown and mastering. Synclavier digital music system with 100K sampling and optical hard disk create a digital "Foley Stage" for SFX creation. Stereo digital satellite recording services for domestic and international sessions. Custom audio duplication with guaranteed overnight, nationwide distribution. **Records—**Robert Cray/Albert Collins/Johnny Copeland (Grammy), Steve Goodman (Grammy), Dave Mason, Dennis De Young, Robert Plant, Ramsey Lewis, Lonnie Mack, Richie Havens, KoKo Taylor, Johnny Winter, Roy Buchanan, Lonnie Brooks, Michael Martin Murphy, Butch Stewart, Jonathan Brandmeier, L'il Charlie & the Nightcats, Katie Webster, L'il Ed & the Blue Imperials, Rufus Thomas, James Cotton, Lucky Peterson. **Commercials (national)—**Mirabeob, Old Style, Bud Light, Budweiser, McDonald's, 7-Up, United Airlines, Cherry 7-Up, Michalob Light, Molson, Twix.

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## 24-track studios

[24+] **STUDIO A RECORDING INC.**; 5619 N. Beech Daly; Dearborn Heights, MI 48127; (313) 561-7489; FAX: (313) 561-6736. **Owner:** Eric and Marilyn Morgeson. **Manager:** Marilyn Morgeson/Fred Morgeson. **Engineers:** Randy Poole, Eric Morgeson. **Dimensions:** Room 1: studio 40x30, control room 25x22 (a John Storyk design). Room 2: MIDI room. **Mixing Consoles:** SSL 6000E 40x24, G-Series preamps, SSL automation, Soundcraft 200B 32x4. **Audio Recorders:** (2) MCI JH-114 24-track, Mitsubishi X 86C 2-track, Sony APR-5003 2-track 1/2" and 1/4", Studer B67 2-track. **Cassette Recorders/Duplicators:** (2) Sony 2500 R-DAT, (5) Sony TC-K555. **Noise Reduction Equipment:** (2) dbx. **Synchronization Systems:** Audio Kinetics Pacer, Roland SBX-80. **Echo, Reverb & Delay Systems:** Klark-Teknik DN70, AMS RMX 16, Lexicon 200, Ursa Major 8x32, Yamaha REV7, DeltaLab CompuEffectron, Lexicon PCM42, (5) Yamaha SPX90, Yamaha REV5, Alesis Quadraverb. **Other Outboard Equipment:** (4) dbx 160X, (2) Valley People Dyna-Mite, (7) Valley People Kepex gate, (2) Focusrite 110 module, Eventide Harmonizer, (3) dbx 263X, (2) Valley People Maxi-Q, Aph Exciter, BBE 822 Sonic Maximizer. **Microphones:** AKG tube, (2) Neumann U87, AKG 414EB, Neumann U47, Sennheiser 421, Crown PZM, (5) Shure SM57, Shure SM58, Neumann KM84, AKG 451F. **Monitor Amplifiers:** Hafler P-225, Crown PSF-2, Crown D-150A, Crown PS400. **Monitor Speakers:** UREI 813, Tannoy NFM-8, Yamaha NS-10M. **Musical Instruments:** New England Digital Synclavier with 32 poly voices, 16 FM voices, 160MB Winchester sample-to-disk option, 8 multichannel outs, SMPTE and MIDI options, Steinway 1898 7' grand piano, Roland D-50, Roland R-8, Yamaha DX7iFD Oberheim Matrix-6, Roland Octapad, Roland JX-8P w/programmer, Sequential Circuits Prophet-2002, Korg EX-8000, Yamaha TX802, Ludwig drums, Korg M1, Roland P330. **Other MIDI Equipment:** Roland GM-70 guitar interface, Macintosh SE librarian and sequencer packages. **Video Equipment:** JVC CR8250U 3/4" deck w/remote, Sony PVM 2530 and 9" monitor. **Rates:** Call.

[24+] **STUDIO DE LUX**; 5346 Sunnycrest Dr.; West Bloomfield, MI 48323; (313) 855-2942; FAX: (313) 855-3221. **Owner:** Rick Stawinski. **Manager:** Rick Stawinski.



**STUDIO M/MINNESOTA PUBLIC RADIO**  
Saint Paul, MN

[24+] **STUDIO M/MINNESOTA PUBLIC RADIO**; also REMOTE RECORDING; 45 E. 7th St.; Saint Paul, MN 55101; (612) 290-1453; FAX: (612) 290-1180. **Owner:** Minnesota Public Radio. **Manager:** Craig Thorson. **Engineers:** Tom Mudge, Paul Barron, Preston Smith, Craig Thorson, John Scherf. **Dimensions:** Room 1: studio 45x36x25, control room 23x17, Room 2: studio 15x15, control room 22x15. **Mixing Consoles:** Neve V Series 36x36x36, Neve 5106 Series 36x8x2. **Audio Recorders:** 3M 32-track digital mastering system, Otari MTR-9011 24-track, Otari MTR-12 w/SMPTE center stripe, (5) Otari MTR-10 2-track, (3) Studer A310 2-track, MCI 110B 4-track 1/2", Tascam DA-50 DAT, Tascam DA-30 DAT, (2) Sony PCM-3402 DASH digital recorder/decoder, Panasonic 3700 DAT. **Cassette Recorders/Duplicators:** (4) Nakamichi BR-1, (2) Revox B215. **Noise Reduction Equipment:** Dolby A M-24, Dolby A 361, Dolby A/SR 363. **Synchronization Systems:** BTX

Cipher Digital Shadow Interlock. **Echo, Reverb & Delay Systems:** Lexicon 480L, Lexicon 224X reverb & effects, EM1 140, Ecoplate I, Ecoplate II, (2) Lexicon PCM42 digital delay, (2) Eventide 969 Harmonizer and other misc. signal processing available. **Other Outboard Equipment:** (4) Trident parametric EQ, (4) UREI LA-4 limiter, (2) Aphex Expressor 651. **Microphones:** (6) Neumann U87, (6) Neumann KM84, (4) Neumann KM88, Neumann SM69, (2) Neumann TLM 140, (4) Bruel & Kjaer 4006, (2) Bruel & Kjaer 4011, (6) AKG C-452EB, (4) AKG 414, (4) Sennheiser MD-421, (6) Sennheiser MK-2E, Electro-Voice RE-20, Shure SM57, Shure SM58, (2) Shure SM81. **Monitor Amplifiers:** JBL 6290, (3) S80/SR200 programmable, PSE Studio Studio IV, PSE Studio V. **Monitor Speakers:** (2) Genelec 1022A tri-amped, Spondor SP-1, Yamaha NS-10, Tannoy 6.5, (2) Auratone, B&W 801 reference monitors. **Musical Instruments:** Steinway 9' Concert D grand, Pearl drums w/Paiste cymbals, Fender Twin Reverb guitar amp, Fender Rhodes 88 elec. piano, custom bass amp. **Video Equipment:** JVC 8250/3/4" video recorder, (13) VHS and Beta 1/2" video recorders. **Other:** Sony PCM-F1 digital encoder/decoder, Sony PCM-601 digital encoder/decoder. **Specialization & Credits:** We specialize in superb acoustic recording. Spacious studios, a superlative signal chain and staff with knowledge and experience all add up. We know how to listen. Studio M offers a wide range of facilities and services, including digital and analog multitrack recording, synchronized audio post-production for video and DDD capabilities (recording, editing, Xfer and premastering all in digital domain). Studio M actually fits three separate facilities that can be reconfigured as needed to fit your project. Our largest acoustic space will comfortably accommodate a 40-piece orchestra. We also have proprietary audio lines to/from the World Theatre (a lovely reconstructed 800+ seat auditorium) for the highest quality live concert recording. Credits include: host location/facility for the Disney Channel's *A Prairie Home Companion* cable series. Ongoing live music broadcasts for Minnesota Public Radio (including the American classical broadcast *Saint Paul Sunday Morning*. Classical releases for Virgin Classics (including 1990 Grammy winner recorded by staff engineer Preston Smith). Releases for MCA, Capitol, A&M, EMI London, Columbia and Independent labels.

[24+] **SWEETWATER SOUND INC.**; also REMOTE RECORDING; 5335 Bass Rd.; Ft. Wayne, IN 46808; (219) 432-8176; FAX: (219) 432-1758. **Engineers:** Jerrold Lehman, Chuck Surack. **Dimensions:** Room 1: studio 24x30, control room 24x28, Room 2: control room 14x16. **Mixing Consoles:** TAC Magnum 72-input w/Mega-Mix onboard automation, Tascam 3500/32. **Audio Recorders:** Soundcraft Series 760 24-track w/dbx, (2) Foxtex E-2 2-track w/center track time code, Panasonic 3500 DAT, Digidesign SoundTools direct-to-disk. **Cassette Recorders/Duplicators:** Tascam 122B, KABA real-time cassette duplication. **Noise Reduction Equipment:** (3) LT Sound NR-8 8-channel, (2) dbx 150X 2-channel. **Synchronization Systems:** Fostex 4030/4035. **Echo, Reverb & Delay Systems:** Lexicon LXP-1 reverb and multi-effects, Lexicon LXP-5 multi-effects, Yamaha REV5, Alesis Quadraverb, Alesis Quadraverb GT. **Other Outboard Equipment:** BBE Sonic Maximizer, EXR Exciter, (2) dbx 160X compressor/limiter, UREI 1175N compressor/limiter, Dyna-Mite stereo compressor/limiter/gate, Digidesign Pro Tools 4-track hard disk recording. **Microphones:** Neumann U87, Beyers M740 (N/C) P48, AKG D12, EV RE-20, Sennheiser MD-441, (2) Audio-Technica 813, Crown PZM, Beyers Dynamic M500 (N/C), (2) CAD Equitec II. **Monitor Amplifiers:** Hafler P-500, QSC 1200, Yamaha A560. **Monitor Speakers:** UREI 813C, Yamaha NS-10, Auratone 5C, EV Sentry 500, (4) AKG D240 DF headphone. **Musical Instruments:** (2) Kurzweil K250, (2) Sample Cell 8 meg, 16-bit, 16-voice sampler, Kurzweil Pro I, Kurzweil Pro II, Kurzweil Pro III, E-mu Proteus/1, Roland D-550, Korg EX-8000, Yamaha TX802, (2) Alesis SR-16 drum machine, (2) Kurzweil K2000 synthesizer, Alesis D4 drum module, E-mu ProCussion module, Proteus 1XR w/Invision Protological upgrade, Proteus 2XR, (2) Performance 1+ piano module. **Other MIDI Equipment:** Roland Octapad II/Simmons MIDI drum kit, Yamaha WX7 wind controller, (3) Mark of the Unicorn MIDI Time Piece, (2) Macintosh II FX w/Performer, MusicProse, Editor Libraries, Finale, etc. **Video Equipment:** Yamaha Hi-Fi VCR, Sony 5850 3/4" editor. **Other:** Yamaha CD-2 CD player. **Specialization & Credits:** Sweetwater Sound is an up-to-date music production and recording facility specializing in latest technology, MIDI and digital recording techniques. Our understanding and innovative use of these tools and our staff of experienced professional producers and musicians have given us a competitive advantage in quality, creativity and adaptability to client needs and schedules. Projects at Sweetwater encompass the corporate, retail and entertainment worlds of music and sound; including the creation and production of custom music and audio scores for jingles, broadcast and non-broadcast video, corporate presentations and album and demo projects for pop, rock, country and contemporary Christian artists. Clients include: McDonald's, Household Finance Company, Lincoln National Corporation, Hardware Wholesalers Incorporated, North American Van Lines, Zenith Data Systems and IBM. In addition, our sister company specializes in selling most major brands of musical equipment including: Tascam, Korg, E-mu, Kurzweil Music Systems and more. Call for a free newsletter.

[24+] **TAPE TRACKS RECORDING**; 2275 Yargenville Rd.; La Salle, MI 48145; (313) 241-6695. **Owner:** Bill Cuson. **Manager:** Bill Cuson.

[24+] **TECHNIMEDIA STUDIOS**; 124-126 S. Fifth St.; Steubenville, OH 43952; (614) 282-5315; FAX: (614) 282-TECH. **Owner:** Frank DeFede, Mike Pernatozzi. **Manager:** Jerry Ostrosky.

[24+] **THE TEMPERMILL**; 2040 Hitton; Ferndale, MI 48220; (313) 399-0550. **Owner:** David Feeny. **Manager:** Dave Feeny. **Engineers:** Mike Clark, Geoff Michael, Mike Harrell, David Feeny. **Dimensions:** Room 1: studio 30x25, control room 22x24, Room 2: studio 12x14, control 14x16. **Mixing Consoles:** Harrison 3232 w/custom disk-based automation, Ramsa WR-1820. **Audio Recorders:** MCI JH-24 w/AL III, Foxtex E-16, Otari MX-5050B II, Panasonic SV-3700 R-DAT, Panasonic SV-3500 R-DAT. **Sound Tools** digital recording/editing software and hard disk recorder. **Cassette Recorders/Duplicators:** Nakamichi MR-2, (2) Aiwa, Marantz. **Synchronization Systems:** MIDI Time Piece. **Echo, Reverb & Delay Systems:** Yamaha SPX900, Yamaha REV7, (3) Yamaha SPX 90, (2) Lexicon LXP-1 with MRC, Eventide H-3000S, (2) Alesis MIDverb II, Roland Chorus echo, Roland SDE-1000, (3) Digitech and other delays. **Other Outboard Equipment:** (10) Valley People Gain Brain II and Kepex II, (2) Valley People Gate, Loft S10 stereo comp/limiter, (2) dbx 166 stereo comp/gate, (2) Alesis stereo comp/gate, (2) BBE Sonic Maximizer 802, Aphex Aural Exciter Type C, Audio Logic graphic EQ, (2) Langevin EQ, (2) Neve 1073 mic pre/EQ, Eventide Instant Phaser, Hycor EQ. **Microphones:** (2) Neumann U87, AKG 414, (2) AKG 460 w/CK61, AKG 452, AKG 451, (4) AKG D1000E, AKG D-112, AKG D-12E, (3) Neumann M4021, (9) Shure SM57, (3) Shure SM58, (2) AT 811, Beyer M121, Beyer M500, (3) AKG D1000E, EV RE20, EV PL 11/PL15. **Monitor Amplifiers:** Ashly Audio, Crown DC-300A, Ramsa. **Monitor Speakers:** (2) UREI 813C, (2) JBL 4312A, (4) Yamaha NS-10, (4) Auratone SC. **Musical Instruments:** Fender Strat, P-Bass, Music Man bass, Martin acoustic, (5) Fender, Roland and Marshall guitar amp, Singertand/Zildjian drum set, (2) E-mu E-max, Proteus, Performance, Akai S-1000, MPC-60, VXR90, (6) Roland R-8, MD-300 digital piano, JX-3P, GM-70, D-110, Korg M3R, Kawai KR. **Rates:** Available on request.

[24+] **3001 STUDIOS**; also REMOTE RECORDING; 580 S. Dayton-Lakeview Rd.; New Carlisle, OH 45344; (513) 845-9646; FAX: (513) 845-8153. **Owner:** Jeff Gastneuer. **Manager:** Dole Shafer. **Specialization & Credits:** At 3001 Studios, we offer the finest in music recording in a secluded, country setting. Our 48-channel, automated, Yamaha digital mixer combined with analog 24-track, over 20 MIDI instruments, 64 voice Sample Cell system, and two Digidesign Sound Tools systems provide complete control over your project. We specialize in all types of music recording, ranging from heavy metal and rock to gospel and contemporary Christian. The staff at 3001 consists of musicians/songwriters, that can provide custom soundtrack music for your video, film or jingle project and MIDI specialists who are experts at sequencing, programming and Macintosh applications such as Performer, Studio Vision, Sound Designer and O-Sheet. Located 15 minutes from the Dayton International Airport, we provide the quality you are accustomed to, at a price far below the major cities.

[24+] **TONE ZONE RECORDING**; also REMOTE RECORDING; 1316 N. Clybourn; Chicago, IL 60610; (312) 664-5353; FAX: (312) 664-6560. **Owner:** JP-USA. **Manager:** Roger Heiss.

[24+] **TRC STUDIOS—THE RECORDING COMPANY**; also REMOTE RECORDING; 5761 Park Plaza Ct.; Indianapolis, IN 46202; (317) 845-1980; FAX: (317) 576-1648. **Owner:** TRC Corp. **Manager:** Gary Schatelen, Alan Johnson. **Engineers:** Alan Johnson, Steve McQuery, John Howcalt. **Dimensions:** Room 1: studio 34x43, control room 19x22, Room 2: studio 30x33, control room 17x17. **Mixing Consoles:** Trident 80B 30 x 24 w/Otari Digital Creations Moving Faders, Sound Workshop 34B w/Otari Digital Creations DiskMix. **Audio Recorders:** (2) Sony JH-24, (2) MCI JH-110B w/1/2" and 1/4" heads, MCI JH-110B w/center track time code, MCI JH-110B 1" video layback machine, (2) Otari MX-5050B, (3) Akai GX-9 w/matchboxes, Otari PD 464 8-track digital workstation, Tascam DA 30 DAT, Panasonic SV-255 DAT. **Cassette Recorders/Duplicators:** Telex 300 5 slave open-reel duplicator. **Noise Reduction Equipment:** (6) Dolby 361 SR, (2) Dolby 361 A, (2) Dolby XPSR 24. **Synchronization Systems:** Adams-Smith 2600 w/remote, Audio Kinetics Pacer, Echo, Reverb & Delay Systems: Klark-Teknik DN780, (2) Yamaha REV7, EMT 140 TS plate, (4) Yamaha SPX90, Lexicon PCM60, Alesis Quadraverb, Alesis MIDverb III, Alesis MIDverb II, Alesis Microverb, Lexicon Super Prime Time, TC Electronic 2290 sampler/delay, Audio Digital TC-2. **Other Outboard Equipment:** (4) UREI 1176, (2) UREI LA-4, Barcus-Berry 202, (2) Eventide 910, (6) Valley Arts Gain Brain, (8) Valley Arts Kepex II, (2) Valley Arts DSP, (2) Valley Arts EQ, (2) Valley Arts PR-10, TC Electronic 2240 EQ, API 3124, Summit TPA200 tube EQ, Drawmer DL241 compressor. **Microphones:** (6) Neumann U87, (3) Neumann U47, (4) Neumann KM84, (2) Neumann KM85, Neumann KM86, Neumann KM88, Neumann TLM-170, (5) Sennheiser 421, (2) Sennheiser 441, (2) AKG 414EB, (2) AKG 451, (2) EV RE20, (5) Shure SM57, (2) Realistic PZM, Schoeps CMT 55, Sony C-48. **Monitor Amplifiers:** Crown PSA-2, Crown DC-300A, (4) Crown D-150, Acoustat Twin 200 MOSFET, (2) Crown D-60, Crown D-40. **Monitor Speakers:** (4) JBL 4435, (8) Yamaha NS-10M Studio, (4) Auratone 5C, (2) MDM-4, (2) Tannoy NFM-8.

**[24+] TRIAD STUDIOS; also REMOTE RECORDING; 1910** Ingersoll Ave.; Des Moines, IA 50309; (515) 243-2125; FAX: (515) 243-2055. **Owner:** Richard Trump, Bill Synhorst. **Joe Borg, Manager; Richard Trump, Engineers:** Rick Condon, Tony Schmitt, Greg Tracy. **Dimensions:** Room 1: studio 38x24, control room 22x21. Room 2: studio 18x21, control room 18x13. Room 3: studio 51x10, control room 10x10. **Mixing Consoles:** Euphonix CS II w/total automation, Tascam 520 20x8, Tascam 512 12x8. **Audio Recorders:** AMS AudioFile, Otari MTR-90 MkII 24-track, Tascam ART-60/8 8-track, Tascam 44-OB 4-track, (2) Panasonic SV-3500 R-DAT, (2) Panasonic SV-255 R-DAT, Tascam DA-30 R-DAT, Tascam ATR-60-2T 2-track w/center track TC, Otari MX-55T-M 2-track w/center track TC, Tascam BR-20T 2-track w/center track TC, Otari MXC-55N 2-track, MCI JH-110B 2-track, Nakamichi DMP-100 (F1 processor), **Cassette Recorders/Duplicators:** Eumig FL1000, Tascam 122 MkII, Nakamichi CR-7A, Magnafax 7801 1/2" bin loop stereo duplicator, Tascam T-2640. **Synchronization Systems:** Adams-Smith Zeta-3. **Echo, Reverb & Delay Systems:** Lexicon 224XL, TC Electronics TC2290, EMT 240, UREI 927 delay, Yamaha SPX90, (2) Lexicon LXP-5, Lexicon PCM60, (2) Lexicon LXP-1, Alessi QuadraVerb. **Other Outboard Equipment:** (2) UREI 1176, (4) UREI LA-3A, (2) UREI LA-4, Aphex Compeller, Aphex EQF 2 parametric EQ, Aphex CX-1 processor, Aphex Dominator II, UREI 546 parametric EQ, (2) Symetrix SX201 parametric EQ. **Microphones:** Neumann U47 FET, Neumann U48, (2) Neumann U67, (4) Neumann U87, (4) Neumann KM84, (2) AKG D-12E, (2) AKG C-414, AKG C-452, (4) Shure SM57, (2) Shure SM81, Shure SM5B, (10) Shure L4 wireless, (2) Beyer MC724. **Monitor Amplifiers:** UREI 6500, UREI 6250, QSC MX1500, (2) QSC 1200. **Monitor Speakers:** UREI 813, MDM-TA3, JBL Control 5, (2) JBL 4602, (2) JBL 4718, (2) UREI 5235 crossovers, (4) Auratone 5C. **Musical Instruments:** Yamaha 7 ft. grand piano, Rogers drums. **Video Equipment:** Proton 19" monitor, Sony VO-9850 3/4" SP, Sony SLO-1800 Betamax, JVC BR-7000UR VHS. **Rates:** Available upon request.

**[24+] UNDERGROUND PRODUCTIONS; 28407 Gilbert; Warren, MI 48093; (313) 573-3562. Owner:** Kevin Holevar. **Manager:** Kevin Holevar. **Engineers:** Kevin A. Holevar. **Dimensions:** Room 1: studio 12x8, control room 19x14. **Mixing Consoles:** Otari SoundWorkshop 34C w/Diskmix II Automation. **Audio Recorders:** Soundcraft SCM760 24-track w/Autolocator, Otari MX-5050B II, Sony PCM-2500 R-DAT. **Cassette Recorders/Duplicators:** Tascam 122B. **Echo, Reverb & Delay Systems:** Lexicon PCM70, (2) Roland SRV-2000, ART DR1, ART 1500. **Other Outboard Equipment:** Gatec noise gate 24-channel, Aphex compeller, Aphex Exciter Type B, BBE Sonic Maximizer, CDT MC-8 8-channel compressor. **Microphones:** AKG, EV, Shure. **Monitor Amplifiers:** Crest CC301. **Monitor Speakers:** (2) Yamaha NS-10M studio, (2) Toa 22-ME, (2) Toa 312-ME. **Musical Instruments:** Emulator E III sampler, Roland JX-8P, Roland D-50, Yamaha TX7, Oberheim Matrix GR, Moog Source, Roland DDR-30 6-piece electric drum kit, Tama Superstar 8-piece acoustic drum kit, (8) guitars. **Other MIDI Equipment:** Mac Plus w/Performer, Jambox 44, IBM Comp. 386SX w/Diskmix 2. **Rates:** Available upon request.

**[24+] UNITED RECORDING STUDIO; also REMOTE RECORDING; 4024 State Line; Kansas City, KS 66103; (913) 262-3555. Owner:** Dave McQuitty. **Manager:** Mike Frazier.

**[24+] UNITED SOUND SYSTEMS INC.; also REMOTE RECORDING; 5840 Second Blvd.; Detroit, MI 48202; (313) 832-3313; FAX: (313) 832-5666. Owner:** Don & Will Davis. **Manager:** Mattie Winters.



UNIVERSAL RECORDING CORPORATION  
Chicago, IL

**[24+] UNIVERSAL RECORDING CORPORATION; 32 W. Randolph, Ste. 1400 and 1500; Chicago, IL 60601; (312) 201-3150. Owner:** Morris Kalish, Murray Allen. **Manager:** Murray Allen, president. **Engineers:** Bob Bennett, Tom Miller, Bill Reis, Ed Golya, Dave Lewis, Steve Wilke, Rich Chojnowski, Dave Gerbosi, J.R. Chappell, Lukas Bower, Tim Reisig, Lorita De Lacerna, Terry Shillog. **Dimensions:** Music 1: studio 39x23,

control 22x23. Prod. 1: studio 24x11, control 17x23. Prod. 2: 22x9, control 15x37. Prod. 3: 16x11, control 14x20. Prod. 4: studio 12x7, control 12x22. Prod. 5: studio 16x8, control room 13x27. Theater A & B: 5x9, control room 18x35. Scoring Stage A: 60x39x30. Scoring Stage B: 39x39x30. **Mixing Consoles:** Neve 8078 32x32, SSL 6000 32x32, MCI 628 28x24, (2) ADM film 16x8, Harrison Raven 32x24, Amek 44x24. **Audio Recorders:** (2) Mitsubishi X-850 32-track, Otari DTR-900, (2) Mitsubishi X-80 2-track digital, (2) Mitsubishi X-86 2-track, (4) MCI 24-track analog, (8) Ampex ATR 2/4-track analog, (16) Ampex 440 1/2/4-track analog, (4) Scully 1/24-track analog, Ampex 1200 16/24-track analog, Otari MTR-90 24-track, (3) Synclavier, (3) Posti-Pro, (7) DAT recorder, (3) AMS AudioFile, Dyaxis. **Echo, Reverb & Delay Systems:** Quantec, Lexicon 200, (6) EMT plate (four rooms), (3) Lexicon 224X, Eventide 2016, (3) 949 Harmonizer, Lexicon, Eventide, Lexicon 480X, AMS RMX-16, (3) AMS DMX 15-80S, Lexicon 480. **Other Outboard Equipment:** dbx, Dolby, UREI 1/3-octave, Orban parametrics, UREI LA-2A, LA-3A, 1176, AMS, Roland, Yamaha. **Microphones:** Neumann U47, Neumann U67, Neumann U87, Neumann KM83, Neumann KM84, AKG 414, AKG 451, AKG 421, AKG 441, AKG C-12, AKG C-24, over 200 mics to choose from. **Musical Instruments:** Bosendorfer 9'5" Imperial grand piano, (3) Steinway grand, (3) Fender Rhodes, celeste, timpani, (2) Sonor drum kit, Ludwig, Slingerland, tack piano, synthesizers, Hammond B-3, Synclavier 32-out. **Video Equipment:** (6) C Format, BTX Softouch, BTX multimachine sync, controllers, Shadow T, Jam sync generators, house sync 1", 3/4", 2" audio, BVH-2000 digital C format, (2) inner from editing suites, ADO, Abekas, Grass Valley. **Rates:** A: \$250/hr.; B: \$235/hr.; C: \$150/hr.; Softouch and digital: \$50/hr. **Specialization & Credits:** Universal, located in the heart of the hotel, restaurant and nightclub area of Chicago, has an "in-house" Cantonese restaurant delivering to all studios. We arrange hotels and limousine service. Universal is one of the largest, full-service audio facilities in the world. With two film mixing theaters, a video-sweetening facility, a cassette duplicating factory and a location film crew, Universal offers the most complete audio service in the country. Among our most recent recording projects are albums by Manowar, Mannheim Steamroller, Placido Domingo, and the films *The Babe*, *Radio Flyer*, and *Backdraft*.

**[24+] WAVE DIGITAL STUDIOS; also REMOTE RECORDING; 4262 Grand Ave.; Gurnee, IL 60031; (708) 336-7776; FAX: (708) 336-6895. Owner:** Al Pangelinan. **Manager:** Al Pangelinan.

**[24+] ZEM RECORDING STUDIO; also REMOTE RECORDING; 3709 S. 60th Ct.; Cicero, IL 60650; (708) 656-1544. Owner:** Ed Zem. **Manager:** Sue Zajda. **Engineers:** Ed Zem. **Dimensions:** Studio 20x22, control room 14x11. **Mixing Consoles:** Harrison MR-4 28x24. **Audio Recorders:** Otari MTR-90 MkII 24-track, Ampex ATR-102 2-track, Otari MX-5050-2-track. **Cassette Recorders/Duplicators:** (2) Akai GX-F91. **Noise Reduction Equipment:** Dolby SR/A 2 channels, dbx Type 1 2 channels. **Echo, Reverb & Delay Systems:** Lexicon 480L digital effects system, Lexicon 200 digital reverb, Eventide MOD3000 Ultra-Harmonizer, Yamaha SPX90 digital effects, Lexicon Super Prime Time, Eventide 949 Harmonizer. **Other Outboard Equipment:** Aphex Compeller compressor/limiter, (2) dbx 165A compressor/limiter, dbx 900 gate/compressor/de-esser, (2) Drawmer gates, Dynaflex DX2, Aphex Aural Exciter Type III, EXR Exciter. **Microphones:** (8) Neumann, (8) AKG, (8) Shure, (4) Sennheiser, (2) RCA, (8) Electro-Voice, Beyer. **Monitor Amplifiers:** (2) Bryston 4B, Crown D-75. **Monitor Speakers:** B&W 801, B&W DM-12, Yamaha NS-10. **Specialization & Credits:** ZEM Recording Studio is a full-service 24-track recording facility. We have over 15 years of experience in all aspects of audio recording. We try to offer maximum service at reasonable rates remembering that customer satisfaction comes first.

**[24+] ZENITH/DB STUDIOS; 676 N. LaSalle Dr.; Chicago, IL 60610; (312) 944-3600; FAX: (312) 944-2843. Owner:** Coken & Coken, Inc. **Manager:** Ric Coken.

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# North Central

## 16-track studios

**[16] ACE MOBILE RECORDING;** also *REMOTE RECORDING*; 21 Gage Ave.; Elkhart, IN 46516; (219) 293-3913. Owner: George E. Compton Jr. Manager: George E. Compton Jr. Engineers: George E. Compton Jr. Dimensions: Studio 20x30, control room 10x30. **Mixing Consoles:** Tapco Panjo 7416 16x16, Tapco 8201 B 8x8, Tapco 8201 REB 3x8. **Audio Recorders:** Itam 1610 16-track w/dbx, Otari MX-5050B 2-track w/dbx, Crown CX 822 2-track w/dbx, Technics: SV-100 F-1 PCM processor. **Cassette Recorders/Duplicators:** (2) Nakamichi LX-3, (4) Sanyo RD 520, (2) NAD 6050 G, (2) Sony WM-D6C (Professional "Walkman"), (2) Yamaha KX1200UF, Nakamichi MR-2. **Noise Reduction Equipment:** (1) dbx 150. **Echo, Reverb & Delay Systems:** ART MultiVerb II processor, Brick plate reverb, Tapco 4400 reverb, Lexicon Super Prime Time digital delay, Alesis QuadraVerb, dbx, Aesys compressors. **Other Outboard Equipment:** Aphex Type 15 Aural Exciter, (3) Countryman DI. **Microphones:** (2) Neumann U87, (2) Neumann KM84, (2) Sennheiser 441, (2) Sennheiser 421, (2) PML F92, (2) Shure SM57, (2) Crown PZM 30GPS, (2) Crown PZM 31, (2) Sony ECM-22, (2) EV 1751, (2) AKG 451, (2) Sony C-37A tube, AKG C-24 stereo tube. **Monitor Amplifiers:** Crown PSA-2, Carver M-1.5, Carver M-400. **Monitor Speakers:** (2) UREI 813, (2) Dahlquist POM9, (2) Dahlquist PCM5. **Musical Instruments:** Kawai "Tone Customized" upright piano. **Other:** dbx computerized 20/20 analyzer/equalizer. **Rates:** Available upon request.

**[16] ACME RECORDING;** also *REMOTE RECORDING*; 1708 W. Belmont; Chicago, IL 60657; (312) 477-7333. Owner: Jim Rasfeld. Manager: Jim Rasfeld. Engineers: Paul Smith, Blaise Barton, John Zdon, Al Vitek. Dimensions: Studio: 40'x21'x12', control room 21'x18'x11', iso booth 1'8'x10'x9', iso booth 2: 5'x8'x9', iso booth 3: 6'x10'x12'. **Mixing Consoles:** Neotec 16x8x4x2, Foxtex 10x2 line mixers, Hill Multimix 16x4x2x1 for remotes, Roland M-160 16-channel line return mixers, Tascam MM-1 line mixer. **Audio Recorders:** Ampex ATR-102 2-track, Tascam 85-16B 16-track w/dbx. **Dig design Soundtools** on Mac IIci, Technics 1520 2-track, Technics 1506, Technics 1505 2-track, Sony PCM 2530 R-DAT, Panasonic SV-3500 (44, 1), (3) Sony PCM-501ES 2-track digital processor, Sony PCM-1630, Technics portable R-DAT, Sony DMR 400 3/4" U-matic recorder. **Cassette Recorders/Duplicators:** (56) Nakamichi BX-300, Yamaha K-1020. **Noise Reduction Equipment:** (2) Dolby SRA, (2) dbx 150x. **Synchronization Systems:** J.L. Cooper PPS100 MIDI-SMPTE box, Opcode Studio 3 MIDV/SMPTE. **Echo, Reverb & Delay Systems:** (2) Lexicon PCM70, Lexicon PCM60, Yamaha REV7, Studio Technologies Ecoplate II, AKG BX-20E, Korg delays, MXR delay, Alesis Microverb. **Other Outboard Equipment:** Yamaha SPX901, (2) dbx stereo compressors, Brooke-Stern DRP 402 dynamics processor, Teletronix LA-2A compressor, Biamp limiter, Omni Craft gate, Symetrix stereo compressor, Orban parametric EQ, Technics parametric EQ, MXR stereo chorus. **Microphones:** Over 60 of the best new and old microphones from Sennheiser, EV, PZM, Sony, Shure, Audio-Technica, Beyler to vintage RCA, Neumann, AKG. **Monitor Amplifiers:** Adcom GFA-555, Carver M-400, NAD 3020/3140. **Monitor Speakers:** Tannoy FSM-U, EV Sentry 100A, EV Sentry 500, EV MS-802, Wharfedale Diamonds, Celestion DL-8. **Musical Instruments:** Roland W-30 sampler/workstation, Korg M3R, Yamaha TX81Z, Kawai K1, Alesis sequencer, Alesis drum machine, Kimball/Bosendorfer 6'7" grand piano, Ampex B-15 bass amp, (3) Fender vintage guitar amps, Ludwig drum kit, Gibson 1951 J-45 acoustic guitar, Casio SK-1 & CZ-101. **Other MIDI Equipment:** Macintosh Plus, Mac IIci, StudioVision. **Video Equipment:** JVC HRD-756 VHS Hi-Fi, JVC HRD-725 VHS Hi-Fi/Fixed deck, (2) JVC HRD-470, (2) Sony Super Beta.

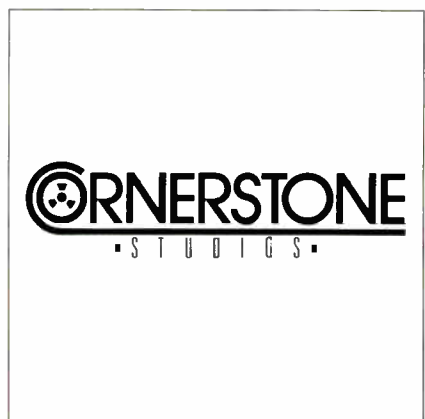
**[16] AL'S AUDIO DINER;** also *REMOTE RECORDING*; 670 Airport Blvd.; Ann Arbor, MI 48107; (313) 769-1411; FAX: (313) 662-0997. Owner: R.G. Martens. Manager: Geoff Michael.

**[16] ANVID RECORDING COMPANY;** 69 S. LaSalle St.; Aurora, IL 60505; (708) 837-9840; FAX: (708) 897-6998. Owner: corporation. Manager: David Schuler.

**[16] AVATAR PRODUCTIONS;** 515 28th St., Ste. 106; Des Moines, IA 50312; (515) 282-9746; FAX: (515) 243-3960. Owner: Michael Meacham/Jeffrey Martin. Manager: Michael Meacham.

**[16] BARKER RECORDING STUDIO INC.;** also *REMOTE RECORDING*; 117 S. Rockford Ave.; Rockford, IL 61104; (815) 399-2929; FAX: (815) 226-0811. Owner: Dwayne and Pam Barker. Manager: Dwayne and Pam Barker.

**[16] THE BROOKWOOD STUDIO INC.;** 1155 Rosewood, Ste. A; Ann Arbor, MI 48104; (313) 994-4992. Owner: David J. Lal. Manager: Matthew Hanson.



CORNERSTONE STUDIOS  
Wichita, KS

**[16] CORNERSTONE STUDIOS;** also *REMOTE RECORDING*; 2475 Coolidge; Wichita, KS 67204; (316) 838-2940. Owner: Steven D. Falke. Manager: Greg Cox. Engineers: Steven Falke, Greg Cox, John Salem, Jay Wedel. Dimensions: Room 1: studio 25'x15', control room 25'x15'. Room 2: studio 15'x10'. Room 3: control room 15'x8'. **Mixing Consoles:** Tascam M3532 32x8x32 in-line with 64 monitor, Yamaha DMP7 8-channel digital automated mixer, Tascam M224 24x4 mixer. **Audio Recorders:** Foxtex G-16 1/2" 16-track, Tascam 38 1/2" 8-track, Tascam 3340 1/4" 2-track, Tascam DA30 R-DAT 2-track. **Cassette Recorders/Duplicators:** (2) Teac V-285CHX, Noise Reduction Equipment: (4) dbx 150, dbx 224. **Synchronization Systems:** Foxtex 8330 SMPTE, Tascam MTS-20 MIDI-tape. **Echo, Reverb & Delay Systems:** Yamaha REV7, Yamaha SPX90, Ro ane SRV-2000, (2) Ibanez SDR-1000, Microplate. **Other Outboard Equipment:** Rocktron 311 compressor, Eventide Omniphressor, Symetrix 525A dual channel compressor/limiter, Omnicral GT-4 noise gate, (2) Yamaha GO-1031 graphic EQ. **Microphones:** (4) Shure SM81, (2) AKG C414 EB, AKG D224 E, (6) Shure SM57, (2) Peavey PVM-520TN, PZM, (2) RCA 44 ribbon. **Monitor Amplifiers:** Carver PM 900, Hafler 500, Eiamt TC120, Soundcraftsmen. **Monitor Speakers:** (2) Altec 504-8G in custom cabinets, (2) Yamaha NS-10M studio. **Musical Instruments:** Young Chang 6'1" grand piano, Roland JX-10, Roland D-50, Roland S-50 sampler, Roland MKS-20, Akai X-7000 sampler with memory expansion, Yamaha RX5 drum machine, (2) Oberheim Matrix 6 Roland Pad 30 drum kit with PM-16 MIDI interface, Ibanez PR1550 electric guitar, Fender Twin Reverb with Groove Tubes, Fender Showman with Groove Tubes, Randall RG-300 guitar amp, Scholz Rockman rack-mount sustainer and chorus/delay, Tama 5-piece acoustic drum kit w/! Paiste cymbals, Korg A5 guitar effects processor. **Other MIDI Equipment:** Roland Super MRC500. **Other:** Sony CDP-300 CD player, Realistic

LAB 430 turntable, (10) AKG K-140 & K-240DF headphones. **Rates:** 8-track, \$30 per hour; 16-track, \$40 per hour; remote, \$250/minimum plus mileage. **Specialization & Credits:** Cornerstone Studios is a full-service audio production facility designed to give our clientele excellent sonic quality at a great price. Centered around its staff of musician/engineers with a total of over 45 years of experience in the music and recording industry, Cornerstone Studios provides all levels of production including custom music composition and arranging, soundtracks for film and video, album production and jingles. Our engineering credits include studio and live work with Miss Universe, The Rainmakers, David Basse and City Light Orchestra, Larry Carlton, Roy Clark, Stansless Steel, The Fowler Brothers, Rick Musallam, KSAS Fox 24, KSNW Channel 3, Rudy Love and the Love Family, Fitness for Life, Visual Communications Inc. and others.

**[16] CREATIONS RECORDING STUDIO;** 6250 W. Michigan Ave.; Lansing, MI 48917; (517) 886-4500; FAX: (517) 886-9310. Owner: Rich Minaya. Manager: Rich Minaya.

**[16] THE DOMAIN GROUP;** also *REMOTE RECORDING*; 289 Main Pl.; Carol Stream, IL 60188; (708) 668-5300; FAX: (708) 668-0158. Owner: Ed Elliott. Manager: Timothy R. Hollinger.

**[16] THE HAIR BEAR RECORDING STUDIO;** 4817 W. 129th St.; Alsip, IL 60658; (708) 389-3373. Owner: Jeffrey A. Islinger. Manager: Jeffrey A. Islinger.

**[16] THE HATCHERY STUDIO;** 2175 Michael Ave.; Warren, MI 48091; (313) 754-8200. Owner: David Sell. Manager: David Sell.

**[16] HUBBARD STREET STUDIOS;** also *REMOTE RECORDING*; 11 E. Hubbard St.; Chicago, IL 60611; (312) 670-0110; FAX: (312) 464-0762. Owner: Jim Poulosom/Pat Brennan. Manager: Sheila Burns.

**[16] LAUGHING CAT STUDIO;** also *REMOTE RECORDING*; 4015 Walnut Ln.; Fort Atkinson, WI 53538; (414) 563-9935; FAX: (414) 563-8342. Owner: Al Jewer. Manager: Al Jewer.

**[16] MIDITRACS;** also *REMOTE RECORDING*; 3808 Beecham Ct.; Columbus, OH 43220-4933; (614) 451-7955; FAX: (614) 451-8087. Owner: Ronald Naile. Manager: Brian Naile. Engineers: Brian Naile, Heath Hunt. Dimensions: Room 1: studio 8'x8' (isolation booth), control room 14'x16'. **Mixing Consoles:** Amek/TAC Matchless 36x24x8x2 w/C Mix Fader automation. **Audio Recorders:** Akai A-DAM 12-track digital, Otari MK-5050 4-track w/dbx, Otari MK-5050 2-track w/dbx, Panasonic SV-3900 DAT w/remote, Panasonic SV-2500 DAT, Panasonic SV-250 portable DAT. **Cassette Recorders/Duplicators:** Nakamichi 6822X, Yamaha KX1200U, Otari DP4050 C2. **Synchronization Systems:** (2) Mark of the Unicorn MOTU MIDI Time Piece, Southworth Jam Box/4+. **Echo, Reverb & Delay Systems:** Yamaha SPX1000, Alesis QuadraVerb, Alesis MIDVerb II, ART DR1, Yamaha SPX90, Lexicon Prime Time digital delay, (2) dbx 166 dual compressor, dbx stereo compressor, Orban 536A Dynamic Sibilance controller (or de-esser), BBE 822 Sony Maximizer. **Other Outboard Equipment:** Panasonic SL-4300 CD player, Benchmark M1A 4x4+ 4-channel mic preamp, Rane HC6 headphone amp. **Microphones:** Calrec Soundfield MKIV, Neumann SM69 stereo mic, (2) Neumann U87, (2) Neumann KM84, (2) Audio-Technica 1051 cardioid condenser w/4049 omni capsules, (4) Beyler M500 dynamic ribbon, (2) Crown PZM. **Monitor Amplifiers:** Bryston 4B, Bryston 3B, (2) Bryston 2B. **Monitor Speakers:** B&W Matrix 801, Tannoy System 8, Yamaha NS-10M, JBL Control 1. **Musical Instruments:** Bechstein 9' concert grand piano, Kurzweil 250 w/Soundblocks A, B, C, D, Superam II, QLS and Sweetwater Sound Library; Roland S-550 w/80meg HD of Roland Sounds, Kurzweil K1000, Proteus 2, Roland D-50, Yamaha DX7 II FD, Roland Super Jupiter, Oberheim Matrix 1000, Yamaha DF80, Roland R-8, Roland DDR-30. **Other MIDI Equipment:** Roland MC-500, Opcode Studio Plus Two, MOTU Performer software, MOTU Composer software, Opcode Galaxy librarian software. **Video Equipment:** Canon A1 Mark II Hi-Fi 8mm camcorder, Sony VO-9600 U-matic SP 3/4" video deck, JVC HR-S8000 U Super VHS video deck. **Other:** Macintosh II computer system w/Laserwriter, Macintosh Plus, Atari 1040ST, Audio Control SA-3050A Spectrum analyzer, Sound Ideas CD effects library. **Rates:** Studio multitrack: \$55/hr, remote multitrack: \$60/hr, remote 2-track: \$40/hr. Special project rates and gear rental available on request. **Specialization & Credits:** MIDITRACS, located in a media production facility, is a full production music studio offering a complete range of services including all digital 2-track recording, full MIDI production with multitrack SMPTE sync, media soundtrack production and post-production and a full album project production. A strong commitment to maintaining state-of-the-art status is made by updating equipment on a regular basis. MIDITRACS is geared to be one of the most comprehensive MIDI facilities in Ohio, and we also offer extremely economical digital multitracking. We have currently begun to focus on complete CD and cassette album projects from start to finish. Please call or write for information, and let us meet your music production needs.

**[16] NEW LIFE SOUND;** also *REMOTE RECORDING*; 506 Colorado St., PO Box 775; Goshen, IN 46526; (219) 533-8793. Owner: Marvin Beachy. Manager: Marvin Beachy/Jon Beachy.

[16] **PRIME TIME STUDIOS**; 1317 Clover Dr.; Bloomington, MN 55420; (612) 884-0778; FAX: (612) 683-0399. **Owner:** Jim Barker. **Manager:** Jim Barker. **Dimensions:** Room 1: studio 50'x30', control room 20'x20'. Room 2: studio 20'x20', control room 30'x20'. **Mixing Consoles:** Allen & Heath Saber 36x16x24x2. **Audio Recorders:** Tascam MS-16 16-track, (2) Tascam 52 2-track, Otari MX-5050 2-track, Revox A77 2-track, Sony 2500 R-DAT, Panasonic 3700 R-DAT, Sony TDC R-DAT. **Cassette Recorders/Duplicators:** Nakamichi MR-1, (2) Tascam 122, Noise Reduction Equipment: dbx on all reel-to-reel decks. **Synchronization Systems:** (2) Tascam ES 50/51 sync & control. **Echo, Reverb & Delay Systems:** Yamaha SPX1000 digital effects, (2) Yamaha SPX90, Yamaha REV-5, (4) Alesis MIDVerb 2, Lexicon Prime Time digital delay, Orban III spring reverb, (2) UREI LA-4 comp/limiter, (2) Alesis 3630 comp/limiter/gate, Rane EQ. **Microphones:** (24) Neumann/AKG/RCA/Shure—complete range. **Monitor Amplifiers:** Yamaha, Crown, (2) Symetrix, Pioneer. **Monitor Speakers:** (2) Electro-Voice Sentry III, (2) JBL 4311, (2) Auratone, (2) Altec VOT, (2) Cerwin-Vega. **Musical Instruments:** Kurzweil MIDI-board controller, Kurzweil 100PX synth, Ensoniq ESQ1, E-mu Proteus 1, E-mu Proteus 2, Roland D-550, Yamaha DX7 IIFD, Yamaha TX81Z, Sequential Circuits VS-1 Prophet, Ensoniq DSK sampler, Alesis HR-16 drum machine, Roland TR-707 drum machine, Yamaha RX5 drum machine, Yamaha G3 6' grand piano. **Other MIDI Equipment:** (2) Atari 1040 ST. **Video Equipment:** Sony VO-9850 3/4" SP recorder, (2) Sony VO-9800 3/4" SP player, Grass Valley 100 video switcher, Sony BVE-600 edit controller, Sony DME-450 digital video effects, Sony VO-8800 portable video recorder, Panasonic 300 CLE video camera (3CCO), (6) Sony/Panasonic video monitors, Amiga 2500 genlocked computer, full studio lighting. **Other:** Dressing rooms, showers, 30-car parking, full photographic services/all format. **Rates:** Rates on request—package and lock-out rates available.

[16] **RENWOOD RECORDING STUDIO**; 3510 60th St.; Kenosha, WI 53144; (414) 644-3376. **Owner:** George Renner. **Manager:** George Renner.

[16] **R/J RECORDING & SOUND**; also REMOTE RECORDING; PO Box 302, 530-C Lark St.; Geneva, IL 60134-0302; (708) 232-1932. **Owner:** Richard J. Peck. **Manager:** Richard J. Peck.

[16] **SINGLE SOUND ENTERTAINMENT AND RECORDING SERVICES**; also REMOTE RECORDING; 7555 Ore Lake; Brighton, MI 48116; (313) 231-9345. **Owner:** Gene Fiero.

[16] **SONG SKETCHES PRODUCTIONS**; PO Box 36483; Detroit, MI 48224; (313) 886-3757. **Manager:** Robert Payne.

[16] **SOUND RESOURCES**; 1400 Energy Park Dr., Ste. #21; St. Paul, MN 55108; (612) 644-3660. **Owner:** Joey Johnson. **Manager:** Ron Runeborg.

[16] **SPARROW SOUND DESIGN**; 3501 N. Southport; Chicago, IL 60657; (312) 281-8510. **Owner:** Brandy Parker-Sparrow, Joanie Pallatio. **Manager:** Kim Burke. **Specialization & Credits:** Sparrow Sound Design is a musician-owned recording studio and production facility. Specialization includes the recording of jazz, chamber music and compact disc production. Boasting one of the largest tube mic and EQ selections in the world, SSD features the Baldwin SD-10 concert grand piano and a Sonor drum set. Designed by Bill Bradley, the studio boasts a live, yet warm sound. Clients include: Japan Communications, Universal Pictures, Columbia Pictures, The Art Ensemble of Chicago, Richie Cole, Bruce Bendinger, Wink Music, Citibank, Ed Crilly, Don Bennett, Lauren Little/Sunny Day Productions, Howard Levy, Fareed Haque, Mary Stolper, Steppenwolf Theater, Don Moye, Eden Atwood, Chicago Dance Medium, Bob McNaughton, Eidee Young, Redd Holt, Janice Mitchell, Caroline Pittman, J. Walter Thompson, The A.A.C.M., Patricia Barber, Ed Petersen, Brad Williams, The Plug Uglies, Jim Scalse, Arminda Coffey, Douglas Ewart, Willie Pickens, Bethany Pickens, Patrick, Josie Falbo, Ron Bedal. Musicians creating music.

[16] **STORMWATCH PRODUCTIONS**; also REMOTE RECORDING; PO Box 751513; Dayton, OH 45475; (513) 293-5280. **Owner:** G. Allan Clarke. **Manager:** G. Allan Clarke.

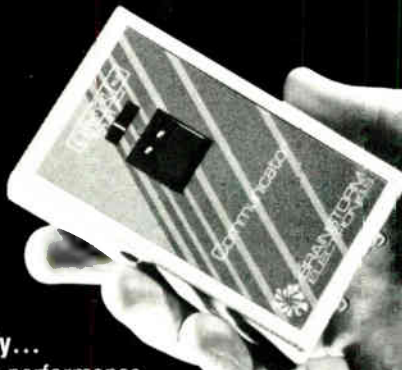
[16] **VIDEO ARTS STUDIOS**; also REMOTE RECORDING; 1440 4th Ave. N.; Fargo, ND 58102; (701) 232-3393; FAX: (701) 232-9439. **Owner:** Art Phillips/Mary Anne Phillips. **Manager:** Steve Germaine.

[16] **WOODEN NICKEL SOUND STUDIO**; 6844 Dickson Cemetery Rd.; Dunlap, IL 61525; (309) 243-7658. **Owner:** Donald Rosser.

[16] **ZAM**; also REMOTE RECORDING; 1121 11 St., #108; West Des Moines, IA 50265; (515) 226-0293. **Owner:** Geoff Bates. **Manager:** Greg Best.

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[4] **AUDIO IMAGES PLUS**; also REMOTE RECORDING; 6228 Oakton St.; Morton Grove, IL 60053; (708) 965-8401; FAX: (708) 965-8426. Owner: Lauren Leifer. Manager: Dan Johnson.

[8] **AUGUST MOON RECORDING**; also REMOTE RECORDING; 30565 East Pointe Dr.; Gibraltar Island, MI 48173; (313) 675-4136. Owner: Rick Bonin Jr. Manager: August Moon Professional Services.

[8] **BEAT BOX MUSIC (FORMERLY WILLY THE FERRET STUDIOS)**; 2331 Flora St.; Cincinnati, OH 45219; (513) 241-7685. Owner: David Arps/Christopher Fee. Manager: John Harcig.

[8] **CLOUD 10 RECORDING**; also REMOTE RECORDING; 1450 Coler; Ann Arbor, MI 48104; (313) 663-0222. Owner: Mike Gould. Manager: Mike Gould.

[8] **EMC PRODUCTIONS**; also REMOTE RECORDING; 300 York Ave.; Saint Paul, MN 55101; (612) 771-1555; FAX: (612) 771-5629. Owner: EMC Corporation. Manager: Bruce Kennedy.

[8] **FIDDLE STRING PRODUCTIONS**; also REMOTE RECORDING; HCR 89, Box 46; Hermosa, SD 57744; (605) 255-4235. Owner: Alfred Svenson. Manager: Stringbean Svenson.

[8] **HIDDEN CITY RECORDERS**; 26769 W. Hills Dr.; Inkster, MI 48141; (313) 563-9350. Owner: Jim Pashkot. Manager: Rae Pashkot.

[8] **KEONI'S DOWNSTAIRS STUDIO**; also REMOTE RECORDING; 1326 Brady St.; Davenport, IA 52803; (319) 323-8631; FAX: (319) 332-6006. Owner: KIL-LIR Productions/Keoni's. Manager: John Curry. Engineers: Scott J. Stulir—chief engineer, Mike Betcher. Dimensions: Room 1: control room 10'x9'. Room 2: studio 15'x8'. Room 3: studio 12'x11'. **Mixing Consoles**: Studio Master Mixdown 24x8x2 (6 aux sends), Yamaha RM-804 8x4x2. **Audio Recorders**: Tascam 58 8-track 1/2", (2) Anwa XD-001 Excelia DAT w/ProDAT mod. **Cassette Recorders/Duplicators**: Sony TC-WR710 w/HxPro, Onkyo Integra w/HxPro. **Noise Reduction Equipment**: (2) Tascam EX-4D dbx Type I Pro. **Synchronization Systems**: J.L. Cooper PPS-1. **Echo, Reverb & Delay Systems**: Lexicon LXP-1, Lexicon LXP-5, Lexicon LXP-15, Lexicon MRC, Roland SDE-3000 delay, DigiTech DSP 256XL, Alesis Microverb, Rockman distortion generator/graphic EQ. **Other Outboard Equipment**: dbx 160X comp/limiter, dbx 166 comp/limiter/noise gate, Omni Craft GT-4A quad noise gate, Yamaha Q2031 graphic EQ, DOD Electronics R431 graphic EQ, Korg keyboard line mixer, 6-channel. **Microphones**: AKG, EV N/DYM, Sennheiser, Shure. **Monitor Amplifiers**: (2) SCS 2450A. **Monitor Speakers**: DS custom Mark V (mains), Yamaha NS-10M (on request). **Musical Instruments**: Korg M1, Korg DSM1 sampler w/SCSI port, extensive disk library for DSM1, E-mu Proteus 2, 6-piece Eames drum kit w/Pearl hardware & Zildjian cymbals, extensive percussion instruments. **Other MIDI Equipment**: Macintosh Plus 2.5 w/45M HD (removable), Passport MIDI interface/Korg MIDI thru box, Encore, Master Tracks Pro 4, Simmons TMI trigger to MIDI interface, Roland Octapad, KAT drum-KAT trigger pad. **Other**: (4) Fostex T-20 headphone, (2) Yamaha RH-5M headphone, (2) Beatmaster trigger pedals (kick drum), Sony CD player, Sharp CD player, Project One turntable, CD sound effects library. Rates: \$24/hour.

[8] **LOST NATION SOUND RECORDING STUDIO**; also REMOTE RECORDING; #6 Storer St.; Guysville, OH 45735; (614) 662-5701. Owner: Dave Aiken. Manager: Nancy Aiken.

[8] **RAVENWOOD PRODUCTIONS**; also REMOTE RECORDING; Rt. 2 Box 27; Osage, IA 50461; (515) 983-4445. Owner: John Stewart. Manager: John Stewart.

[8] **ROSS MUSIC PRODUCTIONS & R.M.P. RECORDING STUDIO**; 5070 Broadway; Gary, IN 46408; (219) 980-1958. Owner: John W. & Jonnie C. Ross. Manager: Johnny Ross.

[8] **RHYTHM PRODUCTIONS**; 8627 Keystone Ave; Skokie, IL 60076; (708) 673-SONG (8664). Owner: John Lucin. Manager: John Lucin.

[4] **SECOND ESTATE PRODUCTIONS**; also REMOTE RECORDING; 16143 Barth Dr. S.E.; Big Lake, MN 55309-9902; (612) 263-3797. Owner: Michael J. Langford. Manager: Michael J. Langford. Engineers: Michael J. Langford—BSEE. Dimensions: Studio 16x12, control room 14x12. **Mixing Consoles**: Akai 6x2, Tascam 8x2, Tascam 4x2, Fostex 8x2, (2) DOD Electronics 4x2. **Audio Recorders**: Akai 4-track w/Sync, Tascam 4-track, Fostex 2-track w/sync. **Cassette Recorders/Duplicators**: Yamaha C-300, Tascam 122, Akai 101, Telex CD-4 (7 stations). **Noise Reduction Equipment**: dbx Integral, Dolby B/C/NR/HX. **Synchronization Systems**: Fostex 4050 SMPTE. **Echo, Reverb & Delay Systems**: Alesis XTIC, Alesis MIDVerb. **Other Outboard Equipment**: Yamaha GC2020B comp/limiter, Yamaha CD2100 Studio HD, IOTA Systems MIDIfader. **Microphones**: Sennheiser MD-41U, Sennheiser MD-431U, EV 644, EV DS35, Shure 525SD, TEAC ME-50, (2) Audio-Technica AT-815A (shotgun). **Monitor Amplifiers**: QSC 1400 (and House), Roland SRA-1200, (2) Kawai KM-60. **Monitor Speakers**: (2) JBL Cabaret (and House), (2) Yamaha NS-10M. **Musical Instruments**: Yamaha acoustic piano, (2) Casio CZ-1, (2) Casio CZ-101, Akai YX-90 rack, E-mu Emax SE rack, Kawai R-100. **Other MIDI Equipment**: (2) Macintosh Plus (4MB, 2MB), (2) Opcode Studio Plus interface, 360 Systems MIDI Merge+, (2) J.L. Cooper MSB+. **Other**: Laser Writer II NTX w/Sonata, Opcode CZ editor/librarian, Opcode Vision 1.2, Mark of the Unicorn Performer 5.0, Mark of the Unicorn Composer 2.3, Electronic Arts DMCS, Digidesign Sound Designer, Intelligent Music User-eat, Intelligent Music M, Dimension digital SFX library on CD. Rates: \$45/hour.

[8] **SOUND SHOP RECORDING STUDIO**; 9250 N. Sleepy Hollow Ln.; Bayside, WI 53217; (414) 352-7766. Owner: Roger A. Roth. Manager: Roger A. Roth.

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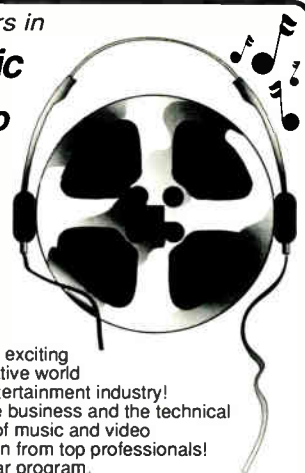
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69	016	API Audio Products/PineBrook Studios	
167	017	The Art Institutes	
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156	019	AudioForce	
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84	025	Audix (OM-7)	
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165	030	Brainstorm Electronics (213) 475-7570	
55	031	Burlington Audio/Video Tapes (3M)	(516) 678-8959
111	032	Burlington Audio/Video Tapes (Sony)	(516) 678-8959
96	033	Caruso Music	
42	-	Carvin	
151	034	Century Music Systems	
137	035	Clair Brothers Audio Systems	
19	036	Community	(215) 874-0190
71	037	D & R USA	
100	038	D.A.T. - Audio Gallery	(213) 829-0304
135	039	The DAT Store	(213) 470-6176
33	040	DIC Digital Supply	
12-13	041	Digidesign	
103	042	Digital Audio Labs	
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149	047	EAR Professional Audio/Video	
93	048	Ensoniq	
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156	051	First Light Video Publishing	(213) 461-1085
28	052	Fostex	
80	053	Full Compass	
73	054	Full Sail Center for the Recording Arts	(407) 671-1112
163	055	Future Sonix	
54	056	GML/Focusrite	(818) 781-3828
60	057	Gold Line	(203) 938-8740
123	058	Hill Audio	
66	059	The Hollywood Edge	
25	060	Hot House Professional Audio	(914) 691-6822
119	061	Imperial Tape Company	
152	062	Institute of Audio Research	(212) 677-6549
30	063	JBL Professional	
142	064	The Russ Jones Marketing Group	
149	065	JRF Magnetic Sciences (201) 579-6021	
65	066	KABA Research & Development	
100	067	Klarity Cassette	(207) 873-3924
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159	069	Leo's Professional Audio Systems	(510) 652-6575
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159	070	MacBeat	
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118	076	Micro Technology Unlimited (MTU)	
152	077	Mix Bookshelf	(510) 653-5142
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51	082	Otari	(415) 341-7200
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121	085	Professional Audio Services & Supply	(818) 843-5754
143	086	QCA	(513) 681-3777
81	-	Ramsa	
89	087	Rane	
90	088	The Recording Workshop	
135	089	Rhythm City	(404) 233-1581
157	090	Rocket Lab	
128	091	Russian Dragon/Jeanius Electronics	(512) 344-3299
79	092	Saki Magnetics	
88	093	Santa Monica Sound	
96	094	SAS Industries	
116-117	095	Shure	(708) 866-2279
11, 41	-	Solid State Logic (SSL)	
154	096	Sonic Solutions	
7	-	Sony	
122	097	Sony of Canada	
139, BC	-	Soundcraft	
161	098	Sound Impressions	
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40	100	Spectral Synthesis	
92	101	Sprague Magnetics	
4-5	102	Studer Revox	
118	103	Studio Consultants	
27	104	Summit Audio	(408) 395-1403
99	105	Sunkyong	
150	106	Sweetwater Sound	
115	107	Symetrix	(206) 283-5504
92	108	Sytek	(312) 588-1682
24	109	Tannoy	(519) 745-2364
91	110	Tascam (ATR-80)	
108-109	111	Tascam (M3500)	
105	112	Tech 21	
151	113	Thoroughbred Music	
141	114	3M Corporation	
104	115	Tice Audio Products	
75	-	Trident	
59	116	Valley International	(615) 370-5907
134	117	Valley Sound	
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130	120	Yorkville	

# MIX

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Use this form to contact advertisers in this issue immediately. All advertisers and some Fax numbers are listed in the Ad Index above. Photocopy this page if you need additional copies of this form.

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Address \_\_\_\_\_

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Pittsfield, MA 01203-9900

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Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

ISSUE: NOVEMBER 1991  
CARD EXPIRES: MARCH 1, 1992

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008	038	068	098	128	158	188	218	248	278
009	039	069	099	129	159	189	219	249	279
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018	048	078	108	138	168	198	228	258	288
019	049	079	109	139	169	199	229	259	289
020	050	080	110	140	170	200	230	260	290
021	051	081	111	141	171	201	231	261	291
022	052	082	112	142	172	202	232	262	292
023	053	083	113	143	173	203	233	263	293
024	054	084	114	144	174	204	234	264	294
025	055	085	115	145	175	205	235	265	295
026	056	086	116	146	176	206	236	266	296
027	057	087	117	147	177	207	237	267	297
028	058	088	118	148	178	208	238	268	298
029	059	089	119	149	179	209	239	269	299
030	060	090	120	150	180	210	240	270	300

### 1 Please check the ONE category that best describes your company's primary business activity:

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 Co.
08.  Record/Tape/CD Mastering and/or Mfg.
09.  Equipment Mfg. (including rep. firm)
10.  Equipment Retail/Rental
11.  Contractor/Installer
12.  Facility Design/Acoustics
13.  Educational
14.  Institutional/Other (please specify) \_\_\_\_\_

### 2 Please check the ONE category that best describes your job title or position:

15.  **Management**-President, owner, other manager, etc.
16.  **Technical & Engineering**-Engineer, editor, design engineer, etc.
17.  **Production & Direction**-Producer, director, etc.
18.  **Sales & Administration**-Sales representative, account executive, etc.
19.  **Artist/Performer**-Recording artist, musician, composer, and other creative functions
20.  Other (please specify) \_\_\_\_\_

### 3 Please check the statement below that best describes your role in the purchasing of audio, video and musical equipment, supplies and/or services:

21.  Recommend the purchasing of a product or service
22.  Specify makes, models or services to be purchased
23.  Make the final decision or give approval for purchase
24.  Have no involvement in purchasing decisions

### 4 What is your company's annual budget for equipment, supplies and services? (check one)

25.  Less than \$50,000
26.  \$50,000-\$149,999
27.  \$150,000-\$249,999
28.  \$250,000-\$499,999
29.  \$500,000 or more

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30.  Immediate purchase
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38.  Private (Personal) Production Facility
39.  Corporate or Institutional Facility

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015	045	075	105	135	165	195	225	255	285
016	046	076	106	136	166	196	226	256	286
017	047	077	107	137	167	197	227	257	287
018	048	078	108	138	168	198	228	258	288
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020	050	080	110	140	170	200	230	260	290
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022	052	082	112	142	172	202	232	262	292
023	053	083	113	143	173	203	233	263	293
024	054	084	114	144	174	204	234	264	294
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- D6.  Broadcast/Radio/Television
- D7.  Record Co.
- D8.  Record/Tape/CD Mastering and/or Mfg.
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—FROM PAGE 137, WILLOW CREEK CHURCH

6032C motorized fader remote control head allow the mix engineer to switch overall L/R EQ at the touch of a button. The Court EQs on each amp feed provide a nominal flat response, allowing the TCs to adjust to the changing EQ requirements within each performance. The switchable EQ complements the L/R versus Near/Far switch, enabling the mix engineer to significantly affect system performance almost instantly.

Once the system was designed, installation had to happen very quickly. "There's only twice a year where we don't have a mid-week service," O'Connor says. One of those is over the July 4 holiday, where a major outdoor event keeps the mid-week crowd outside the church's main auditorium. "When the pastor said 'Amen' that Sunday, things literally started getting torn out," O'Connor explains.

Extensive preparation at Clair's shop helped move things along. "We completely pre-engineered the rigging," says Pelland, "so that when we arrived, all the rigging and speaker cables were cut to length."

"I worked on fine-tuning the array before we shipped it," adds Borthwick, "although the actual horn direction got changed a little for the balcony. It also allowed us to pre-test everything. It's an application of road-thinking to solve install problems." The amp racks were already built into the console mix area, so the Clair team assembled and cabled them in traveling racks, and moved them into location on site. The Clair team, which included Gene Clair, Jim Bang and Frank Farrel, among others, was augmented by Willow's large staff of dedicated volunteers. Four long days later, the install was complete. If the busy install schedule wasn't enough, a full-blown Clair S-4 road system with a Paragon console was used for the 4th of July event held outside the church during the same week. The outdoor show drew 11,000 people and covered

40 acres.

The results of the new system? "From a mix standpoint, it's an absolute joy," says O'Connor. The new main floor system provides the extra punch needed for the more contemporary material, and its quick reconfigurability lets the Willow mixers concentrate on mixing. Happily, the new system also fits in nicely with the older balcony system (which uses 32 JBL 46710K cabinets). Simply re-EQing the original balcony fill systems after the install was complete made a noticeable improvement.

The new system also helps outside acts performing at the church. (Willow outboard equipment includes a Klark-Teknik RTA, K-T quad gates and quad compressors, Yamaha REX7, SPX90II and SPX900, an Eventide Harmonizer, Lexicon PCM70, dbx gates and compressors, and a well-stocked mic closet.) "We've had [contemporary Christian acts] like The Imperials, First Call, Margaret Becker, Praise, Steve Camp and others here," O'Connor says. "We ask them not to bring their equipment in, and it takes time trying to convince them that what we have is equal, if not better, than what they're going to bring in. If they fly a system here, they're not going to get the coverage we can."

Willow also takes its show on the road, and who better to provide touring sound? "We're looking to buy a traveling system from Clair that'll work for 250 to 2,500 people," O'Connor says. "With Clair's background, it's a perfect match for us. We do a lot of outside events, and it's to the point where we need to purchase a [portable] system."

All in all, the relationship seems to have started out on the right foot. "The idea of a good sale," concludes Pelland, "is to find out what the customer's needs are and solve them. We accomplished that on this project—consequently, we walk away feeling good about what we've done, and the customer is satisfied that they got what they wanted from Clair Brothers. It's a happy two-way street." ■

**Coming in Mix:  
December 1991**

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# MIX

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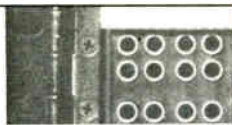


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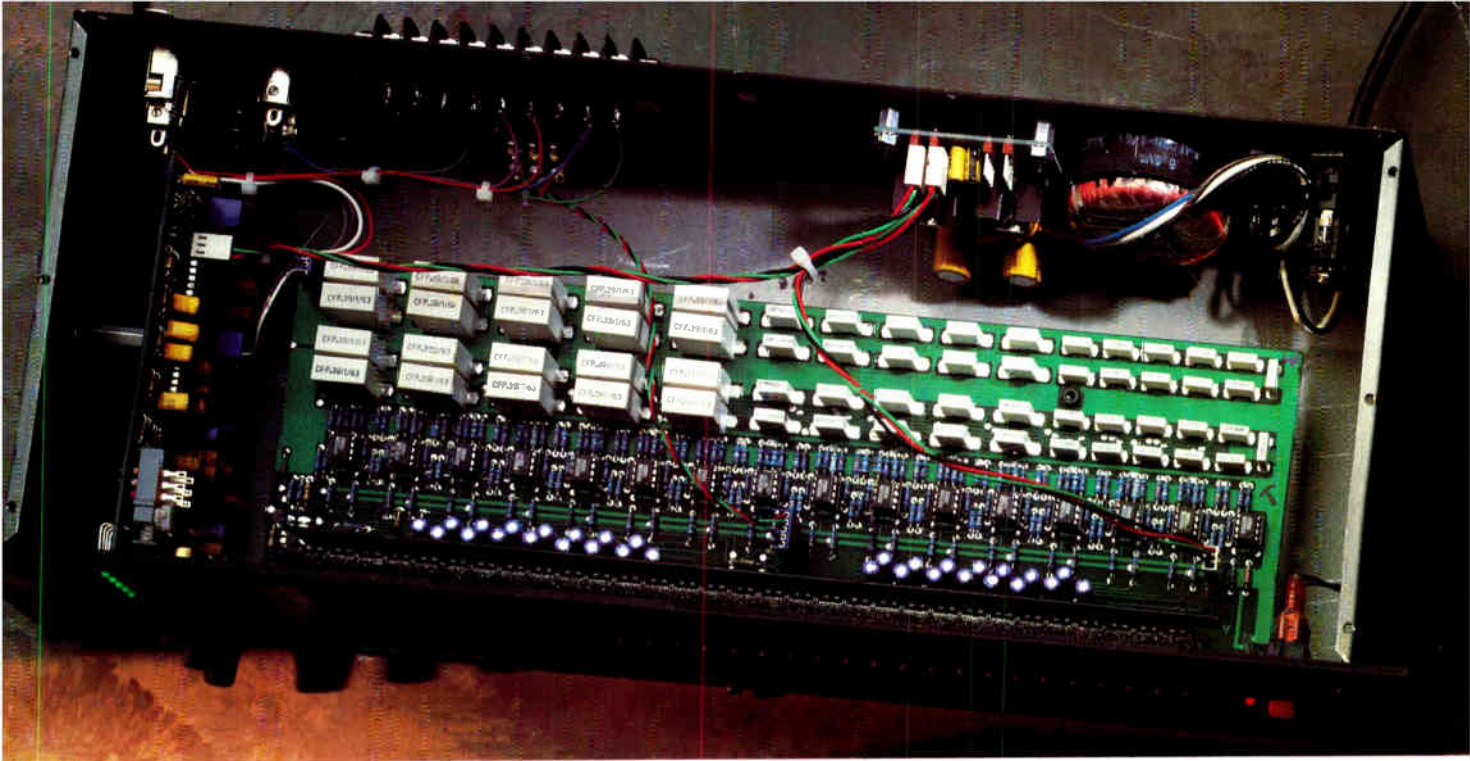
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