

Jimmy Webb: Captain Hook • The Technology Gap • Joni Mitchell

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# MIX

## REMOTE RECORDING

- Facilities Directory
- Forum on Grounding & Electrical Problems
- Capturing Tina Turner Live in Rio

THE RECORDING INDUSTRY MAGAZINE

## SOUND REINFORCEMENT

- House & Monitor Console Update
- New Onstage Loudspeakers

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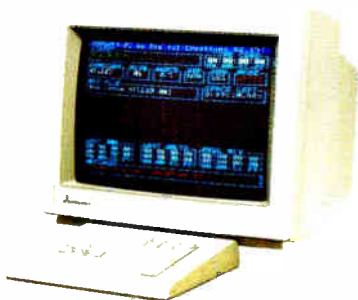
Compumix PC is a powerful and technically advanced automation system, providing storage on floppy diskettes of an unlimited number of mixes and off line editing of mix data. The Compumix PC comes complete with IBM XT compatible PC (with Dual Floppy and 20 MB Hard Disk Drives), Mitsubishi 13" color graphics monitor, custom and standard keyboard, and all cables and software. Compumix PC is probably the most cost-effective high-performance





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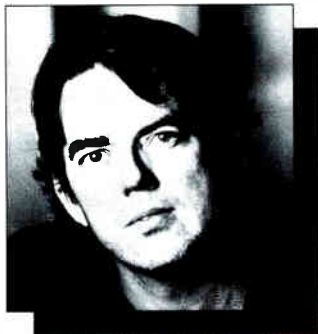
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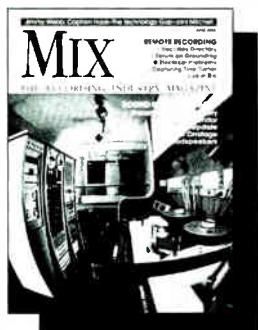
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# FROM THE EDITOR



Cover: Westwood One's Concert Master One remote vehicle is a 45 foot semi based in Los Angeles. The on board system includes an MCI 636 console, two Ampex 1200 multi track recorders, a Neve sub mixer and Alice 600E monitors. Extras include a full complement of outboard equipment and a lounge with a wet bar  
Photo: Todd Andrews

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Here at *Mix* we are in the midst of a major overhaul of our directory information services division. Back when we started doing these listings in the late '70s, the idea was to create a new and more useful way to view the recording market by increasing the visibility of an otherwise very low-key group of businesses. The directory was designed, primarily, as a consumer's tool for shopping "the industry."

In those days, there were four basic groups of commercial recording studios, and categorizing them by number of tracks—4, 8, 16 and 24—seemed like a reasonable proposition. But today's recording studio has changed considerably since then, and needs to be defined differently, too—the term "recording studio" is becoming less appropriate for a growing number of operations. Concepts like "production environment" and "electronic media production center" are being used more often to describe facilities that have integrated computers, MIDI, workstations and post-production tools in their otherwise recording-oriented confines. And, thanks to satellite data transfer, the once provincial studio has entered the world communications market as a bona fide networking node.

There has been an ongoing discussion around our office about how to present the most useful directory information during this evolutionary period. We've surveyed many of you and talked to industry leaders, and over the next few months you should begin to see some significant changes in our pages, as we retool our way of viewing the industry. To help us redesign this area, we've brought aboard Ron Neilson, a longtime industry observer and creative consultant. He'll be working as Director of Information Services here, and if any of you want to put in your two senses' worth, he'd love to hear from you.

Speaking of title changes, you'll see a couple more in this issue, including mine. We've split the editor/publisher hat in two—partner and former Associate Publisher Hillel Resner has taken on the Publisher's responsibilities (whew!), while I've gotten a new set of editorial binoculars.

Keep reading,

David Schwartz  
Editor-in-Chief (yeah, I like that.)

# CURRENT

## **Three-Inch Discs Now Released**

Consumers will soon be seeing 3-inch compact discs in record stores. Distributed under the trade name CD<sup>3</sup>, and marketed by the Recording Industry Association of America (RIAA), the CDs carry up to 20 minutes of audio and can play on standard CD players by using a disc adapter.

The CD<sup>3</sup> measures 3 x 7 inches and contains two cuts; the "maxi," 3 x 12 inches, has extended plays or additional cuts.

## **Harman International Acquires Soundcraft**

Harman International Industries has announced the signing of a definitive agreement for the acquisition of Soundcraft Electronics, Ltd. in the UK. The acquisition is expected to be complete before the end of Harman's fiscal year this month.

"We have always had great respect and admiration for Soundcraft," says Dr. Sidney Harman, chairperson and CEO of Harman International.

Soundcraft Electronics is a leading manufacturer and marketer of high-quality mixing consoles. The company's principal manufacturing facilities are located in Borehamwood, England. Soundcraft's worldwide sales were approximately \$20 million in 1987.

Harman International is a leading manufacturer and worldwide marketer of audio and video products for professional, consumer and OEM markets. Since 1986 the JBL Professional division has been the exclusive distributor of Soundcraft products for the U.S. and Mexico.

## **Record Rental Act Extension Introduced by Congress**

Legislation was recently introduced

in Congress by the Chairman of the House and Senate Subcommittees with jurisdiction over copyright to extend the provisions of the "Record Rental Amendment of 1984." The legislation provides sound recording copyright owners with the exclusive right to authorize record rentals. Congress originally enacted the law for a five-year period.

The senate bill is a permanent extension of the law and is supported by a large music industry coalition including the National Association of Recording Merchandisers, Songwriter's Guild and National Music Publishers Association.

## **ATTC Searches for Executive Director**

The Board of Directors of the Advanced Television Test Center (ATTC) met for the first time in March to incorporate and launch an accelerated search for an executive director to supervise its research and testing activities.

"Our primary mission," says Joel Chaseman, ATTC chairman, Association of Maximum Service Telecasters vice-chairman and chairman of Post-Week Stations, Inc., Washington D.C., "is to help achieve speedy and objective resolution of the tough technical issues surrounding the introduction of an advanced television system which works best for all concerned, especially for the viewing public."

Along with Chaseman, elected board officials are: Dr. Richard Green, senior vice-president, Broadcast Operations and Engineering, ATTC vice-chairman; Sam Antar, vice-president, Law and Regulation, CapCities/ABC, Inc., ATTC secretary/treasurer; John Abel, NAB executive vice-president, operations, ATTC chairman of the Search Committee for ATTC's executive

director.

"John Abel's committee will begin immediately to resolve the search for an executive director," says Chaseman, "so that we can budget, plan and test the systems quickly and objectively in cooperation with the Federal Communications Commission's Advisory Committee and the Advanced Television Systems Committee."

## **New Music Seminar**

The New Music Seminar, slated for July 16-20 at the Marriott Marquis Hotel in New York, originally was a haven for record companies, retailers and new artists. Now in its ninth year, the seminar has expanded to include a "mini AES show" with manufacturer's exhibits. "We're the only music industry seminar that targets the entire industry," says Tom Silverman, one of NMS's executive directors.

The seminar directors have made some changes to accommodate the ever-growing crowd (over 7,000 attendees expected this year). New for '88 is a separate package for people interested in attending the new artist performances in New York clubs. Over 300 performances are set for five nights, known as "New York Nights: The International Music Festival." NMS registrants will have access to all these shows in addition to their daytime activities.

The New Music Seminar will again address political and social issues that impact the international music community. There will be panel discussions about the sampling issue, re-mixing, marketing, talent and booking, among other topics.

For more info, contact the New Music Seminar, 632 Broadway, 9th floor, New York, NY 10012, (212) 353-3162.





## VIDEO DUPLICATION AT "LIGHTSPEED"

135 times faster than real-time, with *uniform* copy quality comparable to the best of real-time—that's Otari's new T-700 high speed video duplication system!

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# INDUSTRY NOTES

**Otari Corporation** moves on May 6 into new U.S. headquarters in Foster City, CA. The new building, twice the size of their present headquarters, includes expanded offices, warehouse, quality control and service areas and a professionally designed studio listening room... Independent industry marketing veteran **Ron Neilson** joins **Mix Publications** to create a new Information Services Division... **Sony Professional Tape Division** established a new Southwest regional sales office in Irving, TX (214-550-5200), headed by **Richard Chambers**... **Mitsubishi** has announced tentative partial purchase of **ElectroSound Group, Inc.**, increasing their economic coordination of Memory-Tech Inc., a daughter company of both... **Gand Music & Sound**, of Northfield, IL, was appointed as the first official music market distributor of **Apple Macintosh** computers and software... **Lewis Frisch**, former manager of Atlanta's Showcase Audio, has opened **Integrity Audio**, a sales and support company for professional products serving Georgia and the Carolinas. The new company will work in conjunction with **Studio Supply Company** of Nashville... **Satellite Productions** has been formed in New Rochelle, NY, as a new full-service production unit for the test commercial, industrial, corporate and music video, educational and sales film production markets... The University of Iowa will hold the ninth annual **Seminar in Audio Recording**, June 13 to 24, with **Jerry Bruck**, **Bob Ludwig** and **Lowell Cross** as instructors. Call (319) 335-1664 for info... **Mike Julian** has been named public affairs director of L.A.'s **Grove School of Music**... **Joseph Kempler** joined **Sunkyoung's** Audio Tape Division L.A. office as technical director... **Studer Revox America, Inc.** named **Mike Halleck** as Southwest regional manager based in their Arlington, TX office. He replaces **Chris Ware**, who was named manager of direct sales... **Ampex Corporation** appointed **Robert Wilson** as general

manager of worldwide marketing, sales and service. They also promoted **Marty Blanchard** to the position of senior market research and planning analyst... **Bruel & Kjaer** has moved **Adrian Weidmann** to U.S. headquarters in Marlborough, MA, where he will work on expanding the U.S. studio market for B & K microphones... **WaveFrame Corporation**, a Colorado manufacturer of digital audio workstations, has named six new European distributors: **Syco Systems** (UK), **Spye Srl** (Italy), **Music-Land** (France), **Amptown Electroacoustic AmbH** (West Germany), **Synton** (Holland), and **New Music** (Denmark). WaveFrame also appointed **Craig Hunter** and **Gary Rosen** as managers of the L.A. and New York offices, respectively... **Rane Corporation**, of Everett, WA, has hired **Bob Moses** for their engineering staff... **Sue Jones** is the new operations manager for **Amek/TAC's** U.S. operations... **Fuji's** magnetic products division has promoted **Brad Friedrich** to director of marketing... **Onkyo USA Corporation** of Ramsey, NJ, named **Len Schneider** as national product/advertising manager... **Ultimate Support Systems, Inc.**, a Ft. Collins, CO-based manufacturer of aluminum support structures for the music industry, has named **Mark Nixon** as vice president of sales and marketing... **Bob Wortsman** is now manager of special projects for **Electro Sound, Inc.**... **Centro Corporation** named **Don Klick** as VP operations... **Shane Dickey** joined **Digital V/X, Inc.** as vice-president of engineering... **Editel/NY** hired **Cindy Mollo** and **David Leveen** for their creative team, while **Editel/Chicago** promoted **Matt Hausman** to technical coordinator and hired **Heidi Hogrefe** as production coordinator for the effects animation design group... **Roy Ferin** joined **Manhattan Production Music** as national director of sales... **Pacific Video, Inc.**, of Hollywood, CA, appointed **Herbert Kraft** as vice-president of operations.

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# SESSIONS AND STUDIO NEWS

## NORTHEAST

The **Bee Gees** were in **Greene Street Recording** in NYC working on a new album with **Arif** and **Joe Mardin**, engineer **Rod Hui** and assistant **Chris Shaw**. . . **Suzanne Ciani**'s third album, *Neverland*, was cut at **Ciani Musica Studios** in NYC with engineer **Leslie Mona**, assisted by **Ari Frankel**. . . At **Platinum Island Studios** in Manhattan, ex-Cars guitarist **Elliot Easton** worked with Upside Records' **Jeffrey Hatcher & the Big Beat**. **Jamie Chaleff** engineered. Also at P.I. was **Charlie Elgart**, producing/engineering a song for **Najee**'s second LP. . . At Long Branch NJ studio **Shore Fire Recording**, **Lance Larson** has enlisted a number of top local names to help him on a series of recording sessions. **Jimmy Reardon** produced, with two tracks co-produced by E-Streeter **Garry Tallent**. **Mike Hommel** engineered. . . **Bill Warfield & His Big Band** visited **The Edison** studios in NYC to record ten tunes for a forthcoming CD and cassette titled *New York Music*. **Mike Abene** produced. . . The Dutch band **Fatal Flowers** stopped by **Nevessa Productions** in Woodstock, NY, to record and mix their new Atlantic album. **Mick Ronson** produced, with **Chris Anderson** engineering and **Gregg Bauer** assisting. . . Ex-Stray Cat **Brian Setzer** checked into **Electric Lady Studios** in Manhattan to cut his "Band of Skeletons" single. **John Luongo** produced, with **Gary Hellman** engineering and **John Magnusson** assisting. . . CBS artists **Tommy Conwell & the Young Rumlbers** finished their debut album at **Studio 4** in Philadelphia with **Rick Chertoff** producing, and **John Agnello** and **Phil Niccolo** sharing the engineering duties, assisted by **Andy Kravitz**. . . At **PCI Recording Services** in Rochester, NY, **Immaculate Mary** cut tracks for their debut album on Mirror Records, with **Steve Forney** engineering, **Jeff Corcoran** assisting. . . **Bon Jovi** was in **Chalet**

**Sound** (Manasquan, NJ), cutting pre-production tracks for their next LP. **Bruce Fairbairn** produced and **John Allen** engineered, assisted by **Chris Cavallaro**. . . Ex-Styx frontman **Dennis DeYoung** worked on his solo album at **Quad Recording** in NYC. DeYoung produced, while **Michael Brauer** engineered. . . **Christian Stephens** were in at **Susquehanna Sound** in Northumberland, PA, laying tracks for their new album. . . **Mark "Prince Markie D." Morales** of the **Fat Boys** worked on tracks with **Bill Biddle** for the group's next album at **Digitel** in NYC. . . **Scott Warner** was in at Pittsburgh's **Gamut Productions** to work with engineer **T.J. Wilkins** on the new EP by **Thick As Thieves**. . . At **Secret Sound** in NYC, **Chuck Irwin** produced and engineered several tracks for **Sandra Mesinger**'s debut album. **Eric Behrend** assisted. . . At **D&D Recording** in Manhattan, RCA recording artist **Grayson Hugh** worked on his debut album with producers **Michael Baker** and **Alex Kroll**. **Douglas Grama** and **Mike Rogers** engineered, with **Kieran Walsh** assisting. . . DefJam artist **Slick Rick** was in at **Chung King** in NYC recording a new project with producer **Hank Shocklee** and engineer **Seiji**. . .

## NORTH CENTRAL

At **Body Electric Studios** in Bolingbrook, IL, **Randy Webster** worked on demos and **David Cruz** cut a rocker called "Your Turn to Cry". . . **Twinkie Clark** of the **Clark Sisters** has been in Detroit's **Sound Suite** producing a track for British gospel singer **Lavine Hudson**'s debut LP for Virgin. Engineer **Steve King** was at the controls. . . At **Kopperhead Productions** in North Canton, OH, the **Wood Brothers** bluegrass group completed an album produced by **Ricky Wood** and engineered by **George Payne**. . . At **Phase One Stu-**

**dios** in Scarborough, Ontario, **Glass Tiger** completed mixes for their new Capitol LP. **Jim Vallance** produced, while **Ed Thacker** engineered. . . The new album by the jazz trio **Mothra** was recorded entirely at **Acme Audio** in Chicago, with **Mike Rasfeld** engineering. . . Rocker **Dawn LaRue** produced a new record project for her band, **LaRue**, at **Paragon Studios** in Chicago. . . **Michelle & Murray Allen** of Universal Recording in Chicago went to the USSR with **DePaul University**'s giant wind ensemble to record concerts in Moscow and Leningrad utilizing a prototype Sony DAT recorder. . . At **Sparrow Sound Design** in Chicago, local singer-songwriter **Jeff Deutsch** recorded four original tunes with an all-star line-up. . . At **Opus Recording** in Gurnee, IL, producer **Eric Greif** completed the debut release of the thrash band **Acrophet**. **Alan Pangellinan** was behind the board. . . Producer/arranger **Tom Tom 99** was in at **Tone Zone** in Chicago with R&B artists **Blue Silk**. **Roger Heiss** was at the console. . . Hard rockers **Synergy** cut four songs with engineer **Mike Konopka** and second **Tracy Stojak** at **Seagrape Recording** in Chicago. . . At **TRC Studios** in Indianapolis, **John Fogerty** produced the new album by **Duke Tumatote & the Power Trio**. **Alan Johnson** engineered the band's live recordings, made in three Midwest cities. . .

## NORTHWEST

San Francisco Bay Area songwriter/guitarist **Steve Kirk**'s band, **A Is A**, finished a four-song demo for Walter Becker at **The Source** studios in Oakland. **Robert Farwell** engineered and co-produced with Kirk. . . At **Ironwood Studio** in Seattle, engineer **Jay Follette** and producer **Steve Adamak** worked with the band **Memphis Movement**. . . The **Recording Studio** in Sunnyvale, CA, completed a compact disc and video project for the



# Sound Assets.

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"The Neve 8232 works so well we bought a second one! We do a little bit of everything here — country, pop, gospel and jingles. The Neve works equally well with all applications. The 8232's powerful equalizer is up to the most demanding tasks. Its speed and general productivity has definitely benefitted us. Other consoles are toys in comparison."

**Gene Lawson**  
Owner  
The Reflections Studios, Nashville, Tn

With digital control, the 82 Series offers storage and instant reset of output assignments. It incorporates Neve's renowned Formant Spectrum Equalization characteristics, 32 or 48 channel mainframe, 6 effects and 2 programmable mutes, and uses the most up-to-date integrated circuit technology.

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*Neve 8232 Console-Soundwave, Washington D.C.*

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# SILENCE I





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band **Giraffe**... **Autobahn** has finished work on an EP at **Triad Studios** in Redmond, WA, with **Tom Hall** producing... **Terry Date** mixed a single by rapper **Sir Mix Alot** at **Steve Lawson Productions** in Seattle... **J.W. Sparrow** has been recording his second album at **OMB Studio** in Port Orchard, WA. **Rob Folsom** is engineering... **Crow Recording Studio** in Seattle handled the live digital sessions for **Frishberg & Dorough** at Jazz Alley...

## SOUTHWEST

At **White Rose Studio** in Edmond, OK, **The Blades** finished recording the theme music for the nationally syndicated teen dance show, *Rock and Roll and Then Some*... The Dallas group **Red Sky**, led by **Goodnight Dallas Studios'** **Ruben Ayala** and **Tim Osbourn**, completed recording and mixing of a satirical single called "God Don't Live in a TV Set" at that studio, with Ayala at the helm... The Texas-based **Midcom** remote truck went to New Orleans to assist in the production of an episode of the *Dolly!* show. **Mike Simpson** and **Jeff Jones** handled the 24-track recording of acts like **Dr. John**, **Irma Thomas**, and, of course, **Dolly Parton**... **Scott O'Reilly** cut his new song, "Money Hungry," at **Planet Dallas** with **Patrick Keel** producing and **Rick Rooney** engineering... At **Cave Productions** in Prescott, AZ, production was completed on **Adrianne Harris'** first single, with **John Wilson** at the console, assisted by **Joe Robertson**...

## SOUTHERN CAL

The **Robert Cray** band did tracking and overdubbing for their new album at **Sunset Sound** in Hollywood. **Bruce Bromberg** and **Dennis Walker** produced, with **Bill Dashiell** engineering, assisted by **Mike Kloster**... **Jermaine Jackson** worked on overdubs for his next Arista album at **The Village Recorder** in Los Angeles, producer **Preston Glass** and engineer **Maureen Droney**, assisted by **Charlie Brocco**... At **Elumba Recording** in L.A., producer **L.A. Reid** and **Babyface** cut a song with **Sheena Easton** for *Miami Vice* (and Easton's next LP)... At **Genetic Music** in North Hollywood, **Joe Sample** worked on his new Warner Bros. LP with producer **Tommy LiPuma** and engineer **Richard Rosing**... **Dennis Seaton** of Musical Youth was in at **Sound Image** (No. Hollywood) cutting with pro-

ducer **Stan Sheppard** and engineer **Conley Abrams**... **WASP** finished recording basic tracks for their next album at **Skyline Recording** in Topanga Park... **Raymond Jones** and **Sammi McKinney** were at **Pacificque Recording Studio** in North Hollywood laying vocal tracks on a project by **Deserei Coleman**. **Hal Swimmer** engineered, with Jones producing... **Stanley Clarke** cut tracks for his new CBS LP at **West Oak Recorders** in Westlake Village... At **Amigo Studios** in North Hollywood, **Roger** was in working on tracks with **Shirley Murdock**. **Terry Dunovan** and **Conley Abrams** engineered... Producers **Leon Sylvers** and **John Lloyd** were in at **Larrabee** in L.A. mixing tunes for **Five Star**. **Taavi Mote** engineered, assisted by **Liz Cluse**... **NRG Recording Services** in North Hollywood handled **Wall of Voodoo's** new live album... **Peter Cetera** was in L.A.'s **Skip Saylor Recording** mixing his new LP. **Pat Leonard** produced, with engineering by **Brian Malouf**, assisted by **Pat MacDougall**... Yes, that is, in fact, **The Bushpigs** cutting an EP at **Hit City West** in L.A. with producer **Alan Harris** and engineer **Kevin O'Connor**, assisted by **Richard Schweitzer**.

## SOUTHEAST

**Johnny Cash** started work on his second PolyGram album at Nashville's **Cowboy Arms Hotel & Recording Spa** with **Cowboy Jack Clement** producing, **Rich Adler** and **Dave Ferguson** engineering, assisted by **Tom Skenker**. Guests on the sessions include Emmylou Harris, Waylon Jennings, Rosanne Cash and Hank Williams, Jr... Producer **Karen Edwards** worked with **Mark Williams** on vocals and remixes for R&B artist **James Ferrell** at **Reflection Sound** in Charlotte, NC... **The Regals** were in at **Mark Five/Sandcastle** in Greenville, SC, mixing a live album produced by **Eddie Howard**... **Scruffy the Cat** has been working on a new album at Memphis' **Ardent Recording**, with **Jim Dickinson** producing and **Paul Ebersold** engineering... **Ronnie McDowell** was in at **Soundshop Recording** in Nashville working with engineer **Mike Bradley** mixing his forthcoming Curb Records album... At **Lamon Sound Studios** in Charlotte, NC, the **Moody Brothers** finished up some tracks originally cut at **Mozarteum Studios** in Prague, Czechoslovakia. **David Moody** engineered... The **Bill Gather Vocal Band** worked on some tunes at the **Bennett House** in

Nashville with producer **Billy Smiley** and engineer **Bill Deaton**... Christian rockers **Alliance** put the finishing touches on their new album at **Strawberry Skys** in West Columbia, SC. Engineering were **Gary Bolton** and **Ron Hollis**... **Keith Richards** did some work on his forthcoming solo album at **Bermuda Sound** on that sunny Atlantic isle. **Don Smith** engineered, assisted by **Robert Berry**... The **Pet Shop Boys** cut a track for their new album at **International Sound** in North Miami Beach, with **Lewis Martinee** producing and engineering with **Mike Couzzi** and assistant **Cesar Sogbe**... **The Front** have been working on an album project at **Cotton Row** in Memphis under the direction of writer/producer/engineer **Nikos Lyras**... Samurai Records artist **Charles Christopher** was in at Ft. Lauderdale's **New River Studios** working on a new release with producer **Andrew Mossop**, engineer **Dave Barton** and mixer/editor **Bob Miro**... **Max Able** recorded his debut album for Sky Records at **Soundscape Studios** in Atlanta. **Rick Brown** produced and shared the engineering duties with **Edd Miller**, assisted by **Abbe Meyers**... **The Benzz** completed final mixes for their LP at **Polymusic Recording** in Birmingham, AL, with **William Brown** at the board... **Tanya Tucker** was in at the **Music Mill** in Nashville doing overdubs with producer **Jerry Crutchfield** and engineer **Paul Goldberg**.

## STUDIO NEWS

**Goodnight Dallas** has added a Sony 3324 multi-track, as well as a DAT recorder... **Music Grinder** in L.A. has installed a 48-input Neve 8108 console with GML automation... **Sunset Sound** in Hollywood has acquired an Otari DTR-900 digital recorder... **Preferred Sound** in Woodland Hills, CA, added a Trident Series 80 console to its second room... **Future Audio** in Dallas now has an Otari MTR-90 24-track... **Warner Hollywood** has put in its fourth Harrison PP-1 automated post-production console... Oingo Boingo leader **Danny Elfman** purchased a Soundcraft TS 12 console with 36 inputs for his home studio in the L.A. area... Maryland-based **Sheffield Audio-Video** has expanded its remote capabilities by purchasing a Neve 5104 sectional console... **Sound Images** in Cincinnati has opened a new MIDI synthesizer room, with the Kurzweil K250 sampling system leading the array of top equipment available. ■

by Stephen St. Croix

# A TRULY DIFFERENT DRUMMER

**D**rums are really big. In fact, it seems they get bigger every year. I have a nice set of custom-made solid birch Slings sitting in the middle of the drum room. There is no plywood used anywhere in their construction, just solid formed birch. They sound great, print very well, and I thought that I would keep them forever when I had them made many years ago.

I suppose it is a theoretical possibility that these drums are not actually gaining mass annually, but in fact my Official Reference Units are changing instead. I use drum machines as my ORU's. As these drum machines get more powerful and smaller, my Slings just keep on growing. Bigger and heavier every year.

I have a lot of these drum machines, in fact, way too many. Each time a new one came out sounding significantly better than the last one, I held the hope that it would allow me to actually print it in a final product (and nobody would ever know). It is this hope that I blame for my monster collection of drum machines, not my poor judgment or inability to resist a few new sampled sounds.

Every time I bring home the new best machine, I think this is the time I will finally be able to *replace* my mechanical, acoustic, hard-to-mic-and-walk-around, real drums. It never is. Until now.

I have about two months on my latest digital drummer, and I *still* think it sounds good. This is a record. Well,

almost: my first 8-bit Linn and Oberheim knocked my socks off for a year. I have discovered that by using two of these new machines together in very tricky ways (along with several other lesser machines for accents and other tricks), I *can*, for the first time, actually print fake drums that sound real!

I have a friend who cringes and scrambles for the radio channel button in her car every time she hears a drum machine on a song, screaming "drum machine" in much the same way Pee-wee Herman screams "salesman!" She won't come into the studio if a drum machine is on. She is the perfect test for my attempts to get a machine to sound live. I have been testing songs on her for a long time, always with the same results: "salesman!"

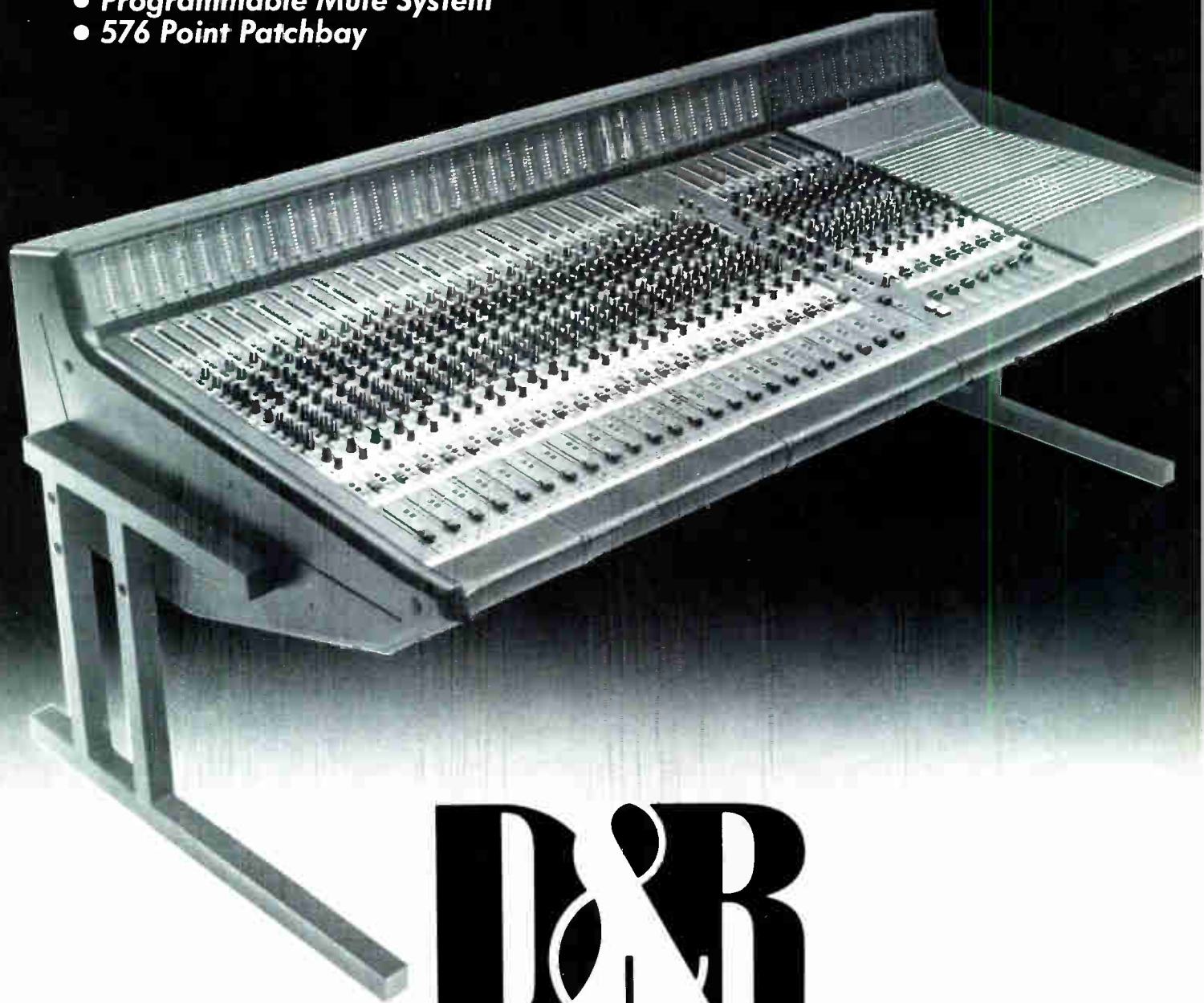
A month ago I did some tunes for an artist who came to the States with a 24-track analog tape, and a disk of all the synth and drum parts in MIDI, to be locked to the analog 24 and played directly to the digital master. I had just received a couple of the new Akai-Linn machines, and I thought this would be a good chance to give them a severe workout.

It was. Using some tricks I had been planning for years, we figured that we had actually gotten the track to sound live. We took a copy of it over to my drum machine friend, and, yes—she thought that it was real. The time had come. This is what I had been waiting for all these years. Finally I could get rid of the Slings (after extensive sam-



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## THE FAST LANE

pling to R-DAT for archive) and use the room they were in for, well, *something*, maybe a couple more of my favorite demolition-ready guitar amps. I could always get the drums back out of the storage area if I really needed them.

But wait, that's not really my point, that's not what I meant to say. I was just warming up, spinning my wheels. What I really meant to say was, now that the Slings are on vacation, why is it still taking me a lot of time to get the drum sounds I want, and perhaps more importantly, how come the little digital drummers rushed in and managed to totally fill the huge space left by the departed Slings? How do I explain this to the amp company that is working so hard to build me those killer stacks?

Now I know it *can* be done. It takes careful planning, a reasonable understanding of what makes real drum playing *sound* like real drum playing, and new technology and tricks to make the machines sound like the drum playing is actually on real drums.

By switching to these MIDI drum machines under SMPTE time code lock, I have gained complete true fix-it-in-the-mix performance and sound editability, total repeatability and amazing power to modify after the fact. I offer the following as an example of how we used (abused?) this new-found cosmic power.

We wanted to tighten up the attack of the bass guitar using the old trick of timing a solid kick drum so it falls exactly on the pick of those certain magic boogie notes. The recorded bass was not tight at all—in fact it was a bit sloppy. It would not have been too cool to trigger the kick from the bass, and the bass, being real (you know, an actual acoustic recording on real analog tape), could not be triggered by the kick.

We multi-sampled the bass, built a voice that consisted of essentially the attack, then fired the attack samples from a slightly tightened-up version of the kick from the original live to MIDI performance (brought over on disk). These attacks were then mixed with

the recorded bass track, and a soft, slow opening gate was applied to the original bass to remove all the variably placed attacks. The gate was timed to match the decay of the sampled attacks. This worked perfectly, and it sounded like the bass player had been working with the drummer for 15 years. Actually they have never met, nor for that matter has the drummer ever even heard the drums that he finally ended up playing. Well, come to think of it, the drums didn't even *exist* when he actually played them.

OK, so you see what I am trying to say; all this power is great fun, and invaluable in production. True, it is another case of technology moving ever sideways, but as long as the check comes... a little more power, a little less music; that's the way to do it. Oh, well.

Now to the real point, the point I was trying to make. Forget all that other stuff, I was just testing to see if you were reading carefully.

With all of these drum machines locked together, working so hard to make the tune hot, how many of them do you think were actually loaded with sequences? Right. None. There is no really cool way to copy sequences from machine to machine. Even if there were, each machine has a totally different system of editing the data once it's in there. While there is a real advantage to having each machine running its own sequence (better MIDI timing, less choking), it takes only three or so machines before you realize that you are not interested in learning each editing system.

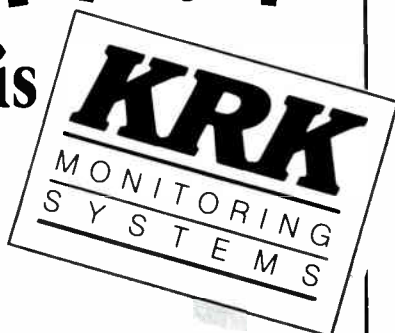
Why learn three different ways to extract accents from the recorded velocity information so you can switch to a slightly modified sample of the same snare for a more realistic end result? Why learn three ways to insert one-and-a-quarter bars when you edit a new trick bridge? What if you have nine machines, or 14, with a total of ten different operating systems? OOC (Out Of Control).

Not a single one of my many drum-droids has ever had a byte of sequence in them, other than the factory examples (and say, boys and girls, how *about* them factory examples)?

I know that a lot of you fill each machine with famous drum patterns, some looped, some not. (You *must*, since they all have such elaborate sequencers.) Linn and some others even

# The Industry Is Asking Who The !\*?#!\*?

is



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make versions of their drum machines without any drum samples inside—only the sequencer sections remain.

What about guys like me? I score directly into a MIDI recorder/editor on a Mac, and sometimes I transfer the drum parts into a special drum editing package in another Mac, tie the two together, and simply push START. I use a Jam Box, so I can get all the MIDI channels out that I want without the dreaded choking. I figure that I have saved at least two years of my time by having to learn only one MIDI recorder/editor, so I can take a one-year vacation in the island sun and *still* come out ahead.

But somehow it seems that I keep on opening packages and finding drum machines with sequencers in them. This redundancy is not only expensive, it uses up a lot of space. When are we going to be able to get high-quality drum machines or add on modules with reasonable pricing and without another sequencer?

The drum part of the drum machine is actually pretty simple. A good drum machine should be 18-bit with a 705.6

kHz (16 times oversampled) input/output structure. Think of it; with that kind of oversampling (available today, by the way), the entire output filter would consist of one 6-cent capacitor casually laying across the output connector!

OK, OK, let's settle for 12- to 16-bit, 44.1 to 48 kHz. It should have separate outputs for each drum, a *lot* of sample memory so cymbals can sound right, and a choice of retrigger or overlap playback for every output. Furthermore it should have the capacity to respond to MIDI tuning data in a way that counts, for each note in real time (no *problem*).

An SCSI interface is mandatory, as these huge samples cannot be remembered in battery-backed static RAM at realistic prices. RS-232 is needed so the cool third-party software guys can make Mac editors with pretty on-screen waveforms for editing. There are 20 other important features that it would really need to satisfy the requirements of my concept of a properly done machine, but that is for another time.

Where would all the money come from to make this dream machine and still keep its price and size realistic? Simple: leave out the complicated sequencer/editor along with all its expensive knobs and buttons, all that panel area and the specially encrypted 200-page sequencer instruction book.

Add good velocity, envelope-and-velocity-modified pitch bend, and perhaps attack crossfades, and you have it: the drum machine I look for every time I go into a music store.

Being forced to wallow in this redundancy just to add a bit more power to my studio is not my favorite way to spend studio bucks.

Well, it is a full month until I write my next column, and I'll probably be calmed down by then. ■

*Stephen St. Croix has been with Mix for a few months now, and we are learning that he is almost always right. This was confirmed by the statement he made shortly after he tried to plug an S/PDIF output into an AES/EBU input: "I thought I was doing it wrong; and I was right, I was wrong."*

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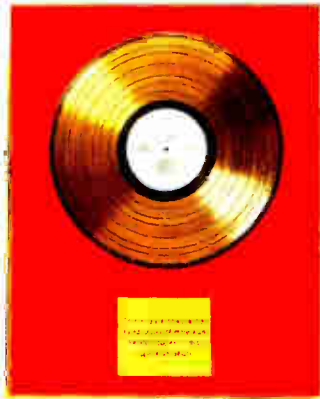
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by Ken Pohlmann

# THE TECHNOLOGY GAP

W

hile you were busy completing your new, simplified 1987 tax returns, mandated by the Tax Reform and Total Employment of Accountants Everywhere Act of 1986, consumer audio technology suddenly got a little better. Normally, that wouldn't be nearly as worrying as the stock market crash, the trade deficit, the federal budget deficit, the trouble in Latin America, the Middle East, and South Africa, and George Bush for president. But the simple truth is that the gap between consumer and professional audio technology, like 'most everything else today, has gotten out of hand. And it isn't a case of professional gear surpassing that of the consumer, but rather the consumer variety putting the pro stuff to absolute, utter shame. As with many other dilemmas, there are simple reasons for this, and the trend seems inevitable, and irreversible. Let's consider why the electronics on sale in Crazy Eddie's can perform better and sound better than that in the best professional rooms.

The last few months saw a series of improvements in digital audio electronics which clearly signal a new generation in consumer audio. New model compact disc players embody these changes and they measure and sound clearly superior to previous models. Perhaps the most significant improvement came with the introduction of full 18-bit D/A converters. Quasi-18-bit switching systems, in which the data stream is bit-shifted through 16-bit con-

verters and corresponding amplitude control to achieve superior quantization performance, have been around since late summer. While a mild improvement over many straight 16-bit systems, they were clearly a transition technology.

Now, full 18-bit D/A converters (such as the Burr Brown PCM-64P) are used in numerous models. Those two extra bits make a big difference; whereas a 16-bit converter offers 65,536 possible quantization levels, an 18-bit converter offers 262,144 levels. From a specification standpoint, the improvement is startling; with 18-bit D/A converters, the theoretical S/N ratio is improved

The gap between consumer and professional audio technology has gotten out of hand—the consumer variety is putting the pro stuff to absolute, utter shame. The trend seems inevitable and irreversible.

by about 12 dB, which drops the S/N to a theoretical value of 110.12 dB. Their measured performance is staggering; for example, using test frequencies below 5 kHz, the D/A can produce THD numbers below -100 dB.

The design of 18-bit converters requires careful attention to thermal properties of the circuitry—previously a secondary consideration. Because of the relative tolerances (1 to 2 parts per million), extremely stable temperature control, with consistent temperatures across the device, is required. Burr Brown has attained this by carefully compartmentalizing the higher and lower order bits and isolating the converter's resistor network from the heat of reference sources, current to voltage conversion, and current source transistors. It is an example of sophisticated engineering enabled by the vast profit rewards of the consumer marketplace.

Of course, CDs and DAT sources are still encoded at 16-bit quantization (the new chip sets provide an 18-bit data stream from the oversampling filter), but the use of 18-bit converters is significant because, quite simply, a 16-bit D/A converter rarely, if ever, provides a full 16 bits' worth of linear conversion. As Lipshitz and Vanderkooy discovered in a recent survey of CD players, and presented at the Paris AES convention, many of the 16-bit converters used in consumer equipment yield less than 16 bits' worth of accuracy. With 18-bit converters this problem can be largely overcome, hence the full 16-bit signal can be linearly converted. Although Lipshitz and Vanderkooy rightly criticized manufacturers of consumer players for their neglect, even the sloppy construction sometimes found in consumer-grade equipment will not be so compromised with the introduction of 18-bit converters. Meanwhile, even carefully made professional gear, still using 16-bit converters, may not achieve the same grade of linearity. Although many consumer players indeed underperform professional digital equipment, it is troubling that a well-designed \$500 CD player may have better reproduction specifications than a costly studio recorder.

Another significant improvement in consumer electronics came with an increase in the oversampling rate in digital output filters. Because sampling is essentially a modulation process,

one consequence of sampling is the creation of sideband image spectra placed at multiples of the sampling frequency. Thus a 44.1 kHz sampling system, such as found in CD, DAT and professional gear, generates images at 44.1, 88.2, 132.2, 176.4 kHz, etc. The images must be removed with filtering. Many early-generation CD players used brickwall analog filters which provide the necessary filtering, but introduce group distortion and other possibly audible artifacts. Manufacturers quickly moved to two-times and four-times oversampling circuits. In these systems, the number of samples is increased through interpolation, the output sampling rate is multiplied, hence the placement of the images is shifted. For example, in a two-times system, the first image is now located at 88.2 kHz. Thus a lower-order analog filter can remove the images, with less introduced artifacts.

Now, consumer manufacturers have introduced eight-times oversampling chip sets. With eight-times oversampling, the first image spectra is moved to 352.8 kHz, thus only a very mild analog filter is required. In addition, because seven new samples are created for every original sample, the density of samples can permit more linear D/A conversion in some designs. In one new eight-times, 18-bit output filter chip (the Sony CXD-1144), the digital filter calculates to the 293rd order, compared to current filters calculating to perhaps the 96th order. The additional calculations increase filter accuracy, increasing flatness of the filter's audio band, and cut-off of the stop band. Specifically, ripple is reduced to .00001 dB and attenuation is 120 dB or greater. This is unprecedented. Not contented, consumer manufacturers are already hinting at 16- and even 64-times oversampling designs. Meanwhile, many professional recorders continue to use analog brickwall filters, albeit of high quality to minimize artifacts.

The mere fact that consumer equipment has moved to high oversampling rates does not necessarily indicate superior performance; other considerations such as the kinds of compromises often found in consumer-grade equipment can nullify any advantages. But this is another example of how the larger, more profitable consumer market can more easily stimulate the development of new technology, while professional manufacturers must con-

tinue to utilize older hardware.

At the input to a digitization system, an anti-aliasing filter is required to remove frequency components beyond the Nyquist frequency. Normally, a brickwall analog filter is used to perform this function, again with the side effects of group delay, etc. Through pioneering work by Robert Adams at dbx and others, oversampling A/D converters have been developed. They yield the same advantages of output oversampling filters, with a higher plane of importance: all recordings made through this input side are free of artifacts, instead of just the output signal reproduced through the playback side. This is of paramount importance to professional manufacturers, makers of master source material.

However, it is consumer manufacturers who have moved to implement these oversampling A/D converters. For example, Technics has shown a portable DAT recorder (the SV-MD1) with oversampling A/D converters. Named MASH (acronym for multi-stage noise shaping), this A/D multiplies the sampling frequency 64 times, thus only a gentle analog low-pass filter is required, cutting at a high frequency (instead of a brickwall variety cutting at a much lower frequency). Hence, group delay distortion is said to be negligible. Subsequent digital filtering and processing reduce the sampling rate to 48 kHz. A pair of these MN 86081s are used so there is no interchannel phase difference recorded to tape. There is also an oversampling filter on the output side. To my knowledge, no professional recorder makes use of an oversampling A/D architecture.

DAT itself, incidentally, is an example of how the consumer market can evolve sophisticated products which would be too costly when built to the limited demands of the professional audio community. More on that later.

Other technological improvements abound in consumer digital audio. A look inside a current model CD player reveals tremendous attention to detail: the chassis may be of honeycomb construction, of plastic resin and calcium carbonate, reinforced with fiberglass, to minimize effects attributed to vibration. Immediately inside the chassis there may be a second, copper-plated chassis which completely encloses the player; this provides total RF and magnetic shielding. The player may be mounted on a tri-composite base with



vibration-absorbing material sandwiched between copper and steel sheets—so-called “silent steel.”

The disc transport linear motor may be mounted on an aluminum die-cast base for rigidity, which in turn is mounted on a high viscosity gel-filled dual suspension system for isolation. The disc drawer may be acoustically sealed with rubber bushings to maintain constant sound pressure inside the tray cavity and hence minimize tracking problems.

The power supply may use dual transformers mounted in separate chassis compartments, isolated from circuitry by copper-plated double walls. The drawer motor assembly would be similarly isolated. In addition, separate analog and digital circuit boards would be used. Wire harness openings from one stage to another would be sealed to prevent any transmission of vibration or electrical interference. All circuit boards would be laid out to minimize changes in capacitance (with respect to temperature, humidity, etc.) between the foil patterns. Up to seven sandwiched foil layers may be employed to maximize component density. Are design considerations such as transport vibration

really important with respect to digital audio sound quality? No one knows for sure. Yet it is the consumer manufacturers, not professional, who have vigorously pursued these and other design criteria, with an open mind.

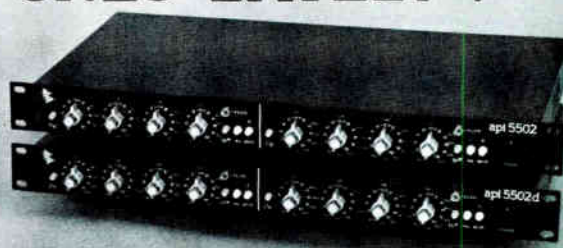
Ironically, it is consumer audio products which have more quickly embraced the AES/EBU serial transmission format. Now most good-quality CD players have the format, in coax or optical form, or both. This type of transmission path is ideal because it isolates one stage from another, with no common ground. This eliminates the possibility of transmitting hum or noise to an external analog converter. In addition, high frequency response remains unaffected by transmission conditions.

To compare a current-generation professional digital audio tape recorder with a current generation consumer CD player, on the test bench, or in the listening room, is a startling experience. It is as if an old technology were being pitted against a new one. And that is precisely the case. The development time for a consumer product, from inception to dealer delivery, is perhaps six months. On the other hand, many professional products sold

today may have changed little over a three-year period. Quite simply, consumer audio enjoys the benefit that only the massed resources brought to bear on a problem can provide. Large engineering staffs, free to specify development of integrated circuits and other special hardware, are able to quickly bring the newest technology to market. Indeed, consumer audio is so competitive that only the newest technology can survive. On the other hand, professional audio companies can often only bring smaller resources to work on a problem, to manufacture very limited quantities of product.

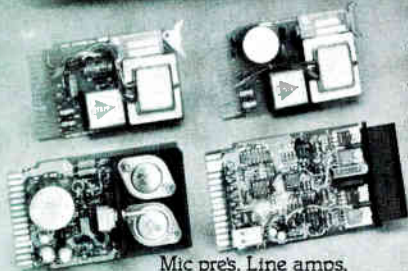
Whereas a consumer company measures its product sales in terms of hundreds of thousands, a professional manufacturer might measure its sales in hundreds. Because of that difference in manufacturing scale, the many advantages of mass production, such as integrated circuit fabrication, are vastly more cost-efficient to the consumer manufacturer. In addition, the professional manufacturer faces numerous problems not experienced by the consumer counterpart. For example, a professional product must be built to withstand years of continuous use, enduring the most violent envi-

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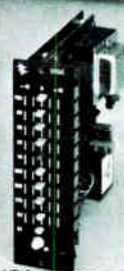
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ronments and signal conditions. Whereas a consumer loudspeaker must only sound pleasing, a professional loudspeaker must be able to play at the highest possible sound pressure levels, and suffer minimal driver damage over a period of time. As a result, sound quality is not always the highest design priority to the professional manufacturer.

By the same token, whereas consumer digital audio products are designed to reproduce the highest sound quality with the latest available tech-

nology, professional equipment is often designed with older, more mature technology, which is more widely available. In that way, the cost of stocking spare parts for the professional user is reduced.

The paradox is clearly defined. Contemporary consumer audio electronics tend to be of higher sonic quality, compared to professional equipment. The limiting factor in the quality of recorded music is thus, more and more, the equipment of the professional recordist. A vicious circle can be created. As professional equipment evolves to meet the sophistication of consumer equipment, using more and

more specialized hardware, the cost of professional equipment rises dramatically. As a result, the number of studios able to afford the purchase of the equipment decreases. This is already clearly in evidence. For example, in Mix Publications' survey of studios last year, only 2.4% of the studios queried owned a digital multi-track recorder—the staple piece of equipment of music recording. Moreover, a full 80.6% reported that they owned no digital recorder of any kind. Soon, more households will have digital audio equipment than professional studios.

And the technology gap appears to be widening. In the past, new technology was developed for professional applications, and trickled down to the consumer. Today the reverse is true. Digital audio is a technology of integrated circuits, and chip sets are economically manufactured only in large quantities—the kind of volume with which only the consumer market is blessed. Thus it is clear that the newest technology will appear in chips designed for the consumer market. Only then will the technology trickle down to the professional level.

This is not to suggest that professional audio manufacturers are primitive or noncompetitive. On the contrary, it is easy to see that contemporary digital audio workstations, signal processing equipment, recorders, and consoles employ highly sophisticated hardware and software to accomplish their specialized tasks. However, in the future it will be increasingly important for these professional manufacturers to stay tuned to developments in consumer technology, and maintain access to that technology. Surely in the future the most profitable professional manufacturers will be those who are most efficient at utilizing chips and other technology from consumer manufacturers, as well as off-the-shelf hardware from the computer industry. Otherwise, the cost of reinventing the wheel (which is less round than those already available) could be disastrously high. Only the military can afford that, thanks to conscientious taxpayers like you. ■

*Ken Pohlmann is an associate professor of music and heads the music engineering program at the University of Miami in Coral Gables. He is author of Principles of Digital Audio and The Compact Disc Handbook, and a consultant to the digital audio industry.*

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by Mel Lambert

# LIVE SOUND IS CHANGING

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**I**n this age of increasing audio specialization, there are a good number of engineering and technical types who have earned an enviable reputation for themselves as live sound mixers. Such individuals are to be found behind the house or monitor console at large arena dates, or riding levels in the sound control booth at smaller clubs and classical music venues.

There's no denying that live mixers, by the very nature of their chosen profession, operate under a unique set of circumstances—like trying to provide a consistent, high-quality sound in environments that are far from ideal, and which might encompass in the space of a week on the road anything from a 40,000-seat outdoor amphitheater to a small rock and roll club with “interesting” acoustics.

But they have a lot more in common with fixed-base engineers that might at first seem to be the case.

Not only has the quality of performance hardware gone through a series of massive improvements during the last half decade, we have also seen some major changes in the type of mixing hardware and peripherals we now take with us out on the road. Loudspeaker, amplifier and signal processing technologies have advanced to such a state that we can now achieve a quality of sound in live performance that rivals that of current-generation control rooms—provided, of course, that we assemble the hardware and operate it with a semblance of intelligence.

Sure, we still have to come to terms with making a live mix sound intelli-

*Loudspeaker, amplifier and  
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## JUXTAPOSITIONS

gible in particularly problematic environments. And although microprocessor-controlled systems using high-resolution parametric EQ can be extremely useful tools for automatically adjusting overall frequency response (as the ambient temperature and audience size affect a sound system's propagation characteristics), we still need to investigate ways of analyzing and then adjusting their time-domain response.

It cannot be long before we have within our signal processing arsenal devices that will allow us to at least reduce, if not completely eliminate,

some reverberation and ambience problems from larger halls and bright-sounding rooms. (It goes without saying that we should continue to encourage venue operators and designers of new performance halls to consider the acoustics of such spaces, and at least offer the visiting or permanent engineer some way of controlling—using absorbent screens and panels, for example, or by electronic means—a reverberant soundfield.)

After all, let's not forget what we are trying to achieve when handling sound mixing during a live performance. Rock concert audiences expect a band or soloist to sound reasonably

similar to the way they do on vinyl, cassette, CD and prerecorded R-DAT. As long as the band's studio engineer has kept a reasonable set of notes on the reverb and processing used on the album, and the live engineer has been granted sufficient time prior to the tour to work out some means of dialing up the appropriate settings between songs, there's a better than average chance that the material will resemble the way it sounded on the commercial release.

Even if we don't choose to mix the song with the same amount of dynamic range as the CD, it can still work for the assembled throng. (By the way, have you ever powered up an SPL meter and checked the sound level of an audience in full cry during an encore? Attempting to add anything less than a tightly compressed track above that cacophony would really cause some severe hearing damage to the assembled throng. To say nothing of pushing the available technology close to or beyond its overload point.)

To duplicate the kind of processing used on commercial releases—and, for classical and jazz releases, the types of miking and stereo balances—it makes sense for live engineers to cultivate a close liaison with studio engineers and facility owners. Regular visits to multi-track studios provide valuable insight into the kind of hardware and recording environments being used to track contemporary releases, and is also an extremely useful way of gaining information about the techniques being used to add unique textures and ear-grabbing sonics. It's one thing to know what compressors, limiters, equalizers and reverbs were utilized on a particular track, but quite another to understand the rationale behind their being used in a specific way. By establishing a viable and ongoing dialog with studio staff, live engineers can hopefully keep themselves up to date with such processing ideas.

A case in point: I recall a conversation a few years ago with a leading house sound engineer who, at the time, was working on the road with an English band. He was commenting about a particular ambience change the studio engineer had used on the album—in essence, a crossfade lasting about ten seconds from an extremely tight, close-miked vocal and rhythm mix, to an orchestral-based, exterior-type ambience. His first at-

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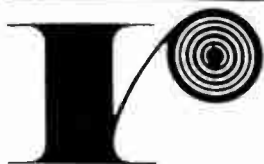


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tempt at using two sophisticated digital reverbs—one for each sonic atmosphere—had worked to a certain degree, although the timing from performance to performance left something to be desired, as did the degree of level control he had available during the manual segue from one ambience to the other. (We'll assume that the console provided for the tour by a well-known sound company had sufficient inputs and effect-bus routing to allow such processing to be set up in the first place.)

The bottom line, on this tour at

least, was for an outboard VCA-based mixer to be connected across the appropriate channel insert points and effects return buses. Then, using a linear stereo fader with 5 volts across its dual tracks—and some rewiring of the VCA control-voltage ports—the engineer was able to crossfade from one mix to another on cue, night after night.

What he still lacked, of course, was some means of effecting the change on a timing cue. These days, a conventional sequencer can provide a similar degree of control for outboard MIDI-based mixers and processing gear. Even if certain segments of a

performance do not involve MIDI sequences enabled from the stage—which could then provide the engineer with a precise source of synchronization for level and processing changes—there is no reason why a free-running sequence cannot be set up on a portable PC at the mix position.

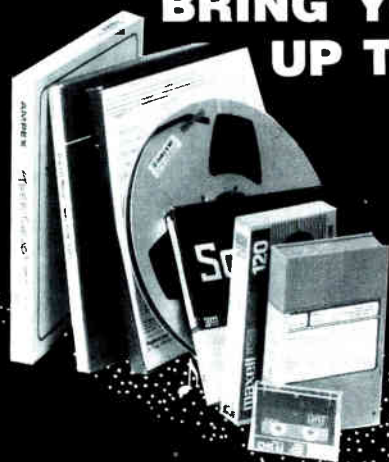
In its simplest form, the ability to step through various MIDI-controlled EQ, reverb, compression and level settings at the press of a key can free up our prehensile digits for more demanding duties—such as fine tuning levels during a complex harmony mix to bring out every nuance of the performance, as well as controlling the band/vocal balance.

Now that an increasing number of console manufacturers are offering automation systems for performance consoles, the integration of VCA-based or moving-fader level and mute control with serial control of effects devices cannot be far away. (After all, it is precisely the kind of integrated control schemes we are beginning to see in recording and production facilities.) As long as we remember that the kind of level and processing changes we need to make in live performance are not necessarily related to a timing reference that remains consistent from concert date to concert date—a constraint that slightly complicates the synchronization schemes we can utilize—the types of sound textures available to the live-sound engineer should prove practically limitless.

As is the case with the majority of audio tasks we are faced with these days, production and sound engineers need to be more efficient at what they do. The ability to handle sessions or concert dates more quickly and efficiently is the name of the game. In that respect, this age of increasing specialization is resulting in similar tools being made available for just about every type of audio task we might need to face both in recording studios and out on the road handling live sound. ■

*Mel Lambert has been intimately involved in the pro audio industry—on both sides of the Atlantic—for the past decade. Formerly editor of Recording Engineer/Producer magazine, he currently is a partner in the Marcus\* Lambert PR firm, and the president of Media & Marketing, a consultancy service for the pro audio industry.*

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# THINGS THAT GO HUM IN THE NIGHT



## Remote Engineers Discuss Grounding and Electrical Problems

by Paul Potyen

While the subject of grounding holds relatively little glamour in this day and age of fast-moving developments in digital recording technology, its importance is undeniable. In fact, digital technology demands that even more attention be paid to minimizing system noise, whatever the cause. And ground noise has been a classic culprit.

Ever since the beginning of live remote recording, the ground loop has been bent on spoiling the best-planned recording session. Many hours have been devoted to developing gadgets and gizmos that outfox this noisy gremlin. And according to several of the top remote engineers in the country, it looks like they're finally succeeding.

**Phil Edwards, PER  
Hayward, CA**

Phil Edwards has been doing remote recordings from his own vehicle for more than nine years. He's engineered live recordings from his van for many Concord Jazz releases, as well as radio broadcasts and film production.

**Mix:** I understand that you were at the Calgary Winter Olympics in February. How was that?

**P.E.:** That was a unique experience. We were contracted by an outfit in Salt Lake City called Non-Stop Productions, who was the vendor for ABC to bring remote equipment up there. Non-Stop composed, orchestrated, recorded, mixed and laid back all original music for the televised highlight sections. It was done almost in real time. It was

not uncommon for us to do three pieces a day for broadcast later in the day. We set up our truck, opened up the back end, had some construction done, and put a battery of 15 synthesizers inside. We set up another room inside the building with identical equipment. One guy could be laying stuff down onto disk in the truck while the other was composing at the other workstation. We had 48 tracks locked to video in the building. [See "Music Notes" for more on Non-Stop's Olympics challenge.]

**Mix:** Were you faced with any unusual problems at the Winter Olympics?

**P.E.:** Almost everything was synthesized, and there were no splits anywhere. The biggest problem was in setting up a lot of mismatched gear. We had about 30 devices down-feeding into the console, most of which were less than line level; some were mic level. Some worked with a floating ground, half of them were unbalanced and some were the wrong level. So we had to make adjustments for that without spending a lot of bucks on line-level, balanced, matching amplifiers for all that equipment. That's a whole grounding scheme in itself, and I don't profess to be an expert on why some pieces work and some don't. At Calgary we spent about a day tracking down hum problems resulting from hooking up all of these different pieces. We also made use of the interview room that ABC used for recording acoustic music. We ran a 27-pair down there with a Clear-Com [intercom system] and there were no problems with any of that. We ran a 25-pair (sending and receiving) for our mixed signal to ABC's audio layover. ABC had a system where everything ran to a master control consisting of four container vehicles. So to pick up VTR 83 in editing suite #7, I could just dial that up. That was true of the video as well. There were never any grounding problems with that setup. It was very fastidiously put together. Their basic scheme was: the signal sender completes ground at his end, and the signal receiver disconnects ground at his end.

**Mix:** How do the more typical remotes

**Photo:** The Record Plant remote truck is equipped with a Sony 1630 2-track and two 3324 24-track recorders. Kooster McAllister is director of remote recording.





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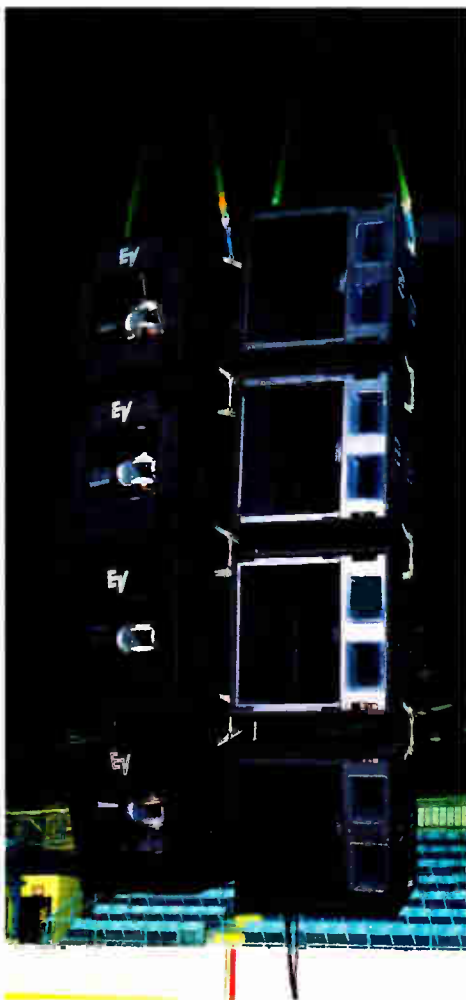
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differ from the one at Calgary?

**P.E.:** Any time you're working in a venue with a lot of equipment spread out over the hall, the cardinal rule in wiring is to have everybody tie in at the same point. If you're working with a single-phase, 110-volt system, you want to tie in on the same leg. Usually you're going in on a dual-phase or a three-phase 220 system, so you want everyone to be on the same phase. You try to stay away from lights, which can be a problem. Sometimes lights can throw a lot of trash down the neutral or ground of the power. We try to stay on a separate transformer from the lights to take care of that. Also, depending on what type of system they're using, the dimmers can generate huge RF fields. At the Bammies they must have had a thousand instruments, and one lighting change created hash everywhere. The audience mics were especially sensitive to this, because they were going through about 900 feet of cable. The lighting guy was kind enough to go through every single one of his cues, and we found the problem in one light. He disconnected it, and the whole show ran perfectly clean. Last night with Icehouse at the Warfield Theater, we had that same problem. That one we couldn't get rid of. There was no time.

**Mix:** Could you determine the source of the problem?

**P.E.:** Well, it was two things. One was lights, and whenever there was a white wash, RF was generated somewhere. The other was, this was an Australian group that had 220-volt equipment, and the bass had a strange setup with some equipment that ran off 110 and some that was 220 running to the transformer, and he was generating noise right from his rack. His stuff was also very sensitive to the light changes, and we never could figure out what was generating the RF. We had to gate him a little bit.

**Mix:** At what point in the path did you gate it?

**P.E.:** We put some false limiting on it and then put the gate after the limiter just before it comes up to the attenuator. Actually it wasn't a horrible problem, just annoying, and I doubt if anyone listening on the radio could hear it.

Let me say this about grounding in general: you go in with a game plan, and be ready with several stand-by options in case plan A doesn't do it. Often



Phil Edwards of P.E.R. in the San Francisco Bay Area.

we'll tie in a ground, but because signals run through thousands of feet, it's very easy to develop a loop, so we'll often float the truck, or the P.A. will float at some point. Usually we'll establish ground in the mixing position and everything else fans out and floats ground at their point.

#### **Kooster McAllister, Record Plant NYC**

As director of remote recording for New York City's Record Plant, Kooster McAllister has provided audio for Live Aid, Farm Aid, Stevie Wonder, Billy Joel and countless other national acts. The facility handles sound for video and film, as well as for live satellite broadcasts.

**Mix:** What common problems do you encounter when you do remote?

**K.M.:** In most of the arenas these days, the professional touring companies pretty much have it together, as far as interfacing with the P.A. Nobody freaks out if you want to go on the same leg as the P.A., because they understand that will help minimize ground loop problems. The problems I run into now are when doing a shoot that involves video in addition to audio. A lot of times they're very careful about putting us on the same side as the P.A., but they don't do that with the video. They put video on its own transformer and either it will be totally clean between us and stage, and dirty between us and video, or vice versa depending on where they tie us in.

**Mix:** Why not put the video on the same leg as well?

**K.M.:** The major reason is that video trucks tend to draw a huge amount of power. They usually ask for three-phase, at least 200 amps-per-leg ser-

vice. A lot of times the P.A. companies are not willing to give them that, because it cuts out a significant amount of their headroom. One thing we have done is design a completely isolated patch bay for all our video-type functions: time code, vertical drive (if we're taking it), RTS [intercom] and our monitor feeds. We put monitor feeds through a video humbuck coil, which is a form of isolation. And we put all our sends to the video truck through our own transformer distribution amps. We use the API 325 cards. Basically any signals that go between the video truck and us are transformer-isolated in some way to keep our ground separate.

There's no fixed way of doing it. It varies from show to show, and you just have to come in and if you have a problem you say, "OK, what can we do?" A last resort with grounds is I can totally lift the electronic ground in my truck. It's on a switch, and if all else fails, that usually takes care of the problem.

**Mix:** What about dealing with individual instruments or amps that are dirty?

**K.M.:** Most people don't carry these, but I highly recommend individual AC isolation transformers. They're 120 volts in and 120 volts out; just a straight pass-through transformer. They're usually powerful enough to do a whole keyboard rack. That really is a miracle fixer. I'm surprised more people don't carry them.

**Mix:** What are some of your more recent remotes?

**K.M.:** We did the James Taylor special that was aired on PBS.

**Mix:** Did you have any significant problems setting up for that concert?

**K.M.:** It was fairly painless, at least partly because the P.A., the video truck and our truck all tied in at the same location. If you can do that, it eliminates 90% of your problems.

**John Ariosa,  
Sheffield Audio Video Productions  
Phoenix, MD**

The Sheffield remote crew specializes in digital recordings, and handles all kinds of venues, from rock and roll to classical. Recent dates include a Harry Chapin salute at Carnegie Hall which featured Bruce Springsteen, Pat Benatar, Paul Simon and the Smothers Brothers. According to engineer John Ariosa, in the past year the company has been recording a lot more classical and jazz, such as the National Symphony and a recent concert with Ella Fitzgerald and Oscar Peterson. Sheffield recently expanded its remote recording capability by purchasing a Neve 5104 sectional console.

**Mix:** What special steps have you taken to deal with remote grounding problems?

**J.A.:** When we built the truck, one of the primary factors we took into account was how to deal with the ground-

ing. We installed a 7.5 kW Liebert computer regulator that we carry on-board all the time. It runs everything aside from air conditioning and heating. All tech stuff including lights is on the Liebert. Short of no power, we have no problem. We've worked with extremely large P.A. systems to the point that they modulate the power line on bass notes, and the Liebert just doesn't care; it eats it all. We break ourselves entirely from the outside world. We take 208 or 240 volts, or whatever we can get, and we take a single-phase feed, no ground. That solves 99% of your problems right there. We've been fortunate, and we owe a lot of our good fortune to the Liebert. It takes in garbage and gives us pure, clean power.

**Mix:** Can you describe the Liebert?

**J.A.:** It's a fancy Solo transformer, as it were. This particular unit is called an Accommodate II, and they're available in a couple of different sizes. The 7.5 kW is the smallest one they make. That's plenty to handle the console power and the two Sony 3324s in our truck. It's got everything built into it. It's got lightning arresters; if we lose power, it disconnects us so we don't get spikes. It just regulates very well.

We've been able to record with this thing down 60-some volts.

**Mix:** How do you prefer to work with the P.A. companies on short-term remotes?

**J.A.:** It varies radically, depending on the show. For instance, if you're latching into a one-nighter with somebody like Barry Manilow, and they have this very complex stage with all their little sub boxes all over the place, it's not practical for us to take a first split.

**Mix:** So the more complex their setup is, the more likely you will take a split from them.

**J.A.:** Right. Whenever possible we try to get a first split, and give them our iso. We can control things better that way. If they're giving us a split and they've picked something up in front of us, there's nothing we can do about it.

**Mix:** Any special considerations when you do classical recording?

**J.A.:** The biggest problem is noise from air conditioning. When we work at the Kennedy Center, we get them to back down the motors on all the fans, because they make so much noise.

**John Moran,  
Digital Services Remotes,  
Houston**

Aside from his facility in Houston, owner John Moran offers a fully equipped remote truck. Digital Services Remotes has done remote audio for live satellite feeds and multi-track recording for records and video for many major clients.

**J.M.:** The number of grounding problems is directly proportional to the number of systems being tied together. If we do a simple remote where we establish our own power and there's no additional sound reinforcement, we rarely run into problems. If we do, it's usually a result of something funny with an old wiring system at the site. Our truck has been designed to work on 208 as well as 240 volts. We are switchable and we have three transformers in the system. We can distribute about 60 amps isolated. We can also separate our incoming technical power from our utility power and run either or both on 208 or 240. We start to see grounding problems when there is a video as well as an audio setup. What happens is that somebody will be on a different leg of the supply from the building. When you go to

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connect things, you'll find a potential between the two.

**Mix:** How do you fix that kind of problem?

**J.M.:** Generally, isolation transformers will do the trick. That's a Band-Aid, but a very effective one. Ideally if you have the time to check out things beforehand in technical pre-production meetings, you can try to implement a common ground system on location, like a star-type system. In theory, that's wonderful. In fact, nine times out of ten you have to isolate somewhere, because there's so much interaction.

**Mix:** Do you use individual isolating transformers?

**J.M.:** Yes. The stage box for the audio split is an individual transformer for each input that provides a direct output and two transformer-isolated outputs. Each of those transformer-isolated outputs has a switch that lets you lift the ground on that specific leg. You have to have the direct output to get phantom power through. We go on that leg nine times out of ten. Depending on the setup, we may take the transformer-isolated one just to give the truck that extra measure of isola-

tion during, say, an arena show, where everything is run from either the house or the monitor desk in terms of powering the mics and boxes on stage.

**Mix:** Do you use a transformerless console?

**J.M.:** Yes, an MCI 636. Signals going out of the truck go through distribution amps. Everything within the truck is more or less transformerless, but to deal with the outside world, we help keep Mr. Jensen happy in his retirement.

**Mix:** Do you have a game plan for more complicated situations that involve a video remote as well as yourselves?

**J.M.:** Most of the time, our involvement with the video truck is to give them a mix feed. In general we find that your power source is at the root of a grounding problem, and transformer isolation will fix it. Last year we did a live album and a concurrent one-hour video shoot with a Latin band called La Mafia. The only manifestation of the problem was through the P.A. The source of the problem was the feed from the video to us, which came through on the shield and finally

showed up as a tremendous buzz on the P.A. It didn't show in video or anywhere else. Video was on a different leg of house power, and there was a potential on one of the two video feeds as a result. It took about an hour to track it down, because of where it showed up. We corrected it with a video isolation transformer.

#### **Mike Simpson, Midcom, Inc. Irving, TX**

Midcom is another remote facility from Texas, in business since 1982. Owner Mike Simpson has recorded such projects as the George Strait MCA Home Video, the Seventh Van Cliburn Piano Competition for American Public Radio, and live albums for The Vocal Majority.

**Mix:** Do you have a standard operating procedure for interfacing with P.A. companies?

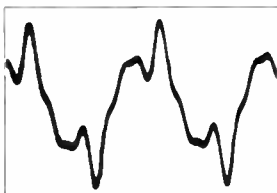
**M.S.:** Well, it's always best when we can have pre-production, but it seems a lot of these events are put together at the last moment. In the case of the Dolly Parton show, we rolled into a typical Bourbon Street club not having any idea what we were going to interface with, and were horrified when we

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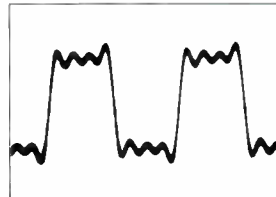
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found it. On the other hand, the Houston Grand Opera with PBS was meticulously planned six months in advance.

**Mix:** Tell me about your approach to grounding problems.

**M.S.:** We do a lot of homework before we ever get to the remote. When we built our truck, we checked every time we sank a screw, to find out what two grounds we might have inadvertently tied together. Consequently our truck is built so the audio ground, the power supply ground, the AC electrical ground, and the truck chassis ground never get together in an uncontrolled or unplanned way. We have a patching facility on the outside bay which allows us to tie any of these grounds together in any combination. Most people who have grounding problems don't understand what happens when you mount a piece of equipment in a rack. When you do that, you tie rack-rail common with AC ground common with signal ground common with whatever else that rack happens to be touching. That gives you an immediate ground loop situation. We engineered all of that well in advance. As a result, for instance, at this New Orleans event it was raining and the club we took power from had no ground whatsoever. We were interfacing a really sorry P.A. system covered with two inches of slime and filth, yet we had a hum- and buzz-free event.

**Mix:** But you did have to track down your share of hums.

**M.S.:** Yes, and almost always those can be tracked directly to the band equipment. A typical guitar player has half a dozen pedals and effects devices haphazardly strung together with no regard to ground loops.

**Mix:** Do you ever end up going with an AC-isolated transformer on one guy's equipment?

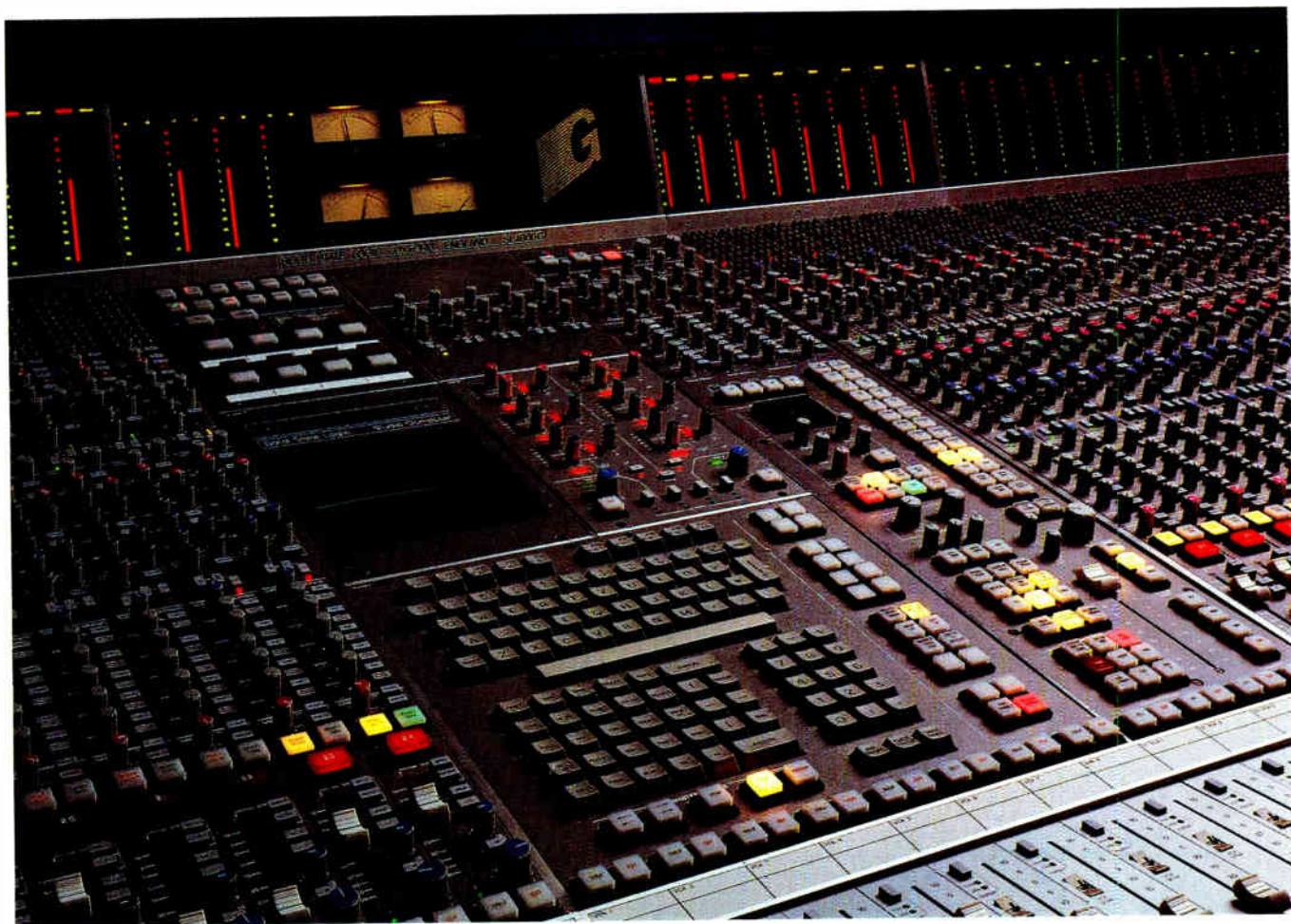
**M.S.:** That's a last-ditch alternative. The ground is where the hum is generally going to come from. If you make only one ground path available, then you eliminate the need for a transformer. We found that by transformer-isolating the entire power system to the truck, that eliminates the need for any additional transformers.

**Mix:** Do you take separate feeds for your HVAC and your audio equipment?

**M.S.:** We have two separate AC services that feed our truck. One of them, our utility power, runs our lighting and



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HVAC. The other, our technical service, comes in on a separate set of wires. Sometimes, as was the case with this club in New Orleans, there is only one place for us to tie in. So when we have to, we tie them together.

**Mix:** So you start with everything grounded at the main box, and if you encounter problems you can lift the grounds one by one to see if that allows you to run clean?

**M.S.:** That's correct. Generally we can ground our equipment without any hums, buzzes or noises. We get into problems when someone else has also grounded their equipment.

**David Hewitt,  
Remote Recording Services  
Lahaska, PA**

If any single person can be associated with remote audio recording, it might well be David Hewitt. Before forming Remote Recording Services, he was in charge of remote recording at the Record Plant in New York. As the head of his own company he has recorded Live Aid, the Tony Awards, and numerous national and international acts, including a recent U-2 tour and a live satellite

show with George Carlin for HBO.

**Mix:** What kinds of problems do you commonly see when you do remotes?

**D.H.:** That whole situation has gotten a lot better over the years. Fifteen years ago, it was a major nightmare.

**Mix:** What has changed to cause less of a problem?

**D.H.:** The usual refinements in bands and gear and the P.A. companies associated with them. In the past, not a great deal of preparation went into remotes. There was an enormous amount of kluge work. Equipment was not designed for the road. Now a whole industry has evolved for the technology to get to this point.

From a recording standpoint, most of the time you're going in and intercepting a package that's already on the road, where people have already spent a great deal of time putting something together. These days, usually by the time you get there, they have fixed most of their internal problems.

**Mix:** How do you approach a complicated remote?

**D.H.:** The first thing is to take the AC

power into consideration. For starters, we've got AC-isolation transformers. They're generally under 100 amps, and they're split between aux (HVAC and lights) and tech service, which runs all of the recording equipment. So they are isolated not only from the power source, but from each other. When the air conditioner kicks in, you don't hear it on the tech line. We also can ground that system properly or float it. That, coupled with the proper isolation transformers with the P.A., takes care of 90% of the problems.

So you start with AC, then you deal with the P.A. and the band equipment. Sometimes there may be peculiar things with the band gear, which you just have to track down and subdue one at a time. Then you start throwing in things like video and satellites. For television, you really have to isolate yourself completely. You simply can't take an unknown system and expect to tie all those grounds together and have them come up with the same potential.

Usually the video trucks have their own isolation. We exchange feeds via ground-isolated distribution amplifiers. The distribution amps we use are

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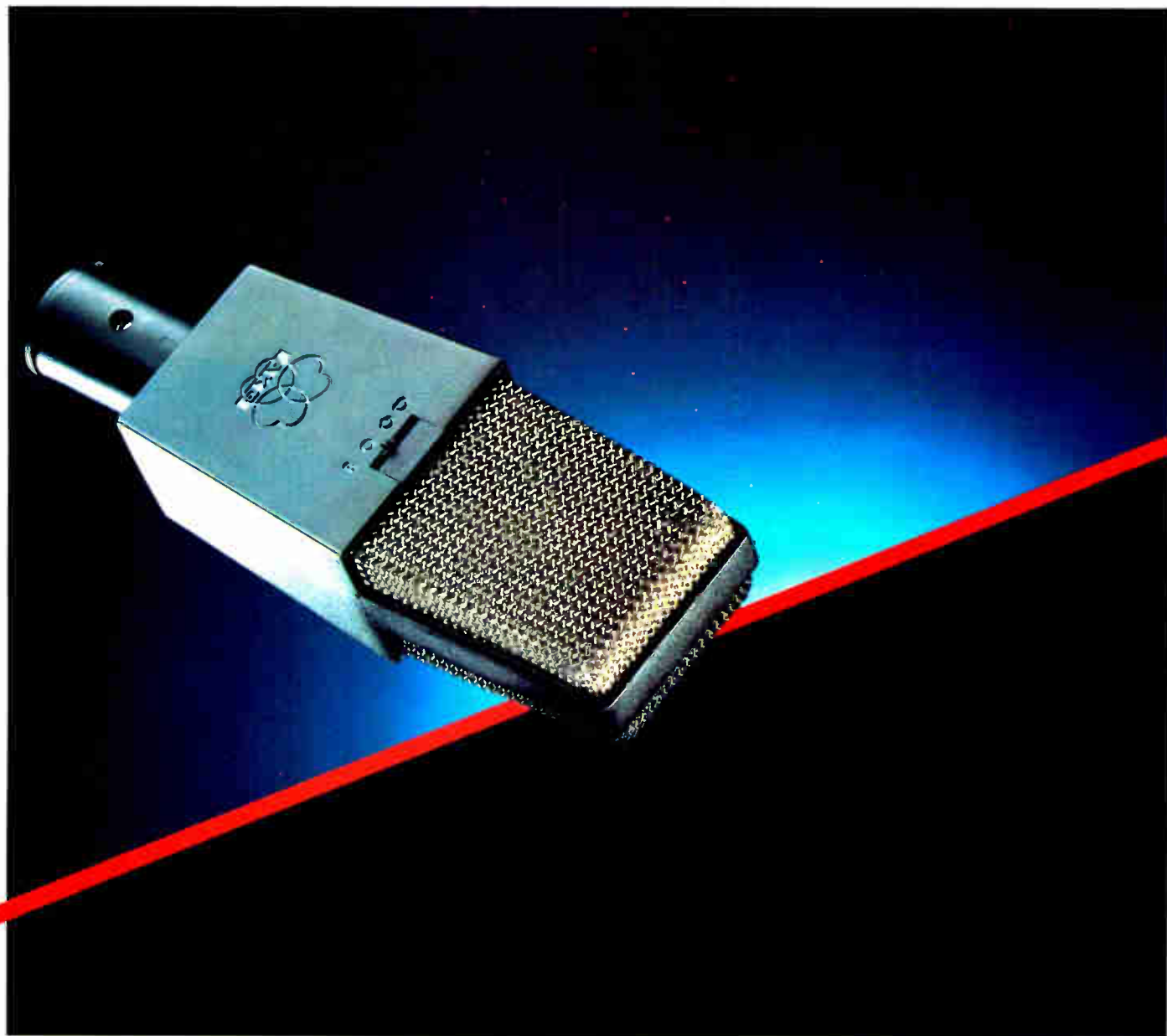
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ACOUSTICS

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\*140dB SPL, 0dB attenuation



customized API units that drive a dead short without interfering with the other sends. We also isolate the incoming video lines and go through a hum-buck coil. All these things are buffered before they get into our system. Ditto with satellite feeds. That's another whole can of worms.

**Mix:** Do you ever end up lifting the AC ground on your truck?

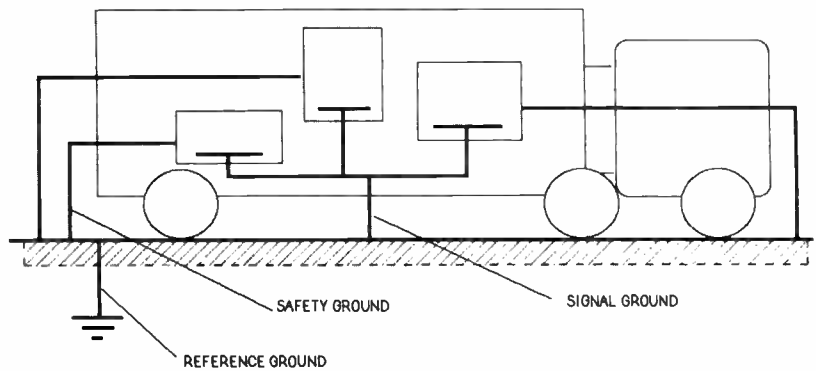
**D.H.:** You occasionally get into a situation where that's the quietest, but that's not something you really want to be doing. You want to have the truck grounded. You can't have that kind of potential if something shorts out to the frame. But you can lift your audio from the chassis. We will lift audio ground from the truck.

**Mix:** Why not lift audio ground from AC ground as a first step rather than as a last resort?

**D.H.:** Ideally, you want to see all these things going back to the same ground point. That's the quietest way if you're wiring a studio. In location recording, lots of luck, pal. You're never really going to get to that point because you're not building it from scratch. You're coming in on a number of pre-built systems, and Murphy states that they'll all be at different potentials, and you don't have time to straighten those things out.

**Mix:** Do you often experience other kinds of noise, like RF?

**D.H.:** We do, but proper grounding and shielding eliminate the bulk of that stuff. Several years ago we did some experiments with microphone cables, and found we could get 100% shielded cable from Belden with the



**Single point signal (star) grounding system**

conductive textile-style cable. That eliminated most of our RF problems. Virtually all of the multi-core stuff is 100% shielded, but the standard braided mic cable is somewhere around 86%. RF sees windows in that braid, and it'll come streaming right in. But proper shielding and grounding tend to be the answer. A related problem we encounter working in New York is we're occasionally bombarded by the cab driver with the 200-watt linear amp parked right beside the truck. Those things are real good at being detected by the unbalanced lines and getting into power amplifiers, even if you have tremendous shielding. The '80s have given us RF mic problems to make up for the fact that grounding problems have been minimized.

**Mix:** What was your worst experience?

**D.H.:** This is more an AC story. We were on the Heart tour a couple of

years ago, doing an outdoor show at a speedway somewhere in the Midwest. They had gotten temporary power service off the poles, and the stuff was all over the place. You could watch the voltmeters dance. The actual turf that made up the speedway was ground fill, and we could not get a ground. These poor guys were trying to drive these 20-foot copper stakes into the ground.

### **Guy Charbonneau, Le Mobile North Hollywood**

Winner of 1987 TEC Award for Outstanding Institutional Achievement, Remote Recording Facility, Le Mobile has recently recorded albums for the Grateful Dead, Pink Floyd, Neil Diamond and Whitney Houston. The company just finished working with the Rush tour, and also just finished a project for CBS International, with French singer Chantal Condor. According to owner Guy Charbonneau, Le Mobile will be in the Bay Area in June to record the next Grateful Dead album.

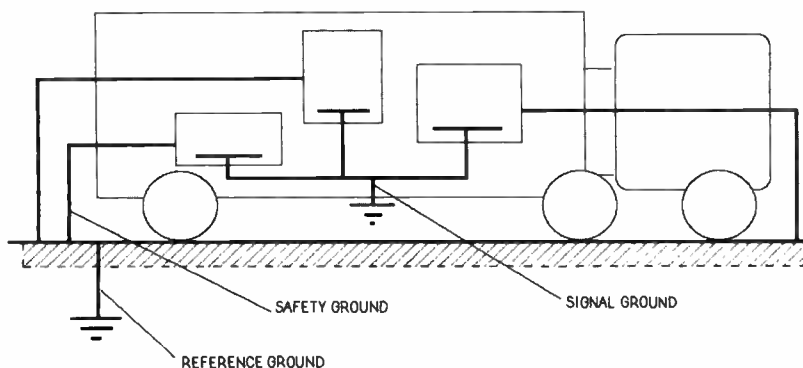
**Mix:** In what kinds of situations are you likely to experience grounding problems?

**G.C.:** The only time I have problems is if I do a local. If I do a tour with a major sound company, it's never a problem. If I tie in with video and a lot of other things, I might end up with a ground loop. But it happens only rarely, if there's a defective light or something like that.

**Mix:** What have you done to minimize these kinds of problems?

**G.C.:** When I rebuilt my truck in 1981, I bought a 25-kilowatt transformer with

—CONTINUED ON PAGE 107



**Floating signal grounding system**

# MIX

## 1 9 8 8

# SOUND REINFORCEMENT CONSOLE

Live console technology has evolved considerably since the first primitive touring units hit the road in the late '60s. In the early '70s, British manufacturer Midas became king while Soundcraft and Yamaha later developed successful models that firmly established a place for them in the sound reinforcement industry. Various other companies tried their hand at portable

## NEWS AND UPDATE

by Mark Herman

console manufacturing with limited success. The '80s has seen the emergence of Gamble, Harrison, Audio Arts/Wheatstone, and relative newcomers TAC, DDA, ATL and Ramsa. In the late '80s, the console market can be divided into three basic groups—the exotic high-end consoles on major tours with national sound companies; the more moderately priced mid-range

### HOUSE CONSOLES

Model	List Price	Config.	Matrix	AuxSD	AuxRTN	Prog. Muting	Metering	Dimensions	#Hi-Pass Filter	High EQ
Gamble Series EX	\$11,500	56x16x2	8x8x2	10	0	8 Scene	74 LED	74x39x14	1 V 15-300	S 1k-16k
ATL M4084	70,000	40x16x8	Opt 8x8	7	8	9 Group	24 LED	73x38x7	2 V 25-600	S F 10k
TAC SR9000	65,000	42x16x2	16x8	16	0	8 Group	19 LED	84x38x15	3 V 20-1k	S 500-20k
Midas XL	57,000	40x16x2	8x2	8	8	8 Scene	52 LED	73x34x13	4 V 20-400	SL 5k-18k
Soundcraft Series 4	56,750	40x16x2	Opt 8x8	8	8	8 Group	66 LED	78x45x13	5 V 20-320	S 1.25-20k
Yamaha PM3000	44,500	40x8x2	11x8	8	4	8 Scene	14 VU	76x38x12	6 V 20-400	S 1.6k-16k
Wheatstone MTX-1080	34,200	40x8x2	11x8	8	8	8 Scene	19 VU	84x36x12	7 F 125	S 850-10k
Soundcraft 8000	34,125	40x8x4	Opt 8x8	8	Opt 8	NO	10 VU	78x30x13	8 F 80	S 1.2k-20k
Wheatstone MTX-88	30,500	40x8x2	11x8	8	8	NO	14 VU	84x36x12	9 F 125	S 800-16k
Ramsa WR-S840	30,000	40x8x2	11x8	8	4	NO	18 VU	73x39x12	10 V 20-200	S 1.6k-16k
DDA D Series	25,050	40x8x2	8x8	8	Opt	NO	10 VU	84x36x12	11 F 100	F 10k
Yamaha PM1800	23,900	40x8x2	8x4	6	4	8 Scene	13 VU	72x34x12	12 V 20-400	S 1.5-16k
TAC Scorpion	23,045	40x8x2	8x8	8	4	NO	11 LED	68x33x10	13 None	SL 6k/12k



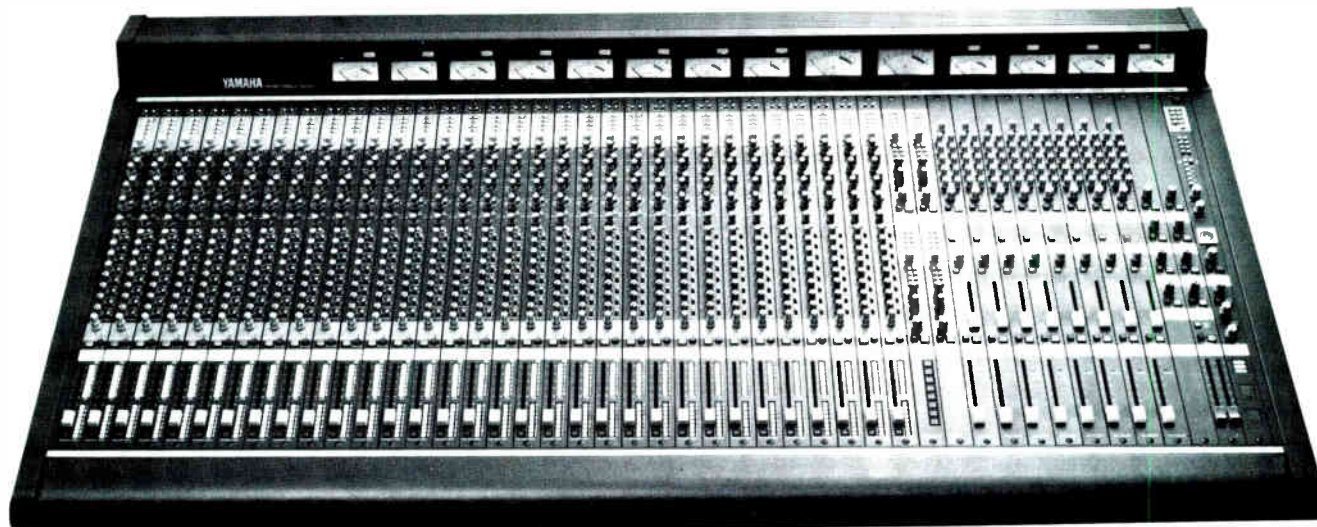
mixers commonly seen on national and regional tours and at many installations; and the many lower-priced smaller consoles popular with regional and local sound companies. The information that follows is a general run-down on selected manufacturer's house and monitor sound reinforcement models from the high and middle group. Special attention is given to new modifications, options and key features. Individual prices and features

may change at any given time, so please contact the manufacturer's representatives for more detailed information.

It is a fact that few sound reinforcement companies successfully design and produce their own consoles. This is due in large part to the time involved and the high initial cost of research and development (not to mention the

setup involved to manufacture a quality, road-worthy mixing board). Clair Brothers' custom folding 32x12x2 house console is the only current major exception that comes to mind. Manufacturers have also found it difficult to profitably produce large portable mixing consoles. Portable console manufacturing is a relatively risky and expensive business that caters to a small client market composed of sound companies, installations, music

### The Yamaha PM3000 Professional Audio Mixing Console



Type	Bandwidth	High-Mid EQ	Type	Bandwidth	Low-Mid EQ	Type	Bandwidth	Low EQ	Type	Bandwidth	Model
Pk	V 0.10-2.0	S 450-7.5k	Pk	V 0.10-2.0	S 140-2.3k	Pk	V 0.10-2.0	S 30-500	Pk	V 0.10-20.0	Gamble Series EX
Sh	—	S 650-14k	Sh	—	S 100-300	Sh	—	F 100	Sh	—	ATL M4084
Sh	—	S 600-20k	Sh	—	S 60-1.4k	Sh	—	S 60-1.4k	Sh	—	TAC SR9000
Sh	—	S 400-8k	Sh	—	S 100-2k	Sh	—	SL 30-200	Sh	—	Midas XL
Pk	V 0.50-2.5	S 450-7.2k	Pk	V 0.50-2.5	S 150-2.4k	Pk	V 0.50-2.5	S 30-500	Pk	V 0.50-2.5	Soundcraft Series 4
Sh	—	S 800-8k	Sh	—	S 160-16k	Sh	—	S 40-400	Sh	—	Yamaha PM3000
Pk/Sh	F 1.0	S 250-3.5k	Pk/Sh	F 1.0	S 125-1.7k	Pk/S	F 1.0	S 45-600	Pk-Sh	F 1.0	Wheatstone MTX-1080
Pk	SL.6/1.1/1.6	S 8.7k-11k	Pk	SL.6/1.1/1.6	S 70-1.1.k	Pk	SL.6/1.1/1.6	S 20-320	Pk	SL .6/1.1/1.6	Soundcraft 8000
Pk	F 1.0	S 400-8k	Pk	F 1.0	—	Pk	F 1.0	S 40-1k	Pk	F 1.0	Wheatstone MTX-88
Sh	—	S 800-8k	Sh	—	S 160-1.6k	Sh	—	S 40-400	Sh	—	Ramsa WR-S840
Sh	—	S 600-10k	Sh	—	S 150-2.4k	Sh	—	F 100	Sh	—	DDA D Series
Sh	—	S 800-8k	Sh	—	S 160-1.6k	Sh	—	S 40-400	Sh	—	Yamaha PM1800
Sh	—	S 500-18k	Sh	—	S 100-5k	Sh	—	SL 60-120	Sh	—	TAC Scorpion

## MONITOR CONSOLES

Model	Price	Config.	Output EQ	Prog. Muting	Metering	Dimensions
Gamble Series EX	\$105,000	48 x 34	5 Band*	8 Scene	64 LED	74x39x14
Soundcraft Series 4	50,250	40 x 16	3 Band*	8 Group	56 LED	78x45x13
ATL 3212MS	47,000	32 x 12	NO	NO	12 LED	59x34x6
Wheatstone M-16	34,800	32 x 16	NO	4 Scene	17 VU	66x38x12
Ramsa WR-S840	30,000	40 x 14	NO	NO	18 VU	73x39x12
DDA D Series	25,050	40 x 8	3 Band	NO	10 VU	84x36x12
TAC Scorpion	23,925	40 x 12	Opt 4 Band	NO	13 LED	68x33x10

\*Parametric output EQ

groups and independent engineers. The total number of mixers sold gradually decreases as the price increases and the client market shrinks. It remains to be seen how recent world currency fluctuations will affect the interplay of American, Japanese, and English console prices and sales.

**Soundcraft** continues to maintain its strong position in the touring con-

sole business with the current **Series 4** and **8000** mixing boards. The Series 4 line runs in the \$50,000-\$60,000 range and is available in four configurations: the standard 40x16x2 house, the 40x16x2 house with an optional 8x8 matrix, the standard 40x16 monitor, and the 40x24 monitor. With the matrix, expect to pay around \$3,000 more, and \$6,000 for the 40x24 moni-

tor. There are eight effect returns on every house version and eight programmable mute groups. The input channels have 4-band full parametric equalization. On the output section of the stage console, there are three bands of fully parametric EQ. Functionally and feature-wise, it is the same as the last few years, but major improvements, to the tune of up to 15 dB, have been made in the grounding design that seemed to plague earlier models.

The 8000 comes in 40-, 32-, and 24-channel mainframe sizes and is only offered for the front of house. The 40-channel 8000 comes in two versions—one with eight effects return output modules, and the other with 8x8 matrix output modules. Both are the same price. Options available are VCA subgrouping (four subgroups only), 10-segment LED metering for each input channel (at a cost of \$75 each), and stereo input modules. Input and output transformers are available if desired. The VCA and metering options are new for the 8000 this year. Soundcraft has redone and reinforced the rear connector panels to enable easier access for multi-pin connectors and improved XLR mounting. According to spokesman Gordon Cochran, Soundcraft feels a future trend in consoles will be MIDI automation. Soundcraft consoles are available from a vast network of pro audio dealers.

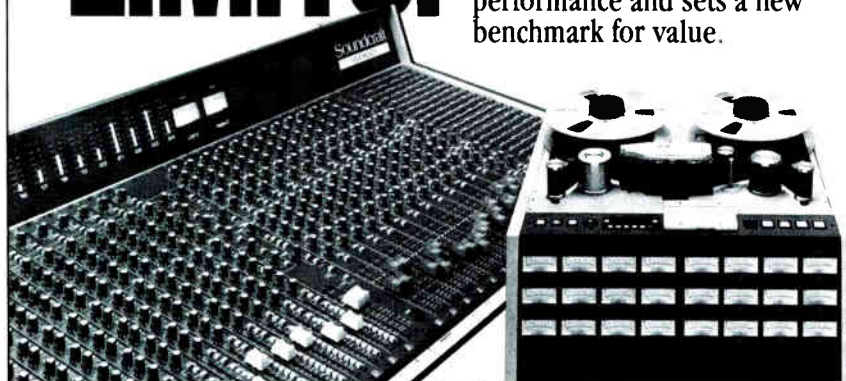
**Yamaha's** top live mixing consoles are the **PM-3000** and its little brother the **PM-1800**. The PM-3000 has quickly become the world's most widely distributed touring console due in large part to a vast dealer network, and

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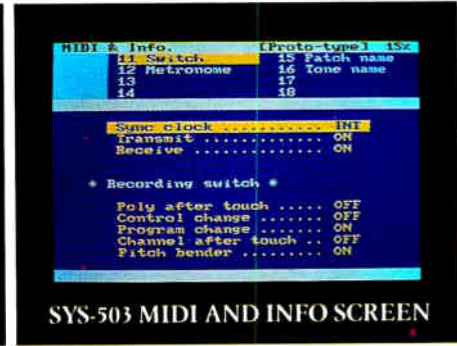
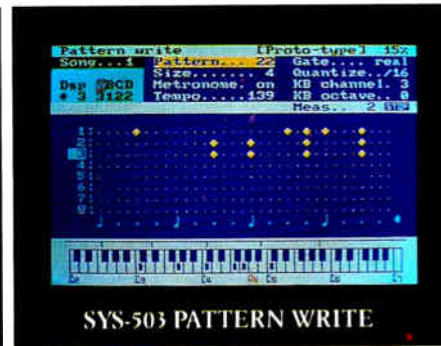
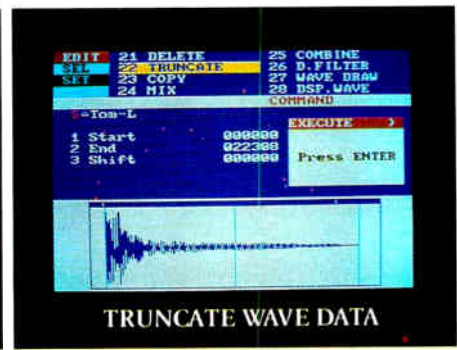
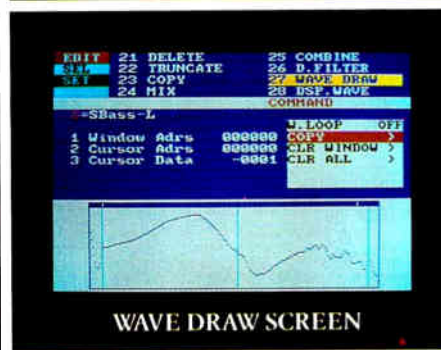
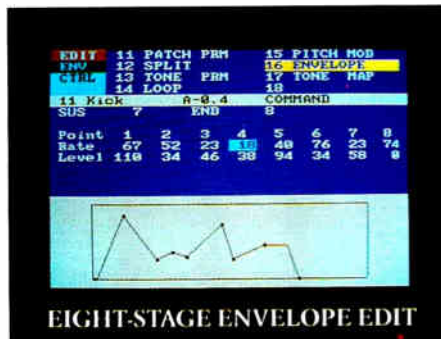
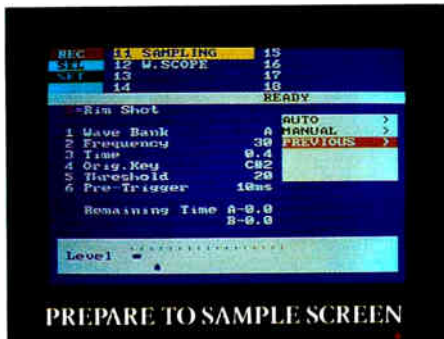
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## The Benefits of Open Architecture

There's no question, digital sampling is one of the most rapidly developing technologies in music today. So when you buy a sampler today, you don't want it to be made obsolete by some new development tomorrow. That's why there's one line of samplers that not only provides top quality today, but allows for future developments tomorrow. Naturally, they're from Roland, the company who always has one eye on the future.

Roland samplers are based around a "clean computer" design of open architecture. This means that the main performance data of Roland samplers is resident in software—software that can be updated with new features and performance just by loading a new disk. Neat trick? That's exactly what our customers think. They've already benefitted from one software update, giving their samplers loads of new features. And more updates will follow.

## Professional Performance Sampling

But before we get too far into the future, let's talk about today. The Roland S-50 Digital Sampling Keyboard and S-550 Digital Sampler Module deliver the professional-quality sound and extensive editing capabilities found only in instruments costing many times as much, all thanks to Roland's breakthroughs in proprietary VLSI Sampling technology. The S-50 offers a wave oscillator, amplifier, LFO, and an eight-stage envelope generator for each of its sixteen voices. Although the S-50's features list is far too extensive to be listed here, among its chief attributes are a 512k word of Wave Memory and 16-bit processing, sampling time up to 14.4 seconds at 30kHz, multi-timbral capabilities, and four polyphonic voice outputs.

The S-550 provides all of the S-50's performance with the addition of a 1.5M Byte memory (for up to 64 tone memories and 16 patch memory banks), and expands upon the S-50 by providing eight polyphonic voice outputs.

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But we think the best way to judge a sampler is with your ears. That's where the Roland Samplers really shine. Play any Roland Sampler and you'll hear a warm and full sound, with a better bandwidth and greater headroom that especially shows up in dynamic instrument samples. You'll experience an evenness of sound across the entire keyboard without the problems other samplers have of obvious split points. And you'll never run out of sounds, because the purchase of a Roland Sampler gives you access to the Roland Sound Bank—a continuously growing library of great sound samples. Plus, the S-50 is

already enjoying one of the fastest-growing bases of third party software support.

## Quality In Means Quality Out

When it comes to user interface, Roland Samplers are simply unrivalled. Both the S-50 and S-550 allow the connection of a video monitor to greatly facilitate sampling process and use such new features as Wave Draw. The S-550 even allows the flexibility of mouse-style input by connecting the new DT-100 Digitizing Tablet. This kind of interface makes the experience of sampling sounds as fun as it is productive.

## Today's Updates

The new 2.0 Software Update (available to all owners for a small handling charge) can now add in loads of new features—including twice as many tones, Automatic Loop Search, combined Wave Data, Polyphonic Multi-timbral performance, and much more. Not just new sounds, entirely new performance. Another new software program—the SYS-503 Director-S—can turn the S-50 or S-550 into a sixteen-channel MIDI sequencer, playing its own sounds as well as those of other MIDI instruments.

Put all this together and you can see why Roland Samplers are the choice of so many top pros. And why shouldn't they be? Because if Roland Samplers do this much today, imagine what they'll do tomorrow.

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In case you forgot some of your high school chemistry, and who hasn't, beryllium makes for a lightweight yet rigid diaphragm. So it's perfect for high hats, snares, or tom-toms smaller than 13".

There are a few other elements, however, just as important as the microphones themselves.

One is that they've been mechanically designed and built from the cable up, specifically for drums. Not just by an engineer, but by an engineer who's a drummer. So they sound good with very little, if any, EQ.

And we know that a drum mike, no matter who made it, is absolutely no good if it's not in the right position. So we also painstakingly created our own pan and tilt mechanics and a sidemounted connector. Which not only lets you position the mike among all the other hardware, but keeps it out of the way at the same time.

The last element, of course, is you. Because a mix is often judged on the drum sound. And because specs, diagrams and calculated rationalization can't convey the hair-raising, toe-curling, goosebump rush you get when the drums finally sound just right.

That very feeling is available in the MZ204 and MZ205Be, and at your Yamaha Professional Audio dealer. So drop on by and give them a listen.

The mikes won't skip a beat. But your heart just might.

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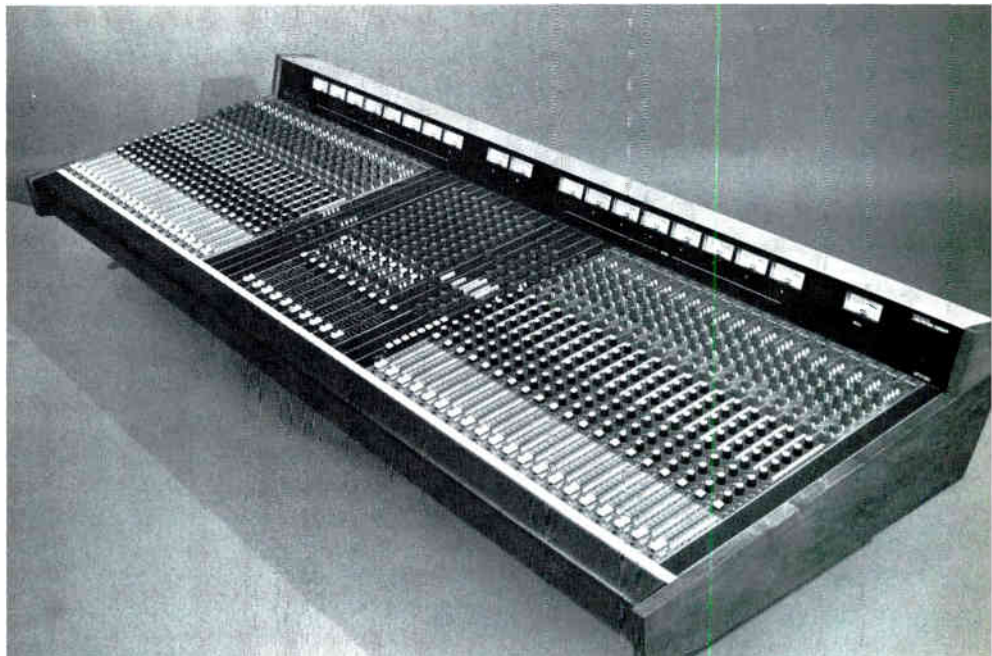
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Yamaha's ability to provide a function-rich console at a moderate price. It remains to be seen how much the rising yen will influence the PM-3000 selling price.

There are three PM-3000 input configurations: 24-, 32-, and 40-channel. The 40-channel version is available with a center master section only. There are eight VCA master faders which can be assigned to control any combination of input channels, eight subgroup mixing buses, a stereo mixing bus, and eight auxiliary sends. Other standard features are the eight-scene programmable muting, four stereo aux (effect) returns, and an 11x8 matrix. The PM-1800 is a more affordable version of the PM-3000 and is available in 16-, 24-, 32-, or 40-input channels. It has four stereo aux returns, an 8x4 matrix that permits eight possible sources to be mixed together four different ways on four different modules, and eight master mute groups. The PM-3000 and PM-1800 models have remained essentially the same since last year, but on another front, Craig Olson, chief designer of both, is working on a new monitor console based on the PM-1800 design, and aims to have a prototype available to show at the fall AES. The price is expected to be somewhere in the PM-1800 range. All Yamaha consoles are available from Yamaha Professional Audio Products dealers only.

**Total Audio Concepts (TAC)** president Arnie Toshner reports that most of the features on his company's consoles are unchanged this year except for a few additional options. The **SR9000** 42x16x2 house console now can be purchased with optional 4-band parametric EQ on inputs, and the Scorpion stage console is available with optional 4-band quasi-parametric



**The Wheatstone MTX-1080 Console**

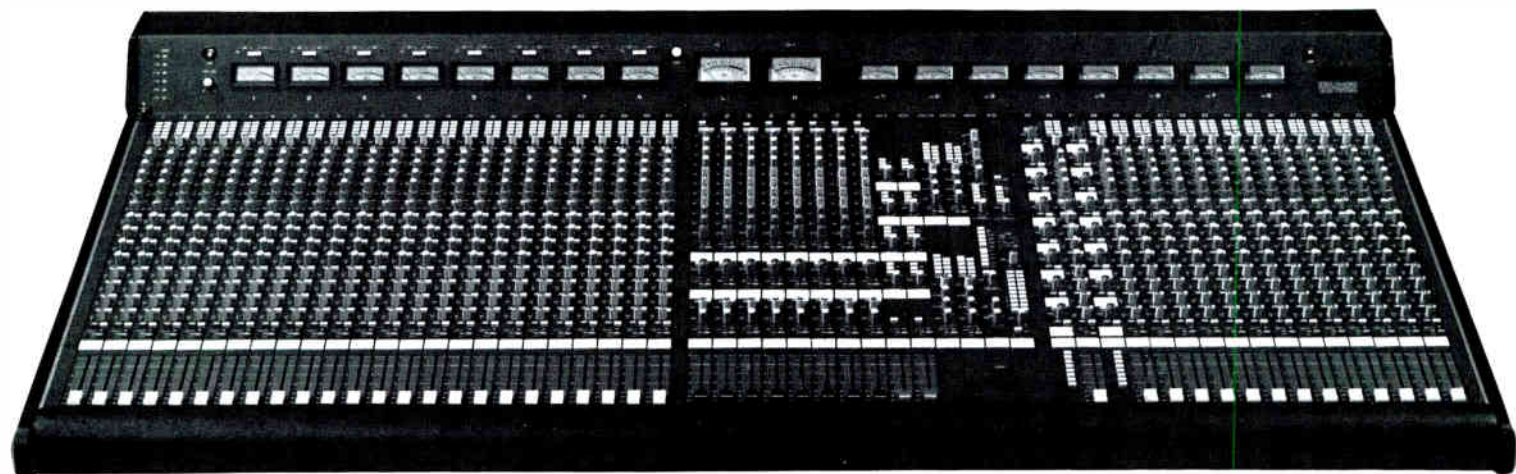
EQ on the outputs. Standard VU meters and Penny & Gile faders are available as options on both the SR9000 and the Scorpion.

Located in Syracuse, NY, **Wheatstone Corporation** maintains an audio console presence in both the broadcast and sound reinforcement markets. The latter is represented here by the Wheatstone 40x8x2 **MTX-1080** and 40x8x2 **MTX-88** house consoles, and the 32x16 **M-16** stage console. Some of Wheatstone's former consoles went under the Audioarts logo. (Audioarts is actually a subsidiary of Wheatstone, but is now being marketed under the parent company's name.) From what I have encountered, the people who have bought Wheatstone consoles seem to be very pleased with them.

The MTX-1080 has an 11x8 matrix,

eight-scene muting, and 19 VU meters. The MTX-88 is a scaled-down version of the MTX-1080 but has three bands of EQ instead of four, 14 VU meters, and no preset muting capability. On the M-16 stage board, the outputs are in a dual-configuration design so that you can use side-by-side faders for a stereo pair if needed. Two outputs are in one module for a total of eight modules. There is no equalization on the outputs and an output reassignment matrix is optional. The input EQ section is the same as the MTX-1080, and there are four scene mutes. Options available for all models include a joystick-type quad panner, tape remote module, a matrix extender, line select modules and timers.

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"It's important that people know we will work with them on specific terms," comments spokesperson Tim Guhl. "We will do custom console modifications for our clients. With our own metal shop, we are able to provide many different frame sizes for up to 56 modules, and we'll do things like put in a special meter bridge if a client wants plasma meters, or work out problems encountered in permanent installations."

Most sales are factory-direct for these consoles that hover in the \$30,000-\$35,000 range. Guhl says, "We see a strong incentive to buy American this year with the higher prices abroad."

Japanese console manufacturer **Acoustic Technical Laboratories (ATL)** is almost unknown to American audio engineers. It may be a surprise to some that this company offers two high-end live mixers—the **ATLM4084** and the **ATL 3212MS**, for pro sound reinforcement. The 3212MS monitor console was briefly distributed in 1986-87 by audio equipment manufacturer Meyer Sound Laboratories as a Meyer/ATL stage console. Reportedly, John Meyer provided some input along the way, but ATL consoles have been designed and built by ATL only. Meyer is no longer selling the ATL line, but both consoles are now available, factory-direct, through American representative Bob Hodas. It may be too early to evaluate the M4084 because no house consoles have been sold in the U.S. at this time and few are available, but one used by the San Francisco-based sound company Pro Media for a Luciano Pavarotti tour received favorable reviews.

The M4084 house console, which is the newer of the two models, has 40 full-feature inputs, eight limited line-level inputs that can be used for effect returns, eight stereo subgroups, six mono and one stereo aux sends, and four stereo outputs. There are individual signal presence and peak signal LEDs to meter each input, and segmented LED bar meters for the program and subgroups outputs. An external remote 8x8 matrix box is available as an option.

Bob Hodas adds, "There is a switch that turns the stereo auxiliary send into an input so you can bring a line-level piece of gear, for example, back into that channel and it will follow the same bus assignment as the module itself. You can turn this effectively into an 88-channel console."

Monitor console configuration comes in either 24x12 or 32x12. All 12 transformerless, balanced outputs have switchable VU or peak-reading segmented LED meters. There is no equalization on the output section. Output mixes are via an eight-way rotary pot matrix and can be assigned in any order to the 12 main outputs via an electronic assignment system. A few stage consoles have been sold in the States so far, but rising Japanese prices have placed ATL's \$70,000 and \$47,000 consoles in the more rarified air of the competitive high-performance console market, where name recognition and familiarity are important selling points.

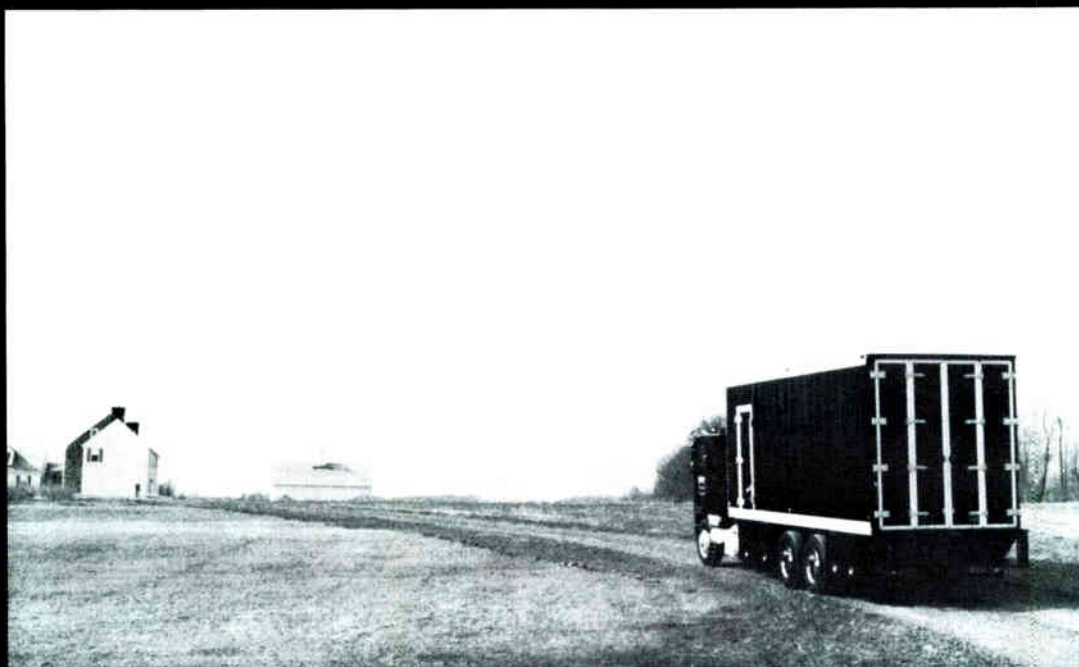
**Ramsa** joined the ranks of pro sound reinforcement console manufacturers this year when they released the **WR-S840 Series** 40x8x2 house and 40x18 monitor consoles. Headquartered in Cypress, CA, Ramsa is the professional audio division of Panasonic Industrial Company, which is owned by Japan's Matsushita Electronics. Much of the design is attributed to American engineer John Windt. The first prototype was shown at the 1987 AES convention in New York. Since then, several prototypes have been road-tested on pro tours, while others have been made available for demonstration purposes across the country. James Murray, Ramsa's western regional manager, reports a strong interest in the moderately priced consoles and says sales have been excellent.

"From the design side we set out to build a console that worked as well in the field as it did on the test bench," he comments. "That is, to build a console that was not susceptible to its environment. From the marketing side, we realize the touring console market was a mature one with many accepted players such as Yamaha and Soundcraft. We also realized that the only true test would be actual concerts, so we have been working closely with many major sound companies such as Maryland Sound Industries, Sound Image, Spectrum Sound, and Burns Audio for field evaluations. To date, the response has been 100% positive."

The 40-channel house model comes standard with an 11x8 matrix and utilizes the same frame as the 40x18 monitor board. Metering is accomplished with 18 standard VU meters. Ramsa offers an optional double-wide, input saving, submix module that has eight mic/line preamp circuits and the same



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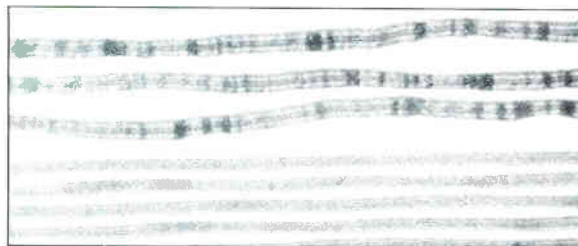
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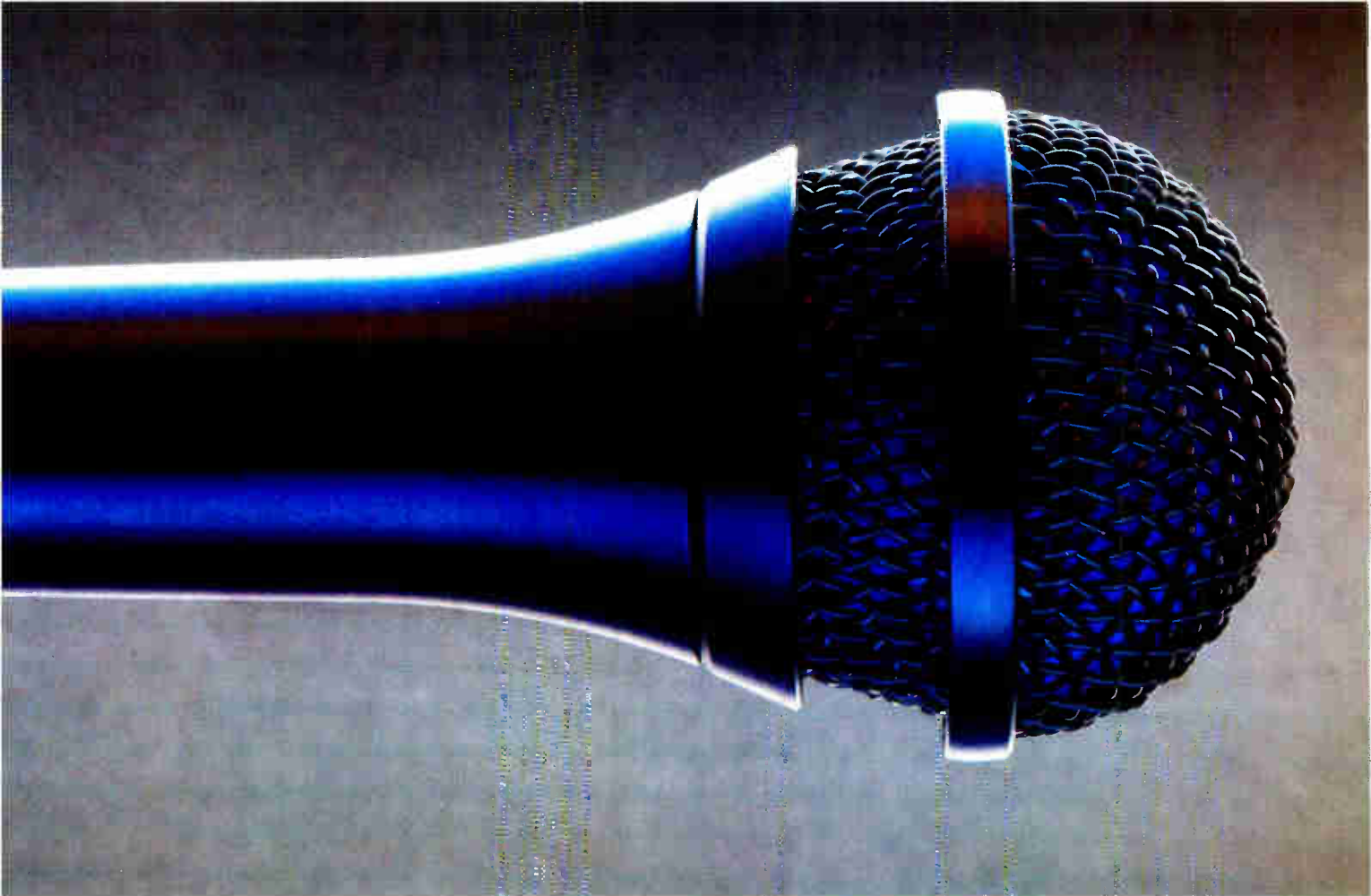
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4-band state-variable sweep-frequency EQ, high-pass filter, PFL, and channel ON switches that are on the standard input modules. Designed to increase the input potential, it is ideal for key-boards, effects, strings, and other groupings that can be submixed.

Designer John Windt is known throughout the industry for his expertise in grounding, so it is no surprise that one of the strong points of the WR-S840 is the distributed grounding system that incorporates a solid copper bar running the length of the frame. Parts used in the consoles include carbon faders and potentiometers, flexible ribbon cables that mate with modular PC boards through gold-plated contacts, and fiberglass-epoxy circuit boards with double-sided traces and plated holes.

Ramsa's house WR-S840 Series is clearly aiming for the mid-priced touring console market that is currently dominated by the Yamaha PM-3000, and to a lesser degree the Soundcraft 8000. The 40x18 monitor console is a needed addition to the short list of available mid-priced pro stage models. The WR-S840 line is sold only through selected Ramsa dealers.

**Jim Gamble Associates** of Tahoe City, California, are known for their high technology, high quality, and high prices. At \$115,000, the **Gamble Series EX** 56x16x2 house console, which was originally released in late 1986, and the new \$150,000 Series EX 48x34 monitor console top the console charts. The 48-channel stage console is making its debut this year. Gamble Series EX consoles employ extremely high-quality, low-noise ICs, conductive plastic faders and potentiometers, made for audio 1% resistors, polypropylene capacitors and gold-plated connectors. True 4-band fully parametric equalization, 24dB per octave adjustable lowcut/high-pass filter, eight mono and one stereo aux sends (each with pre/post fader and out switch), and eight-scene programmable muting are standard features on each input module. For the house console, a total of 74 LED VU meters with a range from -33dB to +24dB provide constant 20-segment peak metering of 56 inputs, eight stereo submasters/matrix, master outputs, and cue system. The output section has eight stereo submasters, one stereo and mono master out, a stereo 8x8 matrix, one stereo and eight aux sends, and intercom. The just-released monitor



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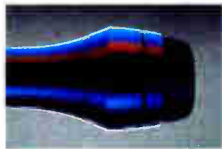
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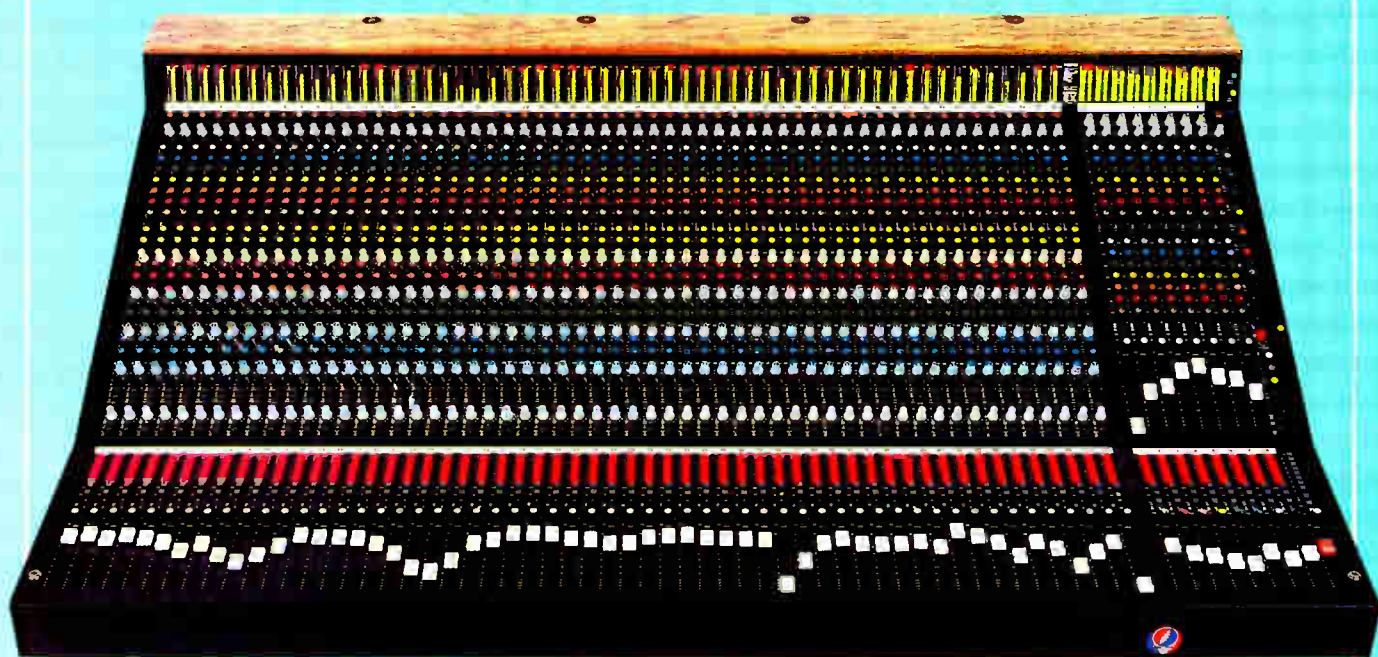
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console features 5-band full parametric EQ on 16 of the 34 outputs, a full patch bay and 65 20-segment LED meters. The 16 outputs are driven by a 16x16 matrix that is fed from the buses. The Series EX line has been modified this year to have the formerly external patch bay mounted into the main-frame. The patch bay has also been expanded to 576 points and now includes 96 tie lines. The Series EX console line is only available factory-direct.

Jim Gamble Associates' founder and owner Jim Gamble, who has over 24 years of firsthand experience, is one of the leading console design engineers in the industry. And his commitment to audio purity has influenced many in the sound reinforcement industry. Here is something for you audio techie types from Mr. Gamble:

"Let's talk about capacitors. There are two passive components used in audio equipment: resistors and capacitors. The quality of these two components determines how good a product can really be. The resistors used in most products are of satisfactory quality, but the quality of the capacitors—well, now that's a big problem. Good quality capacitors cost about one to

two dollars apiece; the capacitors most commonly used cost only pennies. In a magazine article written by John Curl and Walt Jung in *The Audio Amateur* (4/85), titled 'A Real-Time Signal Test for Capacitor Quality,' the truth about capacitors used in audio circuits is revealed. It's called dielectric absorption. The larger the capacitor value, the more dielectric absorption there is. Dielectric absorption distortion is something you can hear. For example, it shows up as that 3kHz rasp on the vocals that equalizing can't even get rid of. The capacitor most typically used by the audio industry today is a 100-250  $\mu$ F polarized aluminum electrolytic that can be found in the signal path of some mixing consoles as many as 40 times. I designed the Series EX console so that the signal path would have only eight capacitors total; input to output. It's done with mirrors and the magic of servos. The input capacitor is a 2  $\mu$ F/63 V film capacitor, and the other seven are 1  $\mu$ F/50 V film capacitors. In fact, every capacitor in the Series EX console is a small value polypropylene film capacitor."

**Klark-Teknik**, distributor of DDA consoles, purchased British console

manufacturer Midas Audio Systems Ltd. in December 1987. The production facilities have been relocated to Klark-Teknik's DDA headquarters in Kidderminster, UK. Klark-Teknik will distribute and service the **Midas XL** console in America along with their **DDA D Series** and **S Series** live consoles. There are plans to provide available parts for the discontinued Midas Pro 40 series. According to national sales manager Keith Worsley, "We are going to do all we can in the way of North American service facilities." This should be a welcome relief for Midas console owners who have struggled in the past with a nonexistent service and parts network. The main service center is now located in Farmingdale, NY. The XL model that debuted last year is now Midas' only touring console in production and comes in three input configurations—40-, 32-, and 24-channel. A 16-input extender frame unit is available. The Midas XL remains the same as last year's model, with no changes reported.

The standard Midas XL features P&G faders, gold contact switches and connectors, conductive plastic potentiometers and extensive metering. Each

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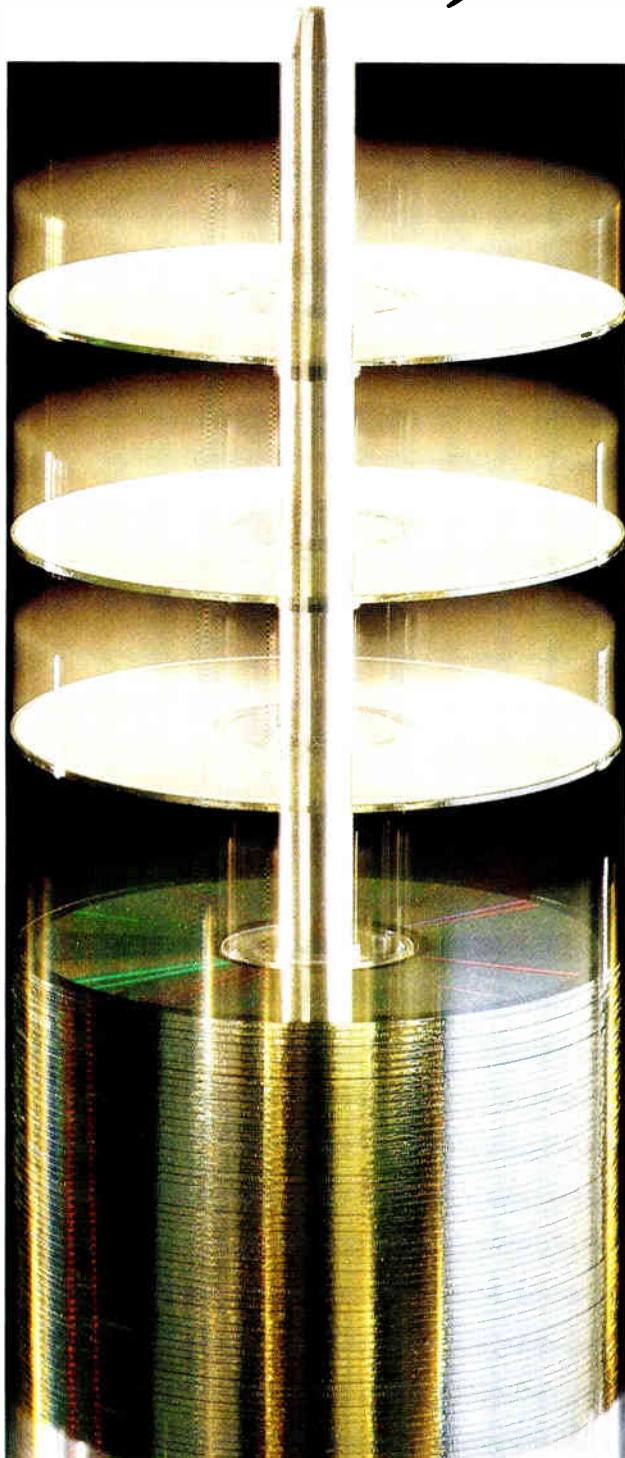
point which permits linking two or more gates together for synchronous tracking or master/slave setups. It all adds up to the finest series of gates available at any price.

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by Tony Thomas

# GOING MOBILE

## THE REALITIES OF THE ROAD

**T**he road to success is paved with obstacles. Lots of obstacles. This is especially true if your line of work is mobile recording. Starting a successful remote recording business is not as simple as throwing a bunch of gear into a truck and hitting the highways. You have to set a competitive day (not hourly) rate, plan for vehicle (in addition to equipment) maintenance, work out the logistical details of each date and somehow manage to book enough days each month to stay afloat. Easier said than done.

Although capturing a stellar per-

formance on tape can be an exhilarating experience, it can be an expensive experience as well if careful attention is not paid to the bottom line. Un-scheduled downtime in the mobile recording business is deadly, as it is often measured in lost days rather than hours. Vehicle breakdowns can be equally catastrophic, as they can result in lost clients, as well as revenue. Given these pitfalls, why would anyone want to go into remote recording?

To find out, we spoke to Tim Powell of Metro Mobile, a 48-track truck that has become one of the Midwest's most successful mobile recording services.

—CONTINUED ON PAGE 196



Tim Powell in  
the Metro  
Mobile truck.

PHOTO: PAUL NATKIN



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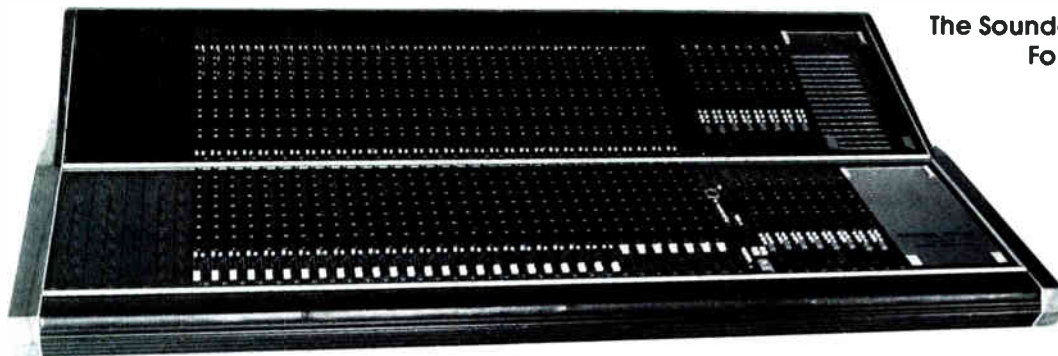
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The Soundcraft Series  
Four Console

—CONTINUED FROM PAGE 59

input module has a 10-segment LED bargraph while the subgroups have 20-segment LED peak response meters that are switchable between subgroups and the aux sends. The master outs and PFL/solo also employ 20-segment LEDs. A modular stage box and patch bay are available as an option for an external 19-inch rack. Input and output transformers are optional.

One would think that the Midas XL and DDA D Series consoles are competing for the same market, but Worsley explains, "The Midas is strictly designed for touring, while the DDA boards are designed for touring and permanent installations such as nightclubs, theaters, auditoriums and churches. They will be marketed in a different manner, but Klark-Teknik will be doing all of it here in this country."

Worsley also extols the versatility of the D Series: "The DDA 'D' Series is a 100% modular board in that every module comes with its own back panel module: you can take any one of our frames and install whatever type of input or output module you want. We have monitor, theater, stereo, matrix and standard modules. In essence, one can make the DDA into whatever type of console is desired."

The standard setup for a touring house console is 40x8x2 with eight aux sends (with 3-band EQ). Ten VU meters are provided for the eight subgroups and the switchable stereo/solo output. No new modifications were reported for this year on any of the DDA consoles which are available, along with the Midas XL, through Klark-Teknik dealers.

Though they are not included in the accompanying charts because they have not yet released their consoles to the public, **CADD** will soon be joining the list of pro console manufacturers. **Creative Audio Design & Development, Inc.** is a new Canadian company out of Brossard, Quebec, that

is beginning to market digital cross-overs and consoles for the sound reinforcement industry. After more than a year of development they have announced plans to manufacture a pro house and monitor console designed especially for live touring. Currently there are three house prototypes very near completion that are due to be road-tested by Audio Analysts sound reinforcement company. Another seven prototypes will be dispersed to other sound companies to gather feedback and user response. Expect to see the **CADD SM-1H** house and the **IM** monitor console at this year's AES convention in Los Angeles. Reportedly they will be priced somewhere in the \$60,000 range.

Well-known engineer Shane Morris, formerly with Soundcraft, headed up the design of the soon-to-be-released SM-1H mixing console, which will be available in a 32- or 40-input configuration with eight stereo subgroups. Morris says of input configuration, "Actually, the house console is 56 inputs. It is designed so you have 40 line inputs, eight stereo returns which are capable of running at mic level, and also eight mono inputs that lack EQ but have mute and fader control which is ideal for bringing in a sub console. The SM-1H is designed to be compatible with all the equipment and situations that arise while touring. One of our objectives was to make it user-friendly for both people and equipment. When designing the console, the idea of it going into a completely hostile environment was always at the forefront of my mind. It's not pristine out there at all. A lot of thought went into the internal signal grounding in the console. Grounding seems to be a major problem that plagues other live mixing console models."

Some of the SM-1H features include: 4-band full parametric equalization, eight stereo effect returns with equalization, four mute buses, eight mono

and four stereo aux sends, three stereo mix outputs, a 16x8 matrix, four programmable mute groups, carbon faders and potentiometers, a stainless steel frame, a 420-point patch bay that includes 60 tie-lines, and metering on all inputs and outputs. The 10-segment LED bargraph meters for the inputs and the 20-segment LED bargraph meters for outputs are located next to the faders.

The CADD SM-1M monitor console prototype has 40 inputs with 16 main group sends, four mute groups and the same EQ section as the house console.

Several manufacturers say they are designing new models but are reluctant to publicly discuss the plans until prototypes are completed. From what I can tell, there are no earthshaking developments imminent, nor radical new technologies being pursued at this time. Those of you waiting for a true, full digital live console will have to sit tight for what looks to be a long while. Unfortunately, I do not think that the live mixing console market is perceived by manufacturers to be large or lucrative enough to warrant massive capital expenditures for R&D.

Spillover technology from recording consoles would seem to be a logical source of future function advances, which most likely will be in the form of recall automation and MIDI control, even though many live engineers feel the latter is unnecessary. There is, however, a lot of room for equalization improvement in almost all of the non full-parametric consoles. Perhaps more manufacturers and designers will get behind improving the overall quality of the EQ section and couple this with the general trend toward increased functions, matrixes, input savers, LED metering, etc. The future of console advancement will likely mirror the sound reinforcement industry's history of continued gradual refinements. ■

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by Tony Thomas

# GOING MOBILE

## THE REALITIES OF THE ROAD

**T**he road to success is paved with obstacles. Lots of obstacles. This is especially true if your line of work is mobile recording. Starting a successful remote recording business is not as simple as throwing a bunch of gear into a truck and hitting the highways. You have to set a competitive day (not hourly) rate, plan for vehicle (in addition to equipment) maintenance, work out the logistical details of each date and somehow manage to book enough days each month to stay afloat. Easier said than done.

Although capturing a stellar per-

formance on tape can be an exhilarating experience, it can be an expensive experience as well if careful attention is not paid to the bottom line. Unscheduled downtime in the mobile recording business is deadly, as it is often measured in lost days rather than hours. Vehicle breakdowns can be equally catastrophic, as they can result in lost clients, as well as revenue. Given these pitfalls, why would anyone want to go into remote recording?

To find out, we spoke to Tim Powell of Metro Mobile, a 48-track truck that has become one of the Midwest's most successful mobile recording services.

—CONTINUED ON PAGE 196



PHOTO: PAUL NATKIN

# STUDIOFEX

STUDIOFEX is a highly organised modular effects system covering a wide range of contemporary effects and signal treatments. The system is based around a 4U high 19" rack mounting mother unit into which 11 plug-in modules may be fitted.

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# GRAMMY, HOW I LOVE YOU

ENHANCED LIVE SOUND  
TRANSLATES TO BETTER  
TV AUDIO

by Dan Daley

**T**here are no Rockettes. Not a trace of them. No boas, no tap shoes, not a single lipstick-stained Kleenex laying around. The Grammy Awards haven't yet felt the need for that kind of terpsichorean artillery. There are, however, plenty of people in off-brown jackets talking nervously into walkie-talkies as they look over Radio City Music Hall's cavernous interior, awaiting the signal to kick out all nonessential personnel (i.e., press, who weren't supposed to be at the rehearsal in the first place), pending the arrival of the Gloved One.

Michael Jackson's scheduled rehearsal, two days before the 30th Annual Grammy Awards

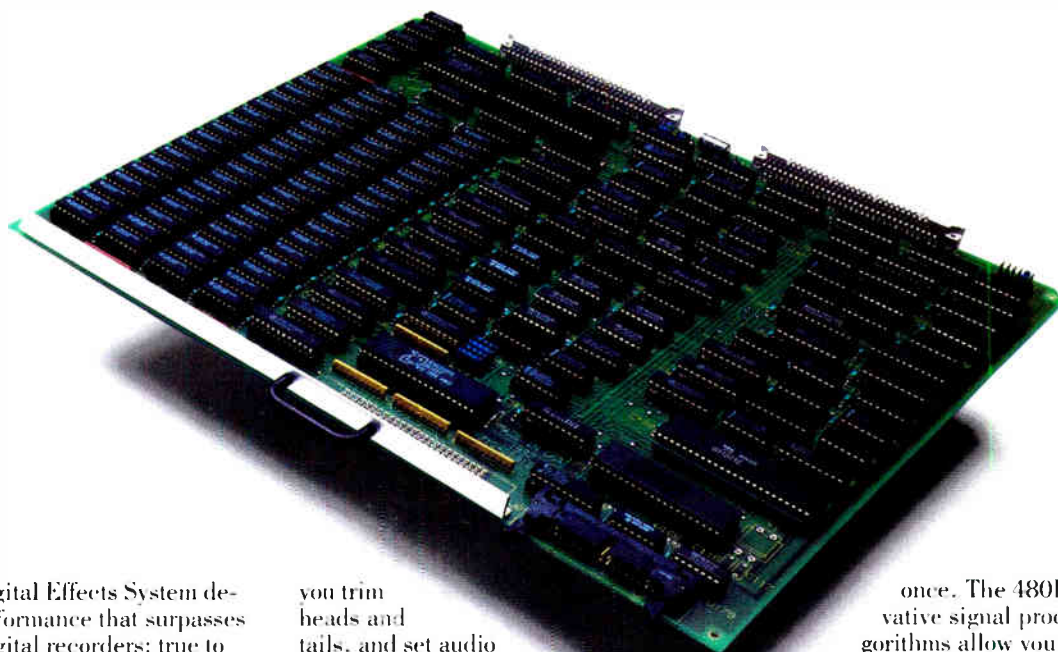
—CONTINUED ON PAGE 69

At top center is the hanging cluster of Meyer MSL3 cabinets.



# EXPANDING THE SYSTEM

*The 480L Sampling Memory Expander. Accurate sampling in phase-locked stereo:  
a Lexicon applications brief.*



The 480L Digital Effects System delivers audio performance that surpasses conventional digital recorders: true to life sampling is a prime example of its advanced engineering. With the optional Sampling Memory Expander, the 480L becomes an astonishingly practical way to copy or move several seconds of audio from point A to points B and C.

Until now, "flying in" or "slipping" vocal and instrumental overdubs meant tradeoffs. Two-track tape is clumsy and degrades the signal; DDLs with long memories are better, but not by much. Now, with the 480L's optional Sampling Memory Expander, you can digitally record 10 seconds of true phase-locked stereo or 20 seconds of mono at a 48 kHz sampling rate. 18 bit equivalent A/D conversion produces a typical dynamic range of 98 dB, with a bandwidth of 20 — 20,000 Hz; output doesn't get any closer to input.

If you're using a digital recorder that's Sony 1610 compatible, the Sampling Memory Expander and the 480L's digital I/O interface can reproduce the original performance at any location on tape without leaving the digital domain. Slip syncing, copying and time shifting of audio segments is faster and cleaner than ever before.

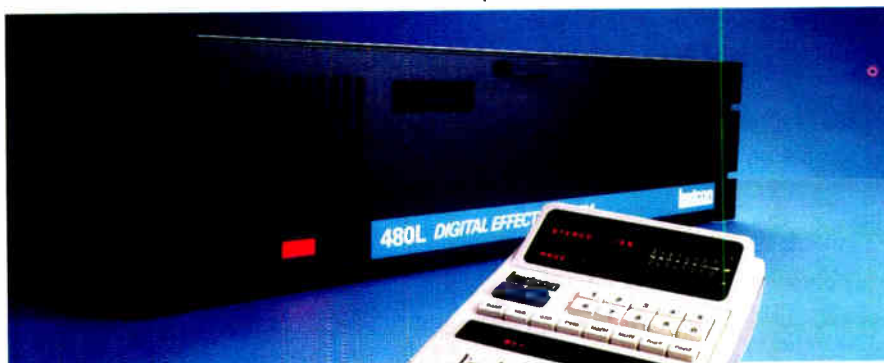
You control sample recording, editing, processing and triggering from your work position using the 480L LARC. Varying up to six parameters at once,

you trim heads and tails, and set audio trigger levels. Audio trigger response time, incidentally, is under 300 microseconds — virtually instantaneous. Sampling Memory Expander enhancements include Record Trigger to trigger sampling automatically from audio input, Time Variant Record, and sound on sound digital recording in sync with the original sample. Lexicon Dynamic MIDI® lets you assign MIDI controllers to sampling parameters, for new dimensions of real-time or sequenced control.

Sometimes even the most accurate replica isn't exactly what you're looking for: if so, the 480L will take you beyond imitation into creative sampling. Play samples faster or slower (without changing the sampling rate), backwards or forwards, even both at

once. The 480L's innovative signal processing algorithms allow you to enhance sounds with advanced reverbs and effects without leaving the digital domain. Add signal processing as you sample, or process a "dry" sample on playback with digital wet-dry mixing.

The 480L digitally integrates sampling and signal processing because it's designed as a comprehensive audio production tool: a system. And sampling is only the first of many directions in which this Digital Effects System can grow. We're continually examining the possibilities, and as your needs develop we'll implement new tools to meet them. Now is the time to call your Lexicon Advanced Products dealer for a demo of the new production techniques the Sampling Memory Expander makes possible.



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## Why your next console should be as difficult to hear as it is easy to operate.

### The studio is more complex and less forgiving.

Electronic production techniques using MIDI and SMPTE sync require more control than a "wire with gain" can provide. But as functions and components accumulate, the console's signal path has grown more complex, and its audio performance has suffered. On analog recordings, higher levels of crosstalk, noise and intermodulation were an acceptable price for additional control. On digital multitrack, however, these flaws become glaringly obvious.

### Crosstalk blurs the stereo image.

Now that digital recorders have virtually eliminated crosstalk, this is an especially annoying problem. *The AMR 24 matches the channel separation performance of digital multitracks* because it employs balanced buses that eliminate crosstalk the same way mic inputs do. This radical design approach takes full advantage of digital's more coherent stereo imaging.

Balanced buses also eliminate the intermodulation that plagues the sound of conventional "virtual ground" mix amps. *The AMR 24's noise floor is constant whether you route one input*

*to a group, or thirty six.* So you can concentrate on the music without distractions from the mixer, even on digital multitrack.

### Features shouldn't degrade audio performance.

Automation widens creative possibilities — and narrows the margin for console error. For example, FET mute switches that are "silent" individually can produce audible glitches when grouped. The AMR 24's carefully controlled switching time constants eliminate this problem.

Every circuit in the AMR 24 has been calculated with equally close attention. Each stage has at least 22 dB of headroom; total dynamic range is over 100 dB. Even so, *unused stages are bypassed to produce the shortest effective signal path in every operating mode.*

Perhaps the AMR 24 is a product of extremist engineering. But as we see it, optimum audio performance, not simply a revised layout, is what makes a console automation- and digital-ready.

### The feel is familiar; the functions are unprecedented.

The AMR 24 facilitates innovative production techniques within a classically

split configuration. Master Input Status switches select mic inputs or line returns on all input channels simultaneously. In its mixdown configuration, the AMR 24 will handle up to 60 tracks, because the 24 Track Select switch changes the monitor returns to line returns normalised to your second 24 track (or to synchronised "virtual tracks" from synthesisers and samplers). The monitor returns have aux buses, solo and mute, plus four bands of EQ and long throw faders, so this flexibility is achieved with no loss of audio quality. For additional effects returns, the Fader Reverse function creates an additional 24 patch points through the cue send faders.

Imaginative design and uncompromising construction give the AMR 24 flexibility and sonic transparency that represent clear achievements: especially clear on digital recordings. For all the facts on this innovative console, send your business card or letterhead to:

**DIDA**

**AMR 24**



Klark-Teknik Electronics Inc., 30B Banli Plaza North Farmingdale, NY 11735 (516) 249-3660

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show was to air on March 2, had a security setup similar to the State Department's, which is to say it was a sieve—already a crowd was gathering on the sidewalk near the stage door with autograph books in hand.

The signal comes over the ether. The Brown Jackets move in. Nowhere to run, nowhere to hide. Until you lean over the side of the Yamaha console and lay your mitts on a fader of the P.A. console, looking for all the world as if that's what you've been doing all your life.

The Brown Jackets hesitate. They haven't got the foggiest notion of what all this equipment does. For all they know, one slight flick of your wrist on the fader and the world as they know it will collapse, forcing them to go back to being waiters or pages at NBC, condemned to giving guided tours. They back off, their eyes crimson with fear and loathing, to troll for surer prey—like anyone with a satin baseball jacket featuring a record company logo.

It's hard to say which is the bigger thrill: getting to watch a semi-private performance by Jackson from the tenth row or beating the Brown Jackets at their own game. But their fear of the technology is as ungrounded as a cheap digital delay. This year, Grammy sounds great.

"People always used to complain about the sound of the show," says Murray Allen, the NARAS sound designer who has been in charge for the last four years. "And last year the L.A. papers wrote how wonderful the sound was. It's the most important music show on all year, so the sound should be good. Up until four years ago, I'll tell you, the sound was terrible. Now we have better equipment, better mixers, more people. We treat it like a record session."

Allen has been involved with the Grammy Awards show since its first live telecast. In 1958, a banquet marked the first awards session. Frank Sinatra, Peggy Lee and Dean Martin were some of those in attendance. A year later, the first Grammy show—prerecorded—was telecast nationally. In 1971, the awards show went live from Nashville. That's when Murray Allen climbed aboard as a mixer. "I did it alone that year, and this year we have seven or eight people handling the mixing," Allen comments.

He admits he might throw a hand on the faders in one of the two trucks parked outside the hall if necessary,

but he has had plenty to do without that. Allen is responsible for hiring and coordinating the various companies that make the sound end come together for the show. This year, as in the past, Greene, Crowe & Company of Burbank, CA, owns one of the trucks outside from which all the video switching and live sound is fed to the network (CBS). Music mixing is done in the Greene, Crowe truck by partner Ed Greene, who also decides on what mics to use and their placement, in consultation with Allen.

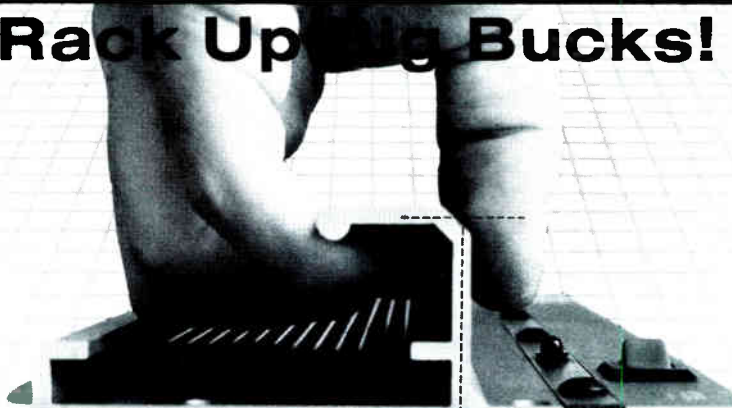
Nearby is the Record Plant truck out of New York City, which is handling

the sound cues for the podium mics, sweetening, audio cue playbacks for nominees and related music cues. All production mixing in the Record Plant truck, as well as all prerecorded playbacks, is done by Don Warsham. Paul Sandwise handles all playbacks from video tape machine, and cart playback.

"That gives each mixer a chance to set up his next situation," says Allen, "so while Don is doing production work, Ed Greene is setting up the next act. Then as that's being done, Donny comes on with the next production segment."

Inside the art deco hall, Andrews

## Rack Up Big Bucks!

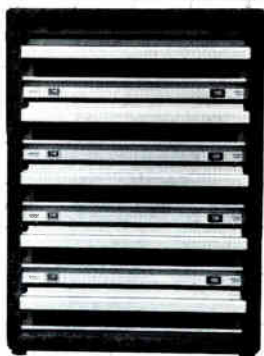


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my shows. They wanted it to be the best it's ever been."

Andrews is no stranger to sound reinforcement; he did the live sound in Radio City for David Letterman's sixth anniversary show. Andrews Audio does a plethora of special events—such as the Atlantic City fights, including the Tyson-Spinks bout—as well as tours and concerts. The challenges the Grammys present are obvious: not only does the sound have to be as good for the spoken portion of the presentation as it must be for the music segments, it's being done before 3,000 of the best ears in the business.

Aside from experience and technical chops, Andrews had another ace in the hole to offer: John Meyer and his patented SIM system.

"That's the reason I requested the SIM system," says Andrews. "I brought John Meyer in at my own expense at the Lifetime Awards to show them what can be done with this technology in giving audio more importance than it usually gets in a TV show. Normally the P.A. on a TV show doesn't get much attention paid to it, and that causes a problem. We use Meyers on everything we do. We wanted to bring this technology to television because television needs it. What ends up happening in TV is that the sound of the P.A. comes back from the room into the mics, and you hear that on TV. What we're trying to do is make the interface between the sound system and the room as

good as possible so that the P.A. and the room sound don't color the sound you hear on TV. We're trying to make the signal coming out of the speakers look like the signal that's coming out of the console, so that the sound system reproduces what's coming out of the console."

There are three main feeds from the stage boxes in Radio City. The bridge primary goes direct to the trucks; Andrews deals with the other two. One of the transformer-isolated splits goes to the monitor mixing consoles (a 40-channel Ramsa and two 30-channel TAC Scorpions, providing 100 channels for monitors). The last split goes to the three house consoles: two 40-channel Yamaha PM3000s and a Wheatstone 32-channel console, providing 112 input channels in the house.

"This was the first TV I've ever done where there was a block of time in the schedule for room equalization," says Andrews. "I said we had to have that in the schedule. Murray Allen made sure it happened. The whole reason Meyer was there was because of the demonstration I arranged for Murray.

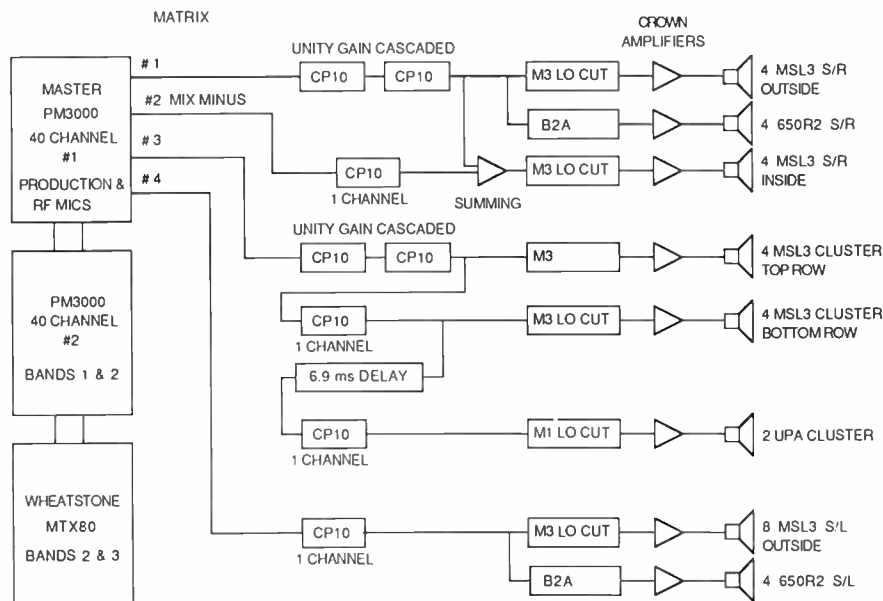
A large single cluster of Meyer speakers hangs from the ceiling above the stage and is divided into three sections: one covers the uppermost balcony, another for two lower balconies, and finally two UPAs hung off a lighting truss that are center fill for the closest seats in the center to the stage. Then there are two large clusters on

each side, each with its own group of subwoofers. Each is dealt with as a separate feed from the CP 10 EQs. "We're trying to build a single system," says Andrews. "This whole thing is thought of as a large monaural sound system even though it's in a number of different pieces."

Bob McCarthy, an assistant who has been working with the Meyer system for four years, explains that the SIM system is almost always used in conjunction with Meyer speakers. Its applications have been tested in theater, rock and recently with opera singer Luciano Pavarotti in concert. "We don't use it with just any system [of speakers]," says McCarthy. "There are certain criteria that must be met for us to qualify a speaker. We're not trying to make a silk purse out of a sow's ear, so to speak. The speaker system has to meet the following criteria: it has to be very linear, it has to have a flat frequency response, and a flat phase response, meaning it has to be time-corrected. It also has to have very low distortion and it has to be arrayable—which means that it doesn't have one frequency response in one seat and another in another seat. It also has to maintain linearity at the levels that people are going to mix them."

According to Andrews' associate, Mike Sinclair, "What you're dealing with here is the coherence of a speaker. If a speaker doesn't give back what you're sending to it, then there's no

## Andrews Audio Consultants GRAMMY SOUND SYSTEM BLOCK DIAGRAM





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way you can deal with the room. We're dealing here with a known speaker in an unknown environment with unknown sounds. That's what makes it easier."

Bob McCarthy explains, "What we're doing with the SIM is to take what they're sending from the board and make it the same thing that's occurring in the house. We do that by placing measurement mics in six or seven locations in the room. Nothing that any of these mics take in goes anywhere but into the measurement system. The idea here is to take two samples of the room and compare them. One channel could be the output of the console and another channel could be the mic and I compare the difference between what's leaving the console and what's actually occurring in the hall. I'm comparing the frequency response on a line-by-line basis all through the spectrum."

These sound "samples" are activated by a computer which turns on selected Bruel & Kjaer omni-directional mics. "They're placed on axis at approximate critical distance in the room," says David Andrews, "actually a little beyond critical distance. They voice all the speaker banks for different purposes and the computer tells us what changes to make in setting up the room once we have people in here for the show."

"Essentially you're listening to a known source in the room and comparing the sound you're trying to achieve with the sound you're achieving and EQing to optimize that," says Mike Sinclair. "When Bob first turned the system on and listened to the room he said 'there has to be something wrong here. From 100 feet away the room sounds exactly like it should!'"

"It's a very interesting and unique room," Bob McCarthy confirms. "In four years I have not come across the characteristics that this room has. It has a very short reverb time and an incredible, astounding amount of high frequency absorption." He adds that the high frequencies drop precipitously at 4k. Most of his EQ is used to replace that.

"SIM means 'Source Independent Measurement,'" McCarthy says. "And that means that we are now independent of the source material. We don't have to use a known source. The power of this is that I can do frequency response measurements just as valid with the music playing as with pink noise. What that means is that as the

show begins and the audience comes in and throughout the show I will be able to make measurements. If the hall goes through some change in frequency response during the show I'll be able to compensate for that."

Mike Sinclair amplifies in his proper British accent: "We can watch the curve changing and what the audience does to this room as they enter." Most of the mics will be kept on during the show for constant fine-tuning of the room.

"In a hall like this I don't expect night and day differences between empty and full because you have absorptive seating," says McCarthy. "It's not like a room with metal seats which changes radically when you let 10,000 people in. This gives you a way to quantify the difference."

Of the several hundred microphones available for use, ten to 12 mics are slated for use as house ambience. As the show progresses, three teams of people will swing into action: one for mic placement, one for monitor placement and one for band power.

David Andrews will direct mic placement, though the mics themselves are chosen by Ed Greene. "He's the engineer who has final control of what the TV audience will hear," says Andrews. "He makes his selection from his experience. We pretty much defer to his selection. We supply a lot of them since a lot of them are Shure 57s and 58s and Sennheiser 421s and 451s. The monitor positions are as fixed as anything is in this sort of last-minute change environment."

"We're trying to choreograph our monitor and mic placement along with various scenery elements and movement on stage," says Mike Sinclair. "We've moved entire monitor placements to fit things in during camera blocking and the crew here is very helpful. It's actually the first television project I've done that's so receptive to audio placement. The result is that we have a sound in here that is second to none."

Monitor mixers Mike Morley and Jules Aerts have a particularly difficult task ahead. "They're trying to mix the monitors with about 115 dB SPL at their ears all the time off the mains, and that's very difficult," says Andrews. "They're using regular reference monitors and they have to crank them to 115 dB SPL just to be as loud as the P.A. system. This is a music show done by people who make music, and by choice the NARAS committee likes

loud sound—because they're all recording studio people in the business and they like to feel and hear the music. So this show will be much louder than a normal TV special in terms of what the TV audience hears." Altogether, over 30 Meyer monitor speakers will be used for the live performances.

The flow of the afternoon rehearsal seems almost too easy. What problems do arise are dealt with quickly and professionally, giving a seamless look to the entire process.

One of the few apparent problems is that host Billy Crystal's podium is positioned on stage right directly in front of a speaker stack. "We had to play quite a game getting his voice out of the speakers that were directly going into his mic while still keeping his voice in the speakers," David Andrews admits.

Some of the performers will use backing tracks for their performances. "Some of the acts feel insecure so we allow them to use tape playback," says Murray Allen, "which is fine with us because we want to make the act perform as well as they can. Other acts go live all the way."

Anything that has survived 30 years uninterrupted has to have accumulated some legends along the way. Murray Allen recalls a pair of them.

"When we did Prince a couple of years ago, we had a very big setup. We not only had the Record Plant truck, we had *two* Record Plant trucks and a whole second P.A. board put in for him. We had two separate total audio setups and another monitor board, one for Prince and one for all the rest of the show. He demanded that and he got it, along with his own crew."

"But the funniest thing of all happened in Nashville in 1973. Curtis Mayfield was doing a number and a smoke machine was supposed to blow some smoke out over him. Well, instead of dispersing over the audience, it lumped in one cloud and hung right above him. Then when he went off-stage they couldn't get it to go away. This was live TV, for the first time, mind you. It just hung there."

"Finally when it did fade away, it made the floor wet. The next act was a dance act and the dancers were virtually skating around the stage."

The Grammy Awards show has almost everything else, why not its own weather? ■

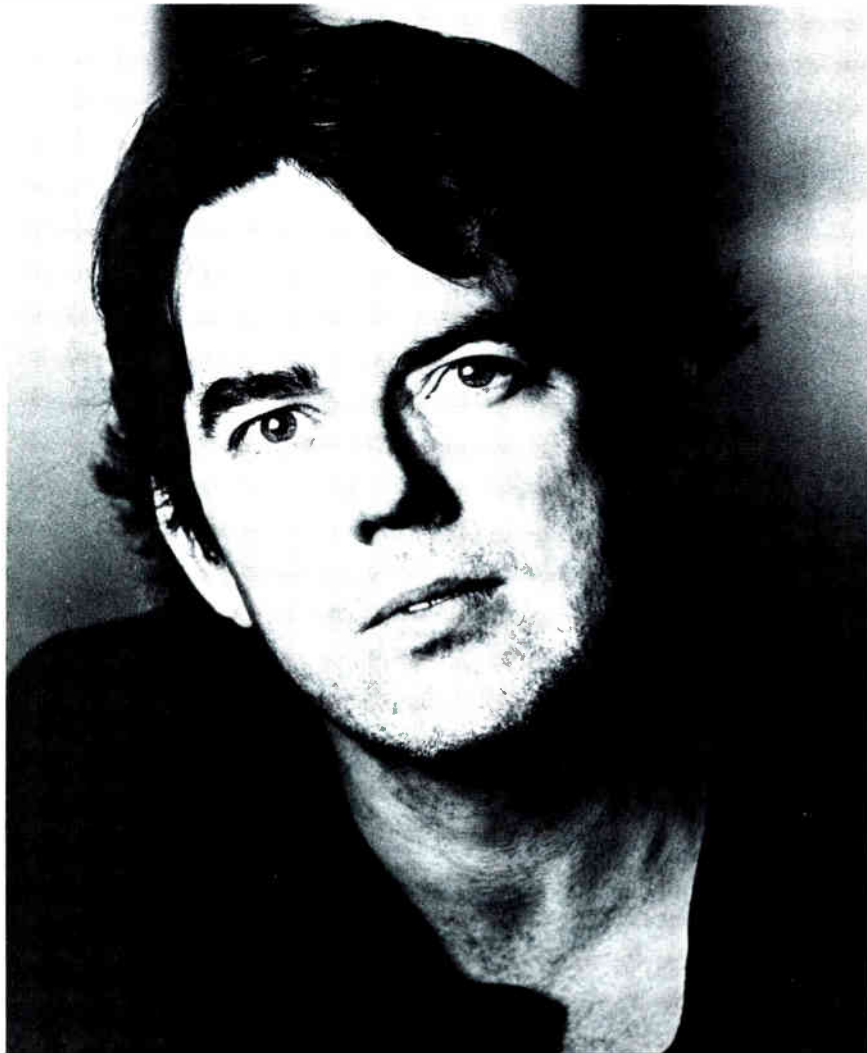
*Dan Daley is a Mix contributing editor.*

by Mr. Bonzai

# JIMMY WEBB: CAPTAIN HOOK

**I**t's fun to imagine the writer's first performance of a song that might be destined for greatness. The songwriter tenderly displays the baby up for adoption. The prospective singer listens and envisions the child growing to fame and fortune. The result can become history that touches generations. Songs like "Up, Up and Away," "Wich-

ita Lineman" and "MacArthur Park" are tunes that pick up our spirits and carry us off to another time; emotional layer cakes that we can feast on. Classic pop songs are the soundtracks of our collective lives, capturing the mood of our memories, both global and personal. Sometimes the song lives longer than the artist. But the songwriter lives





# BRYSTON



## BRYSTON POWER AMPLIFIERS CONTINUE TO DEFINE THE STATE-OF-THE-ART IN MUSICAL ACCURACY, LONG TERM RELIABILITY AND PRODUCT INTEGRITY.

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the input section to the output section, without exception, are designed to optimize the musical experience.

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**W**e consider this criterion to be exceedingly important. We have applied techniques and materials in our everyday construction of electronic equipment more typically utilized in the military and aerospace industries.

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you'll have a verse that you like. Or by working really hard, you will at least decide to discard an idea. If you look at it in the proper frame of mind, you've done some valuable work because you've decided what you're *not* going to do.

**Bonzai:** What is a hook?

**Webb:** A hook is that *good* part of the song. The hook is the best part.

**Bonzai:** Does that come first?

**Webb:** Well, I don't give a lot of conscious thought to it. I set out to communicate an idea. How could I set out to write a song like "Highwayman" and think about the hook? I'm so involved in telling the story that I'm not thinking about the hook. I'm dedicated to telling the story and somehow or other in the last verse the hook comes to me—God gives it to me. "Perhaps I may become a highwayman again." That's the hook in that song. But I don't go out consciously searching for these things. Sometimes they happen nicely of their own accord, and I tend not to contrive them.

I do recognize some of the great ones, like "I Want to Know What Love Is." The chorus is such a grabber. And "You've Lost That Lovin' Feeling"—that big section in the middle, where Bobby [Hatfield] and Bill [Medley] exchange lines and challenge each other and it leads up to that tremendous drum roll-off into the last chorus. That's one of the great hooks of all time. That's a hook, because it's got your complete and utter attention.

I remember a great Mac Davis song—somebody told him to write a song with a hook. They said that the problem with his songs was that he didn't have hooks. Get out there and write us something with a hook! Mac wrote, "Baby, baby, don't get hooked on me." A great chorus and a great hook.

**Bonzai:** Last month I did an interview with Brian and Edward Holland. I've been listening back to a lot of Motown music. I don't think people take those songs seriously enough as incredibly complete works.

**Webb:** First of all, "Baby, I Need Your Lovin'" was my favorite high school record. It just grabbed me and tore me apart. Maybe I was going through something with my girlfriend, but it really got me. I remember thinking,

"Who made this record?!" I looked at the label and it said Motown. I looked at the writing credits and said to myself, "I don't know who these people are, but I'm going to learn how to write songs from them." That's how much I thought of Motown and particularly of the writing on that record.

It led me straight to the Motown door in Hollywood. It was one of the few companies that would open the door, and they were encouraging young writers in those days. They not only let me into their office; they let me into their hearts and became family to me. I have very strong feelings about Motown. The first royalty check I ever got was from a Supremes Christmas album. A check for \$350 for a song called "My Christmas Tree." It was a sudden realization for me—you could make money doing this. It had never occurred to me before—I was just doing it for fun.

**Bonzai:** You had great wealth at a young age. What's the stupidest thing you did with your big money?

**Webb:** Hang on. I'll tell you what I did once. My wife and I were in London, and I used to love a toy store over there called Hambly's. We were staying at the Inn on the Park. I found a small army tank at Hambly's that I liked—a battery-operated toy called the Crusader Tank. I'm a complete and utter toy freak—thank God I have five boys because I can play with all their toys, and they can't tell me I can't. [laughs]. I asked the woman behind the counter at Hambly's, "How many of these do you have?" She looked at me, very surprised and told me that they had 50 or 60. I said, "I'll take 'em." And I took every one and had them delivered to the hotel. I had them all lined up in the bedroom, like I was Rommel. I had 60 tanks. Didn't you ever want to do something like that? I had them organized in battalions and then Patsy and I ordered room service. The waiters came up—very proper English waiters. Three of them were putting out the whole silver service and pouring the wine. I went into the bedroom and launched a major tank assault. I sent wave after wave of these tanks through the doorway and into the living room while they were trying to prepare this flambe. They were incredulous! It was ridiculous, like thousands of beetles crawling across the floor. Little clusters of them were in corners of the room grinding away. It

was hilarious. They opened the door and I sent tanks down the hall. The elevators came up empty and I sent tanks down in the elevators. There were tanks invading the lobby.

**Bonzai:** How old were you?

**Webb:** I was about 25. I think that's the silliest thing I ever did with my money—but it was worth it.

**Bonzai:** Please don't take this morbidly, but what music would you like played at your funeral?

**Webb:** Probably Ralph Vaughan Williams' "The Lark Ascending."

**Bonzai:** You've been working with Ray Bradbury on a Broadway show based on his *Dandelion Wine*. Is there a similarity in your sensibilities?

**Webb:** He's from a small town in Illinois, and I'm from a small town in the Midwest as well. I was a fan of his—I loved his books when I was a kid. There's a similarity. I read him and really liked his ideas, and especially his musicality. I even noticed that then—the musicality of his work. For instance, his Martians who sang. I always felt very close to him and then when I met him, he was more than I could have hoped for, in terms of being a kindly person—very easy to work with. He's given me a lot of autonomy over his work, and has let me mess around and change it around, and goof with it. If he wasn't a big enough man in terms of his own ego to let that happen, then there would be no way we could work together. There's no way to collaborate unless the two people are willing to let go of an awful lot of ego and pride, and all of that stuff. It all has to go out the window.

**Bonzai:** I know a lot of friends have wanted your time lately—thanks for spending some of it with a stranger. I wish you continued luck with your shows.

**Webb:** Well, it went well last night. It almost intimidates me because I don't know if I can do as well as I did last night again, but I'm hoping that I will. I'm gonna go out on the tennis court now and pump myself up and get ready for tonight. ■

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*Mr. Bonzai, a 15-year veteran of the music industry, is former manager of a major Southern Cal recording studio, and author of Studio Life: The Other Side of the Tracks (Mix Publications).*

# BRYSTON



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2. Long term reliability
3. Product integrity

### MUSICAL ACCURACY

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the input section to the output section, without exception, are designed to optimize the musical experience.

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on in his work's incarnations.

Jimmy Webb is one of the most prolific fathers of popular song. He's penned the words and composed the tunes that have given images and character to the voices of Richard Harris, Donna Summer, Glenn Campbell, the Fifth Dimension, and lots more. Just last year he created the Four Cowboys of the Space Age with "The Highwayman" for Waylon Jennings, Willie Nelson, Kris Kristofferson and Johnny Cash.

He's a big daddy, and there's nothing like a proud papa showing off his kids.

The surprisingly youthful Webb recently left his New Jersey homestead to make a rare cabaret appearance in the intimate Cinegrill room of the Hollywood Roosevelt Hotel, an historic landmark that just got refurbished and restored with a fine set of new clothes. Alone with the piano for half his set, and then joined by the sweet, subtle guitar of Fred Tackett, Jimmy sang his classics, introduced us to some new songs, and cracked wise about his life.

Each night the classy, cozy room was filled with folks traveling back in time to the source. People who grew up with his songs came to see the real thing. Artists, unknown and legendary, came to experience the magic that makes history (and quite a few bucks). Listening to the man sing his heart out is an education in storytelling and songwriting.

**Bonzai:** How does it feel to be performing again and seeing all your old friends in Los Angeles?

**Webb:** I am really enjoying it. There's a lot of family and friends—an atmosphere of reunion around the shows. We're filling the place, but half of the people who come are people I know. It's very warm and good to see these faces again.

**Bonzai:** Let's go back to the beginning of your life in music. Can you remember the first song you ever heard?

**Webb:** One of the first things I remember is riding along in the back seat of my dad's '52 Plymouth at night and hearing "Tara's Theme" from *Gone With The Wind*. It was just the most beautiful thing I had ever heard and I remember the experience very clearly. I must have been 6 or 7 years old. It was cozy in the back seat and I remember the green glow from the instru-



Jimmy Webb in concert at the Cinegrill in the Hollywood Roosevelt Hotel, spring '88.

ments on the dashboard. My folks were talking and I drifted off to sleep listening to them and the music on the radio.

**Bonzai:** As a child, who had the biggest musical influence on you?

**Webb:** I had a piano teacher in Oklahoma City named Karen Goddard. My dad was a preacher and it was my mother's fondest desire that I become the church pianist. She encouraged me from the age of 6, but nothing happened until I met Karen Goddard and she began to teach me to do improvisations for church offeratories, based on hymn tunes. We would take something like "Amazing Grace" and she would teach me to reharmonize it. She showed me where to use diminished chords and augmented chords, how to play arpeggio styles and how to create effects on the piano. I guess you would call this composition. I must have been 12 or 13 at the time. She was a very good teacher and I started doing some interesting music based on church hymns, some of which I still think are the most beautiful tunes that I've ever heard—"Come Thou Fount of Every Blessing," "I Will Arise and Go to Jesus." Some of the ones that are based on folk tunes are hauntingly beautiful.

That was the strongest musical influence when I was young, and by the age of 13 or 14 I started putting some of those ideas into practice in my own tunes.

**Bonzai:** You were writing that early?

**Webb:** Yes, I wrote a song in Oklahoma City in 1957 called "It's Someone Else" that is on Arty Garfunkel's *Watermark* album. He once took me into a San Francisco studio and asked me to play everything I knew. I played for two days and put it all on tape. I literally played everything I knew and then I started playing the Baptist hymns I could remember. He loved all of them. Then he said, "There must be more." So I said, "There is one song I think I can remember but you wouldn't be interested in it. I wrote it when I was 13 years old." He asked me to play it and liked it so much that he put it on his album.

**Bonzai:** You've continued working with him over the years. Hasn't he been a supporter of your *Animals Christmas* project?

**Webb:** Yes, we spent three or four years working on that together. We started out with a big live concert at St. John the Divine on 110th Street in New

York. Then we put it on at Festival Hall with the Ren Orchestra. All of those performances were recorded but we decided that it wasn't really what we wanted. We started all over again and went to London to work with the London Symphony Orchestra. We actually worked all over the world—we recorded a boy's choir in St. Paul's at Wembley in England, Amy Grant in Nashville, synthesizer overdubs in New York, Arty did vocals in Los Angeles, and we mixed in Montserrat. It's been an interesting, time consuming process, but it's been worth it. It's been out two years in a row now and I think we've sold about 250,000 albums just during the holidays. The aim, of course, is to perpetuate it and have it available every year. And we have helped arrange several performances each Christmas, ranging from church choirs with piano to full symphonic concerts, some of which have been choreographed and costumed. I'm very happy with it—I'm hoping that it will become a standard repertory piece for Christmas.

**Bonzai:** It deals with Christmas from the animals' point of view—what do you think the difference is between animals and humans?

**Webb:** Animals are innocent and trusting, and people aren't. God gave us the ability to be devious, if we choose to do so. Because we have that ability, we can turn things wrong. We can subvert nature itself. Man created plutonium—God didn't. Man is too clever and does things that can be self-destructive. Consider that man will take cocaine until he has a heart attack and drops dead.

**Bonzai:** Do you have much hope for the human race?

**Webb:** I'm very optimistic. I have to be, because I have five sons [ages 15, 12, 9, 5 and 8 months]. I have to be optimistic because I have no choice. But also, I think that the world must always have looked like a pretty rotten place and somehow we have hung in there and it hasn't been all bad.

Half the world joined together to defeat the Nazis. It would be hard to imagine a more horrific, barren planet in some godforsaken solar system somewhere out there that was controlled by a thousand-year Reich of Nazis possessed with atomic weapons to insure that their regime could never be overthrown. This planet had a real brush with that scenario.

At different times in history mankind has shown a noble aspect and a self-sacrificing, heroic quality that gives us redeeming value. Otherwise it would be a hopeless situation. I think that technology is a mixed blessing, but we will learn to control it and it will help us one day. I think it is hurting us now, but I think it is because we haven't mastered it. We have an engine that doesn't run clean.

**Bonzai:** Let's move on to something that many people feel you have mastered—songwriting. When you're writing, what comes first—the lyrical nugget or the musical mood of the song?

**Webb:** When I first started writing, years ago, I almost always got things out of musical combinations: chords, melodies; musical elements that enthralled me and made me feel good, made me tingle a bit. That would get me started on a song. I started out from the musical side, and used the music, the playing of the chords, and the whole meditation of working with the piano. Down through the years, I have gradually become more of a lyric writer. I think I'm at my best when I sit down and work out a lyric and start

working out the real idea in advance of the music.

I never do the same thing twice, but I tried to explain the process in an article for George Martin's book *Making Music*. I laid down a form, a way of writing, a way of achieving a finished song that I often use. For instance, on my legal pad I might work for an afternoon and come up with one verse. Then I stop writing lyrics for a while and write the music for that verse. The next afternoon, I might spend four or five hours just on the music for that verse. OK, that's a good verse and that's a good tune. Now, for the chorus. I like to know where I'm headed and the effect I am trying to achieve. I don't always get there, but I like to imagine what the song's going to be like in its entirety while I'm writing it. I try to make it materialize, to manifest it as the way I imagine it as a great song, a great ballad, or as a happy, upbeat, carefree song.

Next, I may write the words to the chorus and finally the rest of the music. So, I've got two verses and two choruses and maybe I've spent two or three days to get to that point. That would be the first draft, but I go over that a hun-

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dred times looking for lines that might be improved. I'll sing it many times, maybe put the clock on it to see how I'm doing for time. If I have time, I may put in a bridge and modulate and do a big last chorus—something like that. Sometimes I'll time it and realize the song is finished. It would be too long with a bridge; I've said what I want to say, so I just leave it there. Or I may add a bridge, and as I do it over and over again, I'll be constantly picking at the words and making changes. Right up until the last minute. And sometimes after I do the demo, and I'm listening to it a year later, I go, "Shoot, I wish I'd changed that line." I revise my lyrics, even years later. I say don't ever put 'em away until you really have to—until you've got a major artist recording it, and then you have to stop working on it. Until then, you can keep working and making it better.

**Bonzai:** In listening to you the other night at the Cinegrill, the stories struck me as little movies. Do you see the songs cinematically? They seem so visual.

**Webb:** Well, I do relate to music visually and I do see things. For instance, "Wichita Lineman" came to me when I was driving along one of those flat Oklahoma panhandle roads up by Kansas. You can see for 50 miles and the telephone poles just recede into the distance, getting smaller and smaller. As I was driving, I saw a man working on the top of one of these tall poles. It was such a vividly desolate and lonely image, and as I drove on he was lost in the distance. There he was, suspended between heaven and earth. I wondered what he was listening to, what was he thinking about. I got the strong impression that he was listening to what was going on, on the wires—they have those little phones. One thing led to another, but it was triggered by the stark image of the man out there on the flats.

"MacArthur Park" is another—I conjure up very clearly what that love affair meant to me. It's encapsulated in a picture of a Sunday afternoon lunch, walking through the park with my girlfriend then. All those images are little snapshots, little memories that I keep.

**Bonzai:** What are your memories of Hal Blaine, someone you worked with in the beginning of your career?

**Webb:** In the period when we were recording together he was the drummer on seven Grammy Records of the Year in a row. He is just the steadiest guy, the most reliable guy of all. He's incredibly strong and solid, and his hallmark is simplicity. He kept tracks within the reach of the listener. He made them infectious, but he never got overly complicated. From working with Joe Osbourne as well, I think the trademark of Hal and Joe's sound was a real solid simplicity. They worked extremely well together, by the way.

As a friend, he was one of the warmest, nicest human beings to me. It all began when I was working in Bob Ross's old studio and I had traded some publishing for studio time. I was working with a band, and had just started out with Hal Davis, Frank Wilson and Mark Gordon. I was semi-managing this group of girls called The Contessas, and the guys up at Motown helped me put together some sessions. There was an independent producer, some money was raised and I got a chance to do my very first arrangements.

I was living in Colton then. The Contessas—Susie Horton, Susi Weir, Alice Wheaton and Sharon Johnson—helped me copy out the parts before the date. We did it in pencil on this simple manuscript paper that you buy at any music store. We took them into the session and Hal Blaine was the drummer. I had written for all concert instruments because I was scared to death I would transpose something wrong. I wasn't confident enough and couldn't stand the idea of a disaster so I wrote for three trombones, which I thought would be a nice sound, and I wrote for flute and strings, vibes. It was a nice chart. I realized I could do it—I had an ear for it. And yet, nobody said anything—no comments.

Finally, the session broke up and Hal came over. He said, "Listen kid, stick with it—you're gonna be great at this." He shook my hand and he was like a father to me for ten years after that. We were in the studio all the time, and he worked on all the records I made in the golden days of the late '60s and early '70s. From the first time he saw me, he was constructive and encouraging. I thought he was like that with all the young guys.

Hal was a very funny guy in the studio. I remember once we were at United Western, in Studio Three—I think we were working on a Johnny



Rivers date—might have been Lou Adler producing. Hal took off his shirt because it was hot in there and the guys were playing real hard rock and roll. Hal was sweating, and then Tommy Tedesco took off his pants. It was hilarious to see him sitting there in his underwear playing the guitar. They were a real fun loving group of guys.

**Bonzai:** Hal feels that Glen Campbell's guitar playing brought a whole new fire to music.

**Webb:** There's no doubt about it. When someone is as talented as Glen, it's easy to overlook something like his guitar playing. He's such a great performer in general, and a great singer. I also think he did a pretty fair job of acting in *True Grit*.

**Bonzai:** What does Glen give to your songs?

**Webb:** He has a way of communicating music to the masses. He's very good with arrangements. He gets more out of songs commercially than I do. He knows the radio; he's got good instincts. And Glen really has a silver throat—his voice is perfect. It's a shame when someone does something so

well and we start taking it for granted. And behind it is his incredible guitar playing ability. I know that changed the studio scene around, because he brought a new energy and a new type of playing. He played on everything—he was part of that top session group. Maybe that's where Glen gets his ability to cut hits, from having worked for so many great producers in the studio—picking up ideas from the Phil Spector and the Lou Adlers.

**Bonzai:** What are the essential qualities of a great producer?

**Webb:** It depends on the production. Producers go for different things and you pick different producers for different projects. I think, first of all, a great producer has to know sound. And he has to be up on it—it has to be a daily thing of staying on top of the latest developments, and listening to everything. Awareness, familiarity with the context of the business at all times has a lot to do with an ability to create something that is successful, that sounds like today and not ten years ago. I think a producer must have a good way with people and be a diplomat. A producer must be a psycholo-

gist, too. Probably the strongest part of that equation is the psychology—the ability to sometimes trick an artist into doing what you want. The artist may have a block of some kind and your job is to help them get past it. It's a constant process of trying to elicit a response, to get something out of another human being. I think the really great producers are all master psychologists.

**Bonzai:** You mentioned block. What is your cure for writer's block?

**Webb:** The only way I know how to cure it is to hear down. Sometimes I sit at the piano and I have no idea what I am going to write and I'm almost paralyzed. I can't pick up my hand and sound a key. It feels like a futile act, and I don't know why I'm there and it doesn't matter which note I play. Nothing is going to lead me anywhere. Still, I feel you have to show up and you have to play that first note. You have to hope that it will lead you to something else. Unfortunately, I don't think there is any way around it. You have to work your way through it. It's hard work and you just have to do it. It may come slowly, but in two or three days maybe you'll break through and suddenly



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you'll have a verse that you like. Or by working really hard, you will at least decide to discard an idea. If you look at it in the proper frame of mind, you've done some valuable work because you've decided what you're *not* going to do.

**Bonzai:** What is a hook?

**Webb:** A hook is that *good* part of the song. The hook is the best part.

**Bonzai:** Does that come first?

**Webb:** Well, I don't give a lot of conscious thought to it. I set out to communicate an idea. How could I set out to write a song like "Highwayman" and think about the hook? I'm so involved in telling the story that I'm not thinking about the hook. I'm dedicated to telling the story and somehow or other in the last verse the hook comes to me—God gives it to me. "Perhaps I may become a highwayman again." That's the hook in that song. But I don't go out consciously searching for these things. Sometimes they happen nicely of their own accord, and I tend not to contrive them.

I do recognize some of the great ones, like "I Want to Know What Love Is." The chorus is such a grabber. And "You've Lost That Lovin' Feeling"—that big section in the middle, where Bobby [Hatfield] and Bill [Medley] exchange lines and challenge each other and it leads up to that tremendous drum roll-off into the last chorus. That's one of the great hooks of all time. That's a hook, because it's got your complete and utter attention.

I remember a great Mac Davis song—somebody told him to write a song with a hook. They said that the problem with his songs was that he didn't have hooks. Get out there and write us something with a hook! Mac wrote, "Baby, baby, don't get hooked on me." A great chorus and a great hook.

**Bonzai:** Last month I did an interview with Brian and Edward Holland. I've been listening back to a lot of Motown music. I don't think people take those songs seriously enough as incredibly complete works.

**Webb:** First of all, "Baby, I Need Your Lovin'" was my favorite high school record. It just grabbed me and tore me apart. Maybe I was going through something with my girlfriend, but it really got me. I remember thinking,

"Who made this record?!" I looked at the label and it said Motown. I looked at the writing credits and said to myself, "I don't know who these people are, but I'm going to learn how to write songs from them." That's how much I thought of Motown and particularly of the writing on that record.

It led me straight to the Motown door in Hollywood. It was one of the few companies that would open the door, and they were encouraging young writers in those days. They not only let me into their office; they let me into their hearts and became family to me. I have very strong feelings about Motown. The first royalty check I ever got was from a Supremes Christmas album. A check for \$350 for a song called "My Christmas Tree." It was a sudden realization for me—you could make money doing this. It had never occurred to me before—I was just doing it for fun.

**Bonzai:** You had great wealth at a young age. What's the stupidest thing you did with your big money?

**Webb:** Hang on. I'll tell you what I did once. My wife and I were in London, and I used to love a toy store over there called Hambly's. We were staying at the Inn on the Park. I found a small army tank at Hambly's that I liked—a battery-operated toy called the Crusader Tank. I'm a complete and utter toy freak—thank God I have five boys because I can play with all their toys, and they can't tell me I can't. [laughs]. I asked the woman behind the counter at Hambly's, "How many of these do you have?" She looked at me, very surprised and told me that they had 50 or 60. I said, "I'll take 'em." And I took every one and had them delivered to the hotel. I had them all lined up in the bedroom, like I was Rommel. I had 60 tanks. Didn't you ever want to do something like that? I had them organized in battalions and then Patsy and I ordered room service. The waiters came up—very proper English waiters. Three of them were putting out the whole silver service and pouring the wine. I went into the bedroom and launched a major tank assault. I sent wave after wave of these tanks through the doorway and into the living room while they were trying to prepare this flambe. They were incredulous! It was ridiculous, like thousands of beetles crawling across the floor. Little clusters of them were in corners of the room grinding away. It

was hilarious. They opened the door and I sent tanks down the hall. The elevators came up empty and I sent tanks down in the elevators. There were tanks invading the lobby.

**Bonzai:** How old were you?

**Webb:** I was about 25. I think that's the silliest thing I ever did with my money—but it was worth it.

**Bonzai:** Please don't take this morbidly, but what music would you like played at your funeral?

**Webb:** Probably Ralph Vaughan Williams' "The Lark Ascending."

**Bonzai:** You've been working with Ray Bradbury on a Broadway show based on his *Dandelion Wine*. Is there a similarity in your sensibilities?

**Webb:** He's from a small town in Illinois, and I'm from a small town in the Midwest as well. I was a fan of his—I loved his books when I was a kid. There's a similarity. I read him and really liked his ideas, and especially his musicality. I even noticed that then—the musicality of his work. For instance, his Martians who sang. I always felt very close to him and then when I met him, he was more than I could have hoped for, in terms of being a kindly person—very easy to work with. He's given me a lot of autonomy over his work, and has let me mess around and change it around, and goof with it. If he wasn't a big enough man in terms of his own ego to let that happen, then there would be no way we could work together. There's no way to collaborate unless the two people are willing to let go of an awful lot of ego and pride, and all of that stuff. It all has to go out the window.

**Bonzai:** I know a lot of friends have wanted your time lately—thanks for spending some of it with a stranger. I wish you continued luck with your shows.

**Webb:** Well, it went well last night. It almost intimidates me because I don't know if I can do as well as I did last night again, but I'm hoping that I will. I'm gonna go out on the tennis court now and pump myself up and get ready for tonight. ■

*Mr. Bonzai, a 15-year veteran of the music industry, is former manager of a major Southern Cal recording studio, and author of Studio Life: The Other Side of the Tracks (Mix Publications).*





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# TINA TURNER

by Randy Ezratty

Articles about remote recording projects are often stories of how some live record or soundtrack was made *in spite* of the circumstances under which it was recorded. The obstacles that can hinder or prevent the recording of a live event include anything from geographical inaccessibility and weather conditions, to technical problems, to uncooperative artists or producers, to physical fatigue and deprivation. Being the owner of NY-based Effanel Music, a remote recording company that specializes in worldwide portable packages (in addition to conventional truck based systems), I've got my share of war stories.

Fortunately, from time to time I get involved with projects that go so well I realize just how many of the variables and unknowns *can* be anticipated and controlled, thus resulting in a superior end-product. Just as we remote recording guys are sometimes quick to blame others when things aren't exactly right (and to pat ourselves on the back for overcoming the aforementioned perils), it happens that a lot of the credit for the good ones goes elsewhere, too. I've chosen to write about Tina Turner's live HBO broadcast and recording from Brazil not only because there are examples of successful and innovative audio design and execution, but because this job exemplified the *positive* outcome of a team effort. As a matter of fact, Tina's production company is aptly called Teamwork Productions.

## The Project

In October of last year, I received a call from John Hudson, the owner/engineer of Mayfair Studios in London. I was told that his client, Tina Turner, was going to broadcast her January concert live, via satellite, from Rio's giant Maracana Stadium. In addition to live-to-air mix facilities, they needed to record the show so that a refined

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# Before After

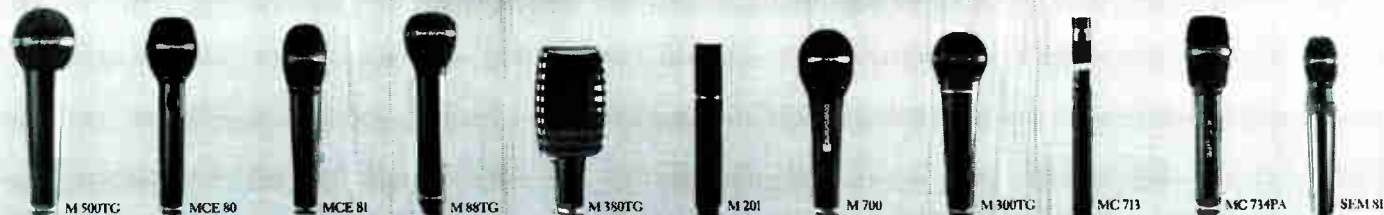
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More importantly, it's even harder to *hear* the difference. But that's something you'll have to prove to yourself. Fortunately, every time you put a TourGroup microphone to the test, you can take advantage of unparalleled Beyer sound.

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by Mark Herman

# SOUND REINFORCEMENT NEWS

**R**ecently, I managed to catch **Sting** on tour at the Oakland Coliseum. Our industry's largest sound reinforcement company, **Clair Brothers**, provided the sound. Well-respected audio engineer **Dave Kob** mixed the flying 52-box Clair S-4, Carver 2.0-powered house system on a Clair 32 x 12 x 6 console. Monitor engineer **Tom Herrmann** handled the stage duties on a Harrison SM-5 32 x 16 console. Tom remarked that it was the first time he'd used a Harrison and he really liked it. He also had rave reviews for Clair's new monitor system. Other engineers for the tour were **Ed Dracoules**, **Tom Folehinger** and **Tom Ford**. The Oakland Coliseum is known as something of a mixer's nightmare, but you couldn't tell listening to Kob's excel-

lent mix and dB level. Judging by the quality of the sound and crew at the concert, Clair Brothers deserved an "A" rating.

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Left: Sting onstage at the Oakland Coliseum. Above: house mixer Dave Kob. (For more on Kob, see page 142.)

PHOTOS: DAVE LEFPORE



# Before After

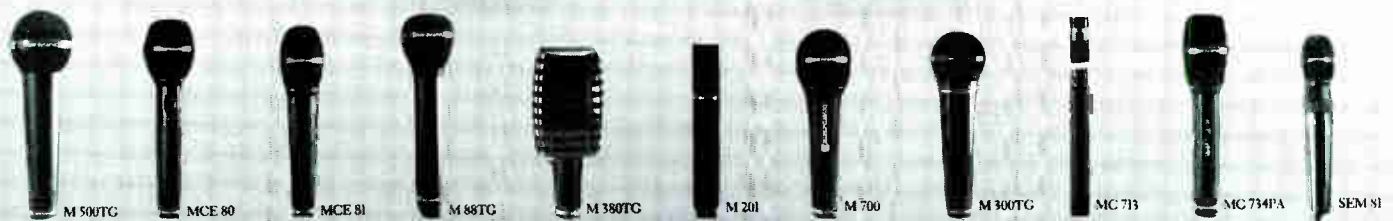
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post-production mix could be used for later rebroadcasts throughout the month. Also, Hudson was in the process of producing and mixing Tina's soon-to-be-released live album (from London recordings) and he wanted to have the option of including tracks from the Rio concert. The recording was to be 48-track, approximately 52 inputs from the stage. I sent him specifications and a bid based on the portable 48-track system which we had used in '87 for Paul Simon in Zimbabwe and for Peter Gabriel in the U.S. and Greece. We had just added 48 channels of Dolby SR to the system, and I included that as part of our package. I assumed that the standard practice of using one recording console for both tracking and stereo ("monitor") mixes, with effects, would be sufficient.

### The System

A few weeks later, I was told that we were on for the job but the specifications had changed. In addition to our basic tracking system, Hudson requested that we design and supply a *separate* 52-channel mixdown system. He gave us an enormous and very exacting list of processing equipment, plus specifications for a mixdown board ("It will have to be able to do more things simultaneously than my SSL").

Luckily, Effanel's John Harris had worked for Maryland Sound Industries prior to joining us and was very familiar with the Yamaha PM3000 concert-mixing console. He felt that while this was not a recording console, its numerous VCA sub-groups, effects buses and matrixes would make it the ideal live-to-air mixdown board. AT/Scharff Rentals had a 40-channel PM3000 available along with a smaller Yamaha board for extra channels. AT/Scharff played an important role on this job in that they supplied much of the mixdown equipment and made it available for advance testing and interface prior to its New York departure.

### Pre-Production

Hudson approved the revised specifications for the expanded system and proceeded to map out a game plan. Three weeks before the show, we received an input list from Clair Brothers' Dave Natale, Tina's house engineer, along with documentation from Hudson that specified the 48-track layout plus every nuance (down to the last patch cord) of the mixdown system. He even sent us 48-track masters



from Tina's London shows so that we could get a feel for what we'd be recording.

Hudson appropriately felt that we—the recording crew—were the ones most qualified to design and implement the stage interface, audience miking and basic tracking, and that he would focus more on his (rather ambitious) live mix.

We at Effanel divided up various responsibilities at this point. Mark Shane was to handle the stage-to-recording interface along with the overall system maintenance. I took responsibility for the 48-track SR recording and John Harris was in charge of the mixdown system. Mayfair staff engineer Mike Ging (good engineer name) would accompany Hudson to assist with effects cues.

### Dateline: Rio

The system arrived in Rio six days before the concert. The Brazilian television network, TV Globo, was providing remote video facilities for the 16-camera shoot. They also provided us with a wonderful 20 x 24-foot modular steel container placed 280 feet behind the stage, under the seats. This air-conditioned, insulated container served as our dual-system control room. Many other similar containers were provided for video and satellite uplink facilities.

The interface to Clair Brothers' stage miking was a snap. They provided a hard-wired mic split from their stage input box to a 50-foot fan-out. This enabled us to place our input box off stage, well out of everyone's way.

Although we're always prepared to place our input system on stage, taking the direct feed for ourselves and giving the P.A. the transformer split, we decided on this one to take the feed and give ourselves the transformer-isolated split. Our Jensen transformers sound fine, and it kept us from disturbing things on stage.

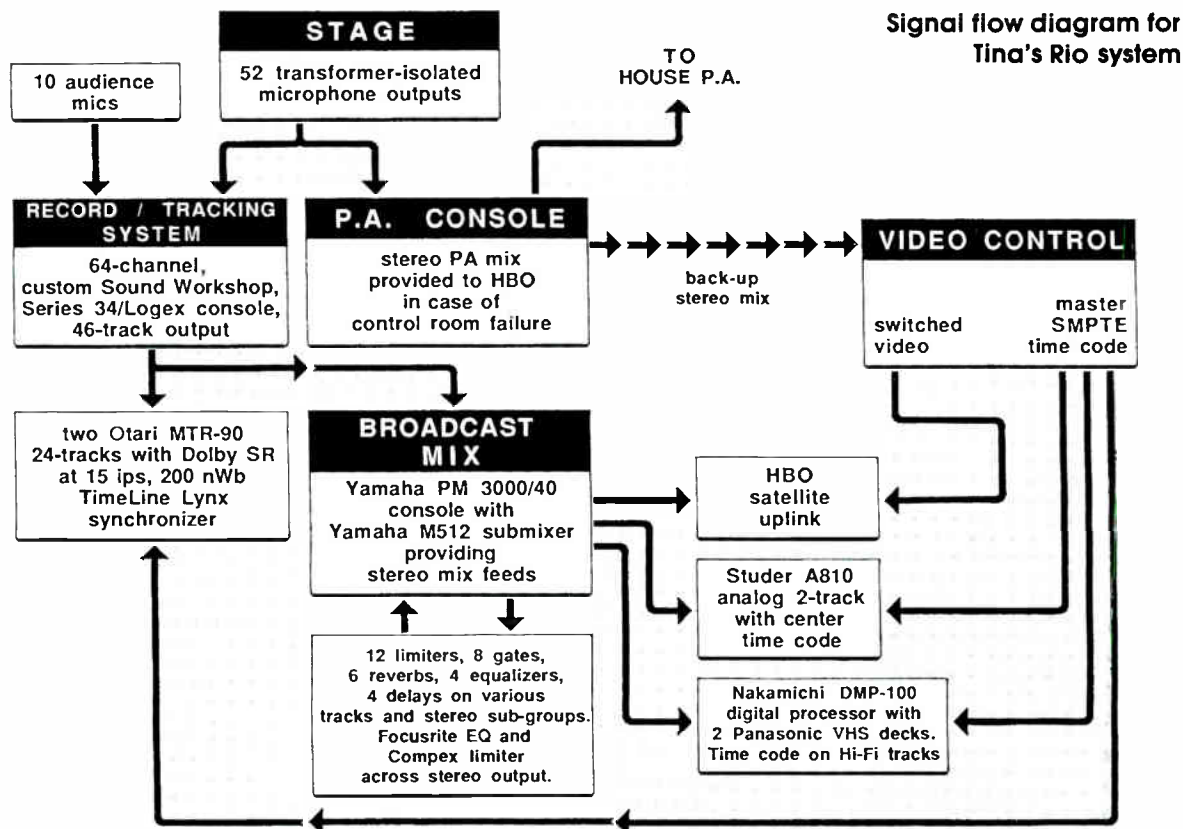
Once again, the high caliber of people with which Tina Turner chooses to surround herself was evident in her Clair Brothers crew. The success or failure of a live recording can very much depend on the artist's concert production team, especially the sound crew (maybe that's why everyone at Effanel is a former live-sound mixer). We've always had good experiences with Clair crews and Tina's was no exception. This P.A. crew had a better grip on live recording than a lot of recording engineers that we run into.

Audience miking was a bit of an ordeal. Maracana Stadium is the world's largest, and we were told that we'd be miking the largest crowd ever assembled to hear one artist perform—"and it had better sound like it." Almost 200,000 screaming Brazilians. It took a full two days (in 105-degree heat) to run the half-mile of cable it took to place ten audience microphones in stereo pairs at varying distances from the stage. The ten mics were submixed and limited (a formula borrowed from Peter Gabriel's engineer, Kevin Killen) to four tracks.

### The Ultimate Crowd Loop

John Hudson was concerned that when bringing up the crowd level during





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the show, he'd get too much P.A. bleed, thus throwing his mix balance off. As a precaution, we got the crowd to cheer and yell Tina's name before the show (without anything coming out of the P.A.). A nice long sample of this random cheering was locked into a stereo AMS for possible use during the live TV mix. As it turned out, the crowd overpowered the P.A. on the audience mics. Our 180,000-voice sample was unnecessary (and unused).

### The Dual-Console, Simultaneous Record/Mixdown System

John Hudson's simultaneous record/mixdown plan made sense from every

angle:

- **Quality**—By having a dedicated mixdown system on-site, it was possible to approach the live-to-air mix with the same facilities one would use in a studio situation, without the inevitable compromise that comes with a conventional one-board, track/mix configuration. Hudson hoped that with sufficient planning, a proper mixdown setup and a good performance, his live mix would not only sound great on the satellite premiere, but be good enough to use for the rebroadcasts. It was.

- **Cost**—Although the budget for audio on this job had already been stretched

to the limit by the prospect of bringing 7,000 pounds of multi-track equipment and crew 6,500 miles, it was decided that post-production audio costs could be greatly reduced by finishing the job on-site. The cost of bringing everybody back to England for mixing and potential overdub/fixes was far more than the cost of bringing a few thousand pounds of additional equipment for a couple of extra days in Rio. (A selfless gesture on Mr. Hudson's part, since he owns the very pricey studio in which post-production would have taken place.)

It was decided that the best way to provide signal simultaneously to both the recording and the mixdown systems was to amplify and bus mic signals for tracking and then split the track-outs simultaneously to the multi-track recorders and, at line level, to the mixdown console. The Dolby "To Console" output was chosen as the split point.

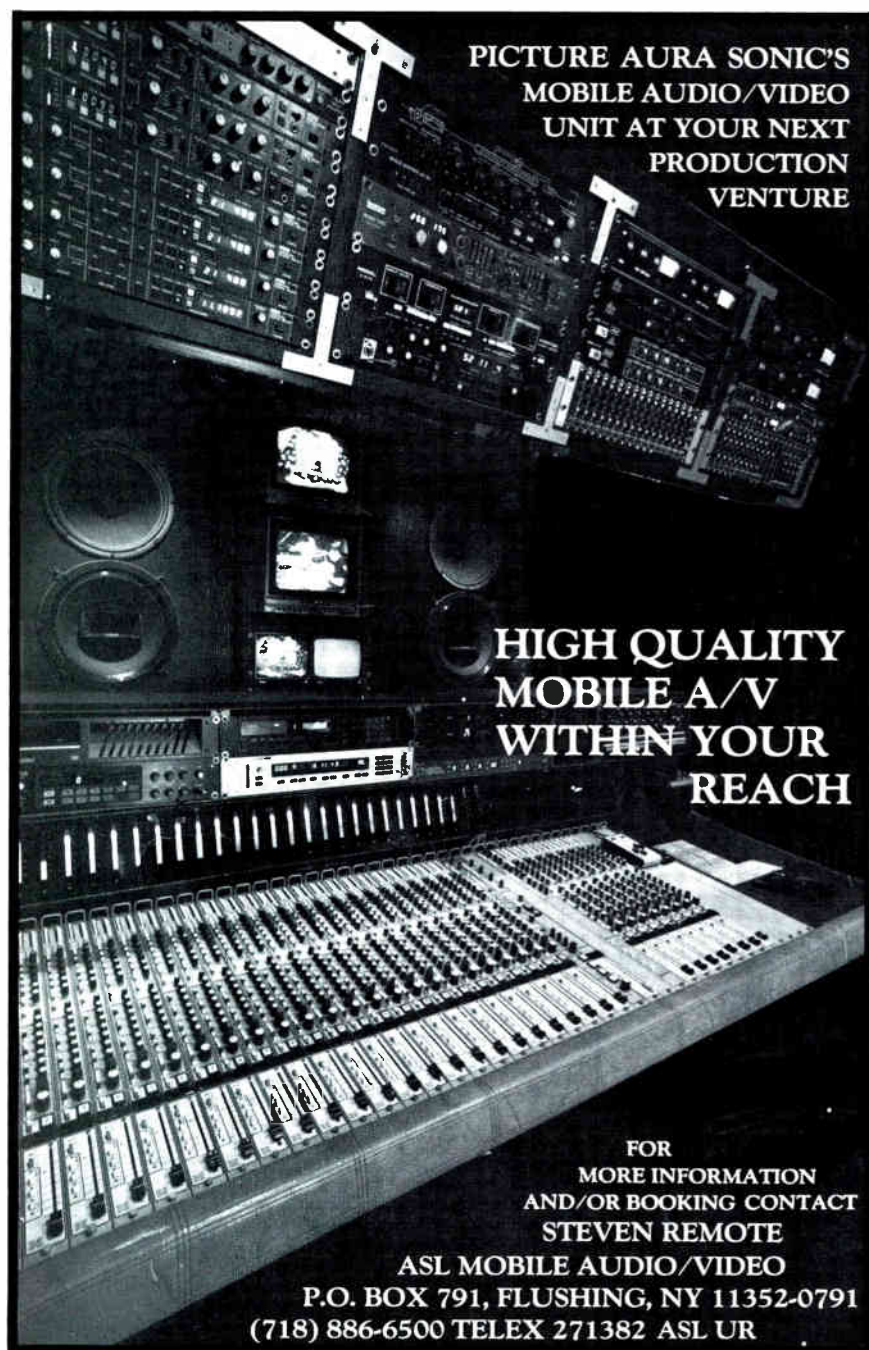
There were a few good reasons for choosing this method rather than splitting the microphones twice (feeding the mixdown system all 52 inputs at mic level). One, we felt that the microphone preamps in our recording console sounded better than those in the mixdown console. Two, it made things easier and quicker for Hudson to receive premixed "tracks" and stereo pairs. And three, it afforded us the invaluable opportunity to record Tina's dress rehearsal the night before and then, by simply playing the 48-track recording back through the Dolbys, rehearse the live mix (with the astounding "line-in" fidelity of SR) as much as we wanted prior to showtime the following day.

### Teamwork

The broadcast sounded great. As it turned out, no audio post-production was necessary. Our mixdown session, scheduled for the following day, was actually a listening party. Fortunately, all of our hard work and thorough preparation paid off in a big way. As it should be, the concert itself was the easiest part of the project.

It was a very special night indeed: fireworks, camera-equipped helicopters, and a record-breaking crowd singing along with Ms. Tumer. It was exciting being part of such a dramatic peak in her amazing career. ■

*Randy Ezratty is the owner of Effnanel Music, located in New York City.*



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by Mark Herman

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Left: Sting onstage at the Oakland Coliseum. Above: house mixer Dave Kob. (For more on Kob, see page 142.)



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# SOUND · ON · STAGE

Clair Brothers specializes in mega-tours, and this year so far they've handled both **Michael Jackson** and **Bruce Springsteen & The E Street Band**. . . The ever-progressive Sting finished his U.S. tour and headed to

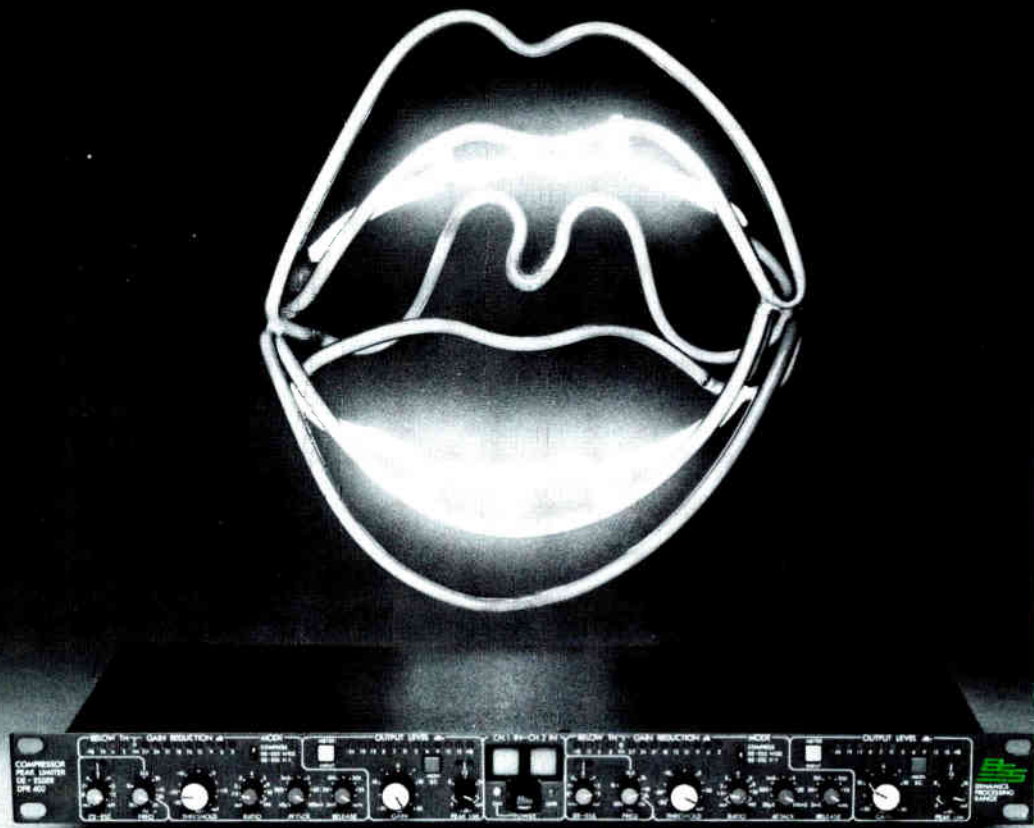
Europe. But he's scheduled to return in early summer. The European leg will use Clair's UK-based P.A. operated by **Clair Brothers Audio, Ltd.** Speaking of which, UK Clair has moved its warehousing and offices from Cam-

bridge to Greenwich, outside of London. . . **Kenny Rogers** is still on tour as usual. . . **Robert Plant** finished a solo UK tour (24 S-4s) in April and then headed to America using 56 Clair S-4s and a pair of Yamaha PM3000s in

## SOUND COMPANIES, EQUIPMENT, ARTISTS & PERSONNEL ON TOUR

Artist Sound Company Tour Dates & Region	House Console #1 House Console #2 Monitor Console #1 Monitor Console #2 Crossovers	Main Speakers Other Speakers Subwoofers Monitor Speakers	Main Amplifiers Other Amplifiers Sub Amplifiers Monitor Amplifiers	Engineers: (B) = band (H) = house (M) = monitor
"3" PPA April-May N. America	Soundtracs M Series 32x8x2 ----- Audio Arts M-32 32x8 ----- TDM	Local PA/Club Support ----- (8) Cerwin Vega Jr Earthquake PPA M212 & Cerwin Vega CVX Series	Local PA/Club Support ----- Cerwin Vega LPA600 Carver PM1.5 & Yamaha P2200	David Stevens (H) Andy Chappel (M)
Bruce Hornsby & The Range Schubert Systems May-Dec N. America	Gamble Series EX 56x16x2 ----- Gamble SC 40x16 ----- SSG Custom	(32) SSG Steradian ----- (16) SSG Sub 218 SSG M112, M115	Crest 8001 ----- Crest 8001 Carver 1.5	Mike Ferrara (H) Alan Bonomo (M)
Whitney Houston Maryland Sound Industries Spring-Europe Summer-N. America	Harrison Alive 32x4 Harrison Alive 32x4 Mod. Yamaha PM2000 32x14 ----- MSI HSX 301	(32) MS2 (24) MS2B (8) MS 2x18 MSI Custom	Ramsa WP9220, SAE 250 SAE P500 Crest 8001 Crest P50, Crest 3501	Steve Guest (H) Mike Prowds (M) David Morgan Dave Callahan
Icehouse Electrotec April-July N. America	Soundcraft Series 4 40x16x2 ----- Lab Q Soundcraft 32x18 ----- Brooke-Siren 360	(24) Lab Q ----- ----- Electrotec Floor Wedge Lab Q SF, Electrotec Opera	Crown MA-1200 ----- ----- JBL 6233, UREI 6400	Chris Pyne (B, H) Bon Johnson (B, M) Courtney Jones Mike Beyer
The Judds Zinn Audio Feb-Dec N. America	Yamaha PM3000 40x8x2 ----- Soundcraft Series 4 40x16 ----- Zinn Audio Custom	(26) ZA PC-4 ----- ----- ZA 3-way active 1281 -----	Crown DC300A, AB 1200 ----- ----- AB 9220, Crown DC300A & Crest 8001	John Cooper (B, H) Brooks Thomas (B, M) Scott Holloway
The Kinks Showco March-April N. America	Soundcraft Series 4 40x16x2 ----- Harrison SM-5 32x16 ----- Showco	(24) AX ----- ----- Showco 100, 200, 300 & 400	Crown PSA2, MT1200 ----- ----- Crown MT1200	Pat Farrell (H) Bill Larmour (M) Dick Hayes (B, M)
Santana Sound On Stage April-May West Coast (*Band supplied)	Gamble EX 56x16x2 ----- *Soundcraft 32x16 ----- PAS TOC23	(20) PowerPhysics 442 ----- ----- *N/A	Crest 2501, 4001 ----- ----- *N/A	Geoff Ganiford (H) Kevin Chislom (M)
Stevie Ray Vaughan Clair Brothers April-May N. America	Clair Custom 32x12x6 ----- Harrison SM-5 32x16 ----- Clair Custom	(24) Clair S-4 ----- ----- Clair Custom	Carver 2.0 ----- ----- Carver 2.0	Mark Rutledge (B, H) Randy Weitzel (M) Bob Weibel





## Overcome vocal limitations without limiting vocal expression

The human voice may be the original musical instrument, but it's still far from perfect. The little quirks that give a voice charm, personality and identity can give you migraines when you're trying to keep it in front of a full-power electric band. The DPR-402's interactive design combines compression, de-essing and peak limiting with control side-chain filtering to give you unprecedented problem-solving power.

### **A choice of operating modes**

Each singer has a peculiar dynamic structure, depending on voice, style and mike technique (some, of course, are more peculiar than others). With manual attack and release times, you can tailor the DPR-402's response to the singer's personality. Or use the Auto mode that links attack/release times to compression ratio.

### **Dynamically sensitive equalization: a new creative option**

You can easily insert the DPR-402's

internal low pass filters in the control side-chain for HF re-emphasis. This means that compressed signals are brighter, preserving vocal clarity when the singer "eats" a cardioid mike with a pronounced proximity effect.

Many rock and pop singers have a tendency towards a shrill, harsh tone, especially on loud, high notes. With the DPR-402's HF filters in the control side-chain, you can use LF re-emphasis to "mellow" compressed peak signals without the obvious coloration of constant EQ.

### **The "active window"**

The DPR-402 combines compression and de-essing with peak limiting, and lets you select fast or slow time constants for the limiter. With this interactive combination, you can set up an "active window" to keep vocal levels where you want them. Now you can concentrate on the creative aspects of mixing, without constantly riding the vocal mike's input gain.

### **Hear the singer, not the circuitry**

The DPR-402 is designed to afford you the control and flexibility of multifaceted dynamics processing without the usual penalties in dynamic range and signal clarity. To do this, we employ a unique double side-chain architecture, with the VCA in a parallel control path rather than in the audio signal chain, as is normally the case. The audio signal chain has just two elements: the gain control and subtractor. You can also configure the DPR-402 as a gate, ducker or expander by reversing signal polarity.

### **Operational reliability**

BSS Audio products have been setting industry standards for innovative design and dependably superior performance since 1979. The DPR-402 is no exception. Its steel chassis surrounds rugged PC boards with socketed ICs. All potentiometers are made with conductive plastic for long life and a positive "feel." Our thorough testing procedure includes a 50 hour burn-in of each unit before shipping.

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## SOUND · ON · STAGE

the house... Hard-working guitarist **Stevie Ray Vaughan** and his band **Double Trouble** are touring again (see "On The Road")... The UK's **Roger Taylor & The Cross** toured in Europe. Taylor was formerly with Queen... Other Clair tours were **The Hooters** and **Julio Iglesias**.

With the prime summer touring season approaching, **Showco** looks good with the following list of current clients: **Linda Ronstadt's** mariachi tour, **Kiss** without makeup, the **Beach Boys**, **George Michael**, **Aerosmith**,

the eternally working **Willie Nelson**, **Barbara Mandrell**, **Saga**, **The Kinks** (see "On The Road"), and **Lynyrd Skynyrd**. After opening for Kiss, guitar madman **Ted Nugent** is now headlining again on his own... Hot country artist **Dwight Yoakum** is set to begin touring soon... Other work reported was the **Capitol/EMI Record Convention** held in Los Angeles.

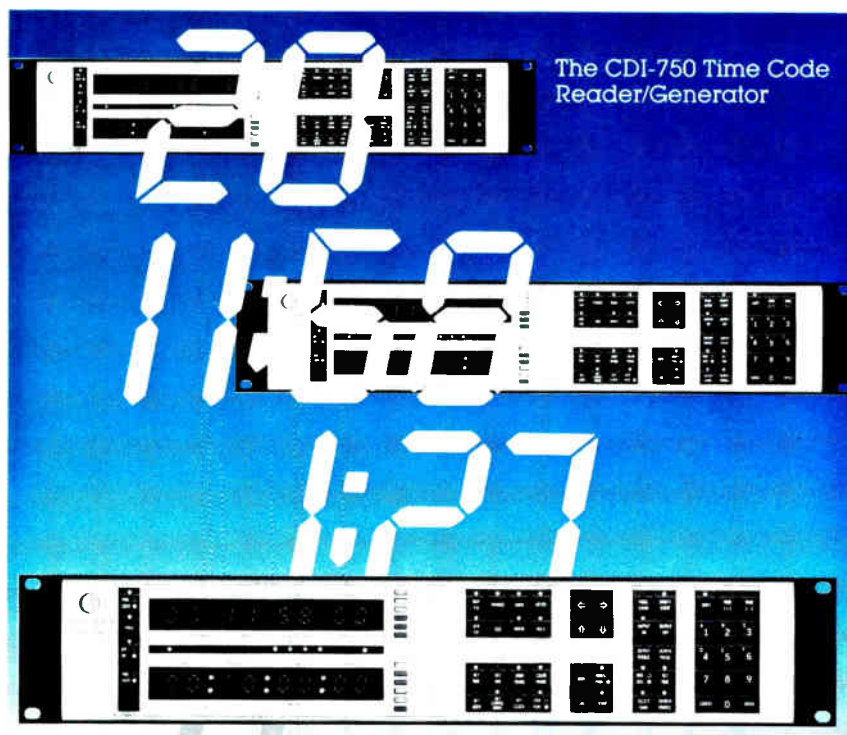
Most sound reinforcement people know Showco has a multitude of concert P.A. systems. In fact, they have at least ten main touring systems. Less talked about are several smaller systems used primarily for corporate

work. **Wil Sharpe** explains, "We do a lot of convention and industrial theater work worldwide and have a special department called **Showco Creative Services** that handles this type of sound reinforcement."

Showco also offers clients a complete Showco Prism sound system designed for stadium venues. "We are excited about the Prism stadium package which we're introducing on the George Michael tour in Europe. This will be an extension of the Prism computer-designed technology," says Sharpe, who adds, "We will also be doing Lynyrd Skynyrd stadium dates with the Prism package. The Prism technology is the big thing for us now. We are continually building more Prism equipment."

Tour news from sound reinforcement company **Sound On Stage** has **Santana** on tour with an SOS-supplied house P.A. and Gamble Series EX 56-channel house console (see "On The Road"). The band supplied their own monitors, amps and Soundcraft "Blue Board" 32-channel stage mixer... SOS is also supplying a Gamble HC 40-channel house console and effects for **Poison**. Engineer **Greg Price** is the house mixer... Their big account, **Huey Lewis & the News**, is still between tours but plans to hit the road again in August... Singer **Harry Belafonte's** tour has touched venues in locations as diverse as Paris, Zimbabwe and South Lake Tahoe, CA. Plans are to continue touring through the summer... SOS recently completed an equipment installation at the historic **Fillmore** club in San Francisco.

**Maryland Sound Industries** is another major sound company that appears to have a busy summer schedule. Spokesman **Ronnie Smith** says, "All in all, we are looking at a blockbuster year again. MSI has a good roster of clients who have committed through the summer, and on. This year we are continuing to bring on more business and new clients"... Here's a look at tours contracting with MSI: **Whitney Houston** continued her world tour in Europe (see "On The Road")... **Manhattan Transfer** was in Europe also... **Yes** carried some equipment, engineers, and consoles, but no main P.A., to Japan... Starting in April, heavyweights **Pink Floyd** resumed touring with one of the most awesome shows around. So far, most of the shows have been outdoors. Well-respected engi-



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# DYNACORD

## HI-TECH

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Europe's largest manufacturer of electronic music equipment launches into their thirtieth year with a wide range of innovative new product. DYNACORD has added a keyboard sampler, a digital drum system, a reverb/effects rack, and a unique signal processing amplifier to their full line of speakers, audio processors, amplifiers and mixing consoles. DYNACORD's new 100,000 square foot research and manufacturing facility, with the latest in computerized test and assembly equipment, guarantees the highest degree of manufacturing precision. DYNACORD backs up their reputation for quality and durability with a unprecedented two year warranty.

### ADS

The ADS is a true 16 bit, 16 voice, phase locked stereo sampler with better than C.D. quality circuitry throughout. Both the keyboard and the rack have capacity for 8 megabytes of memory for almost 100 seconds of 44.1 K sampling. The ADS comprehensive modulation matrix, sound fusion, loop smoothing, digital mixing, and SCSI port gives you extensive control and sound variation.



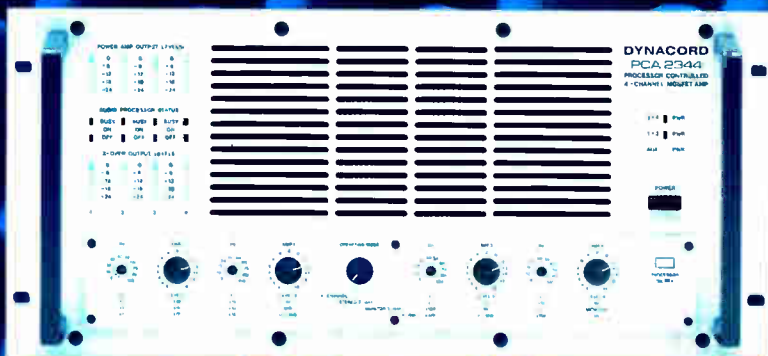
### ADD TWO

The newest member of DYNACORD's advanced digital drum line has many of the features of the ADS in a package designed for drummers. The ADD TWO's built in pad and audio triggers, trigger rate follower, and wide variety of sound stacking, fusing and kit options provides maximum expression for drumming.



### DRP 20

The DRP 20, digital reverb and effects processor, is the result of DYNACORD's ten years of experience in the pro audio market. It features 32 bit floating point technology, 15 reverb structures and reflection clusters, over a dozens stereo delay effects, 100 factory presets and 128 user programmes. This innovative two channel/stereo effects processor sets completely new standards for audio processing.



### PCA 2344

The PCA 2344 is a integrated processor controlled four channel power amplifier with built in crossovers, limiters and equalizers. This amplifier makes it easy and fast to set up professional sounding PA. Simply choose the operating mode (2 to 4 way active, 3 way with monitor etc.), set the crossover frequencies, and the PCA automatically adjusts the time factors for the best sounding PA you ever heard.

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near **Bufo** Jones is in charge of the house mix which involves four consoles and three engineers; two consoles are used just for the drum mix. After finishing the North American leg in mid-June, the band will go overseas to Europe. . . **Earth, Wind & Fire**, **Frankie Valli**, **Anne Murray**, **Luther Vandross**, **Patti LaBelle**, **Peter Allen**, **Belinda Carlisle**, and a small New York club stint with **Neil Young**, who plans to tour this summer, rounds out the list. . . The world's most successful singing duo, **Hall & Oates**, were at rehearsals gearing up for a tour of North America. . . MSI also has a couple of Broadway-type musicals out around the country, one of which is a gospel show titled *Don't Get God Started*. I asked Ronnie Smith if MSI had done musicals before: "We started out with Patti LaBelle when she was on Broadway, and last year we did a theater stint with Peter Allen." Smith noted several differences between regular rock touring and musicals: "We use less equipment, the musicals require lower volume and more vocal



PHOTO: DAVE LEPPARD

### Sting's monitor mixer Tom Herrmann

emphasis, and we tend to remain two to three weeks in each place."

**Bad Vibes in Africa:** Remember the reggae **Sunsplash '88** tour of Africa that I reported in April's issue? Well, it turns out the tour went broke, and the promoter skipped out leaving unpaid bills everywhere! First, the Ni-

gerian government seized sound reinforcement company **Schubert Systems Group's** audio gear that was used for the tour. The government finally released the equipment only to have the Nigerian airline confiscate it again and demand \$60,000 for its return. Two Gamble mixing consoles, one rack of Carver amps, seven racks of Cerwin-Vega amps, and more equipment were involved. Most of SSG's main speakers made it to New York but were under impound by the Nigerian airline. SSG was not responsible for any of the acts by the promoter, nor any of the disputed money, and had their freight bill prepaid. At press time, the airline still refused to release any equipment in either the U.S. or Nigeria, and the U.S. government has been ineffective in helping SSG.

Besides the Sunsplash disaster, Schubert Systems Group is on the road with **Bruce Hornsby & The Range** until December, carrying Gamble consoles and 48 SSG Steradian front-load cabinets powered by new Crest 8001 amps (see "On The Road")... In early May they finished **Toto's** tour of

—CONTINUED ON PAGE 140



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# NOTHING REFRESHES A MIX LIKE A SIX PACK OF MIDIVERB II'S



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\*Based on Music and Sound Retailer's monthly survey of 1,200 audio dealers

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# NEW PRODUCTS

## Lexicon LXP-1 Reverb/Effects and MRC Controller

The Lexicon LXP-1 Multi-Effects Processing Module provides a variety of digital reverberation and effects in a compact, easy-to-use, and cost-effective (\$499 list) unit. The LXP-1's 16 factory programs include halls, rooms, plates, gates, inverse reverbs, delays and choruses—all accessible via a front panel rotary switch; while variable decay and delay controls provide quick access to over 4,000 sound combinations. Further user modifications can be accessed through MIDI System Exclusive commands, allowing control of up to eight separate parameters in each program; presets or the 128 user memory registers can be assigned to any MIDI program

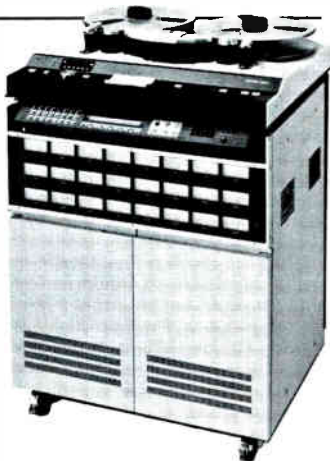
change command, and Lexicon's Dynamic MIDI feature enables any MIDI controller (mod wheel, breath control, aftertouch, etc.) to alter the decay and delay settings in real time.

The MRC MIDI Remote Controller (\$399) provides LARC-style control of the Lexicon LXP-1 and PCM70 effects processors, as well as offering fast, analog-style patch modification to any 6-operator Yamaha FM synthesizer. The unit's generic MIDI mode allows the MRC to interface with literally any MIDI device, since its four faders, four switches and four inputs can be defined as any MIDI controller. External input jacks can also be used to convert pre-MIDI footswitches or pedals to MIDI controllers.

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## Otari MTR-100A ▶

Unveiled at the AES Convention in Paris, the MTR-100A is a digitally controlled, pinch roller-less analog 24-track recorder from Otari of Belmont, California. The MTR-100A features fully automated alignment of all record and reproduce parameters: level, bias, HF/MF/LF record EQ, phase compensation, HF/LF repro EQ and repro level. Other features include a tilt-down panel with alphanumeric keypad, and backlit LCD display for entering transport and auto-alignment parameters. The VU meter display can be remotely configured, swings up for easy viewing during man-



ual alignment and provides access to the optional Dolby SR card cage. According to an Otari spokesman, the machine is targeted to sell for under \$60,000 and should be available this month.

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## MacPherson Model One

MacPherson Loudspeakers of Lansing, Michigan, have unveiled their Model One system, designed for high-fidelity reproduction at medium to high sound pressure levels. The speaker's LF section is horn-loaded to optimize bass response from the compact 48 x 15.5 x 29.5-inch cabinet, and the high-frequency horn can be rotated 90 degrees for wide coverage when used in either horizontal or vertical applications. The system may be used passive 3-way (maximum input 500 watts) or can be ordered in a bi-amped 3-way configuration. Manufacturer specs state a frequency response of 55 to 16k Hz ( $\pm 5$  dB), 100 x 60-degree coverage and a maximum SPL of 127 dB. The Model One retails for \$1,495, weighs 105 pounds and includes casters for one-person setup. Options include a selection of input connectors, flying hardware and special finishes.

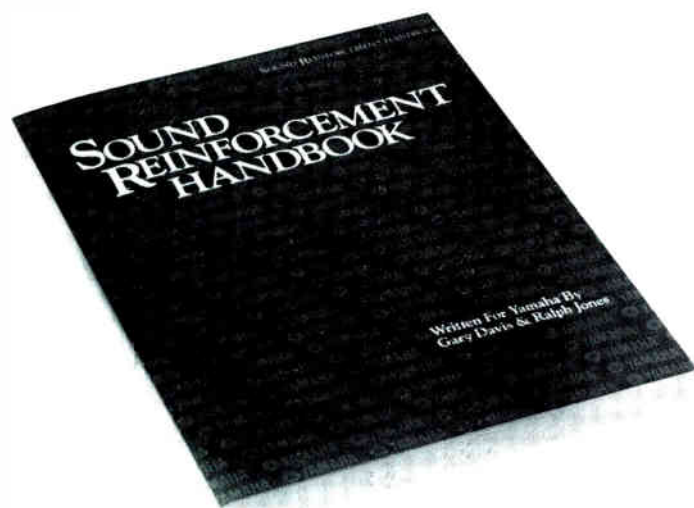
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## Studer Expands A807 Line

New additions to the A807 series of analog recorders from Studer (Nashville, TN) are high speed, 1/2-inch 2-track and 1/2-inch 4-track models. Both the A807 VUK "HS" 2-track and the A807-4 1/2" VUK feature three speeds (7.5, 15 and 30 ips), servo-controlled capstan and spooling motors, MDAC-controlled audio electronics, Dolby HX Pro recording processors, tape shuttle controller and RS-232 serial port. Other standard features include overbridge metering and rugged die-cast chassis construction.

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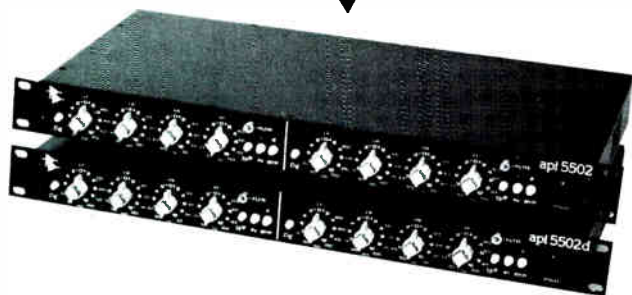




## Yamaha Sound Reinforcement Handbook

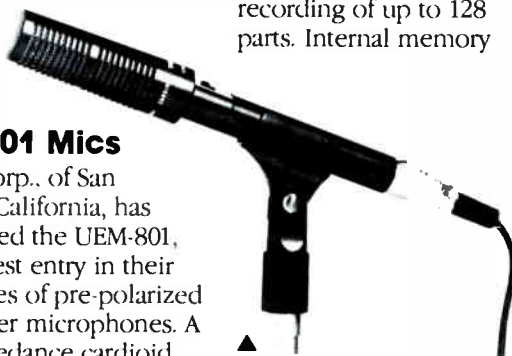
The Professional Audio Division of Yamaha Music Corporation has commissioned *The Sound Reinforcement Handbook*, a comprehensive 400-page text by industry pros Gary Davis and Ralph Jones covering not only sound reinforcement, but also major aspects of professional audio, including recording, broadcast, fixed installations and touring sound. Published by Hal Leonard Corporation of Milwaukee, Wisconsin, the \$29.95 book is available through technical bookstores, Yamaha professional audio dealers, and the Mix Bookshelf at (800) 223-9604.

Circle #154 on Reader Service Card



## Audix UEM-801 Mics

Audix Corp., of San Ramon, California, has introduced the UEM-801, the newest entry in their Tect series of pre-polarized condenser microphones. A low-impedance cardioid design, the UEM-801 is suggested for vocals, acoustic guitar, reeds, woodwinds, cymbals and sampling sounds. Accessories included are a foam



windscreen, stand adapter, 3,000-hour AA battery, 20-foot XLR-to-1/4-inch cable, and carrying case. List price is \$119.

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## API Parametrics

API Audio Products, of Springfield, Virginia, has announced the 5502 equalizer, an all-discrete (no ICs) rack-mount version with the same circuit design as their original API 550A modular EQ. The

5502 contains two parametric EQs in a single rack-space chassis, and in addition to all the original features of the 550A, offers 14 new frequency points, all gold switches, four API 2520 op amps and 36 discrete transistors. Internal jumpers allow users to custom-tailor the 5502 to their own needs, such as polarity of the in/out XLR jacks, overall EQ gain in 3 dB steps and high-/low-pass filter selector. The EQ is also available in a special disc-mastering version (5502D) with gain in 1 dB steps.

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## Roland MC-500 MkII Sequencer

The MC-500 MkII Micro-Composer from Roland-Corp US of Los Angeles is a significantly upgraded version of their MC-500 stand-alone sequencer. When used with the included Turbo 500 sequencing package, the MC-500 MkII can record up to eight tracks, each able to accommodate 16 MIDI data parts over 16 MIDI channels, allowing the recording of up to 128 parts. Internal memory



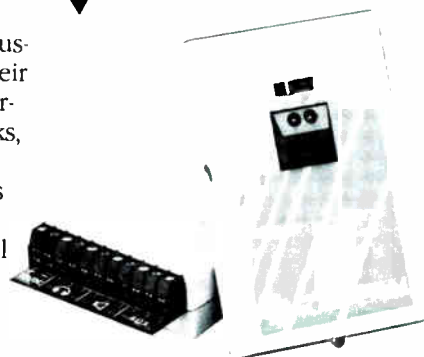
capacity is 100,000 events, with additional storage via the unit's built-in 3.5-inch floppy drive. Another feature is the MC-500 MkII's two independent MIDI outputs for controlling up to 32 MIDI channels simultaneously.

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## Brainstorm TB-4 Communicator

The TB-4 Communicator from Brainstorm Electronics of Los Angeles is an infrared remote control system that allows the producer to activate a studio's console talkback mic from anywhere in the control room. The Communicator's PCM-encoded signal is said to eliminate any interference from outside sources and does not require a direct line of sight between the transmitter and receiver. Installing the receiver is a simple procedure and the unit interfaces easily with most recording consoles. The system (transmitter and receiver) is priced at \$395, and additional transmitters are \$225.

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## Electro-Voice ► BK-32 Mixers

The BK-32 series of stereo mixing consoles from Electro-Voice of Buchanan, Michigan are available in 24-, 16-, 12- and 8-channel versions, the latter being rack mountable. The series features subgroup capability, individual channel effects loops, multiple sends, phantom power and pre-fader listen (PFL). List prices range from \$1,040 (8-channel) to \$1,931 for the 24-channel version.

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## ▲ Invisible Console Stand

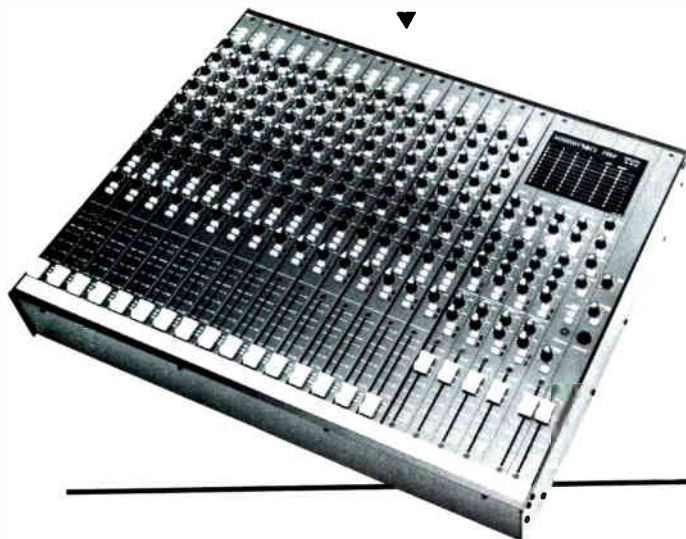
To support those massive mixing consoles in concert and theater use, Invisible Products (Accord, MA) offers the Super Tee Brackets. These rugged add-ons attach to any of Invisible's 24-inch "KB" stands, and are height-adjustable. A single stand can support a medium-sized console, while larger boards can be accommodated by using two stands. A Super Tee-bracketed stand sets up/knocks down in seconds and fits easily in the KB travel bag.

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## Soundtracs FMP Mixer

Available in 24 x 4 x 2 or 16 x 4 x 2 versions, the Soundtracs FMP is designed for budget-conscious applications, yet utilizes the same stereo and mono inputs as the other models in the FM series. Input module features include individual phantom power, phase reverse, 3-band sweep EQ and four aux sends (switchable for pre/post fader operation). Other features include: 2-band EQ on subgroups; built-in talk-back mic; assignable oscilloscope; and bargraph metering of group outs, L/R master outs and solo.

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## Beyer TourGroup Mics

Specifically designed for live performance applications, the TourGroup series of microphones from Beyer Dynamic of Hicksville, New York, includes the M700, MCE 80 and MCE 81 models. The latter two use fixed charge condenser elements (12-48 VDC phantom powered) and are optimized for

vocal work with isolated elements to reduce handling noise. The MCE 80 can also operate from a 4.5 volt battery. The M700 utilizes a moving coil element capable of reproducing high sound pressure levels, whether from drums or vocalists, and its hypercardioid pattern maximizes gain before feedback.

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## American Modular Power Amplifier

American Modular Power of Powell, Ohio, have announced a 4,800-watt modular power amplifier system requiring only four rack spaces and weighing less than 60 pounds. The chassis contains six 800-watt (RMS into 4 ohms) amplifier modules, each with its own power supply, AC switch, bargraph VU display and level control.

The unit's rear panel contains balanced XLR and 1/4-inch TRS inputs, banana-type speaker outputs, three 2-speed temperature-controlled fans and three separate AC cord input receptacles. Available optionally are a variety of custom speaker connector assemblies that mate with the back panel of the amplifier.

Circle #163 on Reader Service Card

by Bob Hodas

# AKG

## ADR 68K DIGITAL REVERB & EFFECTS

**A**KG has been involved in digital research and equipment in Europe for a number of years. Recently AKG Digital was created in America to design and manufacture digital effects for the studio and live performance. Their first effort, the ADR 68K, is a MIDI controllable digital reverb, sampler and effects processor that establishes them as a serious contender in the quality digital effects market.

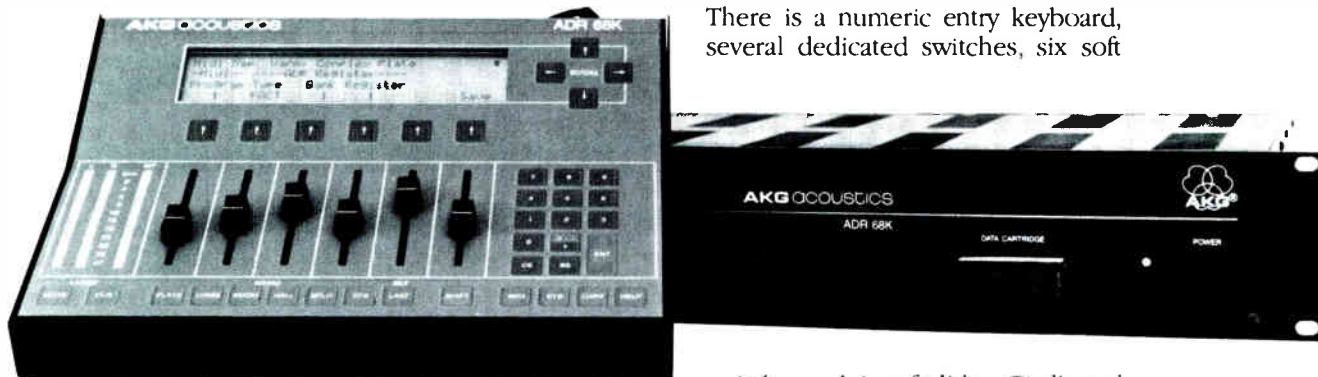
At the heart of the ADR 68K is the Motorola 68000 microprocessor, a powerful high-speed processor that is also found in the Macintosh. It runs at 8MHz and internal processing is 32-bit, while input and output is a 16-bit linear system. AKG uses dual A/D-D/A

converters but no oversampling. There is ongoing program development for the ADR, and software upgrades are a simple matter of changing EPROMs.

maintains the AC power outlet, XLR left/right inputs, L&R main outs, and L&R auxiliary outs (2 in x 4 out). A DIN connector for the remote head is positioned next to the MIDI In, Out and Thru connectors. Everything is clearly labeled.

The control head is well thought out with a nice, readable backlit LCD screen. The screen is 4 x 40 characters with a control for adjusting the screen to compensate for different viewing angles. Letters and numbers are large and easily read under any lighting conditions. All of the information you need to operate the ADR is displayed on this screen.

Anyone familiar with a computer will be comfortable with the 68K. There is a numeric entry keyboard, several dedicated switches, six soft



The ADR 68K operates as a two-piece unit. The brains are contained in a 2U rack mount box, while the control is a separate head which connects via a DIN cable. The connecting cable may be up to 200 feet long. There is no fan on the brain, which is great, because I hate hearing fans in the control room.

The front panel has a power switch, indicator light and a slot for the external data cartridge. The rear panel con-

switches and six soft sliders. Dedicated switches can mute the ADR input or clear the output of signal, as well as access the system, MIDI parameters and data cartridge control functions. Cursor arrows move the screen through the different parameter and information pages, either up, down, right or left. Two segmented LED indicators monitor the input level, and one segmented LED indicator monitors the level within the processor itself. For programs with recirculating information or feedback (flanging, DDL etc.), this indicator tells if the processor is overloading. This is the only machine on which I have seen this internal level



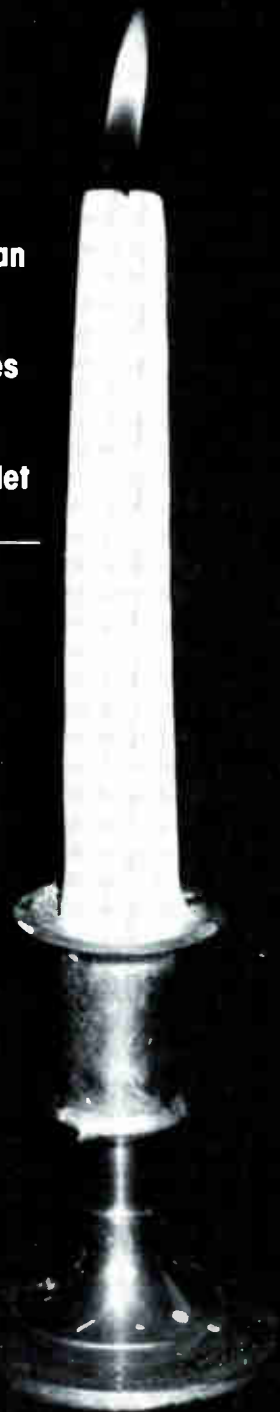
*Creative*

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## FIELD · TEST

indicator. I can't believe how handy it is, and wonder why no one thought of this before.

Six different banks of programs are available to the user through dedicated switches that either call up the first program of a bank or allow access to the bank's menu. Programs may be called up directly through the numeric keyboard or by accessing the menu, flipping through the pages and pushing the soft key below the desired program. Once in the program, parameters are adjusted with the six sliders or the soft keys. A typical program has eight pages of adjustable parameters and functions.

On the back of the control head are four TRS input jacks. These can be used for external control of parameters or to trigger various events with footswitches, pedals or synthesizer control voltages.

Operation of the ADR is fairly simple and intuitive. By hitting the help key, you can access several different levels of instructions and descriptions. This extensive on-line help made the ADR so easy to operate that I only read

through the manual once and never referred to it again. This is how a software-based system should operate, and first time users will not feel the usual studio time squeeze while learning the controls.

Storage memory is quite extensive in the ADR. There is room for 550 factory presets which cannot be written over. Internal user memory has room for 50 programs and the data cartridge for an additional 50. Of course you can use as many data carts as you need and by carrying around your programs on carts, you can use an existing ADR in any studio or live location.

If you want the best MIDI-controlled effects processor currently on the market, this is the machine for you. AKG has figured out how to make parameter adjustments without incurring the dreaded digital "zipper" noise. Therefore, real-time changes in room size or RT60 are no longer a problem. Much more creative and dramatic changes may be made either with MIDI or real-time manual control. The ADR 68K MIDI system can: receive program changes and assign them to specific presets (mapping), send and

receive system exclusive dumps of all or partial memory registers, send and receive samples using system exclusive or the MIDI Sample Dump Standard, send real time fader and switch moves to a sequencer and for storage

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**The band couldn't tell if it was the singer or a sample when they came out to the mix station.**

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and future playback, using MIDI continuous controller commands. Every control on the ADR 68K can be assigned to respond to MIDI commands. Impressive, wouldn't you say?

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function side, the ADR 68K also stands up very well in the area of sonic performance. With only the outputs hooked up to the console, the ADR was about 5 dB noisier than the European reverb against which I compare all comers. This is well within the realm of acceptable for the majority of recording situations and quieter than some units that cost twice as much. Once the inputs were connected, I went through many of the factory presets with several different instruments. A built-in limiter protects against accidental input overload. If you want to maintain a purity of signal, I suggest not hitting the limit lights, although it is preferable to digital distortion (not a pretty sound). I hit the inputs pretty hard on several occasions with no serious problems. The limiter does its job effectively.

The six banks hold the various basic algorithms used to make up the programs. The banks are: plates, chambers, rooms, halls, splits and effects. The first four are self explanatory. Splits are two concurrently running separate programs such as a hall and plate or room and chorus. Left and right inputs are split to mono and correspond to the main and auxiliary outputs respectively, so you can use two mono in, stereo out programs at once. Effects holds several special effects programs that are quite useful. These programs are DDL (includes flanges), chorus (including panning programs), sample (multiple mono and stereo sampling programs), stereo (ambience simulation), multi (cascades many programs such as DDL, chorus, EQ and reverb) and reverse (reverse reverbs).

The plates proved quite effective for a number of applications. Vocals worked well, and snare and toms sounded good in many plate programs. Guitar was also very strong with many of the programs. I found that running the plates with long RT60 but shrinking the size down to about 60% gave the best results.

Chambers gave the feeling of a small space with a fair amount of brightness. One could definitely hear the walls and for guitars the chambers could fatten up the sound. Again, drums, vocals and horns worked well. Reducing the size was not as effective with the chambers as with the plates. I found the shorter reverb times to be best and killed the early reflections to

eliminate some of the close-wall feeling. The gated chambers were fun and more effective than the gated plates.

I modified a number of room and hall programs for a variety of instruments with impressive results. Kick drum was no problem in several rooms and even small halls when I controlled the first reflections. Keyboards and background vocals became monstrous. The room and hall program give the user some powerful controls for manipulation, and a variety of combinations can show good results. Those controls include: depth in relation to the sound source, diffusion and density of echoes at the beginning and tail of the reverb, and randomize, which uses multiple oscillating taps to smooth out the reverb tail.

All of the reverb programs allow the extensive control of first reflections. Six independent reflections can be assigned to the main outputs (three to each) with controls for delay and level. It is easy to give shape and the idea of walls to a room by playing with these reflections. All reverb programs include a "stopped reverb time" feature that I really like. This allows you to set a separate reverb decay for input that is below a user-settable threshold. You can have a fairly short decay that does not muddy up your mix when the music is in full swing, and then open up to a long tail during a pause or fade. I'm glad AKG provided this tool for all reverb programs instead of just a few select programs as other manufacturers have chosen to do.

As mentioned above, there are also a number of split programs. These are great for getting two different effects out of one unit. You don't have as many available parameters, but gain the power of an extra reverb or effect. I find the splits especially handy for live concerts. Additional flexibility is gained, because the split programs have three different input configurations. "Parallel" sums the inputs to mono so that both sources go to both splits. "Chain" monos the inputs and sends the outputs of one effect to the input of the second effect. In this manner two effects can be cascaded. "Split" treats the inputs as totally separate so that the left feeds the main outs and the right feeds the aux outs for two mono-in/stereo-out programs.

Several of the effects were quite good, and I used them for several recordings. I mostly used the chorus,

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## FIELD • TEST

DDLs and flanges. The DDLs are very nice quality with a 15kHz bandwidth and up to two seconds of delay. They have the same input configuration option as the splits. The chorus and flange programs were smooth and rich, with a high quality sound. Guitars were very strong in these programs. I did not actively use stereo, reverse or multi, although I did listen to them and would feel good about the quality if I needed that effect.

I had a real interest in the "sample" program and found it to be a useful addition to the ADR 68K bank of effects. The sampling frequency for the ADR is 32 kHz which translates into a 15 kHz bandwidth. On my rock and fusion projects this limited bandwidth was not an impairment. I sampled a guitar from one chorus and pasted it into another chorus where the guitar had played a different phrase. The band was stunned that the sample sounded so genuine. On a live show, I sampled the lead vocalist, and during a break, set up all of my vocal effects using the sample. This saved him time

and voice, and gave me a chance to fine tune my effects without a lot of noise. The band couldn't tell if it was the singer or a sample when they came out to the mix station.

There are a couple of different sample programs in the ADR. One allows recording 12 two-second samples that will be used by themselves. Another allows 12 two-second samples that can be transported into any of the other ADR programs and triggered into the inputs for full reverb or effects processing. This is a super feature. There are two similar programs allowing 6 two-second *stereo* samples. There is a 16-second stereo sample that is transportable to reverb programs, and a 32-second mono sample. By the way, samples may be triggered manually at the remote head, with an external switch, through an audio trigger at the input, or via MIDI. Having the audio trigger means fast playback at a worst case of 2 ms trigger time. This is good news for me, because I really hate the time lag of 15 to 25 ms with MIDI-triggered samplers.

The sampling operation functions are all straightforward. It took me a

little while to get comfortable with the editing, but I would not term it difficult at all. I had to learn what to listen for when moving the slider through the edit points just like when we learned to listen to rocking tape. I didn't feel as much control as with tape, though. Is my age showing?

Samples may be pitch shifted either as a percentage or interval making for some handy harmonies. This feature worked well, and the interval settings were foolproof. Attack and decay of the edited sample may also be set so that you can do some sample shaping. If you want real sample shaping power, you can save your mono samples via the MIDI dump standard to a Digidesign program for full control, or you can save stereo samples to most sequencers via the system exclusive message. The ability to store and manipulate a sample, and then reload it, is a very strong point for the ADR, although this feature is available only in version 4.0 software.

Techs will like this unit, as it is well built and logically laid out. I took the ADR 68K on the road for three months in Japan and had absolutely no prob-

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lems. The manual contains schematics and full instructions on how to wire the ADR up for ins, outs and CV ins. The manual covers installing new software, some general troubleshooting advice, and full primers on reverb and MIDI. Of course all ADR functions and programs are covered. This is about as good as a manual gets, and my hat is off to AKG for giving so much thought to their customers.

There are two software versions of the ADR 68K available at this time. Version 4.00 contains 152 factory presets, 32 seconds of sampling memory and the ability to store samples. The price is \$6,990. Version 3.07 comes with fewer presets but all of the same program algorithms. Its sampling memory is only eight seconds, and the price is \$4,995. If you don't do a lot of sampling, this version is a great deal. The ADR 68K does a lot for the money, and it does it well. I utilized it in many different recording and concert situations and am glad it was in my effects rack. If you don't want to spend the really big bucks, but still want lots of goodies with respectable quality, then you should check out the ADR 68K. ■

—FROM PAGE 45, HUM

five different taps on the primary, and I just use a single phase to out and no neutral. That's been the most helpful thing for getting rid of ground loops. When you use neutral, you tend to use it for your equipment as well. Sometimes the phase will not be balanced properly on the panel where you hook up and you will get voltage on your neutral, which will create a hum. This transformer gives me a lot of flexibility. Before I had it, I would always connect the video ground to the chassis of the truck. Everything is lifted now. I create my own neutral.

**Mix:** So the AC is grounded on the truck but then you float the audio ground?

**G.C.:** It depends. Most of the time the AC of the truck will be lifted. Not the main AC coming into the box, but the AC to the equipment will be lifted. That gives me a much cleaner AC into the truck.

**Mix:** Do you ever use individual isolation transformers?

**G.C.:** Nah, that's bullshit. There's no need. I was doing Live Aid and David Hewitt was in charge of the technical

and his truck was there as well. I sometimes use his truck; it's great. But we got into a lively discussion. I said, "David, I'm doing stage one. You are doing stage two. My audio feed goes to the other Record Plant truck, because they're doing the sub-mixing of all the stage feeds. First of all, don't worry how I'm doing it. Don't tell me that I have to put a transformer on every line. I'm tied in with the P.A., we have the same AC, and it's two different stages. The only thing I want is to make sure we don't have a loop because you'll be tied in with the P.A. as well. What is the difference if I have the transformer at the microphone or have my Neve transformer at the input of the module?"

With an API or Harrison console, where it's electronically balanced, it might be nice to have a transformer in-line. But one of the things I like about the Neve is the input transformers. If I need to lift the shield, I do that at the split or at the console.

**Mix:** Do you recall any unusual grounding problems?

**G.C.:** I remember doing the Joe Jackson live record two years ago in New York. We had a buzz on the piano. We checked for a ground loop. We tried different mics. It was only there when we brought up the gain on the piano. We finally figured out that a spare guitar amp plugged into the AC on stage was creating the buzz, and because of the gain required to get the piano balanced, that's where it showed up. We unplugged it and it was clean.

When I started out, I had my share of ground loops. One time I was doing a video and somebody decided to plug in a video monitor in the dressing room. It created a buzz. We fixed the problem by putting a distribution amplifier on his leg. If you can follow what's going on, you can make a good guess about the source of the problem. You have to be a detective sometimes. ■

• • •

For further reading on grounding problems see also "A Grounding Primer" by Greg Hanks, *Mix* November 1986, and *Sound System Engineering* by Don Davis and Carolyn Davis, available from the Mix Bookshelf.

*Paul Potyen is associate editor of Mix. He is occasionally awakened in the middle of the night by ground noise emanating from his home studio.*

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by Hal Blaine with David Goggin

# KOREA

## The Drummer Boy Goes Overseas

by Hal Blaine with David Goggin

*This month we go back to the beginning of Hal's career as a professional musician. Touring can be a rough gig, but it's nothing compared with a tour of duty in Korea. The talent and courage that carried Hal to the peaks of show business were taking shape in these formative years when he carried a carbine as well as his trusty drumsticks.*

• • •

The year was 1946 and I had just turned 16. I really wanted to be like my brother and join the Marines—the few, the proud—but I had heard that at Marine boot camp they threw you off a tower dressed in full field clothing with a hundred pound pack on your back. You landed in a lake and either swam or sank. I couldn't swim and had a terrible fear of water stemming from a near fatal accident as a kid in Connecticut. So I went for the Army instead. My folks reluctantly signed my enlistment papers, and I left for basic training with my boyhood pals Bob Kaminski and Bob Steele.

We were sent to the engineering base at Fort Lewis, Washington—no place to be in the winter. Along with our introduction to weaponry, survival and military ethics, we also learned to march, salute everything that moved and function on no sleep at all. We were up every morning at five, collapsed at about seven each night, and were awakened at all hours of the night for inspections, forced marches and the general military program for making men out of boys.

Many of the recruits just couldn't cut it. It was a tough grind, but when you're 16, nothing seems insurmountable. If you were in fair shape you could make it through the first couple of months without too much trouble. If you weren't, the army put you in the best shape of your life.

America was in a patriotic state of mind in the '40s. There were no guys running off to Canada to avoid the draft. We had recently won the war and all of us felt a sense of duty and obligation to our country. I often had trouble holding back tears as I marched and listened to the brass band blasting out the regimental songs and saw the flags waving.

Our sergeants and officers were all 20-year men just back from combat, and the training was brutal. We kept

hearing how tough the front lines were. "We want you guys to live—we've lost too many buddies to stupidity. You guys are gonna be the best goddamn outfit in the army!"

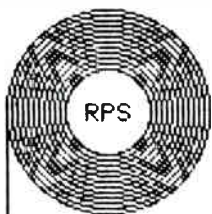
My brother had hipped me to many of the scams instructors used to line their pockets. When we were called on to donate money for an iron (so we would be the best uniformed outfit), I knew that it was the same iron used by the last recruits, and probably the ones before them. Next, we needed an ironing board, a coffee pot and on and on. Every few days there was a new scam, and with 55 guys in each barracks trying to kiss ass, it meant 55 bucks for the sergeants, who were already making a good salary. Recruits started out at \$40 a month, and these "donations" were bleeding the guys pretty dry. Bob







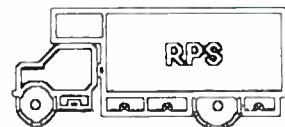
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*Tom Whisner (owner) MANTICORE*

**In the Laboratory** The Carver PM-1.5 was rigorously tested by Len Feldman for MODERN RECORDING (February 1985). His laboratory test results also prove that the PM-1.5 really delivers. The following quotes from the Lab Report are reprinted with permission of MODERN RECORDING & MUSIC:—

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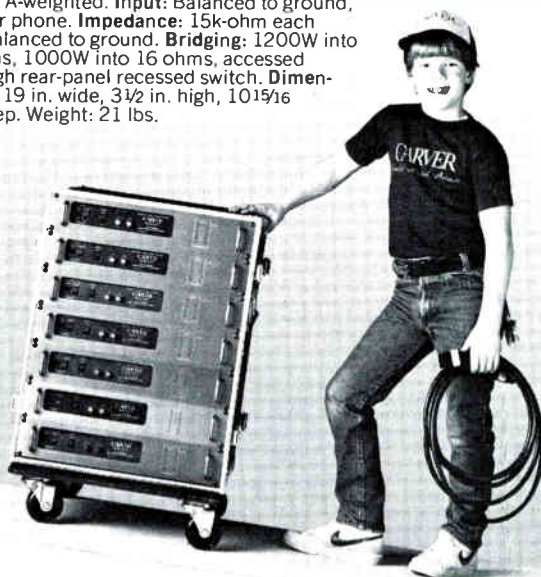
"The amplifier delivered a clean 480 watts per channel into 8-ohm loads with both channels driven for its rated harmonic distortion level of 0.5%. Even at the frequency extreme of 20 Hz, power output for rated THD was 470 watts as against 450 claimed by Carver. Furthermore, at rated power output, distortion decreased to an insignificant 0.015% at mid-frequencies and 0.007% at 20 Hz. When connected to 4-ohm loads, the PM-1.5 delivered 750 watts per channel for rated THD of 0.05%—far more than the 600 watts claimed by Carver. Clearly, when it comes to specs for a professional amplifier, Carver has taken a very conservative approach... All (manufacturer's claims) equaled or exceeded published specifications—usually by a wide margin."

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Kaminski, Bob Steele and I never donated. We just *never* had any money.

My brother had also warned me about volunteering, but I didn't listen. One day the sarge came in and asked if anyone could drive. I was the first guy to raise my hand. He had volunteers follow him to the motorpool where he quickly assigned us to laundry pushcarts. We pushed those carts around for days, picking up dirty laundry while freezing in the snow. Another time a different sergeant came up to me and said, "I understand you're a musician, Belsky." I proudly said yes, just knowing that they needed a drummer somewhere on the base. He handed me a sewing kit and grinned. "Start playing a tune with this!" He had me sewing sheets and blankets for a day.

We finally graduated from basic training and became PFCs. Boy, we had one stripe. We all bought gold engineer insignias (that could pass for captain's bars) at the PX and wore them on our uniforms. They hooked to the collars and lapels of our Ike jackets, and at night we looked like officers strolling around the military post. The new recruits actually saluted us in the dark. We were hot shit.

We were soon ordered to Camp Stoneman in Pittsburg, California, which was the replacement center for men going overseas or for those returning and getting discharged. I was immediately drafted into the base band.

Being a band member, I had a permanent Class A pass, which meant that I could come and go as I pleased at any time of day or night. Most of the men were on "alert" and could get called with an hour's notice to ship out. They rarely even got a pass to go to town. Bob Steele immediately got his orders, and left for the Pacific. We never saw or heard from him again. While Bob Kaminski was waiting for his orders, we were always sneaking out together. We found a concealed water pipeline, one of those gigantic corrugated pipes, and used it regularly to leave the base and head for town.

Then Bob got his orders and left for Japan. That lucky Polack. Everybody wanted orders for Japan—it was like a country club, with easy duty and lots of time off. Most of the Camp Stoneman replacements were sent off to Japan to join the army of occupation.

After a few months, our bandleader, Captain Blackburn, was sent overseas. We were assigned a new band captain,



**Kim (R) was Hal's Korean house-boy at the "Hilton."**

and he was strictly military. Every crease in the uniform had to be perfect. We had early morning band marches, and rehearsals all day. It was the pits. I asked for an overseas transfer and got it. My orders: Korea! I had never even heard of Korea.

In mid-November we left the coast

of California. It was about 80 degrees and the sight of San Francisco from the ship was absolutely beautiful. I was sitting back, looking forward to a peaceful ocean cruise.

We were 5,500 men on a Liberty troopship. A Kaiser weld job with the basic four bunk tiers and a mess hall. Somehow I found myself up on the bridge with a bunch of officers. We all wore dungarees so no one really knew anybody else's rank. One of the officers asked if I had ever been across before. I said no and he said, "Stick around for the show. As soon as we get under the Golden Gate you can watch the rookies feed the fish." Sure enough, in 20 minutes the railings were lined with soldiers puking their guts out. It really was quite a show. Imagine 5,000 men groaning convulsively and moaning in unison. Well, that wasn't going to happen to me—not much.

I finally found my bunk. I was in compartment 2B, up in the front of the ship, second compartment down. The fore and aft get all of the up and down motion. I was assigned the low bunk, with three men above me. We were



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literally packed into the compartments like sardines, with hardly any room to move. The stench of sea water and smell of diesel fuel was enough to turn your stomach, and when the ship began to rise and fall, one of the guys started throwing up all over the cabin. The stink was more than anyone could handle and soon everyone was heaving. I pulled a blanket over me to keep the tossed cookies off. I was sick, but was determined not to throw up. I could hardly move from the sea sickness, but I made up my mind to beat this awful thing.

There was no Dramamine in those days, so you had to get over the sea sickness on your own. I often wondered how the soldiers must have felt just a few years before, ordered to invasions with live ammo all around and feeling as bad as we did.

By the third day I felt next to death. The Pacific was roaring. We were cutting into waves 20 feet high. One second the ship was on the top of a swell and the next it was being pushed down with a tremendous force of gravity, ten times more than you would feel on an elevator or a carnival ride. The moans and groans in our compartment made it sound like a battlefield hospital. Everyone wanted to die, but somehow I hadn't thrown up. Of course, I hadn't eaten for several days, except for sucking an orange and eating a candy bar. I was still dressed in my dungarees, with my boots still on, just lying there watching the slop wash from one end of the cabin to the other while the ship plowed into wave after wave. I couldn't remember a worse time in my life, and I wondered how I could survive another 30 days.

That afternoon, a work detail entered our compartment and started hosing down everyone and everything. A riot almost broke out, and the MPs were called to break it up. Everyone's nerves were worn to a frazzle. You couldn't look at a guy without getting a "What the fuck are you looking at, asshole?" as the vomit came out of his mouth like it was shot from a fire hose. The officer in charge ordered us all to get up and go out on deck. The fresh air felt good and the sea had calmed down a bit. I started to feel a little better.

Somehow we got through the initial ordeal and the hunger pangs started to hit. I knew that I had to get some food in me. The officers told us to eat, shave, shower and get shipshape. I started

feeling confident that I was going to be all right.

I entered the mess hall filled with men either waiting in line or standing up at the counters eating lunch. The sea was relatively calm and we were below decks about midships where there was less motion. Occasionally, a guy would run from the hall, heading for the railing. With steel tray in hand, I waited my turn in line. One guy slapped a gob of mashed potatoes on your tray, the next poured some gravy, then another spooned out some peas, corn and so on.

The guy in front of me asked for more corn and the galley slave told him to shove off. They guy jumped over the counter and grabbed the galley slave by the throat and the fight was on. The entire mess hall broke out in a brawl, a full blown riot. The MPs rushed in once again to break it up and restore law and order. Everyone was in a state of hate.

I finally got my entree, a greasy hamburger steak, and headed for an open spot. I squeezed in between two guys and started eating. I was nearly starved and it tasted pretty good. We all stood side by side and faced the guys on the other side of the stand-up counter. Nobody sat. The tables were just above waist high and just wide enough to hold your tray and the guy's across from you. Ten guys stood at each table, five on each side facing each other. Just as I started chowing down on my first food in days, the guy facing me opened his mouth and out shot the vomit, covering me and my food. I headed for a ladder and up to a spot on the railing as fast as my feet could move. I had the dry heaves for the next few hours and raging headache that made me wish I was dead. But by the end of the day I somehow got my sea legs and wasn't sick again for the rest of the voyage.

As we approached the Korean coastline the snow was falling heavily. The ship dropped anchor and we were transferred to LSTs, Navy landing vessels. There was no dock in Inchon Harbor large enough to handle big ships. It was mid-December.

After making it to shore, we froze our asses off waiting for the narrow-gauge railroad that would take us to the repo depot. We spent a few hours on the train, packed together like cattle, trying to stay warm. There were no windows or floorboards on this antique tinker toy of a train. When we



arrived at the sprawling replacement center, most of us were assigned tents to bunk in. The only covered buildings were a few old Japanese barracks. I was lucky enough to get assigned to one of these small buildings. As filthy as it was, with just a few mattresses covered with soot and grime, slept on by God-only-knows how many thousands of G.I.s before me, I felt fortunate to have a roof over my head instead of freezing in a canvas tent.

There were five troopships in, with over 5,000 men each. That meant over 25,000 soldiers waiting for their assignments. The word was that everyone would be going into infantry outfits. Real soldiering.

Can you imagine 25,000 men lining up for chow? Standing on sheet ice, freezing in a line that seemed endless—it was so cold that when you put your utensils into the vat of boiling water and chemicals for sterilization and then pulled them out, you would hear a click as they instantly froze. No one bathed or shaved for days.

After three or four days of sitting in a gigantic warehouse and listening to names being called for assignments,

*By the third day I felt next to death. The Pacific was roaring. We were cutting into waves 20 feet high. The moans and groans in our compartment made it sound like a battlefield hospital.*

an officer came in and made a speech. "The next six guys that I call are the luckiest bastards to ever hit Korea. You're going to steam-heated barracks with hot showers and breakfast the way you like it every morning." I knew he wasn't talking to me, so I sat back and ignored the whole thing. The first name called was "Belsky, Harold S. Ra 192 444 77."

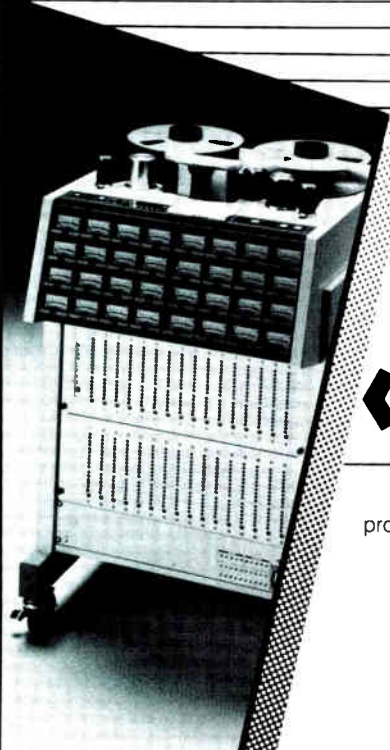
The six of us picked up our gear and were driven to our "country club." I didn't know what was going on, but I didn't open my mouth. No infantry for me, thank God. All I could think of was

the big sign that had welcomed us all to Korea, the first thing we had seen as we got off the LSTs: "Welcome to Inchon, the best damn port in the Pacific." What a laugh.

When we arrived at our destination, the 657th Compound, we were greeted by a group of officers, soldiers and Korean civilians who picked up our gear and escorted us to a real military barracks. It was actually a converted Japanese factory, with long hallways and skylights running the length of the building with private rooms on either

—CONTINUED ON PAGE 194

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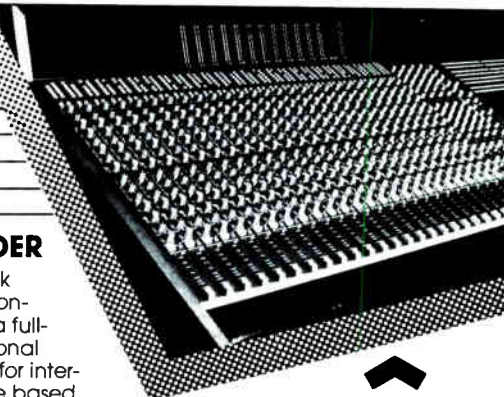


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# NEWS

## FROM AROUND THE WORLD

### Toshiba-EMI Announces New Studio Complex in Tokyo

Toshiba-EMI, one of the largest recording companies in Japan, recently opened a new facility in the fashionable waterfront area of Tokyo. Designed and built by Nittobou Onkyo Architectural Co., Ltd., Studio Terra includes a large recording studio with two independent adjacent control rooms, and an additional mix-down room. Control room A is fitted with an SSL board, and control room B offers a Neve V Series 60-channel console with GML automation. The mixing room features a Neve-GML system as well.

The complex is also equipped with six CD mastering rooms, a video editing room, an audio and video sweetening room, an analog editing room, a

cutting room and a CD-I editing room. This reflects the trend in the Japanese market toward increasing CD sales. According to Toshiba-EMI's maintenance manager Isao Ito, "In Japan most titles are released as CDs and cassettes. In most cases we do not release analog LPs. Japan's CD share is much bigger than that of other countries, and that share is increasing. That's why we decided to create this facility to increase our CD production capacity. We are also looking at video production, since CD-V (compact disc video) is being introduced in Japan in the first half of this year."

### Apogee Filter at Sedic

In other news from Japan, Sedic Studio

—CONTINUED ON PAGE 130



Control room "C" in Tokyo's new Studio Terra complex, owned and operated by Toshiba-EMI.



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by Philip De Lancie

# COPY-CODE

## CBS STRIKES OUT

**F**or years, the entertainment industry has been a house divided against itself, as hardware and software manufacturers grappled with thorny issues raised by the introduction of consumer level recording technology. DAT, of course, has been the latest bone of contention in this conflict, and Congress has been an important battle-

producers rallied by the RIAA, but vigorously opposed by self-styled "home recording rights" advocates and many in the professional recording community. Congress, not known for decisiveness even in its areas of alleged expertise, decided it needed an impartial evaluation of the system before taking any action on legislation,



A "Picture Disc" from PDO. No copy-code notches here!

ground where the software side has hoped to finally gain the upper hand. Attempts to legislate the "reimbursement" of copyright holders for revenues lost through home taping with "royalties" imposed on recorders and blank tapes had made little headway when the development of DAT raised the specter of near-perfect home duplication of copyrighted works. So representatives of software interests, led by the Recording Industry Association of America, shifted tactics and began to advocate a technological fix, the "copy-code scanning" system from CBS Laboratories. The system was endorsed by a stellar roster of artists and

and the matter was referred to the Engineering Laboratory of the National Bureau of Standards (NBS) for a study funded by contributions from the contending parties.

The NBS set out to answer three main questions regarding the CBS system, which requires the removal of a narrow "notch" of frequencies from encoded material to cue the interruption of record functions on "scanner"-equipped recorders: "1. Does the copy prevention system achieve its purpose to prevent digital audio tape machines from recording? 2. Does the system diminish the quality of prerecorded material into which



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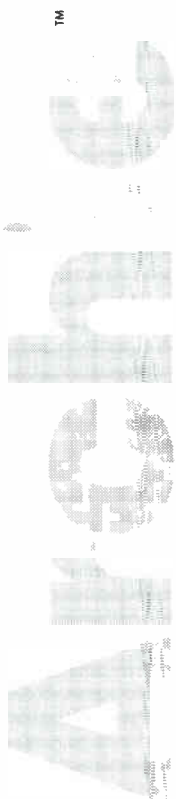
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## AFTER • MIX

the notch is inserted? 3. Can the system be bypassed, and, if so, how easily?" With the release of its study in March (reported in brief in "Current" last issue), the NBS decisively crushed any hope the RIAA may have had for a swiftly legislated technological cure for its DAT anxieties. In fact, though working with equipment and documentation provided by CBS itself, the NBS staff found the system lacking in all three areas of inquiry. In answer to question one, NBS concluded that the system "does not achieve its stated purpose... The system does prevent the copying of notched material much of the time. However, for about half of the recorded tracks studied, the system exhibited false negatives; i.e. notched material was nonetheless recorded. In addition, the system also exhibited false positive behavior, i.e. it failed to record unnotched material" in 16 out of 502 cases.

NBS's conclusions on the audibility of the notch were no less damning: "For some listeners on some selections, [the system] results in a discernible difference between prerecorded notched and unnotched material." Two series of double-blind listening tests were conducted using subjects drawn from the local AES chapter, the NBS staff and local audiophiles and musicians. In one series, involving A/B comparison of synchronized notched/unnotched versions of ten selections, encoded versions of two selections were correctly identified by 12 out of 15 listeners. But even if the system had worked well and was unnoticeable, the study showed that it wouldn't have been much help. In answer to the question about whether the system could be easily bypassed, NBS concluded that it could. While noting that "it is not possible to restore all the actual information removed by the encoding process," NBS engineers "designed and constructed several electronic circuits for implementing five different methods to circumvent or defeat" the system through "external signal conditioning." These "simple and easy to construct" circuits could be built for around \$100.

With three strikes against it, the copy-code scanner idea has been consigned to the ash heap of technological history. Given the results of the study, few will mourn its loss. But the underlying problems remain. To the

RIAA, "home taping rights" is still just another way of saying "copyright infringement." On the other hand, digital recording enthusiasts, whether audiophiles or small studio owners, are still waiting to be able to buy DAT machines that don't come with manuals printed only in Japanese. The RIAA will have to work fast to replace its discredited proposal if it hopes to justify the continued denial of hardware to these eager American consumers. Rumor has it that some sort of compromise is in the works, possibly based on technology allowing a

**C**ongress,  
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single pass for home-use recording of protected material. Hardware and software representatives have reportedly been conferring among themselves in the quest for speedy resolution of the conflicting interests, but no breakthroughs have been forthcoming as of this writing. Stay tuned for further developments.

• • •

In other DAT news, Loranger Manufacturing Corporation of Warren, PA, has begun offering digital-to-digital duplication in the DAT format using Sony's real-time system. DAT cassettes may be recorded at either 44.1 or 48 kHz sampling rates, with tape lengths custom loaded for individual program times. Any digital audio source may



The method now commonly used to connect and distribute the input and output signals of audio and video equipment is to insert patch cables into a jack board. This patch cable type patch bay is a well established connector and distributor of signal lines, but it poses various inconveniences. Changing the connections is time consuming, and to remember a certain patching system it is necessary to record everything on tables. Furthermore, such problems as dirt or rust of the jacks and plugs resulting in poor contacts and damaged patch cables disconnecting the lines occur frequently. The Akai Digital Matrix Patch Bay System has been developed to eliminate all these problems. For the exchange of input and output signals of professional audio equipment, this system uses balanced type/line level inputs and outputs for the audio signals and 75Ω BNC/composite line inputs and outputs for the video signals. To find out more, send for a brochure or see your AKAI dealer.

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## AFTER · MIX

be used as a master, including CDs, DATs, or Sony's F1 or 1610/1630 PCM systems. Loranger is currently supplying prerecorded DAT engineering samples to Ford for tests of a DAT playback unit slated for optional inclusion in 1988 Lincoln Continentals.

• • •

Action is heating up in the maneuvering over which CD format will end up as the heir to the market role played by the ailing 7-inch vinyl single. (More on this in a future "After-Mix.") Digital Music Products (DMP) is making available, by mail order only, a "free"

3-inch CD sampler of its recent jazz releases. "A Touch of DMP" is designed to introduce CD owners to DMP's live, direct-to-digital recording style. Featuring four cuts with a total playing time of 20 minutes, the disc is supplied with an adapter needed for use with drawer-loading players. DMP may be reached at Park Square Station, Box 15835PR, Stamford, CT 06901. Include \$3 for postage, handling, etc.

• • •

The Philips and Du Pont Optical Company (PDO) has announced a new process for creating six-color artwork directly on a compact disc. The exclusive process, under development for

several years, was introduced to counter endurance problems the company says are sometimes associated with the current silkscreening method. The "Picture Disc" has been tested with product for several major acts on the CBS Records roster, including Michael Jackson, Bruce Springsteen and George Michael.

• • •

Studer has introduced a PQ data editing system designed for use not only at CD mastering plants and conventional mastering rooms but also in regular recording studios. Based on a Philips PC, the LHH 3050 PQ-Editor comes equipped with built-in dedicated interface electronics for ¾-inch U-matic recorders as well as DASH format machines such as Studer's D820X. The PQ-Editor also operates with both Sony's DAE 1100 and Studer's new DE 4003 digital audio editors. A complete set of interconnecting cables for recorders and editors is included.

• • •

Two new machine control systems are being offered by 3M for linking machines and control locations via digital networks. The 3M EBus Broadcast and Duplication Control Systems are based on EBus, the serial communications standard now being developed by SMPTE and the European Broadcasting Union. They are able to communicate with and control EBus supported equipment as well as parallel machines. The EBus system uses an open-ended RS-422 serial communications bus that supports the SMPTE/EBU EBus standard for serially controlled devices. Non-serial devices are controlled with serial-to-parallel machine decoders, which convert serial commands into logic level outputs to drive VTRs and other devices with parallel control ports. Most popular machines are supported, and outputs from the decoder may be used for custom control requirements. The Duplication Machine Control System is designed to allow expansion of control from several to hundreds of machines as a duplicator's business grows from low to high volume.

• • •

Video Marketing Service has opened the doors of its new S-VHS duplication facility. Said to be the first of its kind in the nation, the plant's capacity is greater than 100,000 tapes per month. JVC's Model BR-S710U was selected as the duplication deck. ■

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by Iain Blair

# JONI MITCHELL

## PORTRAIT OF A RESTLESS BUT HAPPY ARTIST

**T**he good news is that Joni Mitchell is back. After the less than enthusiastic reception from critics and public alike for her last album, the bleak and caustic *Dog Eat Dog*, her latest album looks certain to redress the balance and put the singer/songwriter back where she belongs—on top.

Entitled *Chalk Mark in a Rain Storm*, it is a beautifully crafted album containing ten tracks that chart some familiar Mitchell territory, but which also radiate as much optimism as

angst. And in addition to the usual generous helpings of (often overlooked) wry humor and uncompromising candor, *Chalk Mark in a Rain Storm* also boasts some unlikely guest appearances from the likes of Billy Idol, Tom Petty, Peter Gabriel and Willie Nelson.

The bad news is that Joni Mitchell may not be back for long. Now 44, and with a 20-year career that has spawned such classics as *Blue*, *Court and Spark*, *The Hissing of Summer*



PHOTO: NORMAN SEEFF



*Launs* and *Hejira* behind her, she may be ready to call it a day. Of course, she's been fighting an uneasy battle with fame for most of those two decades, and has been threatening to retire to her oils and brushes for most of the '80s. But it's already been more than five years since she last toured, and with no such plans in the works, she may indeed be serious this time.

Serious or not, sitting in her manager's office looking stylish and relaxed, Mitchell is more than happy to discuss her new record, the effects of criticism, the role of prophecy in her music, and her possible future plans.

**Mix:** *Chalk Mark in a Rain Storm* sounds like your strongest album in a while. Would you agree, and do you see peaks and valleys in your own work?

**Mitchell:** Well, I'm pleased with the way it's turned out, and I do feel this album is easier for people to get into than any record I've made in a while; that it's more accessible. Why, I'm not sure. I don't view my work and see some records as being "better" or "worse" than others. I just see them as a natural fluid progression in my restless pursuit of perfection [laughs]. And it's more a case of correcting what I feel are my mistakes, not necessarily what was criticized by the press or whatever.

**Mix:** Are you referring to your last album, *Dog Eat Dog*, which wasn't very well received?

**Mitchell:** Yeah, and a lot of the criticism of that record I just didn't share. It was definitely perceived as a largely negative LP, and you only learn how the public reacts over a period of time, with people coming up to you in restaurants or wherever. What you do hear instantly, however, is the critical reaction, and you go from the enthusiasm of completing the project to being deluged by all that criticism. It can be brutal.

**Mix:** Do you pay much attention to critics?

**Mitchell:** Of course, because you put something out in the world and you want some feedback. But in the '80s

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## PLAYBACK

it's fashionable to be nasty and ignorant for its own sake, and I find that very depressing and exasperating, like watching your children get beaten up at school by thick-headed bullies. And those wounds and barbs can ruin an artist and make him impotent, so a lot of criticism is incredibly irresponsible. The critics nearly killed Miles Davis, and Miles is a tough one, but he finally just had enough and retired from it. That's my impression, anyway. No matter what he did, however adventuresome he was, they kept comparing everything to his early work. They just couldn't get past it.

**Mix:** Do you feel the same pressure, that everyone wants another *Court and Spark* or *Hejira*?

**Mitchell:** Yeah, and they just didn't get *Dog Eat Dog*. They wouldn't look at it or give it a fair chance. Ironically, there's a line in the album that comments exactly on that—"Nothing is savored long enough to understand it"—and the album was extremely prophetic for me in that sense. People always resent it when you leave the familiar behind, just when they're getting used to it.

**Mix:** And yet, *Chalk Mark in a Rain Storm* does seem closer to your earlier work, particularly in its sound.

**Mitchell:** Well, you're right in the sense that after recording *Dog Eat Dog*, I couldn't face another project without seeing some real live musicians on the other side of the glass [laughs]. I specifically set out to get a much more live rhythm section, and mix real instruments with electronic sounds, instead of going all the way with programming synthesizers and drum machines.

**Mix:** Where did you record?

**Mitchell:** I started recording in England, kind of by accident more than design, as my husband [bassist Larry Klein] was over there producing Ben Orr from The Cars, and I was busy with my painting. But naturally I kept having opinions about his project, and it was obvious I needed to do something, and then coincidentally Peter Gabriel finished his album and offered me the use of his studio if I wanted to mess around. That's how it began.

**Mix:** Were you writing songs while you were in England?

**Mitchell:** I'm always jotting down ideas. What happened was that I'd written two songs for this film, *American Anthem*, which I knew would be rejected. They wanted the title track and a love song for a particular sequence, and when I went to look at the dailies and raw footage of all the beautiful autumn landscapes in Colorado, and they told me they wanted a Sydnum-type entrance, I told them I couldn't give them that. But they wanted me to go ahead, so I wrote the song knowing it was in the wrong tempo, but it didn't matter as it was

**"Employing all the electronic hardware now available is so bloody tedious—you invariably sacrifice some of the spontaneity and magic of playing live music."**

the catalyst for beginning this album. That's how "Number One" happened. I just thought, "What is the American anthem?" and it occurred to me that in the greedy '80s, it's about winning and being "number one." And the love song came out as "My Secret Place," the first track of the album.

**Mix:** How did the other songs materialize?

**Mitchell:** Well, while we were there, there was that whole Libyan bombing crisis, and they launched the American fighters from an airbase across the valley from Peter's studio, and so naturally we began to feel that if they were to retaliate, we might be a target. So there was a lot of talk about war, and this all happened at the same



time as Chernobyl, so it was all rather unsettling. I thought a lot about war, and two more songs came out of that — “The Beating of Black Wings” and “The Tea Leaf Prophecy.”

**Mix:** Despite such subject matter, the overall tone of this album seems lighter than *Dog Eat Dog*.

**Mitchell:** In a way, I suppose, and in the sense that for the last album, the seeds of change were in the air and I could see them—and many other people could see them, but not that many wanted to look at them or confront them. They thought maybe I was just being paranoid and dismissed them. People were just not in the mood to look at America or Canada critically at the time *Dog* was released. But those seeds later exploded into major news items and issues, which two years later are common knowledge.

**Mix:** So artists and musicians have a responsibility to confront and examine change?

**Mitchell:** Absolutely. If they're doing their job well, being the antennae of the planet they *should* be more sensitive to change, and by their very natures and predilections and interests should wade in where others fear to tread. They should also be less fearful of depression. The average working person doesn't need depression—they've already got a tedious, mundane situation on their hands. But if I get depressed, I can still do my work. I know how to use depression. It's a matter of channeling your creative energy into your work. That's the great thing about writing—you're able to explore and exorcise your frustrations.

**Mix:** Do you write alone?

**Mitchell:** Oh yes, and then I collaborate with Larry over the music on some tracks. “Lakota,” “The Tea Leaf Prophecy” and “Snakes and Ladders” evolved like that. Other things happen as well to push you in certain directions. For instance, Robert Plant lives in the same South England neighborhood [as Gabriel], and he was looking for material, so he approached Larry and tried to talk me out of recording “Number One” by saying “It's a man's song!” Anyway, Larry and Michael Landau, who was also over there putting some guitar on Ben's record, started fooling around with some grooves, and out of that came the

track for “Lakota.” Then, when we listened back to the track for “The Tea Leaf Prophecy,” for some reason I heard the line “The bombs were falling on London town,” which never occurs in the song, but which started me off thinking about World War II. So I commandeered all three of these tracks that Plant wanted because my ideas were developing, and my husband can't refuse me anything [laughs].

**Mix:** Do you find that lyrical ideas come first, or musical phrases?

**Mitchell:** It varies. One song was borne into the air almost lyrically intact like a humming tune, and then I put chords to it, but that's unusual for me. Usually I start off with a chord progression, and listen to it and let it speak to me, like The Beatles with “scrambled eggs,” which became “Yesterday.” You hear a feel, you hear words, and some of them stick to the phrase and some of them fall by the wayside and serve just as filler until the right thing comes along.

**Mix:** How far does modern technology, both in the studio and in terms of instrumentation, affect your songwriting?

**Mitchell:** That's an interesting question for a singer/songwriter like myself. If this album is more accessible, one of the reasons is simply mechanical in that my vocals are more present in the mixes than in *Dog Eat Dog*, and perhaps people need to hear my lyrics more—they require a certain intimacy. I think many would like me to eliminate the band and just get down to the skeletal form of each song, but I cannot resist playing with all these high-tech toys. This is an era of amazing gadgetry, and any composer would be half-dead not to want to experiment and be involved. So if you have all these machines, like the Fairlight and the Emulator, naturally they begin to affect the way you write.

But I also decided this time to pursue more of a mix between live instruments and electronic programming. So, for instance, on “Reoccurring Dream,” I built the track a capella, got the musicians to play live, then added my keyboard parts, and in the process changed the root, changed the key that they played in. So I built the bottom under the track, which made Larry's bass go up into the mid-range and

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## PLAYBACK

change key, and lastly added my sound collages. And I couldn't tell you what key I start in and what key I end in, because often I play in two keys at once, 'cause of all my open tunings. They mess up formal western music.

**Mix:** You've always explored those sort of harmonic ambiguities.

**Mitchell:** Yes, because I think I'm emotionally complex and I like my chords to be the same way. So I'll use a pure minor to inspire a sense of tragedy, or a pure major where every-

thing is peachy keen, and a major 7th when I want to be wistful, and then mix them all up. I need tragedy with a string of optimism running through it, and positiveness with some dissonance in it. That's why my chords are so peculiar.

**Mix:** Do you ever do home demos first?

**Mitchell:** I used to, until I stopped recording at A&M Studios before this Geffen deal. I would just call up and go in and lay down some demos. Now, we just put in a real home studio. It's a 24-track, with a Trident

board and just about every kind of keyboard you can imagine, including a Fairlight, Prophets, Emulators—you name 'em, we've got 'em! My husband uses all that stuff more than I do, but it's great to have and you can basically now produce an album at home.

**Mix:** In fact, you recorded at a lot of different studios for this album, from the Wool Hall and Ashcombe House in England, to Ocean Way, The Village, A&M, Sound Castle, Galaxy, Ground Control and Artisan in L.A. Were you looking for certain rooms to match tracks to?

**Mitchell:** [Laughs] No, we were looking for the cheapest rates! It's so expensive to make albums now, and the truth is mine don't sell millions. And all this keyboard orchestration stuff is a very expensive process, so that's why we've put in our own home studio. I simply can't afford to record in commercial studios any longer.

**Mix:** Which tracks were recorded where?

**Mitchell:** "My Secret Place," "Number One" and "The Beating of Black Wings" were all recorded in England. "A Bird That Whistles" was actually recorded several years ago—Larry and I did it at A&M for fun, and then added Wayne Shorter playing sax at Galaxy. It was recorded on 1/4-inch and then transferred to 24-track, and then I just rewrote the lyrics, 'cause it's a man's song, you know—men have all the good parts, just like in films!

**Mix:** What about "Lakota"? Where did you find Iron Eyes Cody, who sings that incredibly effective chant at the beginning?

**Mitchell:** We recorded that at Ground Control in Santa Monica, and it's quite a story. From the moment I heard the track, I knew it was about Indians, though I don't know why—I mean, there's no overt four-beat pattern. Anyhow, I'd built a chant in the background from memories of chants I'd heard as a child, and I wanted an Indian's approval that these were somewhat authentic. I'm both romantic and realistic where Indians are concerned. I'm not totally realistic, as I didn't grow up on a reservation, but I'm well-informed and romantically my heart goes out to them.

How I ended up meeting Iron Eyes Cody is a strange story. I was in the

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studio, and I'd heard there was going to be a pow-wow at the Santa Monica Civic, and I just knew I *had* to go. That's unusual in itself, 'cause I *never* leave a session, but fortuitously the machines went down, so I left, and when I got to the pow-wow, I was introduced to Iron Eyes and ended up bringing him back to the studio. The weird thing is that we arrived back really late—I'd promised I'd only be gone an hour—and as we walked in, the machines literally started up again! Naturally I took all this as a very good omen. The other strange aspect is that in my enthusiasm, I told him to just sing the chant a capella, completely forgetting about the key. But afterwards, it slotted in perfectly, so it really was meant to be.

**Mix:** What about the other songs on side one?

**Mitchell:** Well, I think "Number One" and "Dancing Clown" speak for themselves. "The Tea Leaf Prophecy" is based on my parents' courtship, but I want to deemphasize the inspiration for it in that I think it takes away from the theme, which is another mystery. The bombing of Libya made me think of war, my father in the service, my parents' courtship, and Hiroshima and that immense turning point in the history of the world. It's also linked to the Indian legends about a fourth world, and the fact that we stand on the brink of the end of that fourth world.

**Mix:** What about side two? You cover a couple of old songs, like "Cool Water" and the traditional "Corrina, Corrina."

**Mitchell:** The last time I heard "Cool Water" I was about 7, and our neighbors were drunk, sitting on their back stoop singing it gleefully! I always liked it. Same with "A Bird That Whistles," where I wrote some new lyrics. As for the others, "The Beat of Black Wings" was based on a true story, someone I'd met back in the '60s who was the catalyst. "Snakes and Ladders" is a duet between a couple, and "The Reoccurring Dream" is a black comedy about commercial seduction which is interesting to play for young people, 'cause they're horrified as they haven't thought about it like that before [giggles].

**Mix:** Overall, the songs and produc-

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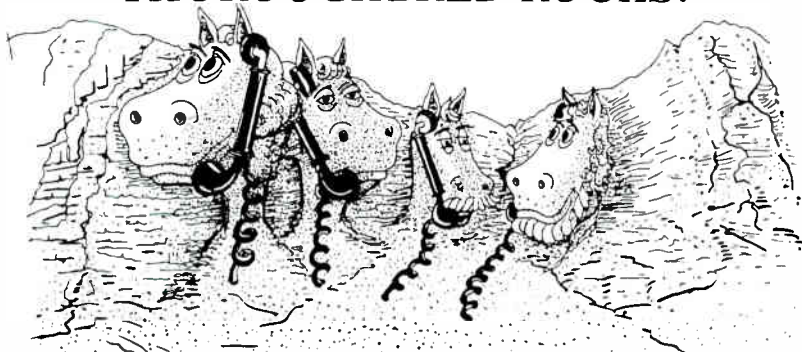
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## PLAYBACK

tion seem to focus less on technology than in *Dog Eat Dog*.

**Mitchell:** Yeah, it is back to basics, but it wasn't so much that I felt I'd gotten away from my roots, as that employing all the electronic hardware now available is so bloody tedious. It's an assembly-line job, and while you can get all these incredible sounds and drums patterns and whatever, you invariably sacrifice some of the spontaneity and magic of playing live music. So I still feel it was the right direction for the last album, but the truth is the process itself was quite dull.

**Mix:** It's also interesting that you produced this album yourself, along with your husband.

**Mitchell:** There were too many cooks on *Dog Eat Dog*, which we coproduced with Thomas Dolby and Mike Shipley. And although I like Thomas' music, we didn't collaborate well in the studio. He became a bit of a tyrant to work with, so this time we kept control, and Mike engineered and mixed with Dan Marnien, and they did a great job. My music doesn't really require a lot of interior decoration. I had a lot more fun making this record.

**Mix:** The album also features some unlikely appearances by guests such as Billy Idol and Tom Petty. How did that come about?

**Mitchell:** I just thought they'd be perfect on those songs—Billy on "Dancin' Clown" which is just pure fun, and Tom on the other cameo there, and later Willie Nelson on "Cool Water." They were all chosen for the sound of their voices. You know, people tend to confuse art with the artist, especially in the pop arena. So Billy is perceived as this rebellious, bullying figure because that's his persona. But he's a doll and we had a great time together. I chose Tom as the other character, Jesse, because the texture of his voice is more vulnerable. And I wanted Willie because his voice is so warm and his phrasing is almost jazzy. They all worked out really well, don't you think?

**Mix:** You haven't toured since 1983. Have you any plans to go on the road for this album?

**Mitchell:** There's a lot of pressure



and persuasion, but no commitment yet [laughs]. I don't miss the road at all, 'cause I'm allergic to my own adrenalin. It's time to go some place and sit by a lake and keep myself calm.

**Mix:** Is painting still an important part of your life?

**Mitchell:** Very much so. I've got a new show in Tokyo coming up in late May and June which is exciting. But I don't think I'm as gifted as a painter as I am musically. The other thing is that painting is a very lonely pursuit, while music is by nature much more collaborative, even if you're a solo artist. Painters are very withholding from other painters and artists, while musicians share their enthusiasms much more openly, and we all need that. Painting is very solitary and fraught with self-doubt.

**Mix:** You talk about music in very visual terms. Do you ever find yourself painting about a subject before turning it into a song?

**Mitchell:** In a sense, yes, because over the last few years I've been paint-

ing abstractly, so it's like avant-garde jazz. The subject matter comes after the fact in a visionary way.

**Mix:** Are dreams very important to you?

**Mitchell:** Oh yes, and I have a very colorful dream-life, very vivid. I dream in color, and sometimes in other-worldly colors. I had one flying dream that was full of burnished colors, like the feathers of a pheasant.

**Mix:** Do you ever suffer from writer's block?

**Mitchell:** Sure, but I still write during a block. You can still create, just not exactly in the direction you want.

**Mix:** Do you ever worry about your voice?

**Mitchell:** Only lately, but I think it's getting better in a way. I smoke too much, but that's given me a fiber, and I like my singing better on this album than almost any other I've done. I've got more grit and growl now, although I'm losing the clarity. But I don't miss it, you know.

**Mix:** Can you see a day when you might retire from the music business?

**Mitchell:** Funny you should ask [laughs]! I've been thinking about it for a while, and I may as soon as this contract with Geffen runs out. Seriously, why not? Nothing increases my sales—the same people buy my albums each time, whether I tour or do videos or whatever. I think I'm getting too old for the grind of touring, and my health is a bit frail.

**Mix:** You're probably one of these frail people who lives to be 102!

**Mitchell:** Yeah, and full of complaints and poking you with a cane. I'm actually looking forward to that, and I already have a cane collection. As soon as I go lame, which is inevitable, I'm gonna start swinging it at people [laughs]. ■

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—FROM PAGE 114

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### Sound Inn Hosts QMS Seminar

On February 16 the first QMS Seminar was held at Sound Inn Studio in Tokyo by Soundcraft Japan Ltd., with Roger Quested as a featured speaker. More than 50 recording engineers and broadcast people participated in the seminar, a discussion of the background and design policy of the Quested monitor.

Sound Inn is the first Japanese user of the QMS monitor system. Mr. Ishino, chief engineer at Sound Inn, commented, "I think we will see the installation of more QMS systems in Japanese studios in the near future." Soundcraft Japan Ltd. is exclusive importer and distributor of QMS in Japan.

### East German National Record Company Acquires Gauss Cassette Duplicating Systems

East Germany has become the first country in Eastern Europe to acquire the Cetec Gauss 2400 cassette duplicating system, considered to be the industry's most advanced music duplicating equipment, according to Jim Williams, president of Cetec Gauss. VEB Deutsche Schallplatten, the East Germany national record company, recently acquired the Gauss system in response to an increasing international demand for high-quality audio tape cassettes.

Gauss has a long history of supplying countries in Eastern Europe with music cassette tape duplicating equipment, including systems to: Gramofonove Zavodny Records and Kovo Praha Records in Czechoslovakia; Hungaroton Records and Hungarian Gramophone in Hungary; Prasa-Ksiazka-Ruch Records in Poland; Jogoton Records and RTV Ljubljana in Yugoslavia; and VEB Deutsche Schallplatten.

Williams continued, "The movement to manufacture, duplicate and market a quality music cassette is wide-

spread and international in scope. And in particular, the Eastern Bloc countries are determined to advance in the development of quality music tape systems and to expand its music market inside their countries and for export to nations throughout the world."

### Intersonics Develops a Speaker for Africa's Elephants

The Pachyderm 6, a compact sub-woofer originally designed for Cornell University to study long-distance elephant communication in Kenya, Africa, has been developed by Intersonics, Inc. of Northbrook, IL.

Measuring only 22½ x 22½ x 38 inches, the Pachyderm 6 contains two active 15-inch cones driven by a servo motor configuration (no voice coils or magnets). There are an additional four 18-inch passive radiators in the cabinet, each with a maximum excursion of two inches. The speaker can develop 112 dB at 15Hz.

The relatively small cabinet size was a requirement due to the limited space available in the Isuzu Trooper used to transport the system to the test site, a rugged 8-hour drive from Mombassa, Kenya.

According to Cornell University researchers, African elephants can communicate by flexing their massive rib cages, creating sounds down to 15 Hz which can be transmitted over five miles.

### ITS First Annual Management Retreat Scores a Hit in Acapulco

The first annual Management Retreat for the International Teleproduction Society (ITS) Presidents' Forum drew an enthusiastic crowd of 90 participating industry leaders from Canada, Mexico and all parts of the United States to its debut session at the Pierre Marquis Resort in Acapulco, Mexico, February 5 through 8.

The setting became an important part of the event, creating an atmosphere highly conducive to the congenial exchange of ideas. Against this background, the first formal gathering of ITS management participants combined the benefits of panel discussions and small group sessions with personal, informal interaction.

A major highlight of the inaugural meeting was the Sunday morning manufacturers' panel on "Future Technology: Manufacturers' Forecast and Timetable." Chaired by Ron Herman (General Television Network, Oak Park, MI),

the panel members included Charlie Taylor (Sony Corp. of America); Jim Duca (Ampex Corp.); Steven King (Quantel); Al Leubert (The Chyron Group); and Mark Pinkel (Abekas Video Systems).

ITS president Tom Angell (Interface Video Systems, Washington, D.C.) hosted the Saturday lunch that addressed the "ITS Agenda for the Future" and introduced Peter Vantine of Emory University in Atlanta. ITS and Emory University will premiere the ITS/Emory Management Institute at the ITS/NATPE International Teleproduction Conference and Exhibition in Los Angeles in June. This formal academic program is targeted for the teleproduction professional who has advanced to top management through the creative and technical ranks, but who has no formal management training.

The success of the inaugural event was perhaps best summed up by Abekas' Mark Pinkel who said, "I think meetings like this will reveal that manufacturers and facility owners all work for the same customer: the facility client. Both have to be responsible and share in doing a good or bad job for that client."

The International Teleproduction Society is headquartered at 990 Avenue of the Americas, Suite 21E, New York, NY 10018.

### Bits & Pieces

Rebel Audio, one of the newest professional audio companies in Australia, has announced a move to new premises at 286 Great North Road, Five Dock. The move comes only six months after Rebel started its operations. . . Harrison Systems recently announced that Singleton Productions of Barcelona has been named the exclusive dealer for Harrison Audio products in Spain. . . Following the installation of an Amek APC 1000 mixing console at Jive Studios in Tokyo last year, two more Japanese studios have placed orders for the new Amek board. An 80-input format is scheduled to go into Mit Studios in Tokyo, and a 64-input configuration is planned for Hibino Electrosound's audio visual division, for use in a new advanced post-production suite. . . Farmyard Recording Studios in Buckinghamshire, England recently upgraded their SSL 4000 mixing console by installing a G-Series computer, resulting in a marked improvement in flexibility and speed of operation. ■



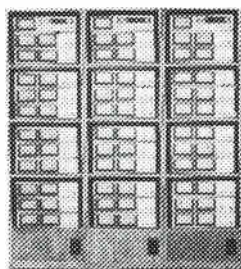


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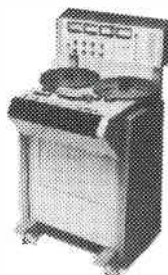
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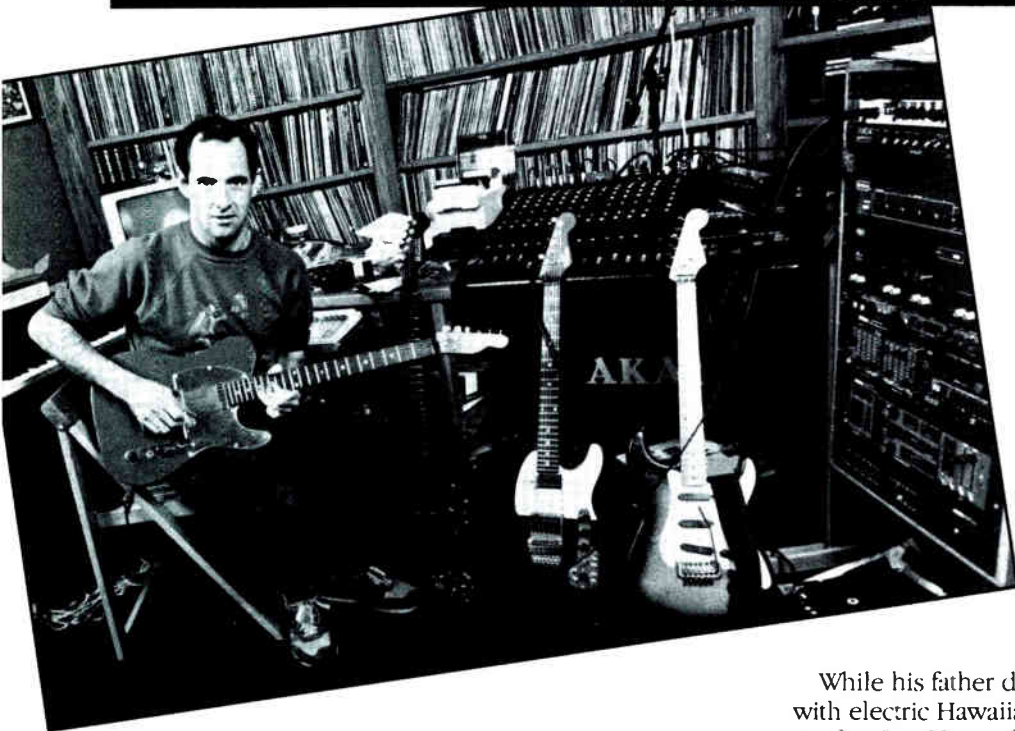
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## OUT ON THE EDGE WITH HENRY KAISER

by Derk Richardson

In Oakland, California, the name Henry Kaiser conjures up images of steel factories and group health insurance plans. In music circles, the name Henry Kaiser inspires notions of difficult, dangerous sounds wrangled from electric guitars into abstract shapes and disconcerting textures. All of that is part of Henry Kaiser's life. But the 35-year-old disenfranchised descendant of the aluminum magnate has transcended both his social roots and his avant-garde pigeonholes to become a renaissance man of music, an unassuming master of its styles and its machinery.

Kaiser builds bridges, but his connect traditional blues and improvised noise, acoustic bottleneck

guitar and the Synclavier, folk-based world music instrumental techniques and Silicon Valley innovations. His output is staggering, and the quantity is matched by its diversity. In 1987 alone Kaiser worked on more than a dozen albums, including *Crazy Backwards Alphabet* (SST), his Captain Beefheart-inspired outing with bassist Andy West and drummers Michael Maksymenko and John French; *Live, Love, Larf & Loaf* (Rhino), an eclectic rocker with Richard Thompson, Fred Frith and John French; *Devil in the Drain* (SST), a solo Synclavier LP; and a new Invite the Spirit project with Korean master Sang Won Park, Charles K. Noyes, Darol Anger, Zakir Hussein, Hamza El-Din, Anthony Braxton and others. It is his integration of borderless sounds and state-of-the-art technology, seemingly scattershot on the surface but ingeniously methodical at heart, that makes the maverick Kaiser such an intriguing artist.

While his father dabbled with electric Hawaiian steel guitar, Henry didn't acquire his musical tastes in the Kaiser home. "It was so horrible when I was growing up," he says. "They would constantly play Broadway show music

in the house and stack records up on the changer and let them run, while I was listening to [the Bay Area's listener-sponsored radio station] KPFA." He developed an affinity for the world, ethnic and 20th-century experimental music. He was also drawn to the more improvisational San Francisco rock bands of the late '60s, primarily the Grateful Dead.

In 1972, in the middle of his college years, Kaiser the obsessive listener decided it was time to start playing music, so he went out and bought a Fender Telecaster. "I wanted to do several things based on the models I'd been listening to," he explains. "I wanted to do free improvisation on guitar, like Derek Bailey, Sonny Sharrock, Fred Frith and Hans Reichel had been doing, with extended

—CONTINUED ON PAGE 134

## THE FAR SIDE

By GARY LARSON





## IN THE GROOVE WITH THE SYSTEM

by Havelock Nelson

Phil Collins has done it. So has Chaka Khan. Even Robert Palmer and Steve Winwood have been there. These artists and others have all had hits using writing, arranging or production by The System. A synth band with a decidedly human feel, this New York-based duo has developed and constantly refined their sound on four albums that bear their name—*Sweat*, *X-periment*, *The Pleasure Seekers* and *Don't Disturb This Groove*—while also working successfully behind the

scenes. They've enjoyed black radio success with groovy rhythm killers like the landmark "You Are In My System," "Promises Can Break" and "The Pleasure Seekers," but they've had as much impact on the pop charts as a fly on an elephant. That is until now: the last half year has seen a tremendous change in The System's fortunes.

Their last LP was their most successful to date and the similarly titled first single wormed its way into the Top 10. And "Nighttime Lover" made the transition from black hit to pop hit even faster. For The System this is the payoff for years of anonymity, watching their outside work do better than their own. But it's also a triumph for their new approach to recording an album.



Mic Murphy (L) and David Frank of The System

"Last time out," says keyboardist David Frank, "before going into the studio we spent a long time writing songs and perfecting our demos. We

were a lot more picky. Before, we didn't write as many songs beforehand. We may have written half of the album, then when

—CONTINUED ON PAGE 136

## GLENN PHILLIPS

TALES OF THE UNKNOWN GUITAR HERO

by Bill Milkowski

Once upon a time there was a quirky little band out of Atlanta, Georgia called The Hampton Grease Band. They released a now-legendary cult album on Columbia, *Music To Eat*, in 1970, and began opening for groups like the Jimi Hendrix Experience and the Mothers of Invention. Critics adored them, particularly the group's eccentric guitarist, Glenn Phillips.

Comparisons to Jeff Beck and Jimmy Page were commonplace. The late Lowell George of Little Feat called Phillips "the most amazing guitarist I've ever seen." Unfortunately,

The Hampton Grease Band broke up in 1973, but Phillips pushed on with a solo career.

Seven albums and 15 years later he's still going strong, still bucking convention, still a renegade after all these years. His

latest on SST Records (renowned for supporting musical upstarts from Black Flag to Elliott Sharp to The Meat Puppets) is *Elevator*, an eccentric instrumental rock album that features Phillips' sonically insane guitar feats. It

follows in the tradition of *Lost At Sea*, his 1974 debut on his own Snow Star label (1467 Canoochee Dr., Atlanta, GA 30319), or his raucous 1985 album, *Live*, on Shanachie Records (Dalebrook Park, Ho-Ho-Kus, NJ 07423). This stuff is wildly aggressive with a strong melodic sense. And some of the sounds that Phillips manages to emit from his customized Gibson L-6 are strictly out-to-lunch. In short, it's the kind of music that guitar fans will drool over. And it's all neatly packaged within a catchy song-oriented structure. Check out his otherworldly sounds on "Vista Cruiser," "Micro" and "Rememory" from *Elevator* and you'll get the idea.

It's a nasty approach to the instrument that Phillips

—CONTINUED ON PAGE 138



—HENRY KAISER, FROM PAGE 132

techniques, pushing the guitar into being a more expressive instrument and doing things nobody had done before. I wanted to learn city and country blues. I wanted to learn to play free-form psychedelic guitar in a band context. I also like the composed music of Captain Beefheart. So I just set out technically to do those things."

While teaching himself the skills, Kaiser started making contacts that would lead to the collaborations that have been so crucial to his work. He and a friend sent a demo tape to impro-

vising guitarist Eugene Chadbourne and he ended up making his recording debut on one of Chadbourne's albums. He inaugurated his creative friendship with British guitarist Fred Frith (of Henry Cow, Art Bears, Massacre and Skeleton Crew fame) by sending a tape. Four years ago, he handed a record to British folk-rocker and Fairport Convention founder Richard Thompson with the suggestion that they work together. When he was trying to find a drummer to work with, he thought why not call up his all-time favorite, John French, who created a revolutionary polyrhythmic style in Captain Beefheart's Magic Band.

"That's come out of thinking, well, they're just people," Kaiser explains, "not out of me thinking I'm anything special. Usually people who play nice music are really nice people."

Kaiser grovels delightfully and delightfully among selected tendrils of his musical roots on his most recent album, *Those Who Know History Are Doomed to Repeat It* (SST 198), released in June. The LP's centerpiece is a side-long version of the Grateful Dead's "Dark Star/The Other One," a loving tribute to a pinnacle of improvisational rock. The track was recorded in New York with bassist Kermit Driscoll, drummer Joey Baron and cellist Hank Roberts (all of guitarist Bill Frisell's band) and guitarist Glenn Phillips. The album's other side, recorded with some Bay Area players, includes such offbeat cover versions as the Dead's unrecorded "Mason's Children," "The Man Who Shot Liberty Valance," "The Andy Griffith Show Theme" and "Ode to Billie Joe." (Extra tracks on the CD include Captain Beefheart covers and Country Joe & the Fish's "Colors for Susan.") The point of the project, according to Kaiser, was "to have a fun time doing old stuff that I had to get out of my system."

As dependent as much of his music is on collaboration and human connections, Kaiser also spends much of his time working alone, pursuing the potential of electrical connections. From the moment he began playing guitar, he started experimenting with the technical limits on its expressive capacity. "I always had a junior high 'science fair' type of mentality," he says, "so I noticed right away when compressors first came on the market, and I was using an MXR battery compressor right off. It had a lot of hiss and noise so I started to look at studio gear, and that was the beginning of me becoming an equipment junkie, having to have the best, cleanest possible sound with the most possible varieties of signal processing available to me for guitar performance."

"As the years went by," Kaiser continues, "I just had to have more and more equipment to get the best studio-type guitar sound on stage. I was interested in making different kinds of sounds, exploring the expressive possibilities of the guitar, not only through processing in strange ways but also through special playing techniques on

—CONTINUED ON PAGE 139

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# NON-STOP WORK AT THE WINTER GAMES

TALES OF AN OLYMPIAN TASK

by Palmer Pattison

Just about any music production company would jump at the chance for a demanding scoring assignment. But suppose the job meant creating 20 to 30 minutes of original music a day—synchronized to video—for five weeks, often with deadlines less than one hour away, while working out of a remote truck parked in another country many miles from home? Those conditions sum up the experience of Salt Lake City-based Non-Stop Productions as they tackled a project of—dare we say it—Olympic proportions: on-site post scoring of the Winter Olympic Games from Calgary.

The story begins months before the opening ceremonies. George Greenberg, director of promotion for ABC sports, was in Non-Stop's studios to hear final mixes of a new promo campaign. According to Randy Thornton, Non-Stop's president, "We had been supplying ABC with traditional promo music packages. We cut the music, they cut video and voiceover to match. When the session ended, I showed George a reel of recent post scoring projects we had completed."

Greenberg returned to New York with a concept for something new in Olympic sports coverage. "ABC has always been a leader in broadcast sports, and we saw here the possibility to continue that tradition." His reasoning was that, "Feature films have been post scored for years; why not televised sports?"

Weeks later, armed with the requisite array of synthesizers, sequencers and samplers (not to mention a couple of trombones, a trumpet, a flugelhorn and a few percussion toys), Non-Stop set up shop in the Phil Edwards Recording truck parked outside the Olympic Broadcast Center. After a day and a half of setting up music and recording equipment, and stringing video, audio, time code and communication tie-lines to the truck, the local fire marshall dropped by to announce that the whole setup would have to be moved to a new location. With ABC segment producers already asking for

their custom music, Non-Stop made the move, then made up the lost time just like any self-respecting music company—by going without sleep.

Every effort was made to give ABC producers what they were looking for: original themes, tightly scored to picture, in abundance and variety—and fast. Non-Stop made heavy use of the *Auricle* scoring program run on a Commodore SX64 to locate picture hit points. When cues were complex and time allowed, the composers wrote parts on conventional score paper, noting the hit points identified by the *Auricle*. When time was tighter, the writing took on a simpler leadsheet form, and when the composers were really up against the deadline wall, they improvised directly into the *Performer* sequencer running on a Macintosh. And when synths and samplers would not do the job, a microphone snake was

run into the broadcast center where an interview booth or empty room was pressed into service as a recording studio for live brass parts, all played by members of the Non-Stop crew.

To keep projects moving around the clock, Non-Stop split into two teams. While producer Randy Thornton and composer Kurt Bestor laid tracks and mixed a segment in the truck, producer Bryan Hoffheins and composer Sam Cardon were in the broadcast center with an ABC producer spotting cues for the next segment and beginning to write the music. When one segment had been mixed, the teams traded places and started the next segment. Both teams relied on the mixing skills of Non-Stop staff engineer, Jeff Carter.

With two composers working shifts to create all that music, Carter had to take special measures of his own to maintain the pace: "We connected the



Composer/arranger Kurt Bestor scoring music to video in the Olympic Broadcast Center.

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## MUSIC · NOTES

drum machine outputs to a 16-input console section that hung on the wall, established a basic EQ, and left it pretty much alone. All other synth tracks were laid down flat, unless the patch really needed an effect. We had two synchronized 24-track machines available, so we deliberately avoided things that waste time like ping-pongs or tracks that needed more than one sound during a mix."

Carter made sure the mixes would hold up on the air by first checking them on a UREI 811 monitor, then a set of Yamaha NS10 monitors to check midrange balances, and finally listening to the final mix on Auratone cubes at low level. The final mix was touched up with overall program EQ if needed, and was compressed lightly with a UREI 1A3. The last steps insured that the mixes would retain their energy even when ducked under an announcer's voice.

"Where broadcast TV is concerned, dynamic range doesn't seem to be tolerated," Carter comments. "Coming from a music background, that bothered me a lot—that somebody, some-

where with a meter determined the quality of a mix." While some would cringe at such a structured approach to mixing music, the technique paid off more than once when Jeff Carter found himself mixing, not to tape, but live-to-ABC without a chance for "take two" or "fix it in the mix."

With all the pressure to produce virtually around the clock, was equipment reliability a problem? According to Carter, "Phil Edwards and his second engineer, Brian Hague were terrific. We had a couple of synchronizer problems, but they were taken care of with replacement modules from the States. Beyond that, they knew the truck well and kept us producing."

As the final ceremonies of the Olympics approached, the pressure continued. Told that the music for the final credits would not air if it was delivered after 3 p.m., the Non-Stop crew went into overdrive and began work on the extended medley, a compilation of all the major themes used during the previous weeks. With brass parts still being written, ABC granted a short extension and issued the final deadline, 4:15. By 4 only the mix was left and Jeff Carter set up the board for the last

time, made a few adjustments, rolled tape and delivered the final theme—with three minutes to spare.

Then it was over. Non-Stop shut down instruments, bundled piles of score paper and stepped out into the chilly Calgary night for the last time. Five weeks of intense pressure, anxiety and exhilaration were fast becoming history. Jeff Carter may have known the feeling best. "I walked outside to pack some road cases and caught sight of the Olympic flame, still burning. I really wanted to watch it go out, but kept on working and when I looked again it was out—gone—and I had missed it." ■

—THE SYSTEM, FROM PAGE 133

we went in to lay tracks we'd write four or five more songs. Sometimes we finished songs the previous night because we had to record them the next day."

"That's not to say that method's bad," adds Frank's partner, vocalist Mic Murphy. "'You Are In My System' was basically done that way. The day before we recorded it, we had convinced Atlantic Records that rather than give

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us \$10,000 to do another 12-inch, they should give us *twice* as much to do a whole album. After we had done this we were sitting in our rehearsal loft above New York's garment district saying to ourselves, 'We're out of our minds; there's no way we're gonna be able to do an album for that amount of money.' After we worked out the economics of it, we said, 'Now what kind of songs are we gonna do?' We didn't have any songs except for the singles. So Dave said, 'I have this bass line, but it's not so good. You can listen to it, but it's terrible.' I listened and I was like, 'This is great; what are you talking about?' I started singing something over it right then."

The System generally writes utilizing a Linn 9000 in one of their home studios. When they move to a larger facility—these days it's generally their own studio, Science Lab—they follow a course that's been planned out and explored for weeks. They no longer want to rely on things falling into place quickly, even though it has happened in the past.

"We constantly try to outdo ourselves," notes Murphy. "We try to push each other always, to get the best. If we had a formula, every song after 'You Are In My System' would have had that same kind of groove—a busy bass line with a chattering hi-hat pattern. Other artists have been very successful following in our footsteps, but we get bored. Repeating ourselves would just be the most boring thing in the world."

Over the years The System's studio approach has basically remained the same—relaxed. "With singers," Frank says, "we usually get them to demo the song so we can see what their strengths are and where to push 'em and how far, and we sequence a lot of the tracks beforehand."

"However," notes Murphy, "we've become more sophisticated in what we can do with equipment. We go into a studio now, we know what we're doing; we know how everything works and we know if the engineer doesn't. When we first went in we didn't have a clue. If there was a buzz or a hum we knew that. But really knowing how to time echos and delays—in the studio there are a lot of parameters and it's important to know how to fine-tune everything so it's a *record*. Before, we had made the songs, we had made the music, but we really didn't make the *records*. Learning how to make a rec-

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ord—what fits and, after it's all said and done, what really doesn't sound good—takes a lot of experience, at the expense of others, I'm sorry to say. But that's the only way you're going to learn. No one's going to give you spec time and let you live in the studio. Either you spend money towards having the equipment in your house, or you get the chance that the record company will give you money so you can go in and learn. Producing music is like being a doctor. You could go to med school, but until you get that first cadaver. . . ."

During the past few months, The System has increased their working flexibility by purchasing their own Manhattan studio, an old jingle house that they've refurbished and equipped with an SSL console, a Studer recorder and a control room filled with MIDI'd instruments. "It was an important step to get some of our instruments out of our houses," Frank comments. "We've been doing all our work at Science Lab recently and I think it's given us more freedom than we've ever had before, both with our own music and with people we produce."

And they've been typically busy in the new facility. Work continues on

the next System album, plus they contributed the first single to be drawn from the soundtrack of Eddie Murphy's new film, *Coming to America*. (Atypically, the single was written by an outsider, Nile Rodgers.) There's been production work with Ashford & Simpson, as well as an up-and-coming outfit called Radiance. "We learn something new from every project we work on," Frank says. "We still have a long way to go." And without question, Frank and Murphy have the *energy* to get where they're going. ■

—GLENN PHILLIPS, FROM PAGE 133

says he developed early on. "I don't want to sound too Shirley MacLaine-ish here, but when I first picked up the guitar at age 16 it was just an instantaneous thing with me. I just had a floodgate of sounds rush open in my mind. And from that point on I've been playing the guitar."

"I had a friend named Bruce Hampton who once told me, 'I'm going to be the best singer in the world.' And I said, 'Really? I'm going to be the best guitar player in the world. Let's start a band.' And that was the beginning of The Hampton Grease Band."

They started off doing oddball covers of classic blues tunes and eventually developed their own material, inspired heavily by Captain Beefheart's Magic Band and by the Grateful Dead.

His first album, *Lost At Sea*, recorded at home on a 4-track TEAC machine, was later picked up and distributed throughout England by Virgin Records. He followed that up with *Swim in the Wind*, also on Virgin, and made an extensive European tour. There followed three independent releases on his own Snow Star label—*Dark Lights*, *Razor Pocket* and *St. Valentine's Day*—before Shanachie agreed to document the band live.

And through it all, Phillips has maintained his uncompromising, renegade stance. "Of course, I could've made a lot more money playing in some copy band, but that kind of thing just makes me want to puke. I have no desire to do it. I want to keep it a thing where it's always alive and full of energy and intensity because I know that playing music is something I want to do all my life, and I know that if I take another role with it, it would kill my enthusiasm for it, which has happened to a lot of other people."

Apart from his work with the Glenn

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Phillips Band (Bill Rea on bass, Paul Provost on keyboards and Steve McMahon on drums), the guitarist also finds time to play in an Atlanta-based band called the Nasty Bucks, which features members from the Georgia Satellites and guitarist Peter Buck from the group REM. And he also collaborates with experimental guitarist Henry Kaiser. On Kaiser's latest SST release, *Those Who Know History Are Doomed To Repeat It*, the two risk-taking guitarists lock horns on a sprawling 24-minute live rendition of the Grateful Dead's magnum jamming opus, "Dark Star."

Whatever context he's playing in, Phillips will continue to defy categorization and convention. "I've been doing exactly what I've wanted to do for the past 20 years and it's just not gonna stop." ■

—HENRY KAISER, FROM PAGE 134

the fretboard—ways of picking and bending notes and articulating things."

For inspiration in the use of electronics, Kaiser had to look beyond 1970s rock to such digital delay experiments as new music composer Terry Riley's pioneering *Sri Camel*. And because he was often playing in relatively quiet concert settings with pianists, saxophonists and other avant-garde improvisors, Kaiser was compelled to seek out studio-quality equipment to eliminate the kind of hissing and buzzing that could often be obliterated in a live rock assault. Today, Kaiser's setup onstage wouldn't look all that different from what Frank Zappa, Eddie Van Halen or Steve Vai might use. It begins with a Fender-type guitar with a graphite neck and Bartolini pickups, plus a special polyfuzz hex pickup system built by Zeta. The signal travels into a Howard Dumble Steel String Singer or Overdrive Special preamp, into a dbx 160X compressor and an ADA Pitch-Track harmonizer, through a Valley People noise gate, down to an Ernie Ball volume pedal on the floor, coming back up into a Lexicon Super Prime Time programmable digital delay, into a Danish TC Electronics TC 2290 delay (allowing 32 seconds of memory) with a foot controller for live performance, through another Valley People noise gate, into a Yamaha SPX90 and into the power amp section of the Howard Dumble tube amplifier.

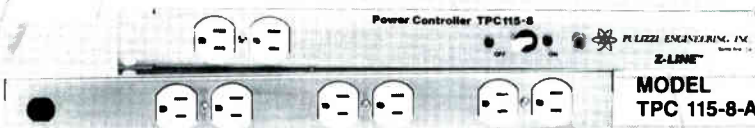
For the past two years, Kaiser has been exploring the potential of his Synclavier music system. He acquired

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## MUSIC · NOTES

it during a period when he felt little was happening for him in rock and improvised music, and it enabled him to undertake soundtrack work from his home studio in Oakland. Thus far, in addition to his *Devil in the Drain* LP, Kaiser has concentrated on such television scoring projects as *Spanish Kitchen*, *Secrets and Mysteries*, a World War II series and Los Angeles TV station KABC's *Evening Magazine*.

"It's very attractive to me," Kaiser says of the Synclavier, "because it makes music very plastic. It's just an extension of the recording studio, which is my other main instrument besides the guitar, and it gives me a lot more manipulation over recorded information. I can turn things around, upside down, backwards or inside-out, I can change timbres or change instruments. A lot of musicians use it like it's an organ with a tape recorder attached to it. But coming from the context of experimental 20th-century music and free jazz, I like to take big chances with random techniques."

Kaiser's intimate familiarity with the

studio—he works in his self-built home studio with the Synclavier, a TAC Scorpion board, an Otari 2-track for mastering, a Sony 501 digital system with a 2-track Beta cassette and a Lexicon 200—and his close working relationship with such engineers as Phil Brown in Los Angeles and Oliver Di-Cicco at Mobius Music in San Francisco, plus his "wide ears," sensitized to music from all eras and all regions of the world, give him an uncommon flexibility when working on other people's projects. And for all his unorthodoxy, he knows where the bottom line is for musicians. "You can listen to Bob Wills' fiddle playing or Vietnamese zither music or Japanese monster movies," he says, "the bottom line is just expression. I *do* like things that are complex, that have a lot of information, that make you think or bring out new feelings. I like things that surprise me." Whatever emerges next from the creative machinery of Henry Kaiser, whether from his Synclavier or his newly acquired 1929 National triple-resonator steel guitar, will most certainly be full of surprises. ■

## SOUND · ON · STAGE

—FROM PAGE 96

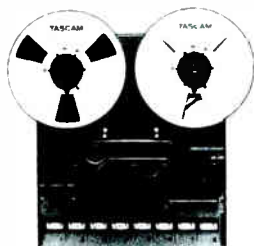
Europe and Japan...Late May and early June had SSG working with **Pat McLaughlin**, **Oingo Boingo** and **Chick Corea**...Other work included an installation at **Sea World**.

**Pro Audio Rentals** of Palo Alto, California, reports ongoing work with Windham Hill Records. Owner **Kevin Korecky** said his main 16-cabinet, horn-loaded Harbinger system, powered by modified AB 1200 amplifiers, also keeps busy handling Stanford University's sound reinforcement needs, two popular regional Motown cover bands, several industrial accounts and local equipment support.

**Zinn Audio**, based in Carmel, Indiana, has been in business since 1974. "All we've ever done is national tour work," says **David Kitterman**. Zinn has two systems, one doing country act **The Judds'** national tour, which carries through the end of the year, and another that is kept for Indianapolis-area work (see "On The Road"). They also provided audio support for The Judds' '86 tour, and in previous

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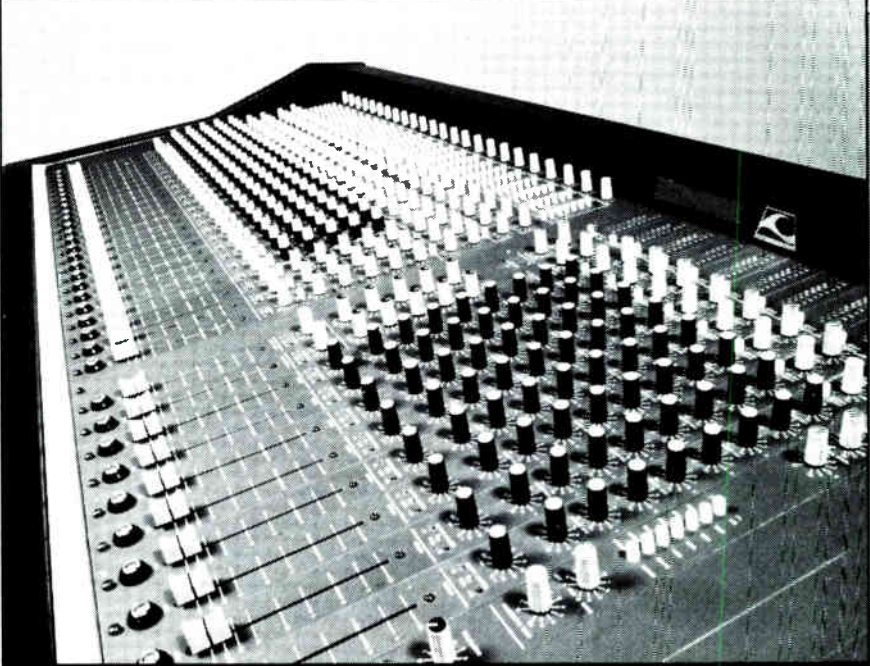
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years have worked with Charlie Daniels, Kiss and REO Speedwagon. Kitterman described Zinn's main P.A. cabinets: "Our speakers are a proprietary design, all horn-loaded, trapezoid-shaped cabinets that we've been using since 1975. We call it the PC-4. It is a four-way system with pattern control horns. It looks like a Clair S-4 from the front and measures 45 x 45 inches." On the subject of new equipment, he said: "Recently we bought a new Soundcraft Series 4 40 x 16 monitor console, and we're looking to purchase new Crest 6001 amps as soon as they are available."

**Attention: Audio Zoologists...** African elephants can flex their massive rib cages and create sound down to 15 Hz. This low-frequency sound, which penetrates the heavy jungle flora and humidity, can be transmitted over five miles and is now thought to be a form of pachydermal communication. **Cornell University** researchers in Kenya are using a specially designed, compact, servo-driven **Inter-sonics** subwoofer that is flat to 15 Hz. A small cabinet that weighed less than 150 lbs. was required because of the limited space available in the Izuzu jeeps used for transportation in the bush. It also had to be rugged to withstand the harsh environment and eight-hour drives in the Kenyan countryside. The well-named **Pachyderm 6** can develop 112 dB at 15 Hz, measures 22.5 x 22.5 x 38 inches, and contains two active 15-inch cones driven by a servo motor configuration and four heavy 18-inch passive radiators. Cornell had tried conventional voice-coil loudspeakers without success before turning to Inter-sonics.

**Electrotec Productions** of Canoga Park, CA, reports: after opening for The Cars last year, Australian act **Ice-house** is now headlining a tour of the U.S. with a 24-box Lab Q main P.A. (see "On The Road")... **Barry Manilow** resumed his world tour after a short break... **Randy Travis** and **Alabama** continued to tour... **Def Leppard** just returned from touring Europe with Electrotec's UK system. They start another North American concert leg that begins with Canadian dates in early June. Expect to see another huge 130+ cabinet P.A. and elaborate monitor rig on this tour, tentatively scheduled to continue into the fall... Electrotec is currently handling a country music extravaganza called **Marlboro Country**



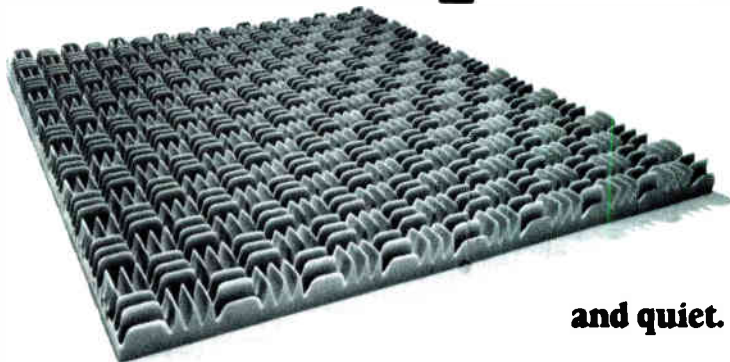
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## SOUND · ON · STAGE

**Music.** Sponsored by parent company Philip Morris, it is a touring show with anywhere from four to eight national country acts. The new equipment re-

port has Electrotec converting over to Crown Macro-Tech amplifiers.

Southern California sound company PPA was out in April and May with 3 on a national club tour (see "On The Road"). Two former members of Em-

erson Lake & Palmer, Keith Emerson and Carl Palmer, joined with Robert Berry and additional backups to form 3. An entire sound system, minus main house boxes, was provided. Monitor cabinets were PPA's proprietary M212

## ENGINEER SPOTLIGHT

Name:	Dave Kob
Age:	36
Home:	Lancaster, PA
Years of Experience:	16
Now Employed by:	Clair Brothers, Lititz, PA
Favorite Console:	Clair Custom 32 x 12 x 6
Favorite Effect:	Lexicon 224, 480
Memorable Tours:	Madonna '85 x '87

**Background:** Originally played drums in a local band and ran their sound. He worked a year for a local sound company and got some experience. Eventually he got a job with Clair Brothers and has been with them ever since. Has a reputation as a very capable and personable engineer with a good ear and mix. Currently mixing house on the Sting tour.

### COMMENTS:

**Mix:** Is there any particular highlight in your career?

**Kob:** Yes. I'd say the time George Martin came up to me after I'd mixed Lionel Richie at Wembley, and said, "The sound was impeccable." For me this was a great thrill because he had always been my all-time hero.

**Mix:** How is the business different now compared to ten years ago?

**Kob:** Everything runs much smoother now. What I really notice is that we don't need to spend nearly as much time on fixing blown amps and other broken gear, or hunting and tracking down weird buzzes, hums and bad cables. The P.A. systems now are bigger and sound better, but seem to require less daily maintenance.

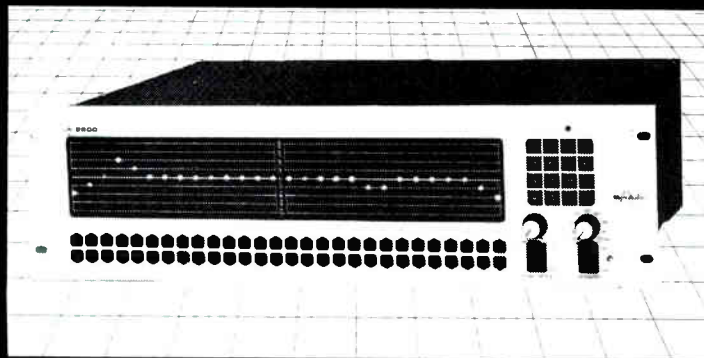
**Mix:** What is your advice for aspiring live audio engineers?

**Kob:** Go fishing.

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wedges, loaded with two JBL 12-inch speakers and a 2445 driver on a conical horn. The sidefills used were the first run of Cerwin-Vega's new CVX Series, three-way, active, dual 15-inch cabinets. PPA deserves partial design credit and is the first sound company to use them. Eight Cerwin-Vega Jr. Earthquake subwoofers, powered by Cerwin-Vega LPA 600 amps, were also brought along to supplement the main P.A.s provided by local sound companies. . . Other work included the **Queen Mary Jazz Festival, Long Beach Festival** and **Y&T** dates using a complete Hill system. PPA also handles the complete contract for the **Los Angeles Country Music Festival**, with five stages, plenty of name stars and as many as 60 acts a day.

**Crossroads Audio** reports a good deal of industrial convention work for the past two months. "The spring is the busy time for conventions here in Dallas," states owner **Doug Hall**. Asked about the differences between industrial and touring accounts, he said: "[Industrial acts] seem to be pickier in different ways, such as the attitude of the crew and the appearance of the equipment. We often find ourselves taking a back seat to the decorating committee. Unlike a standard tour, these shows are built around things other than the entertainment. We have adapted our equipment and personnel to fit the needs of our clients. An example: our speakers are set up to fly and hang 15 feet, with a Genie Superlift providing support. This is useful for ballrooms and gives us an edge in the market." . . . Crossroads flew a system at the Dallas Convention Center Arena for the Association of Operating Nurses convention, which featured **Dionne Warwick** and **Sha Na Na**. Other work cited was the American Society of Executives convention, **Gary Morris** and **Dan Seals** at Arlington Stadium, **Russ Taff** at the Radio & Records convention, and two days of the **North Texas Irish Festival** ■

*Got any news? Call (415) 726-2428 or send press releases, photos, etc. to: Sound Reinforcement News, Mix Publications, 6400 Hollis Street #12, Emeryville, CA 94608.* ■

*Author Mark Herman owns Hi-Tech Audio, a sound reinforcement company specializing in console rentals.*

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by Blair Jackson

# BEAUTY & THE BEAST

## SCOTT GERSHIN CREATES NEW WORLDS WITH SOUND

**W**ho could have predicted that one of the surprise hits of the 1987-88 television season would be a weekly series based loosely on the classic fairy tale "Beauty & the Beast"? Very loosely, that is. Though there are echoes of previous "Beauty & the Beast" interpretations in the series—yes, even the masterful Cocteau version—this is definitely an '80s series, one that owes more to *L.A. Law* than to the picture book we grew up with. The setting this time around is modern-day New York

City. The Beast—an elegant and intelligent lion-man named Vincent—is a mutant pariah who has joined a band of (human) cast-offs in a secret world of tunnels and weird chambers built under the city's subway system. Their leader is an ultra-compassionate, one-time atomic scientist who was blackballed during the McCarthy era, went underground (literally) and now is the



Linda Hamilton (Catherine/"Beauty") and Ron Perlman (Vincent/"The Beast").





Bruce Burns:

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Burns Audio won the 1987 ProSound News "Sound Reinforcement Award, Festival Category," for Liberty Island ceremonies. Other credits include: "We the People...", the Barbra Streisand HBO Special, Happy Birthday Hollywood and the Emmies.

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## POST · SCRIPT

benevolent overseer of this mysterious subterranean civilization. "Beauty" is a kind-hearted Manhattan lawyer named Catherine. The loving, but platonic relationship between Catherine and Vincent, and the clash of their two worlds, provide the jumping-off point for most of the series' stories. Got it?

No doubt all that sounds pretty strange, but the show is surprisingly good. The romantic tension is palpable, the acting excellent, and technically the show is superb: it looks and sounds great. Which brings us to Scott Gershin. Turned down for the role of the Beast—just kidding, folks—Gershin is the sound designer and sound editor for the series, a key part of the technical team that elevates this show high above most network fare. "The whole reason I accepted the job," he says, "is that I could tell right away it was going to be different than most TV shows and I'd have the latitude to do a lot creatively."

Gershin brought a diverse background to the assignment. He grew up on the East Coast and attended Berkeley College of Music before moving out to California to work as a music engineer/mixer at a variety of L.A. stu-

dios, including a healthy stint at Cherokee. A synthesizer buff for years, he became something of a specialist in creating new synth sounds; so much so, friends suggested that he get involved in effects work for cartoon shows. So he did, managing to combine his mixing and synth chops doing FX for shows like *G.I. Joe* and *Transformers*. From there he moved on to some regular series television—*Matlock*, *McGyver*, and the occasional mini-series, like *Amerika*—and eventually he got the call to come work full-time at Todd-AO/Glen Glenn Sound for a strange new outing on CBS, *Beauty & the Beast*. He leaped at the chance to get in at the beginning of a show and make it *his*, so to speak.

And what a world Gershin gets to work with! Aside from standard city soundscapes—traffic, crowds, the subways, etc.—there is Vincent's world, an endless maze of tunnels and chambers, each of which has its own special character. "With a show like this, there's always the temptation to go wild and get into really strange noises," Gershin says, "but we're trying to create an illusion of fantasy with real sounds. We're trying to keep it fairly realistic. So after a lot of soul-searching and thinking, we came up with the idea of

using a lot of mechanical noises for that world. You hear pumps, and of course since it's below the subways, you hear subways in the distance. We made it so [the underground people] communicate with each other with pipes, so you hear pipes in the background. You hear generators and things like that. I like to create atmospheres with winds, but usually they're not winds—they're metal sounds that I've processed; slowed down or used backwards, or both. We have a Chamber of the Winds, the Crystal Chamber, the Whisper Chamber, the Abyss, things like that. For the Whisper Chamber, which is a place where people can hear conversations from the world above, I took a lot of voices and reversed them and then combined it with some metal sounds to make it sound like wind. It's very weird because it sounds like you're hearing things that you're not."

Although he does his sound editing at Glen Glenn, Gershin does much of his sound invention at his home studio. "I've got the usual stuff," he says with his typical self-effacing nonchalance, "a DX7, an Oberheim Xpander, a Roland JX-8P, Jupiter 6, two Akai 900s, a Hybrid Arts ADAP system, a whole bunch of outboard gear, and then I take all of that and put it on an F1. I've got an Atari ST and a Commodore that I use a lot to control the outboard gear." He claims to have no real preferences among his synths—"each has its own strengths and its own unique sounds."

Although Glen Glenn "has one of the largest sound libraries in television," according to Gershin, "I like to try to come up with new sounds whenever I can. I watch a show and I can hear it when somebody uses an old Hanna-Barbera effect, or something from an old *Mighty Mouse*. Obviously you can't do everything from scratch, but I try to stay away from some of the cliché sounds." Most of his treasured "metal" sounds come from recordings he made himself. "Back when I was working on *Masters of the Universe*," he says, "I was looking for some sword hits and stumbled across this great junkyard. So I backed my car in and loaded it with all this metal stuff that I took back to the studio." He does field recording, too, bringing the F1 with him when he can.

One of the most interesting tasks Gershin faces week to week on *Beauty*

Scott Gershin in a rare moment of leisure at Glen Glenn Sound.





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Some of our support staff (l to r): Brian Cornfield, President; Niki Simpson, Accounts Manager; Darrin Miller, Purchasing Agent; Carol Gumbel, Controller; Vanessa Perea, Purchasing.



## POST · SCRIPT

is working with Vincent's occasional animalistic vocalizations. Though actor Ron Perlman generally speaks in a regular human voice in the role, when the Beast is angry or hurt he lets out an unearthly roar. "Vincent's voice is a lot of fun for me," Gershin comments. "It's an ongoing process. I started out with some lion growls—stock stuff from records, CDs—and then Ron and I got together and he did what I call primeval grunting. Then I processed it with some harmonizers, vocoder and put it in the Synclavier. I cut and pasted sections of that with the lion growl. So when you hear it, it sounds like a lion, but also like a man. Ron will occasionally do something interesting in production [the actual take of a scene] and we'll try to blend that in, too. It depends on how mad Ron gets whether we'll use a lot of lion or effects. If it's kind of a yell, I might combine a tiger scream with it. Everything is multi-timbral, because one consistent sound is just too static for me.

"In one of the episodes I'm particularly proud of, 'The Alchemist,' Vincent goes nuts for a while. How do you make him sound sick? You've got to start giving the sound character, so I found a great doberman going nuts and then combined it with everything else. I piece it all together like a puzzle, using the Synclavier."

Glen Glenn's Synclavier gets a heavy workout from Gershin. Aside from using it to lay in all his strange custom effects, he uses it for many standard sound effects, too. In fact, it's allowed him to be a virtual one-man Foley department. "I really enjoy doing things like falls and body punches," he says. "I sync very well. Nine times out of ten I'll end up playing sounds directly from the keyboard rather than syncing in and triggering it. Most sound people hate doing fight scenes, but they're the easiest for me. Everything has a rhythm and if you can hear that, you can play in those sounds. I've got 26 hits or punches on my keyboard and I can usually do a fight in a couple of passes."

Another consideration Gershin contends with is that his sound design must coexist with whatever musical score is added after he's done. "I have a different view of sound effects than most people because I consider it music, too," he says. "But there are also

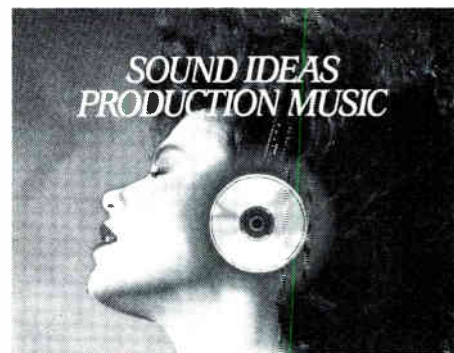
certain sounds that work well with music. Unfortunately, with *Beauty* I don't have the music when I'm working. A common problem that effects people have is that the music is all mid-range and so are a lot of effects, so they clash occasionally. The more I work on *Beauty* and get to know the consistency of the composer, the more I can say, 'OK here's a change of scene, he usually comes in with these instruments,' and I can make my sound effects heard well and sound good by using frequencies he's not. I don't always guess right, but I'm getting better at it."

Gershin feels like both he and the show have progressed quite a bit over the course of this first season. Still, there is one major frustration: time. Or more precisely, lack of it. He usually has to turn around an entire episode, from growls, to door slams to footsteps, to the swirling abyss, in just five days. And that probably means Gershin isn't doing a lot of relaxing at home. But in true workaholic spirit, his view of "spare time" seems to focus on *Beauty*: "Time enables you to go places, to think of new ideas, to experiment. And any time I get some free time—like in two weeks I know I'll have a couple of days when I don't have to do a show—I'll probably work on Vincent's growls or whatever. Create another chamber. Work on some new sounds."

Which isn't to say there's no life beyond *Beauty & the Beast* for Scott Gershin. "I'd love to do a big space movie someday," says this grown-up kid who still makes great laser gun noises with his mouth (and in fact conceives a lot of sound ideas that way). "I'd love to do a feature where I can spend six to eight months on it and come up with things that are really unique."

That dream project is probably closer than he thinks. *Beauty & the Beast* has gotten a lot of attention for its technical excellence, so someone out there in Powerland has probably already made note of his talents. But for now he is truly content. "*Beauty* has so much to it that it's always exciting for me," he says. "Doing Vincent's voice and the chambers and all that is quite a challenge. It sure beats doing *Dallas*!" ■

*Blair Jackson is the managing editor of Mix.*



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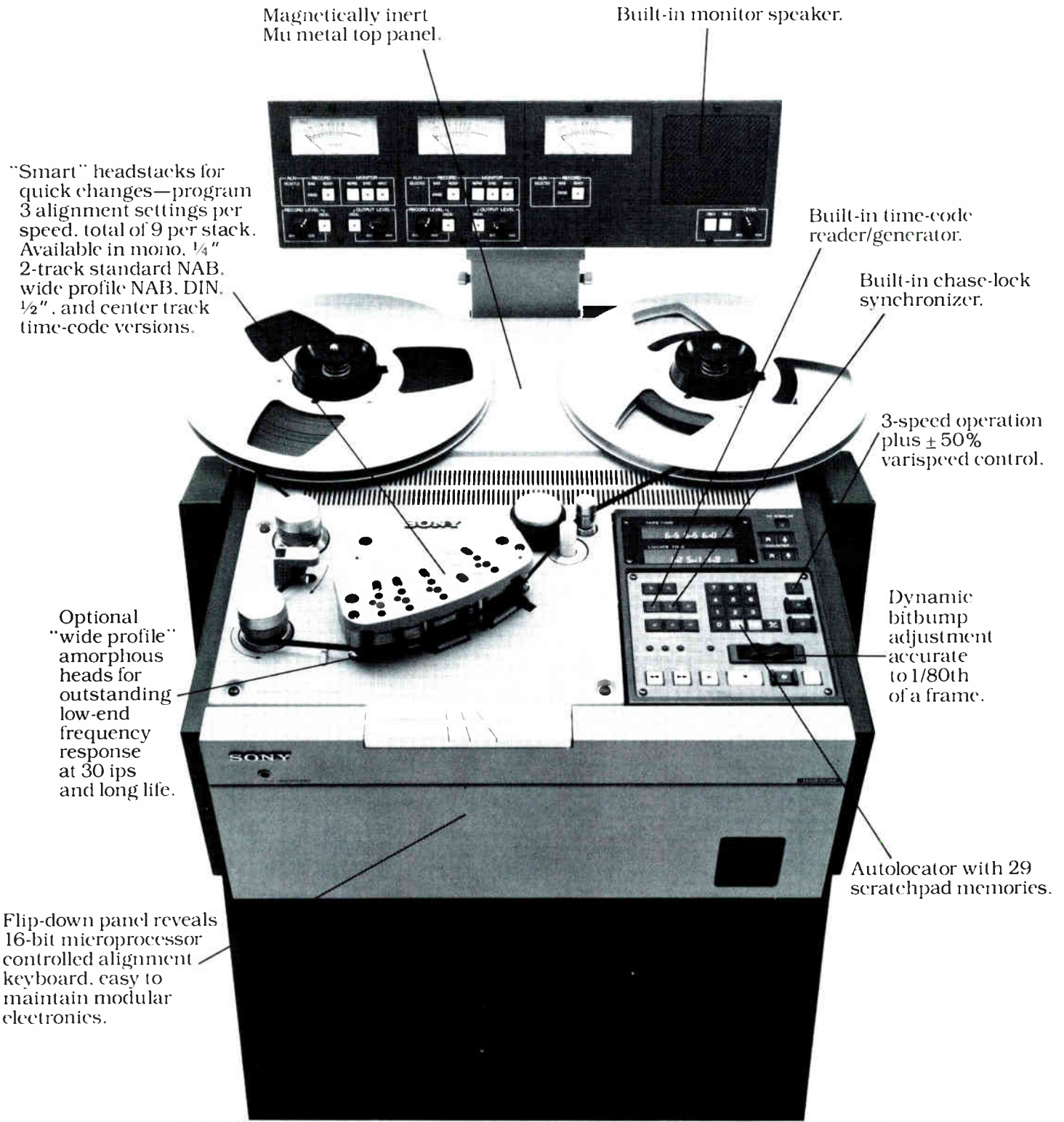
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# MONITORS IN CONCERT

SOUND REINFORCERS & THE NEW GENERATION OF ONSTAGE SPEAKERS

**T**he stage monitor is no longer the poor kin of the mighty house P.A. As the growing technical sophistication of performers and audiences has resulted in better main systems, so too have monitors—commercial and custom—improved in clarity, projection, controlled dispersion and compactness. Thanks to the new-found ability of musical instruments to communicate with each other and with processing gear, the *act* of monitoring has changed. Performers want more stage mixes, and they want them complete with effects and processing. And while they want their monitor mix loud and clear, their attitude towards the usually clunky-looking box itself seems to be “better heard than seen.”

To hear what people have to say

about trends and innovations in the realm of stage monitoring for concert sound, we called several sound reinforcement companies around the country. All handle major musical acts on a national or international level.

**Y**ears ago, the only concern was that monitors were loud and could get sound back at performers. But monitors have improved dramatically in smoothness and frequency response in the last ten years,” says Bob McTyeire, owner and engineer of Ram Sound. The Tuscaloosa, Alabama-based company provides full-service concert production, and has handled sound for the likes of Robert Palmer,

Roy Orbison, Chaka Khan, James Brown, the Neville Brothers and Stanley Turrentine. For monitor mixing, Ram uses a custom 24 x 8 DDS Walker console which is about to go to 32 inputs because “that’s more or less become the norm,” McTyeire notes. Running the monitors are Carver’s new PM2.0T amps, and EQ is handled by third-octave Klark Tekniks. As for speakers, Ram Sound uses the only full pro Klipsch system on the road—although it probably won’t be the only one for long.

Known since the ‘40s for high-end home hi-fi systems, Klipsch has set up a separate division to address the professional sound market. Ram has worked with Klipsch for 15 years, testing out prototypes and new produc-

by Linda Jacobson

(Top photo) Monitors as Stage Props: Huey Lewis and his News-boys like to leap right on top of their floor monitors during a show, so Sound On Stage (San Francisco) designed and built flat-top “wedges” just for this band. The biamped monitors contain single Gauss 15- and JBL one-inch drivers plus a fiberglass horn, and the enclosures sport heavy metal grills.

JUNE 1988, MIX 153

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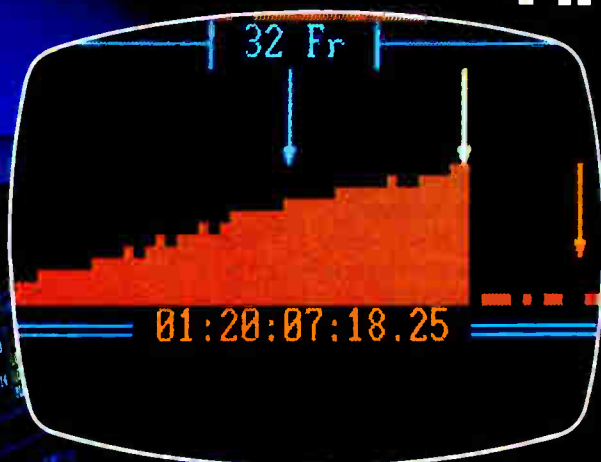
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ers (comprising two 15-inch horns and its own processor, the B-2A), which serve as sidefill monitors for drummers. "We use all the Meyer stuff," says general manager Bob Walker, "although we also make our own bi-amped sidefills." SOS has in-house electronics, cabinetry and steel shops

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Ram's stage floor monitors are Klipsch KSM-1s, introduced two years ago. The KSM-1 is the kind of dual-configuration wedge that can be set upside down for longer distance (6 to 7 feet) monitoring. Says McTyeire, "It has a ported 15 and a Klipsch-designed, 1½-inch horn. The enclosure is ¾-inch birch plywood covered in scratch-resistant paint with a black metal grill and grill cloth. It's very high efficiency, puts out 102dB at one watt, one meter, and it's rated 50 Hz to 15k, plus or minus four dB. It's purposely a little hotter from 1k up, even though it's flat, due to Klipsch's theory of the masking problem in using monitors. So much low-end material is masked by noise coming from the house sys-

tem that it's unintelligible. So Klipsch took care of that in the KSM-1."

**A**lmost everyone we quizzed agreed that the path to acceptance of such mass-produced touring systems by sound reinforcement professionals was paved by John Meyer and Meyer Sound Labs of Berkeley, California. Not far from Meyer's factory is 14-year-old Sound on Stage, which built up its touring credentials working with local acts who happened to be major international talent—Huey Lewis & the News, Starship, Eddie Money, Santana and Boz Scaggs. SOS worked 900 shows in 1987, including a foray to Japan with Night Ranger, and to Zimbabwe with Harry Belafonte. For stage monitoring, SOS uses a 32x16 Gamble console, Crest power amplifiers, and Meyer Sound's UM-1A "Ultra Monitor" wedge (contains a 12-inch cone driver and a 60-degree, constant directivity HF horn). Integral to the UM-1A is a separate control electronics unit, the M-1A processor—a pioneering concept that has since been adopted by other manufacturers.

Along with the UM-1s on stage, SOS sets up Meyer Sound's USW-1 subwoof-

ers (comprising two 15-inch horns and its own processor, the B-2A), which serve as sidefill monitors for drummers. "We use all the Meyer stuff," says general manager Bob Walker, "although we also make our own bi-amped sidefills." SOS has in-house electronics, cabinetry and steel shops to design and build speakers and crossovers. Their "Power Physics" line incorporates stock JBL and PAS components, and that's what they use as the house P.A.

According to Walker, "The innovations that Meyer has brought to time alignment and phase correction—what they do in their processing before it goes to an amplifier—have really started to filter throughout the industry. Processing the signal so it molds the amplifier and speaker system is really important."

**C**oncerts handled by Seriously Sound of Atlanta, GA, run the gamut from Juice Newton, the Harlem Boys Choir and the '60s-comeback "B" circuit (Paul Revere & the Raiders, etc.) to R&B tours by The Temptations and O'Jays. For monitor mixing, Seriously works on Soundcraft 800 and Hill M3 boards. For equalization they use 31-band Yamaha 2031 EQs. Power comes from older Hill "all-in-one" bi-amps, though the company plans a switch to Renkus-Heinz amps. Seriously's VP Paul MacDonald explains, "Renkus puts out world-class products that are reasonably priced, and as good as anything else including Meyer and Turbosound."

That's why Seriously Sound offers 13 matched Renkus-Heinz wedges for monitoring, each containing a 15-inch horn and 2-inch compression driver. That's also why they're experimenting with R-H's new molded fiberglass cabinet, and why they're using R-H's three-way "Smart" system for sidefill monitoring.

Until recently, Seriously ran their wedges using standard internal passive networks, but the sound "came alive when we started biamping," notes MacDonald, "which involved rebuilding racks, taking out networks and putting in four-pin multi connectors."

"We use processors instead of regular crossovers on all the Renkus stuff," continues MacDonald. "Speaker protection is a lot better these days, and it's all in the processors. Meyer Sound uses one, EAW has them... Renkus pretty much pioneered it. They've got floating crossovers, excursion protec-

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tion, and sense gates that go back from the amps to the processors and read what's going on. The floating crossover adjusts the crossover point automatically based on the input. The processors stop damaging signals or DC voltages. Instead of showing you that you're blowing up your speaker, it protects it."

**Y**ears of experience in equipment design have brought together a well-known sound company and a major manufacturer, leading to a unique arrangement that proves the financial viability of the touring industry. The Hollywood-based Stanal Sound, in the business since 1964, has handled Los Angeles' Universal Amphitheater sound for 15 years, and runs permanent installations in several L.A., San Francisco and Chicago theaters. Stanal also covers every Neil Diamond show, and has been involved with the Pointer Sisters, Dolly Parton, Pink Floyd, Bob Dylan and other majors.

At Stanal-run concerts, the monitor engineer works on a Soundcraft console or a Yamaha PM2000, modified to provide 14 discrete mixes. Biamplication derives from Crown MA-1200 and MA-2400 power amps. As for the speakers, that's where Stanal's equipment design chops come into play. Their teammate is JBL.

Stanal president Stan Miller explains, "When I started in the business, no manufacturer built stuff specifically for the touring industry. Meyer was the first to penetrate this market. Now Renkus-Heinz, Electro-Voice, PAS, Turbosound are out there. Major manufacturers like JBL want to have this product to sell. So I designed the JBL Concert Series product line, which is manufactured by Stanal Sound and sold by JBL. We put together ideas from different people and took them further, and designed a complete, modular and matched product line, with all types of loudspeakers and rigging. The line basically comes out of all my experience on the road. For instance, I was one of the first to use fiberglass packaging for my touring systems 20 years ago. So the Concert Series cabinets are wood superstructure, with fiberglass on the outside."

Today the Concert Series includes the two-way Model 4828, a single 12-inch floor monitor wedge. However, Stanal Sound also uses the trapezoidal 4850 house box, set on its side, for floor monitoring, and sometimes adds the larger, three-way 4870 cabinets for



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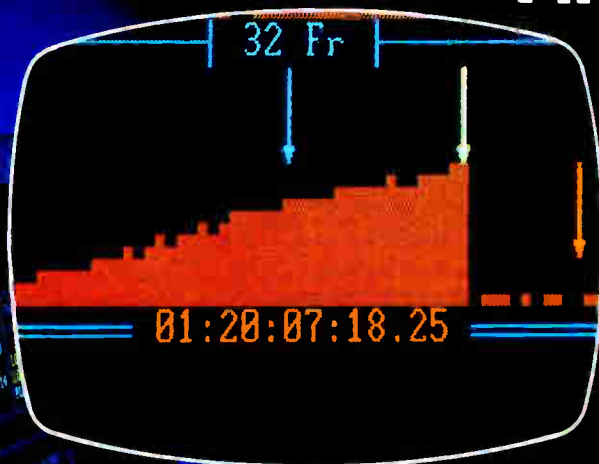
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sidefill. "We're working on a new 4853-series prototype in a wedge box," notes Miller, "with a pair of 12s, a two-inch JBL 2445 driver and a pair of 2404 tweeters."

"JBL picked up the Concert Series in 1985, and it's going like gang-busters," continues Miller. "They're the only major manufacturer that has a complete [touring] package from beginning to end."

*"I really haven't found anything that I can buy that fits our needs well enough."*

—Bruce Burns, Burns Audio

That echoes many comments heard 'round the sound reinforcement world. In most cases sound companies purchase mass-produced house systems, but more often than not, they prefer to design and/or build their own monitoring systems. We talked to several firms who swear by their proprietary systems. Most, but not all, incorporate off-the-shelf components because it doesn't pay to have custom components (rarely are more than a few dozen of any one design built). It *does* pay to please the performer.

"Artists are more demanding than ever. As they experience new technology in the studios, they want to take it on the road," claims Electrotec vice president Pierre D'Astugues. "Monitor mixes have become as complicated if not more so than the house P.A., and we'll continue to see multiple monitor mix situations; 16 is not uncommon." Towards that end, Electrotec monitor engineers mix on Soundcraft Series 4 consoles that can output 24 on-stage mixes. In 1987 the company (with offices in Canoga Park, Calif., Nashville and London) did just that for Alabama, Def Leppard, Alice Cooper, Randy Travis and The Cars.

"For the last three or four years, we offered one floor monitor, a biamped floor wedge that incorporates a JBL 15-inch speaker and a JBL 2-inch compression driver with a horn/lens combination," D'Astugues notes. "However, we're developing a new series of floor monitors with different enclosures for different applications—they'll interface together but work on their own. Drummers, keyboard players, vocalists and guitarists are more specialized with their equipment and that is leading to more specific requirements for monitoring. So we're looking to produce a combination of a single-way, passive, biamped and triamped monitor, something with con-

siderable low end output, midrange, and mid/highs. For a midsize tour, we might work with the passive configuration to keep down our amplifier and crossover costs. In an arena tour with higher sound pressure levels and higher budget, we can get into biamped and triamped situations. At the high-end budgets, we can electronically align these cabinets with a delay.

"The new monitors will use everything from an 18-, a 15-, a 12-, and a 10-inch horn and one- and 2-inch compression drivers, all standard JBL components. For instance, we'll have an 18 or 15 supplementing the more traditional biamped monitor. They'll be wedge-shaped, as low-profile as possible, with a flat wood finish available in different colors to fit whatever's appropriate for the tour. We introduce the monitors this summer.

"Our new series will take into account that monitors are increasingly concealed underneath stages," adds D'Astugues. "It's not the best place for a monitor and has a narrow field of use, but we have some ideas about extending the actual range of monitors concealed under stages.

"Another significant development in monitor systems is the use of outboard signal processing. MIDI has opened up tremendous flexibility in that respect. We've been using MIDI in a basic way for sequencing through effects programs, but monitor systems will be incorporating MIDI-controlled outboard processing to a much greater extent. Three years ago, effects in monitor systems were minimal."

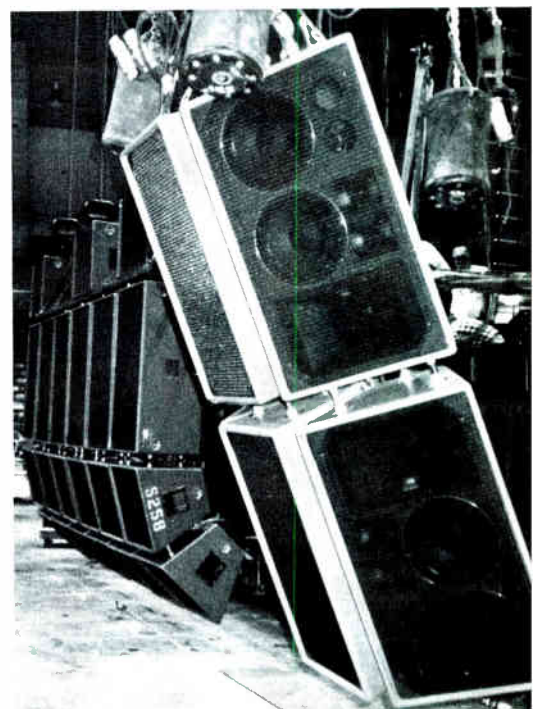
Other trends in monitoring, says D'Astugues, include the use of large cabinets as sidefill monitors to supplement the more localized sound sources, the wedges: "Sidefill monitors which are flown from their own hardware, or occasionally from the lighting truss, will become smaller, more directional, and have very high power output capability."

One traditionally unsatisfactory feature of monitor systems—the off-axis response—has been addressed by Clair Brothers (based in Lititz, Penn.). Clair took to the road last year with Julio Iglesias, Fleetwood Mac, Tina Turner and Michael Jackson. The company has always run with Clair Custom monitors, and just finished the new 12AM™ system which they "previewed" on Sting's recent megatour.

The 12AM's components are a 12-

inch woofer and 2-inch compression driver, built by a manufacturer (Clair declined to identify the maker, to help prevent imitation) to Clair's specs. Roy Clair describes the system as "not really wedge-shaped, because they have rounded corners rather than square or angular corners. Most people don't go to that trouble, but we did it for aesthetics—it not only sounds good, it looks good! The surface is black epoxy, and the grill is treated so it doesn't rattle; most people use non-treated metal. Because the cabinet is curved we have a molded grill cloth, with a plastic edging rather than wood or metal. These processes are very costly so they're not generally associated with our industry; the hi-fi industry uses plastic edging. But the grill prevents the entertainer from stepping on the components or poking a mic through it, and the facing stops water from damaging the components."

The new monitors take advantage of a control electronics package designed last year by Clair Brothers—"it's very small, light, and powerful, matched to the monitors so everything is controlled," says Clair. "All the components and crossover networks are matched so the power and off axis and



**Ready to fly—part of the JBL Concert Series product line, developed by Stanal Sound of North Hollywood. The fiberglass/wood enclosures feature integral rigging points.**

on-axis response are engineered to be as good as it possibly can. We're one of the first companies to address the monitor's off-axis response, by accomplishing it through our network. We're making it easier for artists to hear the monitor. They don't have to turn it up to hear it through all the other music. It's the first product we're going to market, around the end of the year."

**T**oday's monitoring systems, according to Brian Fischer, the owner of Earcraft, need not only loudness capability ("they have to do 130dB") but overall clarity. Earcraft is based in Dover, New Hampshire, was founded in '73, and handles "anything from small Presidential-type speeches up to 10,000-seat marinas," says Fischer. The Radiators, Taj Mahal, and The Casual Gods (offshoot of Talking Heads) are among the company's recent concert credits.

Earcraft's monitor system typically consists of an Audioarts console, Klark-Teknik EQs, and Crest or QSC 1500 amps. "We use various monitor systems," says Fischer, "but the most popular are the Meyer Sound Labs' UM-1 wedge system and the wedges that

brought them gigs with the Four Tops, Doc Severinson, Wynton Marsalis and the Bellamy Brothers). Although Blue Chip uses Bose and EAW speakers for house P.A., their monitors are custom, biamped wedges loaded with one-inch and 12-inch Renkus-Heinz horns. The enclosures are birch plywood painted with fiberglass resin. Crest Powerlines drive the monitors, and an Amek Scorpion provides a 30 x 12 stage mix.

"We have unusual monitor equalization," notes Blue Chip president/engineer Kent Bubbenmoyer. "We use Micro Audio programmable third-octave EQs. Normally you have a rack of third-octave EQs set up with controls for each one. But we just have pots; the programmer [unit] ties into the mixing console, and automatically switches into any pot you're listening to for that mix. Since it controls the pots, there are no controls on any of the equalizers. We can store EQ curves for the opening act and the headliner, which is great if we're doing several bands in one night.

"Eventually the boards will be programmable," continues Bubbenmoyer. "Especially the way things are going on stage. Five years ago, we didn't

itor engineers mix on Soundcraft or Amek TAC boards, providing two 16-bus output groups. Amplifiers are Haffler and QSC, EQs are Klark-Teknik. Linear flies Turbosound TMS-3s for the main P.A., and recently added new custom, biamped and triamped front-end boxes. Linear also recently unveiled a new wedge monitor—a double-15, single 2-inch—that complements their original single-15, single 2-inch wedge. Both are biamped and contain JBL components enclosed in carpeted, Baltic birch cabinets with reticulated foam or steel screens. The firm also provides triamped drum/sidefill monitors.

According to Kline, who directs Linear's sound reinforcement division, "A lot of artists don't like huge wedges in front of them. Our new double-15 is very low-profile; considering what it has for components, it's virtually the smallest enclosure you can have—about 20 inches high from the bottom of the 15 to the top of the horn. And it's very powerful, very loud."

Concurring with other comments about the proliferation of electronic instruments on stage, Kline adds, "there's lots of stuff going on now, 32 to 40 inputs, and damn near half are keyboard lines and drum machines. We have to drop a lot of fill everywhere on stage so they can hear that stuff. You have these Ensoniq and E-mu things doing monstrous low ends. Wedges must be able to take that kind of stuff. Performers want more fidelity than they've been getting, and expecting high fidelity, especially in a wedge's low frequency, is asking a lot. Wedges can only put out so much low end, due to their design and enclosure volume."



**The Oak Ridge Boys in rehearsal, monitoring via pneumatically controlled "pop-up" wedges designed by Burns Audio (Burbank, CA) for the 1987 Country Music Awards.**

Tom McCauley designed for us with McCauley components. It has a 15-inch that goes into a 10-inch and into a McCauley horn with a JBL driver. Tom McCauley designed the cabinets and built the raw frame with high-grade plywood, and we loaded them, put in crossovers, and carpeted the enclosures. At the low angle, they're only 14 inches high. To make performers happy these days, you need a low-profile cabinet with punch."

The new digital technology has enhanced monitor mixing for Blue Chip Light & Sound, a 5-year-old company in Bethlehem, Penn., that primarily handles 5,000-seat theaters (1987

need as many monitor mixes. Six was the average, and now 12. One reason is performers have larger stage rigs with drum machines MIDI-interfaced with keyboards, so the mix is much more elaborate. And the bass players and guitar players are carrying *smaller* rigs, without their own monitor setup."

From another perspective, "monitoring is taking on a studio feel. It's becoming a fidelity thing as opposed to just hearing things," claims Kent Kline of Linear Sound in Oakland, Calif. In 1987, Linear provided sound for the Budweiser Superfest and Hiroshima world tour, along with various regional bluegrass and jazz festivals. Their mon-

**T**hose enclosures can cause a scene when appearing in a concert bound for television, and not because of their fidelity. Burns Audio, headquartered just north of Burbank, specializes in televised concerts. Their credits include the Statue of Liberty celebration, the 200th anniversary party of the U.S. Constitution, and a slew of awards shows: Emmy, American Music, Country Music and Golden Globe. This month, Burns handles sound at the national Democratic convention in Atlanta.

"Stage monitors for television concerts are different from the standard touring type," says Emmy Award-winning engineer Bruce Burns. "We usual-



ly deal with three or four groups in one show, and most of these shows are live. You've got to rapidly go from group to group, on the air. If you have a monitor failure, you're down, you can't stop tape and do it again. One mistake and you don't do the show next year.

"We use a [Yamaha] PM3000 for the stage monitor mix and set up the groups, each of which has different settings, to fit within the show's length," continues Burns. "All the monitors are biamped with Crown Macro-Tech 1200s, and we use Klark-Teknik EQs, mostly third-octaves but we recently ordered their new parametrics. The stage monitor feeds are labelled for easy switching, because the mixer can't leave his board to preset things on stage. In a normal concert situation, you can speak into the mic to see if you're getting the right mix in the right speaker. You can't do that on a live television show. So there's always two-way communication between the monitor mixer and the people on stage setting the monitors.

"The monitors are difficult because TV directors don't like to see cabinets. We did the MTV Awards last fall and

the set builders disguised our monitors as lava rocks, which rolled around the stage as part of the set."

That's one reason why Burns builds their own monitors (although for mains, they use Apogee systems). "We have our tiny M-2 monitor wedge," says Burns, "with a 12-inch Electro-Voice EVM woofer and small JBL horn and driver, biamplified. Because it's 16 inches wide and 13 inches tall, we can conceal it behind a set piece or in plants on stage. For dance numbers and big acts, we have our 511 sidefill, the speakers that can't be seen on stage. They're a double 15-inch EV woofer with the JBL 2-inch, 60-degree horn. Then there's our full-blown concert monitor, the CM-2 with JBL components—15-inch woofer, 2-inch driver and 60-degree horn. We use that when we're allowed to look like a rock and roll set. All the cabinets are ten-ply birch covered with black carpet, because in television, anything in black kind of fades away."

Today Burns anticipates the use of "digital patch bay switching done by computer. What a nice thing to be able to patch your monitor feeds and output of the board to the input of the

amplifiers by computer! As for monitor speakers themselves, in the near future I don't see anything other than what we have. For television, we'll want smaller size, but I don't see anything in the next year or two that will change anything drastically."

**T**he streamlined appearance of a televised concert is important, and perhaps has affected the way performers want their live shows to look. Albert Leccese, VP of engineering for Audio Analyst USA (based in upstate NY), agrees with Electrotec's Pierre D'Astugues when he says that performers' monitoring requirements are moving towards "the clean stage look with monitors built into the staging, where people wonder why no cables or cabinets show." Audio Analyst's engagements last year included John Cougar Mellencamp, Rush, Heart and Billy Joel. During pre-production, the Audio Analyst team would work with the performers' stage designer to determine where, on the stage plot, the artist would perform. The designer would then drill holes or install a suspension system for Audio Analyst's wedge mon-

—CONTINUED ON PAGE 195

# A · E · S · T · H · E · T · I · C · S

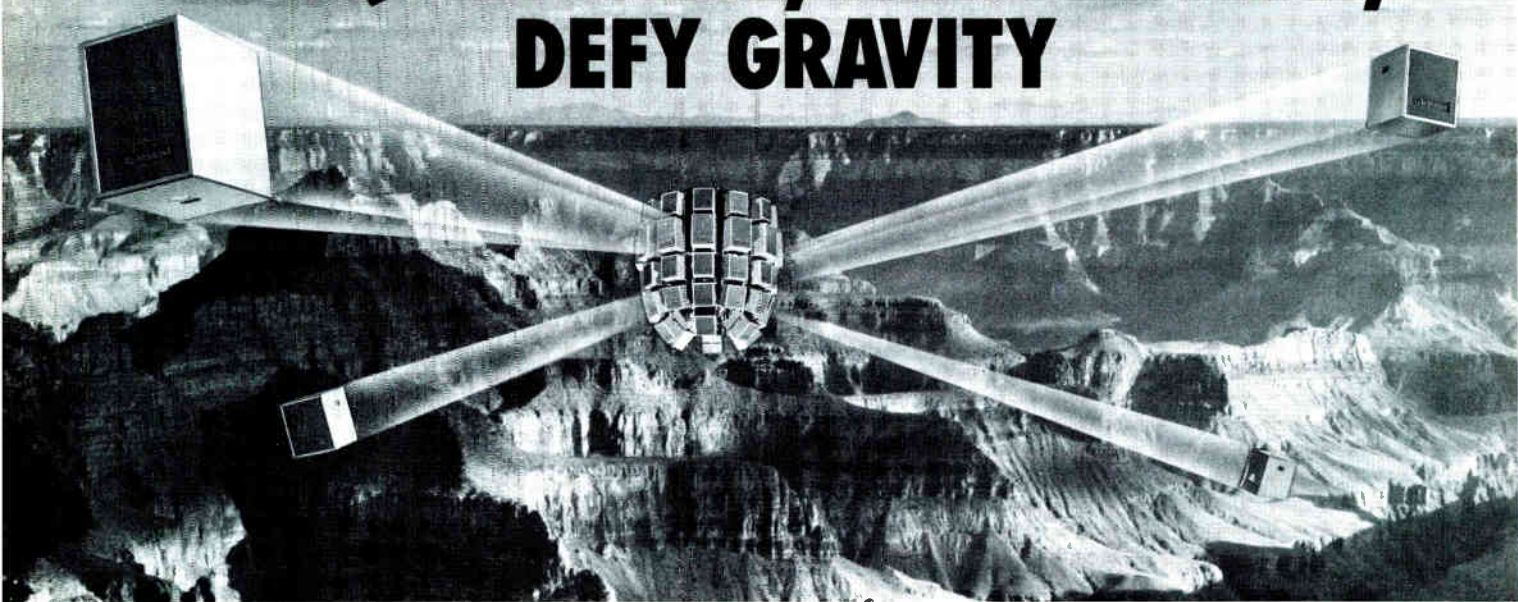
The new CSV Series speaker systems by Community complements the decor of the most discriminating contemporary commercial environment. CSV sound systems and floor monitors' built-in dynamic protection circuitry assures high reliability. Our simplified brackets guarantee ease of installation and offer the system designer a wide choice of mounting options. Also available are visually identical, specification-equivalent, optimally vented low frequency enclosures.



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# CONQUER SPACE, MASTER TIME, DEFY GRAVITY



Some speaker systems attempt to conquer acoustic space with brute force—deploying massive cabinets, firing horns at everything that moves. Others resort to electronic trickery, which requires delicate racks of complex gadgetry.

## Innovative designs for effective performance

Turbosound Separated Enclosure installation systems achieve their superior performance without useless bulk or "clever" disguises. Instead, they employ unique, patented design principles proven on tours and installations worldwide.

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The TSE System focuses Turbosound thinking, outwardly radical yet intrinsically sensible, on the problems of fixed installations. TSE is more than a collection of cabinets: it's a true system, with all elements working together. A variety of straightforward designs, all producing distinguished sound with security and reliability.

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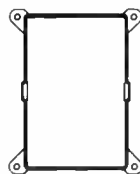
In large venues, a point source cluster is often best. TSE flying hardware simplifies cluster design and installation: complete systems have been installed and tested in one day. Each component is load-certified by a UK government-approved testing organization. An expensive proposition, but you should know how your system will perform. Equally severe testing confirms the audio performance of TSE enclosures.

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TSE components are made for each other. That makes it easy for you to optimize a TSE system for any installation, large or small. There's no easier way for you to bring your own ideas about sound reinforcement to reality: Dozens of different TSE systems in major venues worldwide prove the point.

TSE systems can't grant you supernatural powers, but they will give you superbly natural sound.

TSE Flying Frames remove load stress from the cabinet. Connected with Quicklinks, frames and cabinets pivot to form a smooth coverage arc. Vertical dispersion is easily adjusted with the TS-6 or TS-10 strap connected to the bottom flying frame and the suspension quadrant.

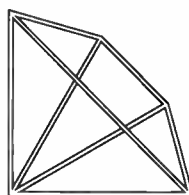


### TSE-111—10" TurboMid + HF horn/driver.

Fits the FF-111 Flying Frame, with a square frontal cross section to let you change dispersion patterns by rotating the frame.



Horizontal dispersion is provided by 90° Suspension Quadrants: each quadrant will hold any combination of TSE enclosures. Combining quadrants yields horizontal dispersion of 70°—360° and vertical dispersion of 50°—270°.



*TSE-211—2 x 10" TurboMid + V-2 HF unit.* Superior Mid and HF projection. Switchable active bi-amped or passive two-way operation. Dual vertically-coupled TurboMid devices double power handling. The V-2 extends frequency response, enhances intelligibility.



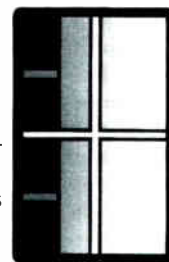
### TSE-260—V-2 HF unit.

Two HF drivers coupled with Turbo loading techniques, minimizing phase cancellation and distortion.

### TSE-215—2 x 15" TurboBass.

Balancing TSE frequency response is easy—LF units are separate from mid/high cabinets. With six units to choose from, generating the proper frequency response and coverage pattern for any venue can be as simple as laying dispersion angles over the blueprints.

*Other bass enclosures available: TSE-115, and TSE-118.*



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# REMOTE RECORDING and SOUND REINFORCEMENT

Information in the following directory section is based on questionnaires mailed earlier this year and was supplied by those facilities listed. *Mix* claims no responsibility for the accuracy of this information. Personnel, equipment, locations and rates may change, so please verify critical information with the companies directly.



Maryland Sound Industries (based in Baltimore), the official sound contractor for Pink Floyd's world tour, has accompanied the band throughout North America, Europe, New Zealand, Australia and Japan. This view, shot in October at the Omni in Atlanta, shows the 80-piece installation of Maryland Sound's custom MS-12 and MS-12B mains. These speakers are designed as modular packages each consisting of a 90-degree radial horn and four JBL 12-inch or 15-inch drivers. Photo by Robert Smith/Robert Cad-dick Photographers.

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*Mix* listings procedure: every month, *Mix* mails questionnaires to recording studios and/or other vital facilities and services for the recording, sound and video production industries. There is a nominal charge to list a Boldface Listing (name, address, contact) and an Extended Listing (equipment, credits, specialization and photo or logo) if you would like to be listed in a *Mix* Directory, write or call the *Mix* Directories Department, 6400 Hollis Street #12, Emeryville, CA 94608, (415) 653-3307.

### Upcoming Directory Deadlines:

Southern California/Hawaiian Studios: **June 3, 1988**

North Central U.S./Canadian Studios: **July 5, 1988**

AES/New Audio, Video & Music Products: **August 5, 1988**

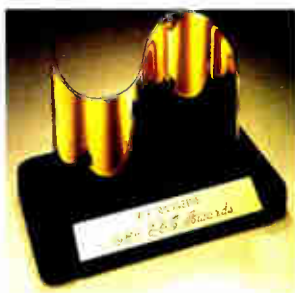
Tape and Disc Manufacturing: **September 6, 1988**

# DRIVING FORCES



## TEC WINNER'S PROFILE

Criss-crossing the country in his Black Truck, David Hewitt has brought the best in remote audio services to many of the world's top recording artists. *Mix* readers voted him winner of the 1987 TEC Award for Film/Video/Broadcast Production Engineer. David Hewitt knows what it takes to succeed, and what it feels like when you do:



**Life on the Road:** "I'm not sure what puts people on the road. I think all engineers are kind of eccentric and unusual. To me, it's always been kind of an addictive lifestyle. I enjoy the travel and the comraderie with people."

**Magic Moments:** "Something happens when the band is really playing. Everything works and the show kind of mixes itself. This doesn't happen very often, but when it does you know it. It's those moments that make the whole thing worthwhile."

**The TEC Awards:** "This is a people business and it's great to give the folks a chance to sit down and scratch their heads and say: 'Who's out there who works well and doesn't get the kind of recognition he deserves?'"

**Mix magazine:** "I've been reading *Mix* a long time — I really use the thing. Once Pink Floyd decided with less than a week's notice to get this very complex package together. I grabbed *Mix* and started calling around, making all the arrangements. It was very, very crazy but we got it down — due, in no small part, to *Mix*."

Photos (Top) Claude Roio, (Bottom) C.R. King

**MIX** THE  
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MAGAZINE

The 1988 Technical Excellence and Creativity Awards will be held Nov. 3 in Los Angeles. Call 415-653-3307 for information.



## NORTHWEST

Alaska, California, Colorado, Hawaii,  
Idaho, Montana, Nevada, Oregon, Utah,  
Washington, Wyoming

**AKASHIC RECORDS GROUP**, *Rental, Audio Recording*; PO Box 395, Danville, CA; (415) 837-7959. Contact: Stephen Jarvis

**ALLERICE VIDEO**, *Audio & Video Recording*; 350 E St., Ste. 309; Eureka, CA 95501; (707) 445-3922. Contact: Darrell Shull

**AMERICAL SYSTEMS INC.**, *Sound Reinf.*; 30982 Huntwood Ave., Ste. 204; Hayward, CA 94544; (415) 471-7451.

**AQUARIUS SOUND INC.**, *Sound Reinf., Rental, Audio Recording*; 347 Loma Vista; Pacifica, CA 94044; (415) 359-7210. Contact: Robert Ring

**ARTICHOKE PRODUCTIONS**, *Audio & Video Recording*; 4114 Linden St.; Oakland, CA 94608; (415) 655-1283. Contact: Paul Kalbach

**A.S.I. INDUSTRIES**, *Sound Reinf., Lights, Audio & Video Recording*; PO Box 90637; Anchorage, AK 99509; (907) 333-3689. Contact: John Nelson

**ASSOCIATED SOUND**, *Sound Reinf., Rental*; 2120 P St.; Sacramento, CA 95816; (916) 443-4773; (800) 492-6800.

**AUDIBLE SYSTEMS**, *Sound Reinf., Rental*; Box 6475; Chico, CA 95927; (916) 345-3540. Contact: Richard L. Castleberry

**AUDIO ACTIVE SOUND**, *Sound Reinf., Audio Recording*; 1135 First Ave.; Oroville, CA 95965; (916) 533-7958; (916) 533-6152. Contact: Henry Hampton, Stan Bunsstock

**AUDIO WEST**, *Sound Reinf., Lights, Rental*; PO Box 4611; Stockton, CA 95204; (209) 948-6623. Contact: Ed Etzel

**AUDIOWORKS RECORDING**, *Audio & Video Recording*; 7479 S. Teller St.; Littleton, CO 80123; (303) 972-4255. Contact: Bill Prentice

**AUTO-TRAK**, *Sound Reinf., Rental, Audio Recording*; 6655 SW Princess; Beaverton, OR 97005; (503) 626-6702. Contact: Bob Bentley

**A-V TECH SERVICES**, *Sound Reinf., Lights, Staging, Audio & Video Recording*; 564 Butler Rd.; Grass Valley, CA 95945; (916) 272-1469. Contact: Tom McWilliams

**BACKSTREET AUDIO**, *Sound Reinf., Rental*; N. 4304 Madison; Spokane, WA 99205; (509) 326-2827. Contact: Mike Canning

**CALIF. COMPACT DISC GROUP**, *Audio & Video Recording*; 9 Skylark Dr., #84; Larkspur, CA 94939; (415) 927-7301. Contact: Larry Marks

**CASCADE SOUND**, *Sound Reinf., Lights, Staging, Rental*; PO Box 12097; Salem, OR 97309; (503) 581-5525. Contact: L. Carroll

**CHAMPAIGN SOUND**, *Sound Reinf., Rental, Audio & Video Recording*; PO Box 7003; San Jose, CA 95150; (408) 252-4536. Contact: Ted Champaign

**CHERRY RECORDING**, *Audio Recording*; 1235 15th St. SE; Salem, OR 97302; (503) 399-9775. Contact: Ron Skog

**CHONK MOONHUNTER**, *Audio & Video Recording*; 484 Lake Park Ave., #289; Oakland, CA 94610; (415) 444-3074. Contact: Curtis A. Choy

**COLORADO CONCERT SOUND**, *Sound Reinf.*; PO Box 1652; Longmont, CO 80502; (303) 772-3933. Contact: Dan van der Hoop

**CHORSOUND**, *Sound Reinf., Audio Recording*; 7606 Champagne Pt. Rd.; Kirkland, WA 98034; (206) 823-1535. Contact: Steve Boyce

**CONCERT SOUND**, *Sound Reinf., Audio Recording*; 20 NW 6th St.; Portland, OR 97209; (503) 223-4600. Contact: Tom Robinson

**CROSSROAD AUDIO**, *Sound Reinf., Rental*; 4029 Goldust; Modesto, CA 95355; (209) 578-0287. Contact: Bill Borgh

**CROW RECORDING**, *Audio Recording*; 4000 Wallingford Ave. N.; Seattle, WA 98103; (206) 634-3088. Contact: John Nelson

# REMOTE RECORDING & SOUND REINFORCEMENT

**CW RECORDING**, *Audio Recording*; 4014 155th St. NW; Gig Harbor, WA 98335; (206) 857-3258. Contact: Charles Wright

**DB AUDIO**, *Sound Reinf., Rental*; S. 4816 Madelia; Spokane, WA 99223; (509) 448-8740. Contact: Drew A. Bunch

**DBC SOUND**, *Sound Reinf., Audio Recording*; 20900 NE 42nd St.; Redmond, WA 98053; (206) 868-8980. Contact: Mark Crouter

**D'TOURE PRODUCTIONS**, *Sound Reinf.*; PO Box 895; Oregon City, OR 97045; (503) 656-2931. Contact: John Gates

**EAGLE NEST RECORDING AND SOUND REINFORCEMENT**, *Sound Reinf.*; PO Box 1184; Castile Dale, UT 84513; (801) 381-2120. Contact: Craig C. Garrett

**DAVID EDIGER PRODUCTION CO.**, *Sound Reinf., Lights, Staging*; 12645 SW 69th; Tigard, OR 97223; (503) 620-8290. Contact: David Ediger



PHIL EDWARDS RECORDING  
Hayward, CA

**PHIL EDWARDS RECORDING**, *Audio Recording*; 1534 W. Winton Ave.; Hayward, CA 94545; (415) 784-1971. Contact: Phil Edwards. REMOTE RECORDING Vehicles: 31' GMC 6500 bobtail w/11-gate, Ford van. Control Room Dimensions: Mobile II 20 x 8 x 8. Mixing Consoles: API 40 x 24 x 24 w/550A EQ. API 1604 w/550A EQ. Audio Recorders: (2) 3M 79 24-track or 16-track, MCI 110-B 2-track, Ampex 440C 2-track, (3) Sony cassette decks. Noise Reduction Systems: Dolby M24 "A", (4) Dolby A361 "A". Synchronization Systems: Adams-Smith 605B 3-machine synchronizer. Outboard Equipment: (5) UREI 1176LN limiters, (2) UREI LA3A limiters, Orban dual parametric equalizers, Orban 3-channel de-esser, Lexicon PCM70 digital reverb, (2) Pultec MEQ-5 equalizers. Microphones: (5) Neumann U87, (2) Neumann U47 FET, Neumann KM84, (2) AKG 414, (2) AKG 451, (4) Sennheiser 421, (2) Shure SM85, (2) Shure SM87, (32) Shure SM56, Shure SM58, (2) Shure SM53, Stereo C Tape, (4) E-V RE15, (2) E-V 1751, (2) Sony ECM-22P, (2) RCA DX77, (6) Countryman FET 85 DIs. Monitor Speakers: (2) UREI 811B Time Align. (4) Auratone Power Amplifiers: (2) McIntosh MC2100S, Crown DC300A. Video Monitors: Sony KX-1901 Profeel color, Sony 8" B&W Cameras: Sony 1900 color camera. Other

Major Equipment: (54) line isolated mic splits, (5) Clear-Com stations, 200' 50-amp 220-volt line, 300' 27 pr snakes, (100) individual mic cables. Rates: \$1,500-\$2,300 per day, mileage and expenses extra. Extras & Direction: Complete packages for record production, video and radio broadcast taping, film and commercial production. Simultaneous record and broadcast packaging a specialty. Experienced crew. Recent credits include Grammy-nominated Woody Herman album (Concord Records), Edwin Hawkins (Birthright Records), George Thorogood & The Destroyers (Concert Video), Zasu Pitts Memorial Orchestra, Carmen McRae and Betty Carter (Great American Music). Call for brochure.

**ELECTRONIC SOUND PRODUCTS**, *Sound Reinf., Lights, Staging, Rental*; 3320 Chelton Loop S.; Colorado Springs, CO 80909; (719) 597-9350. Contact: Don Williams. SOUND REINFORCEMENT. Touring Radius: Regional and national. Maximum Venue Size: 20,000 seats. Vehicles: International tractor and 42' air ride trailer, 18' bobtail truck. House Loudspeakers: (36) ESP Q4 4-way full range, (12) ESP QD18 dual 18" subwoofer. Monitor Loudspeakers: (12) ESP wedge w/15" and 2" horn. House Consoles: Soundcraft 36 x 8 x 2, Hill J1 32 x 8 x 2, Yamaha PM3000 40-channel available. Monitor Consoles: Soundcraft 32 x 10, Hill M2 24 x 8. Outboard Equipment: Lexicon PCM70 digital effects, Lexicon PCM60 digital reverb, Lexicon PCM200 digital reverb, Yamaha REV7 digital reverb, Yamaha SPX90 digital effects, Lexicon PCM40 digital delay, DeltaLab DL5 harmony computer, DeltaLab DL4 digital delay, (2) dbx 160X compressors, (6) dbx 166 dual gate/limiter, (12) White 4650 1/3-octave EQ, Orban 672 parametric EQ, Orban 622B parametric EQ, (2) Barcus-Berry Electronics 802 processors. Power Amplifiers: (20) QSC MX1500, (18) Haller P500, (18) Haller P225, (6) JBL 6290 Microphones: (12) Shure SM57, (8) Shure SM58, (10) Sennheiser MD-421, (4) Sennheiser MD-431, (2) Sennheiser MD-441, (2) Sennheiser MD-409, (2) AKG D12, (2) AKG D112, (2) AKG C451, (2) Beyer M88, (2) Shure SM81, (2) Shure SM98, (2) Shure SM94, (2) E-V RE20, (2) Countryman Isomax II, (8) Countryman Type 85 DI box. Staging: (6) Genie ST24 towers, 60 x 40 roof and truss. Lighting: Celco Series II 60-channel w/Soft Patch, (160) Thomas polished aluminum PAR64, Thomas 80' truss, 80 channels 2 4K dimmers, (12) 6 x 16 Leko, (12) 6' Fresnel. Rates: Call for rates.

**ELECTRONIC SUPPLY/DBA MONTANA SOUND**, *Sound Reinf., Lights, Rental*; 250 11th St. W., PO Box 20556; Billings, MT 59104; (406) 252-2197. Contact: Robert Ostler

**EMERSON FILM & VIDEO SOUND**, *Audio Recording*; 1490 S. St. Paul St.; Denver, CO 80210; (303) 744-3001. Contact: Jym Emerson

**FARPOINT AUDIO**, *Sound Reinf., Rental*; 10529 "D" Lakeview Ave. SW; Tacoma, WA 98499; (206) 581-0370. Contact: Denny or Dick

**FASTTRACK RECORDING STUDIO**, *Sound Reinf., Rental, Audio Recording*; 4220 Broadway; Denver, CO 80216; (303) 292-2115. Contact: Wayne K. Gerbrandt

**FERGUS SOUND ENTERPRISES**, *Sound Reinf., Audio Recording*; 1925 Orchard Ave.; Boulder, CO 80302; (303) 442-3939. Contact: Fergus

**FTM STUDIOS**, *Sound Reinf., Audio Recording*; 1111 S. Pierce St.; Denver, CO 80226; (303) 922-3330. Contact: John F. Sundberg

**GARY GADWOOD CUSTOM RECORDING;** *Audio Recording;* 11995 NW Kearney; Portland, OR 97229; (503) 644-0683. Contact: Gary Gadwood

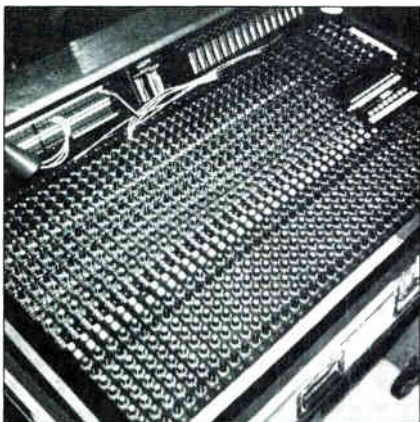
**GENERAL COMMUNICATIONS, INC.** *Sound Reinf.;* 4332 S. 500 West; Murray, UT 84123; (801) 266-5731.

**GOLDEN STATE SOUND, INC.;** *Sound Reinf., Lights, Staging, Rental;* 59A Maxwell Ct.; Santa Rosa, CA 95401; (707) 546-7540. Contact: Don Lind, George Silvers. **SOUND REINFORCEMENT** Touring Radius: Local, regional. Maximum Venue Size: 10,000 outdoors. Vehicles: 20' bobtail w/liftgate, 14' bobtail w/liftgate, Ryder House Loudspeakers: JBL 36" x 36" x 24" 4-way tri-amped, plus various "fill" boxes. Flying System Available: Soon. Monitor Loudspeakers: bi-amped single 15" w/horn, single 12" w/horn, various drum monitors, JBL tri-amped side fills. House Consoles: Soundcraft 8000 40 inputs, 8 aux, 8 subgroups, Soundcraft 400, 26 inputs, Soundcraft 800, 18 inputs. Monitor Consoles: Soundcraft 500 40 inputs, 12 mixes, (2) Studiomaster 20 x 8, 20 inputs, 8 mixes. Outboard Equipment: Lexicon digital reverb/delay/processor Yamaha digital reverb/delay/processor DOD Electronics digital reverb/delay/processor, Roland digital reverb/delay/processor, Yamaha 1/3-octave EQ, UREI 1/3-octave EQ, MXR 1/3-octave EQ, dbx comp/lim/gate, UREI comp/lim/gate, DOD Electronics comp/lim/gate, Symetrix comp/lim/gate, Brooke-Siren crossovers, Rane crossovers, BGW crossovers, JBL crossovers. Power Amplifiers: Carver PM 1.5, Crest 8001 house system, BGW 750, BGW 250, AB Systems monitor system. Microphones: Shure, Sennheiser, AKG, Audio-Technica, E-V. Staging: Stage risers/platforms. Lighting: (200) lamp systems using 40' alum. box trusses, Genie Super Towers, motors, various consoles (manual/computer), Orbitor follow spots. Other Equipment: Club systems, business meeting systems, wireless mics, paging systems, electronic keyboards, stage amps, drums, drapery.

**GREEN WEENIE PRODUCTIONS;** *Audio Recording;* 2207 Shattuck Ave.; Berkeley, CA 94704; (415) 848-4395. Contact: Jim Bennett



HI-TECH AUDIO  
Half Moon Bay, CA



HI-TECH AUDIO  
Half Moon Bay, CA

**HI-TECH AUDIO;** *Rental;* 260 Grove St.; Half Moon Bay, CA 94019; (415) 726-2428. Contact: Mark Herman. **REMOTE RECORDING** Extras & Direction: Hi-Tech Audio offers high-end live mixing consoles for long or short term rental. Gamble Series EX 56 x 16 x 2 x 1 with mixlr, Gamble HC 40 x 16 x 2, Gamble SC 32 x 16, Soundcraft Series 4 40 x 16 x 2 and

## NORTHWEST

# REMOTE RECORDING & SOUND REINFORCEMENT

Midas Pro 40 30 x 12 are independently available for national tours and events

**HIS SOUND, (A CCI COMPANY);** *Sound Reinf.;* 715 SE Grand Ave., Portland, OR 97214; (503) 239-4111. Contact: Steve Jellerson

**HOERNER AUDIO PRODUCTIONS;** *Audio & Video Recording;* PO Box 27990; Seattle, WA 98125; (206) 362-2611. Contact: Clint Hoerner

**ED HOLLICRAFT RECORDING;** *Audio Recording;* 1961 Rose Ln., Pleasant Hill, CA 94523; (415) 689-3444. Contact: E. Hollcraft

**HORODKO SOUNDTRAX;** *Rental, Audio Recording;* 111 Vallejo St.; San Francisco, CA 94111; (415) 956-8729.

**HTS AUDIO & CONCERT PRODUCTIONS;** *Sound Reinf.;* 1025 Idylwood Dr. SW; Issaquah, WA 98027; (206) 392-6342. Contact: Steve Harris

**HUN SOUND;** *Sound Reinf., Rental, Audio Recording;* 647 Irwin St.; San Rafael, CA 94901; (415) 454-2911. Contact: Barret

**INTERMIX AUDIO;** *Sound Reinf., Lights, Rental;* 1121 Hobson, Butte, MT 59701; (406) 494-7826. Contact: Jana Urion, Scott Kalarchik

**ISLAND SOUND & LIGHT CORPORATION;** *Sound Reinf., Lights, Staging, Rental, Audio Recording;* PO Box 218; Camano Island, WA 98292; (206) 387-0826.

**JACOBS AUDIO;** *Sound Reinf., Lights, Staging, Rental;* 26 Berthe Cir.; Colorado Springs, CO 80906; (719) 635-5335; (303) 442-1533. Contact: Chris Jacobs. **SOUND REINFORCEMENT** Touring Radius: Local, regional, national. Maximum Venue Size: 15,000. Vehicles: FRS-8000 Ford 24' diesel House Loudspeakers: Jacobs Audio custom CAD Time Align, phase coherent, 4-way, hybrid flying system fully horn loaded using Gauss 18" 15"/10" and JBL and Renkus-Heinz 2" 1" high freq horns/drivers, Martin F-2, Martin F-2 dual 15" bass cabinet, Mid-high pack loaded w/Martin 12" and JBL 2", JBL 1" HF drivers. Flying System Available: Yes. Monitor Loudspeakers: System 1 (12) Renkus-Heinz processor-controlled 15" w/2" horn and driver, System 2: Martin Audio 15" and JBL 2" in a 35-degree box, side fills/drum monitors: Gauss 18" w/separate Gauss 10" and 1" horn driver, dual 18" sub w/separate mid-high package, both 10-mix systems w/White 4650 1/3-octave EQ and stereo side fills. House Consoles: Soundcraft, Yamaha, Panasonic, Ramsa 40 and 32 x 8 versions. Monitor Consoles: Soundcraft, Yamaha, Panasonic, Ramsa. 32 x 10, 32 x 12 and 24 x 8 versions available. Outboard Equipment: Yamaha REV5, (2) Eventide HL-3000, (2) Yamaha SPX900, (2) Lexicon PCM42 delays, (2) White LC-4400 1/3-octave EQs main, (4) Symetrix 522 dual channel comp/lim/gate, Audioarts 4-band parametric equalizer, Yamaha C300 cassette deck, Nakamichi MR-2 cassette deck, (3) Brooke-Siren crossovers main, (3) Loft crossovers (monitors), (2) TDM 4-out crossovers w/limiters (monitors), dbx 900 rack, Orban parametric and parametric EQs, any outboard equipment available upon request. Power Amplifiers: (6) UREI 6290, (12) Panasonic 9220, Crown Macro-Tech 2400, Crest 8001. Microphones: (12) Sennheiser 421, (2) Sennheiser 441, (4) AKG 451e, AKG D12E, AKG 112, (6) Beyer M88, (6) Beyer M700, (2) Shure SM81, (6) Shure SM58, Shure SM78, Shure SM10, Shure SM57, Shure SM77, (4) Shure SM85, (15) Countryman Isomax II, (5) Countryman DIs, (4) Whirlwind DIs, (2) C-ducer for piano, E-V RE20, (6) E-V 451 vocal. Staging: Upon request. Lighting: 150-250 light show w/Celco 60-channel board truss system. Other Equipment: 42-channel splitter snake, transformer-isolated w/Canon Mass connectors, XLR splits and ground lift switches, rack-mountable w/50 channels of sub-snakes ATA amp racks, multi-pin panels w/Jensen isolation transformers, ATA effects racks include Juice Goose RFI, EMI filtered w/ground switchers, single-phase 220-200 amp rack-mountable power distribution, 12-station, 3-channel intercom w/Beyer DT-109 and Beyer DT-108 headsets for sound, lights and stage. Rates: Reasonable rates are available upon calling.

**JESTER SOUND;** *Audio & Video Recording;* 423 Kuhlman Dr.; Billings, MT 59105; (406) 248-5896. Contact: Bob Hale

**JLN DESIGN;** *Sound Reinf., Lights;* PO Box 90637; Anchorage, AK 99509; (907) 333-3789 (June-Nov.); (808) 624-6618 (Jan.-May). Contact: Linda S. Nelson

**JUST ROSES, ROSES, INC.;** *Audio Recording;* PO Box 2002; San Anselmo, CA 94960; (415) 457-8923. Contact: Michael Evje

**J.V. SOUND;** *Sound Reinf.;* 622 3rd Ave., San Francisco, CA 94118; (415) 752-6389. Contact: Joe or Vicki

**KEAN SOUND ENGINEERING;** *Sound Reinf., Lights;* 4065 Dawn Ct.; Boulder, CO 80302; (303) 440-3365. Contact: Ed Kean

**KEITH KELLER'S DIGITAL SOUNDSCAPES;** *Audio Recording;* 4000 Wallingford Ave. N., Ste. B; Seattle, WA 98103; (206) 547-3482.

**KINETIC SOUND & LITE;** *Sound Reinf.;* 15036 29th Ave. S.; Seattle, WA 98188; (206) 242-7308. Contact: Tom Wilson

**KMS PRODUCTIONS INC.;** *Sound Reinf., Lights, Rental;* PO Box 487; Maple Valley, WA 98038; (206) 432-1179. Contact: Eric Koch

**KUSTOM SOUND SERVICES;** *Sound Reinf., Lights;* PO Box 4902; Missoula, MT 59806; (406) 728-6655. Contact: John Campbell

**LACKEY SOUND & LIGHT CO.;** *Sound Reinf., Lights;* 3425 Stoneway N.; Seattle, WA 98103; (206) 632-7773. Contact: Bill Lackey

**LINEAR SOUND SYSTEMS;** *Sound Reinf.;* 5427 Telegraph Ave., Ste. W1; Oakland, CA 94609; (415) 652-6048. Contact: Kent Kline

**LITTLE PEOPLE STUDIO;** *Sound Reinf., Audio Recording;* 2111 Research Dr. #2; Livermore, CA 94550; (415) 449-9820. Contact: Doug Mann

**LOCATION AUDIO, LTD.;** *Sound Reinf., Audio Recording;* 1765 Braddock Ct.; San Jose, CA 95125; (408) 265-6475. Contact: Doug Berke, Thom Mechlin. **SOUND REINFORCEMENT** Touring Radius: Local, regional. Maximum Venue Size: 10,000 seats. House Loudspeakers: E-V TL4025 bass cabinets, E-V TL1225 mid cabinets, JBL 2385A horns w/2445J drivers. Flying System Available: No. Monitor Loudspeakers: JBL 4604B. House Consoles: Soundcraft 800B 32 x 8 x 2, Tangent 3216 24 x 16 x 2. Monitor Consoles: Yamaha MC2408M. Outboard Equipment: dbx 160X comp/limiters, dbx 166 comp/limiter/gates, dbx 900 rack system, Orban 622B parametric EQs, Roland SDE-3000 digital delay, Roland SRV-2000 digital reverb, BBE 802 soni-z enhancer, UREI LA4 comp/limiters, most other goodies available. Power Amplifiers: Crown. Microphones: Condensers and dynamics from AKG, Audio-Technica, Beyer, E-V, Sennheiser, Shure, Sony, Crown PZMs, Countryman DIs. Nady 701 diversity wireless system. Staging: Sub-contracted staging available. Lighting: Sub-contracted lighting available. Other equipment: RTS 2-channel intercom system, RCA CCTV 150 system, Otari MTR-90 16-track recorder, Technics 1520 2-track recorder, Yamaha K520 cassette recorder. Rates: Please call for daily and tour rates

**M&M AUDIO LABS;** *Sound Reinf., Lights, Staging, Rental, Audio & Video Recording;* PO Box 2005; Coeur D'Alene, ID 83814; (208) 667-7766. Contact: Chris or Elaine

**MARCAN STUDIO;** *Sound Reinf., Lights, Audio Recording;* 360 E. 200 South, #71; Kanab, UT 84741; (801) 644-2442. Contact: Marcia Hymen

**MASTER MIXED PRODUCTIONS;** *Sound Reinf., Audio Recording;* PO Box 25879; Seattle, WA 98125; (206) 362-1151. Contact: Marty Sever

**MATEEL SOUND CO.;** *Sound Reinf., Lights, Rental, Audio & Video Recording;* 432 Church St.; Garberville, CA 95440; (707) 923-3388. Contact: Jimmy Dangler

**MEAD RECORDS/RAINBOW EXPRESS PUBLISHING;** *Sound Reinf.;* 602 W. Mead Ave.; Yakima, WA 98902; (509) 453-6364. Contact: Mike Walter

**MEDIA WORKS, INC.;** *Audio & Video Recording;* 1250 Huff Ln., PO Box 15; Jackson, WY 83001; (307) 733-1300. Contact: Jeff McDonald

**MERCURY PRODUCTIONS UNLIMITED;** *Sound Reinf., Lights, Rental, Video Recording;* 3650 N. Govt Way, Box 9; Coeur d'Alene, ID 83814; (208) 667-6822; (208) 773-9245. Contact: Mike Schettler

**MIDNIGHT BLUE PRODUCTIONS;** *Audio Recording;* PO Box 77013; Colorado Springs, CO 80970; (519) 599-0905.



**MIRAGE PRODUCTIONS, LTD./PENGUIN AUDIO;** *Sound Reinf., Lights, Staging;* PO Box 460; Carmichael, CA 95609; (916) 944-2948. Contact: Chris or Krina

**COLOSSUS**  
DIGITAL STEREO™

**COLOSSUS**  
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MOBILE FIDELITY PRODUCTIONS OF NEVADA  
Incline Village, NV

**MOBILE FIDELITY PRODUCTIONS OF NEVADA;** PO Box 8359; Incline Village, NV 89450; (702) 831-4458; (702) 831-4459. Contact: Brad S. Miller. **REMOTE RECORDING** Extras & Direction: Credits. Founder: Mobile Fidelity Sound Lab. Mobile Fidelity Records and Productions, creator of The Mystic Moods Orchestra and producer/engineer of numerous special effects recordings. Principle in development of Colossus digital audio system with Louis Dorren. Services offered: Location/studio recording where accurate archival of live performance or final mix is required. Production services include the Colossus (4-channel) PCM digital audio system with 1630 compact disc format compatibility, and/or 4-channel surround microphone (MS-4). Recommend that interested parties inquire as to latest compact disc samples in release by clients utilizing Colossus or MS-4 or both. Conversion of existing sound effects and music libraries into Colossus format and then to optical hard disk also available. Written information package available upon request.

**MOONLIGHT SOUND;** *Sound Reinf., Rental, Audio Recording;* 4763 Weld County Rd., #32; Longmont, CO 80501; (303) 535-4748. Contact: Paul Thompson

**NEW LIFE BROADCASTING;** *Sound Reinf., Audio Recording;* PO Box 117, 440 Lawrence St.; Quincy, CA 95971; (916) 283-4144. Contact: Ron Trumbo

**NORTHERN CALIFORNIA PRODUCTIONS ("NCP");** *Sound Reinf., Rental, Audio Recording;* PO Box 525; Chico, CA 95927; (916) 895-9120. Contact: Clint Simic

**NORTHWEST MOBILE TELEVISION;** *Audio & Video Recording;* 7867 S. 180th St.; Kent, WA 98032; (206) 251-0560. Contact: Judy Lawless

**P&G SOUND;** *Sound Reinf., Audio Recording;* 1190 Santa Clara St.; Santa Clara, CA 95050; (408) 244-6662. Contact: Paul Goeltz



PACIFIC MOBILE RECORDERS  
Carmichael (Sacramento), CA

**PACIFIC MOBILE RECORDERS;** *Audio Recording;* 2616 Garfield Ave.; Carmichael (Sacramento), CA 95608; (916) 483-2340. Contact: Kat Colley Hibbard. **REMOTE RECORDING** Vehicles: Chevy C50 w/20' box, air conditioned, lift gate

Control Room Dimensions: 18 x 7'6" x 7'6". Mixing Consoles: Harrison MR-4 36 x 24 x 36 w/VCA grouping, AB Systems mic inputs. Audio Recorders: Otari MTR-90 24-track w/auto locator. Sony/MCI JH110B-14 2-track, 3M M79 2-track, TEAC cassette decks. Outboard Equipment: UREI LA-4 limiters, U.S. Audio gates. Lexicon PCM60 digital reverb, Yamaha SPX90 Ibanez digital delay, 27-band EQ, active and passive direct boxes. Microphones: Neumann, AKG, Sennheiser, E-V, Shure, Beyer. Crown Audio-Technica Monitor Speakers: E-V Sentry 500 JBL 4313 M&K close field monitors. Auratone. Power Amplifiers: Yamaha P2201, Crown D150A. Video Monitors: Sony color monitor, Sanyo B&W. Cameras: Panasonic AG-155, Sanyo B&W camera. Other Major Equipment: 36-channel 3-way isolated split, 16-channel 2-way isolated split, 250' 36-pair snake, 65' sub-snakes, intercom system, 220' 110V transformer isolated, AC distribution system pre-wired for additional 24-track recorder. Rates: Starting at \$1,350/day. Call for quote.

**PHILIP PERKINS SOUND SERVICES;** *Audio Recording;* 171 S. Park; San Francisco, CA 94107; (415) 543-6661. Contact: Philip Perkins. Nancy Baddock

**P.F.S. RECORDING;** *Audio Recording;* PO Box 6840; San Jose, CA 95150; (408) 275-6322. Contact: Mike Halloran

**PHANTASMA SOUND;** *Sound Reinf., Audio Recording;* 7909 Fremont Ave.; Ben Lomond, CA 95005; (408) 336-2494. Contact: Errol

**PHANTOM POWER STUDIO;** *Sound Reinf., Audio Recording;* 105 Pennsylvania Ave.; Hamilton, MT 59840; (406) 363-2835. Contact: Joe McLean

**PINEAPPLE PRODUCTIONS;** *Sound Reinf., Rental, Audio Recording;* 1404 SE 23rd #1; Portland, OR 97214; (503) 233-1725. Contact: Jay Cosnett

**THE PLANT RECORDING STUDIOS;** *Audio Recording;* 2200 Bridgeway; Sausalito, CA 94965; (415) 332-6100. Contact: Bob Skye. **REMOTE RECORDING** Extras & Direction: Rover. The Plant's mobile recording unit offers the finest in mobile acoustic environments and equipment for live concert recording, remote broadcast, audio for film and video, in-house recording and post-production audio sweetening. Rover is a certified LEDE™ control room on wheels that features an acoustic accuracy that surpasses many in-house studios. It



THE PLANT RECORDING STUDIOS  
Sausalito, CA

has become one of the most popular live-to-two-track as well as multi-track mobiles because of its ability to deliver clean, accurate sound to the client with virtually no guesswork involved. Rover is available for everything from one-nighters to lengthy tours. If you are looking for more than just saturated tracks or if you prefer recording and mixing at your place, Rover is the mobile to call. Some of our clients' projects include: John Denver, U2, Stanley Turrentine, Marty Balin, Jacques Cousteau, Judy Collins, NFL Films, Anita Baker, National Public Radio, Bobby McFerrin, Jimmy Smith, Todd Rundgren, Carmen McRae, Ronnie James Dio, Kenny Burrell, Island Records, Billy Preston, Chick Corea, Harry Belafonte, Paul Williams, Peter Paul and Mary, Al Jarreau, John Faddis, Milt Jackson, Les McCann, Robert Cray and Bourgeois Tagg.

**PLU AUDIO—PACIFIC LUTHERAN UNIVERSITY;** *Sound Reinf., Rental, Audio & Video Recording;* 121st and Park Ave.; Tacoma, WA 98447; (206) 535-7268. Contact: Bob Holken

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- 24, 16, & 8 track recorders in matched pairs
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- 3-engineer crews

# PER

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REMOTE RECORDING**

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Circle #019 on Reader Service Card

**EDWARD G. PRATT SOUND**, 840 W. 1700 South, #15; Salt Lake City, UT 84104; **SOUND REINFORCEMENT** Touring Radius: Regional. Maximum Venue Size: 7,000 to 8,000 Vehicles: Rental House Loudspeakers: (10) EAW BH-215 LF enclosures w/(2) JBL 2225, (10) R&R 5512 MLF enclosures w/(2) JBL 2202, (20) JBL 2385 w/JBL 2441, (20) JBL 2404 tweets, (4) McCauley 845 18" bass enclosures w/JBL 2240 Flying System Available: No. Monitor Loudspeakers: (4) EAW SM-222 w/EUM-122/JBL 2441 (biamped), (6) EAW SM-155 w/RCF-15/JBL 2425 (biamped), (6) McCauley 605 w/EUM-12L/JBL 2425 (biamped), (4) JBL 4691B side fill (biamped). House Consoles: Soundcraft 800B 32 x 8. Soundcraft 200B 24 x 4. Soundcraft 200 16 x 4. Audioarts 8000 24 x 8. Monitor Consoles: Soundcraft 400B 24 monitor. Outboard Equipment: (4) dbx 166, (3) dbx 160, dbx 160X, (2) UREI S39, (2) Ashly SC-80 4-way crossovers, Yamaha REV7, Yamaha SPX90, DeltaLab 1024 Effectron, DeltaLab 256 Effectron, (4) Yamaha 2031 EQs (monitor system), R-1000 digital reverb. Power Amplifiers: (10) Carver PM 15 (house pwr), (4) Carver PM 175 (house pwr), Carver 350, (2) Carver 200, (9) Yamaha P2200 (monitor pwr). Microphones: (6) Shure SM58, (20) Shure SM57, (6) Sennheiser 421, (2) Sennheiser 441, (2) E-V RE20, (5) AKG 451, (6) Beyer M-69, AKG D12E, (6) Shure SM96. Other Equipment: 12-circuit single phase pwr distribution, 6-circuit single phase pwr distribution, Yamaha CP80 piano.

**PRO MEDIA: Sound Reint., Rental**, Two China Basin Bldg., San Francisco, CA 94107; (415) 957-1383. Contact: Lori Bolender. **SOUND REINFORCEMENT** Touring Radius: National. Maximum Venue Size: 100,000 Vehicles: 45' Peterbilt tractor trailer, 20' Ford bobtail, 16' Chevy bobtail. House Loudspeakers: Meyer MSL-3, Meyer UPA-1A, custom subwoofer cabinets loaded w/JBL Flying System Available: Yes. Monitor Loudspeakers: Meyer UM-1, custom cabinets loaded w/JBL House Consoles: Yamaha PM3000-40, Yamaha PM1800-24, Soundcraft 800B-32. Monitor Consoles: Meyer ATL 32 x 12, Soundcraft 800B 32 x 8. Outboard Equipment: Meyer CP-10 parametric EQs, Klark-Teknik DN360 graphic EQs, dbx 900 rack, dbx 160X compressor/limiters, Brooke-Siren FDS360 crossovers, Lexicon PCM60, Lexicon 200, Lexicon 224XL digital reverb, Lexicon PCM42, Lexicon 97 digital delay, Klark-Teknik DN716 digital delay, Eventide H949 Harmonizer, Yamaha SPX90 digital effects processor. Power Amplifiers: Crest 4001, Crest 8001, Meyer MS-1000. Microphones: AKG, Beyer, C-Tape, Schoeps, Shure, Sennheiser, E-V, Neumann, Vega. Other Equipment: Onan AC generator 100 amps, 3-phase, custom rigging packages, custom 100-amp 3-phase power distribution. Rates: Please call.

**PROFESSIONAL SOUND & RECORDING, INC.**, 3320 Chelton Loop S., Colorado Springs, CO 80909; (303) 597-8125. Contact: Chris Mickle. **REMOTE RECORDING** Vehicles: 1984 Winnebago Centauri van, compact 20' x 7'3" x 7'5". Good for limited access venues. Comfortable custom work environment inside. Mixing Consoles: Soundcraft 1624 24 x 16 x 24. Rowland research audiophile 8 x 2, additional consoles available as required. Audio Recorders: (2) Stephens 821B 24-track w/autolocator and 16-track heads, (2) Nakamichi DMP-100 2-track digital w/video machines, Revox PR99, (12) TEAC V2RX 3-head cassette deck, real time duplication. Synchronization Systems: Available as required. Outboard Equipment: Yamaha REV7, Yamaha SPX90, Lexicon PCM60, ADC 1024, BBE 202, dbx and Symetrix compressors, gates and limiters, any piece of outboard gear available upon request. Microphones: (2) AKG C414EB, (2) AKG 451EB w/shotguns, AKG C33 stereo, Schoeps 501-V stereo, (4) Schoeps CMC-3, Sennheiser, Crown PZM, C-ducer, Shure, E-V. Monitor Speakers: Spica TC-50, B&W DM 100, Yamaha NS-10, off-air monitoring and Rowland Research X-over and preamp when required. Power Amplifiers: Rowland Research Model 5, Halter DH 200, Intersound SP300. Video Recorders: Panasonic AG-6400 1/2" w/hi-fi Video Monitors; (2) BMC composite. Cameras: Canon VC 20A. Other Major Equipment: Mogami Neglex (all internal wiring), extensive access bay, extensive splitter system, complete location audio production. Rates: Priced per job and location.

**PYRAMID (SOUND DIVISION)**, *Sound Reint., Lights*; 398 N. Laurel, Ashland, OR 97520; (503) 488-2034. Contact: Steve Read.

**RAL RECORDING**, *Sound Reint., Audio & Video Recording*; 6 Southfork Ave., Merced, CA 95340; (209) 722-3220. Contact: Robert Laughton.

**BILL RASE PRODUCTIONS, INC.**, *Audio & Video Recording*; 955 Venture Ct., Sacramento, CA 95825; (916) 929-9181. Contact: Bill Rase.

**RECORDING ASSOCIATES**, *Audio & Video Recording*; 5821 SE Powell Blvd., Portland, OR 97206; (503) 777-4621. Contact: Jay Webster, Bob Sioutenburg.

**REEL TIME REPRODUCTIONS**, *Audio Recording*; 190 Marianna Way, Campbell, CA 95008; (916) 487-5364. Contact: Timothy Whyte.

**GEORGE RELLES SOUND**; 2021 Kincaid St.; Eugene, OR 97405; (503) 686-9325. **SOUND REINFORCEMENT** Touring Radius: Regional. Maximum Venue Size: 6,000 Vehicles: 1988 GMC W4 diesel 8' x 16' box. House Loudspeakers: (8)

## NORTHWEST

# REMOTE RECORDING & SOUND REINFORCEMENT

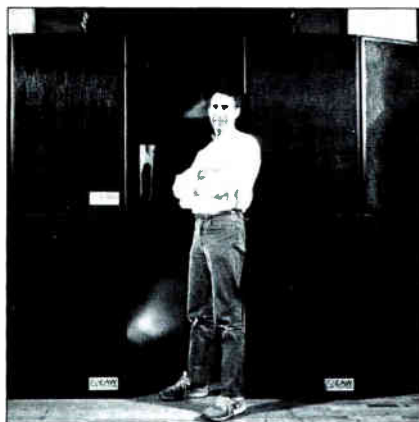
Meyer MSL-3, (4) Meyer 650-R2 subwoofers, (6) Harbinger 508 (JBL 2225/2445 loaded), (6) Harbinger 512 (JBL 2225 loaded), (2) Community Boxer subwoofers, (8) Klipsch LaScala. Flying System Available: Yes. Monitor Loudspeakers: (4) Meyer UPA, (2) Meyer UM1, (4) EAW SM202, EAW 155, (4) Harbinger 524 House Consoles: Hill 4400 32 x 8 x 2, Hill B3 24 x 4 x 2, Allen & Heath 16 x 4 x 2. Monitor Consoles: Hill M3 (24 x 8), CDT Maxcon (32 x 10). Outboard Equipment: Lexicon 200 digital reverb, (2) Lexicon PCM70 digital effects processors, DeltaLab ADM512 Super TimeLine digital delay, (2) Audio Digital Add-2 stereo digital delays, Barcus-Berry Electronics 202 signal processor, Aphex Type B Aural Exciter, EXR exciter, ADR Scamp rack w/(2) S30, S100, (6) S31, (4) S03, (2) S04, Meyer CP-10 parametric EQ, (2) Sundholm 2103 EQ, (2) Rane parametric EQ, (6) Rane ME30 1/3-octave EQ, (2) CDT PF8 rack w/(6) comp/limiter (4) gates. Power Amplifiers: (8) Hill DX1500, (3) Crown Micro-Tech 1200, (4) Haller P500, (3) BGW 250, (3) Carver PM 15, Crown DC300A, Crown D150 Microphones: (3) AKG C460, (8) AKG C451, (2) AKG C414, (4) Neumann KM84, (8) Shure SM81, (10) AKG C535, (6) Sennheiser 421, (2) E-V RE20, (4) Shure SM53, (8) Shure SM57, (4) Shure SM58, (2) Beyer M260, (2) Sennheiser 431, (2) RCA 77, (2) Countryman EM101, Shure SM85, AKG D330, (6) Boundary Layer mics. Rates: \$350-\$2,000/day plus travel.

**RICH SOUND & MUSIC**, *Sound Reint., Rental*; PO Box 3385; Chico, CA 95927; (916) 891-1972. Contact: Rich Pres.

**ROAD WARRIOR SOUND**, *Sound Reint., Audio Recording*; 6596 S. Kit Carson Ct., Littleton, CO 80121; (303) 797-6769. Contact: Doug Zeno.

**NORMAN ROSS PRODUCTIONS, INC.**, *Audio & Video Recording*; 2810 E. Evergreen Ave., Salt Lake City, UT 84109; (801) 484-0401. Contact: Alice Ross.

**ROTHROCK PRODUCTION ENTERPRISES**, *Sound Reint., Audio Recording*; PO Box 1624; Boulder, CO 80306; (303) 499-5475. Contact: John "Rock" Rothrock.



RANDALL SCHILLER PRODUCTIONS  
San Francisco, CA

**RANDALL SCHILLER PRODUCTIONS**, *Sound Reint., Rental, Audio Recording*; 1207 Fifth Ave., San Francisco, CA 94122; (415) 661-7553. Contact: Randy Schiller. **SOUND REINFORCEMENT** Touring Radius: Local regional. Maximum Venue Size: 20,000 people. House Loudspeakers: (16) Gauss 1502 super tweeters, (8) Eastern Acoustic Works KF-850 full range systems, (8) Eastern Acoustic Works SB-850 sub-bass systems, (16) Harbinger 1208 horns w/JBL 2441 drivers, (6) Eastern Acoustic Works SR-115 bass bins, (8) Eastern Acoustic Works SR-215 double bass bins, (16) Cerwin-Vega B-36A/L-36PE low frequency folded horns. Flying System Available: Yes. Monitor Loudspeakers: (8) Harbinger 524, (2) Harbinger 514 (bi-amplified), (4) Gauss HF-4000 drivers on Gauss horns, (4) Altec 816 bass bin w/Gauss 5840 driver, (4) JBL 4628B speakers. House Consoles: Soundcraft 200B SEQ 24 x 4 x 2, Biamp 16 x 2.1, Biamp 883 8 x 2 x 1, Tapco

6100RB/6100EX 14 x 1. Outboard Equipment: Yamaha REV7 digital reverb, Yamaha SPX90 digital reverb, Eventide H910 Harmonizer, DeltaLab 2048 digital delay, DeltaLab DL-2 digital delay, dbx 161, dbx 163 compressor/limiter, UREI 1178 stereo compressor/limiter, Orban 622B parametric equalizer, Fostage DSM3602 360 digital space matrix. Power Amplifiers: (3) Carver M1 5T 360-watt/channel, (8) SAE A-501 250-watt/channel, (18) SAE A-201 100-watt/channel, (8) SAE A-1001 500-watt/channel, (2) Phase Linear 700B 350-watt/channel, Crown Micro-Tech 1200LX 275-watt/channel. Microphones: (2) E-V RE20, (4) E-V RE15, (4) Shure SM81, (12) Shure SM58, (16) Shure SM57, (2) Sennheiser MD-431, (4) Sennheiser MD-421, (2) AKG D12, (2) Sony ECM-33P, (10) Countryman DIs. Lighting: Phoebe Ultra Quartz. Other Equipment: (2) RTS 424 distribution amplifiers, RTS 444 stereo buffer amplifier, (5) Crown VFX-2A stereo electronic crossover, (2) Rane AC-22 stereo 2-way electronic crossover, Rane AC-23 stereo 3-way elec. crossover, Uni-Sync MS-10 10 x 3 mic splitter, SA-3050 spectrum analyzer, Yamaha Q2031 1/3-octave stereo equalizer, (4) MXR dual 15-band stereo graphic EQ. Rates: Call for prices on equipment and equipment packages. **REMOTE RECORDING** Control Room Dimensions: 12' x 15'. Mixing Consoles: TEAC Model 5B, TEAC M35EX, (4) TEAC Model 1. Audio Recorders: Otari 5050B, TEAC 80-8, Sony TC-854-4S, Sony TC-850-2T, Pioneer RT-707. Noise Reduction Systems: (2) dbx 154, (2) dbx 157. Outboard Equipment: (2) Sony TCWR-930 stereo double cassette deck, (2) Sony K-81 TC stereo cassette decks, Aiwa ADF-990 stereo cassette deck, Uni-Sync MS-10 10 x 3 microphone splitter, TEAC MB-20 meter bridge, (4) Technics SL-1200 MkII turntables, Sound Workshop 242 stereo reverb/echo unit, Bozak CMA-102DL mixer, UREI 1620 mixer, Aphex Type C Aural Exciter. Microphones: Neumann U87, (2) AKG C414, AKG D12, (2) Sennheiser MD-431, (2) Shure SM91, Crown PZM 6LPB/PX-18B, (2) Shure SM81, (14) Shure SM57, (10) Shure SM58, Shure 520D "Green Bullet" Monitor Speakers; (2) JBL 4411, (2) JBL 4311, (4) JBL 4401, (2) Auratone. Power Amplifiers: BGE 100-1 30-watt/channel, SAE 2401 250-watt/channel. Video Recorders: JVC HR-470U VHS Hi-Fi/HQ video deck, Sony SL-2700 Beta Hi-Fi video deck. Video Monitors: Sony KV-1956B 19" monitor, Magnavox 13" Sony XRB 27" Cameras: Sony CDD-V110. Rates: Upon request. Extras & Direction: We are a multi-faceted company providing facilities and services in the areas of audio, video, film and theater. We are dedicated to providing the highest quality in a relaxed but professional environment. In addition to recording studio services and location recording services, we provide sound reinforcement for venues ranging from small clubs to large outdoor concerts, audio design and installation, film and video production and lighting services. Check out our latest audio and video design and installation at San Francisco's Juke Box Saturday Night and please come and experience the finest live sound system in San Francisco at San Francisco's finest club—The I-Beam!

**SCOTT SOUND**, *Sound Reint., Audio Recording*; 805 Smith St., Fort Collins, CO 80524; (303) 224-3183. Contact: Scott Moyer.

**SEISMIC AUDIO CORP.**, *Sound Reint., Lights, Staging, Rental*; 1426 S. Jackson; Seattle, WA 98144; (206) 329-8145. Contact: Allan Bagley.

**SELWYN CO.**, *Sound Reint., Lights, Rental, Audio Recording*; PO Box 7301; Oakland, CA 94601; (415) 889-5915. Contact: Greg Gardner. **REMOTE RECORDING** Extras & Direction: The Selwyn Co. provides custom designs and contract sales as well as live production. For the business, organization, hotel or club looking for a permanent installation, we can give the guidance necessary for putting together a high-quality system for your budget. Our live production is based upon a 150- to 4,000-watt 24-channel sound system; 128-scene 16-channel lighting system, and 8-track demo recording. Some instruments can also be provided as part of a production package.

**SHAPED MUSIC PRODUCTIONS**, *Sound Reint., Lights, Rental*; 625 S. 44th St.; Boulder, CO 80303; (303) 494-0518. Contact: Rich Werdes.

**SHYNE SOUND**, *Sound Reint., Audio Recording*; Box 2280; San Rafael, CA 94912; (415) 459-2833. Contact: Leroy Shyne.

**SMALL TIME PRODUCTIONS**, *Sound Reint., Lights, Staging, Rental, Audio Recording*; 1528 Stone St.; Pueblo, CO 81004; (303) 561-9959. Contact: Barry Jansen.

**SNAKE RIVER SOUND**, *Sound Reint., Audio Recording*; 1008 N. 6th St.; Boise, ID 83702; (208) 386-9276. Contact: David Smyth.

**SOUND EXPRESSIONS**, *Sound Reint., Rental*; 3249 Santa Rosa Ave.; Santa Rosa, CA 95407; (707) 528-3565. Contact: Philip Salsbury.

**SOUND ON STAGE**, *Sound Reint.*; 100 North Hill Dr., #30; Brisbane, CA 94005; (415) 468-2990. Contact: Bob Walker, Jerry Pfeiffer.

**SOUND VISUAL PRODUCTS**, *Sound Reint., Lights, Staging*; 3229 Elkhorn Blvd., #6; North Highlands, CA 95660; (916) 348-7377. Contact: Jerry Chappell, Alan Lyon, Greg Bright.



**SOUNDS NATURAL AUDIO SERVICES:** *Sound Reinf., Staging, Audio Recording;* 214 Keystone Ave., Santa Cruz, CA 95062; (408) 425-8015. Contact: Bill Burnside. Ken Botelho Bill Van Bloom

**SPECTRUM;** *Sound Reinf., Lights, Staging, Audio & Video Recording;* PO Box 757; San Carlos, CA 94070; (415) 593-9554. Contact: Wes Weaver

**STARWEST PRODUCTIONS, INC.;** *Sound Reinf., Lights, Staging, Rental, Audio & Video Recording;* 1391 N. Speer Blvd., #490; Denver, CO 80204; (303) 623-0636.

**STOTZ'S SOUND;** *Sound Reinf., Audio & Video Recording;* 576 Cypress St.; Monterey, CA 93940; (408) 375-9718. Contact: Gary M. Stotz

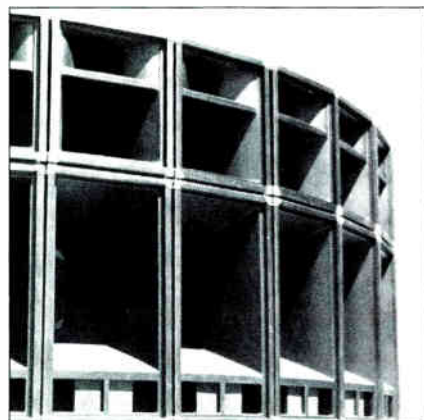
**STUDENT UNION AUDIO VISUAL;** *Sound Reinf., Lights, Staging, Rental, Audio Recording;* San Jose State University; San Jose, CA 95129; (408) 924-6304. Contact: Jan Lopez

**STUDIO III PRODUCTIONS;** *Sound Reinf., Rental, Audio Recording;* 16303 Panoramic Way, San Leandro, CA 94578; (415) 276-1536. Contact: Gary J. Allsebrook

**SWANSON SOUND SERVICE CO.;** *Sound Reinf., Staging, Rental, Audio & Video Recording;* 916 75th Ave., Oakland, CA 94621; (415) 638-4944. Contact: Donald A. Nielsen

**SWEET SOUND;** *Sound Reinf., Lights, Staging, Rental;* 4444 SW Multnomah Blvd.; Portland, OR 97219; (503) 293-9466 (24-hr.). Contact: Paul or Jeff

**TECHART SOUND AND LIGHT;** *Sound Reinf., Lights;* 1450 67th St.; Emeryville, CA 94608; (415) 652-1102. Contact: Tom Sephton



THIRD EAR SOUND CO  
Richmond, CA

**THIRD EAR SOUND CO.;** *Sound Reinf., Rental;* 601 S. 8th St., Richmond, CA 94804; (415) 233-2920. Contact: Raul Suarez. David Trinchero

**TRANSIENT SOUNDS;** *Audio Recording;* 4780-A Caterpillar Rd., Redding, CA 96003; (916) 244-4460. Contact: David B. Green

**TRANSPARENT RECORDINGS;** *Audio Recording;* 1201 Ortega St.; San Francisco, CA 94122; (415) 563-6164. Contact: Lolly Lewis. REMOTE RECORDING Extras & Direction: Transparent Recordings specializes in live-music remote recording using the finest analog recording equipment (Studer console Nagra T-Audio master recorder) and recording direct-to-stereo. Credits include the Telluride Chamber Music Festival, Chamber Music West and Solisti New York, as well as composers John Adams, Ingram Marshall and David Cope. Also available: high-detail tape editing, digital recording, album production and graphics. Transparent Recordings is affiliated with the San Francisco Conservatory of Music.

**TRAX;** *Sound Reinf., Audio Recording;* 545 W. 500 South, Ste. 150; Bountiful, UT 84010; (801) 298-3280. Contact: Jeff Ostler

**ULTRA SOUND, INC.;** *Sound Reinf.;* 70-V Woodland Ave.; San Rafael, CA 94901; (415) 459-0100. Contact: Don Pearson. Howard Danchik

**VISTA SOUND & LIGHT;** *Sound Reinf.;* 8229-44th Ave. W., Ste. C; Mukilteo, WA 98275; (206) 743-6811. Contact: Neale B. Frazier. SOUND REINFORCEMENT Touring Radius: National. Maximum Venue Size: Approx. 5,000. Vehicles: Kenworth AeroDyne COE w/45' long '102" wide air-ride trailer. International 20' diesel bobtail van. House Loudspeakers: (16) McCauley custom double 15" low-freq. cabinets w/(32) McCauley #6244 high power 15" speakers, (16) McCauley

custom double 12" x 2" constant directivity horn mid-high cabinets w/(32) McCauley #6334 high power 12" speakers and (16) TAD #4001 2" high frequency compression drivers. Monitor Loudspeakers: (8) McCauley wedges w/15" McCauley and JBL 2425 bi-amped, (4) McCauley wedges w/12" McCauley and JBL 2425 bi-amped, (2) McCauley side-fill w/quad 15" dbi 12" and dbi 2" JBL tri-amped, (2) McCauley drum/key fill w/18", 12" and 2" JBL tri-amped. House Consoles: Midas Pro-5 (34 x 8 x 2) w/24-track record capability, Ramsa 8724 (24 x 4 x 2), Yamaha MC1604 (16 x 4 x 2). Outboard Equipment: (2) Yamaha SPX90 reverb-delay-multi-effects, Yamaha REV7 reverb/delay, Ursa Major StarGate 626 reverb/delay, Lexicon PCM60 reverb, (5) Klark-Teknik DN-27A DN-22 equalizers, (6) Brooke-Siren FDS-340 FDS-320 cross-overs, (4) Symetrix 501 limiters, Orban 424A stereo limiter, (4) Audioarts 2700 equalizers, Symetrix SE-400 parametric equalizer, UREI 545 parametric equalizer, Yamaha D1500 digital delay, DeltaLab DL-2 digital delay, Yamaha R1000 digital reverb, Symetrix SG-200 dual signal gate, Symetrix HA-10B headphone amp. Power Amplifiers: (20) Peavey DECA-1200 amplifiers-main speaker system, (8) Haller DH-500 amplifiers-monitor system, (6) Crown DC300A II amplifiers-monitor system, misc. BGW 750, BGW 250, Crown DC150A II etc. Microphones: (8) Beyer M-88 (5) Beyer M-201, (6) Sennheiser MD-421, (2) E-V RE20, (6) E-V DS35, (3) AKG C451, (2) AKG D12E, (8) Audio-Technica ATM-41A, (6) Audio-Technica ATM-63, misc. Shure SM58 and SM57. Sony E-V, Beyer, Cetec-Vega Wireless. Staging: Wenger 8 x 8 x 2 riser (two section). Lighting: Lighting system currently not in service. Other Equipment: Midas/custom 38-channel, 3-way splitter w/Jensen transformers, goldline GL-30 real time analyzer, (2) Clear-Com communications systems, Tascam 122B cassette deck, custom 150 amp, 3-phase AC distribution system w/Cam-Lok connectors, comprehensive brochure available on request. Rates: Basic tour rate \$7,275/week (PA, crew and trucking). Other rates negotiable.

**VISUAL COMMUNICATIONS GROUP, INC.;** *Audio & Video Recording;* 3300 Mitchell Ln., Ste. 393; Boulder, CO 80301; (303) 443-6003. Contact: Fred Hull

**WAD SOUND;** *Sound Reinf., Rental;* 3326 El Capitan Ct.; Merced, CA 95340; (209) 723-0800.

**WEST COAST SOUND & LIGHT;** *Sound Reinf., Lights, Rental, Audio Recording;* 2029 Dickens Dr.; Modesto, CA 95350; (209) 526-5495. Contact: Paul Doty, Chris Gray

**WHITLO PRODUCTIONS;** *Sound Reinf., Lights, Staging, Rental, Audio Recording;* 1183 Bird Ave., #3, San Jose, CA 95125; (408) 298-0215. Contact: Whit Lehnberg

**BOB WILSON RECORDING SERVICES;** *Rental, Audio & Video Recording;* 83 Devonshire, #2; Mountain View, CA 94043; (415) 967-4921. Contact: Bob Wilson

**XXXX AUDIO SYSTEMS;** *Sound Reinf., Rental;* 2805 "B" St.; Sacramento, CA 95816; (916) 443-3535. Contact: Doug K. Pumphrey

**Y-KNOT SOUND;** *Sound Reinf., Staging, Rental, Audio Recording;* Box 2022, Trinidad, CA 95570; (707) 677-0145. Contact: Dennis M. Thompson

**ZEPHYRS OF THE MUSE;** *Audio Recording;* PO Box 1136, Pacifica, CA 94044; (415) 355-4359. Contact: Jack Herbert

## SO. CALIFORNIA & HAWAII

**A-1 AUDIO, INC.;** *Sound Reinf., Rental;* 6322 DeLongpre Ave., Hollywood, CA 90028; (213) 465-1101; (800) 446-4466; FAX: (213) 465-9467. Contact: Al Siniscal. Bobby Ross. Gary Rivera. SOUND REINFORCEMENT Touring Radius: National. Maximum Venue Size: Unlimited. Vehicles: 22' bobtail 28' hi-cube 48 tractor trailer, 48 air-ride tractor trailer, 24 air-ride bobtail, 22' bobtail. House Loudspeakers: A1 Audio fully integrated flying PA consisting of Meyer MSL-3 Meyer UPA-1, selection of subwoofers. Flying System Available: Yes. Monitor Loudspeakers: Meyer UPA-1 Meyer UM-1 Meyer MSL-3, A-1 Audio custom double 12" vocal monitors. House Consoles: Yamaha PM3000/40C, Harrison. Alive consoles, Cadac computerized consoles. Soundcraft 800C Monitor Consoles: Harrison, Soundcraft 800C, Yamaha PM3000 40C, all specially modified. Outboard Equipment: All state-of-the-art outboard digital processing gear by Lexicon, Yamaha, Eventide, AMS, Sony, Klark-Teknik, dbx, UREI. Power Ampli-

—CONTINUED ON THE NEXT PAGE

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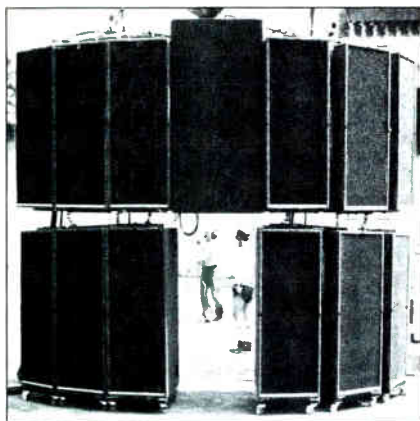
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A-1 AUDIO, INC.  
Hollywood, CA

fiers: Crest 4000, Crest 4001, BGW 750B, Yamaha, Meyer M-1000, BGW 750C. Microphones: All Neumann AKG, Sennheiser, Beyer, Shure E-V, wide variety of Vega, Sennheiser, Other Equipment: Wide selection of Clear-Com and RTS intercom systems, Ikegami video equipment. Rates: Available upon request. **REMOTE RECORDING Extras & Direction:** For over 15 years A-1 Audio, Inc. has served the diverse needs of the entire professional entertainment industry. With international experience in live concert touring, television, film, Broadway theaters, industrial shows and Vegas-type showroom installations, A-1 Audio is ready to meet any audio reinforcement requirement.

**ABSOLUTELY GRIPPING! CREATIVE PRODUCTION, Audio & Video Recording;** PO Box 1779; Visalia, CA 93279; (209) 732-5767. Contact: Ken Emmer.

**AEA, INC.; Audio Recording;** 1029 N. Allen Ave.; Pasadena, CA 91104; (818) 798-9127.

**AM PRODUCTIONS; Sound Reinf., Audio & Video Recording;** 46 S. DeLacey Ave., Ste. 15; Pasadena, CA 91105; (818) 449-0683. Contact: Art Michaud.

**APPLEBOX PRODUCTION SERVICES; Sound Reinf., Lights, Rental, Audio & Video Recording;** 20902 Brant Ave.; Long Beach, CA 90810; (213) 635-1908. Contact: James Ramsey.

**AQUASTAR SYSTEMS; Audio & Video Recording;** 3960 Laurel Canyon Blvd., Ste. 406; Studio City, CA 91604; (800) 227-5606. Contact: Will Adams.



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ATM AUDIO  
Rolling Hills Estates, CA

**ATM AUDIO;** 6 Masongate Dr.; Rolling Hills Estates, CA 90274; (213) 378-4893; (213) 770-3110. Contact: Andrew Martin. **SOUND REINFORCEMENT Touring Radius:** National. Maximum Venue Size: 10,000 seats. Vehicles: 1-ton van, 16' bobtail, 20' bobtail, and as required. House Loudspeakers: ATM/CSS SF1000, FR1000, LF1000, SB1000 loudspeakers, CSS Series loudspeakers are a compact, high efficiency trapezoidal design built for touring ease and an unobtrusive appearance. (8) concert stacks consisting of JBL, Peavey

## SO. CAL & HAWAII

# REMOTE RECORDING & SOUND REINFORCEMENT

EVM, Eden, Foster, Altec, Flying System Available: Yes. Monitor Loudspeakers: (6) Eden SM-1152 pro, (6) ATM/CSS SF1000, (6) ATM/CSS SM1000. House Consoles: Carvin MX1688 (modified) Monitor Consoles: Peavey MkIV 16 x 8. Outboard Equipment: (2) Roland SRV-2000, Yamaha SPX90, Roland SDE-2000, Yamaha GC2020, (4) dbx 163X, Biamp comp/lim, Valley People Dyna-Mite, Yamaha R1000, (3) TDM crossovers, Aphex Type B Exciter, Eventide Omnipressor, Orban 622, DAX 2709B, (2) UREI 529, (6) Pyramid SEA8600, Rocktron Hush 2C, Crown CD Power Amplifiers: (8) Sound Code Systems 2350A, (6) Sound Code Systems 2450A, (6) Sound Code Systems 2150A, Yamaha P2050. Microphones: Shure, AKG, Audio-Technica, Astatic, Crown, Beyer, Sennheiser, B&K, Audix. Staging: House station scaffolding (aluminum), and loudspeaker system risers are available. Other Equipment: Canare snake systems, hybrid snakes available, AKG mic stands and accessories, Missing Link direct boxes: Beckman, SKL, Weller, Hewlett-Packard, White test and maintenance equip, Telex RTS system, Realistic walkie talkies. Rates: There are too many variables to quote a standard price, but ATM Audio will always be the best choice. **REMOTE RECORDING Vehicles:** 1-ton van, and as required. Control Room Dimensions: 5 x 10. Mixing Consoles: Carvin MX1688 (modified), Monitor Speakers: (2) Auratone 5C sound cube, (2) Realistic Minimus 7, (2) Yamaha NS-10M, (2) Celestion DL-4 Power Amplifiers: (2) Sound Code Systems 2150A. Rates: As with sound reinforcement, the rates will vary with the circumstances, but will always be very competitive. **Extras & Direction:** ATM Audio was founded in 1985 as an 8-track recording studio. In the years that have transpired ATM has expanded to include concert sound reinforcement, remote recording, sound contracting, pro audio equipment sales and sound equipment design, development and manufacturing. An important part of this success is the ability for ATM Audio to work with the client to bring him the quality product which is to be expected from a professional audio production company and the ability to provide these services at a great savings. Another contributing factor is the quality engineering staff. All of the engineers are certified and are continually researching new technologies and products so as not to be left behind like so many others in the audio field. ATM Audio is one of the best audio production companies. If you haven't worked with us, maybe it's time. After all, it's one less headache you'll have to worry about. Please call us for your next production.

**ATOMIC ENTERTAINMENT, LTD; Sound Reinf., Rental, Video Recording;** 2808 N. Naomi St.; Burbank, CA 91504; (818) 840-9119. Contact: Gloria or Bryan.

**AUDIO ACHIEVEMENTS; Sound Reinf., Audio & Video Recording;** 1327 Cabrillo Ave.; Torrance, CA 90501; (213) 533-9531. Contact: Donovan.

**AUDIO HAWAII INC; Sound Reinf., Rental, Audio Recording;** 96-1173 Waihona St., #B-4; Pearl City, HI 96782; (808) 455-5875. Contact: Jim, Beth & Paul Perr.

**AUDIO TECHNIQUES INC; Sound Reinf.;** 5169 N. Douglas Fir Rd., #4; Calabasas, CA 91302; (818) 992-6223. Contact: Bob Ludwig.

**AUDRA INTERNATIONAL; Sound Reinf.;** PO Box 38; Silverado, CA 92676; (714) 649-2207. Contact: Algis Renkus.

**B PRODUCTIONS; Sound Reinf., Rental, Audio Recording;** 944 Opal St.; San Diego, CA 92109; (619) 483-4213. Contact: Barry Margolin.

**ROLLAND BEECH PRODUCTIONS; Sound Reinf., Lights, Staging, Audio & Video Recording;** 1795 Ridgeview Cir. W; Palm Springs, CA 92264; (619) 323-8413. Contact: Irma A. Beech.

**BOB'S BANDAIDS; Sound Reinf., Lights, Staging, Rental, Audio Recording;** 3782 E. Austin Way; Fresno, CA 93726; (209) 227-1224. Contact: Bob Martin.

**BURNS AUDIO; Sound Reinf.;** 11174 Penrose St., Unit 6; Sun Valley, CA 91352; (818) 768-2370. Contact: Bruce A. Burns.

**CAL CENTRAL LIGHTING & SOUND CO; Sound Reinf., Lights, Staging, Rental;** 543-A W. Betteravia Rd.; Santa Maria, CA 93455; (805) 925-5280. Contact: Joe Quealy.

**CANTRAX RECORDERS; Audio Recording;** 2119 Fidler Ave.; Long Beach, CA 90815; (213) 498-6492. Contact: Nancy Cannata.

**CHICOSLAVAKIA SOUND STAGE WEST; 4640 Danza St.;** Woodland Hills, CA 91364; (818) 703-8940. Contact: David Chico Ryan.

**CIRCLE COMM. GROUP; Sound Reinf., Staging, Rental;** 13624 Sherman Way, #605; Van Nuys, CA 91405; (818) 886-2026. Contact: Dee Brown.

**CONCERT SOUND CONSULTANTS; Sound Reinf.;** PO Box 831; Julian, CA 92036; (619) 765-2221. Contact: David Scheirman.

**JOE CONTI PRODUCTIONS; Sound Reinf., Rental, Audio Recording;** PO Box 557; Captain Cook, HI 96704; (808) 328-8106. Contact: Joe Conti, Laura Adams.

**R.E. COPSEY RECORDING; PO Box 367; Camarillo, CA 93010; (805) 484-2415. Contact: Reese E. Copsey.**

**CREATIVE MEDIA CONSULTANTS—CM SOUND; Audio Recording;** PO Box 491279; Los Angeles, CA 90049; (213) 396-7105; (213) 471-1166. Contact: Michael Binstock.

**CREATIVE PRODUCTIONS; Sound Reinf., Audio Recording;** 3128 Linden Ave.; Bakersfield, CA 93305; (805) 325-3676. Contact: Roger Thiesen.

**DELICATE PRODUCTIONS; Sound Reinf., Lights, Staging;** 1390 Flynn Rd.; Camarillo, CA 93010; (805) 388-1800. Contact: Spy Matthews, Chris Smyth.

**ELECTROTEC PRODUCTIONS INC; Sound Reinf., Lights;** 6735 Eton Ave.; Canoga Park, CA 91303; (818) 888-8687. Contact: Jim Douglas.

**FLOUNDERGASH PRODUCTIONS; Audio & Video Recording;** 5102 Vineland Ave.; North Hollywood, CA 91601; (818) 509-8821. Contact: Jeff McLane.

**FORMULA 1 SOUND (FORMULA ONE SOUND); Sound Reinf.;** 4716 Dewey Ave.; Riverside, CA 92506; (714) 686-5809. Contact: Michael Sullivan.

**FREE WORLD AUDIO; Sound Reinf., Lights, Rental;** 1148 Norby; Fullerton, CA 92633; (714) 773-4284. Contact: J.T. Thomas.

**GECKO MUNSTER SOUND AND LIGHTING CONSULTANTS; Sound Reinf., Lights;** 79281 Port Royal; Bermuda Dunes, CA 92201; (619) 345-4533. Contact: Tim Ison, Scotty Rose.

**THOMAS GREGOR AUDIO; Sound Reinf., Lights, Staging;** 6850 Vineland Ave., Unit D; North Hollywood, CA 91605; (818) 505-9544. Contact: Greg Kirkland, Christian Hugener.

**GUITAR TRADER AND MUSIC POWER RENTALS; Sound Reinf., Rental;** 5035 Shawline St.; San Diego, CA 92111; (619) 565-8814.

**KIP GYNN SOUND; Audio Recording;** 15 Horizon Ave.; Venice, CA 90291; (213) 399-3595. Contact: Clifford Gynn.

**HARPAZO! MINISTRIES EVANGELICAL ASSOCIATION; Audio & Video Recording;** PO Box 453; Lakewood, CA 90714; (213) 423-0273. Contact: Duane Everts.

**HEADROOM SYSTEMS; Sound Reinf.;** 12518 Venice Blvd., #1; Los Angeles, CA 90066; (213) 398-8995. Contact: Corky Corbett.

**HOMER & ASSOCIATES; Video Recording;** Sunset Gower Studios; 1420 N. Beachwood Dr.; Hollywood, CA 90028; (213) 462-4710. Contact: Peter Conn.

**HUGHES SOUND ENGINEERING; Sound Reinf.;** 3533 Old Conejo Rd., Ste. 125; Newbury Park, CA 91320; (805) 499-7744. Contact: Bill Hughes, Jim Bass.

**JAGARD AUDIO; Sound Reinf., Staging, Rental;** 1757 N. Geoffrey Ave., Simi, CA 93063; (805) 583-0220.

**JAGS ENTERTAINMENT; Sound Reinf., Rental, Audio Recording;** PO Box 935; Captain Cook, HI 96704; (808) 323-3315. Contact: Eric Jaeger.

**JBL PROFESSIONAL; Sound Reinf., Audio Recording;** 8500 Balboa Blvd.; Northridge, CA 91329; (818) 893-8411. Contact: Ken Lopez.

**KOALA STUDIO; Audio Recording;** 22931 Sycamore Creek Dr.; Valencia, CA 91354; (805) 259-8562. Contact: Jack.

**L.A. SOUND CO. INC; Sound Reinf.;** 12547 Sherman Way, Unit F; North Hollywood, CA 91605; (818) 765-6900. Contact: Richard Raik, Steve Lehman.



**LEAVENWORTH/SOUND:** Audio & Video Recording; 5004 Pendleton St., San Diego, CA 92109; (619) 274-3566.

**MAUI SOUND SYSTEMS:** Sound Reinf., Rental; 335 Hoo-hana St. Bay R; Kahului, Maui, HI 96732; (808) 871-8383; (808) 871-5057 FAX. Contact: Joe A. Ken T. Jason A.

**MAZZETTI AUDIO REMOTE:** Audio Recording; PO Box 8874; Universal City, CA 91608; (818) 761-1631. Contact: Michael Mazzetti

**METZGER AUDIO:** Sound Reinf., Lights, Rental; Yorba Linda, CA; (714) 777-2548. Contact: Tim Metzger

**MOBILE SOUND & LIGHTING SYSTEMS OF HAWAII:** Sound Reinf., Lights, Staging, Audio Recording; PO Box 1380; Kailua, HI 96734; (808) 235-0522. Contact: Scott Woody Wood.

**THE MUSIC FACTORY:** Sound Reinf., Lights, Staging, Rental; 1264 Monterey St.; San Luis Obispo, CA 93401; (805) 544-8944. Contact: J.R. Lutz

**ODD E O ENGINEERING:** Audio Recording; 1740 N. Gramercy Pl., #101; Hollywood, CA 90028; (213) 465-1762.

**ON-TRAX AUDIO:** Sound Reinf., Rental, Audio & Video Recording; 9340 Narnia Dr.; Riverside, CA 92503; (714) 687-5506. Contact: Brad Williams

**ONESTOP STUDIOS:** Sound Reinf., Lights, Audio & Video Recording; 17412 Lull; Northridge, CA 91325; (818) 345-8765. Contact: Cathy or Bob

**ORANGE COUNTY SPEAKER INC:** Sound Reinf., Lights; 13686 Newhope St.; Garden Grove, CA 92643; (714) 530-3860. Contact: Sharon Sunda

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**PACIFIC BROADCAST VIDEO:** Audio & Video Recording; PO Box 879; Cardiff By The Sea, CA 92007; (619) 268-3000. Contact: Stephen Cilurzo

**PANASONIC/RAMSA:** Sound Reinf.; 6550 Katella Ave.; Cypress, CA 90630; (714) 895-7277. Contact: Steve Wooley

**PHUSION:** Audio Recording; PO Box 7891; Newport Beach, CA 92660; (714) 650-7915. Contact: Mark O. Paul

**POWERS AUDIO:** Sound Reinf.; 126 W. Ave. Valencia; San Clemente, CA 92672; (714) 361-8862.

**RAINBOW REMOTE RECORDING:** Sound Reinf., Audio Recording; 34 Jackson; Irvine, CA 92720; (714) 551-5367. Contact: Dale McCart

**RAINBOW SOUND:** Sound Reinf., Lights; 1454 Seward St.; Hollywood, CA 90028; (213) 467-2179. Contact: David Raybould

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Monrovia, CA

**PACIFIC AUDIO VISUAL ENTERPRISES:** Sound Reinf., Audio Recording; 545 Cloverleaf Way; Monrovia, CA 91016; (818) 359-8012. Contact: Ron Streicher. **SOUND REINFORCEMENT** Touring Radius: National Vehicles: Consulting primarily, small-scale reinforcement equipment only. House Loudspeakers: JBL House Consoles: Soundcraft 800B. Outboard Equipment: Lexicon, Yamaha, Aphex. Power Amplifiers: Haller 200. Microphones: Schoeps, AKG, Neumann, Beyer, Shure, Sennheiser. Rates: Base rate: \$65/hr variable, pending project requests. **REMOTE RECORDING** Vehicles: Dodge van. Control Room Dimensions: Per venue/set-up on site. Mixing Consoles: Soundcraft 800B (custom modified), Quantum 12A (custom modified), custom-built 6 x 2, custom-built 3 x 2. Audio Recorders: Studer B67 (pair, custom modified), (2) Sony PCM-F1 processors, Revox B77 (pair, custom modified), Otari 5050BQII. Noise Reduction Systems: dbx Type I, Dolby A, Dolby SR. Outboard Equipment: Lexicon 200, Yamaha REV7, dbx 900, Aphex Type B, Aphex compellor. Microphones: Schoeps Callute (extensive), AKG 414/P48 (extensive), AKG 460 (extensive), AKG 450 (extensive), (2) AKG C422 stereo, (2) AKG C24 stereo, Calrec Soundfield system, Beyer, Sennheiser, RCA, Coles, Shure, Neumann TLM170. Monitor Speakers: Norberg BCS-16, JBL 4612, KEF 103.3. Power Amplifiers: Haller DH-200, Haller DH-220. Rates: Base rate \$65/hr variable pending project requests. Extras & Direction: Ron Streicher has an international reputation for "live-to-stereo" audio projects on location as well as in the studio. As owner of Pacific Audio-Visual Enterprises, he provides cost-effective, quality-oriented services by specializing in basic, time-proven production techniques—without unnecessary fuss or gimmickry. The result: a successful job... on time, and within budget. With a lifelong background in music presentation, Ron is well qualified to serve as a music consultant as well as engineer on any project: location or studio recording or broadcast, live concert sound reinforcement,



RECORD PLANT INC  
Los Angeles, CA

**RECORD PLANT INC:** Audio Recording; 1032 N. Sycamore; Los Angeles, CA 90038; (213) 653-0240. Contact: Mark Eshelman. **REMOTE RECORDING** Vehicles: (2) GMC bobtails w/full air cond and heat, air ride suspension; Mobile Unit II 29'2" x 8'4". Mobil Unit III 34'4" x 8'4". Mixing Consoles: Mobile unit II API 44 x 24 16-bus full patch bay, designed specially for live recording applications, Mobile unit III API 44 x 32, 24-bus full patch bay, designed for live recording applications. Audio Recorders: Otari MTR-90 24-track analog, Ampex ATR-102, Ampex ATR-104, Sony 3324 digital recorders available, Mitsubishi 32-track recorders available. Noise Reduction Systems: Dolby A. Synchronization Systems: Lynx 2 channels. Microphones: Microphones supplied according to production requirements. Stock includes most recording quality makes and models. Monitor Speakers: Mobile unit II: JBL 4320, Mobile unit III: Meyers ACD, Auratones, Yamaha NS-10s, Yamaha NS-20s, etc.

**RECORDING SERVICES COMPANY:** Audio Recording; 2414 W. Olive Ave.; Burbank, CA 91506; (818) 843-6800. Contact: John Molino; **REMOTE RECORDING** Vehicles: One-ton Dodge conversion remote recording audio truck. Total outside dimensions: 19 x 8 x 10'8". Control Room Dimensions: 12'5" x 7'4" x 7'9". Mixing Consoles: Audiotronics 501 26 x 16 x 4, Soundcraft 200B 24 x 4 x 8, Yamaha PM180 6 x 2, custom submixer (line level) 12 x 2. Audio Recorders: (2) Otari MTR-90II 24- and 16-track, (3) Ampex MM1200 24-, 16- and 8-track, Otari MX70 16-track 1", Otari MX5050 8-track 1/2", Ampex ATR 100 4- and 2-track. Noise Reduction Systems: Dolby SR, Dolby A. Synchronization Systems: Lynx, BTX Shadow Outboard Equipment: Lexicon 224XL, Lexicon 200, Lexicon 97 Super Prime Time, (2) dbx 160, Teletronix LA-2A (tube limiter), (2) UREI 1176LN, (2) UREI LA-3A, UREI LA-4.

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Microphones: AKG 451, AKG 414, Sennheiser 416, Sennheiser 421, Sennheiser 441, Shure SM57, Shure SM58, Shure SM59, E-V RE20, Sony ECM-50, other mics available upon request. Monitor Speakers: JBL 4311, Auralone 5C. Power Amplifiers: BGW 750, BGW 250, Crown D60. Video Recorders: JVC 850 ¾" VCR, JVC 6650 ¾" VCR. Video Monitors: Panasonic GT-S1300N 12" color, (3) Philips 5" B&W

**ROD'S SOUND SYSTEM;** 720 Bernard St., Los Angeles, CA 90012; (213) 342-9015. Contact: Rod Chushan. **SOUND REINFORCEMENT** Touring Radius: Local. Maximum Venue Size: 3,000 people indoor and 2,000 outdoor. Vehicles: Rental vans etc. House Loudspeakers: (2) JBL 4628B, (4) Carvin cone mid range w/E-V 12L horns, (4) JBL 4627B, (2) JBL 4690, (2) Toa 380SE, (4) JBL 2350 w/2482, (4) bass bins, (8) Gauss 4582, (4) E-V DHIA, (4) JBL 2404H, (4) JBL bass bins (custom made), (4) JBL 2380 w/2441 drivers, (4) JBL 2770. Flying System Available: No. Monitor Loudspeakers: (4) E-V 200S w/EQs, (2) Toa 38SDM 3-way 15", (2) JBL L-110, (2) JBL 4612B. House Consoles: (2) Toa MX106, Toa MX104, Yamaha PM180. Soundcraft 200 16 x 4 x 2. Monitor Consoles: Ramssa WR8112 12 x 4 x 2. Outboard Equipment: (3) SAE 2700B EQ, UREI 537 EQ, Toa RE12 EQ, (3) Orban 622B, Orban 464A, dbx 166 limiter, (3) Yamaha F1040 4-way crossover, (2) SAE 4000 active crossover, (3) Yamaha SPX90, Yamaha REV7 Aphex Type C Aural Exciter, (5) Technics MK1200 MkII turntables, (2) Nakamichi Pro cassette decks, Aiwa 990 cassette decks, Rane AC22 active crossover, Rane AC23 active crossover, Tascam 122B cassette deck, UREI 1178 limiter, Biamp 8000 mixer, Klark-Teknik DN360 EQ, Tascam C1, Ursa Major SST 282 Space Station, Yamaha DSP1, (2) Crown SL-2 pre-amp. Power Amplifiers: SAE X-25A, SAE 2401, SAE A501, BGW 8000, BGW 750B, BGW 7000, BGW GTA Crest 4000, Fender 2244, Fender 2224, Harman Kardon Citation 16A, Crown PL2, Marantz P510M, Acoustech Model 1, Marantz 250M. Microphones: (6) Sennheiser MD-431, (2) Sennheiser MD-441, (12) Shure SM58, (2) Shure 535SD, (2) Shure PE85L-SP, (2) Shure PE50SP, Beyer M260, Telex FMR-2 wireless, (3) E-V RE20, E-V PL9, E-V 635A. Lighting: Effects (rental). Other Equipment: Irie 1E-1CA, Irie 1E-30A, (23) Pro-Co 16 x 4 stereo snake, (22) Atlas mic stands, Fluke DMM 8060A, (4) E-V 200S stands, (4) Atlas speaker stands, Tektronix 485B scope, HP Audio 201C oscillator, (8) Audio-Technica AT8512 DIs (passive), (2) Pioneer CD players, Pioneer R/R tape 15 ips 17", Goldline ASA20B. Rates: (Negotiable) depending on equip. setup

**ROUNDUP SOUND & LIGHTING;** Sound Reinf., Lights, Staging; 396 Corbett Canyon Rd., Arroyo Grande, CA 93420; (805) 489-2337. Contact: Doug Fleenor. **REMOTE RECORDING** Extras & Direction: Roundup Sound & Lighting specializes in medium-sized events. Sound systems range from 1,200 watts to 12,000 watts and feature all JBL speakers, Carver and BGW amps, Rane signal processing and a variety of mixers. Roundup Sound's lighting system currently consists of 36 channels of 1,200 watt dimming and a 48-channel computer assisted console (Teatronics Producer II). Instruments include Thomas PAR 56 and PAR 64 cans fitted with Raylites and FF series 1Ks, two Phoebe Ultra Quartz follow-spots and a variety of ACLs, railights, ellipsoidal spots and a Rosco logger. Roundup Sound has purposely remained small so that our services fit into our clients' budgets. We are experienced in working small venues where ceiling height, available power and other limiting factors place the larger companies at a disadvantage.

**R.S.V.P.;** Sound Reinf., Audio & Video Recording; San Diego, CA; (619) 589-2912. Contact: R. Pitt

**SCHUBERT SYSTEMS GROUP;** Sound Reinf.; 7325 Hinds Ave., North Hollywood, CA 91605; (818) 503-1234. Contact: Dirk Schubert, Mike Ferrara

**SELAH RECORDING STUDIO;** Audio & Video Recording; 9190 Poppy Circle, Westminster, CA 92683; (714) 898-5220. Contact: Dave Gehlhar

**SHADOWFAX AUDIO SYSTEMS;** Sound Reinf.; 841 Barton Ave., Camarillo, CA 93010; (805) 484-4284. Contact: Doug Colier

**SIDESTREAM SOUND;** Sound Reinf., Audio Recording; 5013½ Narragansett Ave., San Diego, CA 92107; (619) 222-0238. Contact: Ken Totten

**SILVERADO SOUND;** Sound Reinf.; PO Box 1502; Morro Bay, CA 93442; (805) 772-5833. Contact: Paul or Scott

**SONIC SOUND PRODUCTIONS;** Sound Reinf., Rental, Audio Recording; PO Box 5000; Huntington Beach, CA 92615; (714) 969-7376. Contact: Wayne Birkle

## SO. CAL & HAWAII

# REMOTE RECORDING & SOUND REINFORCEMENT

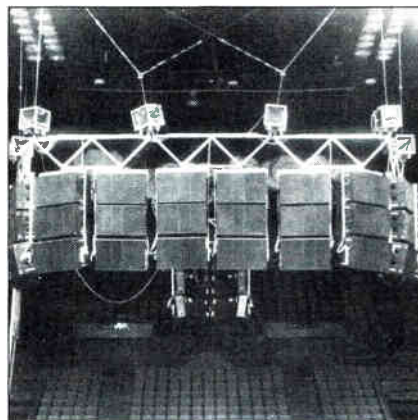
**SOUND CONSULTANTS;** Sound Reinf., Audio & Video Recording; 6874 Clara Lee Ave., San Diego, CA 92120; (619) 286-3538. Contact: V. Burke

**SOUND IMPROVEMENTS;** Sound Reinf., Audio Recording; 4942 Whitsett Ave., #206; North Hollywood, CA 91607; (818) 509-8194. Contact: Jerry Rothery

**SOUND SOLUTIONS;** Sound Reinf., Lights, Staging, Rental, Audio & Video Recording; 1543 7th St., Santa Monica, CA 90401; (213) 393-5332. Contact: David Epstein

**SOUND TECHNIQUES;** Sound Reinf., Rental, Audio & Video Recording; PO Box 648; North Hollywood, CA 91603; (818) 764-3355. Contact: Denny McLane

**SOUNDCHASER RECORDING STUDIOS;** Audio Recording; PO Box 267; Laie, HI 96762; (808) 293-2789. Contact: Brett Butterfield



**SPEEDA SOUND**  
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**SPEEDA SOUND;** Sound Reinf., Rental; 3279 W. Sussex Way; Fresno, CA 93722; (209) 227-2203; (209) 227-2209. Contact: Mike King, Carnot Pease

**JAY STAGGS CASSETTE DUPLICATION;** Sound Reinf., Audio & Video Recording; 7419 Florence Ave., Downey, CA 90240; (213) 928-7516. Contact: Rep

**STAGING TECHNIQUES;** Sound Reinf., Staging, Rental; 1921 Wilcox Ave., Hollywood, CA 91504; (213) 874-5106. Contact: Mark Cummings, Bruce Falls

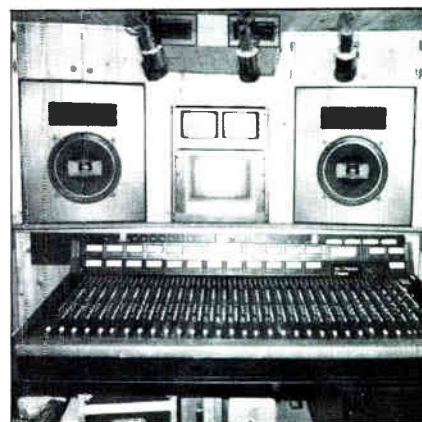
**STEPHEN'S SOUND;** Sound Reinf.; 1801 Pacific Ave., Norco, CA 91760; (714) 371-4975. Contact: Steve Wright

**STUDIO FIVE SOUND;** Sound Reinf., Rental, Audio Recording; PO Box 4291; Point Mugu, CA 93042; (805) 485-7454. Contact: Jim Pearson. **REMOTE RECORDING** Extras & Direction: Studio Five Sound specializes in high-quality sound reinforcement for both indoor and outdoor situations, from conference rooms to football stadiums. Studio Five Sound also does complete sound system design and installation for new and upgraded systems. Rental equipment listings, prices and customer references are available on request. Our remote recording facilities include a Tascam M-70 recorder with dbx noise reduction. To complete your project, Studio Five also does cassette duplication in-house on our 10-station real-time duplication system. Prices are available on request.

**STUDIO M PRODUCTIONS UNLIMITED;** Sound Reinf., Audio & Video Recording; 8715 Waikiki Station; Honolulu, HI 96830; (808) 734-3345. Contact: Mike Michaels



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**STUDIO ON WHEELS;** Sound Reinf., Rental, Audio Recording; 339 Windsor Rd., #6; Glendale, CA 91204; (818) 243-6165. Contact: John Falzarano

**SUPERSOUND STUDIO;** Sound Reinf., Rental, Audio & Video Recording; 8946 Ellis Ave., Los Angeles, CA 90034; (213) 836-4028. Contact: Morris Golodner

**THE TRUCK MOBILE RECORDING;** Audio Recording; PO Box 106; Ventura, CA 93002; (805) 653-5557.

**TRUSCOTT SYSTEMS;** Sound Reinf., Lights; 3509 Glade St., San Diego, CA 92115; (619) 287-4136. Contact: Dan Truscott

**VJ ELECTRONICS, INC.;** Sound Reinf., Rental; 22127 S. Vermont Ave., Torrance, CA 90502; (213) 533-5980. Contact: Gary Ford

**WEST COAST SOUND SERVICE, INC.;** Sound Reinf.; 3500 W. Moore, Ste. C; Santa Ana, CA 92704; (714) 850-0471. Contact: Mark Williams

**WESTERN ELECTRO-ACOUSTIC LABORATORY, INC.;** Sound Reinf., Audio Recording; 1711 16 St., Santa Monica, CA 90404; (213) 450-1733. Contact: Neil A. Shaw

**EVAN WILLIAMS AUDIO/VIDEO STUDIOS;** Sound Reinf., Audio & Video Recording; 1519 S. Grand Ave., Santa Ana, CA 92705; (714) 543-6155.



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These are the remaining Mix Directories for '88. Don't miss out.

**September: Southern California & Hawaii Studios Directory**

**(Deadline: June 3)**

**October: North Central & Canadian Studios Directory**

**(Deadline: July 5)**

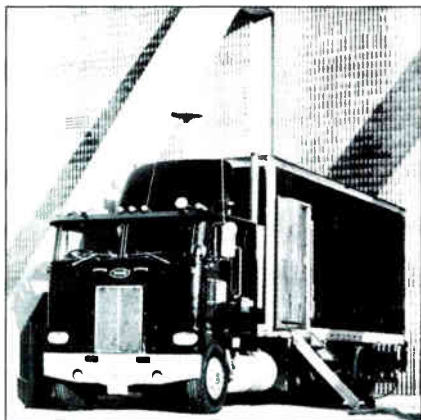
**November: AES/New Products Directory**

**(Deadline: August 5)**

**December: Mastering/Pressing/Tape Duplication Directory**

**(Deadline: September 6).**

**REMOTE MEN VISUAL MUSIC ENTERPRIZES;** *Audio & Video Recording;* PO Box 791; Flushing, NY 11352; (718) 886-6500. Contact: Steven Remote



REMOTE RECORDING SERVICES, INC  
Lahaska, PA

**REMOTE RECORDING SERVICES, INC.; Audio Recording;** PO Box 333, Lahaska, PA 18931; (215) 794-5005. Contact: David Hewitt, Phil Giotner. **REMOTE RECORDING. Vehicles:** 36' custom Peterbilt tractor van, tandem axle air-ride w/on-board generator. Control Room Dimensions: 8 x 9 x 24. **Mixing Consoles:** API 44 x 32/96 mix, Studer 962 14 x 4, Studer 961 10 x 2, (3) Yamaha PM160 6 x 2 rack mount mixers. **Audio Recorders:** (2) Ampex MM1200 24-track, (2) Sony 3324 24-track digital [available], (2) Studer A810 2-track w/time code, Sony PCM-710 digital w/Agogee filters and BVU-820 available, Sony PCM-701 digital w/Beta SLHF-900. **Synchronization Systems:** Lynx TimeLine modules available for each recorder. **Outboard Equipment:** (4) UREI LA-3A limiters, (4) UREI 1176 limiters, (8) dbx 903 compressors, (4) Valley People Dyna-Mite gates, (2) Dynalox noise filters, Yamaha REV7 reverb, Lexicon PCM60 reverb, Ursa Major 8 x 32 reverb, rack of API equalizers and limiters. **Microphones:** AKG D12, AKG 414EB, AKG 451 Systems [CK-1/CK-5/CK-8/CK-9/VR-1/AS1], Beyr 88, Beyr 160, Beyr 500, Countryman Type 85 Dis, E-V RE15, E-V RE16, E-V RE20, Neumann U87. **Seamless:** 421, Sennheiser 421, Sennheiser 431, Shure SM17, Shure SM53, Shure SM54, Shure SM57, Shure SM58, Shure SM59, Shure SM77, Shure SM81, Shure SM85, Sony 535, Sony 536, Sony C-48, Sony ECM-50, Wahrenbrock PZMs, plate and LAW Monitor Speakers: (2) Westlake w/TAD drivers, (2) CSI MDM-4, (2) Yamaha NS-10, (2) Auratone, (2) Hartke M-18. **Power Amplifiers:** (2) Briston 4B on Westlakes, Briston 4B or Crown D150 on small speakers. **Video Recorders:** (2) Sony HF-900 Beta VCRs, (2) Sony BVU-820 VCRs. **Video Monitors:** (2) Sony 19" monitors, (3) Sony 5" monitors available. **Cameras:** (2) CCTV cameras for stage use. **Other Major Equipment:** Extensive cable and splitters available for the really big remotes. **Rates:** Call for quote. **Extras & Direction:** Our 24 inputs of Studer console are available in road cases with a 24-input Jensen splitter system, MDM-4 speakers and any level of support gear necessary for the live stereo recording. The Studer 810s, Sony PCM-1610 or PCM-701 digital systems are available as recorders. Any of these items may be rented individually. We are pleased to announce the opening of our new facility in Bucks County, PA, centrally located between New York and Philadelphia.

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**SEE FACTOR INDUSTRY INC;** *Sound Rein., Lights, Staging, Rental*; 37-11 30th St; Long Island, NY 11011; (718) 784-4200. **SOUND REINFORCEMENT** Touring Radius: National. Maximum Venue Size: Unlimited. Vehicles: Air-ride tractor trailers. House Loudspeakers: Meyer MSL-3, Meyer 650-R2 subs, Meyer UPA-1A, Meyer USW subs, Martin 4-way (JBL components). Flying System Available: Yes. Monitor Loudspeakers: Meyer UM1-A, Meyer USW subs, Meyer MSL-3fills, Martin LE200 (JBL 15" L, JBL 2" driver), McCauley 2 x 12 w/12" driver, JBL SFI 3-way fills. House Consoles: Midas Pro 40 split 48-channel, Midas Pro 5 split 36-channel, Midas Pro 5 32-channel, Yamaha PM3000. Monitor Consoles: Midas Pro 40 32 x 12, Soundcraft 400B 24 x 10, Soundcraft 200B 16 x 4, Audioarts 24 x 10. Outboard Equipment: Klark-Teknik EQs, Broomie-Siren crossovers, Audioarts crossovers, dbx 900 racks w/assorted comp/lim/gate and parametric EQ, Lexicon 224XL, Lexicon Prime Time, Lexicon Super Prime Time, Eventide 9495 Harmonizers, Roland SDE-3000, Roland 555, Yamaha SPX90, Yamaha REV7, Urei. White analyzers, Tascam 122, Tascam 44. Power Amplifiers: Crest 4001, Crest 8001, Crest 3500, Crest 2500. Microphones: Shure SM57, Shure SM58, Shure SM77, Shure SM7B, Shure SM81, Shure SM85, Shure SM87, Meyer M88, AKG 414, AKG 451, AKG D12, Sennheiser 421, Sennheiser 441, E-V RE20, E-PZM, Countryman DIs. Lighting: Strand automated units/controls, Avolites 60-96 channel, Av QM500 90- and 180 channels, Avolacue controllers, Kiegl Performers, Strand Light Palettes, LMI dimmers 1K/2.4K/12K modules, unlimited trussing in box, triangle and custom designs. Other Equipment: Complete line of rigging accessories and controls, CM Loadstar 1- and 2-ton hoists w/up to 120' of lift available in single or 3-phase power, Bergen Xenon projectors, Miniac 16mm projectors, assorted lenses, AVL Genesis II computer controls, AVL Eagle, AVL Dove, Sony 13"19"/25" color monitors, Sony 3/4" Beta decks w/editors, Kodak E2 on film stackers, rear projection screens. Rates: Call.

**SHANGRILA SOUND;** *Sound Reinf., Lights;* 625 Berdan Ave.; Wayne, NJ 07470; (201) 694-7867. Contact: Jeff D Windwer.



**SHEFFIELD AUDIO-VIDEO PRODUCTIONS**  
Phoenix, MD

**SHEFFIELD AUDIO-VIDEO PRODUCTIONS, Audio & Video Recording;** 13816 Sunnybrook Rd., Phoenix, MD 21131; (301) 628-7260. Contact: Richard Van Horn, Nancy Riskin

**REMOTE RECORDING Vehicles:** 30 custom-built diesel Mack truck with heated and air conditioned control room, (audio), 22" Isuzu (video). Control Room Dimensions: Spacious oak and carpeted control room, heated and air conditioned. Mixing Consoles: Neve 8088 MkII 32-input, Neve 5104 24-input, Amek 2-track 16-input. Audio Recorders: (2) Sony 3324 digital multi-track recorders, (2) Otari MTR-90II multi-track analog recorders, (2) Sony 3202 2-track digital, (2) Sony DMR-4000 digital master recorder, Sony PCM-1630 digital processor. Noise Reduction Systems: Dolby A 24 channels. Synchronization Systems: BTX Cypher time code generator/recorder/inserter. Outboard Equipment: (2) UREI 1176, UREI LA3A, Ashly stereo gates, (2) dbx 160X, dbx 162, Lexicon 200, (4) 2-track limiter/compressors, Tascam 122 MkII cassette decks, Otari time record. Microphones: Shure, Sony, Beyer, AKG, Crown P2M. Sennheiser, Neumann.

**Monitor Speakers:** UREI 811B, Yamaha NS-10. **Power Amplifiers:** Crest, BGW. **Video Recorders:** (2) 1" VTRs. 3/4" Video Monitors: Sony. **Switchers:** Grass Valley 1600. **Cameras:** Sony BVP-30, (2) Thompson 601A. **Other Major Equipment:** 350' of 52-pair audio cable w/Jensen 48-channel transformers, isolated mic splits, 500' of power cable, Liebert computer power regulator. **Rates:** Upon request. **Extras & Direction:** We specialize in digital multi-track and digital 2-track recording for all musical projects and audio for video. Our trucks are housed indoors at our facility in Maryland. All equipment including the dual multi-track digital recorders are owned by Sheffield and kept in excellent condition. We can also offer you video interlocked studio mixing packages using our Solid State Logic 4000E console. Credits include Luciano Pavarotti, Yo Yo Ma and Leonard Bernstein for Deutsche Grammophon, Jean Michel Jarre-Rendezvous concert in Houston-Polygram, Harry Chapin in Tribute featuring Pat Benatar, Paul Simon, the Hooters, Graham Nash and Bruce Springsteen (live at Carnegie Hall). **PBS-On Stage at Wolftrap Series and Live New Years Eve Broadcast** and much more.

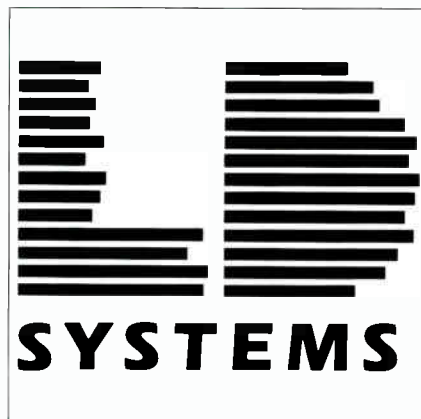
**SHOWTIME SOUND SERVICES, Sound Reinl;** PO Box 3372; Westport, MA 02790; (617) 636-6040. Contact: Lloyd Jacobsen. **SOUND REINFORCEMENT** Touring Radius: Regional. Maximum Venue Size: 15,000 seats. House Loudspeakers: Modular 2-Box System, 4-way active. Monitor Loudspeakers: JBL 15", Renkus-Heinz 2" floor wedges, EVM 12". EAW, Inc. 1" floor wedges. House Consoles: Matrix custom console 24 x 8 x 6, Allen & Heath, Tangent, Kelsey. Monitor Consoles: Allen & Heath, Kelsey. **Outboard Equipment:** dbx compressors, Loft compressors, Loft noise gates, Yamaha EQs, Ashly EQs, Ursa Major reverbs, Yamaha reverbs, ART reverbs, DeltaLab DDLs, ADA DDLs, Korg DDLs. Loft cross-overs, Crown crossovers. Power Amplifiers: Crown, QSC. Microphones: AKG, A.T., Beyer, Shure, E-V, Sennheiser.

**SHUSTER SOUND;** *Audio Recording*; 29 Burt Ct.; Valley Stream, NY 11581; (516) 791-2985. Contact: Bob Shuster.

**SIGNET SOUND;** *Sound Reinf., Rental*; 115 E. 87th St., Ste. 10A; New York, NY 10128; (212) 860-0010. Contact: D.B. Weiss



**LARR CO. INDUSTRIES OF TX./KLARR SATELLITE RADIO/RECORDING DEPT.:** Audio & Video Recording; PO Box 3842; Houston, TX 77253; Contact: Dr. L. Herbst.



**L.D. SYSTEMS**  
Houston, TX

**LD SYSTEMS, INC.; Sound Reinf., Lights, Rental;** 467 W. 38th St.; Houston, TX 77018; (713) 695-9400. Contact: Mark Howard, Andy DiRaddo, Charlie Burns. **SOUND REINFORCEMENT** Touring Radius: Local, regional, national. House Loudspeakers: LD Systems 2 x 4 (2-box 4-way system), LD Systems 3 x 4 (3-box 4-way system), Meyer UPA-1/US-W speaker system, Turbosound TMS-3 system. Flying System Available: Yes. Monitor Loudspeakers: LD Systems bi-amp wedges, LD Systems 3-way side fills, Turbosound TMS-3 side fills, LD Systems 3-way drum fills. House Consoles: Soundcraft, Yamaha. Monitor Consoles: Soundcraft, Interface. Outboard Equipment: Lexicon, Eventide, dbx. Yamaha Power Amplifiers: QSC. Crest Microphones: Shure, Beyer, AKG, Sennheiser, E-V. Lighting: Thomas trussing, upright trussing, interlock trussing, Celco CAE, Spectrum, Digital. Other Equipment: CM Lodestar chain motors, Genie super towers, Vermette lifts. Rates: Negotiable. Extras & Direction: Professional sound reinforcement and lighting systems available for local, regional and national touring. Systems capabilities include show-case venues, rock and roll arenas, outdoor events and conventions. Services range from direct equipment rental to full systems with crews. Staff are experienced sound and lighting engineers. All services are supported by LD Systems' pro audio sales and manufacturing divisions which are involved with full sound system, instrument system and recording system design, fabrication and installation. Lighting services include retail sales, systems design and installation.

**LEO SOUND; Sound Reinf., Lights;** 121 Irene; Elgin, TX 78621; (512) 285-2214. Contact: Harold Haisler. **SOUND REINFORCEMENT** Touring Radius: Local. Vehicles: 1987 Ford F800 tractor w/28 x 8 cargo trailer. House Loudspeakers: (6) Dietz 215BPA, (4) Dietz 112MB, (2) Altec Manary horn/Altec 29/driver, (2) E-V HR60-40 horn/Altec 29/driver, (2) Renkus-Heinz ST-1/1800 driver. Flying System Available: No. Monitor Loudspeakers: (11) Dietz 112HM, (4) Dietz 115H. House Consoles: Ramsa 8724 24 x 4, Sunn 2216 16 x 2. Monitor Consoles: TAC Scorpion 30 x 12, Kelsey Slagmire 16 x 4. Outboard Equipment: (2) Biamp 230 2/3 EQ, Biamp 210 octave EQ, ART 171 2/3 EQ, (3) ART 172 1/3 EQ, UREI 527 1/3 EQ (3) Dietz 6-band parametric EQ, Roland SRE-2000 digital reverb, Vesta Fire RVD1 digital reverb, Roland SDE-3000 digital delay, Roland 555 tape delay, (2) Omni Craft 4-channel noise gates, (2) dbx 160X compressor/limiter, Ashly CL50 compressor/limiter, Aphex Type C Aural Exciter, TEAC 122 cassette tape machine. Power Amplifiers: (2) Crest 3501, (4) Crest 5001, (4) Peavey CS800, Peavey CS400. Microphones: (4) Sennheiser 421, (2) Sennheiser 431, (4) Fender P1, Shure SM81, (8) Shure SM57, (2) AKG C535EB, AKG D1000E, AKG D112, (2) Countryman EM101, (2) E-V PL9, (5) E-V DS35, (5) E-V PL76, (6) Countryman DI, (6) Dietz DI. Lighting: Mirage 1,000-watt follow spot, Sunn PLC816 controller w/(2) PS600 dimmers and (2) PS1200 dimmers, (16) PAR 56 cans. Other Equipment: HM Electronics RP732 2-circuit communication station, (2) HM Electronics BH720 single-channel belt stations, (2) Clear Com RS501 single-channel belt stations, (4) Beyer DT108 single muff headset, Dietz 32 x 3 200' transformer isolated splitter snake, Dietz 16 x 2 100' transformer isolated splitter snake.

**MAGNUM SOUND; Sound Reinf., Lights, Staging, Rental;** 245 S. Plumer, #21; Tucson, AZ 85730; (602) 623-2456. Contact: Tom Dubielak, Mark Gillis. **SOUND REINFORCEMENT** Touring Radius: Regional. Maximum Venue Size: 8,000. Vehicles: (2) 14' box trucks w/lift gate. House Loudspeakers: (24) Mag-Tops™, (2) JBL 2220 15", JBL 2441 on McCauley 482 horn/(2) bullets, (10) JBL double scoops, (12) JBL 18" sub enclosures, (10) dual 15" folded enclosures. Flying System Available: Yes. Monitor Loudspeakers: (8) Mag-Monitors®, E-V 15" pro-line, RH3300 2" horn, (8) JBL 12"

w/horn driver on community lens, (6) side fill/drum fill, JBL 2482 on McCauley 482 horn, (10) single 15 w/1" horn. House Consoles: Soundcraft 200B 24 x 4, Soundcraft 400B 16 x 4, (2) Studiomastr 24 x 8, (2) Studiomastr 24 x 4. Monitor Consoles: Studiomastr 24 x 8, Magnum monitor desk 16 x 8, Yamaha 2408. Outboard Equipment: (2) Yamaha REV7, (2) Yamaha SPX90, Lexicon PCM60, (2) Alesis XTC, (2) Alesis MIDiverb, (3) DeltaLab 1024, DeltaLab DL-4, Roland SDE-1000, Lexicon Prime Time, (3) Yamaha compressor/limiters, (2) UREI LA-4, (2) dbx 165, (4) Yamaha 2031 EQs, (8) various 1/3-octave EQs/RTAs, (2) Furman quad gates, Aphex Aural Exciter, (2) Harmonizers. Power Amplifiers: (8) Yamaha 2200, (8) Carver 1.5, (10) Crown DC300, (8) BGW 8000, (8) Crest 4500. Microphones: (8) Sennheiser 421, (20) Shure SM58, (20) Shure SM57, (6) AT 801, (4) Beyer 69, (4) Beyer 201, (4) Beyer M-600, (2) Telex wireless, (3) HME wireless, (2) AKG D12e. Staging: Available. Drums, guitar amps, bass amps. Lighting: (200) PAR cans, (2) James XY-16 controllers, 150K dimming, Berkey, ETA Spectrum, James. Other Equipment: Yamaha DX7, Ensoniq Mirage, Yamaha KX5, Prophet 600, communications systems, (4) follow spots. Rates: Quite reasonable please call.

**MIDCOM, INC.; Audio Recording;** 3 Dallas Comm. Complex, Ste. 108; 6311 N O'Connor Rd., LB-50; Irving, TX 75039; (214) 869-2144. Contact: Mike Simpson. **REMOTE RECORDING** Vehicles: 1982 GMC 24' straight truck. Control Room Dimensions: 8 x 20. Mixing Consoles: Soundcraft TS-24 32-channel console w/custom, 8 stereo/16 mono submaster routing system, 32 x 24 x 16 x 2 x 1, Soundcraft Series 200B 16 x 4 x 2. Audio Recorders: (2) Otari MTR-9011 24-track, Otari MX-5050-BII 2-track, Studer A810 2-track w/center time code track, Nakamichi MR-1B, Otari DTR-900 32-track digital available on request. Noise Reduction Systems: TTM 24-channel noise reduction, Dolby, dbx, Telcom. Synchronization Systems: Cipher Digital Shadow II w/Shadowpad, Cipher Digital "Cipher" Time Code generator/reader. Outboard Equipment: Lexicon 224XL digital reverb, Lexicon 480L digital effects processor, Lexicon Model 95 Prime Time II, Eventide H910 Harmonizer, dbx Series 900 frames equipped w/903 comp/limiters, 904 noise gates, 905 parametric EQs, MICMIX dyanex/exciter cards, Lexicon PCM70 digital reverb, (2) dbx 160X compressor/limiter, (2) Aphex compellers. Microphones: Neumann U89, Neumann TLM170, Neumann KM84, AKG C414, AKG EBP48, Schoeps CMCS, Schoeps MK5, Sennheiser MD-441, Sennheiser MD-421, Beyer M69, Beyer M88, Beyer M500, Beyer M201, Beyer MC734, Shure SM58, Shure SM57, Shure SM81, Shure SD85, Crown PZM GPB30, (2) Crown 2LV. Cetec Vega R42 handheld and lavalier wireless microphone systems available at extra charge. Monitor Speakers:



**MIDCOM, INC**  
Irving, TX

(2) JBL 4430 Bi-radial monitors w/White 1/6-octave EQ, (2) Auratone 5C monitors for near field, Tannoy NFM8 near field. Power Amplifiers: Hafler P-505, Hafler P-230 operating in a bi-amped mode, BGW 150 for Auratones. Video Recorders: Sony VO-5800 3/4" U-matic, Panasonic AG-6800 1/2" VHS Hi-Fi Video Monitors: Sony CVM-1900 19" NTSC monitor/receiver, (2) Ball 9" B&W monitors. Switchers: (2) Panasonic 2 x 1 routing switchers, (3) ADC "Humbuckers", (8) external inputs. Other Major Equipment: Communications systems: RTS 3-channel dual listen intercom, Clear Com 2-channel intercom, both interfaced to full duplex FM on-board repeater system w/business band and motion picture service frequency synthesized remote radios. 10-line key telephone system, RCC and cellular mobile telephones. RTS 414 and 416 distribution amplifiers, Primus distribution amplifiers, custom 1 x 1 buffer/distribution amplifier capable of driving at 28 dBm, Telco interface via 48 pair ADC Ultrapatch to dedicated patch panel, each pair w/separate resistive termination and/or capacitive coupling, (4) RDL on board for auto answer, stand-by program feeds, 400' power and 42-pair snake on DC motor-driven reels. Extras & Direction: Past projects include Great Performances Series for PBS, "Dolly" ABC-TV prime time, "The Texas Debates" presidential debates for American Public.

—CONTINUED ON THE NEXT PAGE

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## SOUTHWEST

# REMOTE RECORDING & SOUND REINFORCEMENT

—CONTINUED FROM THE PREVIOUS PAGE

Radio, George Strait, MCA Home Video; 7th Van Cliburn Competition, American Public Radio; Benjamin Lees' *Memorial Candles*; American Public Radio; score for Texas, Dramaflex production at Palo Duro Canyon; *Fashion Hit Revue*, Sanger Harris live TV special; Mary Kay Cosmetics 1985 and 1986 seminars, League of Women Voters, 1984 Democratic Presidential Candidates Debate, PBS network special, Bob Banner Associates' *Face of the '80s* syndicated TV special; ACTS TV Network, *Country Crossroads*, two 13-week series; Bob Stivers Productions' *Stars Salute the U.S. Olympic Team*, NBC prime time special, Bugs Henderson live LP project; two live albums for The Vocal Majority, *Miss Texas USA Pageant*, network special; *Carman in Concert*, Word Records/Word Home Video.

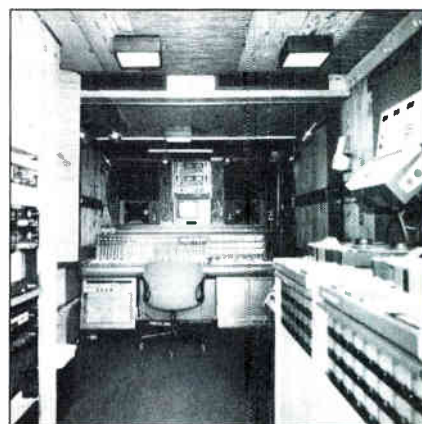
**MODERN MUSIC VENTURES INC./SUGAR HILL RECORDING STUDIOS:** *Sound Reinf., Lights, Rental, Audio Recording*; 5626 Brock St.; Houston, TX 77023; (713) 926-4431. Contact: David A. Thompson.

**MP PRODUCTIONS, INC.:** *Sound Reinf., Lights, Staging, Rental*; 1601 Westpark Dr., Ste. 8; Little Rock, AR 72204; (501) 664-2183. Contact: Mike Pope, Scott Thompson; **SOUND REINFORCEMENT** Touring Radius: National Maximum Venue Size: 80,000 Vehicles; 48' x 96' air ride trailers w/Ryder air ride trailers. House Loudspeakers: (60) cabinets of MP Production 2-box system, (30) lo-frequency enclosure has (4) JBL 15" front loaded and vented, (30) mid hi-frequency enclosure has (4) JBL 12" sealed, (2) JBL 2445 2" on JBL 2385 horn and JBL 2405 tweets. Flying System Available: Yes Monitor Loudspeakers: Red System wedges, JBL 15", JBL 2", Gray System wedges, (2) JBL 12", JBL 2", side fills and drum fill 2 per placement JBL 18", JBL 2". House Consoles: Soundcraft 8000 40 x 8 x 2 w/effects return, Soundcraft 800B 32 x 8 x 2 w/matrix, Yamaha PM3000, Midas, Gamble and others available on request. Monitor Consoles: Soundcraft 500 40 x 12. Outboard Equipment: White 4000 equalizers, Brooke-Siren crossovers, UREI crossovers, Lexicon 200, Yamaha REV5, Yamaha REV7, Yamaha SPX90II, Roland SPV-2000, Roland SDE-2500, Roland SDE-1000, Eventide 949H, Valley People Dyna-Mite gates, dbx 904 gates, dbx 903 compressors, dbx 905 para EQ, dbx 160X compressors. Power Amplifiers: Carver PM 1.5 house, Crown PSAll monitors. Microphones: Beyer M88, Beyer 201, Sennheiser 421, Sennheiser 441, Shure SM58, Shure SM57, Shure SM81, Shure SM85, E-V RE-20, C-ducer, Countryman Isomax and DI. Lighting: Avolights, Celco, Thomas, L&E, Thomas clone and custom 9' trussing. Other Equipment: (24) Loadstar 1-ton motors w/all wire and electrical. Rates: Reasonable and competitive.

**OB STUDIOS:** *Sound Reinf., Rental, Audio Recording*; 5932 N. Grove; Oklahoma City, OK 73122; (405) 721-3727. Contact: Larry G. O'Rear.

**O.K. SOUND AND LIGHTING:** *Sound Reinf., Lights, Rental*; 6040 Brittmore, Ste. "O"; Houston, TX 77041; (713) 896-1130. Contact: Jim Johnson, Rich Bunch, Charlie Carter.

**OMEGA AUDIO & PRODUCTIONS, INC.:** *Audio Recording*; 8036 Aviation Pl.; Dallas, TX 75235; (214) 350-9066. Contact: Paul A. Christensen; **REMOTE RECORDING** Vehicles: 1978 GMC Loadstar (35') w/crew sleeper and power tailgate. Refueling travel range: 850 miles. Power requirements: 220 VAC. 100 amp. Power isolation transformers with center tap neutral provided. Control Room Dimensions: 20 x 8 x 10. Mixing Consoles: API 32 x 32 mixing console w/API 550A EQ, Soundtracs 24 x 24, Hill 16 x 8 x 4 x 2, program buses equipped w/8 stereo VCA groups. Additional inputs available on request. Audio Recorders: (2) Otari MTR-90 24-track, (2) Otari MTR-10 4-track 2-1/4-track w/center stripe TC, Mitsubishi X-80 2-track digital, (2) Technics 2-track cassette, Sony PCM-F1 2-track digital. Noise Reduction Systems: TTM Dolby/dbx rack 24 channels. Synchronization Systems: BTX 4700 Shadow. Outboard Equipment: Teletronix LA-2A limiter, dbx 165 limiter, (7) dbx 160 limiter, ADP Vocal Stressor, (2) UREI 1176LN limiter, Lexicon 224XL digital reverb, MXR old digital reverb, (2) Yamaha SPX90 special FX processor, (4) DeltaLab Super Time Line, (2) dbx 162 limiter, Kexpex gate, Bercus-



**OMEGA AUDIO & PRODUCTIONS, INC.**  
Dallas, TX

Berry Electronics exciter, Aphex comp/lor, Eventide 949 Harmonizer. Microphones: (2) AKG C12A tube, (8) AKG C-414EB, (4) AKG C-451EB, AKG D12E, (6) Beyer 201, (4) Neumann U47, (2) Neumann U87, (2) Neumann KM84, (4) Shure SM81, (12) Shure SM58, (12) Shure SM57, (4) Shure SM53, (6) Crown PZM 315, (7) Sennheiser 421, (5) Sennheiser 441, (3) Sony ECM-22P, (2) Sony ECM-50, (3) E-V RE20, (7) Countryman DI boxes, (10) Heider DI boxes, Audio-Technica ATM-5R. Monitor Speakers: (2) JBL 4430, (2) Auratone, (2) Yamaha NS-10, (2) Visonik Power Amplifiers: (2) Yamaha P2200, Yamaha P1000, Shure 250 Video Recorders: JVC 6600U. Video Monitors: Sony Trinitron 14", RCA 26", Panasonic 19". Other Major Equipment: 600' 54-pair snake system w/54 stage splits, truck wired for 90 inputs, (3) wireless PL (interfaces to RTS), RTS comm. system w/(3) belt packs/headsets. Rates: Call for rates. Varies with job requirements. Extras & Direction: Omega has been supplying remote audio recording services to clients of the record, film and video industry since 1973. During that time, Omega Audio has worked with over 200 major recording artists, all major television networks and on numerous feature films. As a result of this vast and varied experience, Omega Audio is uniquely qualified to handle the challenging tasks that remote recording requires. Omega Audio has received one Platinum Record, four Gold Records, two Ampex Golden Reel Awards, two Grammy nominations, and three Dove Awards. Partial credits include: U2, REM, Lynard Skynyrd, Dizzy Gillespie, Joe Walsh, Fats Domino, Ray Charles, Paul Schaffer, Prince, Cameo, Johnny Cash, WNET-PBS Great Performances, Dick Clark Productions, Pat Benatar, Joe Jackson, Hall & Oates, Anne Murray, Art Garfunkel, Al Jarreau, Molly Hatchett, Neil Young, Amy Grant, Ben Vereen, Bo Diddley, "The Big Easy," "Baja Oklahoma," Fabulous Thunderbirds, Gladys Knight, Pope John Paul II.

**ON-SITE SOUND RECORDING SERVICES:** *Sound Reinf., Audio Recording*; 1610 Scottsdale Dr.; Arlington, TX 76018; (817) 472-7256. Contact: Gary D. Bellard.

**OPTIMUM SOUND:** *Sound Reinf.*; 6900 W. 42nd St.; Little Rock, AR 72204; (501) 562-2225. Contact: Robert E. Long.

**PANKER MUSIC CO.:** *Sound Reinf., Lights, Staging, Audio Recording*; 9941 N. Freeway; Houston, TX 77037; (713) 820-0031. Contact: Stephen Baker.

**PHANTOM PRODUCTIONS, INC.:** *Audio & Video Recording*; PO Box 4870; 701 N. Brazos, Ste. 500, Austin, TX 78765; (512) 320-9098; (512) 288-1044. Contact: Chris or Martin Theophilus.

**PHOENIX AUDIO VISUAL, INC.:** *Sound Reinf., Lights, Staging, Rental, Audio & Video Recording*; 1039 N. 24th St.; Phoenix, AZ 85008; (602) 267-8080. Contact: James A. Smidt, Mike Reese.

**PROBST AUDIO:** *Audio Recording*; 210 W. Belknap; Ennis, TX 75119; (214) 875-7592; (214) 875-3362. Contact: Scott Probst.

**PRODUCTION CONSULTANTS:** *Sound Reinf., Lights, Rental*; 642 W. Rhapsody; San Antonio, TX 78216; (512) 340-9591. Contact: Robert Herrick, Gene Hartmann; **SOUND REINFORCEMENT** Touring Radius: Local, regional Maximum Venue Size: Country/MOR 10,000; Rock 5,000. House Loudspeakers: Renkus-Heinz "Smart System" MR/LR System, JBL/Community horn-loaded system. Flying System Available: Yes. Monitor Loudspeakers: JBL custom foot monitors, Modular Sound TA12 time aligned monitors, Renkus-Heinz "Smart System" monitors. House Consoles: Pulsar Matrix 80 Series 32 x 8 x 8, Soundcraft 400B 24. Monitor Consoles: Pulsar M-8 32 x 8, Soundcraft 400B 24 x 8 x 2. Outboard Equipment: Ashly limiters and equalizers, Ashly noise gates, Lexicon effects, ART effects, DeltaLab effects, Minicube and Countryman direct boxes, Ashly parametric notch filter. Power



Amplifiers: Crest, Crown. Microphones: Shure, AKG, Sennheiser, Crown PZM. Lighting: PAR 64, Fresnel, Scoop, Leko, Teatronics DPI 24- and 48-channel Producer II, control. Other Equipment: C-ducer piano pickup

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**QUICKBEAM SYSTEMS INC;** *Sound Reinf., Lights;* 3716 High St. NE, Albuquerque, NM 87107; (505) 345-9230. Contact: Gary Mathews. **SOUND REINFORCEMENT** Touring Radius: Local, regional, national Maximum Venue Size: 20,000 outdoors Vehicles: Int'l Transtar, Fruehauf 40' w/air ride, Chevy C-60 18' bobtail, Ryder, Rollins, Gelco, Hertz/Penske, open accounts, (2) local vans. House Loudspeakers: (16) QSI H-1 bass utilizing JBL 2240 18" driver, (16) QSI H-1 midbass Pekins bin copy w/JBL D140, (16) QSI H-1 hornpak utilizing JBL 2445, JBL 2385, (2) E-V ST35, (2) QSI BB 3-way JBL components. Flying System Available: Yes Monitor Loudspeakers: (10) QSI 2 x 12, (2) JBL E120, JBL 2425/2370, (6) QSI 1 x 15, JBL 2225, JBL 2425/2370, (6) QSI 1 x 12, JBL E120, JBL 2202 passive House Consoles: Soundcraft 800B 32 x 8, Yamaha 2404 24 x 4, Yamaha PM1000 16 x 4. Monitor Consoles: TAC Scorpion 40 x 12, Yamaha PM1000 32 x 6. Outboard Equipment: (2) Yamaha REV7, (4) dbx 902, (4) dbx 903, Lexicon PCM60, DeltaLab DL-4, Carver CD player, Optonica dual deck, (3) dbx 162, (2) Klark-Teknik DN27A, Barcus-Berry Electronics 802, UREI 625 (crossover), (5) Klark-Teknik DN300 (monitors), (5) Rane AC22 crossovers (monitors) Power Amplifiers: (26) Carver PM 15, (5) Carver PM 200. Microphones: (12) Shure SM58, (25) Shure SM57, (6) Sennheiser 421, (6) AKG 451, (4) Beyer M88, (6) Countryman DI boxes, many other mics, DI boxes and pickups. Lighting: 150 PAR wide/medium/narrow and ACL, (74) 24K dimmers (Teatronics/CAE), Celco Series II 60 channels. Other Equipment: BML pre-rig trussing, QSI power bars, multi cable 6,000-watt "B" system, 24 channels, custom sound and light systems for extended rentals, intercom systems and Motorola radios. Rates: Available upon request. Extras & Direction: 20,000-watt, 32 x 8 w/patch bay house, 9,000-watt, 40 x 12 monitors, 150 can, two-truss lighting system All gear fits easily in 40' airide van. Complete systems with crew, truck and driver offered as one package for touring medium to large venues depending on artist's requirements. Most complete and versatile quality-oriented rigs available in the Rocky Mountain states. All main and monitor enclosures are designed and constructed in-house and individually tuned to maximum specs. Monitor system quality is unsurpassed and has received rave reviews from all artists that have used it. Systems flyable, sound in the round for medium-sized (12,000 seat) arena. Specializing in outdoor festivals. New Orleans Jazz and Heritage Festival, Telluride Jazz Festival, outdoor ski slope concerts at Vail Co., numerous outdoor events throughout the Rockies and Southwest. Call for complete referral list. Stage lighting features completely patchable dimmer racks, Celco board w/manual back up, extremely fast and accurate design and focus. Back drop and teasers. Credits include: live network telecasts for Miss Universe Inc. and NBC *The Today Show*, Showtime special, The Dirt Band, John Denver, Spyro Gyra, Lily Tomlin, New Mexico Symphony, New Mexico State Fair, Colorado State Fair and hundreds of one-nighters!

**RAPA SOUND;** *Sound Reinf., Audio Recording;* Box 1017, Jerome, AZ 86331; (602) 634-9607. Contact: Walter Rapaport.

**REELSOUND RECORDING CO;** *Audio & Video Recording;* 2304 Sheri Oak Ln., Austin, TX 78748; (512) 472-3325; (512) 282-0713. Contact: Malcolm Harper. **REMOTE RECORDING.** Vehicles: 42' Sierra/Hidley tractor-trailer unit. Control Room Dimensions: 18 x 7 x 6'9". Mixing Consoles: Sony/MCI 636 LM automated, Soundcraft 400B, API 8 x 8. Audio Recorders: (2) Sony/MCI JH-24, (2) Sony/MCI JH-110B 1/4" and 1/2" heads, (2) Nikko cassettes, Sony PCM-3324 on request, Akai PCM 2-track. Noise Reduction Systems: (8) Drawmer 201 gates, (4) Valley People Dyna-Mite. Synchronization Systems: QLock 4 10 3-machine lock. Outboard Equipment: (8) API 550A EQ, (2) Drawmer 1960 tube limiters, (4) Valley People Dyna-Mite, (4) UREI LA-3A limiters, (4) dbx 901 limiter, (2) DS

units, DeltaLab DL-1, Ursa Major 8 x 32 reverb, AMS RMX-16 reverb, (8) Drawmer DS-201 gates, RTS intercom 6-channel, Lexicon PCM70 rev 3, Lexicon 200 reverb, Yamaha SPX90, UREI LA-2A, Valley People DSP-915, Sony 19" Pro-feel monitor w/3-channel switcher, (2) White 1/6-octave filter sets and crossovers. Microphones: Neumann, AKG, Beyer, E-V, RCA, Shure, Sennheiser, Countryman, RCA, UREI, Neumann tube, Crown PZMs. Monitor Speakers: JBL 4430 monitors, Westlake BBSM-6, Auratone, Radio Shack 9s, AKG headphones. Power Amplifiers: Crown PSA2, Crown D75, Crown MM1000. Video Recorders: Panasonic. Cameras: Magnavox. Other Major Equipment: Solo Proso transformer, Jensen 48-input transformer split system, 400' snake 48 inputs, stage snake system w/fan outs for 48 inputs, 250' power snake. Rates: Call based on mileage, day rate, crew per diem and tape cost.

**SERIOUS AUDIO;** *Sound Reinf., Audio & Video Recording;* 4121 W. Vickery Blvd., Fort Worth, TX 76107; (817) 731-9117. Contact: Danny Johnson

**SHADOW PRODUCTIONS;** *Sound Reinf., Lights, Staging, Rental, Audio & Video Recording;* 7332 Rampart, Ste. 100; Houston, TX 77081; (713) 271-8019. Contact: Phil Davis.

**SHOWCO, INC;** 201 Regal Row, Dallas, TX 75247; (214) 630-1188. Contact: Wil Sharpe.

**SILVER DOLLAR SOUND;** *Sound Reinf., Audio Recording;* 14500 Dallas Pkwy., #120; Dallas, TX 75240; (214) 239-4029. Contact: Larry Feagin.

**SNOWBIRD JUNCTION REMOTE RECORDING AND REINFORCEMENT;** *Sound Reinf., Rental, Audio Recording;* 3501 Atrisco Rd. NW, #5-06; Albuquerque, NM 87120; (505) 839-0610. Contact: Mike or Tina Craig

**SOUND CITY PRODUCTIONS;** *Sound Reinf., Rental;* PO Box 2187; San Antonio, TX 78298; (512) 733-0091. Contact: Mark A. Rodriguez.

**SOUND SERVICES;** *Sound Reinf.;* 1601 Westpark, Ste. 2C; Little Rock, AR 72204; (501) 666-4214. Contact: Richard Thornton.

**SOUNDWORKS RECORDING STUDIOS;** *Audio Recording;* 2570 E. Tropicana, Ste. 19; Las Vegas, NV 89121; (702) 451-6767. Contact: Bryan Haggerty.

**SOUTHWEST SOUND/VIDEO;** *Sound Reinf., Audio & Video Recording;* 2075 Austin; Las Cruces, NM 88001; (505) 522-5630. Contact: Jim Ficklin

**TEMPEST RECORDING;** *Audio Recording;* PO Box 1007; Tempe, AZ 85281; (602) 968-9506. Contact: Clarke or Andy.

**TEXTSTAR SYSTEMS;** *Sound Reinf., Lights, Rental;* 11490 Harwin, Ste. 517; Houston, TX 77072; (713) 933-1039. Contact: Mark E. Hanz

**THRILL SOUND CO;** *Sound Reinf., Lights, Staging, Rental;* PO Box 662; Shallowater, TX 79363; (806) 832-5760. Contact: Phil Wright

**TOBY'S CUSTOM RECORDING STUDIOS;** *Sound Reinf.;* 1024 S. Presa; San Antonio, TX 78210; (512) 533-3030. Contact: Toby Torres

**THE 25TH TRACK;** *Sound Reinf., Audio Recording;* 309 E. Vicksburg; Broken Arrow, OK 74012; (918) 455-2459. Contact: Walt Bowers

**STAGE SOUND, INC;** *Sound Reinf., Lights, Staging, Rental, Audio & Video Recording;* 4708 E. Van Buren St.; Phoenix, AZ 85008; (602) 275-6060. Contact: Mike Guy.

**STARFIRE SYSTEMS, INC;** *Sound Reinf., Lights, Staging, Rental, Audio & Video Recording;* 3342 E. 41st; Tulsa, OK 74135; (918) 745-1156. Contact: Kevin

**STELLAR WINDS STUDIO;** *Sound Reinf., Audio Recording;* 2501 Sublett Rd., #995; Arlington, TX 76017; (817) 465-4780. Contact: Joe Shaw

**STUDIO CENTER;** *Audio Recording;* 6540 Randolph Blvd.; San Antonio, TX 78239; (512) 653-4004. Contact: Timothy Gressler

**TALUS SOUND;** *Sound Reinf., Rental;* 1248 E. Valerie Dr.; Tempe, AZ 85281; (602) 994-5616. Contact: Gary Adrian.

**TANDEN PRODUCTIONS;** *Sound Reinf., Audio Recording;* PO Box 382; Gainesville, TX 76240; (817) 665-6756. Contact: Bobby Dennis

**PAUL TAYLOR PRO AUDIO, LTD;** *Sound Reinf.;* PO Box 270905; Dallas, TX 75227; (214) 289-4787. Contact: Paul B. Saunders

**TAYLOR SOUND CO;** *Sound Reinf., Lights;* 104 Craigway; Poteau, OK 74953; (918) 647-3287. Contact: Larry Taylor

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**WALK ON WATER STUDIOS, INC.:** *Sound Reinf., Audio Recording*; Rt. 2, Box 566-H; New Braunfels, TX 78130; (512) 625-2768. Contact: Kenneth D. Brazle.

**WHITE ROSE STUDIO:** *Sound Reinf., Rental, Audio Recording*; 1901 Crested Butte; Edmond, OK 73034; (405) 282-2729.

**WING AND A PRAYER MUSIC:** *Audio Recording*; 1200 S. Gary; Monahans, TX 79756; (915) 943-6524.

**WORKSHOP MUSIC & SOUND:** *Rental*; 4408 E. Speedway; Tucson, AZ 85712; (602) 325-4206. Contact: Bill Bland

**ZANBECK SOUND PRODUCTIONS:** *Sound Reinf., Audio Recording*; Rt. 4, Box 1249; Little Rock, AR 72206; (501) 888-7045.

## NORTH CENTRAL

Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin

**AARD-VARK RECORDING:** *Audio & Video Recording*; 335 S. Jefferson; Springfield, MO 65806; (417) 866-4104. Contact: Bill Jacobsen.

**ACES MIDNIGHT MUSIC:** *Sound Reinf., Audio Recording*; 7040 Owosso Rd.; Fowlerville, MI 48836; (517) 223-9705. Contact: Ron Gutzeit.

**ACME AUDIO & RECORDING CO.:** *Sound Reinf., Rental, Audio Recording*; 3821 N. Southport; Chicago, IL 60613; (312) 477-7333. Contact: Jim or Cheryl.

**AERIAL ENTERPRISES INC.:** *Sound Reinf., Staging*; 10106 Industrial Dr.; Whitmore Lake, MI 48189; (313) 231-2500. Contact: Steve Fisher, Jim Lillie, El Learned, Don Balcum.

**THE ALLIANCE RECORDING CO.:** *Sound Reinf., Audio Recording*; 8449 Parshallville Rd.; Fenton, MI 48430; (313) 632-5653. Contact: A. Hurschman.

**ALPHA RECORDING:** *Sound Reinf., Rental, Audio Recording*; 253 W. Kenworth Rd.; Columbus, OH 43214; (614) 263-4900. Contact: Timothy Sheppard.

**AMERICAN SOUND & LIGHTING:** *Sound Reinf., Lights, Rental*; 1755 Jenkee Dr.; Saint Louis, MO 63031; (314) 839-3814. Contact: Tom Blake.

**ANDOVER AUDIO:** *Sound Reinf., Audio Recording*; 2387 S. Coon Creek Dr.; Andover, MN 55304; (612) 757-6589. Contact: Don G. Erickson.

**ANICOM CONCERT SOUND AND LIGHTING:** *Sound Reinf., Lights, Rental*; 2845 Ulysses; Minneapolis, MN 55418; (612) 332-6198. Contact: Daniel Szymanski.

**ARB SONICS:** *Sound Reinf., Audio Recording*; Two Fairway Dr.; Kincheloe, MI 49788; (906) 495-5197. Contact: Penny G. Gorsuch.

**ARROW AUDIO INC.:** *Sound Reinf., Lights, Rental*; 825 S. Olde Oneida St., Ste. 840; Appleton, WI 54915; (414) 731-4888. Contact: Bill (Willie) Dennis.

**THE ARTIST'S SWEATSHOP:** *Sound Reinf., Audio Recording*; 8771 Ida-Maybee Rd.; Monroe, MI 48161; (313) 587-3457. Contact: W. John B.

**ATMOSOUND:** *Sound Reinf., Rental, Audio Recording*; 400 W. Richards Rd.; McConnellsville, OH 43756; (614) 962-6587. Contact: Rick Shriver.

**AUDIO & VIDEO ARTS (AVA):** *Audio & Video Recording*; PO Box 3647; Kansas City, KS 66103; (816) 561-1878. Contact: Paul Gardocki.

**AUDIO COM, INC.:** *Sound Reinf.*; 2213 Delaware; Des Moines, IA 50317; (515) 262-9797. Contact: Marc Vander Linden.

**AUDIO ENGINEERS:** *Sound Reinf., Lights, Staging, Rental*; 6303 Johnson Rd.; Galloway (Columbus), OH 43119; (614) 870-9500. Contact: Joe Jennings.

**AUDIO GRAPHICS:** *Audio Recording*; 1516 Ferris Ave.; Royal Oak, MI 48067; (313) 544-1793. Contact: E.J. Wolfrum.

**AUDIO PRODUCTIONS:** *Audio Recording*; 1845 N. Fairmount; Wichita, KS 67208; (316) 689-3188. Contact: William Andrews.

# NORTH CENTRAL REMOTE RECORDING & SOUND REINFORCEMENT

**AUDIO-TECH LIGHTING AND SOUND:** *Sound Reinf., Lights, Staging, Rental, Audio & Video Recording*; Box 5668; Fort Wayne, IN 46895; (219) 447-2222. Contact: Donald Paul Mitchell.

**AUDIO-VIDEO GRAPHICS DIV. OF AVDA CORP.:** *Audio & Video Recording*; 13801 E. 35th St.; Independence, MO 64055; (816) 254-0400. Contact: Mike Clancy.

**AUDIOCRAFT RECORDING & SOUND:** *Sound Reinf., Audio Recording*; R2, Box 1179, E. Long Lake Rd.; Wild Rose, WI 54984; (715) 258-6092. Contact: Martin Kurka.

**AUDIOLIGHT, INC.:** *Sound Reinf., Lights, Rental*; 21601 Grand River; Detroit, MI 48219; (313) 531-8892.

**AUDIOS AMIGOS:** *Sound Reinf.*; 789 Cottrell Dr.; Columbus, OH 43228; (614) 276-7863. Contact: Dennis Craig.

**AURAL ATMOSPHERE:** *Audio Recording*; 1623 Sherwood Dr.; Anderson, IN 46012; (317) 642-8371.

**AUTUMN BROOKE VIDEO PRODUCTIONS:** *Audio & Video Recording*; Rte. One, Box 305; Council Grove, KS 66846; (316) 767-5926. Contact: Jeff Baker.

**BALL COMMUNICATIONS, INC.:** *Sound Reinf., Lights, Staging, Rental, Audio & Video Recording*; 1101 N. Fulton Ave.; Evansville, IN 47710; (812) 428-2300. Contact: Mike Lankford.

**BARWIG RECORDING CO.:** *Audio & Video Recording*; 5254 W. Agatite Ave.; Chicago, IL 60630; (312) 283-2820. Contact: Roy Barwig.

**BATTLESTAR AUDIO SUPPORT SYSTEMS:** *Sound Reinf., Lights, Rental, Audio & Video Recording*; PO Box 176; Lorain, OH 44055; (216) 244-9600. Contact: Clarence Carter.

**BIRD-ON-FIRE RECORDING:** *Audio & Video Recording*; 103 Lincoln Dr.; West Union, IA 52175; (319) 422-5677. Contact: Doug Koempel.

**BLOCK PRODUCTIONS:** *Sound Reinf., Lights, Rental, Audio Recording*; 1408 S. Grange Ave.; Sioux Falls, SD 57105; (605) 336-0684. Contact: Tom Block.

**BODDIE RECORDING:** *Audio Recording*; 12202 Union Ave.; Cleveland, OH 44105; (216) 752-3440. Contact: Tom or Louise Boddie.

**DENNIS G. BOYCE:** *Sound Reinf., Lights, Staging, Audio & Video Recording*; Audiovisual Resource; College of Vet. Med.; Manhattan, KS 66506; Contact: Kansas State University.

**BRAUNCO VIDEO, INC.:** *Sound Reinf., Video Recording*; 1125 Huntington Ave.; Warren, IN 46792; (219) 375-3148. Contact: Magley Tocsin.

**BRIDGEWATER CUSTOM SOUND:** *Sound Reinf., Rental*; 15957 S. Halsted; Harvey, IL 60426; (312) 596-0309. Contact: Bob Sheffield.

**BROWDER COMMUNICATIONS:** *Sound Reinf., Lights, Staging*; 24166 Haggerty Rd.; Farmington Hills, MI 48024; (313) 443-1813. Contact: Randy Beard.

**BROWN ST. MUSIC:** *Sound Reinf., Lights, Rental, Audio Recording*; 813 7th Ave.; Iowa City, IA 52240; (319) 338-5511. Contact: Dennis Jones.

**BUGGTUSSEL: RECORDING AND ELECTRONICS:** *Audio Recording*; 1659 Seven Trails Cl.; Okemos, MI 48864; (517) 349-7701. Contact: Kevin Blair.

**CENTER VIDEO INDUSTRIAL COMPANY, INC.:** *Audio & Video Recording*; 5615 W. Howard St.; Niles, IL 60648; (312) 647-8700 (in IL); (800) 621-4354 (outside IL). Contact: Brian D. Maks.

**CHICAGO MUSIC COMPANY:** *Sound Reinf., Rental*; 3530 N. Lincoln; Chicago, IL 60614; (312) 477-3900. Contact: Jack Alexander, Ginger Giovacki. **SOUND REINFORCEMENT.** Touring Radius: Regional. Maximum Venue Size: 20,000.

House Loudspeakers: (20) Hill M4, (8) JBL Concert, (4) Turbo, (10) Celestion. Flying System Available: Yes. Monitor Loudspeakers: (24) JBL custom wedges. House Consoles: Midas PR4 32-channel, Hill J3 32-channel, Hill, Yamaha. Monitor Consoles: (3) Hill 24 x 8. Outboard Equipment: (2) dbx 900 racks (8 limiters/8 gates/2 parametrics), Yamaha REV7, Yamaha SPX90, Roland, Eventide 949, White 4400, White 4200, (10) Rane GE27 EQs, (4) dbx 160X, (2) dbx 166. Power Amplifiers: (20) Hill TX1000, (4) Carver PM 1.5, (4) Crown PSA2, (8) Crown DC300. Microphones: Assorted Shure, Beyers, Sennheiser. Other Equipment: Full instrument rental division, full line bass/guitar amps, (30) digital keyboards in stock, (8) drumkits (Yamaha, Pearl, Sonor, Rogers), percussion (LP and Gon Bop) and orchestra gear. Rates: Call for rates.

**CLAYTON STUDIOS:** *Audio Recording*; 1126 S. Big Bend Blvd.; Saint Louis, MO 63117; (314) 781-6200. Contact: Robyn Goffstein.

**CLUB SOUND:** *Sound Reinf.*; 220 S. River; Aurora, IL 60506; (312) 859-2442.

**CMH SOUND & VIDEO:** *Sound Reinf., Rental*; 3168 Landscape Circle NW; Canton, OH 44709; (216) 492-3939. Contact: Carl Hearne, John Fowler.

**CON AUDIO:** *Sound Reinf., Audio Recording*; Oberlin College; Oberlin, OH 44074; (216) 775-8272. Contact: Tom Bethel, Mark Bousek, Joshua Salesin.

**CONTINENTAL SOUND CO. INC.:** *Sound Reinf.*; PO Box 388173; Chicago, IL 60638; (312) 437-1123; (312) 284-0418. Contact: Maggie Stadler.

**D.L. CORBET AUDIO SYSTEMS:** *Sound Reinf., Audio Recording*; 4220 Cleveland Ave.; Dayton, OH 45410; (513) 258-2994. Contact: Don or Julie Corbet.

**CUSTOM RECORDING STUDIOS:** *Audio Recording*; 3829 Scott Ave. N.; Minneapolis, MN 55422; (612) 535-2587. Contact: Jim or Lavern Reynolds.

**DACE AUDIO:** *Audio Recording*; 1478 Brookfield Dr.; Ann Arbor, MI 48103; (313) 668-0002. Contact: David B. Anderson.

**DANIELS ENTERPRISES:** *Sound Reinf., Lights, Rental, Audio Recording*; 205 N. Main; Saint Charles, MO 63301; (314) 947-6789. Contact: Tracy.

**DIRECT SOUND AUDIO:** *Sound Reinf., Lights, Staging*; 7423 S. Constance; Chicago, IL 60649; (312) 955-4876. Contact: Robert Haynes, Darius Lawrence.

**DODD TECHNOLOGIES, INC./SOUNDSMITH:** *Sound Reinf., Lights, Staging, Rental*; 10888 Allisonville Rd.; Noblesville, IN 46060; (317) 842-4905. Contact: Mark Dodd.

**DRAGON SOUND CO.:** *Sound Reinf., Lights, Staging, Rental*; 829 Marquette Ave.; Muskegon, MI 49442; (616) 777-2571.

**EALING MOBILE RECORDING, LTD.:** *Audio Recording*; 709 W. Roscoe St.; Chicago, IL 60657; (312) 871-7793. Contact: Hudson Fair.

**ECLIPSE CONCERT SYSTEMS, INC.:** *Sound Reinf., Lights, Rental*; 153 E. Thompson Ave.; West Saint Paul, MN 55118; (612) 451-8878. Contact: Mike Justen.

**EIGHTH DAY SOUND:** *Sound Reinf.*; 2104 Superior Ave.; Cleveland, OH 44114; (216) 566-7303. Contact: Tom Arko.

**ELI AUDIO:** *Sound Reinf.*; 51 Hawthorne St.; Elyria, OH 44035; (216) 366-5119. Contact: Chuck Patton.

**ENCORE PRODUCTIONS:** *Sound Reinf., Lights, Staging, Rental*; W6319 Kampen Rd.; Arlington, WI 53911; (608) 635-2036. Contact: Steven Johnson.

**ENTERTAINMENT TECHNOLOGY:** *Sound Reinf., Lights*; 1914 Heriford Rd.; Columbia, MO 65202; (314) 474-6788. Contact: David Bartlett.

**FIDDLESTRING PRODUCTIONS:** *Audio Recording*; Rt. 1, Box 19; Hermosa, SD 57744; (605) 255-4235. Contact: "Stringbean" Svenson.

**FLATLAND SOUND COMPANY:** *Sound Reinf., Lights, Staging*; Springfield, IL; (217) 546-1615. Contact: Mark Tate, Ann Tate.

**FORTE AUDIO:** *Sound Reinf., Lights, Rental*; 1129 W. Rowland; Flint, MI 48507; (313) 238-8228; (313) 238-5043. Contact: Brian Phillips.

**ROGER FRANCISCO PRODUCTIONS:** *Audio Recording*; 805 Breen Dr.; Champaign, IL 61820; (217) 351-3532. Contact: Roger Francisco.

**FRONT ROW SOUND, INC.:** *Sound Reinf., Lights, Rental*; 3820 W. Alexis; Toledo, OH 43623; (419) 475-9387. Contact: David S. Shoffer.



**GALAXY AUDIO;** *Sound Reinf.*; 625 E. Pawnee; Wichita, KS 67211; (316) 263-2852. Contact: RD Moneyhun

**GEMINI AUDIO PRODUCTIONS;** *Sound Reinf., Lights, Rental*; 104 W. Berry St.; Greencastle, IN 46135; (317) 653-5491. Contact: Mark Meagher

**TED GREGOREK;** *Sound Reinf., Audio Recording*; 3041 Bavarian W. Dr., #509; Indianapolis, IN 46236; (317) 894-4660.

**GRS, INC.;** *Video Recording*; 13300 Broad St.; Pataskala, OH 43062; (614) 927-9566. Contact: S.S. Andrews.

**GSJ STUDIOS;** *Sound Reinf., Audio & Video Recording*; 9431 Engel; Saint Louis, MO 63132; (314) 993-5713. Contact: Gary Sudin

**HALF STREET PRODUCTIONS;** *Sound Reinf., Lights, Rental, Audio Recording*; 5835 Victoria Ave.; Saint Louis, MO 63110; (314) 644-0992. Contact: Ken Bohannon

**HARMONY SOUND;** *Sound Reinf.*; 5290 Harmony; Willoughby, OH 44094; (216) 942-9361. Contact: T. Black

**HARTER SOUND;** *Sound Reinf., Rental, Audio Recording*; PO Box 235; Ney, OH 43549; (419) 658-2955. Contact: Eric A. Harter

**HARVEST PRODUCTIONS;** *Sound Reinf., Audio Recording*; 308 10th St. (PO Box 308); Milford, KS 66514; (913) 463-5559; (913) 463-5403. Contact: Tim Tiner

**HEDQUIST PRODUCTIONS INC.;** *Audio Recording*; 1007 E. Madison; Fairfield, IA 52556; (515) 472-6708. Contact: Jeffrey P. Hedquist

**HEIL SOUND;** *Sound Reinf., Video Recording*; #2 Heil Dr.; Marissa, IL 62257; (618) 295-3000.

**HIGH VOLTAGE PRODUCTIONS;** *Sound Reinf., Lights, Staging, Rental, Audio & Video Recording*; 6623 W. Bradley Rd. #C3; Milwaukee, WI 53223; (414) 355-2822.

**MICHAEL HOFFMAN SOUND SERVICES;** *Audio Recording*; 1306 W. Newport; Chicago, IL 60657; (312) 348-2714. Contact: Michael Hoffman, Wendy Taylor

**HOOD INDUSTRIES INC.;** *Sound Reinf., Lights, Rental*; 5700 Superior Ave.; Cleveland, OH 44103; (216) 431-4663. Contact: Bob Smith

**HUFKER RECORDING;** *Audio Recording*; 4561 Whisper Lake Dr.; Florissant, MO 63033; (314) 741-7829. Contact: Barry Hufker

**HUSTON SOUND SERVICES;** *Sound Reinf., Lights, Audio Recording*; 3550 Briggs Rd.; Columbus, OH 43204; (614) 274-9178. Contact: Clyde Huston

**IWO SOUND RECORDERS;** *Sound Reinf., Lights, Rental, Audio Recording*; 539 S. Baltimore; Hastings, NE 68901; (402) 463-5059. Contact: Don Robertson

**KEYNOTE PRODUCTIONS, INC.;** *Sound Reinf., Audio & Video Recording*; 4322 Mahoning Ave.; Youngstown, OH 44515; (216) 793-7295. Contact: Richard M. Hahn

**KINGCRAFT AUDIO/VIDEO;** *Sound Reinf., Lights, Audio & Video Recording*; 1608 S. Mosley; Wichita, KS 67211; (316) 262-5741. Contact: Sammie L. King

**KLA LABORATORIES, INC.;** *Sound Reinf., Rental*; 6800 Chase Rd.; Dearborn, MI 48126; (313) 846-3800. Contact: George Kereji

**DUWAYNE KLOOS RECORDING/WESTMARK PRODUCTIONS;** *Audio Recording*; 8345 Duluth St.; Golden Valley, MN 55427; (612) 544-3050. Contact: DuWayne or Joann Kloos

**LAB RECORDING STUDIO;** *Audio Recording*; 8936 Kleinman Rd.; Highland, IN 46322; (219) 923-0074. Contact: Larry A. Brechner

**LAKE AVENUE PRODUCTIONS;** *Sound Reinf., Lights, Audio Recording*; 2707 Irvine; Bemidji, MN 55601; (218) 751-8792. Contact: Mark Anderson

**RAY LAMMERS MUSIC HOUSE, INC.;** *Sound Reinf., Rental, Audio Recording*; 610 Walnut St.; Cincinnati, OH 45202; (513) 241-0200. Contact: Gregg Stauffer

**LAND RECORDING STUDIO;** *Sound Reinf., Audio Recording*; 1912 Herford Rd.; Columbia, MO 65202; (314) 474-8141. Contact: Bob Pruitt

**LEADFOOT SOUND;** *Sound Reinf., Rental*; 6300 Fullerton; Cleveland, OH 44105; (216) 641-8061. Contact: Patrick J. Lewis

**LESCO CONCERT SOUND CO.;** *Sound Reinf., Lights, Rental, Audio Recording*; PO Box 741, 1738 Scioto Way; Newark, OH 43055; (614) 522-6778. Contact: Frank L. Edwards II

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**MARANATHA AUDIO CONSULTANTS;** *Sound Reinf.*; 222 Belview; Normal, IL 61761; (309) 452-0624. Contact: Jim

**MARGUERITE'S MUSIC;** *Sound Reinf., Lights*; 2409 10th St. S.; Moorhead, MN 56560; (218) 233-7546. Contact: Marguerite Mowry

**MARK 3 SOUND (MARK III);** *Sound Reinf., Rental*; 1006 S. Elm; Ottawa, KS 66067; (913) 242-2539. Contact: Monty Fritts

**MARKETING INSIGHTS;** *Sound Reinf., Lights*; 1445 Sunset Ridge Rd.; Glenview, IL 60025; (312) 729-2047. Contact: Frank Luppino Jr

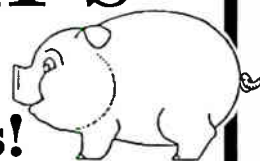
**MCCLELLAND SOUND;** *Sound Reinf.*; 345 N. Ohio; Wichita, KS 67214; (316) 265-8686. Contact: Scott Martin

**MESHENDA PRODUCTIONS;** *Sound Reinf., Staging, Rental, Audio & Video Recording*; 8447 S. Colfax; Chicago, IL 60617; (312) 221-5257; (312) 721-7917. Contact: Lisa M. Williams

**MF SOUND/VISIONS LIGHTING;** *Sound Reinf., Lights*; 15789 Broadway; Maple Heights, OH 44137; (216) 475-2980. Contact: Joe Comella. **SOUND REINFORCEMENT** Touring Radius: Local. Maximum Venue Size: 3,000 plus w/expansion planned. Vehicles: 16' truck, use rentals for larger applications. House Loudspeakers: All systems JBL-loaded: (8) McCauley 882 (3-way), (4) McCauley 838 (low end), (8) F2 custom-built (3-1/4-way), (20) MCA M Series Sensurround sub cabs, 4560, 4550, 2350, 2365, 2366, 2397, 2395. Flying System Available: No. Monitor Loudspeakers: (10) McCauley 623 (2-way) floor wedges JBL-loaded, (4) Yamaha S2115H (2-way) floor wedges JBL-loaded, Peavey 2445 (2-way) floor wedge cue monitor, (4) F1 custom-built (3-way) side fill cabinets w/(4) custom-built F118 sub cabinets (all JBL). House Consoles: Peavey MkIV 24 x 4 x 1, Soundtracs M Series 32 x 8 x 2 w/matrix (8 x 4). Monitor Consoles: Studiomastr RSD 20 x 8. Outboard Equipment: Klark-Teknik DN360 EQ, (3) White series 4001 EQ, (8) Peavey EQ27 EQ, (2) Furman PQ3 parametric EQ, Furman SG-10 sweep graphic EQ, (3) dbx 166 compressor/limiter, (3) Yamaha GC2020 compressor/limiter, Valley People Leveller, Furman LC-3A compressor/limiter, (3) Furman QN4 noise gates, Yamaha SPX90, ART DR2A digital reverb, DeltaLab DL4 digital delay, DeltaLab ADM-1024 digital delay, Bercus-Berry Electronics BBE402 Sonic Maximizer, Roland 555 Chorus Echo. Power Amplifiers: (14) Carver PM 1.5, (3) Carver PM 2.0+, (4) BGW 250, (4) BGW 500, (4) BGW 750, (3) Crown DC300, (3) Crown D150. Microphones: (5) Sennheiser MD-421, (2) AKG D112, (2) Beyer M700, E-V RE20, E-V PL20, (2) E-V RE10, (2) E-V RE15, (10) Shure SM57, (10) Shure SM58, Audio-Technica. Lighting: (100) Par 64 cans, trussing and Genie super lifts avail., ETA 24 x 4 x 2 console. Other Equipment: (2) Furman TX-424 crossovers, (3) Furman TX-4 crossovers, (4) Furman TX-3 crossovers, (2) Ashly SC-80 crossovers, Rane SM26 line splitter. Rates: Call for quote

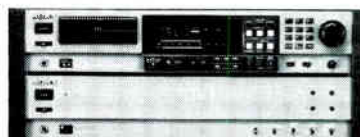
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**TRIAD PRODUCTIONS, INC.;** *Audio Recording;* 1910 Ingersoll Ave.; Des Moines, IA 50309; (515) 243-2125. Contact: Jeff Niedermayer.

**TUNE SMYTHE SOUND CO.;** *Sound Reinf.;* 17051 Trapet; Hazel Crest, IL 60429; (312) 799-6805. Contact: Terry Gurney.

**II BROTHERS SOUND & LIGHTING CO.;** *Sound Reinf., Lights, Staging, Rental;* 7000 S. Pulaski Ave.; Chicago, IL 60629; (312) 581-5069; (312) 581-5053. Contact: Joe Paparelli, Tom Tennant.

**THE VALLEY RECORDER/ACOUSTICS;** *Sound Reinf., Lights;* 1015 N. Union; Fergus Falls, MN 56537; (218) 736-2750. Contact: Mark Wallis, Maurice Skogon.

**VEDANTA DIGITAL RECORDING;** *Audio Recording;* W9643 Rucks Rd.; Cambridge, WI 53523; (608) 764-8082. Contact: Daniel Gomez-Ibanez.

**VIKING SOUND & RECORDING;** *Sound Reinf., Audio Recording;* Box 398, 624 N. Delaware; Edna, KS 67342; (316) 922-3880. Contact: Richard Enckson.

**VISUAL SOUND;** *Sound Reinf., Audio & Video Recording;* 2723 Brandon Rd.; Upper Arlington, OH 43221; (614) 488-3688. Contact: Tom Harned.

**VOICE OF PRAISE REMOTE STUDIO;** *Audio Recording;* Box 202; Prairie du Rocher, IL 62277; (618) 284-3322. Contact: James P. Doron.

**WAVE PRODUCTIONS;** *Sound Reinf., Lights;* 52762 Brookdale Dr.; South Bend, IN 46637; (219) 272-3187; (219) 259-7634. Contact: Rick Clifford, Phil Toopp.

**WEST RIVER LIGHT & SOUND;** *Sound Reinf., Lights, Staging, Rental, Audio Recording;* 2907 Wilson, PO Box 33; Sanford, MI 48657; (517) 687-2732. Contact: Chris Irons.

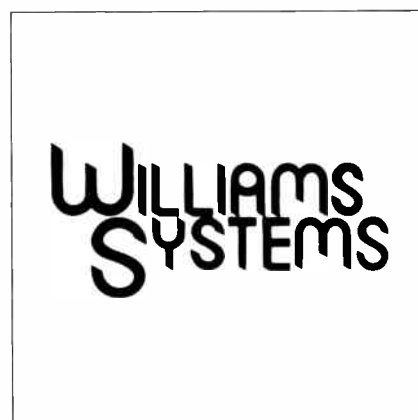
**WHCO RADIO;** *Sound Reinf., Audio Recording;* PO Box 255/Hwy. 154 West; Sparta, IL 62286; (618) 443-2121. Contact: J.L. Scheper, Mike Arnold.

# NORTH CENTRAL REMOTE RECORDING & SOUND REINFORCEMENT

**BOB WHITE ASSOCIATES;** *Sound Reinf., Lights, Audio & Video Recording;* PO Box 39104; Solon, OH 44139; (216) 248-1317.

**WILD OAT PRODUCTIONS/MUSIC CENTER;** *Sound Reinf., Rental, Audio Recording;* 415 W. 2nd St.; Ashland, WI 54806; (715) 682-6464. Contact: Andy Noyes, Mark McGinley.

**CHARLES WILLER, AUDIO ARCHITECT;** *Audio Recording;* 1655 Wells St.; Fort Wayne, IN 46808; (219) 426-1655. Contact: Charles Willer.



**WILLIAMS SYSTEMS**  
West Lafayette, IN

**WILLIAMS SYSTEMS;** *Sound Reinf., Lights, Rental, Audio Recording;* 452 Farabee Dr.; Lafayette, IN 47905; (317) 447-2435. Contact: Mark Williams, SOUND REINFORCEMENT. Touring Radius: Regional 400 mi. Maximum Venue Size: 6,000. Vehicles: 22' van, others as needed. House Loudspeakers: (4) Eastern Acoustic Works MR-102L, (4) TAD TD 4001, JBL 2380 for highs, EAW BH-500L, EAW BH-800L, EAW MH-110, EAW KF-550 avail. summer '88. Systems dynamically reconfigurable in blocks. Monitor Loudspeakers: (4) Eastern Acoustic Works FR-253, (6) E-V FM-1202 wedge, (6) Eastern Acoustic Works SM-120B (biamped) wedge, touring wedges biamped in compressor driver with choice of driver available in summer '88. House Consoles: Soundcraft 500 32 x 8 x 2, Yamaha MC2404 24 x 4 x 2, Yamaha PM3000, Soundcraft Series 4, Midas Pro 40 available w/advance notice. Monitor Consoles: Yamaha MC2408M 24 x 10, others avail. w/advance notice. Outboard Equipment: (4) Yamaha SPX90, Lexicon PCM60, (4) Valley People Dyna-Mite, (2) dbx 166, (2) Ashly GQ-231 1/3-octave EQ, (5) Sundholm 3104 1/3-octave EQ, (2) Symetrix SE4000 stereo 4-band Parametric EQ, dbx 163 compressor, (2) Brooke-Siren FDS340, Brooke-Siren 8-channel line balancing unit, (2) Rane AC22 stereo 2-way crossovers, much more too numerous to list. Power Amplifiers: Carver PM1.5, Carver PM-350, Carver PM-200, Crest 8001. Microphones: (2) Beyer M88, (2) AKG D12E, (12) AKG D112, Shure SM81, (2) AKG C451E, (5) E-V PL78, (12) Sennheiser 421, (15) Shure SM57, Shure SM58, Shure SM10, (10) Brooke-Siren AR116 direct box, Sennheiser 431, Telex PH-20, others available upon request. Lighting: Small systems suitable for clubs, displays and trade shows, follow spot, fogger, large scale systems avail. through 2nd sources to 600 PAR 64. Other Equipment: (2) Whirlwind 24 x 3 transformer-isolated splitting system (700' cable), custom 12-channel matrix and cabling for monitors and mains, (2) 125-amp 220V power distribution systems. Rates: Call. REMOTE RECORDING Mixing Consoles: Soundcraft 500 32 x 8 x 2. Audio Recorders: Tascam MS-16 w/remotes/patch bay/20' cabling snake packaged in (2) flight cases. Noise Reduction Systems: dbx Type 1 16 channels. Outboard Equipment: Rane HC-6 headphone amp. Monitor Speakers: (2) UREI 809, (2) Dahlquist DQ-1W sub-woofer. Power Amplifiers: Carver, Crest, Conrad-Johnson Premier 5Cs. Rates: Call. Extras & Direction: We are committed to providing a level of service formerly available only through the very largest of sound companies

and are continually striving to improve. Our snake setups allow unparalleled flexibility and compatibility to provide audio for remote recording or video as well as our in-house ability to provide live recording on a limited budget. Other services include custom design and construction of road cases, multi-pin setups, patch bays, complete power systems and our own 12-channel matrixing units. By summer '88, custom speakers beginning with high-performance monitors for touring.

**WISE GUYS RECORDING STUDIOS;** *Audio Recording;* 5000 Wyoming Ave., Ste. 121; Dearborn, MI 48126; (313) 582-5988. Contact: Dennis George.



**WIX MIX SYSTEMS**  
Minneapolis, MN

**WIX MIX SYSTEMS;** *Sound Reinf., Lights, Staging, Rental, Audio Recording;* 3947 Snelling Ave. S.; Minneapolis, MN 55406; (612) 872-6815. Contact: Loren Wiklander; SOUND REINFORCEMENT. Touring Radius: National. Maximum Venue Size: Nightclubs, theaters, auditoriums, arena, outdoor. Vehicles: 1984 GMC 6000, 20' box; 1986 Dodge maxi van, other trucking is contracted thru different trucking companies. House Loudspeakers: Welter System L2S bass cabinets, Welter System H34S 3-way cabinets, E-V cones, JBL horns and driver, total of 4,000 watts front power. Flying System Available: Yes. Monitor Loudspeakers: Welter System concert wedges, custom 400-watt side fill cabinets, custom 400-watt drum fill cabinets. House Consoles: Soundtracs 32 x 8 x 2, Soundcraft 200A 24 x 4 x 2, Soundcraft 200B 24 x 4 x 2, Soundcraft 200 24 x 4 x 2, Soundcraft 200 SJ 24 x 4 x 2, Yamaha PM3000 available upon request. Monitor Consoles: Hill M3 32 x 10 mixer, Peavey MkIV 24 x 8. Outboard Equipment: (2) Yamaha SPX90, Yamaha REV7, Roland DEP-5, Roland SDE-3000, Orban comp/limiters, Yamaha 2031 31-band EQs, dbx compressors, Lexicon 224X, Furman gates. Power Amplifiers: Crest 5001, Crest 3501, type for front power, Carver PM 1.5 for monitor power. Microphones: (5) E-V RE20, (20) Shure SM58, (22) Shure SM57, (10) Shure SM81, (20) Toa RD-10, (4) Shure SM87, (10) E-V BK1, (5) AKG D12. Lighting: Subcontracted. Extras & Direction: Wix Mix crews are experienced professionals who will deliver, set up and operate selected systems in the most efficient and accurate way each time. Credits: Natalie Cole, Cheap Trick, Three Dog Night, Chinacrisis, Fabulous Thunderbirds, Wendy O. Robin Trower, Forester Sisters, Southern Pacific, Michael Franks, WCCO-TV, Metal Church, Audigraph, Bonnie Raitt, Pat Travers, Rainmakers, Insiders, Ultra Violets.



**WLF**  
West Lafayette, IN

**WLF;** 2605 Yeager Rd.; West Lafayette, IN 47906; (317) 463-1800. Contact: Ken Gardner; REMOTE RECORDING.



Vehicles: MU-1 and MU-2. Control Room Dimensions: 8 x 12, 10 x 12. Mixing Consoles: Yamaha 1632, Soundcraft 800 Series. Synchronization Systems: Gray Labs time code. Microphones: Various, all types. Video Recorders: (3) Ampex VPR-2B, (3) Ampex VPR-6. Video Monitors: Ikegami, Panasonic. Switchers: Grass Valley 1680 16F, Grass Valley 1680 24K. Video Effects Devices: Abekas A52, Abekas A53. Cameras: (8) HK-323, (2) HL-95, (2) HL-79. Other Major Equipment: MU-1 C-band transportable uplink. Rates: Call for quote.

**WOODMAN PRODUCTIONS;** *Audio & Video Recording;* 1318 E. Algonquin Rd., Ste. 1A; Schaumburg, IL 60173; (312) 397-0502. Contact: Lowell S. Woodman.

**ZEROBUDGET PRODUCTIONS;** *Sound Reinf., Lights, Audio & Video Recording;* Rte. 2, Box 554, Dept. M; West Salem, WI 54669; (608) 786-0037. Contact: Steve Harm.

## NORTHEAST

Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Washington, DC

**A&J REINFORCEMENT;** *Sound Reinf., Audio Recording;* 3293 Cold Springs Rd.; Baldwinville, NY 13027; (315) 638-0308. Contact: Warren Abbott.

**A LA MODE VIDEO PRODUCTIONS;** *Sound Reinf., Rental, Audio & Video Recording;* PO Box 325; Southeastern, PA 19399; (215) 853-2025. Contact: Sam Catanese.

**RICHARD SETH ABRAMSON PROFESSIONAL AUDIO SERVICE;** *Audio Recording;* 17 Masterton Rd.; Bronxville, NY 10708; (914) 337-5232. Contact: Dick.

**ACE AUDIO VISUAL CO.;** *Sound Reinf., Rental, Audio & Video Recording;* 33-49 55th St.; Woodside, NY 11377; (718) 458-3800. Contact: Raymond Mercer.

**ACOUSTIC SPACES INC.;** *Sound Reinf., Audio & Video Recording;* HVM 6219; Kingston, NY 12401; (914) 331-1726. Contact: Mr. Wasserbach.

**A.C.T. AUDIO & COMPUTER TECHNOLOGY;** *Sound Reinf., Lights, Staging, Rental, Audio & Video Recording;* 1229 Broadway; Bangor, ME 04401; (207) 941-0801. Contact: John Bronson.

**A.D.R. STUDIOS, INC.;** *Sound Reinf., Rental, Audio & Video Recording;* Skylight Run; Irvington, NY 10533; (212) 486-0856. Contact: Stuart J. Allyn.

**ANDREWS AUDIO TOURS;** *Sound Reinf., Rental, Audio Recording;* 347 W. 39th St.; New York, NY 10018; (212) 736-9570; (718) 729-6007. Contact: David M. Andrews, Mike Sinclair. **SOUND REINFORCEMENT.** Touring Radius: National. Maximum Venue Size: Stadium and arena. House Loudspeakers: (40) Meyer MSL3. Flying System Available: Yes. Monitor Loudspeakers: (24) Meyer UPA1, UMI, 500, (8) custom 2 x 15, (10) custom 2 x 12. House Consoles: Yamaha PM3000-40, Midas Pro 5-32, (3) Audioarts 40- and 32-channel. Monitor Consoles: Audioarts M16-40, TAC Scorpion 30 x 12. Outboard Equipment: Lexicon PCM70, Yamaha SPX90, dbx 900 series, dbx 160X, dbx 166, UREI 539, Klark-Teknik DN360B, BSS FDS 320. Power Amplifiers: Crown MT 1200LX. Microphones: Shure SM57, Shure SM58, Shure SM87, E-V NDYME, AKG 451, P2M all models, Sennheiser 421, Countryman direct boxes. Other Equipment: Techtron TEF, Meyer SIM, Irie 30.

**APPLIED ACOUSTICAL SCIENCES, INC.;** *Sound Reinf., Lights, Rental;* 6805 Emerson St.; Riverdale, MD 20737; (301) 731-6126. Contact: Eric Maynard.

**APPLIED AUDIO;** *Sound Reinf., Lights, Rental;* PO Box 24799; Rochester, NY 14624; (716) 436-8475. Contact: Seth Waltz.

**ASL MOBILE AUDIO/VIDEO;** *Audio & Video Recording;* PO Box 791; Flushing, NY 11352; (718) 886-6500. Contact: Steven Remote. **REMOTE RECORDING.** Vehicles: 1987 International turbo diesel w/4-door travel—crew cab, dual fuel tanks and air ride suspension. Control Room Dimensions: 16'10" x 7'6" x 7'10"; truck length is approx. 31'5" long. Mixing Consoles: Harrison MR-4 36 w/ARMS automation (additional sub-mixers available, 76 mic/lines total. Audio Recorders: (2) Otari MTR-90 24-track, Otari MTR-10 2-track, (2) Otari 5050 BII 2-track, (2) Denon DR M4 cassette decks, (2) Nakamichi



ASL MOBILE AUDIO/VIDEO  
Flushing, NY

DMP-100 digital processor w/(2) Sony SL-HF900 Super Beta Hi-fi recorders, (2) Sony DTC 1000-ES DAT machines. Noise Reduction Systems: All types available upon request. Synchronization Systems: Lynx Timeline. Outboard Equipment: (3) Yamaha SPX90, Yamaha REV7, Klark-Teknik DN-780, Ursal Major Space Station, MXR 01, (2) Brooke-Siren DPR-402 comp/peak lim/de-esser, (2) dbx 160X, (2) dbx 160, (2) UREI 1176LN, (24) noise gates by: Rebus, Valley People and Drawmer, Eventide 910, MICMIX XL-305, Klark-Teknik DN-700, (4) Korg SDD 2000, (3) Korg SDD 3000, Korg DVP-1, Lexicon PCM41, Lexicon Prime Time, (14) various EQs by Klark-Teknik and Orban, plus additional de-essers, EQs, comp/line too numerous to list, but available onboard the mobile unit. Microphones: Over 100 microphones and direct boxes by: Sennheiser, Shure, Sony, E-V, AKG, Beyer, Neumann, Crown, Realistic, Brooke-Siren, ASL and Whirlwind! Monitor Speakers: (2) UREI 813, (2) K&H 902 (tri-amped), (4) Yamaha NS-10M, (4) E-V Sentry 100A. Power Amplifiers: (2) Yamaha P2200, Crown D60 (headphone amp in control room). Video Recorders: (2) Sony SL-HF900 Super Beta Hi-fi recorders, Akai VS-603S VHS Hi-fi recorder. Video Monitors: (3) 13" color monitors, (2) RCA B&W 9" monitors, (2) Panasonic 3" color monitors. Switchers: Dynair 12-channel video switcher. Cameras: Panasonic color camera (remote zoom, focus, pan and tilt), (2) RCA CCTV B&W cameras. Other Major Equipment: (76) audio mic/lines (via 4 x 19 pair audio snakes) individual XL connectors also available, (4) individual communication lines to mobile unit, (8) video send and returns to mobile unit, (5) incoming Telco lines, (2) stereo signal feeds for Telco and satellite links (additional feeds available), (2) portable mobile cellular telephones (incoming/outgoing service), 1,500-point Bantam jackfield/48-point video jackfield, 40-channel 4-way Brooke-Siren splitter system, 26-channel 2-way splitter. Rates: Available upon request. **Extras & Direction:** Aura Sonic Ltd. (ASL Mobile A/V), established in 1977, is a full service audio/video facility handling a variety of mobile productions. From television and radio broadcasting (via satellite up-links and Telco feeds) to dual analog or digital multi-track recording! Our philosophy is to bring the multi-media, multi-track control room to the concert hall, video facility, MIDI studio, rehearsal space, home and/or anywhere else desired, to develop the sounds and visions needed. The ASL Mobile Unit offers complete basic track, mixdown and pre/post-audio-for-video to clients ranging from top audio and video backgrounds to local artists and bands. Here is a selected list of clients and artists who have used our mobile production facilities: A&M, Arista, BBC-TV, Turner Broadcasting, Squeeze, the Neville Bros., Clarence Clemons, Nona Hendryx, Dr. John, Allen Toussaint, Black Uhuru, Blasters, Boggs/Baker, Boy George, CBS, Duke Ellington Orchestra, FM Tokyo, Frank Zappa, Geffen, Gene Simmons, Howard Jones, James Brown, Jimmy Iovine, Le Tigre, Lena Lovich, Lloyd Cole, MTV, NY String Orchestra, PBS-TV, PMC, The Police, The Ramones, Simple Minds, Sound Works, Stevie Wonder, Talking Heads, WBCN-FM, WLIR-FM, WNEW-FM, WPIX-FM, and XTC to name a few.

**ASSOC. SOUND SERVICES;** *Lights, Staging, Rental, Audio & Video Recording;* 789 N. Main St.; Brockton, MA 02402; (617) 584-5479. Contact: Joe Ballano.

**A/T SCHARFF RENTALS;** *Rental;* 599 Eleventh Ave.; New York, NY 10036; (212) 582-4400. Contact: Peter B. Scharff.

**ATS CORPORATION;** *Sound Reinf., Lights, Rental;* PO Box 606; Avon, MA 02322; (617) 583-4000. Contact: Rick Mansur.

**AUDIO ALIVE ENGINEERING SERVICES;** *Sound Reinf., Audio Recording;* 171 Windmill Rd.; Willow Grove, PA 19090; (215) 657-6711. Contact: Benjamin Zaslow.

**AUDIO ANALYSTS U.S.A. INC.;** *Sound Reinf.;* 13 Industrial Blvd. W.; Plattsburg, NY 12901; (518) 561-5071. Contact: Bert Pare, Abe Hoch.

**AUDIO ANTICS;** *Audio Recording;* 2 Park Pl.; Bronxville, NY 10708; (914) 779-7000. Contact: Susan Winthrop, Nanci Hersh.

**AUDIO ARTISTRY;** *Sound Reinf., Lights, Rental, Audio Recording;* 13909 Saratoga Ave.; Laurel, MD 20707; (301) 498-4145. Contact: Bill Spanoghe.

**AUDIO INNOVATORS, INC. DBA PRO COM SYSTEMS;** *Sound Reinf., Rental, Audio Recording;* 5001 Baum Blvd.; Pittsburgh, PA 15213; (412) 621-1950.

**AUDIO PROMEDIA;** *Sound Reinf.;* 114 Old Amherst Rd.; Sunderland, MA 01375; (413) 665-7122. Contact: Art Steele.

**AUDIO RADIANCE;** *Sound Reinf., Lights, Rental, Audio Recording;* 34 Hockanum Rd.; Hadley, MA 01035; (413) 584-1272. Contact: Chris Dixon. **REMOTE RECORDING.** **Extras & Direction:** High quality sound reinforcement for clubs, halls and outdoors. 24- and 16-channel stereo, 2-, 3-, and 4-way systems. Monitor systems up to 24 x 8. All top quality equipment. Various lighting packages, instrument rentals and remote 4- and 8-track recording. One nighters and regional tours with truck and crew. Shows in the past year include: Ray Charles, Alan Holdsworth, John Hiatt, Jimmy Cliff, Fat Boys, Modern Jazz Quartet, Kris Kristofferson, Nanci Griffith, Bonnie Raitt and Albert King.

**AUDIO SERVICES AND DESIGN;** *Sound Reinf.;* 8 Meadow Pl.; North Haledon, NJ 07508; (201) 427-6503. Contact: Frank Revfi.

**AUDIO SUPPORT;** *Sound Reinf.;* Trent Bldg.; Irvington, NY 10533; (914) 591-6667 (IMC 1708). Contact: Sean McCormick, Simon Nathan, John Doerschuk. **SOUND REINFORCEMENT.** Touring Radius: National. Maximum Venue Size: 20,000. Vehicles: As needed. House Loudspeakers: Meyer MSL-3, 650-R2 systems. Flying System Available: Yes. Monitor Loudspeakers: 2 x 12, 1 x 15 (w/JBL 2441), 2 x 15 subs, Meyer MSL/650 fills, Meyer UPA, Meyer UMI. House Consoles: Midas, TAC Scorpion. Monitor Consoles: Midas, TAC Scorpion. Outboard Equipment: As needed. Power Amplifiers: Crest 3000 and 4000. Microphones: As needed. Rates: Call.

**AUDIO 300, INC.;** *Sound Reinf., Lights, Staging, Rental;* 3A Nicholas Dr.; Albany, NY 12205; (518) 869-1200. Contact: Dave Elliott.

**AUDIO VISUAL ARTS, INC.;** *Sound Reinf., Audio & Video Recording;* 305 E. 83rd St., Ste. 5-E; New York, NY 10028; (212) 744-5459. Contact: Jim Tripp.

**THE AUDIO WORKSHOP;** *Sound Reinf.;* 1728 Leishman Ave.; Arnold, PA 15068; (412) 335-7766. Contact: James N. Guzzo.

**AURA SONIC LTD.;** *Audio & Video Recording;* PO Box 791; Flushing, NY 11352; (718) 886-6500. Contact: Steven Remote.

**A/V CONNECTION/GOODTIME SOUND;** *Audio & Video Recording;* 101 Westchester Ave.; Port Chester, NY 10573; (914) 939-1066. Contact: George Zeman.

**BACKTRACKS LOCATION DIGITAL;** *Audio Recording;* 3 Kent St.; Montpelier, VT 05602; (802) 223-2551. Contact: Mike Billingsley, Geoff Brumbaugh. **REMOTE RECORDING.** **Extras & Direction:** Extras: Location and remote digital (SMPT lock to video if desired) either direct-to-digital stereo or live mix to digital, or to hi-fi tracks with two digital tracks (post-edit/mix to digital master). Extended portability with special DC package. Patented Stereo Ambient Sampling System (SASS™) for faithful reproduction of acoustic spaces and events. **Direction:** Specialized in highly realistic stereo reproduction, with low noise components and especially modified equipment. We record acoustic ensembles (ethnic, folk, classical), location sound effects, environmental ambience and live performances, using especially developed techniques for convincing spatial realism. House label (Straight Arrow Recordings) releases SASS™-recorded music and effects. We also create auditory environments recordings and event loops for audience works, museum environments and stereo sampling digital synthesizers. Artist commissions are welcomed.

**BOB BALZARINI SOUND SVC.;** *Audio & Video Recording;* 48-51 Bell Blvd.; Bayside, NY 11364; (718) 423-7507. Contact: Helene.

**PARKER BANDY'S SOUND ADVICE;** *Sound Reinf., Rental;* 440-B Ramsey Ave.; Chambersburg, PA 17201; (717) 263-8289. Contact: Parker Bandy.

**KEN BELTRONE;** *Sound Reinf., Audio Recording;* 39-57 47th St.; Long Island City, NY 11104; (718) 392-6424. Contact: Ken Beltrone.



**BIG MO RECORDING**  
Wheaton, MD

**BIG MO RECORDING**; 12255 Veirs Mill Rd.; Wheaton, MD 20906; (301) 946-7364. Contact: Ed Eastridge. **REMOTE RECORDING** Vehicles: 1978 Ford C-700 w/air bagsuspension Control Room Dimensions: 8 x 24. Mixing Consoles: ESP custom console 40 x 24. Soundcraft 16 x 4 sub mixer. Audio Recorders: Sony PCM-501 digital processor, MCI JH-114 24-track, MCI JH-12/14 24-track, Revox PR99 2-track, Mitsubishi X-850 32-track digital on request, Nakamichi and Sony cassette decks. Noise Reduction Systems: Dolby A (32 channels), dbx 180. Outboard Equipment: Lexicon 200, Lexicon PCM70, Lexicon PCM60, Yamaha REV7 (3) Yamaha SPX90, Lexicon Prime Time, (4) Gain Brain II, (5) Kexep II, dbx 900 rack w/compressor, gates, de-esser and EQ, (2) Akai S900 digital sampler, Audioarts 4200-A parametric EQ, UREI 530 graphic EQ, Klark-Teknik 360 EQ, (5) dbx 160 compressors, (2) dbx 160X compressors, dbx 166 compressor/gate, Roland DEP-5, Atari 1040ST computer w/SMPTE time code, Yamaha TX812 synth, Yamaha KX76 keyboard controller, Roland synth guitar w/GM20 MIDI converter, Korg DDD-1 drum machine, Biamp 683B mixer, Rane HC6 headphone amp, Fender Vibroverb w/15" JBL Microphones: (4) Neumann U87 and U89, (2) AKG 414, (6) AKG 431, (6) Sennheiser 421, (4) AKG 535, (2) E-V RE20, AKG D-12E, (4) Crown PZM, (8) Shure SM57, (6) Shure SM58, Sennheiser 431, (2) E-V PL20s, Neumann KM84 Monitor Speakers: UREI 811B, Yamaha NS-10M, JBL Power Amplifiers: Crown DC300A, Crown D150A, Crown D75A, Marshall JMP100 instrument amp w/4" and 12" speakers, Roland JC-120 amp. Extras & Direction: We specialize in on-location recording. Credits for the past year include Linda Ronstadt, Emmylou Harris, Ricky Skaggs, Tony Rice, The Seldom Scene, Carl Anderson, Gloria Loring, Danny Gatton, The Night Hawks, John Hammond Jr., Pinelot Perkins, The National Christian Choir, Jeff Jacobs and International Praise and Donald Vales Choraleers. We also provide complete music production coordination i.e. rentals, video, lighting, musicians, hotels and limos. We will gladly provide references and a sample cassette upon request.

**BROOKLYN ARTS COUNCIL**; Sound Reinf., Rental; 200 Eastern Pkwy.; Brooklyn, NY 11238; (718) 783-4469. Contact: Robert Orlinick

**C&S DISTRIBUTORS**; Sound Reinf., Lights, Staging, Rental, Audio & Video Recording; 1700 Hummel Ave., Box 131; Camp Hill, PA 17011; (717) 737-4585. Contact: Carl Samuelson.

**CABSCOTT BROADCAST PRODUCTIONS, INC.**; Rental, Audio & Video Recording; #1 Broadcast Cntr.; Blackwood, NJ 08021; (609) 228-3600. Contact: Larry Scott

**CALF AUDIO, INC.**; Sound Reinf., Rental, Audio Recording; 157 Gray Rd.; Ithaca, NY 14850; (607) 272-8964. Contact: Alfred B. Grunwell

**CAPITAL SOUND REINFORCEMENT**; Sound Reinf., Rental; 10 Raspberry Dr.; Ballston Spa, NY 12020; (518) 885-0770. Contact: David Goss

**CAPRON, INC.**; Sound Reinf., Lights, Staging, Rental, Audio & Video Recording; 50 Park Plaza; Boston, MA 02117; (617) 426-8850.

**CAPTAIN FIDDLE MUSIC**; Sound Reinf., Audio Recording; 4 Elm Ct.; Newmarket, NH 03857; (603) 659-2658. Contact: Ryan Thomson

**CBS RECORDS INC.-NEW YORK STUDIO**; Audio Recording; 49 E. 52nd St.; New York, NY 10022; (212) 975-2958. Contact: Rob Grabowski

**CHAMBERLIN SOUND**; Sound Reinf.; 1104 Roosevelt Ave.; York, PA 17404; (717) 846-1732. Contact: Randy Chamberlin.

## NORTHEAST

# REMOTE RECORDING & SOUND REINFORCEMENT

**CHARLES LANE STUDIOS**; Audio Recording; 7 Charles Ln.; New York, NY 10014; (212) 242-1479. Contact: Michael F. Lynch

**CHILCOTE AUDIO SERVICE**; Sound Reinf.; PO Box 124; Stony Run, PA 19557; (215) 756-4176. Contact: Joseph Chilcote

**CITY OF BOSTON-TECHNICAL ASSISTANCE**; Sound Reinf., Lights, Staging; Room 802, City Hall; Boston, MA 02201; (617) 725-3912. Contact: Michael Testa

**CITY SOUND PRODUCTIONS, INC.**; PO Box 1932; Washington, DC 20013; (202) 265-9000. Contact: Boden Sandstrom

**CLAIR BROTHERS AUDIO, INC.**; Sound Reinf.; PO Box 396; Litzitz, PA 17543; (717) 665-4000. Contact: Gregory Hall

**CHARLES CLARK, AUDIO SERVICES**; Audio Recording; 20 Ritchie Dr.; Bear, DE 19701; (302) 322-0767. Contact: Charles W. Clark, Jr.

**CLEANSOUND LAB**; Sound Reinf.; 18 High St., Apt. 2; Brunswick, ME 04011; (207) 729-1265.

**CO-DIRECTIONS, INC.**; Video Recording; 276 Riverside Dr., Ste. 4C; New York, NY 10025; (212) 865-5069. Contact: Joe Tricipian

**COLLEGIUM SOUND, INC.**; Sound Reinf., Rental, Audio Recording; 35-41 72nd St.; Jackson Heights, NY 11372; (718) 426-8555. Contact: Don Wade

**COMMAND SOUND CO.**; Sound Reinf.; 1895 Dixwell Ave.; Hamden, CT 06514; (203) 248-7313. Contact: Paul Trutnau

**CONCERT RECORDING COMPANY**; Audio Recording; PO Box 286; Center Sandwich, NH 03227; (603) 284-6422. Contact: Lee Quimby

**CONCERT SOUND COMPANY**; Sound Reinf.; 50 N. Second St.; Duquesne, PA 15110; (412) 466-9314. Contact: Vic David

**CONTEMPORARY AUDIO SERVICES, INC.**; Sound Reinf., Rental; 131 Rt. 9W.; Piermont, NY 10968; (914) 359-6116. Contact: Joseph Masucci, Stephen Masucci

**COUNTS AND COUNTS**; Sound Reinf., Rental, Audio & Video Recording; 181 Warrington St.; Providence, RI 02907; (401) 781-8478. Contact: Stewart Counts

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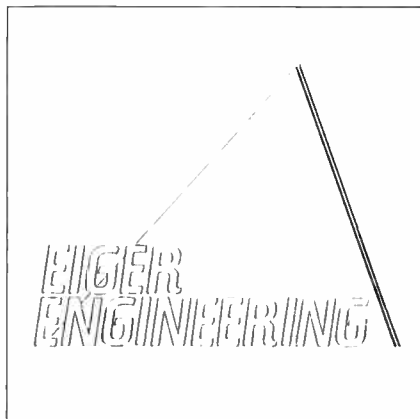
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**TOM POHORILLA AUDIO SYSTEMS; Sound Reinf.;** PO Box 31; Devon, PA 19333; (215) 647-1570. Contact: Tom Pohorilla.

**POMEROY (DIGITAL) AUDIO; Audio Recording;** 193 Baltic St.; Brooklyn, NY 11201; (718) 852-8505. Contact: Doug Pomeroy.

**POWER PLAY RECORDS, INC; Sound Reinf., Lights, Rental, Audio & Video Recording;** 223 Washington St.; Newark, NJ 07101; (201) 481-0972. Contact: Greg Furgason. **SOUND REINFORCEMENT. Vehicles:** 1984 Ford Econoline 150 truck. House Loudspeakers: (4) Gauss 4-way systems w/TAD top-end, (12) Bose 800 speakers, (2) E-V subwoofers. House Consoles: Harrison "Alive" 32-channel, Yamaha PM700 24-channel, Soundcraft 400B 24-channel. Outboard Equipment: Ursa Major Star Gate digital reverb, (2) Audiotronics parametrics, (2) Lexicon PCM41 DDLs, DeltaLab DL-2 DDL, dbx limiters, Eventide limiters, (6) Soundcraft graphic EQs. Power Amplifiers: (6) Soundcraftsmen amps, (10) Crown PAS-2 amps. Other Equipment: 19 and 38-pair snakes. Rates: Please call for rates. **REMOTE RECORDING. Vehicles:** 1984 Ford Econoline 150 truck. Mixing Consoles: Soundcraft 2400. Audio Recorders: Studer A80 MkIV 24-track, Tascam 85-16B 16-track, Otari MX-5050III 8-track, (2) Otari MX-5050BII 2-track, Nakamichi DMP-100 2-track digital. Monitor Speakers: E-V Sentry, Bose. Video Recorders: Ampex VPR-20 1", Sony

BVH-500A 1", Sony BVU-150 ¾", Sony VU-5850 ¾", Sony SL-2000 ½". Switchers: Grass Valley 1400. Cameras: (2) Thompson 601A Minicam w/14:1 lens, Ikegami EC-35 w/all lenses and filters. Other Major Equipment: Lowell and Berkey Colortran lighting kits. Rates: Call for rates.

**PRAGMATECH SOUND CORP; Sound Reinf., Lights, Rental;** 4516 Byron Ave.; Bronx, NY 10466; (212) 325-8888. Contact: Jim Salla.

**PRO AUDIO REMOTE; Audio Recording;** 416 Glenmary; Owego, NY 13827; (607) 687-0374.

**PRO SYSTEMS INC; Sound Reinf., Lights;** 83 Bissell St.; Manchester, CT 06040; (203) 643-8401. Contact: Glen R. Aliczi.

**PRODIGITAL, INC; Rental, Audio & Video Recording;** 3400 Pendleton Dr.; Wheaton, MD 20902; (202) 635-5588. Contact: Alan Wonneberger.

**PRODUCTION MASTERS, INC; Audio & Video Recording;** 321 First Ave.; Pittsburgh, PA 15222; (412) 281-8500. Contact: David Case.

**PRODUCTIONS BY DESIGN; Sound Reinf., Lights, Staging;** 351 Main St.; Wakefield, MA 01880; (617) 245-5553. Contact: Jeff Peach, Peter Garland.

**PROFESSIONAL SOUND & RECORDING; Sound Reinf., Lights, Staging, Audio Recording;** 32 Quickway Rd., #9H; Monroe, NY 10950; (914) 783-4310. Contact: Mike Gluck.

**PROMIX INC; Sound Reinf., Rental;** 111 Cedar St.; New Rochelle, NY 10801; (914) 633-3233. Contact: Lewis Mead. Bob Rendón.

**P.T. SOUND; Sound Reinf.;** 34 Lombard St.; Pittsfield, MA 01201; (413) 442-6731. Contact: Peter F. Tognini.

**Q-SOUND (A DIV. OF MSE AUDIO); Sound Reinf., Lights, Rental;** 5090 Sardis Rd.; New Kensington, PA 15068; (412) 335-2393. Contact: Bryan P. Sell.

**RARE EARTH AUDIO; Sound Reinf., Audio Recording;** 603 Galahad Rd.; Plymouth Meeting, PA 19462; (215) 825-2298. Contact: Jeremy Birnbaum.

**RAVEN SOUND; Sound Reinf., Lights, Rental;** 2617 Peach St.; Erie, PA 16508; (814) 456-0331. Contact: Phil Papotnik.



**RECORD PLANT STUDIOS**  
NEW YORK CITY

**REMOTE RECORDING**

321 W. 44th STREET, NEW YORK, NY 10036  
Contact: KOOSTER McALLISTER (212) 581-6505

**RECORD PLANT STUDIOS**  
New York, NY

**RECORD PLANT STUDIOS; Audio Recording;** 321 W. 44th St.; New York, NY 10036; (212) 581-6505. Contact: Kooster McAllister. **REMOTE RECORDING. Control Room Dimensions:** 7 x 17. Mixing Consoles: Trident Series 80 custom 48-input 32-bus, API 16-input 8-bus, (4) Yamaha 406 mixers. Audio Recorders: (2) Sony 3324 24-track w/V-clock boards, (2) Ampex MM1200, Syncclaver Direct-To-Disk, (2) Ampex ATR102 2-1/4" track, Sony 1630 w/DMR-4000, Sony PCM-501. Noise Reduction Systems: Dolby 361, Dolby M16, 24- and 2-track. Synchronization Systems: Lynx TimeLine, BTX Shadow. Outboard Equipment: (11) API 560 graphic equalizers, (2) UREI 1176 limiters, (4) dbx 160 limiters, (2) dbx 160X limiters, Lexicon PCM60, Yamaha REV7, (11) API 325 line amps, transformer isolated w/individual gain and selectable 600-ohm termination. Microphones: Shure, Neumann, AKG, Sennheiser, E-V, Beyer, Sony, RCA. Monitor Speakers: UREI 813, B&W DM100, Yamaha NS-10, ROR. Power Amplifiers: (2) Briston 4B, Crown 300DC, Crown 300A, Crown 150. Video Recorders: Sony Beta, NEC VHS, JVC ¾" U-matic. Video Monitors: NEC 20" color, Sony 20" B&W Video Effects Devices: Video humback coil, video patch bay. Cameras: Panasonic color camera, Sony AVC-1400. Other Major Equipment:

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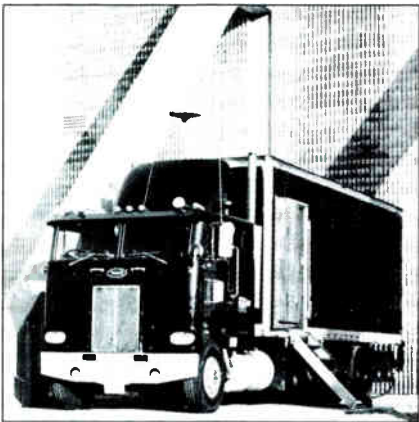
Synclavier direct-to-disk, input box 54 3-way splitter w/Jensen JE-MB-D transformers, 3-12 channel line level boxes w/3 video lines, main snake 600' Belden 54 mic/12 line/3 video, wide assortment of mic stands, 6- and 12-channel sub snakes, Chaos Audio intercom. Rates: Available upon request. Extras & Direction: In the past, this truck has provided audio for: The 1988 Grammy Awards, The David Letterman Anniversary Special, Howard Jones, Bon Jovi, James Taylor, Joe Walsh, Nancy Wilson and Billy Joel, to name a few. From video and film, to live satellite broadcasts, all can be handled with ease. With four independent auxiliary snake systems and a comprehensive video and code/sync patch bay, combined with our custom API line distribution network, signal quality is kept at the highest possible standards throughout.

**REEL PRODUCTIONS; Audio Recording;** PO Box 427; Allston, MA 02134; (617) 343-0673. Contact: Ted Evans, Kathy Evans.

**REEL SOUND; Sound Reinf., Staging, Rental;** 447 Center St.; Frederick, MD 21701; (301) 695-4545. Contact: Bernard L. Watkins.

**RELANCE AUDIO VISUAL CORP; Sound Reinf., Lights, Staging, Rental, Audio & Visual Recording;** 623 W. 51st St.; New York, NY 10019; (212) 586-5000. Contact: Gil Meyer.

**REMOTE MEN VISUAL MUSIC ENTERPRISES; Audio & Video Recording;** PO Box 791; Flushing, NY 11352; (718) 866-6500. Contact: Steven Remote.



REMOTE RECORDING SERVICES, INC.  
Lahaska, PA

**REMOTE RECORDING SERVICES, INC; Audio Recording;** PO Box 334; Lahaska, PA 18931; (215) 794-5005. Contact: David Hewitt, Phil Gittomer. REMOTE RECORDING. Vehicles: 36' custom Peterbilt tractor van, tandem axle air-ride w/on-board generator. Control Room Dimensions: 8 x 9 x 24. Mixing Consoles: API 44 x 32/96 mic, Studer 962 14 x 4, Studer 961 10 x 2, (3) Yamaha PM160 6 x 2 rack mount mixers. Audio Recorders: (2) Ampex MM1200 24-track, (2) Sony 3324 24-track digital (available), (2) Studer A810 2-track w/time code, Sony PCM-1610 digital w/Apogee filters and BVU-820 available, Sony PCM-701 digital w/Beta SLHF-900. Synchronization Systems: Lynx TimeLine modules available for each recorder. Outboard Equipment: (4) UREI LA-3A limiters, (4) UREI 1176 limiters, (8) dbx 903 compressors, (4) Valley People Dyna-Mite gates, (2) Dynafex noise filters, Yamaha REV7 reverb, Lexicon PCM60 reverb, Ursa Major 8 x 32 reverb, rack of API equalizers and limiters. Microphones: AKG D12, AKG 414EB, AKG 451 Systems (CK-1/CK-5/CK-8/CK-9/VR-1/ASI), Beyer 88, Beyer 160, Beyer 500, Countryman Type 85 DIs, E-V RE15, E-V RE16, E-V RE20, Neumann U87, Sennheiser 421, Sennheiser 441, Sennheiser 431, Shure SM17, Shure SM53, Shure SM54, Shure SM57, Shure SM58, Shure SM59, Shure SM77, Shure SM81, Shure SM85, Sony 535, Sony 536, Sony C-48, Sony ECM-50, Wahnbrock PZMs, plate and LAV. Monitor Speakers: (2) Westlake w/TAD drivers, (2) CSI LDM-4, (2) Yamaha NS-10, (2) Auratone, (2) Harke M-18. Power Amplifiers: (2) Bryston 4B on Westlakes, Bryston 4B or Crown D150 on small speakers. Video Recorders: (2) Sony HF-900 Beta VCRs, (2) Sony BVU-820 1/2" VCRs. Video Monitors: (2) Sony 19" monitors, (3) Sony 5" monitors available. Cameras: (2) CCTV cameras for stage use. Other Major Equipment: Extensive cable and splitters available for the really big remotes. Rates: Call for quote. Extras & Direction: Our 24 inputs of Studer console are available in road cases with a 24-input Jensen splitter system, MDM-4 speakers and any level of support gear necessary for the live stereo recording. The Studer 810s, Sony PCM-1610 or PCM-701 digital systems are available as recorders. Any of these items may be rented individually. We are pleased to announce the opening of our new facility in Bucks County, PA, centrally located between New York and Philadelphia.

## NORTHEAST

# REMOTE RECORDING & SOUND REINFORCEMENT

**RIEDEL AUDIO SERVICES; Sound Reinf., Rental, Audio Recording;** 109 Commack Rd.; Islip, NY 11751; (516) 277-9418. Contact: Rich Riedel.

**ROAR PRODUCTIONS RECORDING & MUSICAL SERVICES; Audio Recording;** 6655-H Dobbin Rd.; Columbia, MD 21045; (301) 596-2600; (301) 381-1440. Contact: Steven Rosch, Andrea Weatherhead.

**ROCK CENTRAL, INC; Sound Reinf., Lights, Staging, Rental;** 300 S. Owasso Blvd.; Little Canada, MN 55113; (612) 482-9075. Contact: Tony Domagala.

**ROCK SYSTEMS AUDIO; Sound Reinf.;** 29 Werman Ct.; Plainview, NY 11803; (516) 454-8008. Contact: Joseph Light.

**ROCKIN ROBIN SOUND & LIGHTING; Sound Reinf., Lights, Rental;** 3239 Overlook Dr.; Liberty, PA 15133; (412) 673-4678. Contact: Chuck Gilchrist.

**RTM AUDIO; Sound Reinf., Lights, Staging, Rental;** 710 North Ave.; Garwood, NJ 07027; (201) 789-9352. Contact: Tom Mathews.

**M.C. SANNER PRODUCTIONS UNLIMITED; Audio & Video Recording;** 37 7th Ave. N.; Huntington Station, NY 11746; (516) 673-3557. Contact: Susan Schulz.

**SAVI; Sound Reinf., Rental;** Hutchins Rd.; Saratoga Springs, NY 12866; (518) 885-8966. Contact: Mike Cusick.

**SAWMILL SOUND CO., INC; Sound Reinf., Lights, Staging, Rental;** PO Box 2074; Westminster, MD 21157; (301) 346-7550. Contact: Hanna.

**SAXON RECORDING; Audio Recording;** 26 Sidney St.; Rochester, NY 14609; (716) 288-3150. Contact: Dave Anderson.

**SCAVENGER SOUND INC; Sound Reinf., Lights, Staging, Rental;** 318 Main Ave. SW; Glen Burnie, MD 21061; (301) 355-1199. Contact: J.J. Harding.

**SCHEMBRIVISION; Audio & Video Recording;** 2156 Story Ave.; Bronx, NY 10473; (212) 863-2986. Contact: Sal Schembri Jr.

**SEE FACTOR INDUSTRY INC; Sound Reinf., Lights, Staging, Rental;** 37-11 30th St.; Long Island, NY 11101; (718) 784-4200. SOUND REINFORCEMENT. Touring Radius: National. Maximum Venue Size: Unlimited. Vehicles: Air-ride tractor trailers. House Loudspeakers: Meyer MSL-3, Meyer 650-R2 subs, Meyer UPA-1A, Meyer USW subs, Martin 4-way (JBL components). Flying System Available: Yes. Monitor Loudspeakers: Meyer UM1-A, Meyer USW subs, Meyer MSL-3 fills, Martin LE200 (JBL 15" JBL 2" driver), McCauley 2 x 12 w/2" driver, JBL SF3 3-way fills. House Consoles: Midas Pro 40 split 48-channel, Midas Pro 5 split 36-channel, Midas Pro 5 32-channel, Yamaha PM3000. Monitor Consoles: Midas Pro 40 32 x 12, Soundcraft 400B 24 x 10, Soundcraft 200B 16 x 4. Audioarts 24 x 10. Outboard Equipment: Klink-Teknik EQs, Brooke-Siren crossovers, Audioarts crossovers, dbx 900 racks w/assorted comp/lim/gate and parametric EQ, Lexicon 224XL, Lexicon Prime Time, Lexicon Super Prime Time, Eventide 9495 Harmonizers, Roland SDE-3000, Roland 555, Yamaha SPX90, Yamaha REV7, UREI, White analyzers, Tascam 122, Tascam 44. Power Amplifiers: Crest 4001, Crest 8001, Crest 3500, Crest 2500. Microphones: Shure SM57, Shure SM58, Shure SM77, Shure SM78, Shure SM81, Shure SM85, Shure SM87, Beyer M88, AKG 414, AKG 451, AKG D12, Sennheiser 421, Sennheiser 441, E-V RE20, E-V PZM, Countryman DIs. Lighting: Strand automated units/controls, Avolites 60-96 channel, Avol QMS50 90- and 180 channels, Avolacue controllers, Kliegl Performers, Strand Light Palettes, LMI dimmers 1K/2.4K/12K modules, unlimited trussing in box, triangle and custom designs. Other Equipment: Complete line of rigging accessories and controls, CM Loadstar 1- and 2-ton hoists w/up to 120' of lift available in single or 3-phase power, Bergen Xenon projectors, Miniac 16mm projectors, assorted lenses, AVL Genesis II computer controls, AVL Eagle, AVL Dove, Sony 13" 19" 25" color monitors, Sony 3/4" Beta decks w/editors, Kodak E2 on Chief slackers, rear projection screens. Rates: Call.

**SELECT SOUND COMPANY; Sound Reinf.;** Madison, NJ 07940; (201) 966-0387. Contact: Tom Prasnell.

**SELECT SOUND STUDIO; Audio Recording;** 2315 Elmwood Ave.; Kenmore, NY 14217; (716) 873-2717. Contact: William Kothen.

**SELTZER SOUND; Audio Recording;** 185 E. Broadway; New York, NY 10002; (212) 477-2372. Contact: Carl Seltzer.

**SHANGRILA SOUND; Sound Reinf., Lights;** 625 Berdan Ave.; Wayne, NJ 07470; (201) 694-7867. Contact: Jeff D. Windwer.



SHEFFIELD AUDIO-VIDEO PRODUCTIONS  
Phoenix, MD

**SHEFFIELD AUDIO-VIDEO PRODUCTIONS; Audio & Video Recording;** 13816 Sunnybrook Rd.; Phoenix, MD 21131; (301) 628-7260. Contact: Richard Van Horn, Nancy Riskin. REMOTE RECORDING. Vehicles: 30' custom-built diesel Mack truck with heated and air conditioned control room, (audio), 22' Isuzu (video). Control Room Dimensions: Spacious oak and carpeted control room, heated and air conditioned. Mixing Consoles: Neve 8068 MkII 32-input, Neve 5104 24-input, Amek 2-track 16-input. Audio Recorders: (2) Sony 3324 digital multi-track recorders, (2) Otari MTR-9011 multi-track analog recorders, (2) Sony 3202 2-track digital, Sony DMR-4000 digital master recorder, Sony PCM-1630 digital processor. Noise Reduction Systems: Dolby A 24 channels. Synchronization Systems: BTX Cypher time code generator/reader/insert. Outboard Equipment: (2) UREI 1176, UREI LA3A, Ashly stereo gates, (2) dbx 160X, dbx 162, Lexicon 200, (4) Neve 2-track limiter/compressors, Tascam 122 MkII cassette decks, Otari time code reader Microphones: Shure, Sony, Beyer, AKG, Crown PZM, Sennheiser, Neumann. Monitor Speakers: UREI 811B, Yamaha NS-10. Power Amplifiers: Crest, BGW Video Recorders: (2) 1" VTRs, 3/4" Video Monitors: Sony. Switchers: Grass Valley 1600. Cameras: Sony BVP-30, (2) Thompson 601A. Other Major Equipment: 350' of 52-pair audio cable w/Jensen 48-channel transformers, isolated mic splits, 500' of power cable, Liebert computer power regulator. Rates: Upon request. Extras & Direction: We specialize in digital multi-track and digital 2-track recording for album projects and audio for video. Our trucks are housed indoors at our facility in Maryland. All equipment including the dual multi-track digital recorders are owned by Sheffield and kept in excellent condition. We can also offer you video interlocked studio mixing packages using our Solid State Logic 4000E console. Credits include Luciano Pavarotti, Yo Yo Ma and Leonard Bernstein for Deutsche Grammophon, Jean Michel Jarre-Rendezvous concert in Houston-Polygram, Harry Chapin Tribute featuring Pat Benatar, Paul Simon, the Hooters, Graham Nash and Bruce Springsteen (live at Carnegie Hall). PBS-On Stage at Wolftrap Series and Live New Years Eve Broadcast and much more.

**SHOWTIME SOUND SERVICES; Sound Reinf.;** PO Box 3372; Westport, MA 02790; (617) 636-6040. Contact: Lloyd Jacobsen. SOUND REINFORCEMENT. Touring Radius: Regional. Maximum Venue Size: 15,000 seats. House Loudspeakers: Modular 2-Box System, 4-way active. Monitor Loudspeakers: JBL 15", Renkus-Heinz 2" floor wedges, EVM 12", EAW, Inc. 1" floor wedges. House Consoles: Matrix custom console 24 x 8 x 6, Allen & Heath, Tangent, Kelsey. Monitor Consoles: Allen & Heath, Kelsey. Outboard Equipment: dbx compressors, Loft compressors, Loft noise gates, Yamaha EQs, Ashly EQs, Ursa Major reverbs, Yamaha reverbs, ART reverbs, DeltaLab DDLs, ADA DDLs, Korg DDLs, Loft crossovers, Crown crossovers. Power Amplifiers: Crown, QSC. Microphones: AKG, A.T., Beyer, Shure, E-V, Sennheiser.

**SHUSTER SOUND; Audio Recording;** 29 Burt Ct.; Valley Stream, NY 11581; (516) 791-2985. Contact: Bob Shuster.

**SIGNET SOUND; Sound Reinf., Rental;** 115 E. 87th St., Ste. 10A; New York, NY 10128; (212) 860-0010. Contact: D.B. Weiss.



**SIL SAR MUSIC;** Audio & Video Recording; PO Box 897; Hartford, CT 06101; (203) 548-0212; (203) 522-2705. Contact: Linda "Bottles" Polite, Silver Sargent.

**SIRIUS SOUND;** Sound Reinf., Lights, Rental, Audio & Video Recording; 71 Summer St.; Claremont, NH 03743; (603) 543-3712. Contact: Brian Mitchell.

**S.K. SOUND;** Sound Reinf., Rental; PO Box 204; Southold, NY 11971; (516) 765-3769. Contact: Tom Heinisch

**SKINNER PRODUCTIONS;** Sound Reinf., Lights; 293 St. Anselms Dr.; Manchester, NH 03102; (603) 669-6353. Contact: Michael Skinner, Dave Costa.

**S. SLATER AUDIO;** Sound Reinf., Lights, Audio Recording; 108 Sunnyhill Dr.; Beaver Falls, PA 15010; (412) 847-4986. Contact: Scott Slater.

**SLUGGO AUDIO;** Sound Reinf., Audio Recording; 4112 Spruce St., #6; Philadelphia, PA 19104; (215) 382-0536. Contact: "Mr. Bill" Coe.

**SMILING EARS SOUND;** Audio Recording; 10167 Pasture Gate Ln.; Columbia, MD 21044; (301) 730-3695. Contact: Gary Zeichner.

**SOUND BY FITCH;** Sound Reinf., Rental; RD #2; Pottstown, PA 19464; (215) 469-6082. Contact: Bill Fitch Jr. **SOUND REINFORCEMENT** Touring Radius: National. Maximum Venue Size: 60,000. Vehicles: Four 45' semi tractor-trailers. House Loudspeakers: (32) Turbosound TMS-3, (8) Turbosound TMS-4, (8) JBL bi-amped, (4) Bag-End 18" bi-amped, (4) Community boxer subs. Flying System Available: Yes. Monitor Loudspeakers: (14) Turbosound TMW-215, (6) CLS PBLs, (6) CLS NC-12, (2) Turbosound TMS-2, (10) EAW, Inc. 2-15, (2) JBL sidefills. House Consoles: (3) Yamaha PM1000, Soundcraft 800-40, Soundcraft 800-32. Monitor Consoles: Soundcraft 400B-24, Studiomaster 24-channel, Soundcraft 400B-32, Soundcraft 400-24. Power Amplifiers: (56) OSC 3500-3800, (10) BGW 750, (4) Yamaha 2100, (4) Carver, (2) Crest, (4) UREI. Microphones: (8) Shure SM85, (3) Shure SM98, (3) Shure SM91, (4) Shure SM81, (60) Shure SM58, (40) Shure SM57, (4) Shure SM87, (9) Sennheiser 441, (12) Sennheiser 421, (40) E-V and Beyer, (6) Crown PZM, (3) stereo C-Tape, (4) E-V RE20, (2) AKG D-12, (6) E-V ND757, Heipinstill piano pickup. Other Equipment: (3) CD players, (2) headset systems, (2) TEAC cassette machines, (20) direct boxes, Lexicon 224X, (2) Lexicon PCM70, (2) Lexicon PCM41, (28) dbx comp/limiters, (14) noise gates, (2) vari-act voltage regs, (2) 200-amp stage power distrib

**SOUND CONTROL;** Sound Reinf., Lights, Rental; 1528-80 St.; Brooklyn, NY 11228; (718) 837-6237.

**THE SOUND FOUNDRY;** Sound Reinf., Lights, Rental, Audio Recording; PO Box 527; Cohasset, MA 02025; (617) 545-9273. Contact: William E. Barton.

**SOUNDMIRROR, INC.;** 76 Green St.; Boston, MA 02130; (617) 522-1412. Contact: John Newton, Henk Kooistra. **RE-MOTE RECORDING.** Vehicles: 14' Iveco. Control Room Dimensions: Classical recording utilizing venue control room space. Mixing Consoles: (4) Studer 960 32 inputs. Audio Recorders: Sony 3324, Sony 1630, Sony R-DAT, Sony F1, Studer 1/4" and 1/2". Noise Reduction Systems: Dolby A. Synchronization Systems: Adams-Smith Zeta 3. Outboard Equipment: Lexicon 480, ADR digital mixer, Sony digital metering. Microphones: B&K, Schoeps, Sanken, Neumann, Beyer. Monitor Speakers: B&W 801, B&W CM2, Quad ESL63, ADS 1290, AR 9LS. Power Amplifiers: Threshold S500, B&W MPA810, Nakamichi PA7. Video Recorders: Sony 1/4". Sony Beta. Video Monitors: Sony. Cameras: Sony. Other Major Equipment: CCTV, communications, video sync, B&W monitor speakers. Rates: \$1,000-\$2,500/day. Extras & Direction: Soundmirror, Inc. specializes in location classical, jazz, folk, ethnic and film recording. Ten minutes from Logan airport in Boston, our two studios offers full 24-track digital editing, mixing and synchronizing services. The friendly and multilingual staff has been recording in the U.S. and Europe since 1979 and has yet to find a client they didn't enjoy or a project which didn't challenge them. We go anywhere and to any lengths, to produce the best results. Ask for John Newton or Henk Kooistra.

**SOUNDPORTEAST;** Sound Reinf., Lights, Staging, Rental; 31A Spar Dr.; Erial, NJ 08081; (609) 228-9535. Contact: Ken McCoog.

**SOUNDS EXQUISITE;** Sound Reinf., Audio Recording; 12917 Clarion Rd.; Fort Washington, MD 20744; (301) 292-6145. Contact: Kenneth LaCapria.

**SOUNDWORKS, INC.;** Sound Reinf., Rental; 195-12 56th Ave.; Fresh Meadows, NY 11365; (718) 357-6910; (516) 431-6857. Contact: Daniel Hines, Lyle Chernoff.

**SOUTHERN THUNDER SOUND INC.;** Sound Reinf., Lights, Staging, Rental, Audio & Video Recording; 212 Third Ave. N.; Minneapolis, MN 55401; (612) 339-6303. Contact: Art Welter.

**SPL SOUND, INC.;** Sound Reinf.; 1177 Woodcrest Dr.; Vine-land, NJ 08360; (609) 691-6690. Contact: Steve Ponzetto.

**SPORTS SOUNDS INC.;** Audio Recording; 5519 Pioneer Dr.; Baltimore, MD 21214; (301) 444-4030. Contact: Frank DiVenti

**STACY SOUND COMPANY;** Sound Reinf.; PO Box 2561; Bethlehem, PA 18001; (215) 868-6063. Contact: Keith Stacy.

**STAGER SOUND SYSTEMS;** Sound Reinf., Audio Recording; 16 W. 22nd St.; New York, NY 10010; (212) 675-6000; (212) 595-4065. Contact: Marc Stager

**STAHR SOUND SYSTEMS UNLTD.;** Sound Reinf., Lights, Rental; PO Box 6887; Syracuse, NY 13217; (315) 446-8785. Contact: Christopher Stahr. **SOUND REINFORCEMENT.** Touring Radius: National. Maximum Venue Size: 6,000 seat. Vehicles: 24' Mack, 18' GMC House Loudspeakers: (24) SS-3 3-way mid-high cabinets, (10) SS-B subwoofer enclosures. Flying System Available: No. Monitor Loudspeakers: (10) SSM-2 1 x 15 bi-amped floor wedge, (4) SS-3 w/SS-B 4-way fill. House Consoles: Series 80 32 x 8, Kelsey Pro Tour 8/4 36 x 8 custom modified. Monitor Consoles: Yamaha MC3208M 32 x 10. Outboard Equipment: BSS FDS360, dbx 160X, (4) dbx 166, (4) Ashly CL52, (2) Barcus-Berry Electronics 402, (3) Yamaha REV7, MXR pitch transposer, (2) Roland SDE-1000, (4) Ashly GQ231, (4) Ashly GQ131, EXR SP11, (2) TDM crossover, (4) Furman PL-8. Power Amplifiers: (12) QSC MX1500, (12) QSC 1400. Microphones: Beyer M88, Beyer M69, Shure SM81, Sennheiser MD-421, E-V ND757, E-V DS35, AKG D112, E-V RE20, Crown PZM. Lighting: (50) PAR 56, (20) PAR 64, (2) 40' triangle truss w/Genie lifts and back-drop. Other Equipment: Sony CD player, Nakamichi MR-1 cassette player, scaffolding for house position and speaker stacks. Rates: Please call for quotation.

**STAR TRACK ENTERPRISES, INC.;** Sound Reinf., Lights, Rental; 14 Laurel St.; PO Box 647; Putnam, CT 06260; (203) 928-9554. Contact: Ray Miskiwitch.

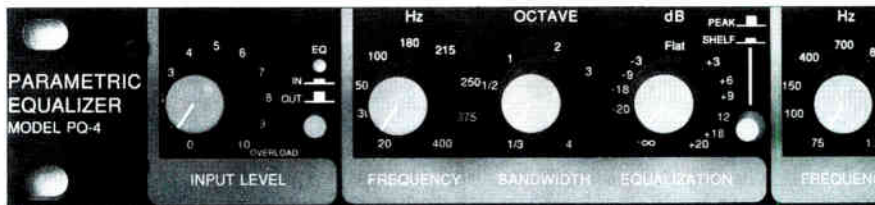
**STARLIGHT SOUND INC.;** Sound Reinf., Lights; PO Box 949; Brockton, MA 02403; (617) 586-9287. Contact: John Stadelmann.

**STEED AUDIO, INC.;** Sound Reinf.; 1038 Pennsylvania Ave.; Monaca, PA 15061; (412) 728-1234. Contact: Tom Beck.

**STEREO DISTRIBUTORS OF NJ.;** Sound Reinf., Lights, Staging, Rental, Audio & Video Recording; 844 Park Ave.; Hoboken, NJ 07030; (201) 792-3604. Contact: E. Hauser

## WHAT'S NEW IN

# PARAMETRICS?



The new Furman Sound PQ-4 Parametric Equalizer is one of the most flexible creative tools available to today's sound engineer or musician. It lets you be in control—with the industry's widest boost/cut and bandwidth ranges. Boost a full 20 dB, or cut with a notch that can go infinitely deep—up to complete cancellation. The PQ-4's more musically useful constant-Q curves allow extremely narrow notches, or boosts that can be as wide as four octaves.

The PQ-4 is a full-function four band parametric equalizer, but its top and bottom bands are something more. Push a Peak/Shelf button and the EQ becomes shelving, where all frequencies below (for the bottom band) or above (for the top band) the selected frequency are boosted or cut.

If you're playing live music, the Low Level input and output lets the PQ-4 be easily used as an instrument preamp, and you can even bypass the EQ with a footswitch. In demanding applications, you can get a PQ-4 with balanced input and output. And like all Furman products, the PQ-4 features isolated connectors, a ground lift switch, and extremely low-noise circuitry for quiet, problem-free operation.

Furman Sound offers a full line of graphic and sweep graphic equalizers as well. Call or write for more information.

Furman Sound, Inc.  
30 Rich Street  
Greenbrae, CA 94904  
(415) 927-1225

**FURMAN**  
*Signal Processing*



PRICE STEVENSON ACOUSTIC RESEARCH  
Downingtown, PA

**PRICE STEVENSON ACOUSTIC RESEARCH;** *Sound Reinf., Rental;* 1591 Broad Run Rd.; Downingtown, PA 19335; (215) 383-1083. Contact: Price Stevenson. **SOUND REINFORCEMENT** Touring Radius: Regional. Maximum Venue Size: 12,000 seats. Vehicles: Step van, 18' Box w/LG, 40' trailer. House Loudspeakers: (20) Woodwox/Roadwox full range, (8) Woodwox/Roadwox subs, (8) Community Light & Sound MB60s, (16) Community Light & Sound RH60s, (4) JEL 4550, all JBL and TAD loaded Monitor Loudspeakers: (16) Woodwox/Roadwox, (4) Community Light & Sound, (4) E-V, (8) custom House Consoles: TAC 32, Soundcraft 16, (2) Sunn, (2) Yamaha Monitor Consoles: Yamaha 2408, Trouper 20 x 4. Outboard Equipment: Roland 101, Roland 1000, (2) Roland 2000, Lexicon PCM60, Yamaha SPX90, (2) Ibanez 2000. Power Amplifiers: (12) Crest 4000, (6) Crest 800, (4) Crown MicroTech 300, (4) JBL 6290, (4) BGW 750, (4) Peavey 800. Microphones: (8) Sennheiser 421, (30) Shure SM58, Shure SM57, (12) E-VRE11, (2) AKG D12, (2) Sennheiser 441. Other Equipment: Hammond B3, Marshall, Ampeg, wide variety of P.A. equipment available. Yamaha drum kits, Ludwig drum kits. Rates: Single piece to full system, call for info. **REMOTE RECORDING.** Extras & Direction: Chubby Checker, Bobby Rydell, Dovells, Marvlettes, Joey Dee, Charlie Gracie, Carmen Dee Orchs., Dead End Kids, Morley, Puzzle, Numbers, Little Buddy, Chill Factor, Secrets, Stand, Turnstyles, John Eddie, Portrait, Thin Ice, Sovereign, Uptown Swing Band, Pin Ups, Ken Kueller, Psycopath, Crank, Steel, Desoto, Redtones, Sleeper, White Fox, Ambush, Position, China Club, Copcaba, NY Marriott Marquee, Heebeegeebees, Max's Kansas City, Vets Stadium pre-game show, The Stage, Koloa Church, Kauai, Hawaii, Kenny Marks & The Remarkables, Dave Meese, Pulsations (M.S.O.E., R.I.A., Syn-Aud-Con, A.E.S., D.V.A.S.A.) Phila Civic Center, Trumps Castle, NJ Bally's Casino, Keith Whitley, Tari Hensely, The Smothers Brothers.

**STIRLING AUDIO SERVICES;** *Sound Reinf., Lights, Staging, Rental, Audio & Video Recording;* 239 Maine Ave.; Stirling, NJ 07980; (201) 647-0327. Contact: Jim Ferrante. **SOUND REINFORCEMENT.** Touring Radius: Local, regional, national. Maximum Venue Size: 30,000 to 40,000. Vehicles: Vans, 14'/18'/22' trucks, tractor trailer. House Loudspeakers: EAW, Inc. KF850, EAW, Inc. BH800, EAW, Inc. KF550. Flying System Available: Yes. Monitor Loudspeakers: Yamaha modified biamped floor wedges, EAW, Inc. 3- and 4-way sidefill, E-V 3- and 4-way drumfill near-field. House Consoles: Midas 36 x 16 x 2 Soundcraft 800B 32 x 8, Yamaha 24 x 8, Yamaha 32 x 4. Monitor Consoles: Audioarts 24 x 10, Yamaha 24 x 8, Peavey 24 x 8. Outboard Equipment: Klark-Teknik EQ, White EQ, dbx comp, EAW, Inc. MX800 processor/crossover. Lexicon PCM70, Lexicon PCM42, Lexicon PCM41, Lexicon Prime Time, Yamaha REV5, Yamaha REV7, Yamaha SPX90, Scamp gates/comps, Aphex Aural Exciter, Yamaha EQ, Biamp comp., Rane time alignment crossovers. Power Amplifiers: Crest 8001 (house), Crest FA800 (monitor), Crest 8001 (monitor). Microphones: Neumann, Sennheiser, Beyer, AKG, E-V, Crown, Countryman. Staging: 3' x 6' x 32' folding leg platforms. Lighting: Penn truss box and triangular, T1, Nova, LMI dimmers/satellite/orbiter spot, Vermite, Genie lifts/log/smoke machines/strobes. Other Equipment: RTA/Pink Noise. Rates: Call Jim Ferrante for the lowest rates on the East Coast. **REMOTE RECORDING.** Vehicles: Van or 14' truck. Mixing Consoles: Midas, Yamaha, Tascam. Audio Recorders: Otari, Tascam. Noise Reduction Systems: dbx. Synchronization Systems: Adams-Smith. Outboard Equipment: Lexicon PCM70, Lexicon PCM42, Lexicon PCM41, Lexicon Prime Time, Yamaha REV5, Yamaha REV7, Yamaha SPX90, comp and gates, Scamp comp and gates. Microphones: Neumann, Sennheiser, Beyer, AKG, E-V, Shure Crown, Countryman. Monitor Speakers: EAW, Inc. M5100, Auratone. Power Amplifiers: Sansui B1, Crown. Video Recorders: Sony 4" and Betacam. Video Monitors: Sony, JVC. Switchers: JVC 1200 Video Effects Devices: ADO effects. Cameras: Ikegami. Sony Betacam. Other Major Equipment: Full lighting package, multi camera, full field production w/headsets. Rates: On request.

## NORTHEAST

# REMOTE RECORDING & SOUND REINFORCEMENT

**STUDIO A;** *Sound Reinf., Lights, Rental, Audio Recording;* 87 Sherry Ave.; Bristol, RI 02809; (401) 253-8428.

**STUDIO 55 PRODUCTIONS;** *Sound Reinf., Rental;* 42-55 Golden St., Ste. 11P; Flushing, NY 11355; (718) 762-1264. Contact: George Lerner.

**SUN SOUND AUDIO, INC.;** *Sound Reinf., Rental;* 518 Pleasant St.; Northampton, MA 01060; (413) 586-3465. Contact: Herb Mayer, Bob Humphreys.

**SUPERSONIX™;** *Audio Recording;* 195 Hicks St.; New York, NY 11201; (718) 875-3209. Contact: Jan Well.

**TAPE TRACKS (DIVISION OF CLACK, INC.);** *Audio Recording;* 56 W. 45th St., 17th floor; New York, NY 10036; (212) 575-9673. Contact: Frank Tomaino, Karen Taylor.

**CRYSTAL TAYLOR SYSTEMS, INC.;** 1231B Ford Rd.; Bensalem, PA 19020; (215) 638-3440. Contact: Carl Taylor, Marty Garcia. **SOUND REINFORCEMENT.** Touring Radius: National. Maximum Venue Size: Unlimited. Vehicles: 24' Mack midliners w/custom Morgan bodies, various 48' air ride trailers. House Loudspeakers: (48) Turbosound TMS-3, (16) Turbosound TMS-4, (8) Turbosound TMS-2, (8) Turbosound TSW-124 subwoofers. Flying System Available: Yes. Monitor Loudspeakers: Turbosound TMW-215 wedges, CTS custom wedges, Turbosound sidefills and drum monitors. House Consoles: (2) Yamaha PM3000 40-channel, Soundcraft 800 32-channel. Soundcraft 400B 24-channel Monitor Consoles: Amek TAC Scorpion 40 x 12, Soundcraft 800B 32 x 12, Soundcraft 400B 24 x 10. Outboard Equipment: Brooke-Sren crossovers, Klark-Teknik EQs, dbx compression, Nakamichi MR-1 cassette decks, Klark-Teknik DN-780 reverb, (2) Yamaha REV7 reverb, (2) Yamaha SPX90 reverb, (2) Ibanez SDR-1000 reverb, (2) Roland SDE-3000 DDL, Lexicon Super Prime Time DDL, (2) dbx 900 racks, (6) dbx 160X. Any particular piece not listed is available upon request. Power Amplifiers: QSC 3800, QSC 3500, 70,000-watt house system, 20,000-watt monitor system. Microphones: Sennheiser 421, Sennheiser 431, Sennheiser 441, Sennheiser MKE-II, AKG D12, AKG 451, Beyer M69, Beyer M88, Beyer M300, Beyer M400, Beyer M500, E-V RE20, E-V ECM23, E-V ECM33, Shure SM57, Shure SM58, Shure SM81, Audio-Technica Uni-point Series, Samson Broadcast Series wireless mic. Staging: Any size up to 60 x 40 w/top. Lighting: (3) Thomas 40' trusses, Celco Series II 60-channel console, Spectrum Design Dense Pack/custom dimming. Other Equipment: CM Lodestar 1-ton motors for all rigging applications, band gear is also available on request. Rates: Quotes available on request.

**TECHNICAL SUPPORT SERVICES;** *Sound Reinf., Lights, Staging, Rental;* 275 Middle St.; Middletown, CT 06457; (203) 347-5314. Contact: Doug Fay.

**TEL-PRO VIDEO PRODUCTIONS;** *Rental, Video Recording;* 857 Portland Ave.; Rochester, NY 14621; (716) 342-6790. Contact: Ken Crayton.

**TELE-COMMERCIAL PRODUCTIONS INC.;** *Sound Reinf., Lights, Staging, Audio & Video Recording;* 25 Spring St.; West Springfield, MA 01089; (413) 739-0500. Contact: H. Speckels.

**THEATRICAL SOUND SERVICES;** *Sound Reinf.;* c/o Center for The Arts; 175 Freight St.; Waterbury, CT 06702; (203) 756-0843. Contact: Nick Tortora.

**TLM ELECTRONICS INC.;** *Sound Reinf., Rental, Audio Recording;* 343 Manville Rd.; #6B; Pleasantville, NY 10570; (914) 769-6423. Contact: Tony Marra.

**TNA RECORDS & STUDIOS;** *Audio Recording;* Box 57, 10 George St.; Wallingford, CT 06492; (203) 269-4465. Contact: Richard P. Robinson.

**TONMEISTER RECORDINGS;** *Audio Recording;* 6120 Massachusetts Ave.; Bethesda, MD 20816; (301) 229-1664. Contact: Andrew Lipinski.

**TRI-STATE SOUND;** *Sound Reinf., Rental, Audio Recording;* 140 W. Wolfert Station Rd.; Mickleton, NJ 08056; (609) 467-4917; (609) 467-4918. Contact: Bruce Wm. Wolfrom.

**TYLER'S TALKIES;** *Sound Reinf., Lights, Rental;* PO Box 86; Central Square, NY 13036; (315) 668-2424. Contact: Tyler Gervaise.

**UGLY SOUND PRODUCTIONS;** *Sound Reinf.;* PO Box 752; New Paltz, NY 12561; (914) 255-6148. Contact: Dennis Villiers.

**UJIMA SOUND PRODUCTIONS LTD.;** *Sound Reinf., Lights, Staging, Rental;* 1000 Grand Concourse 4M; Bronx, NY 10451; (212) 538-5596. Contact: Rebekah Foster, Sidney Mills.

**ULTRA SOUND INC.;** *Sound Reinf.;* 10 Alcott Dr.; Livingston, NJ 07039; (201) 994-3317. Contact: Shelly Diamond.

**UNITED CINE & SOUND;** *Audio Recording;* PO Box 403, Times Square Station; New York, NY 10108; (212) 247-5678. Contact: John Cacciatore. **REMOTE RECORDING.** Mixing Consoles: Soundcraft 200 16 x 4 x 2 Audio Recorders: Sony PCM-501 ES digital audio processor, Sony SLHF-1000 Super Beta Hi-Fi deck, Sony SLHF-900 Super Beta Hi-Fi deck, VHS back-up deck, Audio & Design Propak 2 CTC unit. Microphones: AKG 414EB, Neumann KM84, Sanken CU-41, RCA 77-DX, Beyer M-88, Sennheiser 421, Sennheiser 431, Shure, Countryman Type 85 direct boxes. Monitor Speakers: UREI 809, Visonik David 9000, Auratone. Power Amplifiers: Bryson. Extras & Direction: United Cine & Sound specializes in direct to 2-track digital recording on location. All wiring is high quality Gotham Audio cable and all connectors are Neutrik gold-plated XLRs. Many concert halls, barns, lobbies are available through us for recording sessions. Equipment is quiet and very portable. UC&S can travel anywhere for sessions. Multi-track digital available on request. Rates vary with size of orchestra, etc. Also capable of live mixes for video, film and radio.

**UNITED MASTERWORKS RECORDING COMPANY LTD.;** *Audio & Video Recording;* 324 Mills Pl.; Wyckoff, NJ 07481; (201) 848-0468. Contact: Bob or Ed Chapman.

**UNIVERSITY OF VERMONT-MEDIA PRODUCTION SERVICES;** *Sound Reinf., Lights, Audio & Video Recording;* 232 Rowell Bldg., Univ. of VT; Burlington, VT 05405; (802) 656-2927. Contact: Wes Graff.

**UUAB CONCERTS;** *Sound Reinf., Staging, Rental;* 106 Talbert Hall/SUNY at Buffalo; Buffalo, NY 14260; (716) 636-2957. Contact: Michael Leppitsch.

**VELVET THUNDER SOUND;** *Sound Reinf., Rental;* PO Box 19; Hartford, NY 12838; (518) 632-5375. Contact: Craig Fountaine.

**VIRTUE AUDIO VIDEO RECORD PRESSING CO. INC.;** *Audio & Video Recording;* 1618 N. Broad St.; Philadelphia, PA 19121; (215) 763-2825. Contact: Frank Virtue.

**WABANK AUDIO SERVICES;** *Sound Reinf., Rental;* 1919 St. Regis Ln.; Lancaster, PA 17603; (717) 299-5447. Contact: Vernon Kiehl.

**WARM BROWN SOUND;** *Sound Reinf., Rental, Audio Recording;* PO Box 4; West Dummerston, VT 05357; (802) 254-4283. Contact: Chris Kelly.

**WHEEL TO WHEEL;** *Sound Reinf., Audio Recording;* 238 Hickory Cr. Rd.; East Windsor, NJ 08520; (609) 448-5889. Contact: Hans Schneider.

**WHITE SOUND SYSTEMS;** *Sound Reinf., Rental;* 507 Little Current Dr.; Annapolis, MD 21401; (301) 974-4098. Contact: Sheldon White.

**WIZZ SOUND;** *Audio & Video Recording;* 267 Center St.; #3; Ludlow, MA 01056; (413) 583-2036. Contact: Wizz.

**WMRG STUDIOS INC.;** *Sound Reinf., Audio Recording;* PO Box 73; Cheltenham, PA 19012; (215) 635-4815. Contact: B. Gellhaus.

## SOUTHEAST

Alabama, Florida, Georgia, Kentucky,  
Louisiana, Mississippi, North Carolina,  
South Carolina, Tennessee, Virginia,  
West Virginia

**ABBEY MUSIC;** *Sound Reinf., Lights, Rental;* 109 S. Witchduck Rd.; Virginia Beach, VA 23462; (804) 497-7777. Contact: Eric D. Burgess.



**ADL CONCERT PRODUCTION SERVICE;** *Sound Reinf.*; 3131 Campbellton Rd.; Atlanta, GA 30311; (404) 349-5682. Contact: Roy Drukenmiller.

**ADVENT PRODUCTIONS;** *Sound Reinf., Audio Recording*; 2518 Southview Dr.; Lexington, KY 40503; (606) 278-5852. Contact: Don C. Morgan.

**AGENCY PRODUCTIONS;** *Sound Reinf.*; 1202 Walnut Dr.; Smithfield, NC 27577; (919) 934-2848. Contact: Adrian Howell.

**AIRSHOW, INC.;** *Audio Recording*; 5727 N. 25th Rd.; Arlington, VA 22207; (703) 237-8312. Contact: David Glasser, Ann Blonston. **REMOTE RECORDING** Extras & Direction: Airshow specializes in location recording, engineering coordination and technical direction for remote recording and broadcast. Recent projects and clients have included: Sweet Honey in the Rock at Carnegie Hall (Flying Fish Records), *Happy New Year USA!*, live PBS special w/Mel Torme & The Baltimore Symphony Orchestra, *Tribute to The Lioness Monk* (PBS special), New Music America Festival (American Public Radio), *The Bob And Ray Radio Show*, U.S. Air Force Band, Paul Winter Consort (National Public Radio), George Shearing, Doc Watson, The Lioness Monk Piano Competition, Charlie Byrd Trio, Washington Guitar Quintet, WETA, WBUR, WJHU, WGBH, NPR, Radio Smithsonian. We can supply a portable recording system featuring Calrec/AMS console, KEF/Bryston monitoring, API audio distribution and Sony/AD-R Pro-701, all packaged for efficient on-site setup and transport. Member-SPARS. Please give us a call to discuss your next remote recording or broadcast project.

**ALPHA SOUND & LIGHT;** *Sound Reinf., Lights, Staging, Rental*; 1824 Freedom Dr.; Charlotte, NC 28208; (704) 372-1264. Contact: Al Forbes. **SOUND REINFORCEMENT** Touring Radius: Local, regional, national. Maximum Venue Size: 15,000 (ea. system) Vehicles: (3) 24' trucks. House Loudspeakers: (5) custom 4-way stacking system. Flying System Available: No. Monitor Loudspeakers: (24) custom-built 15" w/horn biamped. House Consoles: Midas PR-004 32 x 8, Audioarts M-8000 32 x 8, Tycobrane 24 x 4. Monitor Consoles: Audioarts 24 x 8, Midas PR-004M 32 x 8. Outboard Equipment: Lexicon 97 Super Prime, Lexicon PCM42, Lexicon PCM41, (4) UREI LA-3A limiters, (4) UREI LA-4A limiters, (4) Klark-Teknik DN-300 graphic EQ, (12) Biamp EQ-270 graphic EQ, Lexicon PCM60 reverb, (3) Yamaha R1000 reverb. Power Amplifiers: Crest 4000, Crest 3000, Crest FA-800. Staging: 40 x 30 stage top. Lighting: Trees, trusses, spotlights. Other Equipment: Two separate systems, both in stereo.

**AMERICAN COMMUNICATION SERVICES;** *Sound Reinf.*; 1885-C NE 149th St.; North Miami, FL 33181; (305) 948-6510. Contact: J. Cordie Miller.

**PAT APPLESON STUDIOS, INC.;** *Sound Reinf., Lights, Staging, Rental, Audio & Video Recording*; 1000 NW 159 Dr.; Miami, FL 33169; (305) 625-4435. Contact: Fran Fiman-Pickens.

**ASSOCIATED SOUND SERVICES, INC.;** *Sound Reinf., Lights, Staging, Rental*; 7954 Angleton Ct.; Newington, VA 22122; (703) 550-9550.

**AUDIO & LIGHT RENTALS;** *Sound Reinf., Lights, Rental*; 1227 W. Lee St.; Greensboro, NC 27403; (919) 370-1234. Contact: Jim Reece.

**AUDIO MEDIA RESEARCH (AMR);** *Audio Recording*; PO Box 1230; Meridian, MS 39301; (601) 483-5372.

**AUDIO TECHNICAL SERVICES;** *Sound Reinf., Lights*; 2413 Ross Clark Cir. SW; Dothan, AL 36301; (205) 793-4540; (205) 792-0706. Contact: Charles E. Arney.

**AUDIOCRAFT—SOUND HUT;** *Sound Reinf., Rental, Audio & Video Recording*; 1604 W. New Bern Rd.; Kinston, NC 28501; (919) 527-8845. Contact: Clark Tut.

**AUDIOIMAGE RECORDING;** *Audio Recording*; 110 N. Jefferson St.; Richmond, VA 23220; (804) 644-7700. Contact: Roger Price, John Valentine.

**A.V. CONCEPTS;** *Sound Reinf.*; 1359 S. Third St.; Louisville, KY 40208; (502) 635-2663. Contact: Jim Hillenbrand.

**AVID REMOTE RECORDING;** *Audio Recording*; 39 Spring Hill Park; Chapel Hill, NC 27514; (919) 929-0551. Contact: Jeff Anderson.

**B&F AUDIO;** *Sound Reinf., Rental*; 2933 Gray Feather Dr.; Charlotte, NC 28213; (704) 547-0788. Contact: Randy E. Fulp.

**BARNETT GERSTEIN ASSOC.;** *Audio Recording*; 4420 Dunwoody Pl.; Orlando, FL 32808; (305) 290-5747. Contact: Bruce Gerstein.

**BEECHTREE RECORDING STUDIO;** *Sound Reinf., Audio Recording*; 2804 Beechtree Dr.; Sanford, NC 27330; (919) 774-8926. Contact: Bill Tripp.

**BERTY'S AUDIO CORP.;** *Sound Reinf., Lights*; PO Box 3928; Hato Rey, PR 00919; (809) 795-8731. Contact: Jose A. Rodriguez.

**B.K.E. SOUND;** *Sound Reinf., Lights, Audio Recording*; 834 Talley Rd.; Chattanooga, TN 37411; (615) 622-8788. Contact: Bryan K. Eley.

**ANTHONY S. BLANC;** *Sound Reinf.*; Tantivy Farm, Rt. 1, Box 4628; Barboursville, VA 22923; (703) 832-5962. **REMOTE RECORDING** Extras & Direction: I am a freelance sound engineer with experience of eight years ranging from club, theater, arena and stadium venues. Recent clients include: 1988 Mick Jagger solo project, 12/86-12/87 David Bowie Glass Spider Tour, 8/86-11/86 Steve Winwood Back in the High Life Tour, 6/86-7/86 Amnesty International U.S.A. tour, 5/85-5/86 Sting/Blue Turtles tour, 10/84-5/85 Wham/Make it Big tour. References available on request.

**BOTTOM LINE STUDIO;** *Audio Recording*; 450 NW 69th Terr.; Margate, FL 33063; (305) 972-4499. Contact: Mark R. Nowak.

**BROADCAST EQUIPMENT SALES & ENGINEERING, INC.;** *Sound Reinf., Rental, Audio Recording*; PO Box 20331; Jackson, MS 39209; (601) 857-8573. Contact: Grant Becker.

**BUZZZ BOYZ PRODZ;** *Sound Reinf., Lights, Rental*; 1717 Durham St. Ext. 111; Burlington, NC 27215; Contact: John Lee, Tommy Nichols.

**CAREY SOUND;** *Sound Reinf., Lights, Staging, Rental*; 3000 Executive Dr.; Greensboro, NC 27406; (919) 379-1943. Contact: Kathy Robinson.

**LOU CASINI RECORDING;** *Audio Recording*; 1001 Neville St.; Follansbee, WV 26037; (304) 527-1758.

**CESAR SIERRA SOUND #1;** *Sound Reinf., Rental, Audio Recording*; Box 6848, Santa Rosa Unit; Bayamon, PR 00621; (809) 798-0053. Contact: Peter Chachere, Cesar Sierra. **SOUND REINFORCEMENT** Touring Radius: Local, regional. Maximum Venue Size: 200,000. Vehicles: Ford 7000, Isuzu w/20' box, (2) Ford 250 vans, Chevy van, (2) pick-ups. House Loudspeakers: JBL 18", (2) JBL 15", 2445/2380, Yamaha JA4281B, (16) Meyer UPA-1A, (8) Meyer USW. Flying System Available: Yes. Monitor Loudspeakers: (4) JBL 3602 Cabaret monitor, (8) Meyer QM, (12) Yamaha 2115H. House Consoles: Soundcraft 800B 32-channel w/matrix, Soundcraft 500B 32-channel w/matrix, DynamiX 32-channel, (3) Yamaha 2404 24-channel. Monitor Consoles: Soundcraft 24-channel, (2) Yamaha 2408 24-channel. Outboard Equipment: (2) Klark-Teknik DN-360 EQ, Klark-Teknik DN-60 analyzer, Klark-Teknik 701 digital line delay, (2) Yamaha REV5, (2) Yamaha SPX900, (10) Yamaha Q2031 EQ, (4) BSS FDS430 crossover, (2) UREI 525 crossover, Lexicon PCM42, Lexicon PCM70, (2) U.S. Audio GateX, White 140 analyzer, (6) Meyer M1-A, (2) Meyer B2-A. Power Amplifiers: (12) Meyer MS-1000, (12) Crown MT1200, (12) Crown MT1000, (12) Crown MT600, (12) Crown PSA-2, (6) Yamaha P2200. Microphones: (16) Shure SM58, (16) Shure SM57, (8) Sennheiser 421, (6) Sennheiser 441, (2) E-V RE20, (16) Audio-Technica, (2) Shure SM81, (2) AKG 451, (16) Countryman Type 85 DB.

**CONTINENTAL FILM PRODUCTIONS;** *Sound Reinf., Lights, Staging, Audio & Video Recording*; PO Box 5126, 4220 Amnicola Hwy.; Chattanooga, TN 37406; (615) 622-1193. Contact: James L. Webster.

**COUGHLIN SOUND;** *Sound Reinf.*; 15223 SW 81st Ave.; Miami, FL 33157; (305) 253-6402. Contact: Kent R. Coughlin.

**CUSTOM RECORDING AND SOUND, INC.;** *Sound Reinf., Rental, Audio Recording*; 1225 Pendleton St., PO Box 7647; Greenville, SC 29610; (803) 269-5018. Contact: Jere Davis.

**DAVIS PRODUCTIONS;** *Sound Reinf., Audio & Video Recording*; 1208 Elm Ave.; Americus, GA 31709; (912) 924-2521. Contact: King Davis.

**DESIGN RECORDING;** *Audio & Video Recording*; 2576 Liberty Hill Rd.; Powhatan, VA 23139; (804) 598-3169. Contact: C.L. Bolling.

**DESTRUCTION PRODUCTIONS;** *Sound Reinf., Lights, Rental, Audio & Video Recording*; PO Box 152; Williston, SC 29853; (803) 266-4257; (803) 266-3662. Contact: Barry Keel.

**DONOVAN AUDIO/THE PROPER AUTHORITIES;** *Sound Reinf.*; 14811 N. Iris Ave.; Tampa, FL 33613; (813) 961-8984. Contact: Joey Donovan.

**DOVE SOUNDS;** *Sound Reinf., Lights, Audio Recording*; 1305 Glen Eden Dr.; Raleigh, NC 27612; (919) 782-1095. Contact: Chris Droessler.

**EDUCATIONAL ELECTRONICS CORPORATION;** *Sound Reinf.*; 216 Oak Ave.; Harahan, LA 70123; (504) 737-4545. Contact: Donald I. Geier.

**EMERALD CITY RECORDING SERVICE;** *Audio & Video Recording*; 2160 Oak Ridge Rd., #H; Orlando, FL 32809; (305) 855-6437. Contact: Lumpy.

**ENDICOTT SOUND;** *Sound Reinf.*; 2892 Endicott Ct.; Clearwater, FL 34621; Contact: Brian Haas.

**FBN AUDIO INC.;** *Sound Reinf.*; 6512 Baum Dr., Ste. 15; Knoxville, TN 37919; (615) 588-3209. Contact: Mike Sullivan.

**FIDELITY SOUND REINFORCEMENT INC.;** *Sound Reinf.*; 4971 Cleveland St.; Virginia Beach, VA 23462; (804) 473-1746. Contact: Jay Meagher. **SOUND REINFORCEMENT** Touring Radius: Local, regional, national. Maximum Venue Size: 3,000-5,000. House Loudspeakers: (8) EAW KF-550, (4) EAW SB-550, (4) EAW JF-500. Flying System Available: Yes. Monitor Loudspeakers: (6) Hill custom bi-amped monitors, EAW tri-amped drum fill, (4) EAW JF-500 side fill, (4) EAW SM-122 passive. House Consoles: TAC Scorpion 32 x 8 x 2, Hill JS3 24 x 8 x 2. Monitor Consoles: Hill PM 2.24 x 8, Hill stage mix 12 x 6. Outboard Equipment: Klark-Teknik DN-360 dual 1/3-octave EQ, Klark-Teknik DN-60 analyzer, (2) Brooke-Siren FDS360 frequency dividing system, (2) TC Electronic 2290 programmable digital delay/sampler, Yamaha REV5 programmable digital reverb, Yamaha SPX90 programmable digital processing unit, Lexicon PCM41 digital delay, Roland SDE-3000 programmable digital delay, MXR01 programmable digital reverb, Symetrix 522 signal processor, (4) Crown FFX-2 frequency dividing system, (4) Yamaha 2031 EQ (for monitors). Power Amplifiers: (15) Carver P 1.5, (4) Carver PM 2.0, (2) Hill DX-3000, Crown MicroTech 1200. Microphones: (25) Shure SM57, (10) Shure SM58, (6) Sennheiser 421, (2) AKG 460, (2) AKG D112, E-V RE20. Other Equipment: 250 amp power distribution w/all cables, HM Electronics house and monitor intercom. Rates: Call for rates.

**FORCE 1 PRODUCTIONS;** *Sound Reinf., Lights, Rental*; 828 Mtn. Leaf Dr.; Tunnel Hill, GA 30755; (404) 673-6472. Contact: Joe Ross.

**FOX FARM RECORDING;** *Audio Recording*; 1431 Saundersville Ferry Rd.; Mount Juliet, TN 37122; (615) 754-2444. Contact: Kent Fox.

**FX SOUNDE COMPANY;** *Sound Reinf., Lights, Staging, Rental*; 6247 Holly Bay Dr.; Jacksonville, FL 32211; (904) 744-4663. Contact: Stuart Neal.

**GALAXY SOUND;** *Sound Reinf., Audio Recording*; 1508 Harlem; Memphis, TN 38114; (901) 274-2726.

**GALLER AND ASSOCIATES, INC.;** *Sound Reinf.*; 2143 Opal Dr.; Orlando, FL 32822; (305) 658-8895. Contact: Christopher L. Galler.

**GARDEN SOUND STUDIO;** *Audio Recording*; PO Box 4870; University, MS 38677; (601) 236-1246. Contact: Britt A. Fitts.

**GARRETT SOUND & LIGHTING;** *Sound Reinf., Lights, Staging, Rental*; 5967 NW 31st Ave.; Fort Lauderdale, FL 33309; (305) 975-8745.

**GEMINI CONCERT SYSTEMS, INC.;** *Sound Reinf., Lights, Rental*; 209 Louisville Ave., PO Box 14306; Monroe, LA 71201; (318) 325-9940. Contact: Rick Pontheux.



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**GHL AUDIO ENGINEERING**  
Nashville, TN

**GHL AUDIO ENGINEERING;** *Audio Recording*; 2807 Azalea Pl.; Nashville, TN 37204; (615) 269-5183. Contact: Gary Hedden, Jim Kaiser. **REMOTE RECORDING** Vehicles: 40' custom-built Great Dane facility. Control Room Dimensions: 8 x 8.5 x 22. Mixing Consoles: Harrison MR-4 36 x 24 w/automation and grouping. Audio Recorders: (2) Otari MTR-90 Mik, Otari MTR-12 2- or 4-channel 1/2", (2) Otari MX-5050B 1/4", (2) Nakamichi MR-1 B cassette recorders. Noise Reduction Systems: (8) Dolby 361 w/Type A cards, dbx 180 stereo Type I, M16/M8 24-channel Dolby A rack available. Synchronization Systems: BTX Softouch, (2) Shadow II, Cypher generator.

—CONTINUED ON THE NEXT PAGE

Outboard Equipment: (2) Lexicon 200 v1.3, (2) Lexicon PCM42, Marshall 5402 Time Modulator, Quantec room simulator, Eventide 910 Harmonizer, (2) UREI LA-3A compressors, (5) dbx 903 compressors, (2) dbx 902 de-essers, dbx 906 flanger, (6) Valley People Dyna-Mite, (4) Aphex EQF-2 parametric EQ, (6) Aphex CX-1 compressor/expander, Alesis MIDverb II. Microphones: (2) AKG 414, (4) AKG 460 cardioid, (2) AKG 460 shotgun, (4) Neumann U89, (8) Neumann KM84, Neumann SM2, (3) Beyer M-500, (8) Sennheiser 421, (2) Shure SM58, (2) Shure SM57, E-V RE20, E-V PL10, (2) Altec M-49, (2) Crown PZM-6S, Sony C-38. Monitor Speakers: (2) Fostex LS-3 modified, (2) Fostex RM-765, (2) Fostex G-7000, (4) Realistic Minimus 7, (2) Auratone, (2) CSI MDM-4. Power Amplifiers: (2) Haller P-500, (3) Haller 220. Video Recorders: JVC CR-6650 3/4" U-Matic. Video Monitors: Panasonic 19" broadcast monitor, RCA B&W 15". Cameras: (2) RCA remote controlled B&W for surveillance. Other Major Equipment: dbx 700 digital processor, Sharp photocopy machine, microwave, coffee pot, fridge. Rates: \$2,500/day, plus mileage at \$1.20/mile. Discounts for additional days. Extras & Direction: GHL is highly regarded in the Nashville music community. Along with our full-scale truck, we operate a small but sophisticated studio for overdubs and mixing. Our crew has extensive experience in all areas of music production and audio for video. Recent clients include Pink Floyd, Michael Jackson, Ricky Skaggs, Grateful Dead, Huey Lewis, David Hungate, Oak Ridge Boys, PBS and Vic Clay.

**GYPSY STUDIO; Audio Recording;** 3039 Hazelton St.; Falls Church, VA 22044; (703) 241-7445. Contact: Mike Rivers. **REMOTE RECORDING** Vehicles: Cube truck, exterior dimensions 18.5L x 7.5W x 8.5H. Control Room Dimensions: 6H x 6.5W x 10D. Mixing Consoles: Soundcraft 600 24 x 8 x 16. Audio Recorders: Ampex MM100 16-track, Tascam ATR60 16-track analog, Sony PCM-501 2-track digital Beta and VHS, various cassettes. Outboard Equipment: dbx 160X compressors, DeltaLab 1024 delay, Roland SRV-2000 digital reverb, Alesis MIDverb II processor. Microphones: Neumann U87, Neumann KM84, AKG C451, AKG C414B/U.S., Shure SM81, AKG D224, Beyer M260, Beyer M201, Fostex M55RP Monitor Speakers: KEF 103.2. Power Amplifiers: Haller DH-220. Video Recorders: Sony SL-300 Beta, Toshiba DX-3 VHS. Video Monitors: Sanyo VM4092. Cameras: Kaygo B&W. Other Major Equipment: Snakes: 150' mic, 200' power, 500' extension snakes available, 24-channel isolated mic splitter. Rates: Rental: \$400/day, \$1,500/week; \$40/hr.

**H&G RECORDED PRODUCTIONS; Audio & Video Recording;** PO Box 161; Chalmette, LA 70044; (504) 469-7963. Contact: Marcelle B. Hardy.

**HOMESTEAD RECORDINGS, INC.; Sound Reinf., Audio Recording;** Rt. 1, Box 1097; Norton, VA 24273; (703) 679-4182. Contact: Ron Swindall.

**IMAGES INC.; Sound Reinf., Lights, Staging, Rental, Audio & Video Recording;** 1662 Stockton St.; Jacksonville, FL 32204; (904) 388-3300. Contact: Bill Lewis.

**INTEGRATED SOUND & LIGHT; Sound Reinf., Lights;** 13218 Pleasantview Ln.; Fairfax, VA 22033; (703) 378-5409. Contact: Ivan Beaver.

**INTERFACE SOUND PRODUCTIONS; Sound Reinf., Lights, Rental;** 5939 SW 12 St.; West Miami, FL 33144; (305) 262-5187. Contact: Juan Turro.

**J SOUND; Sound Reinf.;** PO Box 33301; Raleigh, NC 27636; (919) 851-0767. Contact: Doug Llewellyn.

**JOYFUL NOISE SOUND SYSTEMS; Sound Reinf., Lights, Audio Recording;** 4451 NE 17 Terr.; Fort Lauderdale, FL 33334; (305) 491-6514. Contact: Wayne T. Sherman.

**KENNY'S CUSTOM AUDIO; Sound Reinf., Lights, Staging;** Rm1, Box 625; Hardin, KY 42048; (502) 354-6394. Contact: Kenneth Darnell.

**LEE'S ARTIST SERVICES; Sound Reinf., Lights, Rental;** 2078 LaSalle Pl.; Memphis, TN 38104; (901) 726-9533. Contact: Lee Moore.

**LINDEN INC.; Sound Reinf., Rental, Audio & Video Recording;** 229 N. Henry St.; Alexandria, VA 22314; (703) 549-4424. Contact: Gregg Powers.

**LIPHAM MUSIC CO.; Sound Reinf.;** 3425 W. University Ave.; Gainesville, FL 32607; (904) 372-5353.

**LITTLE RENTALS; Sound Reinf., Rental, Audio Recording;** PO Box 1622; Athens, GA 30601; (404) 237-6540. Contact: Woody Nuss.

**MAGNETIC MEMORIES; Audio Recording;** 1520 Belmeade Dr.; Kingsport, TN 37664; (615) 246-3452 [after 6P. Contact: Lawrence Morris.

## SOUTHEAST

# REMOTE RECORDING & SOUND REINFORCEMENT

**MAGNUM PRODUCTION SERVICES; Sound Reinf., Lights, Staging, Rental;** 2084 Faulkner Rd. NE; Atlanta, GA 30324; (404) 325-8043. Contact: Ralph Traxler.

**MARIAH RECORDING; Audio Recording;** 337 N. 25th Ave.; Hattiesburg, MS 39401; (601) 545-1886. Contact: Vaughn Wilson.

**MARK FIVE/SANDCASTLE; Audio & Video Recording;** 10 Michael Dr., PO Box 7620; Greenville, SC 29610; (803) 269-3961. Contact: Eddie Howard, Rick Sandidge.

**MARTIN AUDIO; Audio Recording;** 1205 Martin St.; Winston-Salem, NC 27103; (919) 721-1729. Contact: Frank Martin.

**MASTERSOUND, INC.; Audio Recording;** 7425 Buckland Rd.; Charlotte, NC 28208; (704) 588-2491. Contact: Jim Deal.

**MCKEEL PRODUCTIONS; Sound Reinf.;** 120 Stuyvesant Rd.; Asheville, NC 28803; (704) 274-1319. Contact: Scott McKeel.

**MEDIA PRODUCTION CENTER; Sound Reinf., Lights;** University of South Florida CTR 217; Tampa, FL 33620; (813) 974-2637. Contact: Thomas Rohling.

**MEMPHIS AUDIO; Sound Reinf., Rental;** 741 N. White Station; Memphis, TN 38122; (901) 761-3880. Contact: Craig Yarbrough.

**MID-SOUTH ELECTRONICS; Sound Reinf.;** 111 Powell Ave.; Monroe, LA 71201; (318) 387-0026. Contact: Don Ossman.

**MILLER RECORDING STUDIO; Sound Reinf., Audio Recording;** 2513 S. Scales St.; Reidsville, NC 27320; (919) 349-8911. Contact: Robbin D. Miller.

**MR. O AUDIO; Sound Reinf., Lights, Rental, Audio Recording;** 2035 S. Lumpkin Rd.; Columbus, GA 31903; (404) 687-6221. Contact: Marice Owens. **SOUND REINFORCEMENT** Touring Radius: Local, regional. Maximum Venue Size: 8,000. Vehicles: Rental trucks for dependability. House Loudspeakers: OAP DP-118, JBL 18"/15"/12"/12" comp driver w/bi-radial, OAP FH-118 subs, Mr. O W25H (2 15"/1" JBL comp driver w/bi-radial EQ), Mr. O 52Ts (15"/1" JBL comp driver w/60-degree horn). Flying System Available: Yes. Monitor Loudspeakers: OAP 2-way Biamp wedges (15"/1" comp driver w/90-degree horn), Mr. O 52T (side fills), Mr. O KA1 drum monitor (2 15"/1" comp driver w/90-degree horn. House Consoles: Soundcraft 500 32 x 8, Canary 32 x 8, Studiomaster 20 x 4, Yamaha EM300 12 x 4. Monitor Consoles: Studiomaster 20 x 8, Yamaha 2408. Outboard Equipment: Lexicon 95 Prime Time II, Yamaha RE7, Yamaha SPX90, Yamaha SPX90II, Effectron III, Roland Space Echo, Ibanez HD-1500, UREI 539 1/3-octave EQs, Yamaha 2031 1/3-octave EQs, Valley People Dyna-Mite (comp/lim/gate/de-esser), UREI 525 crossover, Furman TX4 crossovers, Furman TX3 crossovers, dbx 160X compressors, Symetrix 501 comp/limiters, Crown VFX-2A crossovers, Eventide H910 Harmonizer, (2) dbx 161 comp/limiters, (2) BSS FDS360 crossovers. Power Amplifiers: Crown DC300A, Yamaha P2200, BGW 750, Crown D75, QSC 1400. Microphones: Shure SM58, Shure SM57, PE56, Sennheiser 421, AKG 414. Lighting: (72) PAR 64 w/two 40' trusses, 24 channels of Leprecon (2.4K), and Scrimmer (4.8K) dimming, 10 channels of non-dim 30-amp circuits. Other Equipment: Oberheim DX drum machine, Korg Poly-61M, Moog Minimoog Model D, Akai AX-73 MIDI keyboard, Akai 612 sampler, Roland TR-505 drum machine, Acoustic 370 bass head and Ampeg B-25 cab, (2) JBL 2225, Fender Twin w/JBLs, Ampeg V-4 amp and cab, Rane HC-6 headphone amp, Conn Stroboluner. Rates: Call for rates. **REMOTE RECORDING** Vehicles: Modified Ford E-100 van. (Mixdown in studio) Mixing Consoles: Same. Audio Recorders: Tascam 38 8-track, Tascam 234 4-track, TEAC 3300 2-track, Tascam 32 2-track, Nikko B50 cassette decks, TEAC V-385 cassette deck. Noise Reduction Systems: DX-4D Type I. Outboard Equipment: Same. Microphones: Same. Monitor Speakers: JBL 4312, JBL L-36, Auratone 5C. Power Amplifiers: Crown D75, Crown DC300A. Rates: Call for rates.

**MOBILE SOUND SERVICE; Sound Reinf., Audio Recording;** 1010A Dorothea Dr.; Raleigh, NC 27603; (919) 834-3158.

**MODERN METHOD PRODUCTIONS, INC.; Sound Reinf., Lights, Staging;** PO Box 141; Meridianville, AL 35759; (205) 534-4475. Contact: David Hendricks.

**MOONDANCE AUDIO; PO Box 1460; Roanoke Rapids, NC 27870; (919) 537-9724. Contact: Mark.**

**MUSIC ARTS ENTERPRISES, INC.; Sound Reinf., Lights, Rental;** 2320 Davie Blvd.; Fort Lauderdale, FL 33312; (305) 581-2203. Contact: Frank.

**NATIONAL SOUND/EVENTS INC.; Sound Reinf., Lights, Staging;** PO Box 1177; Newington, VA 22122; (703) 550-7090. Contact: Thomas Linthicum.

**NEW VIRGINIANS-VIRGINIA TECH; Sound Reinf., Lights;** 321 Patton Hall; Blacksburg, VA 24061; (703) 961-6456. Contact: Spencer Allen.

**NICE SOUND SYSTEMS; Sound Reinf., Lights, Rental;** 129 Euclid Ave.; Birmingham, AL 35213; (205) 870-7219. Contact: Pete Nice.

**NOMAD PRODUCTIONS, INC.; Audio Recording;** PO Box 6868; Mobile, AL 36660; (205) 479-2769. Contact: Barry L. Little.

**NORTHERN KENTUCKY UNIVERSITY; Sound Reinf., Audio & Video Recording;** 331 Landrum Center; Highland Heights, KY 41076; (606) 572-5703. Contact: Clarence Woods.

**NORTHTRIDGE SOUND; Sound Reinf., Rental, Audio Recording;** 35 Deerwood Dr.; Aiken, SC 29801; (803) 649-2889. Contact: Geof Northridge.

**OLD DOMINION BROADCAST ENG. SERVICE; Sound Reinf., Staging, Audio Recording;** 9505 Lakewater Ct.; Richmond, VA 23229; (804) 321-4506. Contact: Sam Straus.

**ON CALL AUDIO; Sound Reinf.;** 218 Edmonson Cir.; Nashville, TN 37211; (615) 333-6534. Contact: David Shirley.

**PARADISE SOUND; Sound Reinf., Lights, Rental;** 2721 Forsyth Rd., Ste. 212; Winter Park, FL 32792; (305) 657-0333. Contact: Larry Epstein.

**PEAVEY ELECTRONICS; Sound Reinf.;** PO Box 1230; Meridian, MS 39301; (601) 483-5365.

**PENGUIN STUDIO; Sound Reinf., Rental, Audio & Video Recording;** 1305 Cedar Keys Ct.; Stone Mountain, GA 30083; (404) 299-2614. Contact: Alex Ayers.

**PEPPER PRODUCTIONS/WAITES & WAITES CONSULTANTS; Sound Reinf., Lights, Rental, Audio Recording;** 4201 4th Ave. S., Ste. 3; Birmingham, AL 35222; (205) 591-2004. Contact: Pepper Brown, Terence Waits.

**PHASE AUDIO, INC.; Sound Reinf., Audio Recording;** 1545 Monroe; Memphis, TN 38104; (901) 726-1900. Contact: Murphy Odum.

**PLATINUM PRODUCTIONS OF CENTRAL FLORIDA, INC.; Sound Reinf., Audio Recording;** 6427 Undine Way; Orlando, FL 32818; (305) 298-3917. Contact: Michael Creamer.

**PLATINUM RECORDERS MOBILE SERVICES; Audio Recording;** 658 Douglas Ave., Ste. 1120; Altamonte Springs, FL 32714; (305) 788-2450. Contact: Gary Platt. Touring size: National. Maximum Venue: Any size. **REMOTE RECORDING** Vehicles: 26' GMC coach. Control Room Dimensions: 8 x 15. Mixing Consoles: Sphere Eclipse 48 x 28 w/(32) graphic EQ, (8) super graphic EQ, (16) fully parametric EQ, mod. to include 10 aux sends. Audio Recorders: (2) Otari MX-80 24-track w/CB120 remote, Otari MTR-12 2-track w/1/2" and 1/4" head-stacks, Otari MTR-10 2-track. Noise Reduction Systems: HX-Pro on 24-track recorders, many others available. Synchronization Systems: (2) Adams-Smith Zeia III. Outboard Equipment: TC Electronic 2290 sampling delay, dbx 900 series racks w/(5) dbx 903 comp., (3) dbx 904 gate, (4) dbx 905 EQ, (4) dbx 902 de-esser, (6) UREI LA-4 comp, UREI LA-2 comp., Aphex Dominator stereo multi-band comp/limiter, (2) Aphex comp./gate, (2) Orni Craft GT-4 gate, (3) Drawmer gate, (2) Aphex EQ, (2) Lexicon 480XL, Yamaha SPX90, Lexicon PCM70, Aphex Type B Aural Exciter, Barcus-Berry Electronics phase aligner, (2) Lexicon PCM41, (2) Roland SDE-3000, (3) Roland SDE-2000, DeltaLab 1700 CompEffectron, ADA stereo tape delay. Microphones: (2) AKG 414/PE, AKG C24 stereo, (6) Sennheiser MD-421, (8) Shure SM57, (5) Neumann KM84, Neumann U87, (2) Audio-Technica ATM31R, (2) Audio-Technica AT5-15R, (2) AKG 451E, E-V RE20, Sony EMC-50, (2) Crown PZM, Sony lavaliers, (6) Axe active DI. Monitor Speakers: Fostex LS3, Fostex RM-780, Auratone, Yamaha NS-10M, DeltaLab Mini M1, AKG headphones. Fostex headphones. Power Amplifiers: (2) Haller DH-500, (3) Haller DH-200, Phase Linear 300 aux amp. Video Recorders: Sony 5800 3/4" Video Monitors: (2) RCA TC-2011, Panasonic 19" RTS 1900 color.



**PRODUCTION SERVICES;** *Sound Reinf., Lights, Rental, Audio Recording;* 55 Hanover Circle, #201; Birmingham, AL 35205; (205) 933-5682. Contact: Stephen Smith, David Burris.

**PROGRESSIVE MUSIC STUDIOS;** *Audio Recording;* 2116 Southview Ave.; Tampa, FL 33606; (813) 251-8093. Contact: Ken Veenstra

**PROGRESSIVE PRODUCTIONS;** *Sound Reinf., Lights, Rental;* PO Box 22314; Nashville, TN 37202; (615) 876-4666. Contact: Patrick Hoey

**PROJECT 70 AUDIO SERVICES, INC.;** *Audio Recording;* 777 Lambert Dr. NE; Atlanta, GA 30324; (404) 875-7000. Contact: Jerry L. Connell

**PROLINE AUDIO INC.;** *Sound Reinf., Lights, Rental;* PO Box 799; Chalmette, LA 70044; (504) 279-1124. Contact: Ray Garofalo Jr.

**PROPAGANDA PRODUCTION LTD.;** *Sound Reinf., Lights, Rental;* 5609A Crawford St.; Harahan, LA 70123; (504) 733-8211.

**PROTECH PRODUCTIONS;** *Sound Reinf., Lights, Audio Recording;* 950 Manson; Marrero, LA 70072; (504) 341-2454. Contact: Rick Naizer.

**PROTOLOG INC.;** *Sound Reinf., Rental, Audio Recording;* 4470 57 Ave. N.; Saint Petersburg, FL 33714; (813) 526-1452. Contact: Michael Petrucci.

**PYRAMID AUDIO PRODUCTIONS, INC.;** *Sound Reinf., Lights, Rental;* 2908 Touhouse St.; New Orleans, LA 70119; (504) 486-8158. Contact: Don Drucker

**QUALITY SOUND & VIDEO;** *Sound Reinf., Lights;* 833 Bragg Blvd.; Fayetteville, NC 28301; (919) 483-1212.

**RADIO ACTIVE AUDIOS "GROUND ZERO" REMOTE RECORDING;** *Sound Reinf., Audio & Video Recording;* 9 W. Grace St.; Richmond, VA 23220; (804) 643-2022. Contact: Adam Green, Kirk Henderson.

**RAINBOW RIVER STUDIOS;** *Audio & Video Recording;* PO Box 1708; Auburn, AL 36831; (205) 821-4876. Contact: Larry Barker

**RAM SOUND;** *Sound Reinf., Lights, Staging, Rental;* 10 Arlington Dr.; Tuscaloosa, AL 35401; (205) 759-5284. Contact: Bob McTyre

**RAVEN AUDIO;** *Sound Reinf., Lights, Rental, Audio Recording;* 1918 Wise Dr.; Dothan, AL 36303; (205) 793-1329. Contact: Jerry Wise.

**REAL TO REEL;** *Audio Recording;* 14805 NE 14th Ave.; North Miami, FL 33161; (305) 949-3530. Contact: Gary G. Willhoite, Angelo Enriquez.

**RECYCLED SOUND;** *Sound Reinf., Rental, Audio Recording;* Rt. 1, Box 5; Afton, TN 37616; (615) 639-8569. Contact: John Brown

**REELSOUND RECORDING CO. EAST;** *Audio Recording;* 1701 Green Hills Dr.; Nashville, TN 37215; (615) 385-0220. Contact: David Perkins.

**REMOTE AUDIO PRODUCTION SERVICES;** *Sound Reinf., Audio Recording;* 4410 Park Ave.; Nashville, TN 37209; (615) 297-0513. Contact: Al Craig

**R.F.R. SOUND & LIGHT;** *Sound Reinf., Lights;* 560 Powder Springs, #25-A2; Marietta, GA 30064; (404) 425-5033.

**RM AUDIO;** *Sound Reinf., Rental, Audio & Video Recording;* 3586 Pierce Dr.; Chamblee, GA 30341; (404) 458-6000. Contact: John Tyler.

**ROADWORX AUDIO & LIGHTING SPECIALISTS;** *Sound Reinf., Lights, Rental;* 913 S. Chapman St.; Greensboro, NC 27403; (919) 378-0650. Contact: Vickie Edwards. Hugh Sarvis  
**SOUND REINFORCEMENT** Touring Radius: National. Maximum Venue Size: 20,000. Vehicles: Chevy Tiltmaster 24' House Loudspeakers: (16) Proprietary computer-tuned direct-radiating full-range enclosures loaded w/TAD components (2) 15"/(2) 12"/12". (32) proprietary computer-tuned direct-radiating trapezoid full-range enclosures loaded w/JBL components (2) 12"/(2) 10"/12". (16) proprietary sub enclosures loaded w/Fostex components. Flying System Available: Yes. Monitor Loudspeakers: (12) Proprietary coaxial time aligned enclosures, (28) proprietary biamped lo-profile enclosures, sidefills and drum monitors w/JBL and Fostex components. House Consoles: Soundcraft 8000 40 x 8 x 2, TAC Scorpion 32 x 8 x 2. Monitor Consoles: TAC Scorpion 30 x 12, Soundcraft 500 40 x 12. Outboard Equipment: White 4400 EQs, White 4650 EQs, dbx noise gates and limiters, Valley People 440 limiters, Klark-Teknik DN60 analyzer, White 140 analyzer, Yamaha REV7, Yamaha SPX90, Lexicon PCM42.

—CONTINUED ON THE NEXT PAGE

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—CONTINUED FROM THE PREVIOUS PAGE

proprietary power distribution system, Whirlwind 40-ch. split-r mass connector, transformer-isolated, multi-pin stage boxes. Power Amplifiers: Crest 4001, Crest 8001, Carver PM1.5. Microphones: AKG, Shure, Beyer, Sennheiser, Neumann, Samson wireless. Lighting: Specifications available upon request.

**ROSEMONT RECORDING SERVICES:** *Sound Reinf., Rental;* 222 N. Tonti St.; New Orleans, LA 70119; (504) 821-8611. Contact: Al Taylor.

**ROXY PRODUCTIONS:** *Sound Reinf., Lights, Staging, Rental, Audio Recording;* 325 NW 99th St.; Miami, FL 33150; (305) 541-7699.

**SAM'S TAPE TRUCK:** *Audio Recording;* 2785 Osborne Rd. NE; Atlanta, GA 30319; (404) 237-9075. Contact: Joe Neil

**SCENE THREE INC.** *Audio & Video Recording;* 1813 8th Ave. S.; Nashville, TN 37203; (615) 385-2820. Contact: Dan Ross, Nick Palladino

## Seriously Sound

INCORPORATED

**Audio/Visual Services**

**SERIOUSLY SOUND INC**  
Atlanta, GA

**SERIOUSLY SOUND INC:** *Sound Reinf., Lights, Staging, Rental;* 550-C Amsterdam Ave.; Atlanta, GA 30306; (404) 872-0346. Contact: David Lowell, Paul MacDonald. **SOUND REINFORCEMENT.** Touring Radius: National. Maximum Venue Size: 20,000. Vehicles: Variety available. House Loudspeakers: Renkus-Heinz SR-2, Renkus-Heinz SR-1, Renkus-Heinz LR-2, Renkus-Heinz LR-1, Renkus-Heinz SR-121, Renkus-Heinz processors, Hill M-3 4-way, Renkus-Heinz Smart System. Flying System Available: Yes. Monitor Loudspeakers: (14) Renkus-Heinz 15"/horn bi-amped, Renkus-Heinz Smart System sidefill, (4) Renkus-Heinz custom 2-12"/horn. House Consoles: Yamaha PM1800, Soundcraft 800, Hill J-Series, Hill soundmix/multi-mix. Monitor Consoles: Yamaha PM-Series, Soundcraft 800, Hill M-Series. Outboard Equipment: Yamaha REV7, Yamaha SPX90, Yamaha Q2031, Lexicon 200, Lexicon Prime Time, Lexicon PCM42, AMS RMX16, AMS 1580-S, dbx 900 rack, dbx 166, Klark-Teknik DN360, U.S. Audio Gate, Goldline RTA Tascam 122B, Aiwa ADR30U, Juice Goose, Sony CD, Kenwood CD. Power Amplifiers: Renkus-Heinz P-1500, Hill DX300, Hill DX800, Hill DX1500, Hill 1000A, Hill TX1000, Hill TX800 bi-amp, Crest, Crown, Carver, BGW. Microphones: Shure SM57, Shure SM58, Shure SM81, Shure SM85, E-V RE20, E-V BK1, Sennheiser 421, Sennheiser 431, Sennheiser MK80, AKG 451, AKG 460, AKG 414, AKG 320, AKG 330, AKG D12, Audio-Technica 11, Audio-Technica 21, Audio-Technica 31, Audio-Technica 41, C-ducer, Isomax, PZM, Samson, Nady TD wireless, Countryman DIs, Audio-Technica DIs, IMP DIs, Whirlwind DIs. Staging: Full staging available. Lighting: Complete lighting available, including spots and communication. Other Equipment: Largest inventory of stage equipment in Southeast, complete audio/visual rental inventory. Rates: Upon request.

**S.O.S. ROAD EQUIPMENT:** *Sound Reinf., Rental;* PO Box 391; Maryville, TN 37803; (615) 995-2798. Contact: Roger Schmidt.

**SOUND AND COMMUNICATIONS, INC.:** *Sound Reinf., Rental;* 5830 N. State St.; Jackson, MS 39206; (601) 957-5830. Contact: Don Taylor.

**SOUND & LIGHTING RESOURCES:** *Sound Reinf., Lights, Rental;* Rt. #5, Box 272; Newport, TN 37821; (615) 623-3371. Contact: Randall or JoAnn Inman.

**THE SOUND CATEGORY:** *Sound Reinf., Audio & Video Recording;* PO Box 9; Merrifield, VA 22116; (703) 280-9119. Contact: Mary A. Haller.

**SOUND CELL RECORDING STUDIO:** *Audio Recording;* 601 Meridian St.; Huntsville, AL 35801; (205) 539-1868. Contact: Doug Jansen-Smith.

## SOUTHEAST

# REMOTE RECORDING & SOUND REINFORCEMENT

**SOUND CENTER RECORDERS:** *Audio Recording;* 329 N. Main, PO Box 233; Church Point, LA 70525; (318) 684-2176.

**THE SOUND COMPANY OF CHARLOTTESVILLE:** *Sound Reinf., Rental;* PO Box 472; Ivy, VA 22945; (804) 296-0974. Contact: Dan McCrystal

**SOUND CONTRACTORS:** *Sound Reinf., Lights, Audio Recording;* PO Box 751; Logan, WV 25601; (304) 752-4838. Contact: J.P. Frisby, Jr.

**SOUNDS INTEGRATED:** *Sound Reinf., Audio Recording;* 604 W. Hillsdale Dr.; Jackson, MS 39209; (601) 922-0679. Contact: Rev. O.L. Spragins, Jr.

**SPECIAL EFFECTS TECHNOLOGY:** *Sound Reinf., Lights, Staging, Rental, Audio Recording;* 4850 L.B. McLeod Rd.; Orlando, FL 32811; (305) 423-5516. Contact: Dale Yuhas.

**SPECTRUM AUDIO:** *Sound Reinf., Rt. 24, Box 193;* Johnson City, TN 37604; (615) 282-2208. Contact: Steve Bowman

**STAGE SOUND:** *Sound Reinf., Rental;* 103 8th St. SE; Roanoke, VA 24013; (703) 342-2040. Contact: Reid Henion.

**STEREO SALES; AUDIO REPAIR SERVICE; AUDIO ASSOCIATES:** *Sound Reinf., Rental, Audio Recording;* 637 W. Tennessee St.; Tallahassee, FL 32301; (904) 224-2635. Contact: WT Menasco.

**STOKES PRODUCTION SERVICES, INC.:** *Sound Reinf., Lights, Audio & Video Recording;* 103 Meadow Ln.; Hendersonville, TN 37075; (615) 822-1117. Contact: Allan J. Stokes.

**STRINGS AND THINGS INC.:** *Sound Reinf., Lights, Rental, Audio & Video Recording;* 1492 Union Ave.; Memphis, TN 38104; (901) 278-0500. Contact: Sean Denley

**STUDIO FOUR:** *Audio Recording;* 1918 Wise Dr.; Dothan, AL 36303; (205) 794-9067. Contact: Jerry Wise.

**STUDIO "77" RECORDING COMPANY:** *Sound Reinf., Rental, Audio Recording;* PO Box 57; Smith Station, AL 36877.

**STUDIO SOUTH:** *Audio & Video Recording;* 3423 South Blvd.; Charlotte, NC 28209; (704) 525-0296. Contact: Bill Schinman.

**SYNGRINER SOUND:** *Sound Reinf., Audio Recording;* 280 Northern Ave. #20-I; Avondale Estates, GA 30002; (404) 294-6910. Contact: Berndt Griner.

**WILLIAM C. TALARICO INC.:** *Sound Reinf., Audio Recording;* 1151 Haven Brook Pl.; Atlanta, GA 30319; (404) 233-7825.

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**Hal gets in some practice before joining the army.**

—FROM PAGE 113, *KOREA*

side. The friendliness of the guys and the warmth of the barracks was an incredible change from the previous month. It was wonderful.

We were each assigned a separate room—I couldn't believe what was happening. We had just left thousands of G.I.s sleeping in tents and here I was, the boy drummer from Holyoke being put up in a Hilton. We were shown the shower rooms and the mess hall and then were told that dinner would be in an hour. "If you're not hungry, just go to sleep for a couple of days. You'll get a wake up call."

The hot shower was heaven. The last time I had showered had been two weeks before, aboard the ship. Those awful steel showers were cold, with very little hot water and all of it salt seawater. Showering aboard troop ships with special salt water soap was the worst. You itched for days.

After showering, I headed for my room and covered myself with a big olive drab blanket marked "U.S. Army." I awoke the next day around noon to find a young man hanging up my clothes and cleaning my room. He was a Korean boy about my age and spoke almost no English. He pointed at himself and said, "Me Kim." As I got out of bed, he handed me a bathrobe and opened the door for me to go to the latrine. I was speechless.

I asked a couple of guys who Kim was. They informed me that we each had houseboys. Kim was a student,

working to help his family. He was also saving up to get married. Kim did all the dirty work. He had worked through the night, washing my clothes and pressing my uniforms. The salary was meager, so I was told to give a tip now and then—a toothbrush, a carton of cigarettes, an old shirt.

I spent the next hour or so walking all over the compound. We had all the special military equipment an engineering base would need. We were surrounded by an 8-foot wall that encompassed the 12-acre base. It had a main gate for entry and a few side gates with 24-hour guards keeping an eye on the heavy equipment and surveying gear. The roads were all dirt, as were the streets surrounding us on the outside. It was like a small town just outside of Seoul. The base didn't seem very busy, and I began to wonder what my job was. I soon found out.

After a late lunch, the six of us were sent to Major Brooks' office. We were congratulating each other on our fortunate assignment when the door popped open and we snapped to attention and saluted the major. He saluted us back and said, "Please sit down, gentlemen." Major Brooks was a mild-mannered man with blondish hair, about 35 years old. He wore his shirt open with no tie—a bit casual for a company commander.

"We don't stand on military formality here," he told us. "Nobody salutes, nobody jumps to attention. We're all on a first-name basis. You guys were

picked because of your college educations in geodetic surveying, airborne photography and map-making skills. We're in the midst of using aerial photography to remap Korea below the 38th parallel. It isn't the easiest job in the world, but it sure beats the hell out of infantry duty."

I knew instantly that a big mistake had been made. I could already see myself packing up and saying goodbye to my country club. What a drag.

As Major Brooks looked over the records of each man, spouting engineering terms I had never heard before, all I could feel was a lump in my stomach. As he interviewed each man and assigned him to the appropriate job, he kept picking up my M.O.S. military work sheet, flicking it with his finger, putting it down and picking up the next man's sheet. The other five were sent off to offices, map rooms, dark room facilities or lens shops. I was left sitting there alone with the major.

He picked up my records once again and glanced at them. "Well, Belsky, it certainly looks like a mistake has been made. I see that you're just out of basic training, no college education, and you don't really have a military occupation yet. It looks like you're gonna have to go back to the repo depot for another assignment. I'm very sorry."

I slowly got to my feet and nodded. Then he glanced down again at my records and said, "Just a second—I see here that you play the drums. Are you a professional?"

"Yes, sir—more or less," I replied.

"Well, we've got another musician here, too. Let me give him a call."

He cranked the phone and asked for Santy. A moment later he said, "Santy, we've got a drummer down here that was sent over with the new batch. Why don't you come down and talk to him?"

Lieutenant Santos came running in, out of breath. "Jesus, we need a drummer—you must have been sent from heaven!"

Santos was a trumpet player from Boston, Massachusetts. Since I had grown up in nearby Connecticut, we were practically neighbors, especially when you found yourself on the other side of the world in Korea. He was genuinely excited and explained that they had an all-officer band and no



drummer.

"Can you type?" he asked.

"Not really."

"Can you drive a car?" he inquired hopefully.

"Yes, sir!"

"OK, Belsky, you're gonna be my jeep driver and you're gonna learn how to type. I'll have you assigned to my office."

It was the beginning of a great friendship and quite a learning experience. I did learn how to type, but we spent so much time away from the base on field trips that I felt like I was in summer camp. Santos requisitioned a full set of white Gretsch drums and Zylidjian cymbals which arrived in two weeks from Japan. Here was this Jewish PFC drummer playing with an all-officer band. We played at all the officers' clubs, at parties and special events. When we weren't playing as a full band, we played as trios and various combinations, and they always needed drums.

Each morning we gathered in the dining room and Sergeant Ching cooked our breakfast the way we wanted it. Fresh eggs. Plenty of milk and juice. Our unit of 65 men was drawing rations for 300. At the time, the Air Force was flying missions over Korea to collect photographs for our survey operations. The new photos arrived every morning, along with the fresh rations. We took the aerial photographs and studied them under a stereoscope, noting landmarks and then finding their actual locations in the field. We then made pin pricks on the photos and sent them back to Japan for further processing and assembling for maps.

My duties were to drive Santos and the other officers through the mountains and help set up the stereoscope equipment. They would do the pin pricking and surveying, and we'd drive off to another landmark. It was usually a 9 to 5 day—an easy job and plenty of driving and fresh air. When I wasn't out in the field, I typed reports to accompany the photographs. And once a month I pulled 24-hour guard duty, which everyone had to do.

My first field trip was certainly a memorable one. Four of us drove about 30 miles from the base and found a hill to survey. The other three took off over the hills and left me alone in the jeep with a box of sandwiches and a case of Ballantine ale. The ale was packed in a 24-can corrugated box, totally covered with wax for over-

seas shipping. These cases were a bitch to open. You had to do a lot of digging with a knife to cut through all the packing.

Korea was known for jeep stripping. We were constantly advised to never leave a jeep unattended because the North Koreans were everywhere and would rob you blind if they got the chance. And murder was not unusual. This was my first trip to the field and I hadn't even been assigned my .45 or carbine. I was just sitting there alone in the peaceful countryside when I was suddenly surrounded by about 30 Koreans. They appeared from nowhere and they were angry. They started rocking the jeep and I figured I was going to die right there. I was so scared that all I could think to do was grab the case of Ballantine. With a superhuman strength that surprised me I tore open the case with my hands and pulled out a few of the shiny gold cans. I raised them over my head and started screaming like a madman. The North Koreans thought they were grenades and scattered. I fired up the jeep and tore off. That night I got my rifle and my .45 and was never without them.

After my tour of duty in Korea I got my orders to ship out. I was in a panic about going back on another cattle boat, but was fortunate to get assigned to a presidential liner. As soon as I cleared the deck, I looked up the officer in charge and volunteered my services as a band member. He took me to a small stateroom and said, "You're the first to volunteer—you'll be the band leader." I had my own stateroom with an electric fan and a private shower.

When we arrived back at Camp Stoneman for discharge, we were put into field barracks and told to sit tight. The next day an officer came by for a "friendly" chat.

"Confidentially, men, it's gonna take quite some time to process all of your discharge papers. As you know, there are thousands of you waiting. Now, any of you men that want to join the reserves will be discharged within a day. That's the way they're doing it. The rest of you will probably have to spend a couple of weeks waiting around. It's up to you."

There was no way I was going to join anything. I settled in for the long wait, but we were discharged within a couple of days. Our confidential officer buddy was, of course, full of shit. Then I was off to San Bernardino and a reunion with my family. ■

—FROM PAGE 159, MONITORS

itors in appropriate areas beneath the surface, "with the right type of grating so it doesn't act like a diffraction horn."

Audio Analyst provides monitor mixes via Gamble or Soundcraft Series 4 boards (40 x 16 and 32 x 16, respectively). Power amps are QSC 3800, SAE 2600 and Crown Macro-Tech. Leccese notes, "With the large-frame consoles now providing 4- and 5-band parametric EQ on each output, the use of third-octave graphics for each output mix has gone down to four or five total. Or sometimes none. Which makes the stage-right or stage-left area less cramped when you share it with the guitar tech and 55 guitars and a keyboard rack with 27 DX7s.

"Monitor amplifiers have unique requirements," adds Leccese. "They have to work at full-tilt boogie all the time, all night long. Generally they're more abused than house P.A. amplifiers, so they have to be more reliable and gutsy than the P.A. amps. The Macro-Tech is the most powerful; it puts out about 1,200 watts."

For use above or beneath stages, Audio Analyst offers four standard custom monitors: a double-15, a double-12, a single-12 and a single-15, all with JBL components. They're constructed of 13-, 15-, or 17-ply, 1/4-inch Baltic birch. Each is a "low-profile wedge, which is the standard now but we were one of the first to introduce them back in '78, '79," says Leccese. "You can't get it smaller without sacrificing any more sound quality.

"The monitor is still a coil and paper cone, but the cones are lighter and stiffer, so efficiencies have gone up," he continues. "They're using higher-temperature adhesives to bond the coil material to the former, so power handling has gone up. There's been improvements in raw materials and magnet structures, and the introduction of the new neodymium magnetic material that JBL and Electro-Voice are using promises to make cabinets more efficient and powerful, and lighter. So we're poised right now for a whole redesign of our monitors. With the advances in horn, driver and low-frequency loudspeaker technology, we're on the verge of an introduction by major manufacturers of exciting new uses of 'n-dym' technology, probably within the next year or two." ■

Mix assistant editor Linda Jacobson lives in San Francisco.

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drummer.

"Can you type?" he asked.

"Not really."

"Can you drive a car?" he inquired hopefully.

"Yes, sir!"

"OK, Belsky, you're gonna be my jeep driver and you're gonna learn how to type. I'll have you assigned to my office."

It was the beginning of a great friendship and quite a learning experience. I did learn how to type, but we spent so much time away from the base on field trips that I felt like I was in summer camp. Santos requisitioned a full set of white Gretsch drums and Zylidian cymbals which arrived in two weeks from Japan. Here was this Jewish PFC drummer playing with an all-officer band. We played at all the officers' clubs, at parties and special events. When we weren't playing as a full band, we played as trios and various combinations, and they always needed drums.

Each morning we gathered in the dining room and Sergeant Ching cooked our breakfast the way we wanted it. Fresh eggs. Plenty of milk and juice. Our unit of 65 men was drawing rations for 300. At the time, the Air Force was flying missions over Korea to collect photographs for our survey operations. The new photos arrived every morning, along with the fresh rations. We took the aerial photographs and studied them under a stereoscope, noting landmarks and then finding their actual locations in the field. We then made pin pricks on the photos and sent them back to Japan for further processing and assembling for maps.

My duties were to drive Santos and the other officers through the mountains and help set up the stereoscope equipment. They would do the pin pricking and surveying, and we'd drive off to another landmark. It was usually a 9 to 5 day—an easy job and plenty of driving and fresh air. When I wasn't out in the field, I typed reports to accompany the photographs. And once a month I pulled 24-hour guard duty, which everyone had to do.

My first field trip was certainly a memorable one. Four of us drove about 30 miles from the base and found a hill to survey. The other three took off over the hills and left me alone in the jeep with a box of sandwiches and a case of Ballantine ale. The ale was packed in a 24-can corrugated box, totally covered with wax for over-

seas shipping. These cases were a bitch to open. You had to do a lot of digging with a knife to cut through all the packing.

Korea was known for jeep stripping. We were constantly advised to never leave a jeep unattended because the North Koreans were everywhere and would rob you blind if they got the chance. And murder was not unusual. This was my first trip to the field and I hadn't even been assigned my .45 or carbine. I was just sitting there alone in the peaceful countryside when I was suddenly surrounded by about 30 Koreans. They appeared from nowhere and they were angry. They started rocking the jeep and I figured I was going to die right there. I was so scared that all I could think to do was grab the case of Ballantine. With a superhuman strength that surprised me I tore open the case with my hands and pulled out a few of the shiny gold cans. I raised them over my head and started screaming like a madman. The North Koreans thought they were grenades and scattered. I fired up the jeep and tore off. That night I got my rifle and my .45 and was never without them.

After my tour of duty in Korea I got my orders to ship out. I was in a panic about going back on another cattle boat, but was fortunate to get assigned to a presidential liner. As soon as I cleared the deck, I looked up the officer in charge and volunteered my services as a band member. He took me to a small stateroom and said, "You're the first to volunteer—you'll be the band leader." I had my own stateroom with an electric fan and a private shower.

When we arrived back at Camp Stoneman for discharge, we were put into field barracks and told to sit tight. The next day an officer came by for a "friendly" chat.

"Confidentially, men, it's gonna take quite some time to process all of your discharge papers. As you know, there are thousands of you waiting. Now, any of you men that want to join the reserves will be discharged within a day. That's the way they're doing it. The rest of you will probably have to spend a couple of weeks waiting around. It's up to you."

There was no way I was going to join anything. I settled in for the long wait, but we were discharged within a couple of days. Our confidential officer buddy was, of course, full of shit. Then I was off to San Bernardino and a reunion with my family. ■

—FROM PAGE 159, MONITORS

itors in appropriate areas beneath the surface, "with the right type of grating so it doesn't act like a defraction horn."

Audio Analyst provides monitor mixes via Gamble or Soundcraft Series 4 boards (40 x 16 and 32 x 16, respectively). Power amps are QSC 3800, SAE 2600 and Crown Macro-Tech. Leccese notes, "With the large-frame consoles now providing 4- and 5-band parametric EQ on each output, the use of third-octave graphics for each output mix has gone down to four or five total. Or sometimes none. Which makes the stage-right or stage-left area less cramped when you share it with the guitar tech and 55 guitars and a keyboard rack with 27 DX7s.

"Monitor amplifiers have unique requirements," adds Leccese. "They have to work at full-tilt boogie all the time, all night long. Generally they're more abused than house P.A. amplifiers, so they have to be more reliable and gutsy than the P.A. amps. The Macro-Tech is the most powerful; it puts out about 1,200 watts."

For use above or beneath stages, Audio Analyst offers four standard custom monitors: a double-15, a double-12, a single-12 and a single-15, all with JBL components. They're constructed of 13-, 15-, or 17-ply, 1/4-inch Baltic birch. Each is a "low-profile wedge, which is the standard now but we were one of the first to introduce them back in '78, '79," says Leccese. "You can't get it smaller without sacrificing any more sound quality.

"The monitor is still a coil and paper cone, but the cones are lighter and stiffer, so efficiencies have gone up," he continues. "They're using higher-temperature adhesives to bond the coil material to the former, so power handling has gone up. There's been improvements in raw materials and magnet structures, and the introduction of the new neodymium magnetic material that JBL and Electro-Voice are using promises to make cabinets more efficient and powerful, and lighter. So we're poised right now for a whole redesign of our monitors. With the advances in horn, driver and low-frequency loudspeaker technology, we're on the verge of an introduction by major manufacturers of exciting new uses of 'n-dym' technology, probably within the next year or two." ■

Mix assistant editor Linda Jacobson lives in San Francisco.

—FROM PAGE 64

Powell, who began his career at a traditional studio (Sound Impressions in Des Plaines), found the studio routine a bit too confining and started doing remote recording on the side. One of his early projects was recording bands for a radio show called *The Sunday Morning Nightmare* hosted by Terry Nelson on WZRD in Chicago. After saving enough to buy the necessary equipment and a truck, what started as a part-time obsession became a full-time profession. Since that time, Tim has recorded a variety of acts including The Clash, The Band, The Jam, Greg Kihn, David Johanssen, Buckwheat Zydeco, Clifton Chenier and U2.

We spoke to Tim in his recording truck (where else?) parked at his home base of operations: a leased warehouse.

**Mix:** What are the economics of operating a mobile recording truck?

**Powell:** A lot of it is like owning a recording studio, but part of it is like owning a cab company. You have the additional responsibility of maintaining the truck. In my case, the truck is a 1983 model with about 35,000 miles on it, so maintenance is not that much of a problem. The truck does travel long distances, though. We have been to Detroit, Virginia, Minneapolis, south Missouri and southern Indiana. As far as income and bookings, it is a bit different than a studio. With a regular 24- or 48-track studio, you have a broad range of clients that book time regularly. Your income levels, therefore, look like a straight line. With a recording truck, they look like a sine wave because you are in the business of selling days, rather than hours. It's almost impossible to do a remote for two different people on the same day, although we have done it. So it boils down to either you're booked for that day or you aren't and that can get pretty crazy.

**Mix:** So it's either feast or famine?

**Powell:** Exactly. Although we have figured out ways to diversify. We've mixed projects in the truck, we've done overdubs and we've even recorded bands in our warehouse and used the truck as a "fixed" recording studio. We've even set up a small real-time cassette duplication facility on the side. That came about because I did a heavy

metal band who wanted to do a large quantity of real-time cassette dupes. When they came back and told me what most of the companies that specialize in duplication wanted per cassette, I figured out that I could buy the decks and the tapes and still have some cash left over. I never intended to get into the real-time cassette business, but every once in a while a big job comes through during a slow period and that helps to smooth out the rough edges in the profit curve.

**Mix:** Have you ever thought about constructing a real room for recording purposes?

**Powell:** Yes, that has been part of our plan. Right now, we have an office at the warehouse with doctored acoustics that is good enough for vocals and overdubs. I've even recorded drums in there, though I prefer to record drums in some wacky spaces that have real cool acoustics. There is a very well-run rehearsal space in Chicago called Dress Rehearsal that has three studios and we've recorded album projects there that sound as good as any studio. They have big rooms that are great for drums.

**Mix:** Does your business consist mostly of recording bands?

**Powell:** Chicago is a funny market. It's not like L.A. or New York because most of the recording work in Chicago is for commercials. Jingles are king in Chicago. Even though there are a number of medium-sized 24-track studios that specialize in music recording, it is hard to attract major record deals in Chicago. We have attempted to educate some of our clients about the alternatives to recording in a studio, and when they've tried some of our suggestions, they've been quite pleased with the results.

**Mix:** What are your most productive markets, then?

**Powell:** What I've really gone after in Chicago is blues and gospel recording. My return on investment and energy as well as personal satisfaction is much greater in those areas. I love black gospel music and the blues, and Chicago is the capital of both. Most people know that Chicago is the blues capital but not many people realize that Chicago is also the birthplace of modern gospel music. Just this week an album we did was released by Reverend Cal-

vin Bridges who is an incredible talent. He is considered to be the young gospel giant in Chicago. We also did an album for Reverend Maceo Woods who is an established gospel artist. We also do a number of independent projects for local churches. The beauty of gospel music recording is the emotion and energy you get, both from the artists and the audience. That is impossible to capture in the studio. In fact, in most instances you cannot even fit an entire choir in a studio because the stage plot is so large. There are only a couple rooms in Chicago big enough to accommodate a gospel choir. Plus, the economics of gospel recording dictate live recording. Gospel music really keeps us going.

**Mix:** Do you orchestrate every element of an independent project from start to finish, or do you just do the recording?

**Powell:** I have done the entire project on occasion, but I've found that certain aspects of making a record, such as the artwork, are too time-consuming, especially during our busy season, which is April until November. On a typical self-released gospel session, we'll plan the date and give the client information on the record pressing plants in the area. If it is a cassette-only job, we'll take care of it because it is very easy to do. On vinyl projects, however, things tend to sit while we're busy so we don't get involved with them.

**Mix:** What else have you done to increase your income?

**Powell:** We worked out a deal with several local studios to establish a "studio rate" which is less than our standard day rate. So the studio can quote on doing a remote, mark it up, and still handle the post-production and the mixing.

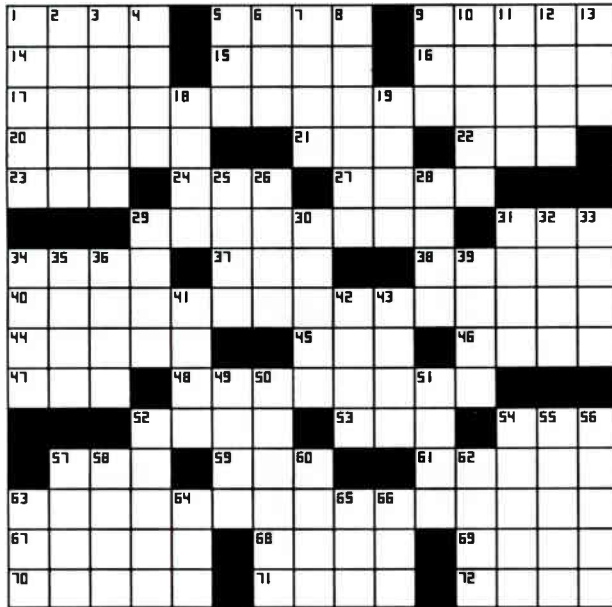
**Mix:** Do you have any advice for other engineers who have a mobile truck or are thinking of starting one?

**Powell:** Yeah. Stay out of Chicago! ■

*Tony Thomas has been involved in broadcasting, recording and publishing for over a decade. He is managing director of Target Communications International, a full-service ad agency, broadcast production firm, and MIDI-based recording studio based in Southern California.*



# MIX WORDS



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## HAVE TAPE WILL ROLL

### ACROSS

1. "I \_\_\_ You"
5. Andy's friend
9. Play guitar
14. Spanish pot
15. A thousand paces, to a centurion
16. Jagged
17. Delivery system for 40A
20. Fishing contest
21. Greek vowel
22. Gaseous prefix
23. Look over
24. Gain
27. Par, in Paris
29. Audio word for most live venues
31. Power \_\_\_
34. Type of aircraft
37. Boat man or sealer
38. Wierd

### DOWN

40. Audio location work
44. Shade of blue
45. Brit 37A
46. A Lodge
47. A group of songs
48. Guides for 17A
52. Porn
53. High note for Guido
54. TV co.
57. \_\_\_ dare
59. La partner
61. Launch an attack
63. Required wires for 40A
67. A disciple
68. Emotion
69. Better than better
70. Got up
71. Make the grade
72. Hobbits' friends

### DOWN

1. Our, in Orleans
2. Cartoon kid from the future
3. Get away from
4. Small fish
5. MD org.
6. Max's counterpart
7. Specialty store adjective
8. Popular dog
9. Going or worthy preceeder
10. Day in court
11. Player's part
12. Computer operator
13. 9D, to Debussy
18. Hawaiian storm
19. Sitar and tabla jam
25. Italian family
26. Despot
28. Mimic
29. Voter group
30. Movement
31. Seed cover
32. Stole
33. Dowels
34. Sp. ladies
35. Distance prefix
36. Skip
39. Dutch communes
41. Definitive word
42. Arrived
43. Face shape
49. Pitcher's goal
50. "The Lady Is \_\_\_"
51. Que \_\_\_
52. "Land's \_\_\_ above!"
54. Comedian Steve
55. Bestowed with grace
56. Abnormal growths
57. Rara avis
58. Pact group
60. Venezuelan copper town
62. French holy man
63. Baden-baden, e.g.
64. Poetic before
65. Writer \_\_\_ Passos
66. New Ips

## Solution to May Mix Words



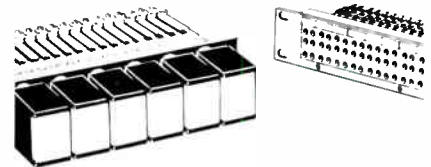
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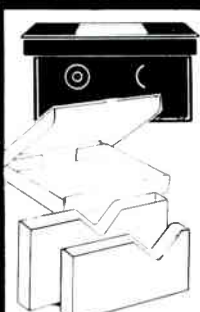
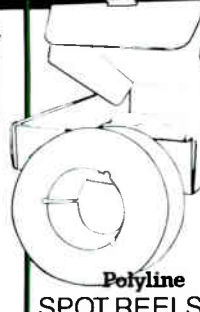
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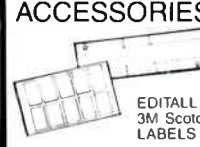

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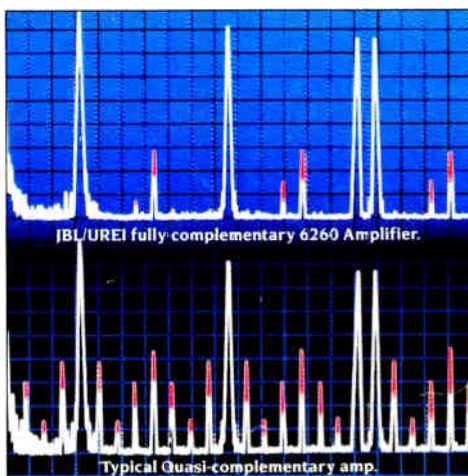
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