# Exclusive Panasonic DA7 Review

PROFESSIONAL PROJECT RECORDING & SOUND

JULY • 1998

Sean Beavan:
the darker side
of recording
Marilyn Manson

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MINING CREEMAN OUR ACCURA

## It's Not Science Fiction. It's Reality.





Every bit you add doubles the resolution of a digital recorder. Compared to 16-bit formats, ADAT Type II's non-compressed, linear 20-bit recording offers a wider dynamic range, less quantization distortion at low levels, more headroom and even lower noise. Result: detailed, full-spectrum audio fidelity that far exceeds the quality of any analog recorder.

Don't get fooled by the science fiction of some "24-bit" recording systems. Just read the fine print: the state-of-the-art ADAT Type II recorders offer audio specs that rival any 24-bit system, without resorting to tricks like data compression or track sharing.

While the rest of the world is trying to figure out the final frontier of recording formats, you need to make a decision. What's the best choice today that will keep you ahead of the game tomorrow?

The answer: ADAT Type II. It's the next generation of Alesis' award-winning digital audio technology that combines the proven power of ADAT with the astonishing fidelity of true 20-bit linear recording.

With the new XT20°, you get a serious improvement on the world standard for professional recording. The new LX20° is the most affordable ADAT ever made. Both provide all the real-world qualities that made ADAT the most popular professional recording format: modular design, efficient tape-based media and complete compatibility with over 110,000 ADATs around the world. Plus, as the only modular digital multitracks that write 20 bits to each track of tape, the new ADAT Type II recorders offer audio quality that's miles ahead of any 16-bit system, period. And with the introduction of the ADAT-PCR° interface card, you get the advantages of nonlinear editing on

your Mac or Windows computer seamlessly integrated with ADAT format recording.

Most importantly, the intuitive ease-of-use, comprehensive features and incredible affordability of the ADAT Type II systems put no limits on your creativity. Because, after all. the final frontier is really your imagination.



There are over 110,000 ADATs in use today, and the new ADAT Type II recorders are compatible with all of them. The XT20 and LX20 will work with your 16-bit ADAT tapes, and you can combine the Type II recorders in a system with any model of older ADAT.



If you think tape isn't as advanced as other removable recarding media, think again. You'd need more than 30 Zip disks to equal the 3.4 gigabyte storage capacity of just one inexpensive ADAT tape.

For more information on ADAT Type II, the XT20, the LX20 and the PCR, see your Authorized Alesis Dealer.

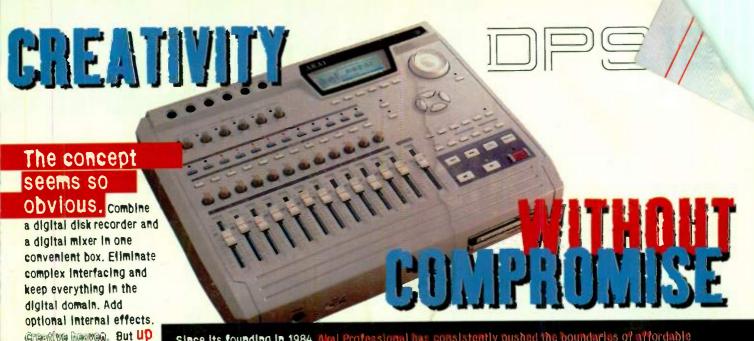
Or call 800-5-ALESIS to order the ADAT Type II Systems video and brochure (\$4.95 for shipping and handling).

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ALESIS
CIRCLE 02 ON FREE INFO CARD



Since its founding in 1984, Akai Professional has consistently pushed the boundaries of affordable recording technology. From the original MG1212 12-track recorder/mixer, to the breakthrough A-DAM digital multitrack, to the DR4/8/16 professional disk recorders and the DD family of audio post-production tools, each Akai recording product has established new levels of performance and value.

Now, with the DPS12, Akai builds on this experience to bring professional-quality digital recording and mixing to the personal and project studio at a price that's truly unexpected.

(Not to prolong the suspense, it's \$1499 msrp.)

#### More is Better

until now, buying

anything that you could

record your music. Or a

compressed data format

that sounded almost as

good as CD quality. Or a

user interface that you

Now, finally, the

concept of Integrated

digital recording and

mixing lives up to its

Studio, Designed for

those unwilling to

vision, the DPS12

recorder (with

combines a 12-track

random-access digital

professional-quality

uncompressed 16-bit

digital mixer in one

of spectacular!

- creativity

sound and powerful non-

linear editing) and a 20-

channel MtDt-automatable

compact, incredibly easy-

price that is nothing short

to-use package. All at a

without

DPS12 Digital Personal

compromise their creative

promise with Akal's

could almost make sense of.

afford meant settling for almost enough tracks to

At the heart of the DPS12 is a powerful random-access disk recorder capable of simultaneously playing 12 (that it welve) track of uncompressed 16-bit linear audio from optional removable JAZ cartridges or SESI hard disks. More tracks for more recording flexibility. More control of individual parts. Less need for track bouncing.



And speaking of more tracks, the DPS12 also lets you record a whopping 250 virtual tracks. At mixdown, you can assign any virtual track to any of the twelve physical tracks for playback. This gives you the freedom to compare multiple takes, experiment with alternative arrangements, even combine parts of different virtual tracks on a single track.



At the front end, the DPS12 lets you record on up to 8 tracks simultaneously through six high-quality balanced analog inputs and a S/PDIF stereo digital input at sampling rates of 48kHz, 44.1kHz or 32kHz.

#### The Wait is Over

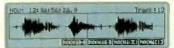
Since the DPS12 is a random-access recorder, waiting for tape to wind is a thing of the past. The DPS12's locating functions let you move instantly to any of

12 quick-locate points and 100 stack memory points. The stack points can even be named, so you can identify locations by the part of the song (FIRST VERSE, CHORUS, etc.) or even by specific lyrics.

#### Easy Editing

Ever wonder how people managed to write anything before word processors? Well, after experiencing non-linear editing on the DPS12, you'll wonder the same thing about audio. Insert, Delete, Erase, Copy or Move sections of single- or multi-track audio from anywhere to anywhere within your project. This is stuff you just can't do with tape.

The DPS12's high-quality jogging and graphic waveform display let you zero in on your precise edit points.



Then call up an edit screen (complete with a graphic representation of your selected operation) and Do It.



Next, use the special Play To and Play From keys to confirm that seamless edit. Changed your mind? 256 levels of Undo are only a button press away.

#### Mix Master

The DPS12's digital mixer is a model of flexibility. During mixdown, for example, the inputs can be used as an additional 8-channel Thru Mix, perfect for adding tracks from sequenced MIDI modules to the 12 recorded tracks for a true 20-channel mixdown. Two AUX sends and digital EQ are also included.



Found the perfect mix? Mix setups can be saved as snapshots and recalled at any time. And since all of the DPS12's faders and panpots generate MIDI controller data, you can record your mix moves into an external MIDI sequencer (like our MPC2000, for example) and play them back in sync with the DPS12.

#### Effects Inside

If you want the added convenience of integrated internal effects (not to mention keeping your mix entirely in the digital domain), add the EB2M multi-effect processor board. The EB2M gives you two independent processor with a wide variety of programmable effect types.

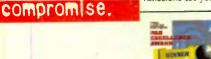
#### It Wants To Be Your Friend

It's one thing to give you all the tools you need to do the job, but it's another thing entirely to make them useable. It is, quite simply, really easy to use. At the heart of its friendliness is its informative graphic display. Backlit and easy to read, it always gives you a clear picture of what's going on with your DPS12. Frankly, it's all so simple that most of you may never have to take the manual out of the box.

#### Check It Out

There's a lot more to the DPS12 than we could fit in this ad, so head down to your local Akai Professional dealer for some quality hands-on time with a DPS12. And don't forget, that's

\$1499<sup>-</sup> msrp.



AKAI Akai Musi

Akai Musical Instrument Corporation 4710 Mercantile Drive, Fort Worth, Texas 76137

professional [phone] 817 831 9203 [fax] 817 222 1490 www.akai.com/akaipro

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CIRCLE 93 ON FREE INFO CARD

#### **UNFLINCHING ACCURACY.**

We've claimed it. Reviewers and power users are confirming it: the HR824 is the most accurate 8-inch 2-way near field monitor you can buy. It lets you hear exactly what was recorded — from microphones right through to your mixdown deck. You'll suddenly discern fine nuances of sonic texture. dynamics, equalization and stereo perspective that were sonically invisible before. As one owner put it, "I am correcting a lot of mixes I have made in the past."

# HR824 According to Mix flat according to Mix

According to Mix magazine's recent field test of the HR824...

"Frequency response was the flattest we have measured so far... there can be no question... they speak the truth."

"The HR824s performed admirably, allowing us to distinguish very fine shades of tonal color and to establish subtle timbral and harmonic relationships between sounds. When the mixes were played on other monitors, including some that cost more than twice as much, they translated very well. The overall imaging was extraordinarily clear and detailed."

# **HR824 ACTIVE NEAR FIELD**

Because the HR824 is active, we can precisely match each transducer's actual output. During final assembly, each HR824 is carefully hand-trimmed to ±1.5 dB, 39 Hz 20kHz. As proof, each monitor comes with its own serialized, guaranteed frequency response printout.

#### EXTREMELY WIDE SWEET SPOT.

Instead of a traditional, narrow

"sweet spot" directly between the monitors, you'll discover that the HR824s have a wide, "sweet zone." They maintain a wide, coherent, stereo panorama that lets you move from side to side — and share what you hear with others.

Again, Mix magazine...
"[HR824s] also have
a wide off-axis listening range, due to
the high-frequency
dispersion of the
waveguide...the mids
and highs were tightly
focused, and the stereo
image well defined."

## EXTENDED LOW FREQUENCY RESPONSE (sub

woofer is built in\*). The HR824 has the lowest frequency response of any 8-inch near-field

monitor. It really IS capable of flat, accurate, articulated response below 39 Hz and usable response to 30Hz — low frequency accuracy that simply can't be achieved with passive speakers. Bass notes start and stop instantly, without

\*A large honeycomb composite piston mounted on the back of the cabinet couples with the front woofer, acting as a



AC power and input connectors (1/4" & XLR) extend directly from the bottom of the amplifier down, allowing the cabinet to fit flush against any surface.

overhang, distortion or "tubbiness." *Mix* further states...

"The HR824s handled the ultra-low bass remarkably well... Mackie asserts that the HR824s are smooth from 39 to 20k Hz (±1.5 dB), and our tests corroborated the claim. This is no mean feat for monitors this size, and at this price."

#### BRING ON THE HR824s. HOLD THE ICEBERGS.

Simon Franglen and his cohorts worked on the blockbuster hit Titanic at Castle Oaks Studio in Calabasas, CA. The studio was equipped with expensive studio monitors (one each for left, center and right) and a matched sub

woofer. When Simon received three Mackie HR824s, he immediately did a series of rigorous listening tests against the old monitors. The unanimous decision: replace the studio's previous near field monitors with the HR824s.

"The difference was extremely pronounced," explains Simon.
"Three HR824s gave us better bass response than the larger monitors with a sub woofer. The HR824s were louder, had more dynamic response, and the imaging throughout the room [was incredible]." Simon says the HR824's sweet spot is much larger, which made listening to things easier, "when you were off to the side of the room." "Apart from

very expensive speakers," says Simon, "I've not come across any other speakers that sound as good. They absolutely tell me what I'm putting on tape."

One person who's taken Mackie to heart is Britishborn synth player/producer SIMON FRANGLEN. You may not know his name, but you most certainly know his work. Simon Franglen's curriculum vitae includes work with Grammy winners Eric Clapton. Madonna, and Celine Dion (including the single from the blockbuster movie Tiranic). rockers Yes and Crash Test Dummies, and legendary performers such as Michael Jackson and Parbra Streisand. Simon's done work in the movies, too, including Titanic, The Client, Dances With Wolves. Mission Impossible, Seven, and Contact. He's won seven Clio

Awards for his work in television commercials—his clients have included Nike and Lee Jeans. His talents as a session synth player and programmer, as well as producer, are wellknown throughout the entertainment world. With such credits, you'd think the guy was using incredibly esoteric, expensive gear. How else could he get such award-winning results? Well, Simon will be the first to say: you don't have to spend wads of money to get tough, quality sound gear. Not with Mackie.

# MONITOR—WELL WORTH DISCOVERING.

#### How much is unflinching accuracy worth to you?

As we talk to more and more professional engineers who have converted to Mackie HR824s, one

thing is becoming especially apparent — our near field monitors can uncover nuances that other speakers miss. In fact, one Very Prestigious Major Los Angeles Studio Complex has now installed HR824s in its Quality Control

Department — because our monitors can uncover miniscule audio flaws that were undiscovered during the tracking and mixdown process on "big studio monitors." When you value the quality of your creative product, HR824s should be in your studio, too.

#### HUMBERTO GATICA, TRIPLE GRAMMY AWARD-WINNING ENGINEER/ PRODUCER

Being at least nominally humble we thought it would take years for mixing/producing legends like Humberto Gatica to publicly admit — much less proudly proclaim — to prefer our HR824 near field monitors.

We're delighted the esteemed Mr. Gatica proved us wrong. After being turned on to HR824s

by Simon Franglen,

Humberto new uses

them at his

private facility

and has

carrying cases for a second

pair so he can get

the same accuracy

in studios that

haven't yet become

HR824 converts. Talk about

a traveling ad

Humberto's stellar ear for mixing has served him well as a producer: Grammy awards and nominations for engineering (Chicago, Michael Jackson, Streisand) led the way to a Grammy for producing Celine Dion's "Falling Into You" and mixing/producing her 18X platinum album "Let's Talk About Love."

Mix Magazine quotes from Mix Magazine Field Test by Barry Cleveland, April 1998. Reprinted by permission. And this isn't the only glowing review we've gotten. Check out the February 1998 issue of Recording Magazine, beginning on page 30; the April issue of Pro Audio Review, page 16; and the October 1997 issue of Audio Media, page 46.

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PROJECT RECORDING & SOUND TECHNIQUES VOLUME 9, ISSUE 7 JULY 1998



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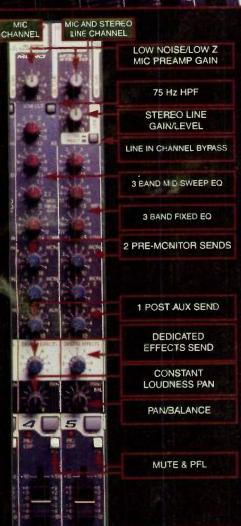
#### ON THE COVER:

Sean Beavan at L.A.'s Record Plant. Photo by Edward Colver. EQ (ISSN 1050-7868) is published monthly plus Buyer's Guide in December by Miller Freeman PSN Inc. 460 Park Ave. south, 9th fil., New York, NY 10016-7315. Periodicals postage paid at New York, NY and additional mailing offices. POSTMASTER. Send address changes to EQ, P.O. Box 0532, Baldwin, NY 11510-0532. SUBSCRPTIONS, U.S. \$29.95 for 1 yr. (13 issues), CANADA add \$10.00 per year for surface; other countries add \$15.00 per yr. for surface; All add \$30.00 per yr. for Airmail All subscriptions outside the U.S. must be pre-paid in U.S. funds by International Maney Order, checks draw from a bank located in the USA Visa, Master Card or American Express. Back-issues \$5. Printed in the U.S.A.

# SO COMPACT IT'S HUGE!

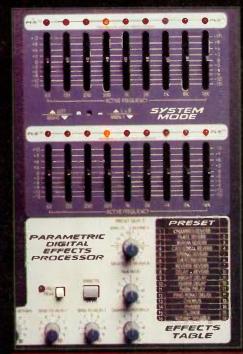


THE XR 886 HAS SO MANY HIGH-TECH FEATURES THAT OUR ART DIRECTOR WANTED TWO PAGES FOR THIS AD. BUT WE FIGURED IF WE COULD FIT SO MANY FFATURES INTO SUCH A COMPACT PACKAGE, WE COULD SQUFFZE THEM ALL ON ONE PAGE.



#### TWO 9 BAND GRAPHIC EQS WITH FLS (PATENT PENDING)

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### *Willie Nelson* Is Nuts

During this past May, I had the opportunity to get back on the road and tour the country from Seattle, WA to Hallandale, FL and parts beyond in support of the EQ Magazine All-Stars Live Road Tour. Now you would think that after touring as a musician and then moving around from studio to studio doing music productions that I would've had enough of "the road." Well, yeah...but one of the good/bad by-products of having spent extended time on the road is the short-term (that is, damaged) emotional memory that results. People can convince you to do these things, and you're off before your brain synapses start firing off warnings. So...

In cooperation with 11 different Guitar Center stores across America, I traveled to stores to present EQ contributing editors, columnists, and special guests to G.C. customers and EQ readers from coast to coast. We presented clinics on varied topics — from surround sound to live miking to guitar effects to music on the Internet.

The idea behind the EQ All-Stars Live Road Tour was (obviously) to present EQ live and in person. And while I was hardly alive at the end of the tour, that's what we did. It was our chance to get out and share information with you. The Tour enabled folks to come out and ask questions in an intimate (well, maybe not, but the lights were low...) setting - someplace where they wouldn't feel nervous or self-conscious about asking questions.

Two things that struck me (besides exhaustion and bad food; some things never change) were that: [1] because of the rapid changes in technology, musicians and project studio personnel are hungrier than ever for good, useful information; and [2] the EQ contributing editors and columnists really are a group of extremely talented and diligent individuals who take pride in sharing their knowledge with others. They are the best in the business.

I ran around the country sharing tips, techniques, and bad food with Craig Anderton, Eddie Ciletti, David Frangioni, David Miles Huber, Al Kooper, Bobby Owsinski, Al Schmitt, Robert Scovill, Bennet Spielvogel, and Tim Tully. If you missed it, you missed out.

Playing to intelligent, curious audiences, I had the chance to ask hundreds of readers and readers-to-be about what is important to them. The number one answer? They need to share information that will enable them to do their jobs better. The crowds contained folks of varying levels of expertise, but all shared the common bond of needing more real-life help. We hope we provided that

We plan on doing more tours in the very near future. If you are interested (and why wouldn't you be, huh?), but missed out on the maiden voyage, get in touch. Let me know where you'd like us to show up next, where you'd like to have the seminars presented, and what topics you'd like covered. (And potential sponsors shouldn't hesitate to call; breakfast at Denny's is a budget buster.)

Until then, keep in touch, keep reading, and stay home until my brain tells me it's time to hit the road again and come to your town. See you there.

(Muchas gracias to tour sponsors AKG and JBL — without whom I could have stayed home. Thanks also to Matt Charles, Bill Evans, Diane Gershuny, Albert Margolis, Andy Myers, and Herb Schiff of EQ and Gig for jumping into the fray when I needed extra help at certain sites.)

—H.G. La Torre

The power of an 02R digital mixer and 16-track hard disk recorder

(cleverly

disguised as

a \$1,000

computer card).

Imagine having the processing power o

digital recording console on a computer card. When you install the card in

your computer, you've got a 24-channel, 10-bus digital mixer with all

the mixing power of the acclaimed 02R. Pretty great. Imagine this card

also gives you 16 tracks of tape less recording

with up to 32-bit resolution. And works

canability

104 hands of

Two 32 his effect

out of the box with the industry's most

popular PC and Mac recording soft

ware\*. Imagine you can have all

this for under \$1,000. Yamaha

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tal recording and mixing system

inside your computer. For details.

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#### **ROLL WITH THE CHANGES**

I can't tell you how much I enjoy your magazine, and all the great columns, information, etc. It's amazing how your columns and information seem to stay right in step with everything I'm doing as an independent project studio owner/producer/engineer.

I'd like to comment on the recent editorial [EQ, 5/98] by Lynn Fuston: "Are Engineers Obsolete?" and the thoughtprovoking piece by Steve La Cerra [EQ, 3/98]. They were both very good takes on the current state of affairs of the "Business." Yes, our roles are constantly changing in this new "Golden Age." (Who wants to be stuck in the same thing forever, anyway?)

Like any other business, it is up to us, the people that produce and engineer this stuff, to read the changes in the landscape, and adapt accordingly. While there may be less and less need for tape alignment or bias adjustments on 24 track machines, there are never enough talented folks around to fill the real jobs. And those jobs are still out there, they just keep changing, always adapting and evolving to whatever the demands of the clients' needs are right now. One just has to look harder, stay sharp, and be ready for new opportunities.

Looking at the size and scope of the industry today, versus what it was thirty, twenty, or even ten years ago, there are as many opportunities now, probably more, than there were back then. But they have changed, just like everything else today. It's a fact: digital has taken over the industry. Being an engineer now also means staying on top of the latest on a variety of DAWs and computer platforms, from a huge pool of manufacturers, as well as knowing how to work the equipment and make it spit out something audible.

Some folks wanting to get into this business will ask me from time to time: Where did you learn all this, what school, what degree? My answer is always the same: "Who says I'm done learning?" This type of career position is never really "done," it's always a matter of growth, new opportunities, rethinking traditional, proven concepts and applying them to the new technology, etc.

Granted, there will always be those artists who think they can do it all, and there are some who actually can, theoretically putting someone out of a job. But why sweat it? As the need for pro audio, sound for picture, live sound,

sound design, and so many other opportunities grows, I doubt we'll see any shortage of jobs any time soon. The need will always be there, it's just trickier sorting it all out.

We are a long way from the men in white lab coats at RCA and Abbey Road, just as the engineers of the next millennium will be an evolved version of what we are now. Like the music and the technology, it's ever-changing. Those who get stuck in one mindset or one position forever are doomed for disappointment. Nothing lasts forever.

I don't look at the current state of audio engineering as the glass is half-full or half-empty. The glass, in my opinion, keeps changing size! It's up to us to keep tabs on that ever-changing glass.

Joe Hannigan Weston Sound Philadelphia, PA

#### SURVIVAL OF THE FITTEST

Perhaps similar to Lynn Fuston [Editorial, EQ, 5/98], I have been made to feel obsolete at different points throughout the last 16 years as an engineer. Sadly, I did not use this as an opportunity to make necessary changes or even pay attention to what was going on. Instead, I was more likely to take criticism personally and eventually make necessary changes. The only regret is the time lost between the feeling of obsolescence and the change. In an ever-evolving business like music or professional audio, time is the only nonnegotiable factor. With such a loosely defined job as "engineer" we are expected to make it sound "right," fetch beverages, and break up fights. I have done that and more to earn a living and I have no regrets about it. Here we all sit in 1998, and if we apply the skills that made us money, happy, or both in 1988, we deserve to be fossil fuel in the near future.

Reading the May editorial made me think hard about where we are and how we got here. This is a time where everybody can be the artist, producer, player, etc. If anyone finds that hard to swallow, look through EQ advertisements and tell me who manufacturers are selling to. On the opposite page from the editorial. Lexicon (a name I have trusted for years) is selling their first guitar amp to "the artist, the engineer, and the tech."



is where the money is.

Please understand I have no axe to grind. For a long time, I thought Roger Nichols parked his car next to God's. That may still be so, but I now believe there is room in that parking lot for Beck's car as well as the cars of The Crystal Method - if you catch my meaning. This business is about change. We are the only ones who can make us obsolete.

> Ross Harney Seattle, WA

#### LIVE AND LET DYE

I was intrigued by your May '98 issue's article on burning your own CD-Rs in order to sell them to the public. There's something interesting that people should know before starting a project like this. I work in electronics repair for a large airport, and we have some CD players using CD-Rs as part of an informational display. These players constantly play the same 3-minute track over and over. What we've been noticing is that after a year or so, the CD-Rs can no longer play that track and have to be replaced. The other tracks are fine and can still be played. Granted, this is after hundreds, if not thousands, of plays, but I think it clearly shows that you can wear out a CD-R. Regular CDs are stamped out mechanically, whereas CD-Rs are made by the effect of a laser on a dye layer, so this kind of makes sense. Hope this information has been of use to you.

> Terry Gould via Internet



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#### PORCH PLAYER

I read with great interest Mike Sokol's article about miking acoustic instruments [EQ, May '97]. I am an upright bass player in an absolutely acoustic bluegrass band in Atlanta, GA. As time has worn on, back porch playing has given way to gigs in clubs, etc.

I don't need the money (I have a day job), but playing on-stage might be fun if it weren't for the hassles of all those damned wires! I started with a Shure Beta 57 wrapped in a towel and stuffed in the tailpiece. (Not bad, but it seemed "incorrect" to wrap a mic in a towel!) I tried the Beta 57 on a stand, but found that I (inadvertently) moved around too much. This caused great agony for the sound guy. I need a clip-on mic (preferably under \$200). (I'm looking at a Crown GLM 100.) How can I avoid feedback? (I haven't had feedback problems yet, but some of the fellows that stand close to the monitors have.) Are some mics more feedback prone than others?

Would you suggest a few tips for onstage monitors and mic combinations that would allow me to get into the same "groove" on stage that I am able to get into on the back porch? My philosophy re: the "groove" is that if the band members can hear each other and there are minimal distractions such buzzing and popping and nonfunctioning equipment, the rest should be as easy as playing on the

porch. I am considering a Hot Spot®type monitor because I can control the volume and also direct the sound towards my face and away from the mic. My concern is that such a monitor may be somewhat "lo-fi."

Stu Stuckman Free Range Chickens via Internet

I've used a GLM 100 on standup bass a number of times, and it has worked very well. I've also used an E-V 635 omnidirectional mic in a piece of foam rubber stuffed in the tailpiece, and that was also fine. Some of my engineering buddies like a Sennheiser 421 in that position. Sennheiser just came out with the Evolution 602, which is designed for standup bass and kick drum, but it's rather large. I've got one for kick and really love it. A lot of my bluegrass clients use bridge pickups, but I don't like them because the sound quickly gets really brittle, especially if you do any bowing.

One solution to the feedback problem is to use both a bridge pickup, which goes to the stage monitors, and a microphone for the FOH sound. This gives you the best of both worlds since bridge pickups generally don't sound as nice as a mic, but are much less prone to feedback. Part of the problem is that even a cardioid pattern mic will tend to be omnidirectional at low frequencies, and you're putting it next to a

large flat surface, which really messes with the rejection pattern. So you can't get a large amount of gain from a mic in that position.

If you're really serious about feedback, you need at least a 1/3-octave equalizer on the monitor speakers that will allow you to notch-out the problem frequencies. Better than that, Sabine makes a feedback controller that automatically puts in very narrow frequency cuts where feedback occurs.

This isn't cheap technology, but it does simplify the job of the soundman a lot. The Hot Spots®-type monitors are OK, but you need to limit the bass energy going to them or they sound terrible. Cut everything below 100 Hz and they sound fine.

Hope this helps. Let me know how you make out. Check out my Web site for more info.

> Mike Sokol **Contributing Editor** EQ magazine jmsokol@intrepid.net www.soundav.com

PRAETZEL TWISTS

I really appreciate Eddie Ciletti's articles and have found them to be invaluable. Being in Montana, it is difficult at times to get expert advice on pro audio equipment and techniques.

I'm looking for advice on wiring mic preamps into our studio. I know that the cleanest possible route is to go straight from the wall jack to the multitrack, but I sometimes like to compress to tape, as I have more tracks than compressors. I use ADC TT-type patchbays, and I'm curious if I should wire the preamps to the patchbay for versatility or if I should stay the purist and go straight to tape with

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them. The preamplifiers are Benchmark Media MP-1 models (micro frame). I am using Mogami studio cable. How much degradation of the signal will I lose by wiring to the patchbay (through a punch block)? Is it really something that I (the very average engineer) am going to notice? How are other studios doing it, and is there a way to get both versatility and clean audio?

> Steve Praetzel West Shore Recording Lakeside, Montana

I've wired mic panels to a bantam patchbay, so I wouldn't worry about sending a line-level signal there. Note: Keep your patch plugs clean.

A little compression, especially on the way to digital tape, is a good thing. Of course, there are many ways to skin a cat, er, uh...use compression, but I've found one approach very suitable to digital (making that "format" assumption). One is to use a very slight ratio -1.25:1 — but setting the threshold all the way up; that is, perform across-thedynamic-range processing. If it sounds like it's too much, just turn the ratio down (1.15:1) until it doesn't. Also, a slow attack and fast release help to counteract the "sound of digital." Thanks for reading.

> Eddie Ciletti **Contributing Editor** EQ magazine

#### DAT FIXES

Lately I've been getting a bunch of Panasonic DATs into my shop with highly intermittent problems — usually with searching to a specific audio point using the scrub wheel or using the skip function. Some [clients] complain of constant digital crap from the machine, others of just a short burst of junk before the machine correctly tracks itself.

Sometimes cleaning and/or aligning the units fixes this; sometimes it's an indication of a worn head (if the error rate remains high). Sometimes, though, this just happens once in a while, say once in 20 attempts. It's very irritating to trace the problem, and I hate to just go in and wholesale replace stuff - brakes, gears and so on. Especially since this problem is so intermittent.

Have you run into the same thing?

Is it just that most of the 3700's have just enough use by now that parts are wearing out? Keep up the good work.

> Michael Gore via Internet

Take note that on all Panasonic 3700's from late '94 (serial number AA4...), the case paint changed from "textured" to shiny. Inside, the upper head drum changed from having relief rings to not having them. The position of the record current also changed from mid rotation to full counterclockwise.

Apparently, production of DAT machines was moved to a different factory. Since that time, the heads do not: [1] last as long; or [2] give long-term consistent error rate; and/or [3] remain as easily clog-free.

Also, back-tension adjustments from the factory as well as clutch manufacture (and resulting take-up tension) have not been consistent.

But the number one reason why the error rate/distortion goes up after locating a START ID is due to the little soft brake under the take-up reel. If the machine receives heavy use, you should always change all three brakes every year.

One way to tell if there is a problem is to look at the reflection of the mechanism in the tape - between the takeup side precision guide and the capstan. Go forward and back in Play using the shuttle wheel. The reflection will indicate whether the tape skews. When in reverse play - the most difficult mode poor back tension and/or an extremely out-of-whack exit guide (the last one before the tape goes back into the shell) will aggravate the tape path in reverse. In many cases, the guide will not correctly adjust because the plastic that secures the machined brass becomes damaged. Only 1/8th of the "soft" brake touches the under side of the reel table, so when it wears out. there is no braking action.

Take-up tension should be between 10 gm/cm and 15 gm/cm (not less than 8 gm/cm or more than 18 gm/cm). Nominal Supply tension is 6 gm/cm (-1/+2 gm/cm). Back tension when the take-up reel becomes the supply reel in reverse play - should be 10

> Eddie Ciletti **Manhattan Sound Technicians** www.tangible-technology.com

# Jean Lake DIGITAL AUDIO SEQUENCERS

Audio sequencers combine two of today's hottest technological breakthroughs: MIDI sequencing and random access hard disk recording. Nothing beats the creative freedom of a computer-based MIDI/Digital Audio rig, regardless of your musical style. Here are four of the leading programs — all proven, multi-award winning, professional powerhouses!

#### Cakewalk Pro Audio 7

The undisputed leader in Windows based sequencing. **Cakewalk** is now pumped up with even more recording and effects processing power, onscreen consoles with aux sends and returns, Yamaha DSP Factory support, online tutorials, real-time MIDI control and beyond! Yet even with all this



new power, the interface is easier than ever to use with dockable toolbars, streamlined menus and faster access to editing. Music, films, games or even for live performance . . . .

Cakewalk Pro Audio 7 makes it easy!

#### **Digital Performer 2.4**

Years of hit records, film scores and concert tours are reflected in the design of **Mark of the Unicorn's Digital Performer.** Version 2.4 includes dozens of real-time audio and MIDI plug-ins including arpeggiator,

tube pre-amp, eVerb, Sonic Modulator, 40-band EQ per track, Chorus, Flange, Echo, Dynamics, DC offset removal and more! Also plug-in grouping, 24-bit recording, stereo tracks, drag and drop audio transfers with samplers, PureDSP stereo pitch shifting and time stretching. Digital Performer offers the best combination of advanced features and power.



#### **Logic Audio Platinum 3.5**

960 PPQ! Simultaneous multiple hardware support! Stereo Sample Editor! Audio Cycle Record! Non-destructive realtime crossfades! 24-Bit sup-



port! New improved, easier to use user interface! Hit after hit is being made with Logic Audio from Emagic! A myriad of plug-in options from TDM to VST to Premiere, all with real-time DSP. BIAS Peak SE (for Mac) or Cool Edit Pro LE (for Windows) bundled at no

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Inspiration can strike you in the strangest places. But, when you've been dreaming of the ideal digital a/v mixer for as long as we have, you jot it down on the nearest piece of paper. Well, the end results of that inspiration have come to pass...Panasonic introduces the RAMSA WR-DAZ digital mixer, and sets an entirely new standard in quality, fiex'bility, affordability, case-of-use and value.

#### TAKE COMMAND... NOW

32 inputs and 6 auxiliary send/returns (for a total of 38 inputs), 8 bus, 24 bit converters, moving faders, instantaneous recall of all settings, surround sound... you'd think nothing this fully featured could be this easy to use or this affordable... but it is!

#### **GREAT SOUND**

32-bit internal processing combined with 24 bit A to D and D to A converters, yield an incredible 110 dB dynamic range, putting the DA7's sonic quality in a class by itself.

#### MAXIMUM FLEXIBILITY

Packed into the DA7 are sixteen analog mic/line inputs and individual access to channels 17-32 through channel flip buttons located above each fader. I wenty faders do triple-duty as level controls for channels 1-16, 17-32, or Aux sends 1-6, Aux returns 1-6, and buses 1-8. We've even added an additional fourth layer, which includes MIDI faders.

#### EASY-10-USE

The DAZ features automated, logical layout and intelligent design. Access a channel by pushing its select button, and all parameters for the channel: EQ, bus and aux assignments, and dynamic/delay settings come up on the large backlit ECD screen. To access individual parameters, just touch the appropriate knob in the console's master section. This calls up the sub-menu on the LCD screen and zooms in on the appropriate function. No digging through menus or getting lost in functions; just select... and you're there.

#### THE POWER TO CONTROL

The EQ section offers four true parametric bands active on every channel, with the top and bottom bands selectable from peaking or shelving, or they can be high and low pass filters, respectively. The frequency bands are overlapping, with the top two bands ranging from 50 dz to 20 kHz, and the bottom two bands ranging from 20 Hz to 20 kHz. Boost or cut for these bands are adjustable in 1/2 dB steps to + or - 15 dB. The bandwidth is adjustable from 0.1 octave to 10 octaves. The DAZ is so full featured, even the Aux returns feature a 2 band parametric equalizer. The dynamics section offers you a choice of a Gate/Compressor/Limiter or an Expander on every channel with variable attack and release times and levels for threshold and ratio. A Delay of up to 300ms is available on every channel. In addition, 50 EQ and 50 Dynamics memories can store your favorite settings for instant recall.



#### SURROUND SOUND AT YOUR FINGERTIPS The DA7 is equipped to mix 5.1 channel surround through its buses, so you don't have to tie up auxes, control able by three modes for any channel or combination of channels. All modes provide full dynamic control of panning, and can be copied, stored, and trans-8888888 ferred to any other channel. An optional MIDL oystick gives yet a fourth method. MORE FEATURES THAN WE HAVE ROOM TO TELL YOU ABOUT The DAZ features four up/down/left/right cursor keys that are switchable to output AllDI Machine Control commands to MDMs, sequencers, or workstations. Data entry is done through the parameter dial or alphanumeric keypad. There's an undo redo button, solo mode set, and built-in talkback mic. Honostly, the DNZ is so feature rich, (but still easy to used that we don't have foom to describe it all here. You'll have to test drive it in person! TAKE ON THE WORLD The rear panel has 16 analog mic/line inputs (8 XLR with individual software switched phanton power, and 8 with TRS); to channel inserts (pre VD); and 6 auxiliary send return jacks (1,2 use S/PDIF; the rest, +4dB 1/4inch connectors). Analog outputs include +4dB balanced master outs with XLRs; +4dB balanced record outs on TRS 1/4inch jacks and 150 +4dB monitor outs on TRS balanced jacks. Dig tal 1/0, via XLR connectors is switchable between AFS/EBU and S/PDIE. The leav panel also offers MIDI in and Out. word clock I/Os, plus both a 9-pin RS 422/485 serial port and PC port for Mac/Windows with software support for both, a 1/4 inch footswitch jack for controlling talkback on/off or automatic punch in/out for automation, and a D 15 subconnector for the optional meter bridge. TAKE IT EVEN FURTHER 3 expansion-card slots allow connection of recorders with ADAL Lightpipe. TASCAM IDIF, and AES/EBU (switchable to S/PDIF) interfaces, with any of the audio cards fitting into any slot. A fourth card provides 8 more analog inputs/outputs via a D=25 subconnector. The third expansion card dot can be used 3 ways: Connect 2 DA7's together with true bi-directionality Replace analog inputs 9-16 with digital inputs Digital inserts across the 8 buses, six Auxes, and L/R stereo. out. An option card provides SMPTE and Video Sync input. Panasonic worked overtime to provide so much creative power and flexibility in such an affordable package. We can't possibly show all you can do with the DA7 on paper, so experience it yourself at your Panasonic RAMSA dealer. **Panasonic** Broadcast & Digital Systems Company FOR MORE INFORMATION CALL: 1-800-777-1146

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#### **GET A CUE**

emini Sound Products has introduced the CDM-1000 professional stereo preamp mixer. Featuring four stereo channels, the CDM-1000 also offers the latest in cueing technology, LEDs on each channel, -26 dB of cut for low, mid, and high on each channel, plus balanced master outputs and three mic inputs. For further information and prices, contact Gemini Sound Products Corp., 8 Germak Drive, Carteret, NJ 07008. Tel: 800-476-8633. Web: www.geminidj.com. Circle EQ free lit. #111.



# TASCAM DA-45HR

#### **CHOMPING AT THE BITS**

ASCAM has just introduced the world's first high-resolution, 24-bit DAT recorder. The DA-45HR is able to record true 24-bit audio data on a standard DAT tape. The 3U rackmountable DA-45HR features XLR balanced and RCA unbalanced analog I/O, AES/EBU and S/PDIF digital I/O, Word Sync I/O, and a parallel interface. When operating in 24-bit high-resolution mode, a standard 120 DAT tape yields 60 minutes of recording time. If the machine is

functioning in 16-bit standard mode, the tape will yield a full two hours of recording time. Supported sampling frequencies include 44.1 and 48 kHz. The recorder's Repeat function ranges from 2 to 15 times with added support for free or unlimited repeat capability. The DA-45HR also provides Single, Skip, and Program play modes for added flexibility when working with multiple audio tracks. For more details, contact TASCAM, 7733 Telegraph Road, Montebello, CA 90640. Tel: 213-726-0303. FAXBACK: 800-827-2268. Web: www.tascam.com. Circle EQ free lit. #112.

#### TRUE PRECISION

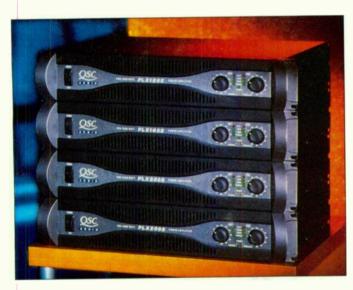
RUE Audio Systems' microphone preamplifier system, the Precision 8, features eight sonically transparent preamps, a selectable MS decoder, two FET instrument direct inputs, peak-hold level indicators, and an internal power supply. This unique combination of features makes it a good input system for MDMs, DAWs, and HDRs. Dual-balanced output connectors (25 pin D sub and TRS) are provided for easy connection to a wide variety of mixing consoles, patchbays, and recording devices. The Precision 8 has a suggested retail price of \$2495. For more information, contact TRUE Audio Systems. Tel: 520-299-3351. Email: sunrise@primenet.com. Circle EQ free lit. #113.





#### **FOUR TO GO**

n ideal next step for those looking to upgrade to a more sophisticated multitracker, or for those hungry for more professional features than their entry-level MTR provides, the new Fostex X-24 cassette multitracker provides simultaneous 4track recording with two XLR mic inputs and insert points, while successfully eliminating the troublesome operational problems associated with conventional multitrackers. The Fostex X-24's interface includes an Auto-Routing feature that allows for the automatic setting of all necessary functions by simply selecting which tracks to record, as well as an Auto-Bounce function that provides track bouncing with the simple touch of a button. The X-24's sound quality is produced with the benefit of 7.5 ips tape transport speed and a switchable Dolby B noise reduction system. The Fostex X-24 also offers potent wide pitch control, with the ability to alter pitch anywhere from +15 percent to -50 percent. The Fostex X-24 offers both unbalanced 1/4-inch phone jacks and balanced XLR inputs with trim control for subtle input level adjustments. The four line inputs work as insert jacks with a TRS plug, while the four tape outs are available for use with a drum machine or sequencer by feeding a sync signal. Price is \$369. For more details, contact Fostex Corporation ()f America, 15431 Blackburn Ave., Norwalk, CA 90650. Tel: 562-921-1112. Web: www.fostex.com. Circle EQ free lit. #114.



#### POWER PUMPER

SC Audio's PLX incorporates QSC's exclusive PowerWave switching power supply and combines the audio performance of QSC's PowerLight Series with the value of the MX Series. Four initial models include the PLX1202, PLX1602, PLX2402, and PLX3002. At 2 ohms, the PLX1202 provides 600 watts/ch, the PLX1602 800 watts/ch, the PLX2402 1200 watts/ch, and the PLX3002 1500 watts/ch. Each amp delivers high power in a compact 2-RU chassis that weighs 21 lbs and measures 13 inches deep. Other standard features include all-metal XLR and 1/4-inch balanced inputs, Neutrik Speakon and touch-proof binding post outputs, and comprehensive LED indicators. including a three-step signal ladder, true clip, protect. bridge-mono, and parallel input mode status. For more information, contact QSC Audio Products, Inc., 1675 MacArthur Blvd., Costa Mesa, CA 92626 USA. Tel: 714-754-6175. Web: www.gscaudio.com. Circle EQ free lit. #115.

#### DRAWMER DISTRIBUTION

he Drawmer DA-6 is a 6-channel stereo (or 12-channel mono) distribution amplifier featuring XLR balanced inputs and outputs with optional transformer balancing for use with remote amplifiers and recorders that are fed from separate power supplies. The stereo input features individual left/right level controls with LED bargraph metering, enabling the correct balancing of stereo material or two mono signals. Each of the six outputs incorporates left/right level controls and a mono/stereo switch for the selection of either one stereo output or two mono outputs per channel. The out-



put section consists of a Channel Select mode that enables the left/right output level of each channel to be displayed on the output LED bargraph, which is monitored by the headphone jack. A pair of auxiliary link 1/4-inch stereo jack sockets (TRS) on the rear panel allows for multiple DA connections. For more details, contact Drawmer Distribution, Ltd., Charlotte St. Business Centre, Charlotte St., Wakefield, West Yorks. WF1 1UH, England. Tel: 0924 378669. Circle EQ free lit. #116.



#### **BUZZ BEGONE**

urman Sound is showing off its IP-2B Iso-Patch Dual Transformer Isolator, which is a balanced XLR version of Furman's popular IP-2. This compact accessory fits in a tool box, is designed for use anywhere, and features two low-distortion audio isolation channels to eliminate the buzz and hum that can be caused by ground loops in a line-level signal patch. The IP-2B also



provides both balanced XLR connectors and 1/4-inch TRS balanced or unbalanced jacks on inputs and output. For more information, contact Furman Sound, 1997 South McDowell Blvd., Petaluma, CA 94954-6919. Tel: 707-763-1010. Web: www.furmansound.com. Circle EQ free lit. #117.

#### **GRAPHIC LANGUAGE**

abine's new 24-bit, GRAPHI-Q is available in four models: a 1U single-channel unit, the GRQ-3101; a 2U dual-channel unit, the GRQ-3102; as well as blank front-panel slave units (the GRQ-3101S and GRQ-3102S), with complete control via GRAPHI-Q Remote for Windows software which permits user control of up to eight GRAPHI-Qs simultaneously (full function or slave units). For more information, contact Sabine Adaptive Audio Products, 13301 Highway 441, Alachua, FL 32615. Web: www.sabineinc.com. Circle EQ free lit. #118.



# Introducing The 48



#### **EXPAND YOUR HORIZONS**

eneralmusic has recently made all of the indispensable features of its popular PRO I digital piano available in a standard half-space rack module known as the PRO Expander. Easily added to any existing rack system, the PRO Expander

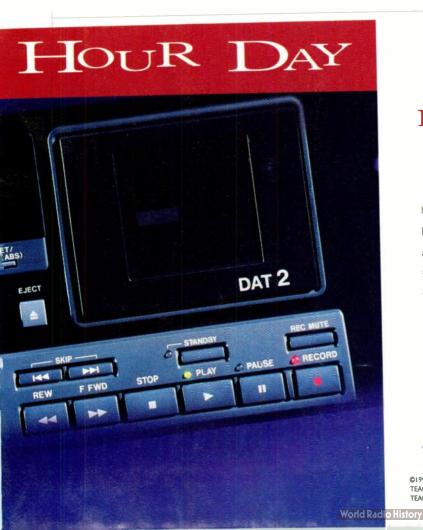


module offers a complete set of MIDI connectors (in, out, and thru), and can be configured for optimum performance in just a few minutes. The unit also features a computer serial port, allowing direct connections to an IBM or Macintosh.Suggested retail price on Generalmusic's PRO Expander is \$665. For more details, contact Generalmusic Corp.,1164 Tower Lane, Bensenville, IL 60106. Tel: 630-766-8230. Circle EQ free lit. #119.



#### REVEALING MONITOR

annoy Professional's distinctive new playback monitor, Reveal, is a two-way discrete system that is designed for nearfield monitoring in project studios, mobiles, broadcast, audio post, and AV applications. The Reveal's front panel is not just for show — the curved baffle has been designed to minimize diffraction. The thick panel provides a massive non-resonant mounting platform for the drive units. A soft dome tweeter is matched with a long-throw bass unit using a hard-wired, low-loss crossover. Both drivers are magnetically shielded allowing operation close to video monitors. For more information, contact TGI North America Inc., 300 Gage Ave., Suite #1, Kitchener, Ontario N2M 2C8. Tel: 519-745-1158. Circle EQ free lit. #120.



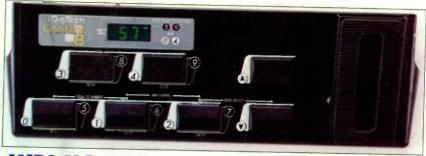
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#### MIDI MASTER

ike the Control 7, the DigiTech Control 8 MIDI foot controller requires no programming — just plug in, connect a MIDI cable, and go. The controller's seven footswitches can access any MIDI program on any MIDI channel. A built-in expression pedal can be assigned to any MIDI CC number for real-time control of parameters. Price is \$149.95. For more information, contact DigiTech, 8760 Sandy Parkway, Sandy Utah, USA 84070. Tel: 801-566-8800. Web: www.digitech.com. Circle EQ free lit. #121.

#### **GIVE ME FIVE**

single-rack-space unit, the PreSonus VXP features a microphone preamplifier, compressor, expander, de-esser, and a 4-band, semi-parametric equalizer. The VXP has a Jensen transformer (class A discrete twin servo) microphone preamplifier with phantom power and 20 dB pad. The compressor has eight preset compression curves, tailored specifically for voice processing. The expander has an adjustable threshold from off to +20 dB. The compressor and expander have automatic attack and release times. The de-esser section allows threshold and frequency controls. The 4-band equalizer has low and high shelving bands and two semiparametic mids with frequency ranges of 100 to 700 Hz and 0.5 to 6 kHz. For more information, contact PreSonus, 501 Government St., Baton Rouge, LA 70802. Tel: 504-344-7887. Web: www.presonus.com. Circle EQ free lit. #122.



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With built-in Sample Rate Coversion and Multi-I/O the Zefiro Acoustics ZA2 is the Master of CD Mastering.



he ZA2 includes the professional features the other cards leave out. Its powerful 24-bit DSP sample rate converter lets you take inputs directly from a 48kHz pro DAT or a 32kHz LP DAT, and converts them on the fly to perfect 44.1kHz for CD mastering. Its Multi-I/O configuration gives you AES/EBU on real XLR cables and S/PDIF (both optical and coax) inputs and outputs, plus analog outputs for monitoring. You can use all the inputs and outputs simultaneously to do sample rate or format conversion (for example, S/PDIF in and AES/EBU out) or tricks like managing SCMS, or manipulating DAT start ID's or CD PQ codes — and you can switch back and forth between inputs with just a few mouse clicks.

The ZA2 delivers up to 24-bit recording — beyond the range of any commercially available A/D converters. It also works as a Windows sound card, converting all wave audio data (even mono, 8-bit, or 11kHz) to 16-bit stereo. You get drivers for Win95 and NT, plus Sound Forge XP 4.0 editing software and a promotional

offer for upgrading to CD Architect. Basically, the ZA2 packs in more features than we can cover in an ad. Check it out at http://www.zefiro.com or call 949.551.5833 and find out how

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#### **LOADED LEXICON**

exiVerb is a TDM-compatible "software plug-in" that combines Lexicon reverb and a simple user interface to create a tool for the Digidesign Pro Tools system. LexiVerb supports Pro Tools 4.0 automation and LexiVerb parameter groupings (Macros), which offer complete control over the individual parameters that comprise the legendary "Lexicon Sound." The LexiVerb plug-in may be used in either monoto-stereo or stereo-to-stereo configurations. An integral frequency response graph displays the envelopes for the low-, mid-, and high-frequency bands. A built-in Macro Editor permits para-



meter grouping of as many as four parameters complete with individual scaling adjustments. For more information, contact Lexicon, 3 Oak Park, Bedford, MA 01730-1441. Tel: 781-280 0300. Web: www.lexicon.com. Circle EQ free lit. #124.

#### **UPS DELIVERS**

merican Power Conversion has introduced across-the-board upgrades to its desktop uninterruptible power supplies. Runtimes of the new APC Back-UPS and Back-UPS Pro models range from 5–40 minutes for a typical computer. Features include: User renewable UPS, which allows the user to replace the battery; push-button, resettable overload protection to eliminate the hassles of replacement fuses or factory servicing; auditory signals to alert the



user of power problems or battery depletion; and site wiring fault indicator that identifies dangerous building-wiring problems as soon as the unit is plugged in. The new APC Back-UPS and Back-UPS Pro are available in VA ratings ranging from 200 to 1400 VA. List prices range from \$99-\$760. For more information, contact American Power Conversion, 132 Fairgrounds Road, West Kingston, RI 02892. Tel: 401-789-5735. Web: www.apcc.com. Circle EO free lit. #124.

#### A DOCTOR IN THE HOUSE

ave Mechanics' PurePitch 2.0, a plugin bundle for Digidesign's Pro Tools for formant-preserving pitch processing, has added Pitch Doctor, an automatic intonation correction tool. Pitch Doctor can automatically repair many minor intonation errors, or can be used with Pro Tools automation to spotfix more serious problems. All parameters can be automated with Pro Tools 4.0 or later, giving users precise control over the amount, location, and type of pitch correction desired. PurePitch 2.0 can alter pitch with either a "formant-preserving" or a "conventional" pitch-shift algorithm. The formant-preserving algorithm uses DSP techniques to preserve the spectral character of the original source material, even when shifting the pitch by large amounts. The conventional algorithm is used for shifting the pitch by small amounts. A full working demo version of PurePitch is available for downloading from the Wave Mechanics Web site, www.wavemechanics.com. Wave Mechanics' PurePitch 2.0/Pitch Doctor bundle is \$695. For more information, contact Wave Distribution, 1170 Greenwood Lake Turnpike, Ringwood, NJ 07456. Tel: 201-746-9417. Web: www.wavedistribution.com. Circle EQ free lit. #125.

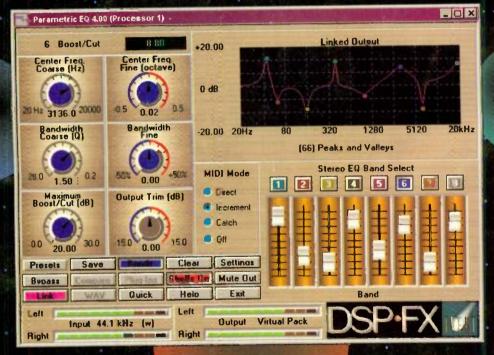
#### 96 IN '98

he new AD-2 and DA-2 96 kHz converters, now available from Prism Sound, allow recording at 96 kHz with stereo output straight from the mixer to an optical disc recorder. For more on this technology, contact Prism Sound, 15 Route 46, B-16, Mountain Lakes, NJ 07046. Tel: 973-299-7790. Web: www.prismsound.com. E-mail: 100612.1135@compuserve.com or sales@prismsound.com Circle EQ free lit. #126.



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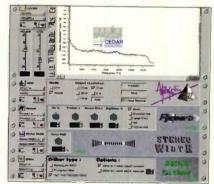


#### SYNTRILLIUM SCINTILLATES

yntrillium Cool Edit Pro 1.1, a digital audio editor, recorder, and mixer application for Windows 95 and Windows NT, offers faster DSP processing than version 1.0, improved SMPTE support, larger file-handling capacity, and several major new features, including a "Grouping" function for associating waveforms and Vocoder and Envelope Follower functions. For more details, contact Syntrillium Software Corp., P.O. Box 60274, Phoenix, AZ 85082-0274. Tel: 602-941-4327. Circle EQ free lit. #127.

#### **WORD REDUCTION**

ADiE Inc., makers of SADiE and Octavia Digital Audio Workstations, has decided to make Apogee UV22 available on their systems. UV22 is regarded as the most widely used wordlength reduction algorithm with an estimated 80 percent or more of top U.S. CD releases having been processed with the system. UV22 takes a high-resolution 20- or 24-bit digital signal and translates it into the 16-bit domain for CD and similar media, without artifacts or loss of

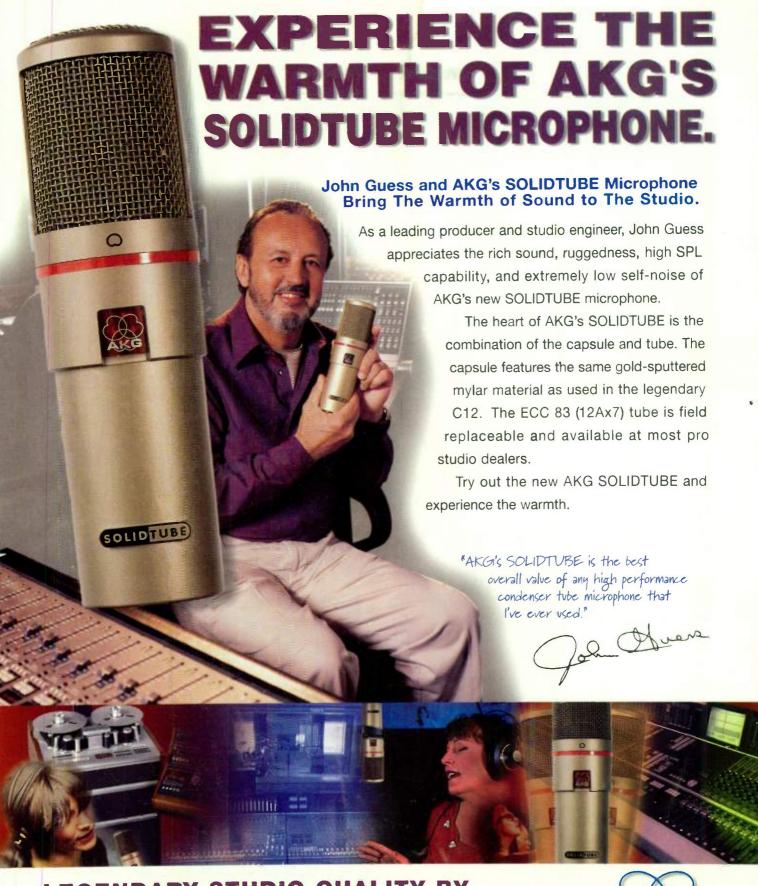


quality. For more details, contact SADiE Inc., 1808 West End Ave., Suite 1119, Nashville, TN 37203. Tel: 615-327-1140. Circle EQ free lit. #128.

#### DISCMATIC DOES IT

vailable with standalone hardware controller or PC software solution, Discmatic's new AD1050 is designed to take the surprise out of small-run duplication. Capable of duplicating as many as 50 CDs at once, the AD1050 supports a wider variety of formats than any similar product available, including CD-DA, Mixed Mode CD, Multi-Session CD, CD-Extra, HFS, PhotoCD, VideoCD, and Hybrid CD. The Discmatic AD1050 offers 4X writing/12X reading speed and stability in the form of high-performance robotics. The Discmatic EZ-ONE controller requires no complicated set-up and makes duplicating CDs as simple as using a copy machine. For more details, contact Chugai Boyeki, 55 Mall Drive, Commack, NY 11725. Tel: 516-864-9700. Circle EQ free lit. #129.





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AKG Acoustics U.S., 1449 Donelson Pike, Nashville, TN 37217, phone: 615-360-0499, fax: 615-360-0275.

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## The VS-1680. It's huge. Make room.

Finally, the studio of your dreams is within your reach. With 16 tracks (8 simultaneous record), 4 stereo or 8 mono effects processors\*, 26-channel automated digital mixer, 256 virtual tracks, direct CD burning capability and MT Pro 24-bit recording mode, the VS-1680 looms large in any room. Make it yours.

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# The Gospel Truth

#### Harlem, NY-based Brownstone Recording helps spread the word

STUDIO NAME: Brownstone Recording

LOCATION: Harlem, NY

**KEY PEOPLE:** Warren Henry, Michele Henry **PROJECTS & CREDITS:** Carolyn Byrd, Blackgirl, Loni Clark, Mike Jackson, Jerry Hutchinson, Christ Sent, Angela Frederick, Dana Reed, IN EFFECT, Inspirations of Joy, Richard Phillips, Barry Addison, Easton Goubourne. Labels: PMG, RCA, Glover, Escape, Christ Sent Productions (Note: All of the artists, with the exception of Blackgirl and Loni Clark, are Gospel artists.)

CONSOLES: TASCAM 2600 32x8x32 running Mackie Ultramix automation; Allen & Heath GS316 16x8x16; Alesis 1622

MONITORS: TOA 265ME; Alesis Point Seven: Auratone Cubes

AMPLIFIERS: Samson Servo 240; U.S. Audio P-40; Rane HC6 headphone amp RECORDERS: Alesis ADAT XT w/BRC autolocator [3], TASCAM TSR8; 2-Track TASCAM 32: Technics cassette deck

DAT MACHINES: Sony DTC A6 and DTC A7
OUTBOARD GEAR: dbx 163X compressors [2],
463X [2], 266A dual compressor/ gate, and
263X de-esser; Alesis 3630 dual compressor/gate and Quadraverb Plus [2]; DOD
R430 graphic equalizer and Spring Reverb
(for those special occasions); Delta Lab
ADM 1020 digital delay; BBE 422 Sonic
Maximizer; Yamaha R100 digital reverb [2]
MICROPHONES: AKG C414 Multi Pattern
Condenser; Neumann U47 Condenser;
Audio-Technica ATM 31 condenser and
Pro 3H dynamic

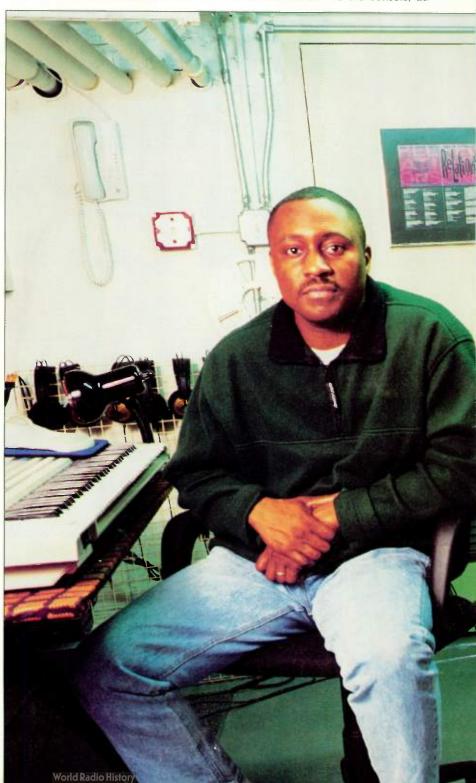
MIDI GEAR: Roland Juno I, JV 880, Sound Canvas, and S760 sampler w/18 MB ram; Akai x7000 sampler/controller; JLC PPS-100 SMPTE/MTC synchronizer; KMX MIDI patchbay; Alesis SR16 and HR16; Casio RZI drum machine; Studio 64XTC synchronizer/MIDI interface

**COMPUTERS & SOFTWARE:** Pentium 133 w/40 MB RAM; Apple Macintosh IIvx; Atari 1040 STE; Emagic Logic Audio 3.0; Creamware TripleDAT 2.4 DAW; Sound Forge XP 4.0; Cubase 3.01

STUDIO NOTES: Warren Henry explains: Our location is a blessing: is found in the

basement of our brownstone. Clients come here and have the best of both worlds — the studio to work in and the comforts of home. The studio is wired so

that we can do vocals and record drums anywhere — even in the backyard. **EQUIPMENT NOTES:** Henry continues: The "Big 4" at Brownstone are the console, au-

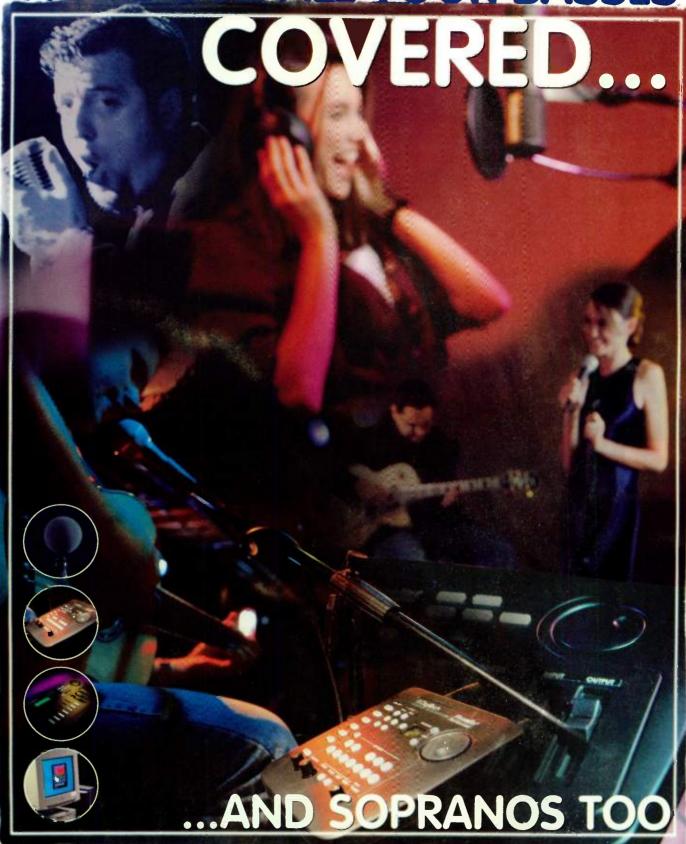


tomation, digital audio workstation, and my favorite vocal mic. TASCAM has redefined project studio console design with the M2600 console. Mackie's Ultramix rules. It gives the console both fader and mute automation. During mixdown, the Ultrapilot allows me to control all components in the studio responding to MMC. TripleDAT 2.4

is the PC version of Sonic Solutions at 1/5th the cost. Lastly, my AKG 414 — sure it's slightly sibilant, but the right vocalist knows how to work it.



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The ideal tool for musicians, singer/songwriters and MIDI/project studios, the Vocalist Workstation EX lets you create up to 4 harmony voices that have fully editable MIDI parameters, reverb and effects. The Workstation's built-in mixer can be can be controlled easily from the front panel faders and the desk-top format makes editing a snap.



#### STUDIO VOCALIST EX

With its 4 voices of harmony, The Studio Vocalist EX is the flag ship of the line with an array of harmony, effects and editing features mounted in a sturdy 2U box. Features such as the 5 independent XLR outputs, 40V phantom power, genderbender (formant shifting) and the digital 1/0 option make the Studio Vocalist EX the best choice for the discerning professional.



#### **VOCALIST ACCESS**

New to the Vocalist family, Access is a great solution for musicians, producers and engineers who rely on MIBI for control.

Access gives you the same great 4 harmony voices, reverb and effects neatly tacked in an attractive 1U package.

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your voice is uniquely yours. It's your instrument, your signature. Your voice might be proud and strong or soft and sultry. Your tone may be raspy, bluesy or sweet and clear. But no one else in the world sounds quite like you. Singing is part of your soul.

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So what are you waiting for? Define your voice. Visit your local DigiTech dealer today to find out which Vocalist is the right one for you.

...DEFINE YOUR VOICE



# Roland VS-Series Digital Studio Workstations

A behind-the-scenes look at Roland's trio of popular digital recorders

#### BY ROGER MAYCOCK

At the January 1996 NAMM show in Anaheim, California, Roland introduced the VS-880 digital studio workstation and, in a single shot, forever changed the record-

tablished Roland as a player in the recording industry, but these units garnered much of their support in areas such as broadcast and postproduction, and, hence, had considerably more limited appeal.

I recently had the opportunity to visit Tom Stephenson, product manager for the Roland VS-Series product group at the company's Los Angeles facility. Our conversation began with an examination of the strengths and weaknesses of commonly used media. The decision to go with hard disk was reached for a variety of reasons. For starters, prices of hard drives have

random access media such as a hard drive offers this capability.'

Now that the choice of media had been made, why not take the computer path? After all, there's some pretty slick software packages out there. This decision was really a no-brainer. Roland has always produced dedicated hardware, and they wanted the system to be portable. Additionally, computers are still more susceptible to system crashes than dedicated hardware.

By now, Stephenson had made several references to a "pointer-based system" and the ability of the VS-Series products to operate along a 24-hour

ing mardropped dramatically in recent ket. Since timeline. Further examination produced then, the what may well be the original single V S most 880 has evolved into the "V-Xpanded" VS-880 and the product line has grown to encompass two additional "studios" - the VSand years, 840, which in many ways is aimed at the every indication points toward this trend continuing. More imguitarist, and the recently introduced

VS-1680, the flagship of the line.

The VS-880 is not only a groundbreaking product with worldwide sales in excess of 70,000 units (a mind-boggling number in a small industry like ours); it also represents Roland's foray into the musician's recording market. Granted, previous models like the DM-80 and the DM-800 hard-disk recording systems certainly esportantly, only a hard-drive-based system would enable Roland engineers to create a workstation capable of retaining and recalling all aspects of a project. Notes Stephenson, "A key factor in the design of the VS-880 was the ability to retain data in such a manner that it could be recalled, reprocessed, and remixed instantly - and only a fully

unique aspect of the Roland approach to recording and a concept that few people, including VS-Series owners, understand.

With all three of the VS-Series recorders, when you perform the original stereo mix of the drums for the bounce, with one button push you can save the levels, EQ, virtual tracks, and effects as a

scene. Should you later decide that the snare drum sounds like a garbage can being hit with a baseball bat, you could recall the scene and easily make your corrections. This ability to pull back original tracks for the purpose of a remix is very cool, indeed.

#### **THE VS-840**

As I looked at each model, I wanted to get a feel for the intended user and what one or two features would be most applicable to that potential customer. Let's begin with the VS-840.

Designed primarily for the songwriter, guitarist, and the technical "newcomer," the VS-840 is an 8-track recorder with 64 "virtual" tracks that ships with an Iomega Zip drive as its recording medium. Granted, this isn't exactly a hard drive, but Roland has optimized the system to yield surprisingly similar results. An optional SCSI interface is available for additional storage requirements. It also facilitates file compatibility with the VS-880. For this level of user, the Zip drive functions as a readily available media that is instantly transportable. For me, the most unique feature on the VS-840 is what Roland terms "EZ Routing." EZ Routing. EZ Routing. EZ Routing can best be thought of as the Roland equivalent to a Microsoft Wizard. It's a straightforward, simplified approach to the issue of assigning input signals to tracks, bus assignments, and the like. For this product's intended customer, this feature should certainly make the learning curve considerably easier. It should also be noted that mixes can be made more manageable by means of manually recalling multiple scenes.

The VS-840, like its siblings, provides built-in effects processing including a selection of reverbs, delays, chorus, vocoder and numerous combination effects. The unit even includes a dedicated guitar input for recording guitar direct — eliminating the need for a direct box. Roland's Composite Object Sound Modeling (COSM)-based guitar simulations also reside in the system — making this unit the guitarist's home recorder of choice.

#### THE V-XPANDED VS-800

The V-Xpanded VS-880, also an 8-track recorder with 64 virtual tracks, is now

targeted toward touring musicians, songwriters, and a somewhat more technically savvy user — although, as the first product introduced, it has been sold to users of all skill levels. This unit has a more capable mixer, more editing capability, and uses a dedicated hard drive for recording operations. Dynamic automation is available for mixdowns.

Considering the lack of balanced XLR microphone inputs for use with what we usually consider to be professional-grade microphones, I consider the unit's COSM-based microphone simulations to be among its most significant features.

#### THE VS-1680

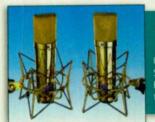
One little-known benefit of the VS-880 and the new VS-1680 lies in the fact that by simply removing three screws on the lower-right front panel of these units, it is very easy to access and, if desired, remove the hard drive. The internal IDE hard drives in these recorders even have a grab handle. In my book, this constitutes removable media.

continued on page 155

# Take Part in the Best Sounding Contest in History



To commemorate 70 years of Neumann excellence, we've designed a contest with a number of exceptionally great sounding prizes. Visit our web site or use the reply card found in this magazine to get your copy of the 1998 Neumann CD-ROM Catalog. Follow the contest instructions, and enter for your chance to win.



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## Brauner VM 1

Handmade in Germany, this new "classic" tube condenser offers quiet performance

MICROPHONE NAME: Brauner VM1 PRICE: \$4999 (includes power supply, cables and shock mount)

TYPE OF MIC: Vacuum tube condenser

TUBE: Telefunken AC701k

POLAR PATTERN: Variable (see notes) FREQUENCY RESPONSE: 40 Hz-20 kHz

THD: 0.3% at 128 dB SPL

**EQUIVALENT NOISE LEVEL:** Less than 13 dB, A-weighted

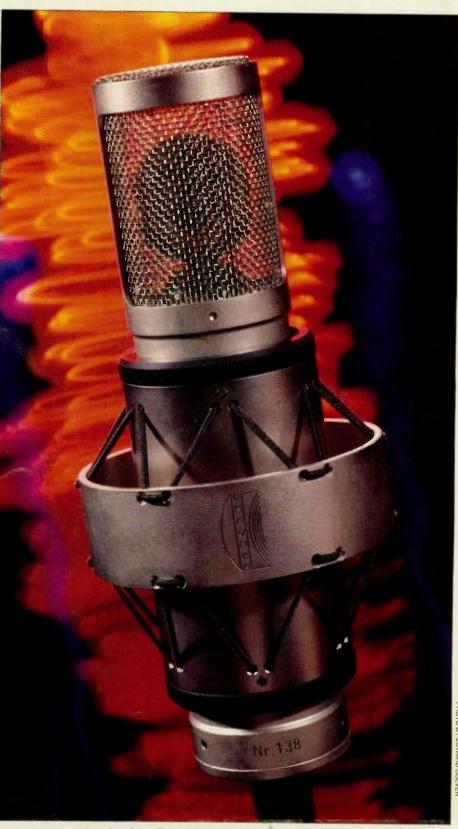
SENSITIVITY: 28 millivolts/Pa

SIGNAL-TO-NOISE RATIO: 79 dB, A-

weighted

MIC NOTES: One of the most quiet "classic" tube microphones currently in production, the VM1 from Brauner is handmade in Germany - including the gold-sputtered, large-diaphragm capsule. An outboard power supply provides bias voltage to the tube (either an AC701k or an EF 806S) and also allows user adjustment of the pickup pattern from omnidirectional through cardioid, to figure eight. USER TIPS: The polar pattern of the VM1 is adjusted from its outboard power supply, and adjusting the pattern also results in subtle changes in frequency response. This allows the mic's tonal characteristics to be tailored to the sound source. A 10 dB pad is also located on the power supply for use in high-SPL situations. One of the more interesting design characteristics of the VM1 is the ground lift on the power supply. In addition to the two "normal" positions (connect or lift), a "soft" ground position is provided for reducing ground hum in situations where the other two positions aren't quite right.

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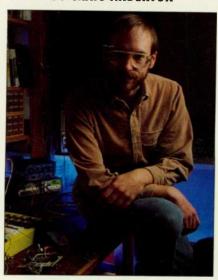
Introducing the TASCAM TM-D1000 Versatile Digital Mixer. It's fully loaded, has incredible specs



## The Digital 8 Backup Solution

An ADAT or other digital 8-track might be just the ticket for your hard-disk backup needs

#### BY CRAIG ANDERTON



We all know hard-disk recording generates a lot of data — gigabytes of data, in fact, and you need to stow it somewhere.

Removable cartridge drives, such as the lomega Jaz, are popular for this purpose. A 1 GB cartridge costs about \$100; while not exactly cheap, the format is convenient. However, given the possibility for media failure, you probably want to back up to two cartridges. This doubles the media cost. Magneto-optical drives are more robust, but slower and less common. DAT tape drives trade off low cost for glacially slow operation.

The recordable CD is great for archiving. But when capturing works-in-progress, you end up with a lot of obsolete "coasters" in the process, which is not environmentally friendly. CD-RW is better, but the media costs substantially more than CD-R. And all storage media involves one more factor: how universal is it? Ideally, there would be a single, universal storage medium for audio data, with a common file format that

could be interchanged among studios everywhere.

We're not there yet, but, meanwhile, here's a solution using digital multitrack tape to not only archive data, but archive it in different ways. The point of reference for this article will be ADAT-family tape machines and the Ensoniq PARIS hard-disk system, because this is the system with which I'm most familiar. However, the same principles apply to other products as well.

#### TAPE MEETS HARD DISK

Like tens of thousands of other people, when ADAT first appeared I couldn't wait to get my hands on one. Now, several years later, I have quite a collection of ADAT tapes. ADAT's inability to do any real editing wasn't too serious a problem, because I could always bounce a track pair over to Sound Forge or WaveLab, do some tweaking, then send the tracks back to tape for storage. For simpler projects where I did use multitrack hard-disk recording, I'd mix down inside the computer and save the mixdown to DAT, CD and/or two ADAT tracks.

But recently, more ADAT projects coming into my studio have required editing across more than two tracks, like cutting the end of a chorus and pasting it to a verse recorded on another take. While this can be done with multiple ADATs, editing with tape is relatively inflexible. However, multitrack hard-disk systems are well suited for this application.

Having recently acquired an ADAT interface for PARIS, it seemed all systems were go, except for one small problem: I hadn't chosen a backup medium yet. When working exclusively with ADAT, this wasn't an issue because tapes are inherently selfarchiving, and, for added safety, I could run off "clones" during slack periods to create multiple backups. But now I needed something to store all those gigabytes of takes, mixes, remixes, and masters from the hard drive.

#### HAVE YOU BEEN SAVED?

Cartridge drives have issues with cost and universality. Remembering the First Law of Digital Data ("Digital Data is Not Real Unless It Exists in More than One Place"), I realized that saving to multiple cartridges was going to be a budget-buster. Also, I couldn't count on other studios to have whatever cartridge drive I bought.

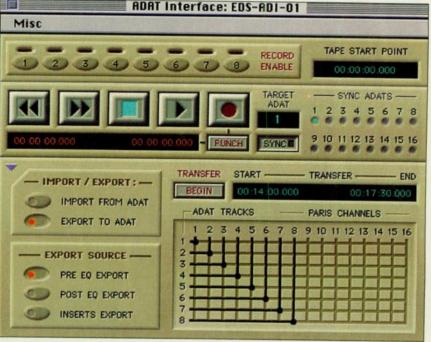


FIGURE 1

## THE LONG & SHORT OF IT.





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Fortunately, like most other multitrack hard-disk programs, PARIS maintains a file separate from the audio that stores EQ settings, automation parameters, aux send levels, effects settings, etc. — basically, everything except the audio files. (This "parameter file" has a .PPJ suffix; the audio files are .PAF; and the audio overview files, .OVW.) And since I already had an ADAT, the proverbial light bulb went on: store the audio on ADAT and the .PPJ files on a floppy and/or Zip disk. However, the story doesn't end there. Because S-VHS tape is such an inexpensive backup medium, it opened up some other interesting possibilities for saving.

#### **OPTIONS IN SAFETY-LAND**

The PARIS ADAT interface software (fig. 1) allows for sending tracks to ADAT pre-EQ, post-EQ, or post-channel insert. Since the object is to save the raw audio to ADAT and let the .PPJ file handle all other parameters, just send eight pre-EQ tracks to ADAT. To reload the backup at a later date, open the .PPJ file (the tracks will be empty), transfer the

ADAT tracks to PARIS, and you have an exact copy of your original project.

Another option involves saving, then reloading, to augment the DSP. PARIS allows a maximum of 16 effects, which can be any combination of mono inserts, mono master effects, or stereo master effects (which use up the equivalent of two effects). For example, if you gang two stereo room reverbs for a big room sound and also insert an effect in each of 12 channels, you can't add any more effects. Granted, this is a whole lot of DSP, but for some people "a whole lot" is never "enough." In this case, save the tracks post-insert so that the insert effect becomes part of the audio. You can then reload the tracks and add more inserts. If you do this, do another backup without the insert effects, just in case you decide that maybe you didn't really need four compressors on the voice after all. and want to return to the original tracks. Hey, tape is cheap - play it safe.

At least with PARIS, there's no real advantage to a post-EQ backup. The EQ is implemented in hardware, all channels always have four stages of EQ available, and the .PPJ file remembers all EQ settings. However, in hard-disk recording systems where the EQ is software-based, the number of stages you can use is generally subject to other factors (processor speed, number of other effects in use, track count, etc.). In this situation, you can save the tracks with EQ applied, so you can then reload those tracks and add more EQ or other effects if desired.

Similarly, the next PARIS update is slated to support DirectX and VST plugins, and some of these can be real processor hogs. At least with my computer, it's often difficult to run more than a couple of complex plug-ins at once without the system going berserk (followed shortly by me doing the same). This is another situation where bouncing to ADAT with the plug-ins in place, then bouncing back again, frees up CPU power for additional plug-in effects.

#### THE FINAL TOUCH

As tape is not the most robust medium in the world, immediately after doing the backup, make a "clone" using a second



digital 8-track (or if you have only one machine, then back up again to at least one more tape). My confidence level is satisfied only when I have at least two copies (preferably with one in a safe deposit box).

If you don't have an ADAT or similar digital 8-track, before buying a removable cartridge drive for backup, consider the following. As of June 1998, a used ADAT in good shape cost about \$1000, and a \$15, T-180 S-VHS tape holds about 2.5 GB of 16-bit data (somewhat less for 20-bit data). So, if you need to store 10 GB of data and want to back up to two sets of tapes, your total cost comes to about \$1120 (assuming you have an ADAT interface for your hard-disk recorder). As a bonus, if you need eight extra tracks, you can sync the ADAT to your hard-disk system. You also have a storage/transfer medium that's compatible with many other studios, as well as eight sets of A/D and D/A converters.

On the other hand, storing 10 GB on a standard Jaz drive runs about \$1300 (\$300 for an external drive, and \$1000 for the cartridges). If you want to record to an additional set of cartridges, figure on a total investment of \$2300 — enough to buy a new ADAT LX20 (which will store 20-bit data), and about 20 S-VHS cassettes.

However, cartridges do offer some significant advantages. Saving with digital 8-tracks is a real-time process: it takes 20 minutes to save 20 minutes of audio, not including any required repatching. Cartridges are much faster. Also, unlike cartridge drives, ADATs require regular maintenance (although just using one for backup doesn't stress out the transport very much); and something like a Jaz drive can store more than audio, such as large graphics files or a complete backup of your entire computer. Finally, if you want to save 24-bit files, the current generation of ADATs won't do it.

Meanwhile, though, if you do have an ADAT or other digital 8, don't overlook its backup abilities in conjunction with hard-disk systems. Your most costeffective backup option might already be sitting just a few feet away in your rack.

Craig Anderton is the author of Home Recording for Musicians and Multieffects for Musicians. He lectures around the world on musical electronics and has been known to play extremely distorted guitar.



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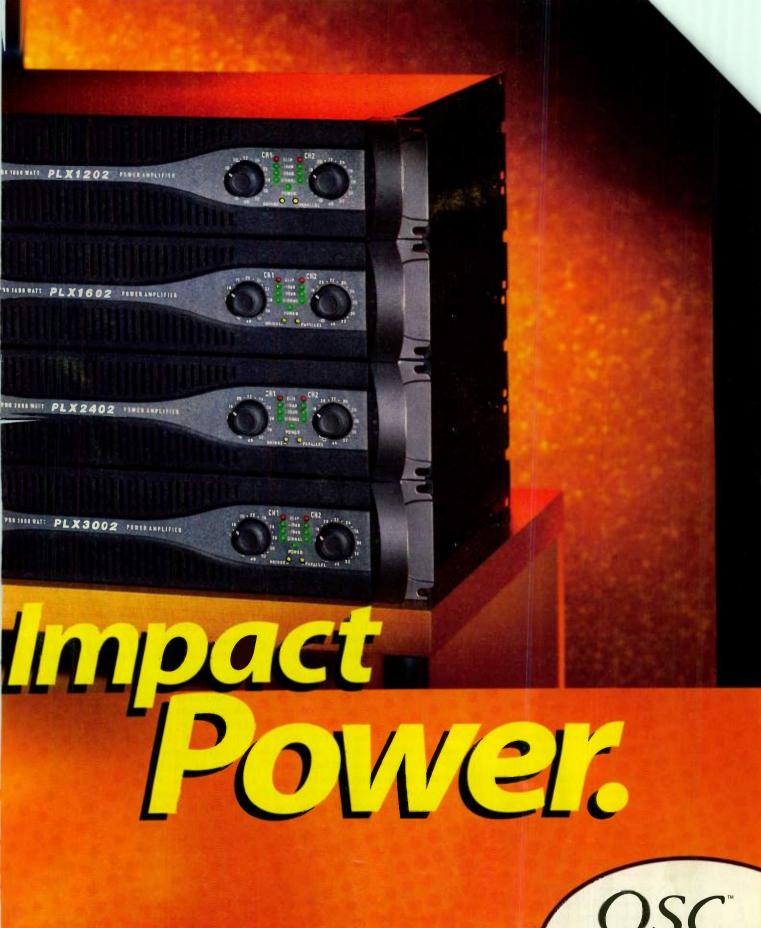


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## Mixin' It Up



Some techniques to try when you're mixing by yourself

#### BY AL KOOPER

Having a project studio at home and being a virtual solo operation has sharpened my studio skills considerably.

Quite simply, there's only me. I'm the artist, the producer, the engineer, the assistant engineer, the maintenance crew, the tea boy, and the owner. Fortunately, once the equipment is in place and running, the overhead is reduced drastically—no rent, small staff. Can't beat it with a stick. The owner's happy. Of course, the engineer would love some new equipment, but the owner's on a tight budget in '98.

Make sure you have a log sheet for every roll of tape, digital or cassette and DAT. It should list the songs on the tape and the start and ending times. Keep it running current as you use the tape. Along the same lines, track sheets are a smart bet. On your multitracks, keep a current track sheet with what instrument is on what track for the above reasons.

So you finally nailed that elusive vocal and your song is finished short of mixing.

If you have time, walk away from it for a few days to keep it fresh. Mixing is a ponderous process, and fresh ears are a great asset. In the real world, your mix is in the hands of someone who walked in after all the "real" work was done. It's a little scary, but they bring in a fresh viewpoint — something you can't possibly have at that point.

When I mix, I start with the bass and the bass drum. I bring them up, EQ them if necessary, and check to see that they are playing together in case the producer missed that.

Kooper's Law #1: The bass drum never plays unless the bass is playing. Kooper's Law # 2: The reverse is not required. When the bass and bass drum play at the same time, it creates a sound and accent that I consider one instrument and the backbone of every record. That is why I begin with them. Motown and Stax-Volt invented this concept, and they were pretty wise rhythm sections. After I fine tune those puppies, I listen to the snare drum by its lonesome and add echo if it's appropriate (sometimes with delays that are matched to the beats per minute of the song). I add the left and right side of the drums to the whole equation and fine tune the whole kit EQ-wise. I re-add the bass and balance it in properly.

Next I select the basic keyboard chord instrument — the one that is usually playing the chords of the song throughout. I put it in the center with the bass and bass drum. It's another backbone of the record in its own way.

Now on to the guitar section. Sometimes I'll play two acoustic guitars. The reason I play two is to give one part a stereo balance. I'll divide one acoustical part into two parts. For instance, if the guitar is strumming eighth-notes, one guitar part will play all the downbeats and the other all the upbeats. My time must be accurate or the part gets stilted. Once you get the hang of it, it's a snap. In this way, the guitar part is in stereo and makes the corners wider in the mix. I'll do this with electric parts as well.

I usually record backup vocals on two to four tracks for a thickening and stereo sound. If they're on two tracks, pan them left and right, naturally. Three tracks — left, center, and right. Four tracks — left, left of center, right of center, and right. They surround the lead vocal quite nicely that way.

Synthesized strings and horns are dodgy. They're not really a pleasant sound

on their own like the real thing is, so you compensate with EQ and FX. Remember that when you use EQ, addition is not the only answer. Subtraction works well, too. If a horn section has a tubby hump at 100 Hz, subtract 2 or 3 dB at that frequency, and if it sounds fine, no need to add any EQ. The subtraction solved the problem. String pads are nice if they're lightly bathed in echo and remain fairly subliminal. Experiment by bringing them into the finished track slowly until you can hear the difference and then hold the level there. That way they thicken without drawing anyone's attention away from the hallmarks of your arrangement.

The lead vocal is the storyteller of your fable and must be heard clearly at all times. A little limiting or compression will keep the vocal level constant and in your face throughout the song. This is a good thing. Bring your brother or sister or best friend in and ask them if they can understand every word. That's a good barometer if they've never heard the song before. That would actually eliminate your brother or sister, so just call a friend over.

Equalizing the vocal is a precise art. You want a well-rounded sound, but you don't want to cover the entire frequency range because it will obscure some of the nice "ear cookies" in the arrangement and the mix. Divide up who gets the frequencies in a mix. It works quite well. Remember, if you add a lot of one frequency to two different instruments, it will cancel them out.

I usually put the horns on the left and the strings on the right. No special reason. However sometimes incorrect panning can bog down a mix, so glance up at the meters every now and then and check to see if you're right or left heavy. That's one way to quickly locate an incorrect pan or a balance error. Experiment with the panning placement of parts in a mix with headphones on. There is a point where it blends perfectly, and you'll notice that moment faster with cans on.

Well, I hope this helps in some small way. It certainly helped me get the column done this month. Sometimes you just can't imagine what to write about. You can't remember if you've said this before or what. Ya know, the memory is the second thing you start to lose. I can't remember what the first is...

Probably your mind.

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World Radio History

## Ralph Sutton



The man behind Lionel Richie's new album discusses careers, analog, and a lot more

BY MR. BONZAL

Bonzai: What kinds of records did you listen to as a child?

Sutton: Rock 'n' roll, The Beatles, Doors; R&B from Stax and Motown, and Jazz. The artist that really comes to mind is Wes Montgomery. "Bumpin' Down Sunset" is still one of my favorites.

How did you become an engineer?

When I was 15, I was a frustrated musician because I didn't have the patience to practice two or three hours a day. But I had always loved music. My mother bought me a Pioneer turntable and

some components and I became an audiophile. I read the backs of albums and tried to understand the process as best I could. What really inspired me

Suspect: Ralph Sutton

Birthplace: Chicago, IL

tattoo on right bicep

Vehicle: BMW 740i

Way, Studio One

James Carmichael.

Residence: Hancock Park, LA

Designer, Remixer

roughage

Occupation: Engineer, Sound

Dietary Preferences: Fruit and

Distinguishing Marks: Black Panther

Location of Interrogation: Ocean

Notes: Has been engineering since

1979, earning a reputation across

the board with his specialty in R&B

and Funk. Has recorded: Babyface,

Ice Cube, John B., Marvin Gaye, Ste-

vie Wonder, Michael Jackson, Temp-

tations, Four Tops, Rick James, and

Smokey Robinson. In film, Sutton has

worked with Stanley Clarke, record-

ing and mixing the scores for Ice

Cube's Dangerous Ground, Whoopi

Goldberg's Eddie, Sprung, and

BAPs, directed by Robert Townsend.

Most recent project is the new Lionel

Richie album, Time, produced by

was the work that Rik Pekkonen did with The Crusaders. What was your first session as the chief engineer?

I was working at Chateau Studios over on Magnolia here in L.A. and Eric Burdon booked some time. We got three songs recorded and I have no idea what came of them. Who was your mentor when you began

engineering? Ken Scott, the great European engineer of Beatles fame. I assisted Ken on two albums for Missing Persons and one for Kansas. I guess he really saw something in me that I didn't see [in] myself. Ken is the drummer's engineer, and during that time I feel like I perfected what is today my drum sound.

How do you get that drum sound?

The first thing is to communicate with the drummer and have him play a capella without any mics up. I try to come up with the right mics for the particular style of playing. I just recently recorded Paul Lyme for Lionel's album.



Sometimes I use very large diaphragm microphones on the toms, 67's or 87's, but in Paul's case that wouldn't work—he's a very hard hitter, so I used

Sennheiser 421's. If the drummer plays less hard, you can use a much larger diaphragm. Then there's a chain of compression and EQ that I like to use, and I usually bypass the console and go direct to tape, using the attenuator on the compressor as my volume control.

What's your favorite compressor?

On drums I like 1176's and LA4A's. My favorite chain right now is Summit, all tube. You go into a TPA200B mic pre, to the EQF-100, and into a DCL-200.

Do you have a console of preference? Any of the vintage Neves, like this 8078, which reminds me of

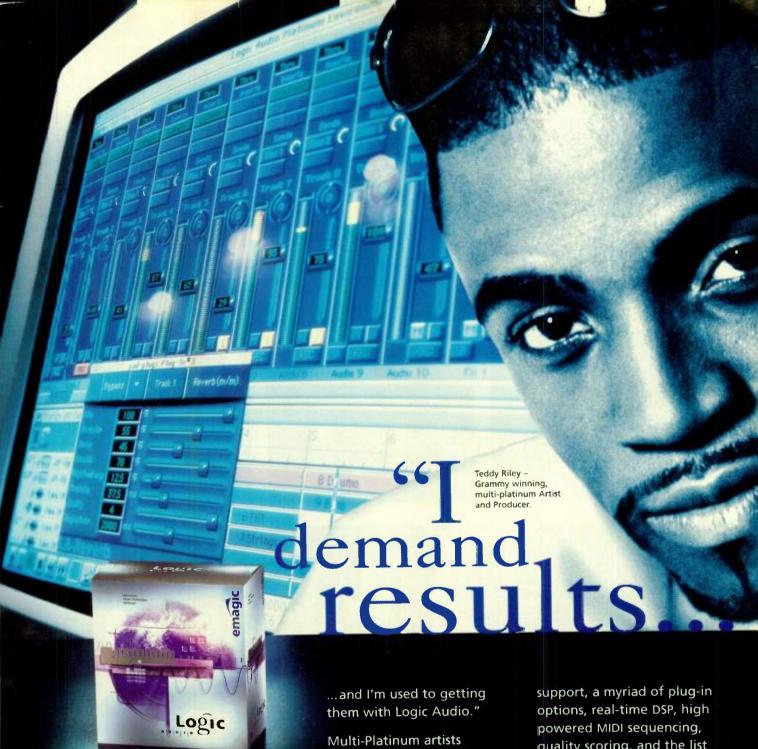
the years I worked at Hitsville and conjures up my Motown

experiences. I am a Neve man, and I also love the hotrodded consoles at Conway, but, mind you, SSI.s are also very good consoles.

Digital? Analog? Where are we in 1998? I like to track analog on Quantegy 499 at +6 and then transfer to the Sony 3348. I'd love to go completely analog, but



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**World Radio History** 

due to the way we handle tape now, you almost have to go digital - at least for the projects that I have been fortunate enough to work on.

Because they are so complicated? Yes, and we wear the tape out rapidly. What was the maximum number of tracks you used for Lionel?

One hundred and forty-eight tracks on one song, the single that's out now called "Time." That involved three 3348's running simultaneously with a 24-track analog. Track management becomes very important.

Did anything innovative come out of this Lionel project?

Yes, I think that myself and Dave Zeller, former technician over at Conway, came up with a digital chain that really preserved the dynamics of the music and gave us an opportunity to get the maximum volume to the mixdown media. I mix down to three formats: PCM9000, 1/2-inch analog, and DAT, so the producer and artist can compare and choose. Half-inch always wins, and that's what we mastered from over at Bernie Grundman's.

Can you give me a little more on this "digital chain?"

We chained together different A-to-D and D-to-A devices along with a digital

distributor, and we also used some of the TC Electronic stuff. The cats know what I'm talking about. And for conversion, in my opinion nothing sounds better than dB Technologies.

If you could go back in time, what would you like to record?

Ragtime jazz, that Southern Bayou sound, with clarinet, accordion, string bass, guitar, and banjo.

Any complaints about the music industry?

I would like to see more live musicianship again. We're falling into a situation with a lot of producer/artists working in isolation, on their workstations with









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samples. I would prefer to see real musicians again, to see the cats come in. My best sessions were in a room with seven or eight guys all focused on the song. I think it would help society if a child could say, "I'm going to be a musician when I grow up." Right now, no one can say that because it means nothing.

What do you listen to while you're driving?

Jazz. Joe Sample, Wes Montgomery, Coltrane...

What did you learn from Lionel Richie?

Perseverance, patience, determination. Any engineer who you especially respect and admire?

Allen Sides, who has been a friend since I got into this business. He used to let me sit in on his sessions when I was starting out, and always encouraged me to start firsting as soon as possible.

Is there anyone in history you wish you could have recorded?

Coltrane, Bird. The saxophone is like a voice, and they knew how to articulate. Any business advice for young engineers? Pay your taxes. Work hard, ask questions, and don't let anyone smash your dream.

Who is a great producer?

James Carmichael, who did all the Commodore albums, worked with Diana Ross, Jackson Five, and, of course, Lionel Richie's Dancing On the Ceiling sold 18 million. He understands how to let the musicians be who they are. He believes in the chart, for each musician, as a roadmap. You have all kinds of highways and biways, alleys, and he lets them find their best way to get to the capital, which is the record. James is one of the last of the oldschool producers who writes the chart, plays every instrument, and is a concertmaster. He's very stern, but very kind.

Have you ever witnessed a miracle? Where I grew up in L.A.'s South Central, I once saw a little boy get hit by a car, which drove over him and tumbled him underneath. A storefront preacher ran out into the street, grabbed the little boy and said something to him, and that little boy jumped up

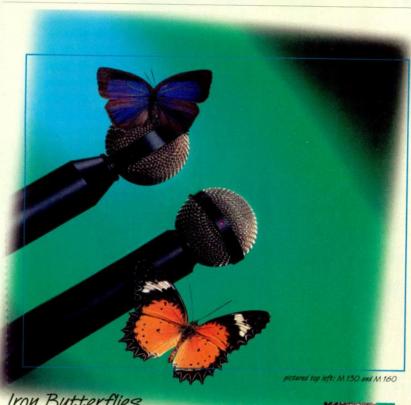
and ran home crying. I said, "Wow!" I have also witnessed miracles in the studio - psychoacoustic phenomena. If you do this long enough, you will witness powerful physics at work in the creation and recording of music. I think we sometimes take this too lightly.

Any advice for getting a good start as an engineer?

As an assistant, you must be very patient and understand that in order to lead you must learn how to serve. If you can't serve, you can't be a leader. My role as an assistant was to operate the tape machine, shut up, and try to second guess what the engineer and producer might want. Anticipate. Take some initiative. If they are about to run out of coffee, don't ask, just get it.

If you become the lead engineer, it means that you may be responsible for million dollar budgets. You will be expected to do your absolute best at all times. Are you ready for that?





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## Recording Voodoo

Building a mix with producer/engineer/ mixer-to-the-stars Don Smith

#### BY BOBBY OWSINSKI

Just one look at producerlengineer/mixer Don Smith's credits will give you an indication of his stature in the industry. With credits that read like a Who's Who of Rock 'n' Roll, Don has lent his unique expertise to projects by (ready?): The Rolling Stones, Tom Petty, U2, Stevie Nicks, Bob Dylan, Talking Heads, The Eurythmics, The Traveling Wilburys, Roy Orbison, Iggy Pop, Keith Richards, Cracker, John Hiatt, The Pointer Sisters, Bonnie Raitt, and lots more. Here are some of Don's thoughts on mixing — an excerpt from my upcoming book Mixdown.

#### EQ: Can you "hear" the mix before you start?

Don Smith: I usually can roughly hear what it should be. I start out with the basics of a good rough mix and then I try to tweak it from there. Sometimes, I may hear something while I'm doing it, like a tape delay on the drums, that might change the character of the mix and make it turn into a different direction.

#### How do you start your mix?

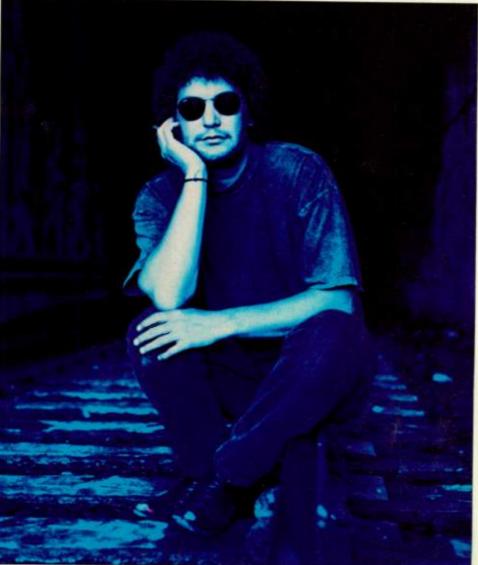
I start most of the time with just drums and bass, then everything else. Then there were some records that I started with lead vocal, then guitar, and the drums would be last. With somebody like Tom Petty, his vocal is so important in the mix that you have to start with the vocal. So the vocals get roughed in. [and I] throw guitars around it. Then I might start back in the

other direction, making sure that the drums and the foundation are solid. But I like to start with the vocal and guitar, because it tells me what the song is about and what it's saying, then let everyone else support the song.

Do you have an approach to using EQ? I use EQ different from some people. I don't just use it to brighten or fatten something up; I use it to make an instrument "feel" better. Like on a guitar, I try to make sure that all the strings on a guitar can be heard. Instead of just

brightening up the high strings and adding mud to the low strings, I may look for a certain chord to hear more of the A string. If the D string is missing in a chord, I like to EQ and boost it way up to +8 or +10, and then just dial through the different frequencies until I hear what they're doing to the guitar. So I'm trying to make things more balanced in the way they lay with other instru-

Do you have a special approach to lead instruments or vocals?



SMITH'S JONES: Don Smith reveals many of the tricks and techniques he used to get the sounds on the Rolling Stones' Voodoo Lounge and other high-profile projects.

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I use tape slap all

the time. I use it

more than I use

digital delays. It's a

lot warmer and

much more natur-

al, and the top end

doesn't get so bright

and barsh so it

blends in better.

For vocals, just make sure that the song gets across. The singer is telling a story. He really is telling a story and trying to get the song across no matter what any one else is doing. He's gotta come through, but not be so loud that it sounds like a Pepsi commercial.

Sometimes you might want the vocal to sit back in the track more because it might make the listener listen closer. Sometimes you don't want to under-

stand every word. It depends on the song. It's always different. Do you build a mix up with effects as you go along?

I always build it up dry. I look at it like building a house. You've got to build a solid foundation first before you can put the decorations on. It's the same way with tracking. I very rarely use effects when I track. Just every now and again if an effect is an integral part of the track to begin with, then I'll record that.

What I've found is that, if you really get it good butt naked, then when you dress it up, all it can do is get better. If you put effects on too early, then you might disguise something that's not right. I don't really have too many rules about it; I'll just do what feels good at that moment. Sometimes you get it butt naked and you don't need to put any effects on.

It's pretty cool, so just leave it alone. Do you have a method for adding effects? I usually start with the delays in time, whether it's 1/8th note or dotted value or whatever. Sometimes on the drums I'll use delays very subtly. If you can hear them, then they're too loud; but if you turn them off, you definitely know they're gone. It adds a natural slap like in a room, so to speak - that maybe you won't hear, but you feel. And, if the

drums are dragging, you can speed the delays up just a gnat so the drums feel like they're getting a lift. If they're rushing, you can do it the other way by slowing the delays so it feels like they're pulling the track back a bit.

A lot of times in my mixes you won't hear those kinds of things because they're hidden. On the Stones' Voodoo Lounge album, there's a song called "Out of Tears." There's these big

> piano chords that I wanted to sound not so macho and grand, so I put some Phil Spector kind of 15 ips tape slap on it. It sounded kind of cool. so I tried some on the drums, and it sounded pretty cool there. too. By the end of it, I had it on everything and it changed the whole song around from a big grandiose ballad to something more intimate. It was played on a Bösendorfer, but [it] really wanted more of an upright, like a John Lennon "Imagine" type of sound. Do you use tape slap

a lot?

I use tape slap all the time. I use it more than I use digital delays. It's a lot warmer and much more natural, and the top end doesn't get so bright and harsh so it blends in better. I varispeed it to the tempo or whatever feels right. I usually use a 4-track machine with varispeed and an old mono Ampex 440 ma-

chine for vocals. The mono has a whole different sound from anything else sort of like the Elvis or Jerry Lee Lewis slap where it can be really loud but never gets in the way because it's always duller yet fatter.

On the 4-track, I'll use two channels for stereo, like for drums, and send each slap to the opposite side. Then I might use the other tracks for guitars or predelay to a chamber or something. Sometimes I'll

put Dolby on the 4-track to cut down the hiss or at least turn the gain way, way up because you're not using much of it.

Do you have an approach to panning? Yes, but it's kinda weird, though. I check my panning in mono with one speaker, believe it or not. When you pan around in mono, all of a sudden you'll find that it's coming through now and you've found the space for it. If I want to find a place for the hihat for instance, sometimes I'll go to mono and pan it around, and you'll find that it's really present all of a sudden, and that's the spot. When you start to pan around on all your drum mics in mono, you'll hear all the phase come together. When you go to stereo, it makes things a lot better. Do you have a set of monitors that you use all the time?

I have a set of Yamaha NS10's that I've had since '83, as well as a set of ROR's, which they stopped making, from '80 or '81. I tried all the different [ROR] versions, but they never sounded the same afterwards. I sometimes bring a Yamaha 2101 amp with me.

What level do you listen at?

I like to listen loud on the big speakers to get started and occasionally thereafter, and most of the time at about 90 dB. When the mix starts to come together, it comes way down, sometimes barely audible. I turn it down way low and walk around the room to hear everything.

I mix a lot at my house now where I sit outside on my patio. If I mix in a studio with a lounge, I'll go in there with the control room door shut and listen like that. I definitely get away from the middle of the speakers as much as possible. How much compression do you use? I use a lot of it. Generally, the stereo bus itself will go through a Fairchild 670 (serial #7). Sometimes I'll use a Neve 33609 depending on the song. I don't use much, only a dB or two. There's no rule about it. I'll start with it just on with no threshold just to hear it.

I may go 20:1 on an 1176 with 20-dB of compression on a guitar part as an effect. In general, if it's well-recorded, I'll do it just lightly for peaks here and there. I'll experiment with three or four compressors on a vocal. I've got a mono Fairchild to a Neve to maybe even a dbx 160 with 10 dB of compression to make the vocal just punch through the track.

Again, I don't have any rules. As soon as I think I've got it figured out, on the next song or the next artist, it won't work as well or at all.

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CIRCLE 92 ON FREE INFO CARD

## Speaking with the Alien

#### And other interesting tricks you can do with Opcode's fusion: VOCODE

#### BY TIM TULLY

Vocode, one of Opcode's most interesting plug-ins from the "fusion:Effects" series, is finding a lot of use in remix and postproduction work. Since Vocode (see review, EQ 12/97) processes digital audio files instead of processing live audio in real time like a traditional hardware vocoder, Vocode suggests some different techniques.

#### **VOCODER BASICS**

Vocode is the software equivalent of the hardware used by such groups as Kraftwerk and Lipps, Inc. ("Funkytown"), and produces a sound similar to the "talking guitar" effect made famous by Peter Frampton back in the '70s. A traditional hardware vocoder works by dynamically extracting a set of control voltages from a "modulator" signal and using them to cut and boost the same bands in the frequency spectrum of a second signal, the "carrier." This imparts the real-time spectral characteristics of the modulator onto the carrier to meld the two signals in a way that sounds like no other effect.

A typical vocoder application is modulating a

guitar or synth sound with voice. Whenever the voice contains a lot of highfrequency sibilants, this boosts the instrument's high frequencies. When the voice hits low frequencies, the carrier's lows are boosted, and so forth. Via the vocoder, the voice becomes a very expressive filter control. Since the vocoder can change its filtering characteristics very rapidly, it can also produce good percussive effects.

One of the first vocoding tips is to use harmonically rich sounds - like big, distorted guitar, and lush string sounds - as carriers, since they have enough frequency bandwidth to respond to the variations in the modulator's signals. A second suggestion for when you're getting familiar with the effect is to use percussive sounding modulators, but, ultimately, the field's wide open.

#### CARRYING THE RHYTHM

Part of fusion: Vocode is a rudimentary synthesizer that generates a number of carrier waveforms, including saw, pulse. and triangle waves as well as oohs, aahs, and simple instrument sounds. The

rhythm track. I had success using a carrier pulse wave pitched in the bass range and sketching a minor chord by clicking the notes C1, Bb1, and Eb2 on the keyboard. I modulated these sounds with a drum loop and saved the resulting file, then did the same thing using an F1 and Ab2, and then again using the notes F2 and D1. I purposely spread the pitches as far as possible to get a note in the frequency range of different drums. I turned the high and high-mid bands on the Vocode equalizer down to -20 or -30, and the mid to -18.

The resulting files didn't exactly play a bass line, but I didn't really want that. What it did was to add some or all of the pitches I clicked, locked real tight to the kick, snare, and low tom (which was functioning as sort of a second kick



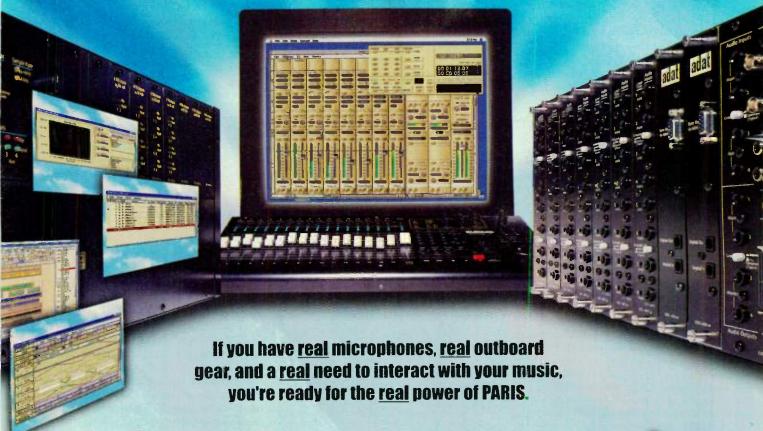
HAVE A NICE DAY: Provided you know how to use it, Opcode's fusion: VOCODE can let you do many processing tricks — including re-create some your favorite sounds of the '70s.

Vocode screen displays a small keyboard that goes from C1 to C9, on which you can click different keys to play the synthesized carrier at a number of different pitches (depending on the patch). The modulator affects each of the voices it plays individually.

This is an excellent and simple way to add a harmonic dimension to a in this loop). Arranging the output files in Studio Vision created a drumintensive sequence that strongly suggested - without actually playing - a minor I-IV-V pattern, and added both rhythmic punch and tonality to a sequence.

You can also turn that approach around. Record a pitched performance

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(an instrumental or vocal bass line, for example) for use as a carrier. If you have a good drum loop, the performance you record doesn't even have to be that good in a rhythmic sense, as long as the pitch is on the money. You can effectively tighten up the performance to your drum loops, as well as add some harmonic weirdness, by modulating it with the drum loop.

#### **LEGAL ALIENS**

One of the most popular vocoder applications is to create voices for aliens. mutants, and assorted other diverse beings for movies, Web sites and games. Doing this is essentially the same as the talking guitar effect, except the talking is more important than the guitar, and a terminally distorted, ring-modulated synth pad is usually a more effective carrier than a guitar.

This is fairly easy to do since Vocode can use any audio file on your disk as a carrier. Start by recording a nice, long sustained synth note using a harmonically rich patch. If you want,

add some dynamic variation that you can't get from Vocode's built-in synth by recording a chord and changing a note here and there over time. If you want the harmonic changes to be subtle, set up the synth patch with a fairly long attack and decay to make the note changes less obvious.

Once you have the synth performance in the form of a MIDI sequence, you have to record it to hard disk as audio. In essence, this means routing the output of the tone generator playing your MIDI sequence to your audio card's input and recording it. (See "Studio Vision and the CD" in the January 1998 EQ for tips on doing this.)

After recording the synth performance as audio, click the Custom button in Vocode to specify it as a carrier. instead of using the built-in synth. This gives you a basically infinite array of sounds you can modulate with the original dialog to make a new alien any time you want.

To take the opposite approach, you can "play" the monster's dialog by using a fast-attack synth patch and changing the chord to reflect emotional changes in the alien's voice. To do this, you'll need pretty good Foley-like skills and know the dialog pretty well.

Put the alien dialogue in a Studio Vision track, set up another track for your synth, and set it to record. As the alien talks, play along with it, harmonizing along with his words. When he's sad, play a minor chord, when he's glad. play a major, and when he's mad, hit a tritone. I'm oversimplifying it, of course, but you get the picture. Be forewarned, though, this is not a simple job. If you really want to sting this guy's dialogue, you have to know it cold, and probably score it before you start recording.

Make sure there's no dead space at the beginning of either the dialogue or the synth file, and they should lock up pretty tight, though several shorter files are easier to keep in sync than one long one.

I found that if I kept the carrier level at about +0.5, the emphasis at around 50, and the depth at 85, I could cut the mix back to the 25-percent range to make the synth chords less apparent, and just hear the alien voice with the tonality.

These techniques are just a smattering of Vocode's possibilities. Check it out yourself and you'll probably come up with lots more. E



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## Tales From the Shop

Wallet shock

begins as you

start investi-

gating repair

options.

Remember:

everything

old needs a

little TLC.

Vintage gear may be cool to own, but remember to factor in some maintenance fees when buying

#### BY EDDIE CILETTI

Reliability in used gear starts with the obvious wear items - switches and pots, which in many cases can be brought back to life with a high-tech spray (such as those made by Caig Labs) and exercise. A full resurrection, however, is often only temporary for 30something components. Less obvious

problems only reveal themselves if you have two identical models on the outside - each with very different personalities on the inside. Then wallet shock begins as you start investigating repair options. Remember, though, everything old needs a little TLC.

Labor rates vary from a low of \$35/hr. to a balmy \$100/hr. The wide range is as much a regional phenomenon - big city, big price - as it is skill dependent. Deep technical knowledge is always a plus - great techs can fix anything - but even a "simple problem" can sometimes take several hours, especially with an antique. Earthy techs with less book smarts and more gear-specific experience can get the job done quickly be-

cause the blood and guts of most common repairs is patience and time.

#### CALCULATING THE FUDGE FACTOR

Be wary of the low-ball estimate. If the "patient" is an old tube mic or a tape

machine, you want the skilled, experienced specialist. Some techs will give an estimate without even seeing the patient. Don't be afraid. You are actually being done a favor. It's better to know the ballpark price before shipping rather than bailing after paying for the round-trip airfare and the estimate. Assuming (for the moment) a classic piece of outboard gear selling for \$1500, factor in at least \$300 into "the repair/negotiating fund.'

Lemme tell ya a story...l recently serviced a Universal Audio 175, the vacuum tube predecessor to the UREI 1176. This unit is just about military grade with double-sided fiberglassepoxy circuit boards circa 1965. The unit powered up but seemed tired. All of the tubes tested at less than 25% of their typical, new-ish value, so I scrounged a few from my

stash and powered up again. Bad news. It worked better with the bad tubes; now it's oscillating at low frequencies when the gain is cranked. Weird...

Everyone knows that capacitors don't age well. Surprisingly, though, all the caps I pulled tested good; that is, all the ones that were easy to get at. The first clue was a major mid-tohigh frequency roll-off. There are two caps in the feedback loop of the output amplifier. Problem is they're on the backside of a small circuit board (one of two).

I managed to extract the old caps, but the surgery presented complications. Military grade or not, I damaged some of the feed-throughs be-

tween the top and bottom layer. (These are electroplated after etching and drilling.) If the desoldering process goes well, the components don't require much force to be removed. If, however, you're simultaneously applying heat

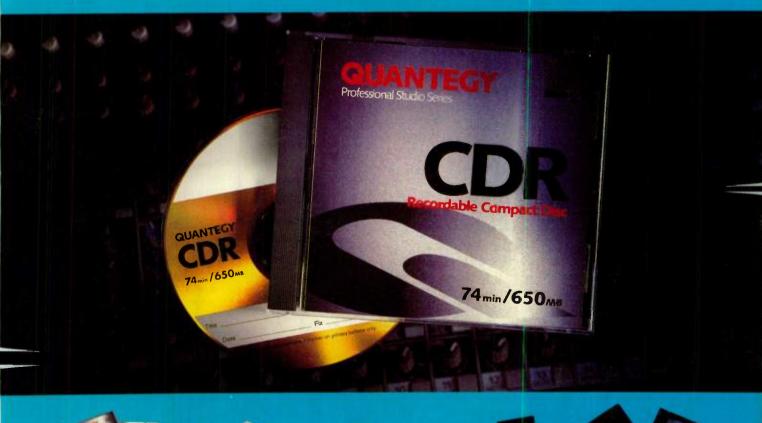


chances are better than 90 percent the land will lift, either breaking from the plate through connection or pulling it out altogether. It's times like these you wish it were oldfashioned terminal strips instead of PCBs.



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#### TECHNIQUES

#### IT'S MY PARTY

Of course, while I'm under the hood, the carbon resistors get replaced with lownoise, 1-percent metal-film resistors. I want this box to be as quiet as possible, especially if radical compression is the gimmick. Adding meter lamps caused an electro-mechanical detour of at least an hour.

The 175 used stepped attenuators for the input and output controls. Unlike modern gear, these are electrically preinput and postoutput transformers, respectively. This "location" requires them to maintain constant impedance to the source and destination no matter what the setting. These had been replaced with a dual-T-pot similar to the one UREI used to set input level in the 1176.

#### LOVE PROJECT

The 175 has internal jumpers that can be set for "normal" operation or provide 10 dB more gain. By replacing the jumpers with a switch, the gain could easily be changed during a session. (In the "higher gain" setting, a high-output mic can drive the 175 without a preamp.) But I didn't stop there. Anticipating a session with a vocalist whose midrange could curl the hairs on a peach, I added a little sidechain EQ - centered at 2.5 kHz. Solving the problem with EO in the sidechain sounds more natural than taking it out of the vocal track.

The motivation for making all of these changes was to increase flexibility - I wanted all of the benefits of vintage without the undesirable artifacts such as noise or inconsistency. I was not concerned with keeping everything original nor did I feel I was performing a "charmdectomy." (At the opposite extreme, I once had a customer who was specific about my replacing only the "bad" parts for fear some of the magic would go away. Humbug! I regretted secondguessing myself and the customer was never completely happy cause the box ended up being unreliable.)

Even after major surgery, old gear can be temperamental. Don't give up! In the world of vintage, reliability is a combination of luck, money, chance, patience, time, and more money!

Eddie has been seen at the auto supply store purchasing a "creeper." If you see him under a console, don't worry unless he asks for an oil pan. Find him at any hour at: www.tangible-technology.com.

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## Demo Queen Gets A Job

# Molding minds and making musicians in elementary school

#### BY C. REEDER

After two funerals too close together, I suffered temporal lobe damage caused from either too many or not enough prescriptions to deaden the pain. Then I took a ride with the teenage driver from hell, my 17-year-old daughter. My darling girl drives her little red Mazda like the Mad Hatter in a Formula One race, zipping in and out of reality and telling the "truth" as she sees it. Reams of excuses like, "I wasn't speeding when I got that ticket. I was trying to make my curfew," or "I was really in class, that teacher just didn't see me." and "The problem with you, mom, is you're not down," roll like turds off her tongue. Such chatter creates a dervishlike whirl in my undernourished t-lobe and, without warning, twisted sounds escape my mouth like, "ARGHH" and "S"T" and "GET OUT!"

Dagmar called at a weak moment. "Just go talk to Mr. Wiseman," she said with urgency. "It's really a baby-sitting job. The little darlings are spoiled rotten and the principal isn't on your back. You have all summer off and holidays. I'm desperate and need more money. There's an opening at a public school that pays a lot more, and if I find a replacement I can leave...Please!"

Being a close friend, I was aware of Dagmar's ongoing drama and vast obligations, including the 12 cats and four dogs she snatched from the brink of death. I agreed to see Mr. Wiseman, the owner of a ritzy private school (K–8), and "talk" about me taking over the position of music teacher. With no one around to shake me, I said, "Yes."

Day job: the two most dreaded words in a musician's vocabulary. A day job for a musician is what happens to you on your way up or on the way back down. As the reigning Demo Queen, I refuse to be pegged. I just am what I am.

Besides, if Princess Di, God rest her lovely soul, could be a teacher, it's good enough for me. Lots of musicians were teachers, including Bach, Mozart, Zippo The Clown (my band director who played trumpet for the circus on the weekends), and Madame Sousatzka.

Bored with pitching songs and the music biz in general, I thought to myself, "What the hell. How hard could it be? I love kids and should get some good out of all that school and my music degree. Right?"

Wrong is not exactly the word I would use — more like terror and hours of planning and thinking fast on your feet come to mind. I don't even have time to think of quitting.

Day one: I walk into my studio/

classroom and survey the tools at hand. One old upright piano, one Yamaha PSR-SQ16 synthesizer, one turntable that's at least 30 years old, one CD boom box, various polyvinyl albums for kids with artwork straight from Laugh In, music books for various ages with kids wearing clothes from the '70s, and miscellaneous bells, xylophones, noise makers etc. I hadn't thought of "This Land Is Your Land" for longer than I care to admit

Every 30 minutes from 9 AM to 3 PM about 25 small bodies run in (until I learned to make them walk in) and start bouncing up and down on their seats when they're not rolling on the floor or jumping, squealing, talking loud, spewing leftover food from lunch,



STRATION BY AMY HILL

lunch, or crying to go to the bathroom or get a drink.

When asked by Mr. Wiseman how I would discipline, I confidently said, "I'll make music fun." (Big pause here for any one who has spent any time in a classroom to laugh.)

A fine line exists between fun and chaos. Fun to kids is an active verb and chaos is always just around the corner. Dancing to Space Jam is fun until a kid, usually a boy, slams a smaller kid into the wall, then chaos erupts with lots of wailing and crying.

The cool part about being a teacher is that I don't have to get even: I get to give grades. Such power is not to be taken lightly. I don't want any future thug behavior blamed on the F poor Johnny got in the second grade in music class, so I give everyone A's. Well, I gave one kid a B because she never brought the recorder I gave her back to class, coughing up lame excuses like, "We moved" or "It's under my bed."

Day 60: Feeling inspired one day between classes, I was working on a song when a class of third graders walked in and the cute little polished face of a boy named Ollie, who wears starched white shirts and polished black loafers, asked me what I was doing.

Thinking he wouldn't have a clue as to what I was talking about, I said, "Oh, I write songs and I want Julio Iglesias to sing this one." His eyes lit up and he said, "My dad is in the music business, but I don't think he knows him."

"That's nice and who does your dad know, Ollie?" I asked with almost a yawn.

"Ummm...Celine was over for dinner the other night."

"As in Dion," I choked.

"Yeah, that girl who sings the Titanic song.'

"Ollie," I cooed in my nicest sounding you are definitely getting an A+ voice, "Do you think you could give this tape to your dad and say it's a great song for Celine?"

He coyly scowled until I added, "I'll give you 10 percent.'

Ollie brightened with, "Make it 15 percent and it's a deal. I'll bring my contract tomorrow. Not that I don't trust you Ms. R, but my dad says get everything in writing."

Bested by a midget with a lawyer brain and connections. At least he didn't ask for a cowriter credit. I'll save that for the dad. Hey ho ...



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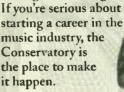
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CIRCLE 18 ON FREE INFO CARD

## Principals of Production

"Producing Success" seminar at USC gives attendees a chance to hear from the pros

#### BY ROGER MAYCOCK

The Music Producers Guild of the Americas (MPGA), in conjunction with Miller Freeman PSN, Panasonic, JBL, and BASF, hosted the first West Coast "Producing Success" seminar at the University of Southern California's Bing Theater on Saturday, June 13th. The forum for the morn-

ing and afternoon events was that of a panel discussion moderated by producer Don Was.

The panelists for the two sessions read like a Who's Who of Studio Stardom. Among those in attendance were Shel Talmy, Allen Sides, Joe Chicarelli, Geza X, David Was, and Danny Saber. In addition to views offered by the aforementioned producers, music attorney David Burns, A&R veteran Larry Hamby, and Shannon O'Shea (manager for both Danny Saber and Butch Vig) added their perspectives to round out the discussions.

Don Was was in top form throughout the proceedings, keeping the conversations well-paced and informative. The morning session began with each producer sharing some background as to how they got started. The attendees were treated to experiences ranging from starting as a studio gofer to blatant lying about one's credentials (and getting caught in the process — but only after proving one's ability). Don best summed up what became increasingly evident throughout this session when he said, "There's a common thread here, and it's the fact that anything goes!"

Ocean Way Recording's Allen Sides shared his humble beginnings as a "guy more interested in building speakers than running a recording studio." States Allen, "I used to buy all this [recording gear] because I wanted great demo tapes to show off my speakers. Before I knew it, people were more interested in my production than the speakers — and Ocean Way was born."

The afternoon session dealt with issues confronting both established and as-



SUCCESSFUL PRODUCERS: "Breaking into the Business" morning panelists (back row, L-R) producer/engineers Geza X, Joe Chicarelli, Allen Sides, producer Shel Talmy, and moderator Don Was; (seated, L-R) studio owner Howard Schwartz, producer/engineers Dave Reitzas, Greg Ladanyi, producer David Was, and Larry Hamby, VP of A&R at Windham Hill.



SHOW OFF: Panasonic's Fred Jones (left) shows off the company's DA7 digital mixer during the seminar. (For a full review by Craig Anderton, see page 80.)



L.A. STORY: Outside USC's Bing Theater (L-R) Howard Schwartz, Don Was, David Schwartz, Tim Heile, Dave Reitzas, Larry Hamby, Joe Chicarelli, and Chris Stone.



DOWN TO BUSINESS: Larry Hamby discusses the realities of A&R in the music industry while David Was looks on.



STUDIO SIBLINGS: The Brothers Was together again (Don is on the left, David on the right).

piring producers alike. Topics included ideas producers can use to encourage the best possible performance from the talent, shopping a project to record labels, and the use of various technologies to achieve the best sounding production. Throughout the day, the audience of roughly 150 people had ample opportunity to ask questions and solicit ideas on these and other issues.

As the panelists shared their most memorable studio experiences, remix guru Danny Saber offered a thought echoed by everyone in attendance, "You've got to be true to the music - from there, everything else will fall into place." Danny's thoughts on what constitutes a good remix as opposed to a "bastardization" of the original were also the source of much lively conversation.

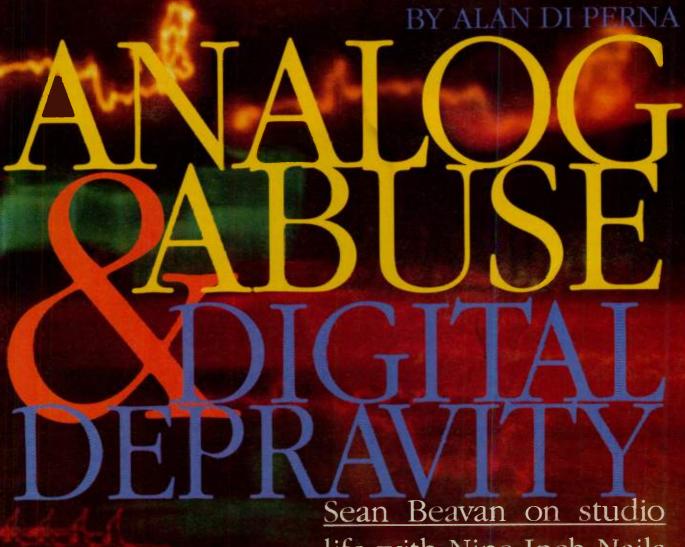
In addition to the panel discussions, attendees were also treated to several 5.1 surround sound demos as well as a close look at Panasonic's DA7 digital mixer (see review on page 80).

The seminar was a success, offering attendess the opportunity to meet industry players as well as experience the technologies affecting pro audio.



MEETING OF THE MINDS: Allen Sides and Don Was confer on the "Negotiating the Deal" agenda of the conference.





Sean Beavan on studio life with Nine Inch Nails and Marilyn Manson



ean Beavan has vivid memories of the last Maril n Manson tour:

"You opened up one of the bays on the tour bus and there were all these prosthetic limbs. It was kind of surprising for people who looked in there. Kind of disturbing, some-

times. But then we got to a point where we were bringing our studio rack out on the road, and we had to have room for it. So we had to get rid of the prosthetic limbs."

Beavan doesn't look like a ghoul (what audio engineer does), but he has created some of the most horrific, extreme, and unsettling sounds ever heard on disc. It's all in a day's work when you're studio engineer, co-producer, and live sound mixer for rock's two current reigning bogeymen: Nine Inch Nails' Trent Reznor and the aforementioned Marilyn Manson.

Trained in psychology, Beavan worked with mental patients before he got into engineering. So he's uniquely qualified for his present job. He did live sound for industrial music pioneer Jim Thirlwell (Foetus) before hooking up with Reznor in time to work on one of the most influential youth cult albums of the '90s: Nine Inch. Nails' The Downward Spiral. When Reznor started Nothing Records, his own Interscope-distributed label, Marilyn Manson was among his first signings. With Reznor as executive producer and Beavan mixing and co-producing, Manson's shock rock debut, Portrait of an American Family, came into this world. Beavan worked on the band's subsequent releases. Smells Like Children and Antichrist Superstar. while also collaborating with Reznor on a slew of Downward Spiral remix discs, as well as remixes for Megadeth, Rasputina, Prick, and the Golden Palominos, among others. He's currently at work on new albums from Kidney Thieves and Marilyn Manson.

The latter project got started at Manson's house up in the Hollywood Hills before moving to a studio in the heart of town, prosthetic limbs and all. It will be the band's first record without Reznor as producer. (Michael Beinhorn's in the big chair.) There are rumors that the much-anticipated album will be a major departure for the

always-surprising Mr. Manson. He and his whole ghastly crew have been holed up in the studio for quite some time. But Sean Beavan recently took a morning off, venturing into the L.A. sunlight for coffee and a chat.

EQ: You and Trent Reznor have forged a sonic aesthetic all your own. You've made it nearly impossible to listen to those mediocre industrial records with unimaginative fuzztone vocals. You've upped the ante.

Sean Beavan: That's part of what Trent set out to do, in a way. We heard the textural tones of what was going on in industrial music and loved it. But where was the song that made

you feel something? You think of Soft Cell, a song like "Tainted Love" — his vocal was tearing your heart out. Or something like "No Hate, No Fear, No Broken Hearts" by Annie Lennox. Those vocals kill. That emotion. And the textures that industrial music has can enable you to bring out so many more emotions.

You guys meticulously crafted what were previously thought of as completely undesirable sounds.

And made them into a thing of beauty, yeah. I think a song like "Hurt" or "A Warm Place" [from The Downward Spiral] takes you to a place in your life that Whitney Houston doesn't come close to. Life isn't a Mariah Carey song. I don't always necessarily want to explore dark and depraved things, but there's a pure beauty in the ugly emotions you have.

You've been involved with Marilyn Manson since the beginning of the band's recording career.

Yeah. Trent and I were working in Miami, and Manson brought us his demo tape. We listened to it on the way back from Miami to New Orleans [where Reznor is headquarted]. We really liked it and thought it would be cool to sign him, which is what Trent did as soon as he finished his deal to have his own label and sign people.

How has Manson's approach in the studio changed and evolved?

Obviously, he's gotten more savvy about equipment and sounds. But he's always had a very direct and clear vision of what he wanted to do. And it's different on every record. He has different ideas, and he tends to conceive things in very visual terms. And very well-defined terms. With him, it's more a process of figuring out what he wants to do next. Once he finds it, he gets into the character of it, and things are very easy.

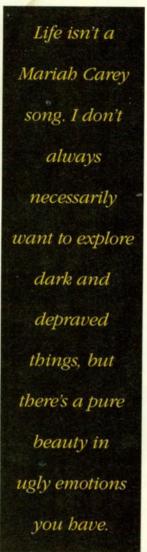
Antichrist Superstar sounds a little more programmed than the earlier work.

It was. And that was a direct reflection of where Trent wanted to go at the time. It came as a series of demos on a 4-track that were very much

played live, except for a drum machine. Trent just took it and made it a lot more precise and programmed.

But on the new Manson record you're going back to more of a live sound?

Very organic. This record's more like a cyborg, whereas the other records had no living tissue. *Antichrist* was completely stripped of any emotion. It was completely amoral and antiseptic in a way, but full of anger. So this time, Manson's gone completely the other way. The songs and lyrics are all full of emotion, and the music is very organic, although with a hint of what we've always done with computers and synths.



We tracked this record so that we could come up with the most creative parts we could, and then go back later and play live guitars and bass over the top of that to get a whole performance. So it's not all chop, cut, and paste. It flows and there's a lot of dynamics.

#### You started up at Manson's house?

Yeah, we began working there and then moved down to Conway.

Are you recording to hard disk?

Yes, using Pro Tools. We recorded everything to hard disk at the house. We had a 32-voice Pro Tools rig and a bunch of drum machines. We just bought every drum machine we

could think of — real FM-sounding drums, old DMXs, and LINNs. But the whole idea while we were doing it was that we would eventually take this up to the studio and replace some of the programmed drums with real drums. But we've also retained some of the programmed drums. So there are hybrids, like programmed drums in the verses and live drums in the choruses. Everything is done with the idea of what the song's about, how the lyrics go, and what Manson's trying to bring out in the song.

# Do you sample all those old drum machines?

No, we buy 'em. [Laughs.] I mean, we do sample the ones we don't have MIDI for. But, if at all possible, we try not to sample them. Because you lose a lot of the texture. Especially since we're going into the studio with the idea of working on 15 ips, 16-track, 2-inch, we wanted to make sure we had as many things running in the analog domain as we could, so we wouldn't lose the ultra-high harmonics that you lose because of sampling. And the ultra lows.

# So you're running a MIDI system as well as everything else.

Yes, right now in the control room we've got two, 16-track, 2-inch Studers, one Sony HR 24-bit digital machine, a Pro Tools 24-bit rig, and a Pro Tools 16-bit rig.

#### What kind of sequencer?

We're using Studio Vision.

# But just the MIDI sequencing, not the audio facilities, right?

No, we're using the audio, too. The Pro Tools 16-bit rig is run through Studio Vision because we did everything on 16-bit at the house. But then we got the 24-bit rig when we went to Conway. We used it to capture and loop drums, vocals, and things like that.

I've heard you've got something like 40 songs in the can.

It's more like 27 or 28. But we're working on 15 for the record, and we'll probably only use 12 or 13 of those. So we still have plenty for soundtracks or maybe an EP with a couple of new songs.

Does Manson always work like that? Does he always have twice as many songs as he's going to use? Yeah. On Antichrist we had probably 18 songs [16 of which



appeared on the album]. We hit a super creative period where it was like a song a day. Then we went into Westlake Audio to do vocal tracks, so we wouldn't be as distracted. We were just doing the rough vocals for songs, and we wrote five songs while we were there. Manson would then pick and choose songs as he developed his idea of what he wanted the album to do.

So it's not that songs were weeded out because they weren't very good. They were weeded out more because they didn't fit the emotional mood of the record. They didn't fit in with the grand scheme. Manson can't help but do a rock



opera kind of thing. Everything ties in together. *Portrait of an American Family* was almost the same as *Antichrist* in that respect. I don't think he can help that. He's like a novelist. Each song is another chapter.

# Tell me about your approach to guitar sounds.

It's pretty multifaceted. Personally, I love direct guitar sounds. But I like to attenuate them through a speaker simulator. I do love amplifiers, too. It's just a matter of what seems to fit the song. My favorite thing in the world is just running a guitar through every pedal you can get in the room and stressing

them all to the max and seeing what the guitar does. I'm not a purist at all in my approach. Whatever fits.

What I used to love about Led Zeppelin records as a kid was that, on songs like "Black Dog," it was just a guitar plugged into the board, turned up. No one else was doing that. And the tone was so cool. I can't stand records that get a great quitar sound and it's the same sound through the whole record. There's nothing wrong with a great drum sound. But when it's the same drum sound on every song. those records make me bored. I loved Queen records growing up, and The Beatles's white album, where every song is completely different, sonically. I have the white album in my car pretty much every day.

can get in the room and stressing

What's involved in getting that "Nothing Records' Guitar Sound": that signature industrial distorted rhythm chunk? It's really full frequency: big-bottomed, yet it goes all the way up the spectrum.

That's analog. The way we do that is to track a bunch of guitars. We always track them to 30 ips — with the guitarist playing the part an octave high, twice as fast — and then slow the tape down to 15 ips. That's how you get that huge guitar in "Physical": 20 tracks of 30 ips slowed down to 15. It's so weird how it mutates the frequency band. And analog gets that high breadth that you can't get from digital. But then we also track guitars then throw them into Turbo Synth and screw around with them. At the lowest volume, we can get it sound-

ing like your boom box is being ripped to shreds. Trent's whole idea when we were working on *Broken* [NIN's 1993 EP] was, "I just want it to sound really loud, quiet. How do

we do that?" I just figured out how.

# So as many as 20 tracks of guitar?

Oh yeah. On the song "Antichrist Superstar" we had I think it was 29 tracks of quitar. And then they were all sampled back, so we could do the stops to make them sound like they were cutting off almost like a key trigger [i.e., on a noise gate]. But, then again. some sounds are just a single guitar, or two guitars, without a lot of gain stage on the amp. So they're lightly gained and then distorted by turning the amp up all the way [i.e., power stage distortion] and letting the amp blow up. We've blown up quite a few amplifiers. On this record here I think we've blown up six Marshalls, two Ampeg SVTs... It's so loud. We were working on

one bass track and Seal was working in the studio across the way, and he had to stop singing his vocals 'cause you could hear the low end from our stuff. We had two Ampeg SVT amps and a full Electro Tech subwoofer rig blowing into the room. It was the most loud, low-end extravaganza you've ever heard.

# How do you mic something like that?

What we do is double mic the cabinets, usually with something like a FET 47 or an MD421 or SM57, and then just let the low end from the sub fill the room. It actually compresses the room. So all of a sudden you get a really tight, full, low bass sound without even using compression. It's so cool: physical compression.

# Do you ambient mic the room as well?

Yes. We usually ambient mic the room with a Neumann CMV-3, an old Hitler mic, placed really low to the floor. So you maintain the resonance from the floor. They're these mics from the '20s and '30s that you always saw on the podium with Hitler. Totally amazing sounding.

# Do you do the tape saturation thing when you're tracking guitars?

On some occasions. It'll take some brittleness off and give the guitars a great

gloss. But, on other quitars. we want to maintain that brittle edge. I look at analog tape as a processing device. It's just like running something through a Neve mic pre for that high-end distortion that you can't get any other way. Running something through Pro Tools or an Experience pedal is a similar thing. You have to think about the unique properties of the medium you're running the signal through and consider both the benefits and disadvantages. Digital cuts off those super-high harmonics, so you have to create interest using some kind of EQ or compression that will take the place of the interest created by those harmonics.

With 16-track 2-inch you get the wider track width. So you get so much more low end and so much more high end. It's that whole thing about the more space on tape, the better it

But why 16-track analog?

thing about the more space on tape, the better it sounds. And it does. I mean 16-track is a pain because you have to lock up more machines. But once you get it together, it works out

great.

I heard Billy Corgan [of the Smashing Pumpkins] was working with Marilyn Manson for a while.

Billy and Manson became really good friends. They met backstage at one of Billy's shows and just really got along great. Billy's a fan and supporter, and Manson's a fan of Billy's. I think Billy helped Manson get up the gumption to try and do something musically more interesting on the new album. Manson's always been amazing at coming up with the sloganeering, but he wanted to do something more emotional musically on

this record, and I think Billy really helped formulate some of those ideas. They talked a lot, and there was talk about Billy producing, but he was

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working on his own record and couldn't get away to do anything else. There was also talk about the Dust Brothers, but none of that seemed to pan out. Then the idea of using Michael Beinhorn came up and it seemed like a perfect choice. Manson wanted to explore things texturally and sonically, the Michael's stuff is. Manson is a big fan of Soundgarden's Superunknown album.

One thing that Marilyn Manson and Nine Inch Nails records have in common is that there's a lot of foreground information. The guitars are really in your face. The vocals are screaming. Mix-wise, how do you fit all that in?

That's the bane of my existence. I work a lot in the midrange frequencies. I'm not afraid of them. I don't yank them out. I'll do little tiny tweaks at 1 k or 700 Hz or 1.5 k to delineate certain things. I spend a lot of time over the distortion. I'll go for a Neve [mic pre] to get one kind of distortion or a Demeter [mic pre] for another kind of distortion because I

want the texture of that distortion to come through.

It's hard when you're working with that much distortion. All of a sudden you're getting masking all over the place. So I try to find what it is that I like the most about a particular distortion sound and just accentuate that frequency a little more so that it becomes a little more resonant. Hopefully that will start delineating this guitar from that guitar, and this vocal from these guitars.

It also depends on what EQ I'm us-





ing. Certain EQs work for certain things. Sometimes I'll bring an API in. Other times I'll use an old Neve. For other things I'll use the SSL E Series EQ or G Series EQ. Or even the EQ on a Mackie board, which I used for some of the drum sounds on the Marilyn Manson live video. I'd started messing with those mixes in hotel rooms on the road using a Mackie, and I found I just couldn't get those sounds with any other EQ.

Both Trent and Manson do a lot of whispering as part of their vocal styles. It must be really hard to make that cut.

Yeah. Normally with Trent it's not as premeditated as Manson. Manson's like an actor. He'll think in terms of what voice he should use for different parts of the song. He'll experiment with three or four voices for each part. So he'll say, "On this part I'm going to be really breathy and quiet," and I'll adjust the EQ or the compression. Mainly the compression. It's either going to be an 1176 or an LA2A. For me, the LA2A is really great for the breathy vocals. It gets all the cool nuances of his throat. And, for Trent, the chain is always the Neve 1073 [mic pre] and almost always an LA2A. "Hurt" was all done like that, in single takes. He's just really good at working the mic - especially a '58. He sang all of "Piggy" curled up underneath the console with a '58 into a 1073 through an LA2A. When he screamed, he pulled back; and when he was whispering he got exactly in the right kind of proximity because he listens for the tone as he's doing it. Manson's that way, too. So you have to have a headphone mix where they can hear. That's a big deal. It has to happen instantly or else they're mad.

So you use a lot of live performance mics, like the '58.

Yeah. Trent loves the Beta 58. Manson normally likes to do scratch vocal tracking with the '58, because it makes him real comfortable. But he loves to sing through a 251 or an SM7, or a 47 for the real take. Those mics work really well with him. He likes to get that big, thick low end because his voice is so low. Trent's voice is more midrange — and explosive in that midrange. But Manson's has so much richness in the low register. And that's what he loves to hear.

On stage, our monitor engineer, Maxi Williams, was just freaking out about him because normally you do a 3k boost, so people hear that high-mid intelligibility, and they love that. Manson

hates it. He ends up clicking the horns back to almost nothing. His voice is all lower frequencies in the monitors. He hears that and it makes him feel more powerful. You know how when you scream your ears compress? The ear actually physically starts to close up and you hear mostly high end. Well, when Manson screams, then he thinks he's sounding thin because his ears are clogging up. That's why if you give him lots of low end and no high end, he'll still feel the

low end resonating through his bones, and that makes him confident when he sings. It's one of those physical things.

# So what do you like for distorting vocals?

My favorite is the Neve 1073 mic pre. Just crank that mic gain. It does so many cool things when it distorts the upper harmonics. There's nothing like it. Another thing that's amazing for distorted vocals is to get a chain of LA4's and you just crank them 100 percent into each other.

#### Really? How many?

Four of them. Trent's vocal on "Get Down, Make Love" was done that way: four LA4's with a Drawmer gate between each one. So when he starts screaming, they all open up and the whole room becomes your palette. Then it shrinks back to nothing again when the gates close. It's really so cool because it's almost beyond-infinity limiting.

# So you like that style of distortion better than cheap fuzztones for vocals.

Yes. Vocal-wise, I rarely use pedals for distortion. Sometimes I'll use an Ibanez Tube Screamer or an Electro-Harmonix Screamin' Bird. Run-

ning a vocal through an Extreme pedal is kind of cool. It has sort of the same effect as if you take a Neve [1073] and crank it up all the way. The Neve will start breaking up and it will self-gate, and the Extreme pedal has some

kind of weird gating mechanism in there and it does a similar thing. But frequency-wise, it makes the signal small, which is great for some things, but I think the width and body of the 1073 are better in most cases. I like older gear distorting more than I like newer gear distorting. Like cranking something up and running it through an old Pultec [EQ]: Even if you bypass the EQ, it sounds cool just running a signal through that circuitry. It's probably because all the classic rock records you're used to listening to all used that gear, so it just sounds like a record. The way those harmonics are affected are a huge deal.



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There's one vocal effect I must ask you about. How did you get that distressed tremolo quality on the vocal in the Manson remix of Rasputina's "Transylvanian Concubine"? It sounds like digital quantization noise. What the hell is that?

It actually is a quantization noise. We did a lot of time com-

pression and expansion. What I did to get it to sound more screwed up was I time-expanded it twice as long as I needed it to be, and then I retime-compressed it to where I wanted it. So it got double the [digital] artifacts. It's just a feature in Studio Vision that will allow you to time stretch or time compress audio to fit a certain tempo. So I can figure, "Well, I can do it as a triplet, and then bring it down to here and I'll get this many artifacts." And it gets that weird tone. That's one way to get that sound.

You can also get something like that using DINR [Digidesign Intelligent Noise Reduction System], too. If you use DINR too much, it gets a really cool sound, but it doesn't get a crunchy tone. It's more smooth. If you want something real crunchy, do that and then lo-fi it.

The sound on that "Transylvanian Concubine" record was done with quantization and a Zoom patch. I love Zooms. The 9050 and the 9030 are really cool. Tonally, they're very different, even though they do the same type of thing. If I want something crunchy, I'll use the 9030. If I want something with more fullness in the lower midrange, I'll use the 9050.

# There's a similar kind of "broken up" vocal sound on NIN's "All the Pigs, All Lined Up" remix.

That's an old Electro-Harmonix ring modulator. It does the same kind of thing. It introduces weird artifacts. It sounds almost like you're singing through a fan — that super-fast tremolo, but it adds these tones that make it all weird. It's almost like additive synthesis on the voice. It adds tones and the tones screw with the voice. The voice becomes a square wave here and a triangle wave there.

# But that's not a digital piece, that ring modulator?

No. That's an old analog pedal. The background vocals on David Bowie's "Scary Monsters" are all that ring mod.

# So you can achieve that kind of sound in the analog domain.

Oh yeah. There's an old Electro-Harmonix pedal called a Pulse Modulator. If you ever see one, buy it. The vocal on "Dried Up [Tied and Dead to the World," from *Antichrist Superstar*] is that sound. There's nothing I've ever heard that quite sounds like that.

There's one other specific sound I just have to ask you

about: On Nine Inch Nails' "Closer to God" remix, the way the whole track just starts to break up as it goes into the fade. How did you do that?

[Laughs.] When we finished the mix, I took the whole thing and ran it through two Neve 1073's. I just kept clicking the outputs up. So it got way louder, obviously. But I kept clicking it up

and we recorded into Pro Tools like that. And then I assembled it back in the Pro Tools, using Sound Designer. I just adjusted the volume down, so it would maintain the same volume but get more and more broken up. The Neve 1073s I used were ones that were giving me problems in the studio. They were screwed up, so as they got more distorted, they didn't get more washy; they got more glitchy. I wouldn't say anybody doing that could probably get that sound. You have to find the right 1073, one that's broken in just the right way. I think that's one of my favorite things ever. That's one of the sounds I'm most proud of.

# So does Manson bring props with him into the studio?

Oh yeah. [Laughs.] It's crazy. We've had mannequins and all kinds of stuff. It looks like we might get a Real Doll. Do you know those? I think they're made out of silicon. They're actual replicas of a real woman. Like an inflatable doll, but made of silicon with a skeletal structure and everything. It's so horrifying. It's on the Internet under www.realdolls.com. I was at my friend's house and he had it on his Web site. I printed it all up and brought it into the studio to show everybody because it was so weird, and they said, "We gotta get one of those."

#### So this is a sex product?

Exactly. They're like five grand apiece.

## He had one of his jewel-encrusted monkey skulls on the night table when I interviewed him in Cleveland.

Oh yeah. He's starting a pretty amazing collection of stuffed animals. [Manson keyboardist] Pogo, though, has the greatest thing. We were in Mexico, in some weird little market, and he found a parrot skeleton. Still had a little bit of feathers on it. And he clipped it to the jacket of

his German uniform. So there's this parrot skeleton sitting on his shoulder. It was so disturbing. Pogo's head would be rocking back and forth with this parrot next to it.

# Have they ever actually, really frightened you? [Laughs.]

#### Maybe that was a dumb question.

I've known them for so long. They are who they are, and they're pretty crazy. But I don't think I've ever been afraid. There are times when I've gone, "This is so wrong." There's been times I've been afraid for them, but they always seem to pull it off.



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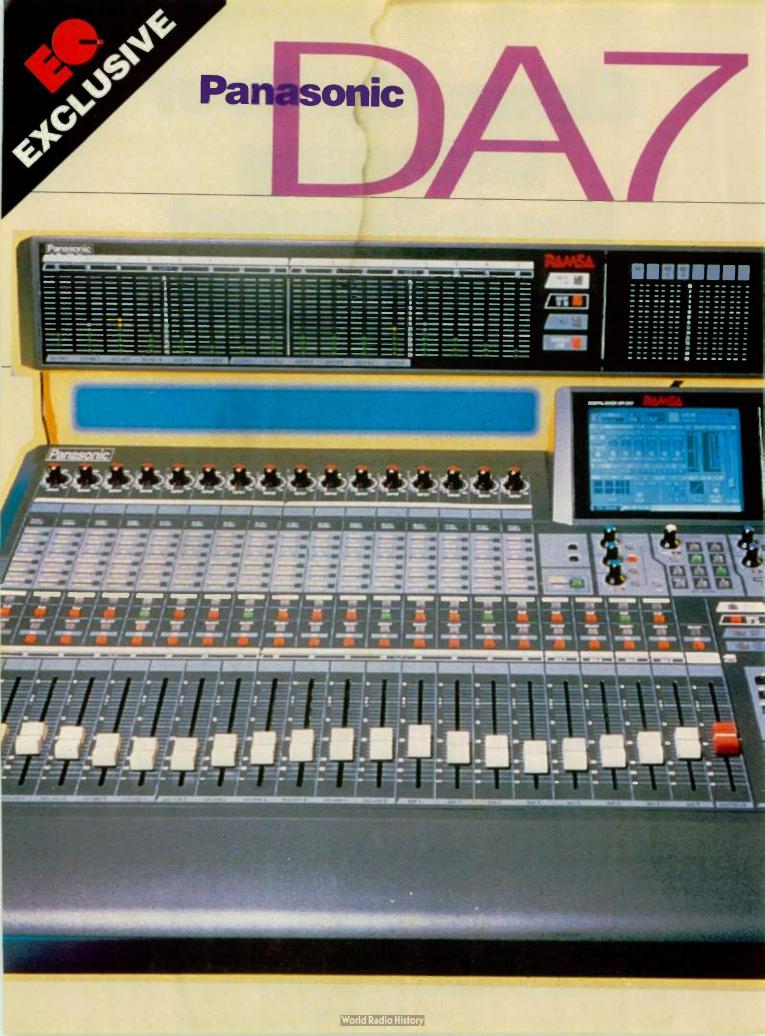


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# Digital Mixer

Panasonic's budget digital mixer offers the benefits of digital with the "feel" of analog

# by Craig Anderton

The DA7 is no stranger to *EQ*'s pages, having been mentioned in a First Look (11/97) and our Digital Console Update (1/98). Although the initial feature set remains intact, several tweaks have enhanced the mixer beyond the original specs. Overall, this is a potent digital mixer whose ease of use belies its considerable depth, and the sound quality...well, keep reading.

# DA7DigitalMixer

#### BASICS

The DA7 has 16 main channels, which control four different, button-selected "layers." Layer I consists of 16 +4 analog inputs (8 XLR with switchable phantom power and 8 1/4-inch TRS, all balanced and switchable for phase). Layer 2 is typically 16 digital inputs, as determined by the digital interface card(s) slipped into the three available expansion slots. Current card options include ADAT and TDIF interfaces, as well as an 8-channel digital I/O board (switchable in channel pairs between AES/EBU and S/PDIF). This card puts the 8 ins and outs on a DB-25 connector (breakout cable required); the mode selection switches are internal, so switching requires pulling the card. An additional card with 8 channels of A/D and D/A is planned. (A fourth expansion slot is dedicated to a SMPTE/Video Sync card, which is also required for ADAT applications, as there is no 9-pin ADAT sync connector on the ADAT card.)

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The third expansion slot can accept either a "Tandem" card that links two DA7's together into one 64-input mixer, or one of the other interface cards. The latter replaces analog ins 9-16, so if you need 24 digital input channels, you got it (it could also provide digital inserts for the busses, auxes, and L/R master instead).

All faders are 100-mm moving faders, which can be automated (described later).

#### OTHER I/O

Scanning the rear panel, there are 16 pre-D/A, TRS, 1/4-inch analog inserts

In Layer 3, the faders control 6 aux sends, 6 aux returns, and the 8 bus outs. Layer 4 is a custom layer that can control any audio signals from the other layers and/or transmit MIDI commands. For example, you could control some channels from Layer 1, some from Layer 2, some from Layer 3, and send out continuous controllers of your choice to MIDI gear.

SPENIS GAZNEU SCENE

BR FVEL CH

FIGURE 1

In both Layers 1 and 2, four additional faders handle odd and even bus outs, respectively, for busses 1–8; a "flip" button allows flipping one channel to the alternate layer. For example, if you're set to Layer 1, but channel 1 is flipped, it will control channel 17 on Layer 2.

for the 16 main channels. You also have six unbalanced aux send/returns, with one pair connected to S/PDIF jacks, and the other two pairs to analog TRS connections. Although skimpy on the aux I/O, if you're a big fan of external analog processing, adding the AD/DA board increases the options significantly. Of

course, the Aux ins can serve as extra inputs if needed.

Other I/Os include master XLR outs, digital (AES/EBU) master XLR out, TRS balanced "record" outs, two

**MANUFACTURER:** Panasonic, 6550 Katella Ave., Panazip 17A-7, Cypress, CA 90630. Tel: 714-373-7277 or 800-777-1146.

**APPLICATION:** Digital mixer for studio or live performance.

SUMMARY: A well-thought-out digital mixer that combines a great interface, sound quality, feature set, and competitive pricing.

STRENGTHS: Easy to use; versatile, thanks to card-based architecture; good use of MIDI; excellent sound quality, including EQ and dynamics algorithms; 5.1 surround sound capabilities; editable moving-fader automation; automatable EQ parameters; fine use of display graphics; very low latency.

WEAKNESSES: Double-duty functions may take a little getting used to; limited analog aux bus outs without additional card; limited automation memory; analog-only channel inserts.

PRICE: WR-DA7, \$4995. Options: WR-MTBR meter bridge, \$995; WR-AESS AES/S/PDIF interface card, \$360; WR-SMPT SMPTE card, \$495; WR-ADAT ADAT interface, \$295; WR-TDIF TDIF interface, \$350.

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TRS monitor outs for an A and B monitor section, and monitor B input. This [last] does not appear as a mixer input, and is designed specifically for monitoring (it's a great place to feed in a CD player's output, for example). You also have MIDI In and Out, serial I/O for Mac/PC control, 9-pin RS-422 port, Word Clock In and Out/Thru connectors, and a 2-track XLR digital input, which is switchable between AES/EBU or S/PDIF, but S/PDIF requires a custom cable. The DA7 handles word clock flexibly, allowing control via the 2track digital in, an external source, or its internal source (incidentally, the DA7 can run at 44.1 kHz or 48 kHz sample rates internally).

#### CHANNEL STRIPS

Each channel has individual 4-band parametric EQ (also switchable per band to shelf or high pass/low pass); dynam-

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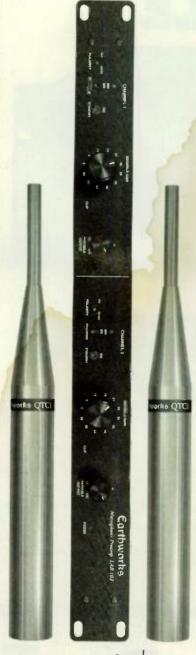
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# A7Digital Mixer

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and focused,

while the high

end comes

across as

clean and

accurate. The

sound is

almost

sparkling in

its clarity.

with a

smoothness

often lacking

in digital gear

ics (compression/gate) processing; and a simple delay function (0-300 ms delay, variable in 1-sample increments). Changing EQ settings doesn't create glitches, and, overall, the EQ has an accurate, clean sound that works extremely well and never sounds "plastic." The two low bands cover 20 Hz-20 kHz; the two upper bands handle 500 Hz-20

kHz. There are 50 EQ "library" user presets.

The Dynamics control is gentle - don't expect to use it as an effect (maximum usable gain reduction is 12 dB, as that's the amount of gain you can add to make up for the signal loss caused by gain reduction). Nonetheless, it sounds great and can give signals a major "lift." As with EQ, there are 50 available user presets. Note that the master and bus outs can incorporate both EQ and dynamics; aux returns allow for EO.

Furthermore, there are 50 storable memories for channel strips. For example, if you have a favorite guitar EQ setting stored in the library, then tweak it for a particular application; storing the channel strip stores the tweaks as part of the channel.

Channel strips can be grouped as desired and linked as individual channels with shared volume, or as a stereo pair where one channel's EQ, dynamics, etc., controls the other channel as well

AUTOMATION

The DA7 synchronizes to SMPTE, MIDI timecode, MIDI clocks, or internal timecode. Automation controls EQ parameters, dynamics on/off, mute on/off, levels, panning, scene ("snapshot") memory and preset recall, 5.1 surround sound mixing parameters (which, by the way, are well-implemented), aux send, and balance. If you're into "playing the faders," you can also "exempt" particular channels from automation. Although the onboard memory isn't exactly overwhelming - 32,000 events - it's enough for many applications, and besides, Panasonic promises that software will be available soon for computer control with both Mac and Windows. Meanwhile, to maximize on memory, make

liberal use of snapshot storage, don't record parameters that don't need to be recorded, and use dynamic changes only as

needed.

Because this is a "deen" product, and magazine space is limited, let's shift from specs and features to what it feels like to use the DA7 (I'm sure Panasonic will be glad to bring you up to speed on anything we haven't covered, such as the solo and direct options).

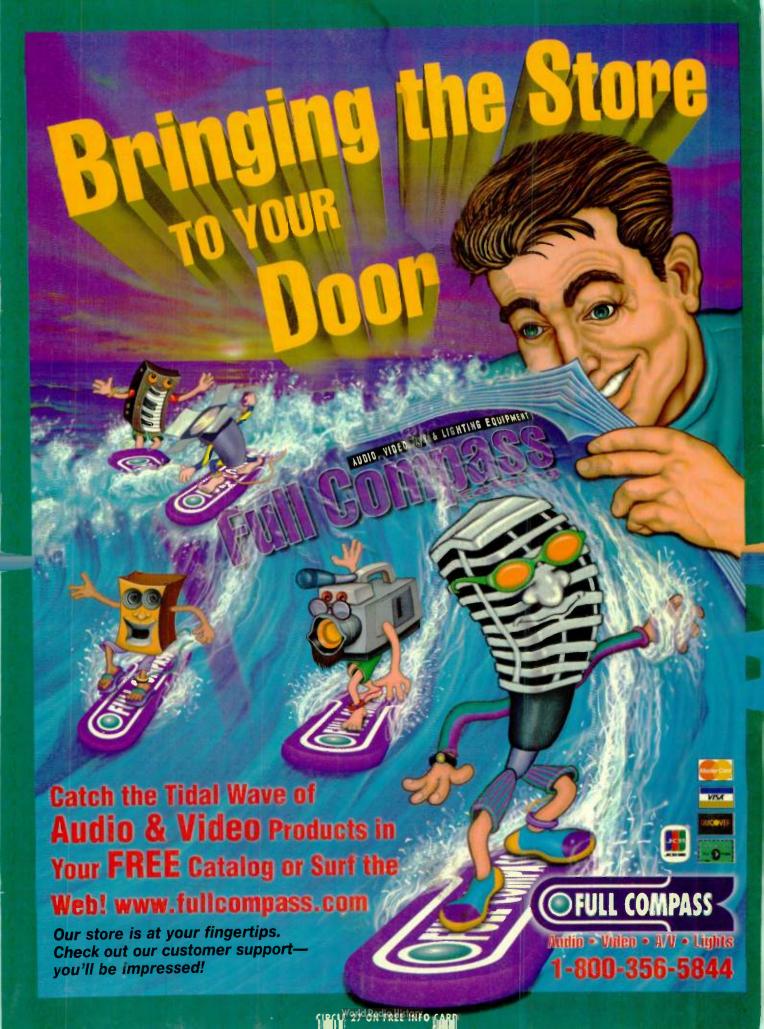
The interface is, in a word, marvelous. I was able to get quite far without looking at the manual. I hesitate to say that, though, because you can't use the DA7 to its full potential unless you do read the manual - there are many shortcuts and nifty little features. The manual itself gets off to a promising start (within a few pages, you know how to reset, save/load, and configure, which most manuals place toward the end). But the organization is somewhat scattered, with information often repeated in several differ-

ent places. As a result, the interface is actually more transparent than the documentation would lead you to believe. The bottom line: bite the bullet, spend a day doing a test project with the console, and read the manual from start to finish. You'll be glad you did. (To borrow a line from the documentation for Symbolic Sound's Kyma system: "Question: What do you call someone

#### **USING IT**

E Q

JULY



# DA7DigitalMixer

who reads manuals from cover-to-cover? Answer: Power user or guru.")

As one example of a hidden feature, the mixer defaults so that the large, informative display shows the parameters for whichever channel you select. But you can enable an auto select function on so that just moving a fader automatically "jumps" the screen to that channel. Ditto equalization: tweak an EQ knob, and the screen shows the EQ parameters. This is a tremendous timesaver for many working situations, especially since real knobs and switches control all parameters. Many controls do double-duty, but in general, this causes little confusion as modes are clearly indicated, either through LED colors (and, yes, there is intelligent use of color) or unambiguous display readings.

The 320 X 240 dot, backlit display (fig. 1) is a real coup. Parameters are grouped logically and intelligently, with a jog wheel to help you navigate around. The graphics are clean, readable, and in-

formative; there's no wasted space or "graphics for the sake of graphics." The end result is that you barely have to think when running the mixer, which says a lot for such a sophisticated device.

And let's talk sound, which is also top-drawer. This probably has much to do with the 24-bit, 64X oversampling converters (20-bit for the analog aux send/returns) and 32-bit internal processing. The EQ and dynamics algorithms, however, were clearly approved by people who listen with their ears instead of oscilloscopes. The bass seems tight and focused, while the high end comes across as clean and accurate it has neither analog "warmth" nor digital "brittleness." Yet it's not quite "neutral" either; the sound is almost sparkling in its clarity, with a smoothness often lacking in digital gear (particularly of the 16-bit variety). Okay, so it's tough to describe sound quality in print...listen for yourself.

By the way, all digital mixers have

some degree of latency, but the DA7 is unusually good in this respect — a mere 2.5 ms from mic in to master out. If you're really, really, picky about timing, being able to jog the channel strip delay one sample at a time should take care of even the most timing-sensitive musicians.

I really could go on about this mixer, but space is running out. The DA7 is a professional, cost-effective, and satisfying mixer. Its compactness and ergonomic interface make it an unobtrusive addition to the music-making process. Although the sound quality is beyond reproach (and isn't that what it's all about, anyway?), the ease of use that the DA7 brings to mixing is equally impressive. Granted, we're seeing more competition in the digital mixer field. Panasonic, however, has not just come up with a winner, but also provided a superb example of how to bring analog "feel" into the digital age - with both style and substance.



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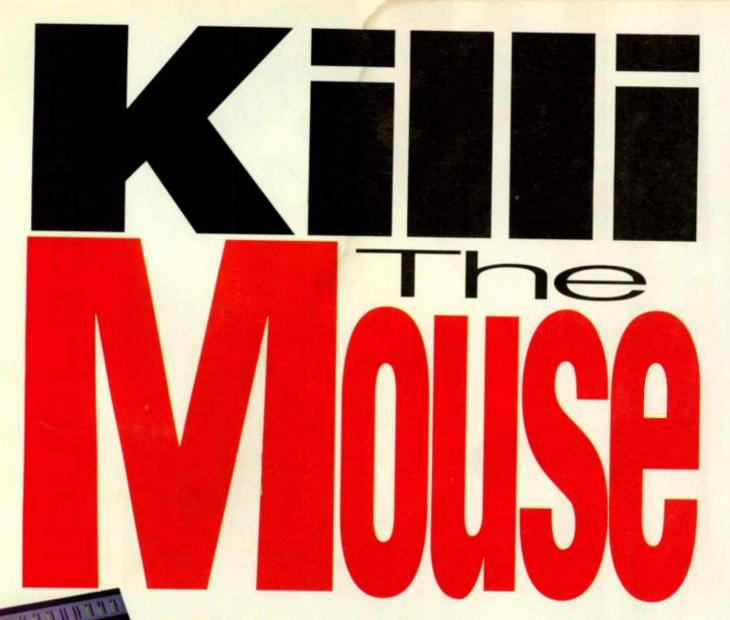
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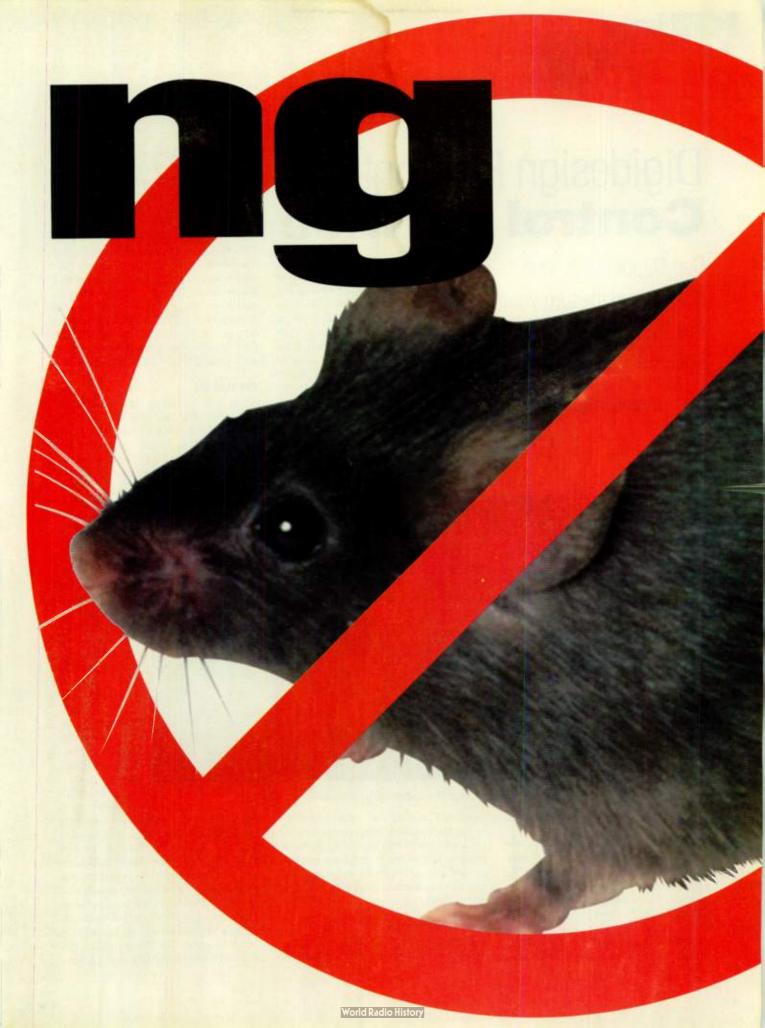


Hard-disk recording offers many benefits, but being confined to a computer workstation isn't one of them. Computer mice are for accountants and magazine editors — not studio engineers. Two products have emerged, however, that will give that

old console feeling when using Digidesign's Pro Tools.

So read on as we present reviews of Digidesign's

ProControl and Mackie's HUI mouse-killers.





# Digidesign ProControl Control Surface

Can Digidesign's new control surface turn your Pro Tools station into a dream console?

#### BY ROGER NICHOLS

Digidesign's new ProControl is going to be the envy of all other control surfaces. Finally, there is a way to control a Pro Tools session that permits a project studio enasked how the Pro Tools system was used, the answer was that after recording to tape, material was transferred into Pro Tools, edited, tuned up, noise reduced, time stretched, and then transferred back to the tape machine. When it came time to mix, the tapes were played back through the console, using the console automation for level control. The major complaint was that when trying to use only Pro Tools for recording and mixing, it was too hard to make quick changes to EQ or set up stereo headphone mixes, or perform final mixdowns with a mouse.

During the fall of 1997, I helped Bela Fleck record an entire album using Pro Tools. The recording, editing, overdub-

tem. ProControl requires Pro Tools version 4.2 or higher to enable its remote control functions. The connection from your host computer to the control surface is via Ethernet. After connecting the cable and updating my software, I enabled Pro-Control in the new Preferences menu. Instantly the names of the tracks in the Pro Tools session showed up on the scribble strips above the touch-sensitive moving faders on the ProControl. A blue border surrounds the track name on the Pro Tools screen, telling you which tracks are being controlled by the ProControl. Total time to get the whole system connected and running was less than 10 minutes.

#### THE SURFACE

My initial impression was that ProControl looked and operated like one of the million-dollar digital consoles that I had mixed an album on just a few months ago. The basic ProControl system consists of a center section with controls and functions that are common to

all tracks, and an eight-motorized-fader section that contrack-specific controls, such as fader level. mute, record enable, pan, solo, mute, insert select, automation mode, and scribdisplays above each fader. The scribble strip displays the channel names. send levels, fader levels, and channel delay. Optional expansion fader units.

which allow you to expand in increments of eight faders, up to a total of 32, are also available. Above the moving 10-mm fader is a rotary control with LED indication of knob position (along with a scribble strip for parameter names and values). These knobs are used for send levels, pan position, and I/O assignment. Eight stereo peak meters are included in the fader section. The 100-mm fader controls audio level with 1024 steps of reso-



TOTAL CONTROL: ProControl can be expanded up to a total of 32 faders.

vironment to work like a world class digital recording facility.

Over the last couple of years, Pro Tools has become a more and more powerful tool for record production. The problem at one time was that Pro Tools was thought of as a power piece of outboard gear, rather than the central focus of the recording environment. Most studios had a console, some tape recording machines, and a Pro Tools system. When

bing, and mixing were done entirely within the Pro Tools environment; so now we know that it can be done. The only thing lacking was a professional control surface to make the recording process feel more like a standard recording environment. Enter ProControl.

#### PROCONTROL SETUP

I recently got my hands on a ProControl and connected it to my Pro Tools 24 sys-

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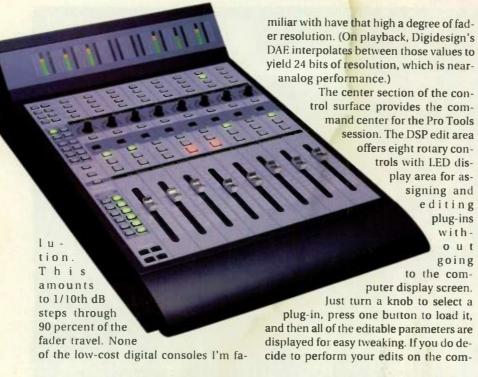
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#### A NEW OUTLOOK

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is the control surface — a huge expanse of faders and dials laid out to help you massage your music to fit the final delivery medium. You also notice one or more computer screen, sometimes mounted in the console and sometimes located off to the side. You are used to some type of computer monitor associated with the console because of fader automation systems that have been a part of studio mixing for the last 15 years or so. You view the package as an audio console primarily, with a computer to help with the more complicated aspects.

With large digital consoles, audio comes nowhere near the control surface.

In a separate room there is a giant rack filled with computers, disk drives, A/D and D/A converters, MADI to AES converters. sample-rate converters, synchronizers, **SMPTE** readers and generators, and power supplies to make everything work together. The big console in the mix room is connected to the central processing rack by either an Ethernet or fiber-optical connection. The only electronic pulses

flowing in this connection are the commands from the control surface telling the processing rack what to do, and the responses to the control surface that tell a knob to move or a display to change.

Pro Tools started out primarily as a computer program with displays on the screen and hardware hung on the computer to get the audio in and out digitally. Since 1988 when the first Sound Designer software was released, the user primarily has been dealing with the computer to get the work done. When Pro Tools was introduced, third-party vendors designed hardware boxes that would control things, like fader movement, within Pro Tools, but they were not motorized faders and you still had to focus most of your attention on mixing by mousing around on the computer screen.

When you first start using ProControl, the feeling of "Computer With Stuff Plugged In" is quickly replaced with "Digital Hardware Console With Computer Support." What you have is a highend control surface with a remote rack of processing gear and I/O interfaces. In this case, the gear in the rack happens to be your Mac computer, 888/24 I/O boxes, ADAT I/Os, USD synchronization interfaces, and disk drives. The beauty of all of this is that you can add functionality as you need it. I needed extra tracks, so I added a Pro Tools|24 expansion kit. I needed more online storage, so I added another 9 GB hard disk.



## WHAT ABOUT THE MULTITRACK RECORDER

So far, I have been talking about the Pro-Control, but Pro Tools is more than just console environment: it is a 24-bit digital multitrack recorder. The only other place you can go to record 48 tracks of 24-bit audio is with a tape machine that costs more than \$250,000. That kind of money will buy a lot of fast hard disks and backup drives. And try to do complex edits with a tapebased digital machine. I just finished working on a song in Pro Tools that ended up with over 20,000 edits. The Pro Tools session document was 1.6 MB.

#### **PRO TOOLS BONUS**

I almost forgot one very important advantage that a Pro Tools system has over the high-end digital consoles (besides continued on page 151

# HE TECHNOLOGY THAT MADE WAVES FOR TITANIC CAN MAKE, WAVS IN YOUR PC

For more than 25 years, E-mu Systems has been one of the most respected names in the music industry. Our sampling and synthesis technology is found in post-production and project studios worldwide. You'll hear the results in many major Hollywood films including *Titanic*, *Independence Day* and *Hunt for Red October*.\*

E-mu's sampler products set the standard for excellence in sound. Now you can put E-mu technology in your computer with the E-mu Audio Production Studio (APS)—the first sound card designed as an instrument, not a game card. And, like an iceberg, there's more to APS than meets the eye. APS is a PCI audio system that gives you sampling, 64-voice wave-table synthesis, multi-track hard-disk recording, and real-time effects in an easy-to-use, plug-and-play, music-making package.

APS allows you to create professional audio for sound design and multimedia content using your computer's RAM so you don't need to buy additional, proprietary memory.

APS lets you integrate up to 32MB of SoundFont samples while playing stereo digital audio from your hard drive. SoundFonts are the most widely-used downloadable sample format. Thousands are available from E-mu, third party developers or on the Internet. You can even create your own with the Audio Production Studio.

#### E-Card—the heart of APS

The E-Card allows full duplex, 16-bit CD-quality streaming audio that can be augmented with programmable hardware-based real-time effects including reverb, chorus, echo/delay, compression and parametric EQ.

# E-Drive—convenient drive bay access

APS includes E-Drive, an audio access panel that installs in the drive bay of your PC. It has switchable mic/line inputs, studio-quality preamps, balanced 1/4" connectors and switchable microphone types (with internally-selectable 12V phantom power). There's also an extra S/PDIF I/O and headphone output with volume control. E-mu's E-Control software for Windows 95 lefs you easily manage all of your mixing and routing tasks.

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# Mackie Human User Interface

Mackie's mixer for
Pro Tools adds the
human touch and brings
hard-disk recording a
more familiar feel

ation reference) and Mackie's HUI reference (which covers audio hardware setup). Don't expect to breeze through the setup process; while it's not painful, it takes a while to sort out.

Once setup is out of the way, opening a session in PT makes HUI come to life. (Don't be startled if the faders move around on

punching a keypad number from one through four (ditto for "Edit Tools"). We found this much more efficient than mousing to accomplish the same task. Save and Undo functions are also accessed in this area, though we really would like to have seen a key for "New Session." When you record-enable a channel on HUI, the Mix window pops up with the selected track in record ready (slick). If PT presents you with a dialogue box, the VFD alerts you, and you may use HUI's Enter key to click OK.

Each HUI channel has a 100-mm, touch-sensitive, motorized fader, channel select switch for editing or assignment, scribble strip, mute, solo, auto (enables automation), a V-Pot<sup>TM</sup>

BY STEVE LA CERRA

A lot of people have been waiting for the Mackie Human User Interface (aka HUI) for

a very simple reason:
mixing with a mouse sucks. HUI
was designed as a companion to
Digidesign's Pro Tools 4.1, providing
dedicated hardware controls for PT parameters such as fader level, pan, effect
sends, and plug-ins. The idea is that
HUI lets you operate Pro Tools with a
control surface more familiar to the audio engineer.

Out of the box, HUI feels like it's built to last — all controls feel solid. Two manuals are included with HUI: the Digidesign MIDI Controllers Guide (a software installation and HUI oper-

their
own, because
HUI will match
its surface to the software parameters in the PT session.) HUI's Keyboard Shortcuts section has dedicated buttons for calling
up transport, edit, memory location,
and mix windows, saving time from
mousing around. Pro Tools' four edit
modes may be quickly toggled via HUI
by either continually pressing "Edit

HUI AUDIO SPECIFICATIONS

Frequency Response: 20 Hz to 60,000 Hz, +0/-1 dB

**THD:** Less than 0.005%

Signal-to-Noise Ratio: Greater

than 92 dB

Dimensions: 6.5 H x 20.6 W x

22.5 L (inches)
Weight: 37 pounds

Mode" or holding "Edit Mode" and

software potentiometer, V-Sel (toggles the V-Pot between I/O routing, send, mute, etc.), insert (selects a plug-in for editing), and record ready. Certainly one of HUI's strongest features is its touch-sensitive faders. Since they track automation moves, there is no need for fader "nulling." Therefore, it's possible to update an automated move by grabbing a fader. We could write a book on all of the flexibility that these controls offer, but suffice it to say that if Pro Tools supports a function, HUI can control it.

The master section adds transport control, punch in/out, pre and post roll (with audition), return to zero, and, perhaps best of all, a scrub/shuttle wheel. No more mousing to find an edit point. A set of five buttons zooms the waveform display horizontally or vertically and locates cursors. Above the transport controls are dedicated buttons for switching record modes, again eliminating the need to access a menu — while clearly indicating record mode status. A DSP Assign section with controls for editing, bypassing, or in-

serting plug-ins to specific channels also contains four V-POTs and a Page button to facilitate adjustment and automation of DSP parameters. We liked this section because it made tweaking a plug-in more like using a hardware processor — just grab a knob and twist.

If HUI's abilities stopped right here, it'd be a useful tool, but when you add its audio capabilities, the plot thickens. Six monitor I/Os on the rear panel are configurable as three pairs or six discrete channels for 5.1 mixing. There's a headphones output and a

pair of mic inputs with trim, phantom power, inserts, and direct outs.

Because HUI
offers so many
possibilities, it
takes time to
learn. Once you
do learn it, work
progresses much
more quickly
than with mouse
and keyboard.

After doing a voiceover session with PT and HUI, a light bulb went on: if the majority of your work is "needle drops" plus VO, you don't need an analog console. HUI provides the mic preamps and interfacing for DAT, CD, PT interface, monitors, headphones, and talkback (internal or external). The control room monitor section selects which monitor inputs are being used, and to where they are routed. Excellent.

HUI does have a few limitations. For example, it controls only eight channels at once. Additional channels are accessed using two sets of dedicated incre-

ment/decrement buttons. Pressing a bank button moves HUI to the next set





THE HA-6A HEADPHONE/MONITOR AMP is ideal for the studio without a separate control room. Plug up to six headphones into the front panel, and each musician has his or her own volume control. Its very ample 20W per channel capacity is enough to get headphone levels really loud or to do double duty as a power amp for small monitor speakers. Expand it by adding up to twelve HR-2 Headphone Remote Stations.

At just \$88 (list), the HR-2 is an economical, passive dual headphone box that clamps to any mic stand. HR-2's may be daisy-chained with standard mic cords from an HA-6A or an SP-20A.

Furman manufactures a broad line of moderately priced, high quality signal processors and power conditioners for pro audio applications. For more info and a catalog, please contact us.

# Control Room

THE SP-20A HALF RACK STEREO POWER AMP is the best way to go in the studio with a separate control room.

This compact unit contains the same beefy 20W per channel headphone amp as the HA-6A, but with only one built-in headphone jack.

You can also attach a chain of up to twelve HR-2's on the studio floor.

And that's not all—the SP-20A can also do double duty driving small monitor speakers.

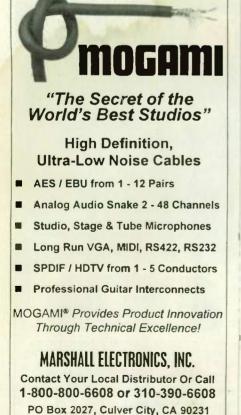


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of eight channels, while hitting a channel button moves HUI one channel at a time. Because of this, you need to arrange your channels with a bit of thought. You can click and drag a channel over to a new location, making it simultaneously active with whatever other channels you'd

like. Or you could group channels (e.g., drums), hide all faders in the group, except the master, and mix in stems.

Certain combinations of MIDI gear freaked HUI out. We had a

Roland A90-EX

(piano/con-

troller) plugged into our

called an exorcist. We shut off the A90-EX, and HUI was well again. Beware of such situations.

Don't expect to set up HUI and do a session on the same day, even if you're an experienced Pro Tools user. Because HUI offers so many possibilities, it takes time to learn. Once you do learn it, work

USER FRIENDLY:
The HUI provides a more familiar feel for engineers.

quickly than with mouse and keyboard. A few days should be enough.

If you're looking for a Pro Tools work surface that allows simultaneous control over a hundred channels, look elsewhere. If, however, you have Pro Tools, are frustrated mixing with a mouse, and don't mind controlling eight channels at a time, look to HUI. If you're moving towards VO and commercial radio production with Pro Tools, or intend to use Pro Tools to mix in 5.1, make HUI your studio centerpiece. Mackie's Human User Interface is a very useful tool.

MANUFACTURER: Mackie Designs, Inc., 16220 Wood-Red Road NE, Woodinville, WA 98072. Tel: 425-487-4333. E-mail: sales@mackie.com. Web: www.mackie.com. Circle EQ free lit. #131. PRICE: \$3499

Opcode Studio 4 on MIDI 1/O 1. HUI was connected to MIDI 1/O 2. Other devices connected to the Studio 4 I/Os were Korg, Oberheim, Alesis, and Ensoniq synths and modules. Whenever the A90-EX was powered up, it put out some spurious MIDI data (active sensing perhaps?) that HUI did not like. The weird thing was that HUI was the only device defined in OMS. So HUI

shouldn't even have known the A90-FX was there. You hadda see all the \$\$\$%^\$\$##@!! that came up on HUI's VFD. Timecode ran from zero through 29 frames continuously, and the display showed cryptic messages... We turned HUI off. We turned HUI on. We

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# Hafler TRM8 Active Monitor Audition

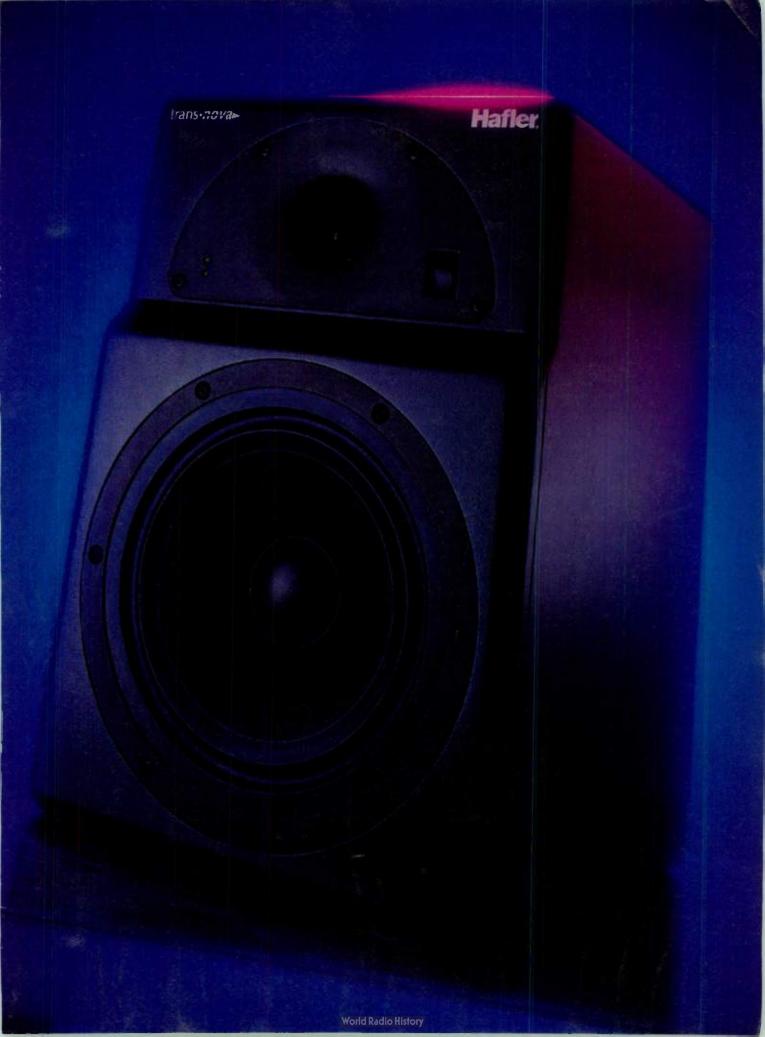
Could this be the next standard in professional nearfield monitoring?

# BY BOBBY OVVSINSKI & FRIENDS

Even though speaker technology hasn't undergone a major revolution since the '20s or so, every year there seems to be some incremental tweaks that really do make our listening experience better. Sometimes the incorporation of a number of new technologies into one speaker system can make a change of significant proportions, which is certainly the case with the new Hafler TRM Series Trans\*nova reference monitoring system.

At first glance, the TRM8 system doesn't appear much different from numerous others on the market. It's a biamplified, two-way system featuring an 8-inch polypropylene cone woofer and a 1-inch soft-domed tweeter crossed over at 2.5 kHz. That said, there's a lot more here than meets the eye.

The enclosure, which measures 10-1/4 inches W x 15-7/8 inches H x 13 inches D and weighs a heavy 35 lbs., utilizes 3/4-inch MDF squared pressboard that's much more dense than either standard MDF or plywood and produces an extremely low-resonance cabinet. The cabinet is also stepped to provide driver time alignment and features an Exoport, which is a rear firing porting system.



# Hafler TRM8Active Monitor

The tweeter is also injected with ferrofluid that improves internal cooling and, as a result, is less likely to fail when it's stressed under extreme levels.

The TRM8's amplifier section employs a 150-watt amplifier (4 ohms) for the low frequencies and a separate 75-watt amp (6 ohms) for the tweeter. These amplifiers employ

the patented Hafler Transnova MOSFET circuitry, which simplifies the basic amplifier circuit, and, according to the manufacturer, results in decreased crosstalk. wider bandwidth, and faster slew rate. The amps also contain another unique circuit innovation that Hafler calls DIAMOND (Dynamically Invariant Amplification Optimized Nodal Drive). DIAMOND combines the linearity and pleasing sound of Class A operation with the headroom of Class B. The front panel near the tweeter features a power rocker switch and two multicolored LEDs that indicate power on. clipping, and thermal overload for the tweeter and woofer amplifiers.

Some of the features found on the rear of the TRM8's that you don't see on similar units are: multiple input jacks (RCA, 1/4-inch, and XLR); a DIP switch that features six input sensitivity presets to exactly match the monitors to +4 or -10 (or any level in between) operation: and four positions of bass shelving (-4 dB, -2 dB, +2 dB, +4 dB) and treble shelving (-4 dB, -2 dB, +2 dB, +4 dB). Also featured is a Mute switch for each amplifier, which is really nice to have when doing room voicing. A small but welcome feature is the rubber pad for the bottom of the cabinet to decouple it from either a stand or console. Yet another nice touch is the fact that each monitor is already tapped so it can be mounted via an Omnimount mounting bracket.

The TRM8's manual is a thing of beauty in that it's much more complete than

the vast majority of manuals that accompany audio devices these days. Included are installation tips, technical references, schematics, interior pictures, a parts list, theory of operation, and calibration procedures. Despite the abundance of information, the manual is still easy to read and understand. This should be the standard against which all other manu-

als should be judged, and Hafler should be loudly applauded for this alone.

Hafler states that the

TRM8's frequency response is an excellent 45 Hz to 21 kHz, ±2 dB, but, as we all know, spec sheets and superficial appearances can be deceiving. The real test is in the listening. When I initially put the TRM8's up, I thought they were off a bit at certain frequencies because familiar material sounded different to me. After about a half-hour, however, I found that what I was hearing was the accuracy of the monitors and a distinct absence of hype (which I was apparently used to ... ). After listening to a good range of CDs, vinyl, and DATs, I was amazed that I was hearing instruments and parts that I'd not heard before. On my own tapes, I heard a definition the way I'd only heard it in the highresolution environment of a mastering house.

Listening to finished product can give you one idea of what a monitor sounds like, but actually hearing them on a project is the ultimate test, so I used these monitors for the second round of mixes on a movie that I scored and was working on.

Movie mixes tend to be a good benchmark for monitors since there are usually lots of diverse instruments and rhythms as well as lots of varied cues to work on. In this case, the instruments ranged from a string section to synthesizers to African hand drums to blues guitar to acoustic guitar. Sprinkle in a dash of techno and hip-hop

# BRUCE SWEDIEN, PRODUCER/ENGINEER

The Hafler TRM8 is an excellent monitor. Of all the self-powered monitors I have heard — and I have heard them all — this is the best one. I had them set up in my control room with an ASC Attack Wall, and the low end was very impressive for such a small speaker. I don't think that I can give up my Westlakes for their accuracy, but the Hafler TRM8 is wonderful.

# ERICK LABSON, MCA MEDIA STUDIOS

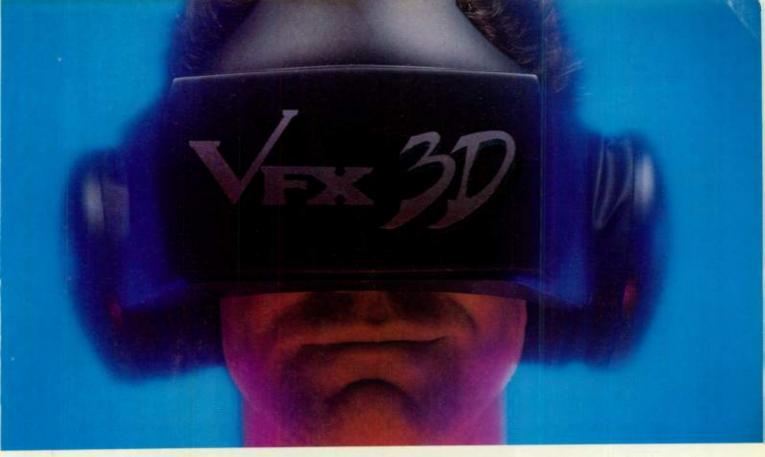
The TRM8's image pretty well, and the low end extension on the hip-hop, rap, and electronica stuff I listened to was pretty impressive. They put out a good amount of low end for their size, a quality that doesn't seem to be as surprising from small monitors these days.

However, my ears were pretty fatigued after extended listening. And I'm not really digging the mids coming out of the Haflers. The mids seem squashed and boxy on most of the material I played on them. The highs were OK, but overall the speakers didn't have much space in front, behind, and around the stereo center.

# BERNIE GRUNDMAN, GRUNDMAN MASTERING

In spite of their small size, the TRM8's do not sound boxy. This is because they don't produce the low frequency resonances that some small cabinets can, and, as a result, the bottom end is clear and defined. It's very easy to get the curve you want from them with the frequency balance controls on the rear panel. By using the high- and low-frequency shelf controls, I was able to get exactly what I wanted.

A lot of engineers carry monitors around with them for a consistent reference, and since the TRM8's are small, they're good for this purpose. There are XLR, 1/4-inch (TRS), and RCA input connectors on the back, so they should be easy to connect in just about any studio. Their small size is also important in rooms where there's more than one pair of monitors. You want to be able to place a nearfield monitor close so that you're not hearing the room, and we were able to position the TRM8's on the console for nearfield monitoring without obstructing sound coming from the main monitors. There was no sense of strain due to lack of power, so they should be easily adaptable to tracking, mixing, or mastering situations.



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# Hafler TRM8Active Monitor

and you have the perfect test bed for a set of monitors. In the end, I found my mixes using the Haflers to be far better balanced, especially in the bottom end, than my previous mixes. Plus, the

mixes were spot on in mastering with only .5 dB touches at 40 Hz and 12 K, which is the best frequency balance I'd ever gotten on a mix.

These monitors speak well at any level. I frequently listened at very low levels (62–64 dB) and found that they were just as accurate as at higher levels. The TRM8's can get frightfully loud for such a small package, but I never managed to light any of the clipping indicators.

As with the best soffitmounted studio monitors, the Haflers just get bigger sounding instead of louder when you turn them up, thanks to their low distortion. In fact, it's hard to believe that the bottom can be so big in a system with only an 8-inch woofer! Furthermore, the TRM8's imaging is excellent. The sweet spot is quite large with these monitors, and the off-axis response is really, really good.

# ROGER NICHOLS, RESIDENT GEAR SLUT

I wanted to make sure I got my two cents worth in on the Hafler TMR8 speaker review. I have been a Hafler fan for over 20 years, since I purchased my 500-watt power amp that I still use to power my Magnaplaner speaker system. No other amp would work as well with these voltage-hungry monsters. When I heard about the TMR8 powered speaker system, I begged for a pair to listen to. They are very clean and transparent sounding, with a lack of phase distortion at the crossover point between the low-end and high-end drivers. They are very easy to listen to and do a great job of filling the room — for a nearfield monitor.

I have used four of them in many of my digital audio/surround seminars. During the presentation, someone always asks, "Gee, what kind of speakers are those? They sound great." I agree. I have recommended them to quite a few people who are looking for a very good powered monitor at an affordable price. Nothing more needs to be said.

There's a lot to like about the Hafler TRM8's, and many of those things are the small details, like the preset level controls, RCA/XLR/1/4-inch inputs, integrated rubber decoupling pad, amplifier mute for room voicing, shelving controls with boost, and the excellent manual. Combine these things with the monitor's excellent imaging and frequency balance accuracy at just about any listening level, and you have a major contender for a place in any large or small studio.

MANUFACTURER: Hafler, 546 S. Rockford Dr., Tempe, AZ 85281. Tel: 602-967-3565. Web: www.hafler.com. Circle EQ free lit. #102. PRICE: \$1990/pair

# **HEADPHONE MIX BREAKTHROUGH**

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The Q-Mix HM-6 headphone matrix amp/ mixer lets 6 musicians create their own individual headphone mixes from up to 5 sources — plus effects! For just \$349 suggested retail.

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The OZ Audio difference: you can route four MORE mono inputs to the Q-Mix. For example, 4 mixer subgroups such as drums, background vocals or keyboards. Or an assortment of aux sends, individual channels, or a click/scratch track. The musicians dial in their own input levels—and stop constantly nagging the control room.

It gets even better. The Q-Mix HM-6 also includes a separate 5-channel mixer.

Connect its output to an effects processor and return the signal to the HM-6. Every Q-Mix channel has its own stereo effects seturn, so all 6 performers can dial in their

6 robust (160mW) outputs can drive any headphone to high SPLs **Built-in power** supply (no wall wart!) Main L/R input plus 4 injection channels Effects loop with stereo returns for each mix channel 6 individual musician-controlled mix channels, each with 5 inputs Long-life sealed rotary controls

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own effects. And you can concentrate on engineering instead of dealing with constant cries of "More vocals!", "More Effects!" or that old standby "More ME!"

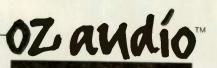
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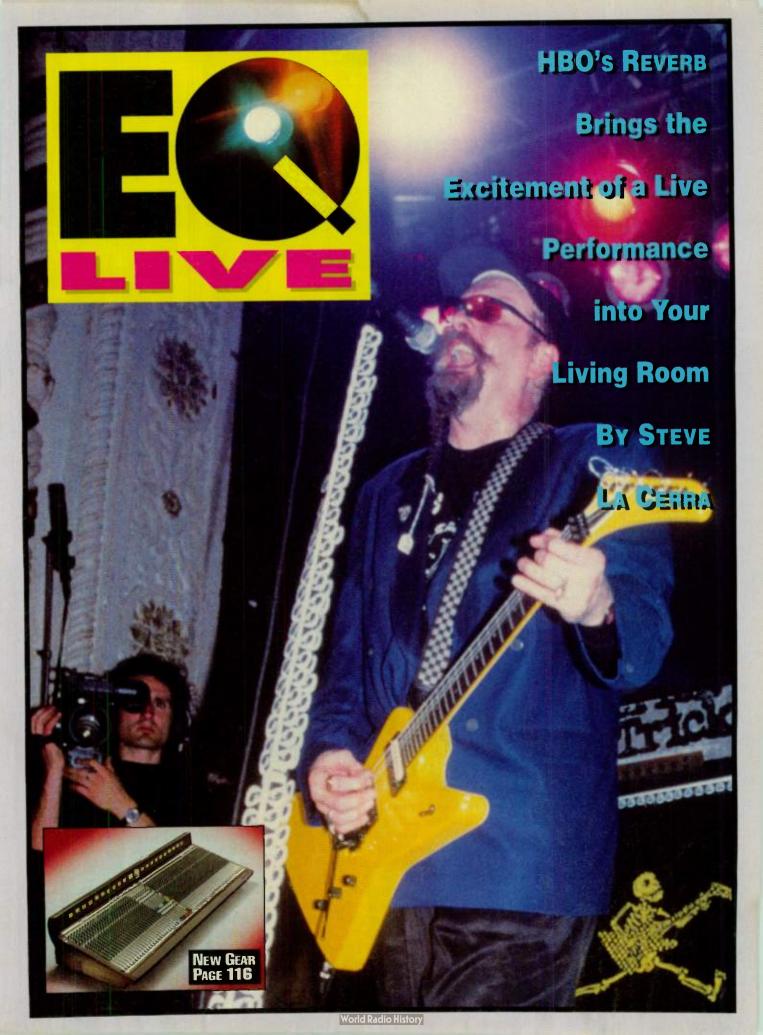


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# THE MAKING OF REVERB

THAT IS,

HBO'S LIVE

MUSIC PROGRAM,

NOT THAT

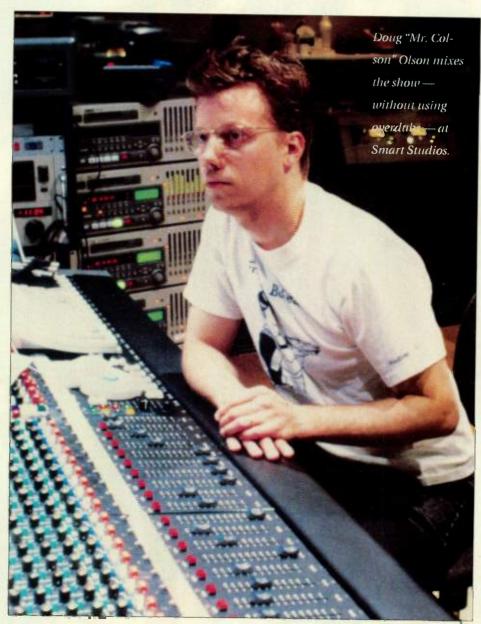
By Steve La Cerra

OTHER STUFF.

Reverb is a live alternative rock TV show now in its second season on HBO. Unlike a lot of "live" music shows, Reverb goes to a venue to record an artist or band performing in front of an audience. The show would happen regardless of whether HBO was there or not, though the audience is usually aware of something special happening. This season, performers will include Pete Droge, Paula Cole, Smash Mouth, Cheap Trick, Bad Religion and Goldfinger, at venues such as CBGB's, Irving Plaza (NY), 9:30 Club (Washington, DC), Metro (Chicago), and Electric Factory (Philadelphia, PA). At some of these shows, there'll be a well-known headliner and a more obscure, up-

and-coming support act that might be on an indie label. *Reverb* is shot with six cameras and recorded on multitrack digital audio by Frank Papitto and Steve Lettie of Audio Alchemists (Ho-Ho-Kus, NJ; see sidebar). Doug "Mr. Colson" Olson is responsible for mixing the shows at Smart Studios in Madison, WI.

"The whole idea is to go in and film a real show, so there's no overdubbing," explains Doug. "We obvi-



ously take pains to pick the best material out of the show, but it's raw in a lot of respects. On one or two occasions a band has felt they didn't nail an important song, so they did a second take, but that's rare." Tracks are generally recorded flat via split to TASCAM DA-88's from the front-of-house engineer's mic plot (the number of tracks varies with the number of mics). "Frank and Steve don't really interfere with the band's sound set-

up," continues Olson, "so I get a variety of different miking approaches.
One FOH engineer may use a '57 on a guitar and another might use an Audio-Technica 4050. Though we've made a few recommendations, preference is given to the FOH engineer."

After the project has been recorded, Doug receives a "line cut" — a live edit made from the six cameras onthe-fly during the show (all of the footage is kept for further editing).

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This is furnished on a 3/4-inch, U-Matic video tape striped with timecode that Doug uses as the master, locking up to air TASCAM IS

locking up to six TASCAM DA-98's (via the '98's internal synchronizer) to a Sony video deck.

While most of the time, audio and video machines remain locked, Doug must approach things a bit differently at times. "Being that these are live shows, things get crazy. Stage power can vary during the show, so sometimes the code I receive is a bit ragged and code drops out. The DA-98's have a mode where they can sync for some specified amount of time and then run wild after that, so I don't have to worry if the code drops. For a three-minute song, it'll still be perfectly sync'd."

### KEEP YOUR EYES OPEN

Mr. Colson notes the subtle distinction between mixing a record and mixing a band for TV: "I need to see and hear the performance at the same time. To sit there and work on a mix without ever looking at video, you could get to the point where you think, 'OK, I've got this nailed.' But then if you sync it to video, you'll find something isn't quite right when you

are looking at it. For example, let's say there's a percussionist and the camera zooms in on them. At that point, the

percussion needs to be little more 'there in the mix.' Generally I try to make the audio correspond to what you see, but it's not like sounds need to suddenly jump in level when the camera pans to them — that's probably not a good way to approach it. It's fairly subtle, more like a highlight, whereas in a music mix you might not need the highlight."

#### **GET SMART**

Doug has been mixing Reverb at Smart Studios in Madison, WI. "For the first half of the season, I was mixing in the A room on a Trident 80C with Uptown Automation. For the rest of the season, I'll be working in the B room on an old Harrison desk that our techs have tweaked. I supplement the console EQ with outboard EQs like Neve 1081's, Summit tube EQs, and a pair of Daking mic pre/EQ modules." Mixing techniques vary with the project. "I don't have a set regimen. It's live, so there's a fair amount of interaction between the mics. You really need to get the vocal up in the mix early and then balance instruments around it

because mics affect each other so much. If you start by getting the overheads the way you like them, when you put the vocal in you'll have a cymbal-heavy mix. The bleed from the vocal mic will contribute to the overall sound, so I mix around it.

"I compress the vocals because if I didn't, then it'd be really tough to get the kind of consistent results I work for. The amount of compression depends upon how loud someone sings, how close they are to the mic, and how much isolation I get as a result. The more isolation I have, the more compression I can get away with - although I try not to use any more than necessary. I do ride the faders. I don't pull them out of the mix, but even if it's just five or six dB, I pull them down when someone is not singing - just enough to clean things up.

"There may be a section where the drummer starts bashing on the cymbals so you really need to duck the vocal mic. To get some kind of presence out of the vocal I often have to boost the high end and also — because they are singing right on mic - there's a lot of proximity effect. So you'd be surprised if you saw some of the EQ curves. I might use a fairly drastic cut at 100 Hz or 120 Hz to cut the flab. You can't have a lot of wooly audio going out on a five-inch TV speaker and maintain any sort of clarity. Although there are times when I don't cut anything, I have yet to boost low end on a vocal.

"Some singers have excellent vocal technique. Cheap Trick was on the show and Robin Zander was great. I barely had to compress his track. I rode it a bit, but his levels were very consistent. People try to use 'mic technique' by backing off when they are exerting themselves, but that doesn't mean they are producing a lot of volume. What really matters is the efficiency of the voice. Some singers back off the mic when they are actually not singing all that loud. At times I'll put two compressors on a vocal track: one that is really fast to nail the peaks and then another to smooth out the level. On top of that, I still may have to ride the vocal. Compressors are patched in series, post EQ. Usually I put the one that is nailing the peaks first and then a

### **REVERB'S REMOTE RECORDISTS**

Reverb is recorded to digital multitrack by Steve Lettie and Frank Papitto a.k.a. Audio Alchemists - in their mobile recording vehicle. Housed in a 24foot Grumman truck, the Audio Alchemist recording rig is based around six TASCAM DA-88's (that's 48 tracks total) and 48 channels of ART Dual MP tube mic preamps. Signals are routed to the DA-88's directly from the Dual MP's, making for an especially clean and direct signal path. A Mackie 32.4 console with a 24-channel sidecar is used for monitoring purposes, and there are three racks of outboard gear including Drawmer compressors and gates, Lexicon, Eventide, and DigiTech processors, and a Summit stereo program EQ. The DA-88's and ART mic pres fit into four road cases that can be taken off the truck if necessary. (See the profile on Audio Alchemists in the October '97 issue.)

Whenever possible, Lettie and Papitto work inside their truck where they can monitor in an environment that's far more quiet and acoustically advantageous than a noisy rock 'n' roll club. Being inside the truck also gives them ready access to the outboard gear, though Reverb is generally recorded without any processing. They run just a single audio snake from the truck into the venue and take a split from the house feed. Lettie and Papitto go to great lengths to secure a good parking spot, often scoping out the parking situation at the venue days in advance and then arriving early on the day of the show to nab that coveted spot.

In addition to Reverb, Audio Alchemists has recorded Kiss live on the Brooklyn Bridge for the MTV Video Music Awards. One of their specialties is recording club concerts for syndicated radio broadcasts. Some of the artists they have recorded recently include beck, Dishwalla, Sponge, Tonic, and Big Head Todd and The Monsters.

-Steve La Cerra

Summit after that. Because I am often EQ'ing radically, I want to compress the signal as it will sound in the mix."

Mixes are recorded onto an additional DA-98, which Doug sends to Fritz Lang (Acme Sound Works, New York, NY) for layback. "I send him a tape with a stereo mix, an instrumental mix, a vocal-only mix, and the audience tracks. It's all recorded in one pass using the console busses. The idea was that if we needed to tweak the mix, we'd have the vocals separately

and wouldn't have to remix. But I believe he has mostly used the stereo mixes. Fritz lavs in the audience track, but I let him feature it as he sees fit. I don't use those tracks for ambience, and I use processors sparingly. If you turned all of my synthetic stuff off, it wouldn't be an eyepopping change. I've been using the 'Empty Stage' setting from the (Lexicon) PCM80, which I'll tweak a bit, particularly the decay they can symp time. It's always under a second, pretty tight. I put in just enough so that the sound is not dry, but I never try to make it sound cavernous." AND KEEP run wild after

### YOUR EARS OPEN

When it comes to monitoring, Olson has been using a variety of speakers including Genelec 1031's, B&W 808's, Yamaha NS10M's, and a single Auratone. He feels each of

these speakers does "a certain thing. The key is to know what they do and don't do. The Yamahas are great for listening quietly for balance. They emphasize the midrange quite a bit and they're not the most detailed speaker in the world, so there's information you simply don't hear through a speaker like an NS10M. If you know that, you can trust it for what you know it can tell you. The Genelecs have a rounder bottom and will tell you if a sound is tubby in a mix. Sometimes it's better to EO on the Genelecs because of their flatter response. On an NS10M, you're probably

going to under emphasize the upper mids. Things need to sound 'bitey' on an NS10M. Otherwise, when you get into the postproduction studio, you'll need to add in the 1 to 4 kHz area, where the NS10M's are peaked up."

"I also spend quite a bit of time listening in mono on the Auratone. If you listen in mono to something that is centered and then start panning it to one side, you'll hear it drop in level. From center to about 3 or 9 o'clock, it

drops maybe a dB or so. But in that last little bit from 3 to 5 o'clock - the end of the pan pot - it drops another 2 dB. You can get a fair amount of stereo effect by moving things between 9 and 3 without the image collapsing in mono. It's a necessary compromise in making the mix mono-compatible."

#### TIPS AND TRICKS

Working with such a variety of artists has presented Doug with some interesting mixing situations. "One singer used a wireless mic that kept overloading in one song. There were a few



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EQ

that, so I don't

spots where it was really bad and you'd hear this horrid, solid-state distortion. The only way I could make it right was by ducking the high end quite a bit, which rolled off the screechy harmonics generated by the distortion. If you listen carefully, you can still hear the distor-

tion, but it's not as noticeable as it might have been.

"Then there was another show where the drummer had a closed front head on his bass drum. Sometime mid-set, somebody must have bumped the mic and pushed it right onto the head.

Every time the guy hit the drum, the mic bounced, making this a-rhythmic clackity noise. In that case, I had to use a sample - there was no other way around it. Occasionally I'll use the trick where you run a snare track through a speaker, put the speaker on a snare drum, and mic the snare. It sounds dumb, but it really works. Most of the time I get separate top and bottom snare tracks and use both, but sometimes I only get a top mic. You can EQ till you're blue in the face, but you can't get any snare sound - especially when a drummer tunes the snare really high and chokes it. So I put a snare out in the room, stick a 414 under it, and bring it into the mix for a bit of that sizzle.

"Having the chance to work with such a wide variety of artists has been an education for me," concludes Doug. "It's great to work on a 'tell-it-like-it-is' music show that's raw, exciting, and a continual challenge."

Mr. Colson can normally be found at Smart Studios in Madison, WI.







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your choice of three handheld transducer capsules the dynamic D 880, D 3800, and the condenser C 535EB - each of which is identical acoustically and mechani-

cally to the hardwired versions of those microphones. For more details. contact AKG Acoustics, 1449 Donelson Pike.

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turns; balanced XLR inputs on gold-plated connectors; and more. Suggested retail list price for the MX 2004A is \$569. For more information, contact Samson Technologies Corp., P.O. Box 9031, Syosset, NY 11791-9031. Tel: 516-364-2244. Web: www.samsontech.com. Circle EQ free lit. #134.

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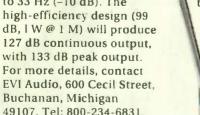
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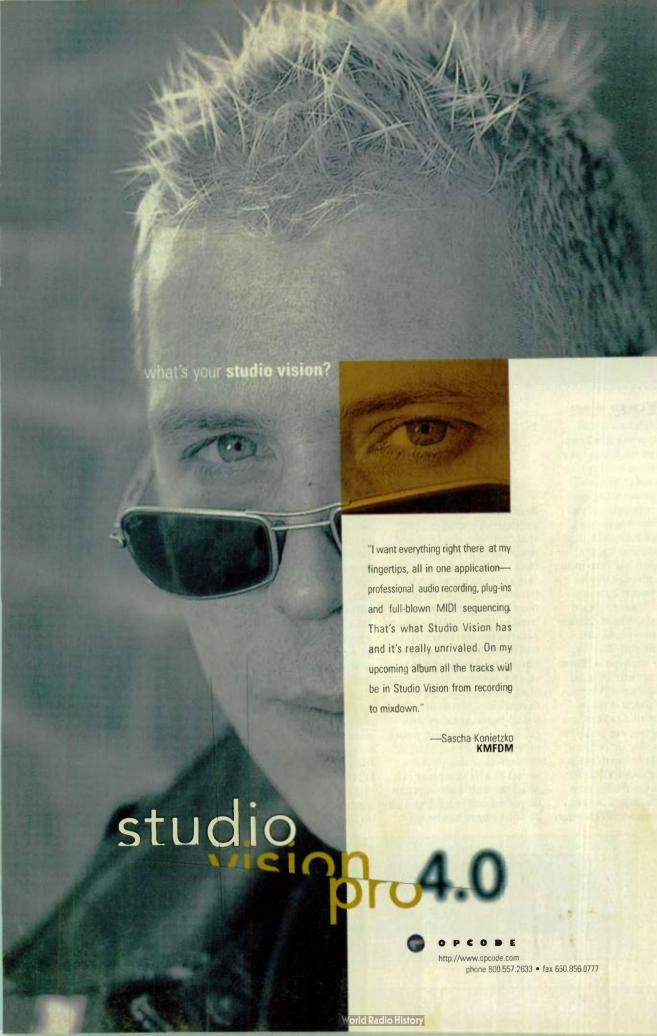
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Nady Systems' Platinum 802 is a 2-channel. UHF wireless system offering dual antennas and DigiTRU Diversity with proprietary digital processing circuitry for maximum range and elimination of audio dropouts in adverse RF conditions. The space-saving receiver is rack mountable with front-mounted antennas. For more information. contact Nady Systems, 6701 Bay Street. Emeryville, CA 94608, Tel: 510-652-2411. Circle EO free lit. #135.



AKG WMS 60

114







IN YOUR EAR

Soundcraft's new SM20 Monitor console has been designed primarily to take account of the continuing trend towards the use of personal monitoring systems. The console is available in three frame sizes, providing 40, 48 or 56 inputs into 20 outputs that are globally switchable to mono or stereo, giving any combination between 20 mono sends and 7 stereo plus 6 mono sends. A host of additional features includes a built-in mic split facility, sweepable high-pass filters, and MIDI control of external BSS Varicurve<sup>IM</sup> equalizers. The SM20 ships as standard with a brand-new 3U high power supply, CPS 800, but is also directly cable-compatible with the ultra high-powered CPS2000, as used on the Series Five Console. For more details. contact Soundcraft, Harman

Pro North America, Air Park Business Center 12, 1449 Donelson Pike, Nashville, TN 37217. Tel: 615-399-2199. Web: www.soundcraft.com. Circle EQ free lit. #136.

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Behringer's new DSPI 100 Feedback Destroyer automatically searches out and destroys any type of feedback. This unit also functions effectively as a fully parametric, stereo or dual mono 24-band EQ with a bandwidth from 1/60th to 2 octaves for maximum control in all kinds of applications. The Feedback Destroyer features Auto, Single Shot, and Manual modes that are assignable on a "per band" basis and easy program editing via front panel or MIDI and 20-bit AD/DA converters with a professional 48 kHz sampling rate. All of the unit's settings can be edited and stored, and all 24 of its filters can be set

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knobs for input level, mix and output level, as well as LEDs for signal L&R, clip, and bypass round out this simple piece of gear. For more information, contact DOD Electronics, 8760 S. Sandy Parkway, Sandy, UT 84070. Tel: 801-566-8800. Circle EQ free lit. #138.



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CIRCLE 62 ON FREE INFO CARD

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## DEAR MR. HOUSE ENGINEER...

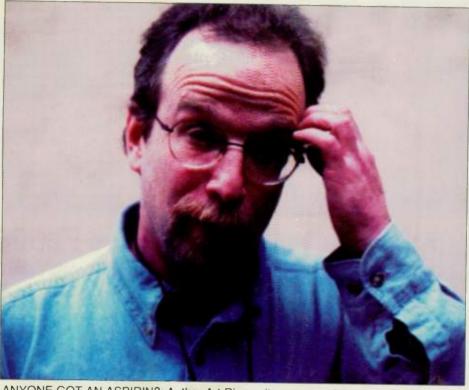
A GIG FROM
HELL DEMONSTRATES
HOW A CLUB
SHOULD BE
PREPARED FOR A
VISITING BAND

By Art Ring

[Editor's Note: Readers of EQ will be familiar with the Club Profile that we often run in this section. This month, we offer a slightly different perspective...]

We're on our way to the gig, but it's early in the morning, so we figure we'll stop for breakfast. We pull into the Awful House on I-5 and place our orders. The drummer orders a short stack, toast, and some kind of omelet, which comes in looking like a microbe on his plate. "Is this really two eggs?" he asks. "Oh sure," the manager answers. Yeah right. Two hummingbird eggs. Maybe we'll get real food at the gig. Maybe we'll have better luck checking into the hotel. Of course, none of the rooms are ready at the Double Tree (a.k.a. 2xtree). They give the engineer a key to 221, and when he goes to the room to drop off his stuff, he finds something really odd about the room. Must be that nice gabardine setup hanging in the closet. "Hey, you could use some new gabardine threads," I tell him, "and it was time to do laundry anyway, so what's the problem?" The pants were too short and it's time to go to the gig anyway.

At the gig it's a cornucopia of contractual competence, and I'm amazed. Everything on the rider is in place: loaders, two



ANYONE GOT AN ASPIRIN?: Author Art Ring writes an open letter to club owners and house engineers in the hopes his next tour will be easier.

follow spots, a 40-input Yamaha PM3000—even the Pepperidge Farm cookies are in the dressing room, and lord knows that while the band is busy chasing members of the opposite sex, I'm usually fighting tooth and nail for the PF cookies.

Our first indication that all is not well in paradise is that the person who I advanced the gig with is in L.A. doing another gig. Hmmmm. Probably pays better. The engineer and I walk up to FOH and have a lookie. Something's wrong with this picture. Could it be that the PA is supposed to be a house system but there's a lot of gear and wires, but none of it's connected? Or is it the profound look of puzzlement on the face of the "house engineer" when my band engineer asks him if we're running phantom power from the house console or the monitor desk? Better get lunch before work makes me sick. Forder the fried chicken and go to the dressing room to make sure the PFs are under lock and key.

Lo and behold, a few minutes later my lunch magically appears. But something ain't right about this chicken — must've hatched from one of those eggs the drummer sucked down for breakfast. Better get to work before lunch gets me sick...

Meanwhile, the engineer is up at FOH, tunneling through that rat's nest of cable and connecting the simple stuff like the effects sends and returns. He's OK making the connections, but how about a little help from the "house"? No chance because they're too occupied attempting to wire the stage. Some of the connections are easy, like Aux 5 to the SDE1000, Aux 6 to the SPX990, Aux 7 to the second SPX990, and Aux 8 to the ART SGE Mach II that he carries for the show effects. Luckily, some of the components in the drive rack (EQ, crossover, speaker processor) were already wired. But

# A Different Slant on Reverb





As a new sports car beckens you to the open road, the Wedge's totally unique desktop design makes creating great reverb a breeze. It's the first reverb that's fun to drive.



Just push the Wedge's edit button and start adjusting your reverb with the four edit sliders. It's easy to get creative with the Wedge's powerful parameters like decay, frequency damping, swirl, early reflection room shape, width, density and diffusion.

For as long as effects processors have been bolted into racks, customizing your reverb sound has been about as much fun as setting the time on a digital watch. But the Alesis Wedge offers an ingenious new angle to the way you approach reverb and ambient effects.

Unlike racked effects, the Wedge is a dedicated Desktop Master Reverb, cleverly designed to be used on or near a mixing console where you do your most critical listening... in the sweet spot of your mix. And with four edit sliders to access several effects parameters at once, you'll find yourself tweaking aspects of your sound you would never dream of editing in a rackmount box. Result: more inspiration for recording and mixing, and less limitation on your creativity.

There's more to the Wedge than its great design, like all-new algorithms that represent the finest, most detailed best-

sounding reverb you've ever heard, especially in an affordable processor. Don't limit yourself to the rack; instead, think differently and try out a new slant on reverb. The Wedge. At your

The Wedge. At your Alesis Dealer now.



Instead of using a snare drum to set up your reverb, the Wedge offers the innovative Impulse Audition feature, which sends a full bandwidth audio signal to help you get flawless reverb for every application.



If you're on the net, check out the special Wedge page with audio files at www.alesis.com/wedge
For more information on the Wedge Desktop Master Reverb, see your Authorized Alesis Dealer or call 800-5-ALESIS.
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Alesis Corporation

1633 26th Street Santa Monica CA 90404 800-5-ALLESS alredio @elesis .usa.com www.alesis.com



where's the input to the house amp racks?

We find an EDAC connector hanging out of the rack and a mating connector that disappears into the floor. It's a 50/50 shot, and I have worse odds in at blackjack in Vegas, so we go for it. Then we plug the console output to the EQ input and fire it up. What'dya know, it works. A little funky in the midrange, but nothing a crossover tweak can't cure...

Well, maybe a crossover tweak, a soldering iron, and an MA in electronic engineering. You see, we got the 40-channel PM3K, but I neglected to advance how many of those channels actually work. The engineer brings up Channel 40. Massive hum — must be that gain pot that's angled perpendicular to the console surface. Channel 39? Sounds like my rental



SAVE ART RING: Back against the wall, smoking too much — all he wants is *something* from the rider to be present at the gig...

car's radiator overheating. Channel 38? Wow, this must be a multi-tiered console because 38 is sticking out of the frame by about an inch. He starts to check every channel in the console. The "substitute house" engineer isn't too happy. Too bad.

I'd like my engineer to have at least four channels for the vocals. He takes a mic and cable, and directly plugs the cable into the each and every input on the desk. They all seem to work up to Channel 33, but, of course, Channel 25 — the mic on the lead guitar player's left speaker cabinet — will crap during the show (I'll notice this when my engineer starts to slam his fist down on the console during the show...once it's maintenance, twice it's abuse). Maybe this poor console took an involuntary bath.

Now the engineer is on to patching the inserts. They've graciously provided us with 12 channels of gate and 8 channels

of compressor. Too bad there's only 16 channels of cabling to accommodate it—and, of course, none of it's labeled. If it were labeled, my engineer could do his job in one hour instead of two and we could go eat dinner like normal human beings instead of thoroughbred's await-



ing the start of the Preakness.

He pulls all the insert wiring out and starts from scratch. Lucky for him, one of the snakes is sort of color-coded and numbered in pairs -Neutrik 1/4-inch TRS connectors at both ends - and each channel has one nickel and one black connector. For the rest, it's blackiack again. He patches the inserts and then attempts to check the ef-

fects sends and returns. Now why are the effects so distorted? He checks the cables, the channel returns, and finds a weird problem: the aux send master pots are dirty and are sending a distorted signal into the effect units. You should have heard that glorious cascading echo of distorted fffftuttt coming back everytime he put a signal into his SGE. He repatched the sends until he found a few that worked without the fffftuttt.

After a few hours of wrestling with a plethora of pathetic patching, the PA is working and we're ready for a sound-check. We are, but even four hours later, the stage is still not wired. "Why?" I ask. Mr. Substitute House Engineer informs me that he ran short of mic cables. "OK," I reply, while staying calm and still using

polite but incorrect variations of his name, "We can check all the channels that are already wired and leave those few channels for last until the new cables arrive." "No," he says, "we're ten cables short." *Ten cables. Are you kidding me?* He just sent someone out to buy a dozen. An absolute disgrace. Why the hell did I advance the gig? So here's a little tip to house engineers: I promise that you'll need at least one cable for every channel at the house console.

About an hour before show time, the crew begins reassembling after a dinner break, but we notice that the guitar tech is missing. Seems he tried to enter the venue at the front door without a laminate and, after giving him a hard time (and vice-versa), security asked to search his bag. We thought they wanted to search the bags under his eyes, which could've taken days. His reply cannot possibly be printed. He cooled down, got into the club, and the show went off pretty well, all things considered. Always wear your laminate.

So what's my point? My point is that if you're the house engineer at a venue, make sure your shit is together. If you treat your gear and your visiting engineers with respect, they'll notice it upon arrival and will return the favor. When you can't make a show, send a substitute who knows how the house system connects and operates. If you can't do that, at least leave a wiring plot so that a competent guest engineer can find their way around. Also, it'd be really nice if all of your gear actually worked. If there's a bad channel, move it to the last slot in the console. And don't give us, "It worked last night," or "I don't have time to do maintenance on the console," because that really doesn't help us. It only takes a few hours to pull the modules, clean the bus connectors, and replace the modules. Have a spare module on hand so that when one craps, you can pull it and use the spare while you repair the broken one. Keep parts like pots on hand at all times.

One last thing: Watch out for overzealous fans who like to tape shows. I recall that one guy who plugged the AC adapter for his DAT machine into the AC lines supplying my follow spots. The breaker cut out 30 seconds before the show and took about half of the first song before it cooled and could be reset.

Art Ring is an independent tour manager, stage technician, and general music industry scoundrel. He has worked with Blue Öyster Cult, Ministry, Richard Hell and the Voidoids, and Anthrax. He can be reached at 609-392-6299.

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# SYMETRIX 533E GRAPHIC EQUALIZER

### By MIKE SOKOL

Equalizers are the roadies of the production rack. They don't have a lot of

or a little — there's not much middle ground. And since you tend to get what you pay for, a cheap equalizer

EQ and carted it around for a few shows. Here are my impressions after living with it for a few months.



flash, everyone takes them for granted, and they tend to be overworked and underpaid. But they're absolutely essential for any production work. Try a live production without them sometime to see what I mean (both the roadies and the equalizers).

So I really do appreciate a good EQ. To qualify as a "good" EQ, it should be quiet, rugged, and have the proper input and output jacks to interface with all the different parts of the sound chain without a lot of fooling around. And, perhaps most importantly, it should sound good. Remember most, if not all, of your engineering efforts will end up going through its circuitry, so it's essential that it "do no harm" to a healthy audio signal (Ref: Hippocratic Oath).

I normally use White 1/3-octave EQs for most of my live production work, and many times have access to Klark-Teknik EQs as well. Both can be found the world over in many FOH and monitor racks and, without question, certainly do a first class job. The cost of those units, however, might be prohibitive to many bands, sound companies, and weekend engineers. Unfortunately, there seems to be a stratification of prices when it comes to equalizers. You can either pay a lot

can be a pain. short faders, no headroom, limited connectors, and, worst of all. bad sound. What's needed is an EQ with professional features and sound, but at a price point that makes them an affordable option for those on a budget or looking to purchase multiple units.

Enter the
Symetrix 533E.
It's certainly
more affordable
than a White or
K-T, but would it
perform? Well, as
most of you readers know, we like
to test stuff in
real-life situations, so I put one
in my EQ rack
along with four
channels of White

# ROAD

MANUFACTURER: Symetrix, Inc., 14926 35th Ave., West Lynnwood, WA 98037. Tel: 425-787-3222. Web: www.symetrixaudio.com.

APPLICATION: Dual 1/3-octave equalizer for front of house stage monitors, and studio use.

**SUMMARY:** The Symetrix 533E is a 1/3-octave, 3 RU, stereo equalizer with the following design details: full-length sliders with metal shafts, ±6 dB, ±12 dB or bypass modes, variable high- and low-cut filters, input level control with LED indicator, and balanced XLR and TRS inputs/outputs. Standard European 120-volt AC connector. Fail-safe bypass relay.

STRENGTHS: LED level display makes troubleshooting easy; variable high- and low-pass filters are handy for monitor world or ultrasonic repairs; long fader travel on smooth sliders makes it easy to accomplish small adjustments without the "oops" factor; very transparent sound with low noise and lots of headroom takes away the fear of EQ'ing.

**WEAKNESSES:** Case could be made for heavier gauge steel; feels a little flimsy for road use.

PRICE: \$949

**EQ FREE LIT. #: 103** 

The very name evokes a sense of power and control normally associated with high-performance automobiles. And rightfully so, as KRK's latest incarnation of the active studio monitor strikes the necessary balance—much like a fine-tuned engine—between the power and control you need in today's studio environment.

The V8 is the culmination of KRK's 12-year singular

focus on sophisticated loudspeaker engineering, combining extensive working experience with a veritable "Who's Who" of recording engineers. Borrowing extensively from its reference Exposé line, the V8 is the first in a new series of high-performance, videoshielded, active close-field monitors whose sound quality, construction and appearance put it at the top of its class. Yet the V8, for all of its achievements, is available at a price that any budget-conscious professional will applaud.

All of the benefits of biamplification (non-existent intermodulation distortion, tailored response for each driver, higher equivalent power, individual driver protection and increased dynamic headroom) are applied to exacting Kevlar and silk drivers, precision-matched active crossovers and shelf-ported cabinets. Superior features like

versatile Neutrik®

combo XLR connectors, silent turn-

on/off, high- and low-frequency contour controls and thermal protection define the V8's attention to detail and deliver the performance you expect.

KRK meets the multichannel challenge too, with Orbital Surround™ packaged mixing solutions that are precision matched to within ±0.1 dB! But, then again, that's the kind of performance you expect from the company that names its speakers after fine-tuned engines.





More than a shielded, 200-watt, bi-amped monitor, the V8 is an insightful synthesis of form and function. The wavefronts produced are the exact acoustical analogs of the incoming signals. Pure and simple.

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THE AUTHORITY IN POWERED SOUND





I was a little worried at first about the lack of weight of the unit. It felt a little flimsy out of the rack, and there's a bit of side-to-side play in the sliders. I noted, though, that the sliders had metal shafts, and that once mounted in a rack,

### MANUFACTURER'S SPECIFICATIONS

**EQ Type:** Graphic, 31 bands per channel on standard ISO, 1/3-octave centers

**Boost/Cut Range:** either ±6 dB or ±12 dB, globally switched per channel

**THD:** less than 0.002%

**High Cut:** 12 dB per octave w/sweepable cutoff frequency

Low Cut: 12 dB per octave w/sweepable cutoff frequency I/Os: direct coupled, gold-plated

XLR's w/servo-balanced output

the feel of the unit became very professional. I really liked the LED level display, which is mysteriously missing from a lot of pro units. It really helps in troubleshooting a system while under the gun. The variable low-cut filter is essential when in monitor world to get the "woof" out of the system, and the variable high-cut can help keep the ultrasonic frequencies from getting out of control. Plus, the combination TRS/XLR con-

nectors is really handy when going from insert to inline mode. You just never seem to have the right connector on hand when you need to do a quick change, and I really appreciate the time saved by not having to run back to the work case for an XLR adapter.

the LED level
display, which
is mysteriously missing
from a lot of

The "sound" of the unit was conspicuous only by its absence. When the sliders were centered, the sound was essentially like that coming from a straight wire. And when I boosted or cut a band, it did exactly was it was told to do. There seemed to be no out-of-band interaction. I used it in the studio as well, and was very pleased with the low noise and distortion of the circuitry.

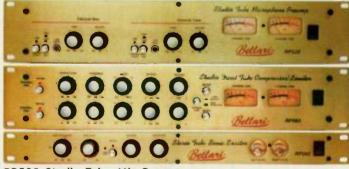
Symetrix has achieved an enviable balance of solid engineering and affordability with this unit. It is at home in a professional

tour rack, but is still priced low enough to be within the reach of the weekend warrior.

Mike Sokol is the author of The Acoustic Musician's Guide to Sound Reinforcement and Live Recording. Check out his Web site: www.soundav.com.

## Bellari

### Studio Tube Processors



Bellari products have the sound you've been looking for. They maintain plate voltages ranging from 150 volts in the smaller units, to 250 volts in the rack-mount preamps and processors. What that means to you is warm vocals and instrument tracks that subtly make their presence known in a mix. All Bellari tube compressors use light/photocell elements in their gain cell for smooth, distortion-free compression.

### **RP520 Studio Tube Mic Preamp**

- · Smooth, warm sound
- 30 dB Input and Output Padding
- Phase Reversal
- Analog Metering

### RP583 Studio Tube Compressor/Limiter

Designed for Subtle compression applications such as:
 Vocals - Program Material - Soft Instruments

· Side Chain for direct detector circuit access

- · Smooth, natural tube compression
- All Tube Gain Circuitry

### **RP562 Studio Sonic Exciter**

- Restores Signal Clarity
- · Adds Life and animation to the Sound
- Automatic Sound Separation
- Adjustable 18dB/Octave Subwoofer
- Subwoofer Clip Indication

#### RP533 Studio Tube Multi-Processor

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Bellari

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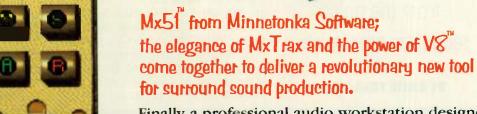
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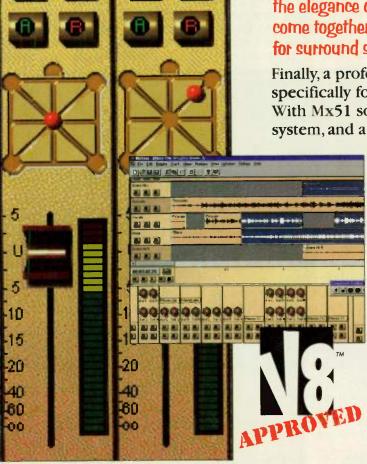
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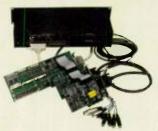
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# Cedar Noise Reduction Plug-Ins

A three pack
of track-enhancing
processors
from the noise
reduction specialists

BY DAVID FRANGIONI

plug-ins will be one at a time, so plan your purchase around the necessary plug-ins and one Cedar DSP card.

#### HANDS ON

I tested each of the plug-ins on a Mac Quadra 650 using Pro Tools 4.0 with an 882 interface (supplied by the company). This system is truly a snap to install and begin using. There is virtually no learning curve to begin using any of the three plug-ins. Each of the plug-ins feature adjustable output gain from -40 to +10 dB. Since

and right. This is very handy for making fine tune adjustments and is offered on the Gain, Threshold, Split Level, Brightness, and Hiss Attenuation features of each of the appropriate plug-ins.

The first plug-in I auditioned was DeClick. The available parameters for DeClick are: Models (small, medium, and large), Threshold (0–99.99), Pre or Post operation, and Output gain — all very straightforward and intuitively laid out. I ran several styles of music through the DeClick



For some time now, Cedar has been producing some of the finest noise reduction processes. Now Cedar has taken three of its best and most useful algorithms and offered them to Pro Tools users. There are, though, several requirements to meet before you're able to use the Cedar plug-ins.

First, there are three choices of plug-ins. They are DeClick, DeCrackle, and DeHiss. Each plug-in uses a Cedar DSP card, which must reside in the Mac TDM system for any of these plug-ins to be used. Unfortunately for a lot Pro Tools users — it is a NuBusonly card. That's right, this system is not compatible with PCI systems. Although each plug-in requires a DSP card, you can easily have all three plug-ins resident in your Plug-Ins folder, as you will typically only be using one at a time. Should you need to use two at a time, you would need two Cedar DSP cards on the TDM bus. Again, the most typical use for the

most users will be processing stereo material, there is a "lock" option that simultaneously controls both the left

with varying degrees of problematic clicking present on each of the musical segments. Note that there is no

### LABREPORT

MANUFACTURER: Cedar Audio. U.S. distribution: Cedar Audio USA, 43 Deerfield Road, Portland, ME 04101. Tel: 207-828-0024.

**APPLICATION:** Noise reduction for audio in mastering and restoration within the Pro Tools environment.

SUMMARY: Great sounding and reasonably affordable TDM plug-in and card for Pro Tools NuBus systems. Sounds as good as systems costing many times its price.

STRENGTHS: Easy to use; great sounding; works as TDM plug-in.

WEAKNESSES: Works only with Pro Tools NuBus.

**SYSTEM REQUIREMENTS:** Digidesign Pro Tools NuBus with at least one open slot to accommodate the Cedar card.

PRICE: \$2500 per card; \$2500 per plug-in (up to three available).

EQ FREE LIT. #: 104

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noise reduction system of which I am aware that is completely free of artifacts when doing any heavy processing. This means that the more "reduction" of noise that takes place, the more artifacts you will introduce. The key is to find the balance between lower noise and high-quality sound.

The DeClick was very useful on all of the examples that I played through it. Because it is real time, it took just minutes — instead of hours — to find the "perfect" setting. There was no time spent doing any processing or computation. Auditioning the different models was simple, as was balancing the few parameters. The DeClick was very useful and did a great job at declicking.

Next up was the DeCrackle plug-in. The available parameters are Models (detect, crackle 1, and crackle 2), Split Level, Threshold (0-99.99), Pre or Post Operation, and, again, Output Gain. Again, there is not much to tweak, and the system is easy to use. This time I ran some old LPs into Pro Tools and put the DeCrackle through its paces. Of the three plug-ins, I was least impressed with this one. Although it did clean up the track and sounded okay, it didn't make as much of an immediate difference as the other two plug-ins did. Plus. I found that it introduced artifacts well before reaching extremely usable levels. But then, DeClick and DeHiss are a hard act to follow. I did later find that De-Crackle should only be used after DeClicking. It turns out that the algorithm is "confused" by the clicks coming from an LP. Therefore, DeCrackle is better being used to remove the fine surface noise and crackle remaining after the track(s) has been through the DeClicking process.

My favorite plug-in module is the DeHiss. Its available parameters are Hiss Attenuation, Threshold (0-99.99),

My favorite plug-in module is the DeHiss.

I recorded over ten different pieces of music. It sounded amazing on every piece that it processed.

Brightness, Pre or Post Operation, and Output Gain. The Brightness control is useful for adding a little sparkle wherever the Hiss reduction may have taken away high end. I recorded over ten different pieces of music, including cassette tapes, old records, and old radio recordings. This plug-in is awesome! It sound-

ed amazing (or, I should say, it made the processed material sound amazing) on every piece that it processed. Anyone in need of dehissing for restoration work may have found the solution.

#### THE VERDICT

The Cedar Plug-In package is extremely high quality and very useful in many areas of mastering and audio restoration. The DeHiss is simply astounding, and the other two plug-ins sound very good. Although you'll need a Pro Tools TDM NuBus system to use these plug-ins, you might be surprised how cost-effective it is to buy just such a system. Considering that a PT3 NuBus can be had on the street for around \$3k, a NuBus Mac for \$500, and the Cedar system (one plug-in and one card) for around \$5000, you still have not spent as much as some competing systems would set you back. If you have been searching for a set of very high-caliber noise reduction tools, look no further. The Cedar system fits the bill with flying colors.

Note: Many thanks to Fraser Jones of Cedar Audio USA and Independent Audio for the extremely functional review system.

David Frangioni is a studio installer/digital audio consultant. He recently completed studios for Gary Burr at MCA Nashville, Desmond Child, and Will Lee of the Late Show. Check out his Web site at www.audio-one.com.



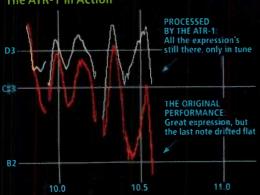
# Introducing Perfect Pitch in a Box (No, really.)

AND THE INTENSTION PROCESSOR

OK, let's be honest. For most of you, "Perfect Pitch in a Box" is right up there on the credibility scale with Elvis sightings and miracle three-day weightloss. Unless, of course, you happen to be one of the thousands of audio professionals who already depend on Antares's

amazing Auto-Tune™ pitch-correcting software

The ATR-1 in Action



for the Mac (and soon, PC). In fact, when we introduced it last year, *Recording* magazine hailed Auto-Tune as a "Holy Grail of recording."

Now, with our new ATR-1<sup>TM</sup> Intonation Processor, you can get the power of Auto-Tune in a simple 1U box. Without the need for one of those pesky computers.

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Of course, words are cheap (well, actually, when printed in a magazine ad like this they're fairly expensive). But hearing is believing. Try out the ATR-1 at your local Antares dealer or call us for a free demo CD. Either way, we're confident you'll be convinced. No, really.

Here's what some ATR-1 users have to say:



'With the ATR-1, vocal sessions can focus on attitude, not intonation."

-MADAME MARIE CURIE \*



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~FRAMZ KAFKA\*

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# Korg AM8000R Multieffects Device

Korg presents plenty of processing possibilities at a pleasing price

### BY ZENON SCHOEPE

vice on the structure of this device. For example, had I not already worked out the curious thinking behind "the method" on the DL8000R, I might have missed much of this unit's considerable potential. This is, without a doubt, a very capable and interactive box of tricks, which just doesn't extend the hand of friendship that readily.

You get 256 memory locations the first 127 are userprogrammable

as to which you're in.

Effectively, there are three processor "modules" called FX1, FX2. and Delay/Reverb. These have their own "active" indicators and are switched in via three dedicated pushbuttons. Strangely, the status of these modules can not be saved as

preset; you have to

engage or dis-

able the sections manual-

KORG

ly. It's not that much of a pain because you usually leave all three on all the time, and if you want to defeat a block, then you attempt it from the editing process. The buttons are, however, handy when editing as they allow the modules to be individually auditioned. You also get a 3-band EQ section, but FX1 and FX2 modules, while identical, concern themselves with just under 30 types of algorithms, including chorus, flanging, modulation delays, phasers, pitch shifters, rotor simulators, filters, more EQ, and full dynamics. Each of the types averages out at around ten parameters.

concentrates on the

business of generating ambiencerelated effects. Its front panel differs from a distance only in the color of the top and inclusion of the Warp knob, which is assigned to real-time adjustment of selected algorithm parameters. In fact, the AM8000R also requires the same intensive and timeconsuming editing process that displays, via a largish LED, one parameter at time for adjustment. As with the DL8000R, my objection to this rather old-fashioned method of interaction is not that you can only adjust one parameter at a time - as this is often the practice with multieffects units but that you can only see one value at a time. (From my experience, the ability to view multiple values is a critical part of the information-gathering process.)

The sonic results are excellent. Indeed, this multieffects unit is even more spectacular and impressive than the delay line, and there's a strong argument for going to the trouble of getting the hang of it. Disappointingly, though, the manual offers little adOnce you go further, however, your attention will be tested.

Editing and the Utilities menu are accessed from a Function knob, which first scrolls sequentially through the available editing parameters and then on to the Utilities, with Edit and Utility indicators lighting on the display to give you a clue

MANUFACTURER: Korg, 316 S. Service Road, Melville, NY 11747, Tel: 516-333-9100. Web: www.korg.com

APPLICATION: Studio and live production, musicians.

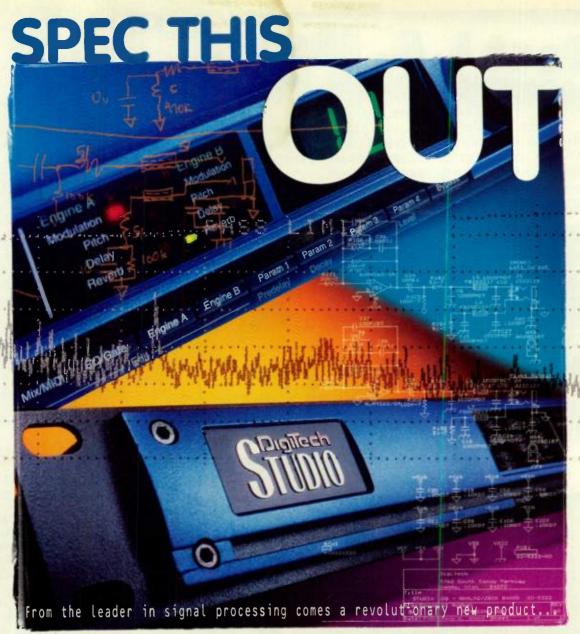
SUMMARY: Stereo multieffects unit with a wide palette of possibilities and a high degree of real-time interaction.

STRENGTHS: Great reverb sounds; extremely extensive list of effect types; high level of MIDI and front-panel Warp real-time parameter control

WEAKNESSES: The unit is tedious to program because of its line-at-a-time editing

**PRICE: \$600** 

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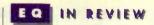
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The Delay/Reverb module can draw from 11 types, which are mostly made up of delays with fundamentally fine room, hall, and plate algorithms. (Remember that you get one line at a time to contend with and you'll realize that the flow chart of the editable parameters for the AM8000R could probably cover the surface of a large split console.)

The reverbs are great in character, and even though you only have predelay, reverb time, high and low damping, density, and diffusion to play with, they can range from skinny and sparse to fat and expansive. The FX modules are notable for superb retro-style phase and flanges that come up from your boots, fabulous horn and rotary simulations that are convincing, and outrageous modulation and pitch effects that would be at home in a late-series Eventide. The whole lot can be mixed together intelligently at the end of the chain.

Connectors are on unbalanced jacks, two in and two out. The unit is powered by an external supply with plenty of lead, thankfully, on either side of the wart. You also get a footswitch jack socket to mimic the action of the front-panel switch, plus three controller inputs for real-time tweaking assigned within the editing procedure — and you can do the same via MIDI.

It's all here you see, but it's all a matter of getting to it. I tolerated the operating system on the DL8000R because delay tap setting on most units is laborious and involved at the best of times, and Korg's interpretation was bearable. However, when the market already provides a number of easily accessible reverb and multieffects units, you may be asking for trouble. This is a great-sounding unit marred by a timeconsuming editing system. The presets alone will be good enough to entice some users — especially at the \$600 list price — but others will have to develop the knack to quickly edit a nearly-there preset during a mix or while an artist is impatiently waiting for a particular foldback effect.

In summary, the Korg AM8000R multieffects processor, despite a fairly high level of editing inconvenience, provides remarkable sound, enormous potential, and outstanding levels of preset interaction, not to mention great value for the money.



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# Mobile Fidelity Sound Lab Sound Check 2



This is only a test—but one that should solve most of your system evaluation needs

### BY WADE MCGREGOR

The advent of the portable CD player brought a reliable, inexpensive source for audio test signals. Just slip in a disc of test tones and you have replaced a large and cumbersome signal generator. There are many discs available with test signals for this application. One of the most comprehensive was the original *Sound Check* CD produced by Alan Par-

sons and Stephan Court. I have carried that disc around for years, evaluating countless sound systems, studio monitor systems, and signal processors. That disc not only contained a useful variety of test signals, it also offered dry instrument and vocal tracks, a range of fully mixed music, sound effects and even SMPTE timecode.

Mobile Fidelity has just released the update to this excellent test CD, Sound Check 2. In addition to enhancing the range of test signals and broadening the range of music samples (including operatic voices and symphonic music), the gold-plated disc has been mastered in the audiophile tradition of Mobile Fidelity using their Ultradisc II process. The original recordings of dry tracks and full mixes are excellent quality, and this is maintained through the careful mastering and production of this version of the disc.

The disc starts with a complete set of 1/3-octave filtered bands of pink noise, followed by a series of broadband pink noise signals, pink noise band limited to common loudspeaker ranges (0-200 Hz, 200-1000 Hz, 1 kHz and up, 7 kHz and up), interchannel polarity checks (misnamed "phase" to be consistent with this common misuse of the term), swept tones, spot frequency tones, and square wave tones. Then a range of music and voice samples, including Alan Parsons's description of the disc, dry recording Luciano Pavarotti, a reverberant recording of soprano Catherine Bott, and a vocal track by Steve Overland. These provide excellent material for evaluating the effects of processing or loudspeaker system playback of fa-

### LABREPORT

MANUFACTURER: Mobile Fidelity Sound Lab, 105 Morris Street, Sebastopol, CA 95472. Tel: 800-423-5759. Web: www.mofi.com.

**APPLICATIONS:** A convenient source of test signals for evaluating sound systems, control room monitors, and signal processing equipment.

**SUMMARY:** A comprehensive set of test signals for evaluating both the objective and subjective performance of audio systems.

**STRENGTHS:** High-quality signals stored on robust media and packaged in handy Shape 2001 jewel case.

**WEAKNESSES:** A wider variety of speech samples would be useful; manual should warn of pitfalls in using an SPL meter or RTA to make equalization adjustments.

PRICE: \$44.95

EQ FREE LIT. #: 106

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miliar voices (if they're not familiar now, they will be once you start using this disc). Voices are the most revealing source for subjectively evaluating the tonal qualities of components and systems. These are excellent recordings for this use.

The latter half of the disc includes a series of dry tracks of instruments, including common pop music instruments such as drums, guitars, basses, and percussion. There also are wind and string instruments and ensembles. This is followed by a series of full mixes of a range of heavily produced pop music and orchestral music. For the real torture tests (yours or the equipment's?) there are sound effects of sub-machine guns, tank-gun firing, a thunderstorm, steam train, and military jets. The disc also includes SMPTE timecode in several formats, channel identification tracks, digital black (just how quiet is that CD player?), and finishes with a 1 kHz sine wave at 0 dB full scale (7FFF in hexadecimal) reference level. This is a very comprehensive range of high-quality sound for reference and evaluation. Repeatedly using these tracks will provide you with a standard reference when comparing the subjective qualities of audio equipment, such as compressors, reverb units, or loudspeakers.

Just as no single music CD can provide everything you might ever want to listen to, so, too, is the fact that no single test CD can cover the entire range of signals you may need to check every aspect of an audio component or sound

system. There is one test tone sequence I regularly use that is not included in this disc: stepped tones through the low and mid-frequency ranges. This sequence of tone bursts is invaluable in evaluating resonance in subbass, bass, and midrange loudspeaker systems. The other signal I routinely use is a dry voice recording that assists in evaluating speech intelligibility. (These are typically word lists and counting.) The speech sample on Sound Check 2 is adequate for many situations, but not comprehensive enough for extended speech intelligibility testing.

Although the highly informative manual offers methods to equalize sound systems using the test signals on this disc and a sound

level meter or RTA, remember that these simple test devices do not allow you to select the timing of the measurement data. Our aural perceptions make very critical decisions on tonal qualities based on arrival time. Keep this in mind if you use the test signals in this

If you are analyzing audio
equipment or
entire systems
for their ability
to reveal detail
and accurate
tonal qualities,
this test disc
should be part
of your test kit.

way: your measurements will be blind to the time domain, but your perception of the sound quality will not be. Always listen to the voice and music samples before and after making adjustments to ensure that you are making improvements to the quality of the sound.

If you are analyzing audio equipment or entire systems for their ability to reveal detail and accurate tonal qualities, this excellent test disc should be part of your test kit. Developing a familiarity with the tracks will help you to correlate the measured response of the component or system with its subjective qualities. Mobile Fidelity Sound Labs' Sound Check 2 is an excellently mastered and packaged test disc that you will find invaluable in making judgments on the perfor-

mance of the audio gear you must rely upon. High-quality test equipment has never been more accessible.

Wade McGregor is a principal consultant for MC Squared System Design Group based in North Vancouver, BC.

### REVIEW SHORT: SATURNINE SMPTECALC BY CRAIG ANDERTON

This Windows 3.1/95 program works like a normal calculator, but also converts and manipulates time in the four common SMPTE frame rates (24, 25, 29.97, 30). For example, you can convert SMPTE time at one frame rate to a different frame rate, add/subtract times, enter a total number of frames and translate that to time, or add a certain number of frames and see how it changes the total length.

For preparing CDs, SmpteCalc is handy for converting song timings into a total time. For example, if you enter song lengths in minutes and seconds, you'll end up with the total running time. SmpteCalc also does regular calculator functions and can recognize the numeric keypad as well as the mouse or QWERTY keys.

Entering times requires inputting the number, followed by a letter to indicate the appropriate time unit (for example, 1 hour, 10 minutes, 6 seconds, and 18 frames would be en-

tered as 1H10M6S18F). You can also click on the equivalent screen buttons ("1," "Hours," etc.) with the mouse, as well as copy what's in the display to paste into other programs (e.g., add total timing to a CD track sheet or list particular hit points).

There are no extras; I'd like to see BPM functions as well, such as translating among time, BPM, and measures (e.g., 20 measures at 120 BPM equals how much time?). Still, given SmpteCalc's low price and uniqueness, this program is well worth seeking out if you do a lot of time-related calculations.

MANUFACTURER: Saturnine, PO Box 3035, Allentown, PA 18106. Tel: 610-395-3930. E-mail: satur9@worldnet.att.net. Circle EQ free lit. #107.
PRICE: SmpteCalc, \$17.95 + \$3.00 shipping (PA residents add 6% sales tax).

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> CIRCLE 77 ON FREE INFO CARD World Radio History

# SPL Qure Parametric Tube Equalizer

An EQ that you may not know is there, but you notice when it's not

BY MIKE SOKOL

boost/cut with proportional O.

The unit is built with overall attention to detail. Both XLR and 1/4-inch TRS connectors are included, and the significant weight of the unit implies a hefty power supply. There's also some very interesting switches labeled "Qure On" and Shift Qure." These switches turned out to be the stars of the show...as it were.

clipping can be helpful for both level control of the peaks and overall fattening of the sound. These are benefits sometimes missing in the sterile environment of the digital world. Plus, it's more intuitive to sweep the frequency band to the area desired rather than mess with a bunch of sliders on a graphic EQ. This makes it easier to demonstrate the effect to a



I like a good parametric equalizer for studio use — and the Qure by SPL certainly qualifies as a good parametric EQ. As soon as I opened the box, I knew there was going to be some fun. I patched the Qure into the inserts of my console for a mixdown session of several live-recorded ADATs of a local band, The Blue Comets. I had done the live recordings without any limiting or processing a month earlier. My intention was to add all of that in the final mixdown. But, first, the technical details for all you circuitheads...

The equalizer section proved to be properly functional with the detented controls operating as designed. The only strange thing being that the 0-dB position is offset slightly clockwise from 12:00 on all the controls. Go figure. The midband filter uses a non-reciprocal response, providing a very deep and narrow notch with up to 36 dB of cut, which is great for problem feedback frequencies. Both the low and high bands have a more standard 15 dB of

The nice thing about using a tube parametric as the final equalizer in a digital recording chain is that the additional harmonics and soft-

client. So when the Blue Comets showed up for their mixdown session, I was ready to play.

After all the initial equalization

### LAB REPORT

MANUFACTURER: SPL (Sound Performance Lab). Distributed by beyerdynamic 56 Central Avenue, Farmingdale, NY 11735. Tel: 516-293-3200.

**APPLICATION:** Vocal processing or mastering equalizer for field or studio use. Tube processing makes it useful as final EQ in a digital sound chain.

SUMMARY: Professional dual-channel 3-band parametric equalizer with additional lowand high-cut filters. Proprietary "Qure" processing uses a pair of Sovtek 12AX7 tubes in an adjustable network that adds variable tube harmonics in the final output stage. Optional input/output transformers are available.

**STRENGTHS:** Very responsive dual 3-band parametric equalizer with detented controls and lighted switches, hard bypass switches on each filter band; offers XLR and TRS in/out connectors; additional Qure circuitry adds adjustable tube harmonics.

WEAKNESSES: The manual is not well-translated into English — there are a lot of syntax and spelling mistakes, as well as wording that's difficult to understand.

**PRICE:** \$ 1799

**EQ FREE LIT. #: 140** 

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and dynamics were patched into the individual tracks, I adjusted the overall balance and added some [Yamaha] REV 7 reverberation. The bottom end wasn't convincing, so I added a little overall bass with the low band of the Qure. The controls fell easily to my hands, and soon we had a real nice mix. Then we switched-in the "Qure" circuit. Wow! The vocals seemed to really take on new life. This wasn't like the effect of a BBE or Aphex unit, but something totally different.

My only complaint concerns the user's manual. It's full of spelling and grammar mistakes - something I consider less than professional. True, the manual doesn't have an impact on the engineering or the sonic integrity of the unit, but it shows a lack of customer concern that I find disturbing. SPL should hire a good English proofreader.

The controls allow you to dial-in the center frequency of the processing from 2 kHz to 6 kHz, and the shift control changes the range to the adjustment from 400 Hz to 2 kHz. An overall silky quality was added to the vocals, and the instruments seemed more de-

fined. The clients loved it, and made me promise to leave it in the patch for the rest of the mixdown session the following week. "No problem," I said. Anything that makes look good with so little effort stays in the rack.

Next loaned the Oure EO out to a recording studio Morgantown, WV to get their feedback. The principal engineer there has done worldwide touring with major acts Ziggy Marley, The B-52's, and Stone Temple Pilots, so I

The nice thing about using a tube parametric as the final equalizer is that the additional barmonics and soft-clipping can be belpful for both level control of the peaks and overall fattening of the sound.

wouldn't be fooled by some advertising hype. He used the device in a 24-track mixdown session and called after a week to say it really "made" the album. He used some of the parametric functions, but thought the Qure processing was the best part of the unit. He noted that it could easily be adjusted so that you didn't seem to notice anything different while it was in the patch, but as soon as you bypassed it, you knew something important was gone. The ability to provide subtle control of the sound made it the star of the session.

Mike Sokol is the author of The Acoustic Musician's Guide to Sound Reinforcement and Live Recording. Check out his Web site: www.soundav.com.





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### BY EDDIE CILETTI

In recent years the challenge of reviewing increasingly sophisticated equipment (comparing digital audio converters, for example) has created an ever-increasing need for me to hear greater detail. In addition, using a Soundscape workstation has greatly expanded my ability to create more precise, intricate, and sophisticated mixes. These two applications alone have changed the way I listen. Short of riding the shuttle into space, I needed a monitoring system that would boldly take me into new sonic territory.

I am familiar with the current batch of

popular monitors, but, as usual, that did not dissuade me from auditioning something different: the Dynaudio Acoustics BM15A. This biamplified system consists of a 9.5-inch woofer and a 1-inch tweeter in a ported cabinet that is 17.4 inches H x 10.75 inches W x 13.5 inches D. A rear-panel switch selects operating level: +4 or -10. Input is via XLR connector.

If you prefer nonported operation, foam plugs are provided. The same package is also available as a nonpowered version, model BM15. Left and right cabinets have mirrorimage drivers, a good thing for a symmetry freak like me. Mixing and mastering is an ongoing process; hence, let's not call this a monitor audition, but rather an "interactive evaluation." After mixing four songs and premastering two CDs, all within a three-month period, I am not ashamed to say that relations with the BM15A's have been intimate.

Both the Dynaudio and my old standby E-V MS-802 monitors have a similar cabinet volume, yielding a bass output within the same ballpark (with the port open). The similarity ends there, however, because the BM15A delivers greater tightness and precision from the crossover point (2.5 kHz) on down. (Plugging the port will further tighten the bottom.) I definitely needed more low-end clarity. Since the E-V is "soft" sounding, the resulting mixes often had too much midrange punch when played on other systems.

#### **NEARFIELD**

I sit close to my monitors — about three feet, plus or minus six inches. At that distance, I don't need much output from the tweeter. Dynaudio has provided both bass and treble

pots on the rear panel. Switches would have been preferred for their precision and repeatability, but since the range is limited to ±3 dB, I did not consider this to be a problem. I ran the bass flat and the treble at minimum (-3 dB). This corresponds with the E-V HF level control, which has been living at -4 dB.

The difference in treble response between the two monitors was more divergent than in the low end. The BM15A is clearly the winner — delivering an extended high-frequency range, with greater detail and more openness (or "air") without harshness. The E-V tweeter has a "schmeer" between 5 kHz and 10 kHz that makes things seem brighter, yet the lack of response at frequencies above this range robs you not only of detail, but of awareness of noise as well.

One particular feature increased my fondness for the Dynaudio BM15A: It has no sweet spot. The lack of phase interaction between the woofer and tweeter allows the engineer, producer, and client a fairly similar listening experience. By contrast, the E-V's and some other monitors have a much narrower range; a little vertical movement —



standing up, for example — can make them sound completely different.

#### PRODUCTION TOLERANCE

I was already familiar with Dynaudio because their speaker components are used in audiophile monitors such as the Duntech Sovereign and Black Knight series. (One of the reasons for their popularity is their unit-to-unit consistency.) The Dynaudio BM15A has more in common with these towering behemoths than with the typical nearfield monitor. Better monitors have more "self" control and therefore less coloration. The BM15A is simply a better monitor than most.

It's fascinating that monitoring systems generate such polarized opinions. For example, Genelec lovers hate Meyer and vice versa. Both speaker lines are well-crafted and have similarly priced products, but if neither is your cup of tea, check out the Dynaudio's BM15A. It's for those who are looking for something else.

MANUFACTURER: Dynaudio Acoustics, distributed by AXI, Inc., 357 Liberty Street, Rockland, MA 02370. Tel: 781-982-2626. Circle EQ free lit. #109. PRICE: \$3559

### **LOUDSPEAKER CONCEPTS**

Self-powered monitors are a very '90s phenomenon, but this trend is neither superficial nor hype. The concept of minimizing cable length between amp and speaker makes perfect sense, especially for low frequencies. If short is better than long, then why not have almost no cable? By locating the amp inside the speaker cabinet, the choice of esoteric or generic speaker cable is no longer an option. (Think of the money you'll save!)

Another weak link between amp and speaker is the passive crossover network. Splitting the audio spectrum for woofer and tweeter is a necessary evil, but the passive approach is more costly and more difficult to get right than its active counterpart. Biamplification puts the crossover before the amplifier, improving efficiency and allowing more precise control over each frequency band.

The edge of the woofer in the BM15A has a surround made from long-life Neoprene instead of foam, which dis-

integrates over time. The voice coil is made of ultra-light hex-shaped aluminum wire rather than copper. The decreased mass of the high-excursion coil increases linearity — especially at high er levels — lowering overall distortion.

One could argue for either a ported or an airtight cabinet. One is more efficient while the other is, perhaps, a bit more precise. The foam plug provides an option that is different from turning down the bass because it affects low-frequency resonance just before roll-off begins.

Little is mentioned in the product literature about the dome tweeter. From previous experience I had learned that Dynaudio use ferrofluid, which improves efficiency by closing the gap between magnet and voice coil. By allowing heat to dissipate via the same path, it helps to maintain greater accuracy even after repeated doses of high-level, potentially damaging transients.







JULY 1994

CIRCLE 20 ON FREE INFO CARD

# Bag End Infrasub-18 Subwoofer

Hear low frequencies as they were meant to be heard

### BY WADE MCGREGOR

Authority. That's what low frequencies give to a mix. How can you be sure that you have the lowest tones just right? Infrasub. Check it out...

The powered Bag End Infrasub-18 offers both line-level and loudspeakerlevel connections that should allow this unit to easily fit into almost any monitoring situation. The self-contained power amplifier is capable of driving the power-hungry ELF (Extended Low Frequency) 18-inch driver to significant sound pressure levels while maintaining tight, solid, building-shaking bass. The

driver is mounted in a sealed enclosure, setting it apart from the more common vented subbass units. Not only does this design side-step problems such as port noise (chuffing) and resonant peaks in the frequency response, it also ensures that the unit is highly damped. The result not only reveals low frequencies that you may never have heard before, but also those frequencies are clearly defined in pitch and tone. You then know exactly how your mix is going to disc.

Beware: The bass that you hear on most other monitoring systems will sound colored and boomy by comparison. You will have to adapt to mixing with this new view of the audio spectrum. You may also find that you can mix at lower volumes, simply because you have the confidence that very low-frequency problems will now be more audible.

The ELF processor is built into the active circuitry of the Infrasub-18. This process utilizes the band below the dri-

ver/cabinet resonant frequency by boosting the level 12 dB-per-octave through this frequency band. The result requires a driver that can handle the large excursions (cone travel) this demands and a power amplifier that can provide the voltage swing necessary to meet this need. The Infrasub-18 package provides all of these elements in a single convenient package.

### **MANUFACTURER'S SPECIFICATIONS**

Low Frequency Transducer: 1 EL-18P 18-inch cone

**Amplifier Output Power: 400 watts** continuous sine wave

**ELF Module:** Patented 8-Hz Dual Integrator

Finish: Black matte vinyl laminate Grille: Black nylon cloth on frame

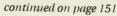
Dimensions: 23.5 H X 21.25 W X 18.25 D (inches); 59.7 x 54 x 46.3 (cm)

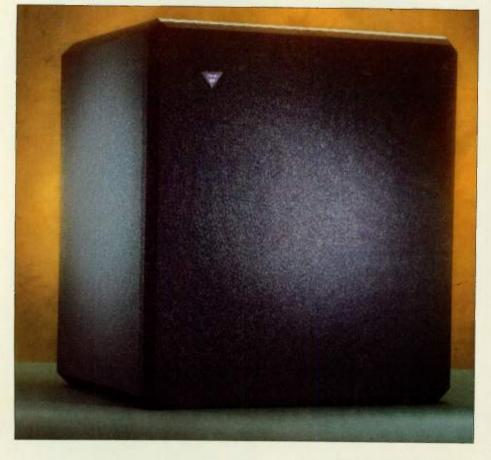
Weight: 92 lbs. (41.7 kg)

Input Connectors: Left, Center, and Right channel line-level RCA jacks, Left and Right channel speaker level spring terminals High-Pass Filter Outputs: Left, Center. and Right line-level RCA jacks 12-dB-per-octave, factory set for -6 dB at 95 Hz

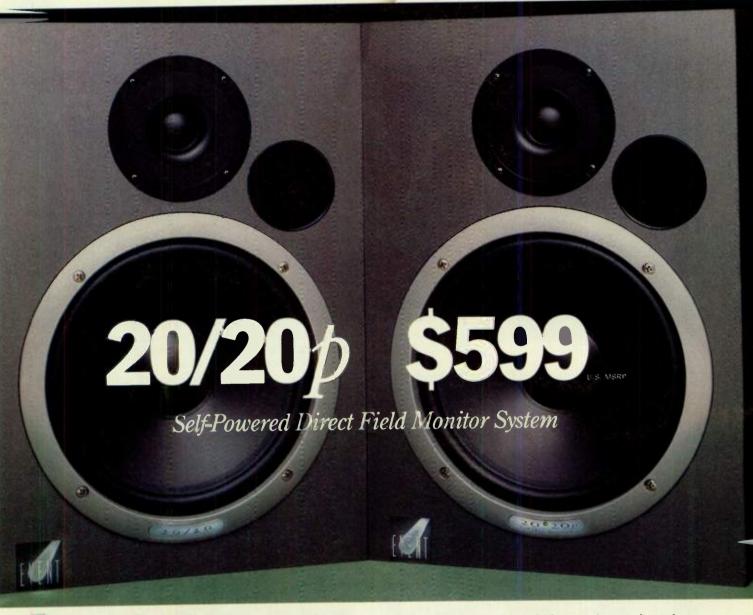
Frequency Response: ± 3dB from 8 Hz to 95 Hz (2 p Steradians), ELF system -6 dB frequency 95 Hz (not adjustable)

A unique (to ELF) concealment circuit ensures that the driver does not exceed its excursion limits by sliding a high-pass filter up in frequency as program levels demand. The real "trick" of the ELF process is making this dynamic filter unobtrusive in operation. The output level of the unit at 8 Hz is limited, so don't expect this sub to have the power of a massive subwoofer system. In fact, if you were playing back audio with 12 Hz energy that demanded the full 400 watts from the amplifier (boosted 18 dB by the ELF dual integrator), the unit will have the equivalent of 7 watts at the 95 Hz (crossover) frequency. This is the nature of the power-hungry ELF process. However, the audible result will be more musical and better defined than any other (non-ELF) sub you can





# The 'p' is for power.



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deliver the low end punch that you just can't get from a 6.5" speaker ("It's all physics."—Walter Dick, world renowned transducer designer). Like the matched internal cubic volume between the master and satellite cabinets, for identical left/right low-end response characteristics. Like the continuously variable low and high frequency trim controls—a must-have for tailoring the speakers to your unique listening environment.

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# Keeping It Legal



A review of Audioactive's MP3 Production Studio, which lets you avoid the Musicbots

## BY JON LUINI & ALLEN WHITMAN

"If you don't like the music, go out and make some of your own." (With apologies to Scoop Nisker.)

The lovely, talented, entrenched, and self-appointed power structure currently controlling the delivery of music to retail and radio knows the best defense is a good offense. Their crackdown (assisted by the RIAA) of illegal free MPEG Layer 3 (MP3)-based music sites is only one example of a pointed and furious fusillade. Inefficient software search engines, such as BMI's charmingly named "Musicbot," have been commissioned by the tenacious Collection Societies. These "bots" cruise the Web at the speed of a banana slug, seeking out audio files created with known freeware MP3 encoders. The adorable beastbot then reports back to its trainer with a list of files that match the search parameters.

Unfortunately, the results say nothing about the content of the files or whether the audio file is legally owned by its creator. It merely tells the trainer the name of the file and where that file is. Imagine the absolutely huge number of MP3-encoded files on the World Wide Web. Now cackle with glee, grateful you're not the drudge sifting through data to identify who's bad and who's good. Your dues at work! Let's do our part in shifting the balance from illegal to legal in the bots' master list of MP3 files. How can you do that? Let's try out a new, useful and fairly priced MP3 audio encoder.

Created by Big Brains at the privately owned Telos company located in the resurrecting-as-we-speak urban opportunity that is Detroit, the recently released Audioactive MP3 Production Studio (a software encoder) is a simple and workable tool for preparing digital audio files to be streamed and downloaded via the Internet.

The encoder is built on top of the expert Fraunhofer-Gesellschaft encoding algorithm. These are the same wacky German audio scientists who (while glaring balefully over their small rectangular glasses and pushing a lank lock of hair out of their eyes) were heard to intone: "One-percent packet loss is unacceptable!" The Audioactive MP3 encoder is at the top of a very short list of fully functional software encoders that make use of this algorithm. Other encoding engines may use lower quality algorithms, have slower processing time, a less common-sense interface, and more limited feature set, or (horrors!) be illegal. You may experience some discomfort while using them. Do not operate heavy machinery. See side of package for details.

You can try the Audioactive MP3 encoder for 30 days, free, by downloading a copy from www.audioactive.com. That should be more than enough time to plaster every piece of music in your CD collection to the server in your closet. Just kidding! Despite our fingerpointing at the shortcomings of the traditional music industry, the FezGuys believe that the best way to effect change is through responsible application of the tools at your disposal. As Mr. Mackey, the school counselor on

South Park, might tell you: "Kids...putting up audio files you don't own the copyrights to for free distribution on the Internet is bad. So don't be bad... hmmkay?"

Here's how the little chunky-monkey works: The Audioactive MP3 Production Studio takes WAV files as input and converts them to MP3 files in a wide variety of bit and sample rates. You can batch-compress many files at once. Files can be "drag-and-dropped" into the application, or browsed-for and individually added from within the app. Once adding a WAV file to the encoder, settings can be individually selected for the resulting MP3 file — a selection of bit rates ranging from small (16 kbps, 18 kbps, 20 kbps, 24 kbps - which will stream in real time over modems) all the way up to the not-small 128 kbps (for the fabled "near-CD" quality that justifies actually charging money for musical downloads).

It's our experience that, at the aforementioned modem-streaming bit rates, the best sound quality is achieved with sample rates of 16 kHz or higher. If you will use the lower bit rates; it's worthwhile sticking to the mono setting, thereby applying every spare bit available to the sonic clarity of your music.

A default parameter setting is available and is easy to modify. This makes it a simple task to preserve the quality settings you have discovered after some initial time spent testing different combinations of sample and bit rates. Speaking of which, there's also a "Preview" option that allows for quick sampling of the sound quality for different compression settings on 1-to-10-second portions of your WAV file. It's particularly useful since you have the ability to select where in your WAV file the preview starts.

For those interested in the size of compressed files at various bit and sample rates, the devoted Audioactive folks have also included a simple little "Stream Size Calculator" that allows you to set two variables and thereby compute a third variable of your choice using data rate, length of clip, and size. That's a pretty useful feature. You ask: "How did they come up with that one?" You know that tiny indicator on the dashboard that tells you what kind of

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CIRCLE 60 ON ERERISHED CARD

fuel mileage you're getting? Our guess is that they kidnapped that engineer from the car factory down the street and forced the poor deluded geek to twist megabytes instead of gas.

The Audioactive MP3 encoder works very well. It's reasonably fast (about twice the processing speed of the common freeware encoders). The bench-chained Fez-Testers found encoding time for a one-minute, 18 kbps, MP3 file on a Pentium 90 machine (not a huge powerhouse of a machine by to-

day's standards) to be around one minute and twenty seconds. A one-minute, 44.1 kHz, 16-bit file encoded to MP3 at 48 kbps and 24 kHz took approximately two minutes and thirty seconds. For those of you with experience in this field, you know that's pretty respectable. You can batch-process a bunch of files, step away from your machine, and go watch the docudrama about the rise and fall of Milli Vanilli. When you're finished retching in sympathy for those deluded dorks

your files will be nicely wrapped up and ready to go.

Audioactive also includes a "Processing Priority" setting to control how much computer power (CPU cycles) is being used, including a setting to only run when it's idle, thereby allowing you to batch encode a lot of sound files in a way that won't interfere with the normal use of your computer. This MP3 encoder is based on a well-respected and popular codec and, improbably enough, you can bug Audioactive for support on technical queries. They are proud of their little software darling and are eager to discuss improvements and field suggestions.

The Audioactive MP3 Encoder is a Windows-only product for the time-being. Overall, it's very good. The Lite version, at \$59, is very competitively priced. The Pro version, at \$369, seems a "leedle pricey," but if the extra doodads and what they call "higher quality encode" (for squeezing that extra oomph in "quality") improves your sense of selfesteem, a few hundred dollars are certainly worth the investment. Casual users publishing samples to the Internet will be more than pleased with the Lite version. The FezGuys give the Audioactive MP3 Software Encoder three and a half Fezzes out of a possible four. (See below for what that means.)

# E COMING UP IN EQ AUGUST

(SUR)ROUND TABLE. Still wondering what the future holds for surround sound? A panel of the industry's best — including Ed Cherney, Al Schmitt, Larry Hamby, Mike Bishop, Alan Parsons, Phil Ramone, Nile Rodgers, Chuck Ainlay, George Massenburg, Bob Ludwig, and Elliot Scheiner — discuss the important issues surrounding this burgeoning format.

TALES FROM THE PROS. EQ continues to put the "pro" in project studio with stories from the top people in the field. Case in point: Phil Ramone offers his views on what a second engineer should be responsible for; Roger Nichols discusses CD-R incompatibilities; go behind the scenes in director David Lynch's project studio; and more.

THE REGULARS. All of the columnists you know and love will be on hand to dole out the audio advice. Look forward to tips and techniques from Craig Anderton, Al Kooper, Mr. Bonzai, The FezGuys, Eddie Ciletti, and Roger Nichols.

For more information on this exciting issue, contact:
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(ext. 457), Christine Cali (ext. 454); Advertising Sales;
Albert Margolis, West Coast Sales (714-582-5951)

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### **FEZ SCORES**

1 Fez: Pass

2 Fez: If there's nothing else

3 Fez: I'll take it

4 Fez: I'll kill you to get it

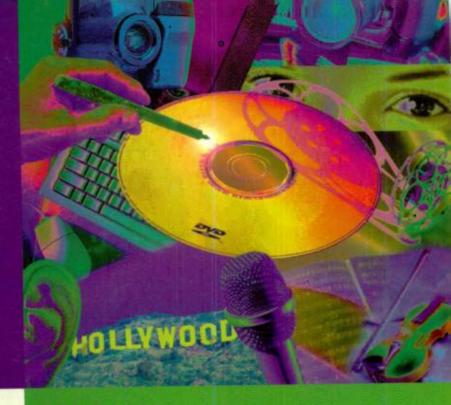
### LETTERS

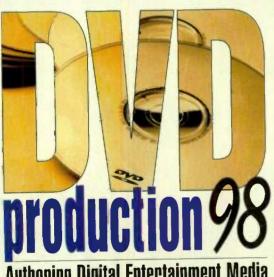
Fez y Fez — I have a question that I can't seem to get answered by local geeks: I'm trying to download a sample video with music. It's a 900k file, and when I try to play it, the message says it is an AVI file and I need an AVI-to-QT converter, and it says I ain't got it. I'm running a Mac PowerBook 1400c with System 8 and all that came with that system. Any idea what I need to play this thing, and where to get it? Thanks. The Fez is with me. — Bob Mithoff

This is not an uncommon predicament among MPEG users of the world! MPEG standards cover not only a number of different types and versions (Layer 1–3, MPEG 1, 2, etc.), but they also include audio-only, video-only, and audio and video together. Since there is

continued on page 168

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## **BAG END AUDITION**

continued from page 144

find for most project studio monitoring applications.

Connection to the unit is either through unbalanced RCA connectors or, if you have a very simple monitor chain, directly from the loudspeaker lines in parallel with your full-range loudspeakers. Both connections will actively sum the left and right channels to provide a mono subbass output. The line-level connections also include outputs that are high-pass filtered for connection to the inputs of your full-range loudspeaker amplifier. If you must use the loudspeaker-level inputs, no filtering is available for the full-range loudspeakers. Unfortunately, this will cause these loudspeakers to work too hard trying to also produce the very low frequencies and may cause destructive acoustical interference depending on the physical relationship between the two full-range loudspeakers and the Infrasub. With the high-passed, line-level output these interference effects (between the sub and the full-range devices) are only significant near the crossover frequency.

Bag End includes a concise manual - printed on the metal rear panel of the cabinet - with each unit. The instructions and technical data are right where you need them while making your connections and initial adjustments. Once the unit is in operation, the manual is safely stored where it is hard to lose (it is possible to rub off the printing), but handy if you need to make any changes (assuming you can still get to the rear of the unit).

The Bag End Infrasub-18 is a powered 18-inch subbass loudspeaker system capable of ruler flat response to 8 Hz, yet small enough to fit into practically any project studio. Using the patented ELF processor to operate the driver below resonance, this sub has authority!

MANUFACTURER: Bag End Loudspeaker Systems, 22272 Pepper Rd., Barrington, IL 60010. Tel: 847-382 4550. Web: www.bagend.com. Circle EQ free lit. #110. PRICE: \$1495

Wade McGregor is a consultant for Mc2 System Design Group, an acoustical consulting firm based in North Vancouver, BC. For more info visit their home page at www.mcsquared.com.

## **PROCONTROL**

continued from page 94

price): software plug-ins. If you decide you want Focusrite EQ, then just dial it up from the ProControl, and tah-dah! Drawmer gates, Auto Tune, Aphex Aural Exciter, TC Tools, Lexiverb, Dolby Surround Encoding, Q/Sound spatial enhancement, and many other high-quality digital audio plug-ins are available for Pro Tools. On the other hand, you are stuck with what is built into the expensive digital consoles.

## PRO TOOLS 4.2 PEEK

I mentioned that a new version of Pro Tools was required to support the Pro-Control, but that's not all you will find in the 4.2 update. Aux sends are now stereo! Yes, you heard me correctly, S-T-E-R-E-O. When you activate a stereo send, you get an additional little fader above the primary fader on the screen, along with a meter display and pan position indicator. It is now easy to set up a stereo headphone mix for overdubs. As a matter of fact, if you have a mix you like on the main faders, you can just copy it to the aux sends. Cool, huh?

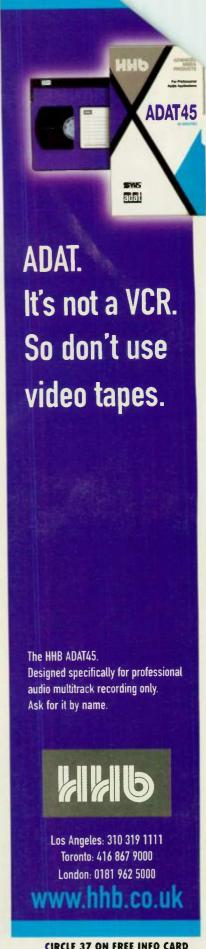
The next new feature I noticed was the increase in available tracks. With one dl24 card you can have 32 voices and 64 tracks, and with the dl24 expansion kit, you have 64 voices and 128 tracks of audio at your disposal. You are still limited to 72 channels of I/O, but I find that I always need more internal tracks for things like alternate solos or additional vocal attempts that need track space but don't compete for I/O.

### CONCLUSION

The ProControl has taken the Pro Tools environment from a hard-disk digital audio recorder with some mixing features to a full-fledged hardware digital recording console with built-in, multitrack, hard-disk recording. Digital audio production will never be the same again.

I still enjoy working at world-class studios with high-end gear, but in my project room, I can now have the same recording capability, and enough money left over to buy a small island country in the Caribbean. I just have to think of a name for it. How about Tortuga De Musica, or TDM for short?

MANUFACTURER: Digidesign, 3401-A Hillview Ave., Palo Alto, CA 94304-1348. Tel: 650-842-7900. Web: www.digidesign.com. Circle EO free lit. #141. PRICE: ProControl Main Unit: \$11,995; Pro-Control Fader Expansion Units: \$6495



CIRCLE 37 ON FREE INFO CARD

# scipe For Tape Restoration

If I knew you were coming I'd have baked a tape

BY EDDIE CILETTI



The aging of magnetic tape concerns everyone. Even as you read this, a DAT tape is waiting to clog the heads of your most difficult-to-clean-machine. This month, however, I'm not talking about digital anything. This summer, I'm spending my vacation in the past! Are you ready to explore the time-space continuum?

## TIME TRAVELING ... PLEASE WAIT!

People who make analog recording

part of their daily routine take for granted that the tape is new and the machine is operable. When called upon to re-master or remix a vintage analog recording, it goes without saying that the machine must be in top form and that your business should be insured. That said, there is one variable over which you have no control: tape condition. This is especially true for mid-'70s era high-output tapes such as Ampex 406/407 and 456, 3M 250, and AGFA 468. (It does not exclude those made well into the '80s.)

Don't attempt to play a vintage tape before reading this article! In order to expect full recovery, tapes that have been shelved for an extended period deserve special treatment.

## G00 "U"

All tape consists of three primary components: iron oxide, the "binder" or glue, and a plastic carrier. Acetate — which does not stretch and can be brittle — was used until the '60s. Though its oxide color is typically reddish-brown, black oxides were also used. Mylar/polyester eventually replaced acetate. It handles stress well and never becomes brittle. Sixties-era Mylar tapes with black oxide will be the least problematic.

Fig. 1 shows how easy it is to identify acetate simply by holding it up to light. (Acetate is translucent and polyester is opaque.) Tapes that have been poorly stored in an "uneven wind" manner (see the photo in fig. 1) will require extra care.

#### UNGLUED

Over time, the glue that binds the oxide

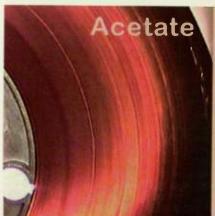
to the plastic will absorb moisture and break down. The symptoms of "binder breakdown" are immediately obvious even when rewinding. Tearing sounds and sluggish behavior are clues to quit before the oxide comes off. Machines with stationary lifters (Ampex 440/1200, MCI, and 3M) will, in many cases, stall well before reaching the halfway point. An older Studer, with its rotating guides, may not reveal any warning signs until the tape is played.

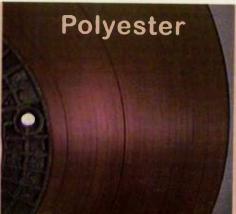
Playing a bad tape is not recommended. Just trying to get through a three-minute pop song will require several cleanings. Once the precious sonic material collects on transport parts it is worthless, not to mention difficult to remove. Do you really want to risk damage to the master for the sake of getting a transfer? There is hope, so be patient.

## SHAKE 'N' BAKE: PART I

Several years ago it was discovered that baking tape at low temperatures reactivated the binder, thus making tapes playable as new. While convection ovens and hair dryers have been called into service, the most elegant and affordable solution came to me from my brother-in-law, Gary, a metallurgist in St. Paul, Minnesota.

The device de jour is the Snack-master™ Pro model FD-50 [dehydrator] made by American Harvest (800-288-4545 or www.nesco.com/). At \$85, with shipping, it comes standard with four trays, each of which can comfortably handle a reel of 1/2-inch tape. (Additional trays and jerky mixes can be ordered. Allow four weeks for delivery.) To accommodate 1 and ≥inch tapes,







modify one tray by cutting out the plastic spokes along the perimeter with a wire cutter. This creates a "dummy tray," adding height to the tray below.

Fig. 2 shows the dehydrator as intended, with standard and modified trays overhead. Do not process food and tapes together!

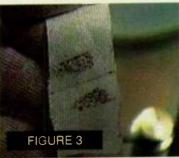
The FD-50 features an adjustable thermostat and a built-in fan to circulate the air. I checked for dangerous magnetic fields and found none, though I do use the upper trays just to be safe (the fan is in the bottom of the unit). The heat is adjustable from 95 degrees F to 145 degrees F and is accurate within five degrees when checked with a photographic thermometer.

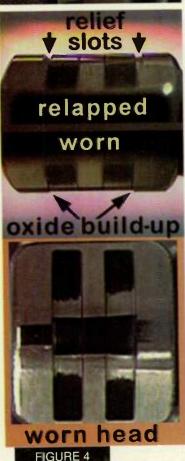
## STORAGE AND HANDLING TIPS

Storing tapes "tailout" after having been played minimizes the effects of printthrough and improves the chances of longterm survival. "Printthrough" is a form of mechanically induced tape echo. The winning combination of high record levels and fast winding will transfer signals from one layer of tape to another. Tail-out storage will hide printthrough as "post echo.'

If you discover that the tape is unplayable while in fast wind, come to a slow stop. Fast winding the tape may cause fur-







ther damage because oxide may adhere to the back of the previous layer. In addition, old splices may come apart. For the safest journey to the head, play the tape backwards first, then forward to create an even pack.

The best machines for winding traumatized tapes are those with all rotating guides. The Ampex ATR-100 and most Studer machines are well suited to the task. In addition, you will want to remove the head assembly, otherwise a gooey oxide/binder cocktail will quickly collect on all stationary surfaces (heads, lifters, and guides). Model 800 series Studer machines are dangerously powerful, so don't use the remote, pay close attention, and be ready to stop at a moment's notice.

If uncertain of the tape's condition but the pack is good, bake it anyway. Do not bake acetate!

## RESTORATION

When baked, the tape will expand and become loose around the hub. For this reason, use flanges to protect the tape from coming apart. Cooking temperature is between 130 degrees F and 140 degrees F. Tapes wound on plastic reels with small hubs should be rewound onto large reels with NAB hubs. Be careful to thread the tape around the hub without any "folds." The goal is to

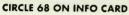
continued on page 155



JULY

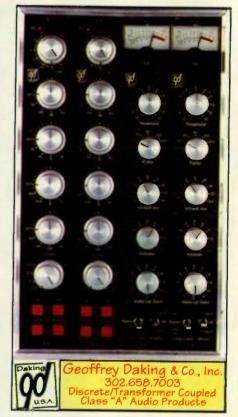
# EC SHOPPER







CIRCLE 7 ON INFO CARD



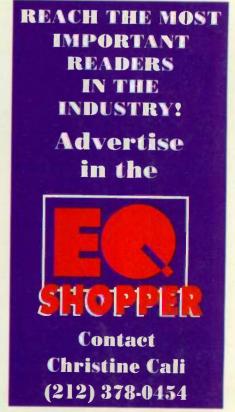
CIRCLE 34 ON INFO CARD



CIRCLE 83 ON INFO CARD



CIRCLE 82 ON INFO CARD



## MAINTENANCE

continued from page 153

minimize "mechanical distortions" that can be impressed upon subsequent layers, causing dropouts.

Cooking times vary with tape width — three to four hours (minimum) for 1/4-inch tapes, five hours for 1/2-inch, six hours for 1-inch, and eight hours for 2-inch tapes. Temperature, tape condition, and number of reels will also affect the baking period. You may want to flip wide tapes once every hour. Afterwards, return the tape to its box, allowing it cool for the same amount of time it was baked.

To confirm the process, I sandwich a piece of cloth around the tape while rewinding. Fig. 3 shows what happens when the tape is not baked. A minimal amount of oxide shed is normal. Excess shed will cause friction to build up within the cloth. If so, re-bake.

## A CLEAN MACHINE

Worn heads will aggravate the process of getting a good transfer. Fig. 4 features multiple views of a 2-track head. Lighting anomalies conveniently darkened the wear pattern of the "worn head," which appears as a horizontal bar in the center. From the side view, arrows point to where oxide gets trapped in the grooves worn by the tape. Use a toothpick or business card to remove stubborn dirt.

Worn heads like this one should be re-lapped to improve high-frequency response and reduce low-frequency muddiness. To prevent a future groove from trapping dirt and degrading performance, relief slots can be cut into the surface (see the top image of fig. 4). Contact John French at JRF Magnetic Sciences (973-579-5773 or www.jrfmagnetics.com/) for details.

## DESSERT EYE-LAND

The dehydrator is perfect for tapes, bananas, and sun-dried tomatoes. The addition of this culinary tool to your studio gear will surely generate restoration business as well as improve client health by upgrading the quality of their junk food. Enjoy!

Eddie C. has a library of tapes to restore from his days as Italian heavymental crooner Fred Zeppole. Visit his Web site — www.tangible-technology.com — or send e-mail to: edaudio@interport.net.

## **ROLAND VS-SERIES**

continued from page 35

The new VS-1680 represents a considerable step up from the VS-880. This product inspires gear lust. Its large, backlit LCD provides far more visual feedback during editing operations. This model doubles both the number of virtual tracks and simultaneously available playback tracks to 256 and 16, respectively.

If your work involves dialog editing or sound effects for postproduction, this is the VS recorder for you. Track naming is implemented on this model, and it is the only unit that provides true waveform editing functions. Hence, the VS-1680 makes tasks like removing lip smacks or breath pops child's play. While these tasks can be accomplished on the VS-880, that model was never intended for such work and, as a result, is not well suited for the job.

Like the VS-840, the VS-1680 has the EZ Routing system for the purpose of simplifying signal routing and mixing functions. One particularly interesting aspect of this recorder is a nondocumented feature that, for the purpose of this overview, we'll call "Easier than EZ Routing." By pressing and holding the Status key for any given track, you can immediately see all signal routing parameters as well as create any additional ones — this includes input routing, track routing, and effects return routing. This capability makes working with the VS-1680 extremely fast.

With both the VS-880 and VS-1680, you can add optional CD recorders that not only enable you to mixdown direct to CD, but in the case of the VS-1680, also provides a convenient method for backup. The ability to burn your own CDs not only enables you to keep your project in the digital domain from start to finish, but, seeing as these are multisession CDs, you can actually perform several mixes to the same disc. You might experiment with different versions of comped tracks and monitor your work in a variety of listening environments. This is a great way to learn what does and does not work. Mixing to CD also gives you the ability to deliver your work in a format that just about anyone can immediately listen to.

Third-party development is good and getting stronger all the time. With developers providing software control templates and data conversion utilities that open the door to greater compatibility with other digital recording formats, the VS-880 and VS-1680 are likely to expand their presence in a variety of professional studio environments.





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## Digital 8 Bus Mixing Console

Well, it's finally here and just like the analog 8 bus a few years back, it's everything you've anticipated Great sound quality, full recording and mixdown capabilities, motorized faders and an array of digital features geared to take you flying into the next century.

- · 48 channels of automated compression, gating, EQ and delay
- . Built in 3-way meter display keeps you on top of your mix
- Built-in meter bridge,
   Ultramix II automation for complete control, hook up an S-VGA monitor. and you'll feel like you spent a lot more money.

  • All functions can be automated, not just levels and mutes. Store
- EQ, reverb compression, gating and even Aux send informa
- Fast SCENE automation allows you to change parameter snapshots on every beat.
- · Reads Standard MIDI tempo maps, displaying clock into on the built-in position counter.
- Truly the cutting edge of mixing technology



## **Panason**

## WR-DA7 Digital Mixing Console

Stop dreaming about your digital future, it's here! The Panasonic WR-DA7 digital mixer fea-Stures 32-bit internal processing combined with 24-bit A/D and D/A converters as well as moving faders. instant recall, surround sound capabilities, and much more. Best of all, it's from Panasonic

#### FEATURES-

- · 32 Inputs/6 AUX send/returns
- · 21-hit converters
- · Large bacilif, LCD screen displays EQ, bus and aux assignments, and dynamic/delay settings.

  • 4-band parametrir, EQ
- Choice of G..te/Compressor/Limiter or Expander on each channel
- 5.1 channel surround sound in three modes on the bus outputs
- · Output MMG
- Optional MIDI joystick



## **TASCAM**

## TMD1000 Digital Mixing Console

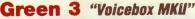
ou want to see what all the digital mixing buzz is about? The NEW TMD100 from Tascam will have you smilin' & automati in no time. If features fully automated EQ, lev els, muting, panning and more in an attractive digital board with an analog 'feel'. Your digital luture never 'ooked, or sounded, so clear

## FEATURES-

- 4 XLR mic inputs, 8 1 4" balanced TRS inputs . 20-bit A/D B/A conversion, 64x oversampling on iaput, 128x on output.
- · Store all settings fully MIDI compatible
- · Optional IF-TD1000 adds another 8 channels of TDIF and a 2-channel sample rate converter.
- Optional FX-1000 Fx board adds another 4 dynamic processor and another pair of stereo effects



# **Focusrite**







he Voicebox MKII provides a signal path of exceptional clarity and smoothness for mic recording, combining The Voicebox MKII provides a signal pain of exceptional painty and smoothings by and full Focusrite dynamics.

The new MKII now includes a line input for recording and mixdown applications.

### FEATURES-

- Same mic pre section as found on the Green Dual Mic Pre includes +48V phantom power, phase reverse, and a 75Hz high-pass filter. Mute control and a true-VU response LED bargraph are also provided
- EQ section includes a mid parametric band with frequency and gain control as well as a gentle bell shape to bring out the character of the voice.
- Dynamics section offers important voice processing functions of compression and de-essing combined with a
- noise reducing expander Single balanced Class A VCA delivers low distortion and a S/N ratio as low as -96dBu

## t.c. electron

Finalizer Plus





mproving on the multi-award winning Finalizer platform. The Finalizer Plus delivers an unprecedented level of clarity, warmth and punch to your mix. Inserted between the sterno output of your mixer or workstation and your master recording media, the Finalizer Plus dramatically rounds out your material, creating that "radio ready" sound.

- Balanced Analog as well as Digital outputs including AES/EBU, S/PDIF, & TOS. 24-bit precision A/d & D/A Converters
- . 5-band 24-bit stereo EQ
- Enhance De-essing, stereo adjust or digital radiance
   Real-time gain maximizer
- · Variable slope multi-band expander
- · Multi-band compressor
- Monti-Data compressor
   Word Clock Sync
   MIDI section useful for controlling sequencer fades or any of the Finalizer's parameters from a remot€ MIDI controller.

## exicon

## PCM81

**Multi-Effects Processor** 



oice among studio effects processors, and more. Ma he PCM-81 has everything that made the PCM80 the to effects, more algorithms, longer delay and full AES/EBU I/O.

- FEATURES-
- Presets include p tch. reverb, ambience, sophisti cated modulators, 20 second stereo delays, and dynamic spatialization effects for 2-channel or surround sound applications
- · 2 dig tal processo's incluning Lexicon's Lexchip for the reverb and a second DSP engine for the other effects.
- 24-bit internal processing
  Dynamic patching matrix for maximum effects control.
- · PCM card slot

# Focusrite



The Green 2 Focus EO is suitable for a variety of applications combining a Focusrite equalizer section with a multi-source input section. Use it as a high-quality front end for recording applications or patch it into the /return loop to upgrade a single channel of console eq. either way, it sounds great.

### FFATURES-

- XLR & 1/4" inputs are similar to the Dual Mic Pre but have been adapted to cope with a wider range of levels.
- VU metering via a 10-LED bargraph
  EQ section derived from the Red and Blue range processors for superb audio quality

VC1 Studio Channel



Channel offers three pieces of studio gear in one. It features



transformer coupled mic preamp, a great compressor and an enhancer unit all in a 2U rackmount design. Find out why more and more studio owners can live without one . Compression In/Qut and VU/compression meter

## FEATURES-

- 48V phantom power, Fully balanced operation
- Mic/Line input switch
   Mono photo-optical compressor
- High pass filter for large diaphragm mics
   Extra XLR input on front makes for easy patching
- Twin balanced XLR outputs with one DI XLR output for stage use

  • Enhancer In/Out switch and enhance ind cator
  • Internal power supply 115/230V AC



## Blue Series 160S Stereo Compressor

he dbx 160S Combines the best features of all the great dbx compressors in a well-built unit where the crafts-



manship is as stunning as the engi This is truly a desirable compresso

- 127dB dynamic range Program dependent "Auto", or fully variable attack and release Hard knee/OverEasy switchable.



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VS1680 Digital Production Studio

The new VS-1680 Digital Studio Workstation is a complete 16 track, 24-bit recording, editing, mixing and effects processing system in a compact tabletop workstation. With its advanced features, amazing sound qual ity and intuitive new user interface, the VS-1680 can satisty your wanderlust

## FEATURES-

- 16 tracks of hard disk recording, 256 virtual tracks.
  24-bit MT Pro Recording Mode for massive headroom
- and dynamic range.

   Large 320 x 240 dot graphic LCD provides simultaneous level meters, playlist, EQ curves, EFX settings, waveforms and more
- 20-bit A/D D/A converters
   2 optional 24-bit stereo effects processors (VS8F-2) provide up to B channels of independent effects pro-
- 12 audio outs 8x RCA, 2x stereo digital & phones



- · New EZ routing function allows users to creat save various recording, mixing track bouncing, and
- tom power, 6 balanced 1/4" inputs, and 1 stereo digital
- Direct audio CD recording and data backup using optional VS-CDR-16 CD recorder.



## **Digital Recording Studio**

ie new D8 Digital Recording Studio features an 8-track recorder, a 12-channel mixer, onboard effects, and basically everything else you'll need to record and mix your music, you supply the talent

### FEATURES-

- · 8-track recorder, 12-channel mxer
- 1.4GB hard disk for up to 4.5 hours of recording on a sinale track
- · High and low EQ on each channel
- · 130 high-quality stereo digital effects for complete recording in the digital domain.
- · MIDI clock sync, SCSI port and S/PDIF digital interfaces all standard



## other comprehensive mixer templates for instant recall 10 audio inpits. 2 balanced XLR-type inputs w/ phan-

input (optical/coaxial)





DA-98 Digital Audio Recorder

he DA-98 takes all the advantages The DA-98 takes all the duvating of offered by the DTRS format and significant for the profesnificantly ups the ante for the profes-sional and post-production professional alike. With enhanced A/D and D/A convertors, a comprehensive LCD display and full compatibility with the DA-88 and DA-38, the DA-98 delivers the absolute best in digital multitrack functionality

#### FEATURES-

- Confidence monitoring for playback and metering
   Individual input monitor select switch facilitates easier
- checking of Source/Tape levels

  Switchable reference levels for integration into a variety of recording environments with internal tone generator

  Digital track copy/electronic patch bay functionality
- · Comprehensive LCD display for easy system navigation
- DA-88

· D. dicut d function/numeric keys make operation easier

- Built-in sync with support for MMC and Sony P2
   D-sub connector (37-pin) for parallel interface with external controlle
- Optional RM-98 rack-mount ear for use with Accuride 200 system

A standard digital multitrack for post-production and winner of the Emmy award for technical excellence, the DA-88 delivers the best of Tascam's Hi-8 digital format. Its Shuttle/Jog wheel and track delay function allow for precise dueing and synchronization and the modular design allows for easy servicing and performance enhancements with third-party options.

e DA-38 was designed for musicians. Using the same Hi-8 format as the highly acclaimed The DA-38 was designed for musicians. Using the same throughout a sure an extremely DA-88, the DA-38 is an 8 track modular design that sounds great. It features an extremely fast transport, compatibility with Hi-8 tapes recorded on other machines, rugged construction, ergonomic design and sync compatibility with DA-88s

ADAT XT20

The New ADAF-XT20 provides a new tandard in audio quality for affordable professional recorders while remaining completely compatible with over 100,000 ADATs in use worldwide. The XT20 uses the latest ultra-high fidelity 20-bit over-sampling digital converters for sonic excel-

# New Digital Audio Recorder

#### FEATURES-

- lence, it could change the world. 10-point autolocate system
   Dynamic Braking software lets the transport quickly
- wind to locate points while gently treating the tape · Remote control
- · Servo-balanced 56-pin ELCO connecto
- · Built-in electronic patchbay
- Copy/paste digital edits between machines or even within a single unit. Track Copy feature makes a digital. clone of any track (or group of track ) and copies it to any other track (or group) or the same recorder



## CDR-800 Compact Disc Recorder

he new CDR-800 Compact Disc Recorder The new CDH-800 Compact List Trees The From HHB is built rock-steady for the best recording on this widely accepted format. You can record direct from either analog or digital sourcs and it comes loaded with features, making it ideal for professional studios looking to output quality CDs.

#### FEATURES-

- Built-in Sample rate converter
- · Analog and digital inputs and outputs
- - · 1-bit A/D converters for lowest possible distortion

  - Synchronized recording and editing
     Digital fader for natural fade-in and fade-out

# SV-3800 & SV-4100

he SV-3800 & SV-4100 feature highly accu-The SV-3800 & SV-4100 reacure manning with rate and reliable transport mechanisms with search speeds of up to 400X normal. Both use 20-bit D'A converters to satisfy even the hiest professional expectations. The SV-4100 adds features such as instant start, program & cue assignment, enhanced system diagnostics.



Cue assignment, emanticu system uniquiositis.

multiple digital interfaces and more. Panasonic

DATs are found in studios throughout the world and are widely recognized as the most reliable DAT machines avail able on the market today

#### FEATURES-

- 64x Oversampling A/D converter for outstanding phase characteristics
- Search by start ID or program number
   Single program play, handy for post.
- · Adjustable analog input attenuation, +4/-10dRu
- L/R independent record levels
   Front panel hour meter display
- 250x normal speed search

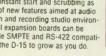
#### TASCAM DA-30MKII

A great sounding DAT, the DA-30MKII is a standard mastering deck used in post-production houses around the world. Among many other pro features, its DATA/SHUTTLE wheel allows for high-speed cueing, quick program entry and fast locating.

## FEATURES-

- ultiple sampling rates (48, 44.1, and 32kHz).
- Extended (4-hour) play at 32kHz.
   Digital I/O featuring both AES/EBU and S/PDIF. XLR balanced and RCA unbalanced connections
- · Full function wireless remote
  - · Variable speed shuttle wheel
  - · SCMS-free recording with selectable ID
  - · Parallel port for control I/O from external equipment

The new Fostex D-15 features built in 8Mbit of RAM for instant start and scrubbing as well as a host of new features aimed at audio he new Fostex D-15 features built in 8Mbir post production and recording studio environ ments. Optional expansion boards can be added to include SMPTE and RS-422 compatibility, allowing the D-15 to grow as you do



## FEATURES-

- Hold the peak reading on the digital bargraphs with a choice of 5 different settings
- Set cue levels and cue fimes Supports all frame rates including 30df
- Newly designed, 4-motor transport is faster and more efficient (120 minute tape shuttles in about 60 sec.) · Parallel interface · Front panel trim pots in addition to
- the level inputs



## D-15TC & D-15TCR

The D-15TC comes with the addition of optional chase and sync capability installed. It also includes timecode reading and output. The D-15TCR comes with the further addition of an optional RS-422 port installed, adding timecode and serial control (Sony protocol except vari-speed)

ncorporating Sony's legendary high-reliabil-ity 4D.D. Mechanism, the PCM-R500 sets a new standard for professional DAT recorders. The Jog/Shuttle wheel offers outstanding operational ease while extensive interface options and multiple menu modes meet a wide range of application needs.



### FFATURES-

- · Set-up menu for preference selection. Use this menu for setting ID6, level sync threshold, date & more. Also selects error indicator
- Includes 8-pin parallel & wireless remote controls
- SBM recording for improved S/N (Sounds like 2Gbit)
- · Independent L/R recording levels
- Equipped with auto head cleaning for improved

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## MIDI

Time Piece™ AV 8x8 Mac/PC MIDI Interface

The MTP AV takes the world renowned MTP II and ados synchronization that you really need like video genlock. ADAT Lync, word clock sync, and even Digidesian superclock!

#### FEATURES-

- Same unit works on both Mac & PC platforms.
   8x8 M/DI merge matrix, 121 M/DI channels.
- ully programmable from the front panel. 128 scene, battery-backed memory
- · Fast 1x mode for high-speed MIDI data transfer.

## Digital Time Piece™ Digital Interface

hink of it as the digital synchronization hub for your recording studie. The Digital Timepiece provides sta-the, centralized syric for most analog, digital audio, and indee equipment. Lock log-ther ADATS, DA-88's. ProTools, word clock, SPDIF, video, SMPTE, and MMC computers and devices tlawlessly. It ships with "Clockworks" software which gives you access to its nany advanced features and remote control of some



Studio 64XTC Mac/PC MIDI Interface

e Studio G4XTC takes the assorted, individual pieces of your studio-your computer, MIDI devices, digital and analog multitracks and even pro video decks, and outs them all in svoc

## FEATURES-

- 4 Ir 4 Out 64 channel MIDI/SMPTE interface/patchbay with proverful multitrack & video sync features
- · ADAT sync with MIDI machine control
- Simultaneous wordclock and Superclock outp 44 1kHz or 48kH; for perfect sync with ADAT, DA-88 and ProToxis
- Video and Blackburst in (NTSC and PAL)
- · Cress-platform Mac and Windows comparibility





Starting with 64X oversampling, Akai's 5-Series Samplers use 28-bit internal processing to preserve every number of your sound and the outputs are 18- and 20-bit to ensure reproduction of your sounds entire denamic range. These three new samplers add powerful capabilities, ease-or-use, expandability and affordability to set the standard for professional samplers

## **Roland**

XP60 & XP80 Music Workstations

The XP-80 delivers everything you've ever wanted in a music workstation. An unprecedented collection of carefully integrated features provide instant response, maximum realtime control and incredible user expandi-bility.
The XP-80 features a pro-quality 76-note weighted action keyboard while the NEW XI



#### XP80 FEATURES-

- · 64-voice polyphony and 16-part multitimbral capability 16 Mbytes of internal waveform memory; 80Mbytes when fully expanded 16-bit linear format)
- 16-track MRC-pro sequencer with direct from disk playback. Sequencer holds approx. 60,000 notes
- New sequencer functions like "non-stop" loop recording and refined Groove Quantize template
- Enhanced realtime performance capability with advanced Arpeggiator including MIDI sync and guitar strum mode and Realtime Phrase Sequence (RPS) for on-the-fly triggering of patterns
- · 40 insert effects in addition to reverb and chorus
- 2 pairs of independent stereo outputs, click output jack with volume knob
- · Large backlit LCD display



Roland's SR-JV80-Series wave expansion boards provide JV and XP instrument owners a great-sounding, cost-effective way to customize their instruments. Each board holds approx. 8Mb of entirely new waveforms, ready to be played or programmed as you desire.

#### Boards Include-

Pop, Orchestral, Piano, Vintage Synths, World, Super Sound Set, Keys of the 60's & 70's, Session, Bass & Drums, Techno & Hip-Hop Collection.



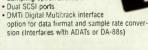
## KURZWEIL

**K2500 Series** Music Workstations

The K2500 series from Kurzweil utilizes the acclaimed V.A.S.T. technology for top-quality professional sound. Available in Rack mount, 76-key, and 88 weighted key keyboard configurations, these keyboards combine ROM based samples, on-board effects, V.A.S.T. synthesis technology and ull sampling capabilities on some units

#### FEATURES-

- True 48-voice polyphony
- · Fluorescent 64 x 240 backlit dis-
- Up to 128MB sample memory · Full MIDI controller capabilities
- · 32-track sequencer
- Sampling option a railable





## Trinity Series Music Workstations DRS

Korg's Trinity Series represound synthesis and an ncredible user interface. It's touch-screen display is like nothing else in the industry, allowing you to select and program patches with the touch of a finger. The 24MB



using ACCESS which fully digitizes sound production from source to filter to effects. Korg's DSP based Multi Oscillator Synthesis System (MOSS) is capable of reproducing 5 different synthesis methods like Analog synthesis. Physical Modeling, and variable Phase Modulation (VPM).

## FFATURES-

- 16 track, 80 00 note MIDI sequencer
- · Flexible assignable controllers
- · DRS (Digital Recording System) features a hard disk recorder and various digital interfaces for networking a digital recurding system configured with ADAT, DAT recorder and hard disk.
- library using optional 8MB Flash ROM board
- 256 programs, 256 combinations
   Reads KORG sample DATA library and AKAI sample

TRINITY 61-key

88 Weighted-key/Solo Synth

76-key/Solo Synth

61-key/Solo Synth

\*(Digital IF, SCSI, Hard Disk Recorder, and sample Playback/Flash ROM functions are supplied by optional upgrade boards

Winner of Pro Audio Review's PAR Excellence Award in 1997, Hafter's

TRM8s provide sonic clarity previously found only in much more expensive speakers. They feature built-in power, an active crossover and Hatler's patented Trans-nova power



- 45Hz 21kHz, ±2dB 75W HF, 150W LF
- · Electronically &
- Acoustically matched



These new close-field monitors from Mackie have made a big stir. They sound great, they're affordable, they're internally bi-amped "What's the catch?" Let us know if you find one

## FEATURES-

- 150W Bass amp. 100W Treble amp
- Full space, half space and quarter space placement compensation
- Frequency Response 39Hz to 22kHz ±1.5dB



## TANYOY Reveal

The latest playback monitor from Tannoy, the Reveal has

an extremely detailed. dynamic sound with a wide, flat frequency response

#### FEATURES-. 1" soft dome high fre-

- quency unit
- Long throw 6 5" bass
- · Magnetic shielding for close use to video monitor
- Hard-wired, low-loss crossover
- · Wide flat frequency response
- · Gold plated 5-way binding post connectors





Audiomedia III Digital Audio Card

Working on both Mac and Wesdows OS systems.

Audiomedia III will transform your computer into an powerful multitrack workstation Compatible with a wide variety of software options

Digidesign and Digidesign develop-

ment partners. Audiomi dia

III features 8 tracks of play back, up to 4 tracks of recording 24-bit DSP processmultiple sample rate support and easy into justion with leading MIDI sequencer DAW so tware programs

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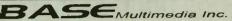
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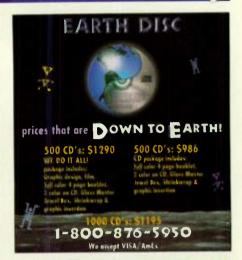
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# The Key to Studio Security

Keeping thieves out is the best way of keeping your gear in

BY MARTIN POLON



It never ceases to amaze me when I am bombarded with this sad story or that sad story of how this facility or that was just struck by authorized agents of the "Midnight Audio Supply." It's not that we don't feel compassion for those whose facilities are left with nary a spare XLR connector, it's that the whole thing is so frustrating because this is always the classic case of locking the barn after the horses have been led away. Worse, we have already "told you so" — many time in the pages of this magazine.

Let's face the facts that our industry is somewhat more prone to inside, as well as outside, break-ins than many other businesses. Size has nothing to do with it. Small facilities frequently have \$50,000 worth or more (sometimes far more) of highly mobile electronics in a single room. In fact, when was the last time that somebody stole a huge SSL mixing board without the aid of a gantry crane and four weight lifters?

Every time a studio of any size advertises in local musician's magazines, you also reach a small and exclusive "clientele" that you would really rather not. The same thing happens every time you book a new group to record and fear that they may be there to "case the joint." How about hiring that scruffy young man with the honest face to clean up after sessions because he wants to "break into recording." Indeed

he may well break into (a) recording (studio) — yours!

Now this is not to say that everyone you meet is dishonest in the biz — quite the opposite. But the potential is there, and there are just enough dishonorable folks to make the whole business of studio operation somewhat more exciting than it needs to be unless your recording facility is made physically secure.

There is a way out of this risk, and it is not expensive. What is so frustrating is that the simple use of relatively inexpensive locks can provide a level of security that will help you to sleep at night and may reduce your insurance rates.

1. Spend whatever is necessary to protect your facility based on the recommendations of a qualified lock-

smith. It is amazing that studio operators who will not flinch at the occasional \$20,000 purchase of studio gear will insist on buying all of their locks at the neighborhood hardware store for under \$100 in total and having their studio techs install the locks.

2. Verify the reliability of a locksmith by first soliciting recommendations from the police and/or a locksmith association and then asking the recommendee for a client list whom you might call for evaluation. Legitimate and reliable purveyors will not mind your scrutiny.

3. Replace your doors to the outside world and to individual studio rooms with steel fire doors and steel frames. These may cost in excess of \$300 a unit, but to protect a \$100,000 recording facility (give or take), that is small potatoes indeed. Make sure the doors open so that the hinges are inside rather than out, so that the hinges cannot be attacked.

4. Use the best quality deadbolt you can buy, and consider using alternative lock/key sets. Specify that all locks both to the outside and on studio doors are two-way locking deadbolts. That is to say

that a key is required to open the door from either side. During business hours, main doors will probably have to remain unlocked to meet fire code. But at night, when it counts, the inside keyed deadbolt will stop cold any thieves who were thinking of leaving with equipment by the front door. That is especially useful in dealing with those who have entered through a ventilator or unbarred window (which will then hopefully be barred — after the fact).

5. Post on the door of your facility a vandalism proof notice to all locksmiths that your doors should not be opened by them without a police representative at the location. That should stop the scam of a gorgeous woman calling locksmith's out of the phone

book because "I'm locked out of my studio."

6. Use your locks to sector your facility. The office area should be locked out of reach to groups recording nights and weekends. So should other recording rooms in your plant not being used.

7. Keep your keys in a heavy-duty key cabinet behind a well-secured door and hidden behind a poster, etc. Have the locksmith stamp your keys with a die that says: "Do Not Duplicate."

8. If you lose keys, consider having your locksmith rekey the facility. The rise in your insurance rate after a "hit" will be far greater than the

cost of rekeying.

The bottom line here is to spend a little money to protect your facility properly so that you may avoid spending sleepless nights worrying about your studio complex. Dogs, electronic alarms, night watchman, private security services visiting your facility hourly, etc., are all other real options to consider — depending upon the size of your operation and your location. But simple professional locksmithing can eliminate the vast majority of your potential problems.



## **JSS THE BOARD**

ied from page 170

per. It results. The reason there was no problem was because I was always referencing to the same piece of tape.

This time, however, I had some audio material that was on a slave tape that needed to be transferred to the master tape. Both of the tapes were formatted so that the SMPTE and CTL tracks started at 00:00:00:00. The audio was in the same place on both tapes. They were actually DASH locked together with the CTL track reference when the recording took place. The audio on the master and the slave started at one minute. I locked up Pro Tools to the SMPTE track on the slave tape and dumped the audio into Pro Tools. I then put up the master tape and locked up the Pro Tools to the same time. Theoretically, the audio should have sync'd up and transferred correctly to the master tape, NOT!

It turns out that the SMPTE is not exactly aligned with the CTL track. Usually I always have a common audio track that was cloned from the master to the slave that I can later use to make sure that everything lines up correctly. This time all of the tracks were needed for recording new ma-

terial, and since I have never had any problems locking masters with their slaves, it seemed safe to erase the common reference track. Murphy's law strikes again.

What it all boils down to is that if there is a possibility that you will have to use an alternate time reference to synchronize your masters, then make sure that you have a copy of one master track on the slave tape. The best choice would be a click, or snare drum, or other percussive track, but in a pinch, anything will do. When you transfer the slave tracks back to the master, transfer the reference track also. You can then load the original and copy of the reference tracks into Pro Tools and look at them to see if they are lined up. If they are off, you can see exactly how much to offset the slave tape and make the transfer again. When you make the corrected transfer, load the tracks into Pro Tools again to make sure that you made the offset in the right direction. If the tracks line up, then you are done.

I no doubt will have more horror stories to tell you about in the future, but I am now sworn to secrecy. Maybe I can code the information into a normal column so nobody but you can read it. How about poking holes in the eyes of the guy on the park bench on the *Royal Scam* CD cover and overlay it on my column? But, of course, you can tell no one.

## **FEZGUYS**

continued from page 148

no standard single application that can handle playback of all of the possibilities (though QuickTime is coming close), you need to stockpile your computer with players for each commonly used type. Here's how to make an intelligent guess on whether the file you are downloading is MPEG audio or video: If it ends in .mp2, .mp2a, .mp3, or .m3u, it is an audio file. If it ends in .mpg, it's likely to be a video and audio MPEG file. You should be able to view video MPEG files with the latest version of QuickTime. For the Mac, you can also search the Internet for "Sparkle" (if you have problems with QuickTime's Movie Player application). There's still a lot of confusion stemming from users' unfamiliarity with correct file extensions. In your particular case, it sounds like you have come across an AVI file (commonly named "file.avi"), which is a Windows video format. QuickTime 3.0 claims to be able to play AVI files, so if you don't have 3.0, take a stop over at quicktime.apple.com for a free upgrade!

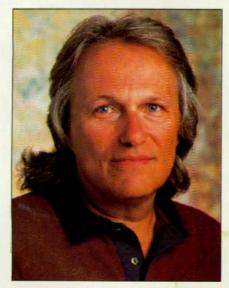




CIRCLE 95 ON FREE INFO CARD



# Non-Disclosure



# Warning, the following column contains the following: Adult Language; Nudity

## BY ROGER NICHOLS

I received bags of e-mail with questions about whether or not I was working on the new Steely Dan album. The problem is, I can't discuss it. Donald and Walter made me sign a non-disclosure agreement. They won't let me tell anyone what goes on behind closed doors, or even admit that the project exists. This is serious stuff! If you don't believe me, I can prove it. Here is a copy of said agreement:

## **NON-DISCLOSURE AGREEMENT**

I, Roger Nichols, being of sound mind and body, do hereby agree to the following terms and conditions of my employment as engineer-in-chief of the new Steely Dan album, *Two Against Nature*:

1. I shall neither compose, nor shall I publish, any contemporaneous accounts pertaining to the events taking place during the making of said Steely Dan record, during the lifetimes of the principal artists Donald Fagen and Walter Becker, or until uch time as all three of us are dead and gone

2. For the duration of the recording project I shall refrain from using the following terms of art in any of my regularly published columns in EQ or anywhere else:

a) "increments"

b) "milliseconds"

c) "SlowTools"

d) "punch at the section"

e) "SampleSlut"

f) "furlongs per fortnight"

g) "Why a duck? Why not a chicken?"

h) "adrenal cotex"

i) "I won't take it home, I'll just eat it here"

J) "none of my tricks?"

k) "cantilevered clit-shelf"

In deference to the fragile mental

health of myself and my employers, I will refrain from referencing, in whole or in part, the following anecdotes: "2nd Arrangement," "your everlasting summer," "punch at the section," "track 25," "Malibu Sheriff," "mother/ daughter undercover agents," "the girl with four nipples," and "what do mullet look like?"

4. I will refrain from leaving pamphlets and spec sheets for expensive audio and computer gear on the producer's desk or anyplace else where it will likely be seen by Walter and/or Donald.

5. I shall tithe a small portion of my salary from the project to my family for food and household expenses, rather than spending all of it on expensive audio and computer equipment, as is customary.

6. I will not charge more than \$2000/month in 900 number toll calls to the telephone at the studio or in my hotel room.

7. I will not order food from any restaurant whose name ends in the word "Junior" or whose name contains the word. "Fat." Examples: "Fatburger," "Bob's Big Boy Jr.," "Carle Jr."

8. I will curtail my efforts towards spontaneous human comb istion for the duration of the project.

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9. Puns — I will do the best I can. I promise.

I, the undersigned, do hereby agree to the above terms for the duration of my employment as engineer-in-chief on the new Steely Dan album and until five years after the release of said album.

-Roger Scott Nichols

So, I guess I must talk about something else.

## COMMON REFERENCES

Everyone has at one time or another had sync problems with tape machines, MIDI gear, or hard-disk recorders. ADATs use absolute time for sync'ing machines, Sony

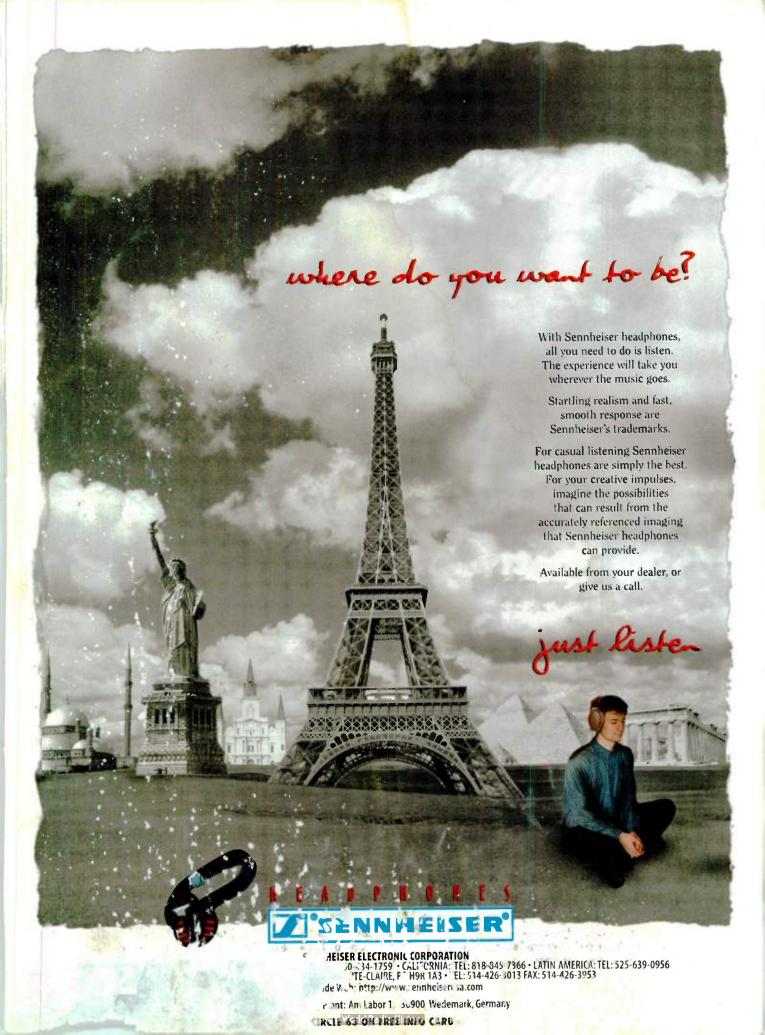
uses DASH lock, MIDI uses MTC, and video guys use SMPTE. All of these time references are fine, as long as you stay in one domain. You can make digital clones and synchronize them with the original tapes and everything is perfect, as long as you don't change horses in the middle of the stream. (That wasn't on the list, was it?) Things recently got sticky for me when I needed to sync Pro Tools to Sony 3348 digital tapes on a project that I can't talk about.

When you format a new 43-track digital tape, you have to set the start times for the SMPTE and CTL tracks (control track, or absolute time). The SMPTE and CTL times do not have to be the same. This allows you to have SMPTE that is referenced

to a video project, and maintain a completely separate CTL reference. If you want the CTL and SMPTE code to be the same, there is a procedure to follow that sets both counters to the same number. In my case, it was 00:00:00:00:00 at the start of the newly formatted tapes. I have been formatting DASH tapes this way since 1984. I have edited DASH synchronized tapes with no problems, and I have locked up DAT machines and hard-disk recorders to the SMPTE track with

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# THE NEWEST TECHN IN MONITO FROM THE FIRS

enging old monitor concepts.

revalent, 4, 5 or more channels are

production environments, daily. The

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design techniques with Linear Spatial

LSR concept helps to dramatically

area, creating a larger, more accurate

, JBL has literally redefined how a sys-



Differential Drive

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Tew multichannel formats While traditional ster being monitored in mo LSR Family applies new going beyond traditi

Reference perform tem is create expand the

mixing

32 introduced the world to the Linear Spatial Reference philosophy. This 12" 3-way mid field monitor offers maximum performance in oth vertical and horizontal configurations.

The R28P isan 8" bi-amplified near field monitor, deal for multichannel mixing in small to medium-size production environments.

> The SR12P is a 12", powered subwoofer that easily integrates into a wide variety of stereo and multichannel formats, and complements both the LSR32 and LSR28P.

LSR12 Subwoofer (Vertical)



For more information on the LSR Family www.jblpro.com

Mid field Reference Monitor

ed Diffraction

Hear Every Thing



Mid field Reference Monitor

LSR32 (Horizontal)