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On the Cover: Red-hot producer Alex da Kid
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Studios Studio 2. **Photo:** Brian Peterson.

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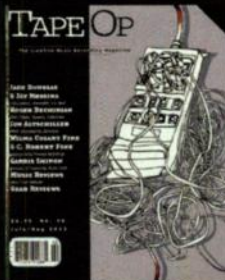
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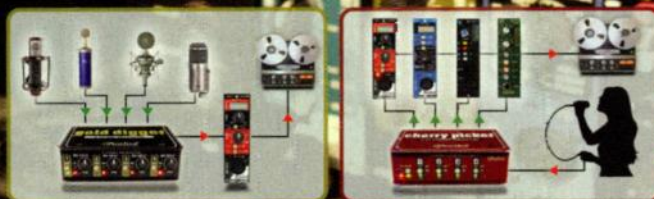
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From the Editor

WE'RE ALL LUCKY TO BE HERE BY TOM KENNY

Back when my younger daughter Jesse was 11 or 12, she used to love the VH1 nostalgia shows. *Behind the Music*, *I Love the '80s*, that sort of thing. She's a hard worker, a determined and forward-thinking young woman, and a recent UC Berkeley graduate headed to graduate school in museum studies. But back then, she used to revel in vegging out on the couch for long stretches at a time, taking a break from the sometimes crazy pressure put on teenagers today and soaking up the culture as seen through on-demand television. She still does, when she can, just like her dad.

But back then, it was the early days of Napster, a time of transition in music consumption, and she had been raised on CD playback of the Kinks, Zeppelin, The Beatles, Dylan, and a bit of Rickie Lee Jones, right along with Destiny's Child, Spice Girls, N'Sync and Backstreet Boys. One lazy, rainy Saturday, as I passed through the living room with her on the couch and *I Love the '70s* on the pre-LCD TV, she turned to me and said, "Dad, you're so lucky. You got to grow up in the '70s and now."

I tell that story a lot. As those close to me might attest, I tend to repeat myself. But I tell it here because she was so right, but for reasons she might not have imagined. I've been thinking a lot about The Golden Age of Music, The Golden Age of Recording, the mid-'60s to late-'70s. For many years I felt like an old man on a rocking chair telling anyone who would listen, "When I was young..." Maybe I was the kind of dad whose children would roll their eyes when their friends came over.

But I'm not that dad. I treasure my roots, I recognize their importance, but I do my best to live in the present and embrace today's culture, today's technology and today's music. I feel that I was confirmed and validated of that in recent conversations with this month's cover boys, red-hot producer/

songwriter Alex da Kid and red-hot mixer Manny Marroquin of Larrabee Studios, one of the hottest commercial facilities on the planet.

Alex da Kid is often portrayed as a laptop guy with penchant for rhythm and a Nose for the Now. But as a newbie/student, he interned/assisted for years at Metropolis Studios, one of the great facilities in London, where he spent off-hours, in the middle of the night, experimenting with sounds anywhere and everywhere he could create them. Analog or digital, it didn't matter. He loved drums, and he loved rhythm, and he spent countless hours experimenting in the studio, dropping objects on the floor and recording the moments, seeing what he could get out of medieval percussion, playing with analog effects. He stored all those root sounds to gigabytes of hard drives and today uses them (often heavily digitally processed) as the foundation for nearly all of his worked-up demos. Look him up. He has more than a few hits.

Marroquin, meanwhile, studied music at a relatively prestigious high school for the arts in Los Angeles, and then took a job as a runner at Enterprise Studios, working his way up the old-school way. Trained on SSLs, reaching for a Fairchild, learning from the masters, finding a home at Larrabee, and now at the top of his game. He's had hits with Dr. Dre, Eminem, Christina Aguilera, Imagine Dragons, Bruno Mars, Usher, Rihanna, Mariah Carey, Kanye, Katy Perry, John Mayer, Miguel and countless others. Recently he released a highly popular plug-in collection through Waves.

There are no rules. Modern workflows and sheer processing power have progressed to the point that there is no analog vs. digital debate anymore. Whatever tool suits the song, that's the tool to use. If you love music and you love technology, it's a great time to be alive. Jesse was right. I am lucky. I got to grow up in the '70s and now. I wouldn't trade it for anything.

Winter NAMM, January 23-26



Winter NAMM will be held late January in the Anaheim Convention Center, and of particular interest to *Mix* readers, the H.O.T. (Hands-On Training) Zone will provide educational sessions and panels for pro audio, entertainment technologies,

music business operations, recording, live sound, DJs, house of worship, commercial systems contractors/integrators, and stage and lighting industries. Some H.O.T. Zone sessions of note include the TEC Awards Preview on Thursday; the AES Los Angeles Chapter open meeting; *Pensado's Place*,

hosted by top mixing engineer Dave Pensado; and "Mastering Do's and Don'ts" with Gavin Lurssen, Peter Doell, Howie Weinberg, and Tom Rogers.

"If AES 2013—held just three short months ago—is any sign, NAMM 2014 should bring a harvest of great new gear, including mics, speakers, preamps, processors, software and some surprises," says *Mix* technical editor Kevin Becka. "This show often brings a wider range of product releases from companies who seek the broader reach that NAMM offers."

For detailed information about Winter NAMM 2014, go to www.namm.org/thenammshow/2014

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TEC Awards at Winter NAMM

The NAMM Foundation will present the 29th annual Technical Excellence & Creativity Awards on Friday, January 24, 2014 at 7 p.m. in the Hilton Pacific Ballroom in Anaheim, Calif. The evening will also include a presentation of the Les Paul Award to recording artist and producer Todd Rundgren, as well as the TEC Hall of Fame induction of audio technology pioneer John Meyer and renowned session drummer Hal Blaine of The Wrecking Crew.

To purchase tickets online, go to tecfoundation.com. For questions about TEC Awards tickets, contact Karen Dunn at 925/954-8040 or via email at karend@tecawards.org.

On Saturday, January 25, as part of the NAMM H.O.T. Zone, 10 historic 20th-century musical and sound inventions will be inducted to the ninth TECnology Hall of Fame: the Western Electric audio amplifier (1915), Bell Labs' bass-reflex loudspeaker patent (1930), Mike Battle's Echoplex tape delay (1959), the Mellotron tape-loop keyboard instrument (1963), Studer J37 4-track recorder (1964), Klark Teknik DN360 graphic equalizer (1984), Yamaha SPX90 digital multi-effects processor (1986), Akai MPC60 sequencer/drum machine (1988), Genelec 1031A active studio monitor (1991), and Royer Labs R-121 ribbon microphone (1998).



Walter Eugene Clair, 1940-2013

Walter Eugene Clair, known to many as Gene and a co-founder of the live sound reinforcement company Clair Brothers, passed away on December 3, 2013, at the age of 73 due to an illness. Founded in 1966, Clair Brothers has supported tours for artists including Bon Jovi, Paul McCartney, Carrie Underwood, Florence + the Machine, Jack White, Katy Perry, Elton John, The Rolling Stones, the Moody Blues, Michael

Jackson, Peter Wolf, and more.

Gene Clair was born May 6, 1940, to Roy B. Clair and Ellen Mae (Ulrich) Clair, in Lititz, Penn., where he remained a lifelong resident. In the 1960s, he and his brother, Roy Clair, were working as electricians for Franklin & Marshall College when they were asked to provide the live sound for visiting musical group Frankie Valli and The Four Seasons. Following the show, the band members were so impressed with the audio quality that they invited Gene and Roy to tour with the act. This launched the Clair Brothers, and throughout his career Gene served as a live audio engineer for a roster of world-renowned artists.

After selling his end of the business to his son Troy in 1995, Gene divided his time between Lititz and his mountain home in Sinnemahoning, Penn. He was also a member of the Pennsylvania Forestry Association's Board of Directors.



Montarbo's RA16 two-way, line-source element

Montarbo Announces North American Distribution

Montarbo, a manufacturer of sound reinforcement equipment based in Bologna, Italy, and Montarbo's Audio Innovation Research LLC (airconsoles.com) announce the formation of MontAir Distribution (montairllc.com) based in Las

Vegas, Nevada. MontAir is a joint venture, distribution and technology center offering products from both companies, including Audio Innovation Research's air audio systems/Virtual Mixing Technologies-VMT large format mixing consoles and DAWs.

While new to the U.S., Montarbo has served the pro audio markets in Europe, North Africa, the Middle East and Asia for the past 50 years. Montarbo tests its range of products in a demanding live-concert environment with severe operating conditions, and designs and builds its own digital tools for the testing and analysis of electroacoustic systems. MontAir states that its loudspeaker and mixing console products will benefit from shared distribution, management directives, and in some cases, sales representation.

Grammy Awards Set for January 26



The Grammy Awards ceremony that is traditionally held in February has moved up to Sunday, January 26, 2014, at the Staples Center in Los Angeles.

The nominees for **Best Engineered Album, Non-Classical**, are: *Annie Up* (Pistol Annies; RCA/Sony), Chuck Ainlay, engineer; Bob Ludwig, mastering engineer; *The Blue Room* (Madeleine Peyroux; Decca/Universal), Helik Hadar & Leslie Ann Jones, engineers; Bernie Grundman, mastering engineer; *The Devil Put Dinosaurs Here* (Alice In Chains; Capitol Records), Paul Figueroa & Randy Staub, engineers; Ted Jensen, mastering engineer; *...Like Clockwork* (Queens Of The Stone Age; Matador), Joe Barresi & Mark Rankin, engineers; Gavin Lurssen, mastering engineer; *The Moorings* (Andrew Duhon), Trina Shoemaker, engineer; Eric Conn, mastering engineer; *Random Access Memories* (Daft Punk; Columbia Records), Peter Franco, Mick Guzauski, Florian Lagatta & Daniel Lerner, engineers; Bob Ludwig, mastering engineer.

The nominees for **Best Engineered Album, Classical**, are: *Hymn To The Virgin* (Tone Bianca Sparre Dahl & Schola Cantorum; 2L/Lindberg Lyd), Morten Lindberg, engineer; *La Voie Triomphale* (Ole Kristian Ruud & Staff Band Of The Norwegian Armed Forces; 2L/Lindberg Lyd), Morten Lindberg, engineer; *Roomful Of Teeth* (Brad Wells & Roomful Of Teeth; New Amsterdam Records), Mark Donahue & Jesse Lewis, engineers; *Vinci: Artaserse* (Diego Fasolis, Philippe Jarousky, Max Emanuel Cencic, Daniel Behle, Franco Fagioli, Valer Barna-Sabadus, Yuriy Mynenko & Concerto Köln; Virgin Classics), Hans-Martin Renz, Wolfgang Rixius & Ulrich Ruscher, engineers; *Winter Morning Walks* (Dawn Upshaw, Maria Schneider, Australian Chamber Orchestra & St. Paul Chamber Orchestra; ArtistShare), David Frost, Brian Losch & Tim Martyn, engineers; Tim Martyn, mastering engineer.

This year's two **Technical Grammy Award** recipients are Harman International's Lexicon brand and Emile Berliner (1851-1929), a posthumous winner who invented and patented the Gramophone disc recorder and player in 1887.

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On the Cover

By Tom Kenny

LARRABEE STUDIOS

The Best of Old-School/New School, With Style



Photo: Brian Peterson

Alex da Kid (left) and Manny Marroquin

On a Tuesday night in late 2012, past the 11 o'clock hour, Larrabee Studios in North Hollywood was crazy packed and jumpin'. Jimmy Douglass was mixing Justin Timberlake in Studio 3 with Timbaland, who was also down the hall working with Brandy and a couple of other artists on pre-production in Studio A. Jaycen Joshua was working with T.I. in his room, Studio 1. Manny Marroquin was working on mixes for Bruno Mars and Christina Aguilera back in Studio 2. If not typical, then an almost typical night.

Nearly a year later at the time we put together this cover story, producer Big John was in with Marroquin playing music for a new UK signing, the Vaults. In another room, Paramount Pictures head of music Randy Spendlove was in with Linkin Park finishing a song for a movie. He stops by Marroquin's room, hears some cuts, and mentions that a new Teenage Mutant Ninja Turtles and a new Transformers franchise is coming up. Maybe there's something there...

It feels a bit like the 1970s, bumping into musicians in the hall and playing on each other's

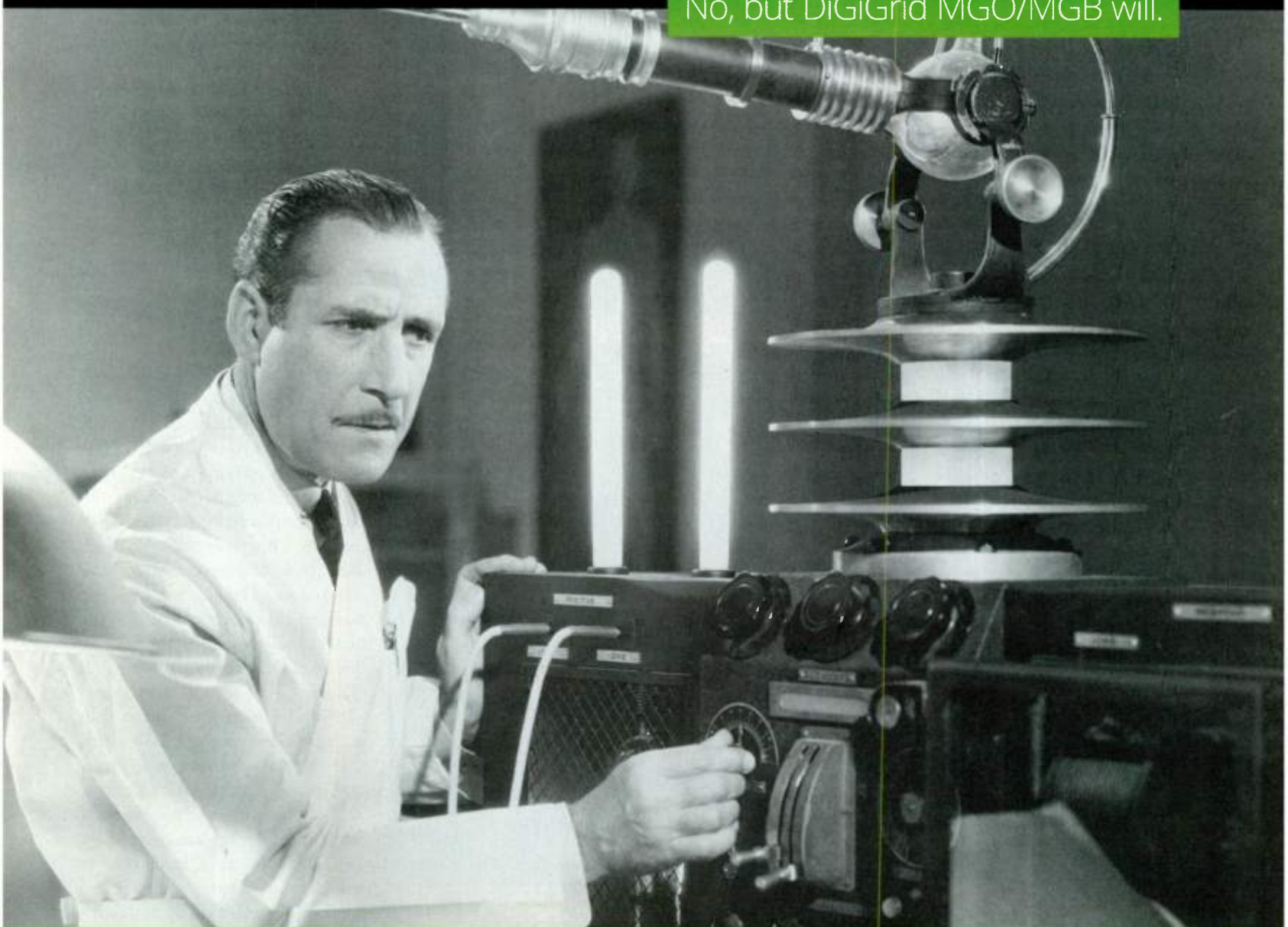
records, but with a decidedly present-day slant. Vocal recording. Drum programming. Mixing in three rooms. Networking. Song placement. Albums. Singles. Hits. Larrabee Studios has a legacy of hits.

Studio 2, red-hot mixer Marroquin's comfortable and vibe-y home base, is one of five studios in what was once known as Larrabee North after Kevin Mills purchased it in 1991 from composer Giorgio Moroder. The first main project? Michael Jackson's *Dangerous*. Since then? Just in the past few years, hits by the likes of Imagine Dragons, Alicia Keys,



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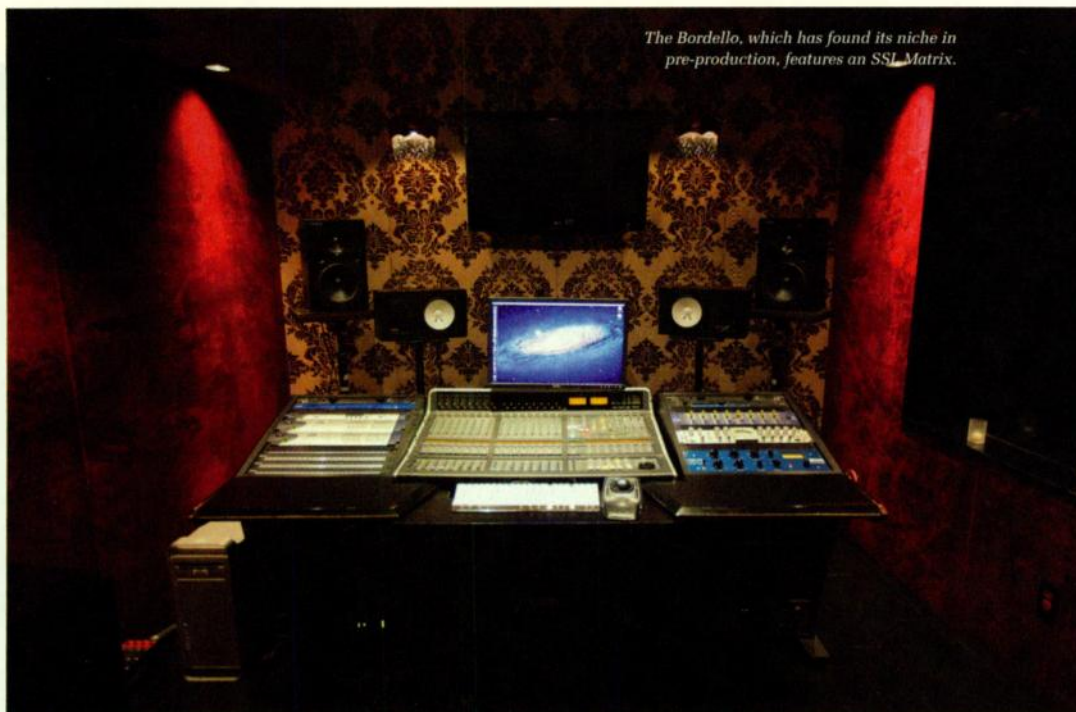
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The Bordello, which has found its niche in pre-production, features an SSL Matrix.

Photo: Brian Peterson



Studio manager Amy Burr in Studio 4, the "Rat Pack Room," the newest addition to the facility, featuring an SSL 4056 G Series console.

Photo: Brian Peterson

Usher, Justin Timberlake, Chris Bown, Miguel, Linkin Park, Bruno Mars, John Mayer, Mary J. Blige, Justin Bieber, Rihanna, Kanye...the list goes on and on.

The original Larrabee Sound Studios dates back to 1969, opened by the Mills family. That's a 45-year run if you're keeping score. And it feels like the place just opened as the new hot ticket, velvet rope, gotta-be-there kind of studio. The rooms remain accurate and true; the style has been

updated to reflect a thoroughly modern yet completely home-y vibe—the lounges, the hallways, the reds and the blacks, the open-air patio and an outside mural on the way. The two newest rooms are known as The Bordello and The Rat Pack Room.

The producer-mixer duo pictured on this month's cover, Alex da Kid and Manny Marroquin, embody that sense of modern style meets old-style groove. Their recent work on Imagine Dragons' *Night Visions* was last year's breakout smash, and their collaborations on Rihanna, Eminem, Dr. Dre, Skylar Grey and others over the past couple of years represent the best in a producer-mixer relationship.

"I do everything I can with Manny and Larrabee," says Alex da Kid, a London native whose songwriting and production work rolled across the U.S. like a tidal wave of hits these past couple of years. "When I first came to L.A., I was driving around with a guy and he was telling me about who had recorded at Larrabee. It seemed like a magical place. Then I met Manny and started mixing with him. There's such a great vibe and we have such fun. We've done so much here. He's drawing off of 25 years of experience and I want his opinion and his taste, even beyond the music. I turn to him all the time for his opinion...then I usually ignore it [laughs]."

Alex da Kid is often portrayed as a "laptop producer" and songwriter, and he's fine with that. When writing, he prefers to be alone with Logic and his own sounds. But there's a backstory. After becoming enamored of Fruity Loops at 19, he enrolled in an audio engineering program and landed the equivalent of an intern-

ship at the world-renowned Metropolis Studios. There, he would record all night, analog and digital, dropping objects on the floor and recording it, borrowing some medieval percussion, gathering sounds that would become the foundation for much of his songwriting. Even today, being in the studio makes him feel that it's time to focus, time to get serious.

Continued on p. 82

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ROSANNE CASH

'The River and the Thread' Weaves Southern Influences

By Barbara Schultz

In 2009, Rosanne Cash and her husband, producer/musician/recordist John Leventhal, made *The List*, a selection of covers from a longer list of essentials that Johnny Cash had given to his daughter when she was 18. That album gave listeners new insights into the music that inspired the Man in Black, and a new appreciation of classic country and folk songs like "Heartaches by the Number" and "500 Miles."

Cash and Leventhal continue to explore the musical soul of the American South on *The River and the Thread*—this time not by re-

envisioning chestnuts, but through new songs that tap into the essence of Southern music.

"Immersing ourselves in the songs on *The List* was a great experience, and it started me thinking we should find a theme for Rosanne's next record that ties it all together, but where we do the songwriting," Leventhal says. "We took several trips to the South and were thinking how the South has informed so much of the music we love—from Muscle Shoals and Fame and Stax and Hi and Sun, to all the deeply soulful bluesmen from the Delta, as well as all the great musicians from Appalachia. But we didn't

want to make it a pastiche, where we would be mimicking classic Stax or Delta blues, or even country music. The trick was how to make it sound fresh and original, but still resonate with the great Southern styles we love."

Cash and Leventhal created a beautiful collection of originals that take what Leventhal calls an "impressionistic journey through the South." The lyrics describe various characters, experiences and landscapes; the music is full of gentle, often subtle, references to roots music, and to '60s and '70s soul and pop. Sometimes a horn section makes all the difference, or



John Leventhal (left) and Rick Depofi

Photo: Wes Bender

DePofi, who records and mixes in Cubase. “For the most part, we use API and Daking mic pre’s with Distressors or 1176s for guitars. We’re constantly completely changing the setup.”

Leventhal says that as soon as he has a solid melodic foundation for a given song, it’s time to start cutting Cash’s vocals. “It’s important for me to get a semblance of a real vocal early on,” he says. “Everything I do is to create an interesting world around the vocalist.”

Leventhal owns two Neumann U 67 vocal mics that he says, “sound fantastic and utterly different from each other.” One

was modified by Klaus Heine, and Leventhal says it has a “classic” sound, whereas the other has a rich but darker tone: “I’ll make an intuitive decision as to which one to use; or sometimes I’ll put both in front of her and decide.” Cash’s vocal chain also includes a Daking 52270 mic pre, an Empirical Labs Distressor, or sometimes a Summit tube compressor.

The River and the Thread includes a couple of tracks played live with members of Cash’s touring band. “Modern Blue,” for example, started with Leventhal playing all of the parts, but then he decided to switch things up. “I think if you heard the demo, you would think, ‘That’s nice,’ but the band performance gave it more urgency and magic,” he says.

Leventhal and Cash also got help from several guests, including John Paul White of Civil Wars, Alison Moorer, Derek Trucks, and the “Master’s Choir”—Rodney Crowell, Amy Helm, Kris Kristofferson, John Prine and Tony Joe White—who recorded choruses for “When the Master Calls the Roll” with engineer Donovan Cowart in Crowell’s home studio.

“I like my tracks to have a little bit of sparseness to them but still be interesting,” Leventhal says. “I’m always trying to make sure the vocal is dominating and really moving, and that the production leads you to the emotional intent of the song. Hopefully there are some other interesting bits in the track as well: a compelling groove, and guitar parts and hooks that are vibe-y and bring you into it. Ideally that’s what we want to do: make a record that continually draws you in.” ■

orchestral strings, or slide guitar.

Leventhal does his studio work at New York Noise, a Manhattan facility that’s close to his home and is co-owned by Rick DePofi, Leventhal’s co-engineer and co-producer on *The List* and *The River and the Thread*. To start any project, Leventhal surrounds himself with necessary tools, and lets the ideas come.

“I’ll sit with an acoustic guitar and vocal mic at the computer controls, and I’ll have percussion instruments around me—a snare on a stand, some shakers, a tambourine,” he says. “Everything’s plugged into my pre’s with some compressors. In the beginning, I move very quickly. The ideas are flowing through me, and I like to try to get them down without thinking about them too much.”

“Since John plays a lot of the instruments on the record, he’s always at it, figuring out what he’s going to do,” DePofi adds. “I try to keep out of the room as much as possible during that phase so I can come in with fresh ears. He wants to be able to throw ideas at me and have me chime in. I’m there to help him engineer, and then to come in and say, ‘That sounds great,’ or ‘I don’t get it,’ or ‘What happened to Rose?’”

Leventhal’s fluid process—without hard lines between demo’ing, arrangements, tracking and mixing—requires a flexible engineering approach, as well. For Leventhal’s guitars, there are always several amps wired up with 57s on hand to capture whichever unit they choose.

“We have a collection of four or five mics that we use for [acoustic] guitars: [Neumann] U 67s and 563s and a Gefell UMT 70s,” says

NIR FELDER’S ‘GOLDEN AGE’

Jazz guitarist Nir Felder touches on different “ages” on this solo release. The former sideman for contemporary artists Esperanza Spalding, Jack DeJohnette, Meshell Ndegeocello and more plays in various styles—echoing artists from Wes Montgomery to Lou Reed—and points to significant historical periods by sampling political speeches in a couple of tracks. The voices of Mario Cuomo, Jesse Jackson, Hillary Clinton and many others are woven through the songs “Lights” and “Sketch.”



Golden Age (Okeh Records) was recorded in Sear Sound with engineer Chris Allen and producer Bob Power, and mixed by Felder and Power. Allen says almost all instrument tracks were captured live, with drummer Nate Smith in a booth and the rest of the musicians—Felder, pianist Aaron Parks and bass player Matt Penman—in one studio.

Felder’s rig—which the guitarist describes as “a ’95 Tex-Mex Strat through a Polytone Mini-Brute II amp with a whole lot of pedals in between,” was triple-miked: “I used a [Neumann] U 67 straight on and a Shure 57 off-axis, and I put them right up against each other,” Allen says. “I also placed an RCA 44 a few feet back and four or five feet from the ground.”

“The 67 has a really solid low end with a really nice bright high end,” he continues. “The 57 gives you that—well, that typical sound that everybody knows—and the off-axis placement keeps it from getting too boomy. Combining the two of them, to me, always sounds like I’m sitting in front of the amp. And then the 44 gives everything a little space, a little air around it—a warm, gentle sound. A lot of people use very bright room mics, but to me that makes it too obvious that there’s a room mic in the mix.”

—Barbara Schultz

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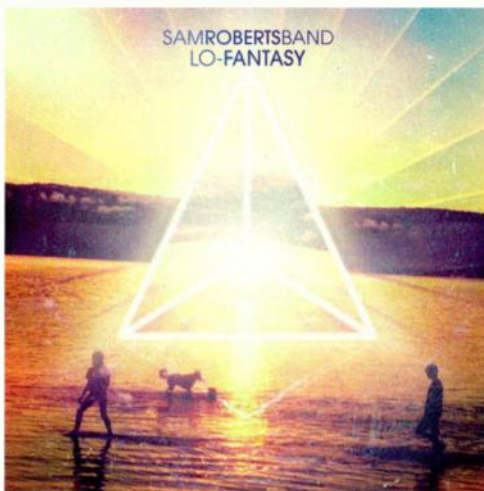
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SAM ROBERTS BAND'S 'LO-FANTASY'

Engineer Michael Rendall uses the word “ecstatic” to describe the playing on *Lo-Fantasy*, the latest rock-via-'70s-funk-and-punk album from the Sam Roberts Band. The dynamic vibe on the release grew from live sessions in Montreal's Mixart Studios, where Rendall and producer Youth captured the players in 12 high-energy days.

“Youth famously wants to move fast and get the performances,” Rendall says. “The band was inspired by how quickly things went. They'd do four or five takes, walk back into the control room, and it's already sounding like a record. Any technical choices occurred with that same kind of mentality: Nothing's overanalyzed.”

That said, Youth and the band chose Mixart for specific reasons that support their approach: a large open live room, vintage Neve console, good mic collection, and a seasoned staff, including Rendall's co-engineer



Nicolas Pétrowski, who helped get the project on track quickly. Youth and Rendall record to Logic, feeling that the speed and efficiency of the platform allow creative juices to flow.

Recording chains were thoughtful but simple, and took bandmembers' preferences into account. “A vocalist like Sam knows what's good [on his voice],” Rendall says. “Sam's fond of the [Shure] SM7. Mixart has a beautiful Neumann M 49, which Nico recommended, but we mainly used the SM7.” From there, Roberts' vocal—which was overdubbed after the band sessions—went through the console, via an 1176. Further vocal overdubs were done in Youth's personal studio in Spain before the album went to Dave Bascombe to be mixed.

“There's major credit due to Dave and his mixes,” Rendall says. “He got everything sounding great the first time, almost every time. Work on this album was all a reaction to the band playing.”—*Barbara Schultz*

COOL SPIN

VARIOUS ARTISTS: MUSIC FROM AND INSPIRED BY 12 YEARS A SLAVE (COLUMBIA)



Forget the brutality that suffuses Steve McQueen's brilliant film, *12 Years a Slave*. This album, assembled by John Legend, who also sings a couple of tracks, is all about our shared humanity. It's quite an eclectic mix—from field hollers, to finger-picked folk blues (Gary Clark Jr. at his haunting best on Libba Cotton's “Freight Train” and Lonnie Donegan's “When the Sun Goes Down”), to short

orchestral cues by Hans Zimmer, to Alabama Shakes' jazzy take on Max Roach and Oscar Brown's “Driva Man,” to striking originals by Alicia Keys (“Queen of the Field”), Chris Cornell (“Misery Chain”) and the rousing closer by Cody ChesnuTT, “What Does Freedom Mean (To a Free Man).” I also really love Laura Mvula's moving version of the Rodgers and Hart standard, “Little Girl Blue.” By emphasizing African-American music styles—gospel, blues, jazz and hints of R&B—the potpourri has a more unified sound than the disparate elements might suggest, and it also manages to evoke both the film's story and speak to our own imperfect times.—*Blair Jackson*

Producers: Nicholas Britell, Alicia Keys, Tracy Miller, Charlie Peacock, John Legend, Cody ChesnuTT. Engineers/mixers: Britell, Dave Tozer, Bharath Ramanath, Daniel Kresco, Jimmy Nutt, Ann Mincieli, Samuele Aru, Richie Biggs, Chris Bolster, Quentin Gilkey. Studios: Abbey Road, Chicago Recording, Remote Control, Art House, Spark, Jungle, Oven. Mastering: Stephen Marcussen, Stewart Whitmore/Marcussen Mastering.

THE REVEREND HORTON HEAT: 'REV'



Jim Heath's longtime psychobilly outfit releases its debut for Victory Records this month, and *Rev* does not disappoint. There's plenty of freaky tongue-in-cheek thrash on songs like the single “Let Me Teach You How to Eat,” but Heath's approach is also nuanced and authentic. His vocal on “Scenery Going By,” for example, has a certain sensitivity juxtaposed with the rapid-fire rhythms of bassist Jim “Jimbo” Wallace and drummer Scott Churillo.

Tracking on *Rev* started in the band's rehearsal space and then moved to Jeff Saenz's Modern Electric Sound Recorders (Dallas). Saenz says the band originally intended only to finish basics with him but ended up staying for their overdub phase, which included most of Heath's guitars and vocals, as well as keys, horns and other embellishments.

Heath sang into a Peluso 22 47 SE (similar to a Neumann U 47), which went through an Avedis MA5 pre and E27 EQ, then a UA LA-2A into Pro Tools. “We put up a Coles 4038 for a room mic during vocals as well,” Saenz says. “And we left those mics up when we tracked his guitars. We used a Beyer M 160 on the front of the amp, that Coles behind it, and the Peluso on omni just in the general area he was performing; it sounded really cool, so we left it right where it was.”—*Barbara Schultz*

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Legendary, five time GRAMMY® Award winning producer/engineer, Chris Lord-Alge, recently adopted Focusrite's RedNet as the cornerstone of his new workflow. Chris' star-studded resume is a veritable who's who of pop icons, including Aerosmith, Green Day, Muse, and Tina Turner to name only a few. For over two decades Chris depended on 48-track tape to interface with his console and array of mostly vintage outboard gear. Confronted with the reality that he will soon need to transition away from tape, Chris tested other D/A converters and was only willing to "make the change" after hearing RedNet.

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Classic Tracks

By Blair Jackson



"DIRTY BUSINESS" New Riders of the Purple Sage

After psychedelic music had its heyday in the late 1960s, many musicians decided to take a trip sideways down country roads. The Flying Burrito Brothers and Poco both put out their excellent first albums in 1969, and that was also the year that Dylan cut *Nashville Skyline* and The Band released their roots-y "Brown Album."

Meanwhile, the Grateful Dead hit the apex of their psychedelic evolution in the winter of 1969 (when *Live Dead* was recorded), yet shortly after that, Jerry Garcia's songwriting and playing took a decidedly country turn. He and lyricist Robert Hunter simplified their style and started turning out the country-tinged material that would grace their 1970 commercial breakthrough, *Workingman's Dead*. It was during the Dead's spring '69 tour that Garcia bought a Zane-Beck pedal steel guitar, and as soon as he got back to the Bay Area, he hooked up with a young, country music-loving singer-songwriter named John "Marmaduke" Dawson (who had been on the periphery of the Dead scene since their earliest days), and started playing low-key gigs as a duo in small venues south of San Francisco, highlighting Dawson's originals and a selection of Bakersfield and Nashville numbers.

"At first, Garcia didn't have the slightest idea what the real steel players were up to," Dawson told me in the late '90s. "What he played was just his idea of what they were doing and what sounded good to him... He didn't read any books; he just sat down and played." And like everything Garcia played, his work on the pedal steel came out sounding uniquely like him. "After a while," Dawson added, "we decided to make a little band out of it."

The group was dubbed The New Riders of the Purple Sage (after a Zane Grey cowboy novel), and in its first real incarnation, it was three-fifths Grateful Dead members: Garcia on pedal steel, Phil Lesh on bass and Mickey Hart—in whose Marin County barn studio they rehearsed—on drums, joined by leader Dawson and David Nelson (who went back to Garcia's pre-Dead folk days). By August 1969, the New Riders went on the road as opening act for the Dead on a tour, and the response from Dead fans was rapturous. So it was no surprise when record companies started sniffing around and the group decided to make an album. In November 1969, they made a four-song demo, but it would be another year before they set out to formally make their first album, at Wally Heider Studio in San Francisco, and sign with CBS.

During that intervening year, the New Riders continued to open for the Dead fairly often, Lesh was replaced by bassist David Torbert, and shortly after the sessions for the album began, Mickey Hart was replaced by former Jefferson Airplane drummer Spencer Dryden. By the time those sessions rolled around, too, Garcia had become the in-demand pedal steel player in the Bay Area, having worked on records by Jefferson Airplane; Paul Kantner; Brewer & Shipley; Crosby Stills, Nash & Young; David Crosby; and the Dead's two 1970 discs, *Workingman's Dead* and *American Beauty*. That last Dead album had been engineered and co-produced at Heider's by Stephen Barncard, who also cut Garcia's pedal steel part for CSNY's "Teach Your Children" there.

Barncard, who was an experienced engineer in his native Kansas City, arrived in the Bay Area in mid-1969, just as Heider's facility was getting off the ground. Hired as an assistant by Heider himself, Barncard's early work at the studio included sessions for Harry Nilsson, Jefferson Airplane, CSNY and others, but *American Beauty* was his big early break as lead engineer, followed by David Crosby's landmark first solo album. That led to his being asked to engineer and co-produce (with Phil Lesh) the Riders' debut album. By that point, the group had honed Dawson's original songs through playing them on the road, so the sessions at Heider's upstairs Studio C were cut mostly live (with vocals and a few overdubs added).

Dawson's country-rock tunes covered a broad spectrum of topics, from love songs ("All I Ever Wanted," "I Don't Know You," "Louisiana Lady") to ecological anthems ("Last Lonely Eagle," "Garden of Eden"), a spry train robbery tune ("Glendale Train") and this month's Classic Track, "Dirty Business," a brooding epic about a mining disaster and the poor folks caught up in the tragedy. It was a centerpiece of the group's sets during



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The New Riders at Pomona High School (Menlo Park, Calif.), April 28, 1970. L-R: Dave Torbert, David Nelson (rear), leader John "Mornaduke" Dawson and Jerry Garcia.

Photo: Michael Parrish © 2013

the era when Garcia was the Riders' steel guitarist (he was replaced by Buddy Cage in the fall of '71), famous for his snarling and crackling fuzzed steel line.

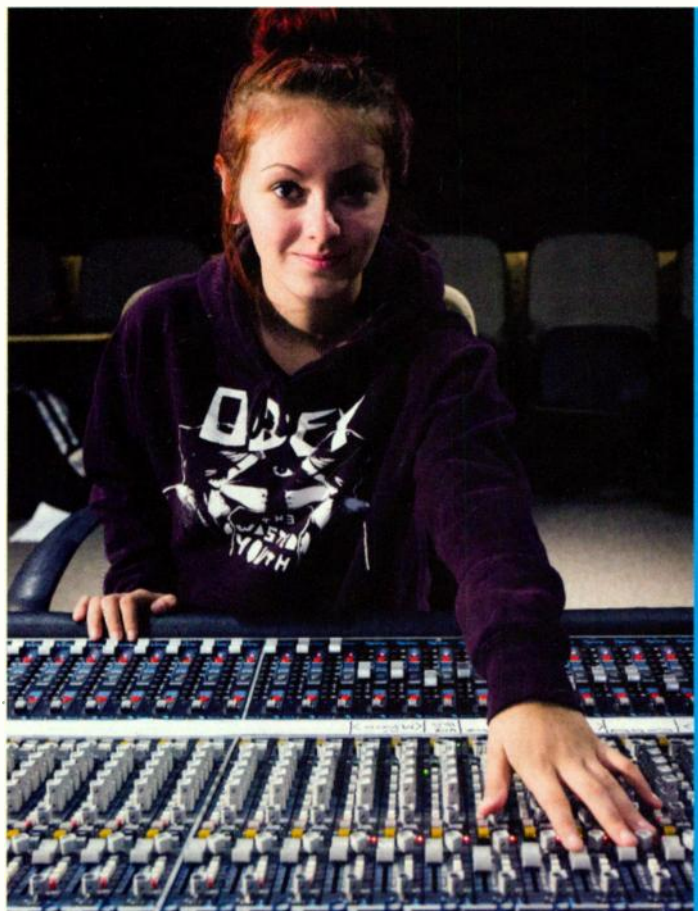
"He had a [Dunlop] Fuzz Face, a real cheap diode square-waver—that's what sufficed for fuzz in those days," Barncard says. "The pedal industry hadn't matured, so they were hand-built and noisy, but they did what was advertised, which was distort the signal." On that track, Garcia combined the Fuzz Face with a wah-wah pedal, allowing him to bend both notes and raw fuzzed sound in unearthly directions beyond the steel's conventional capabilities.

"I was always willing to let Jerry be Jerry," Barncard adds. "Whatever he wanted to do, man! He didn't require a lot of takes. He just had a feel

for the instrument and he knew where to go with it. And even when it was wrong it was right: There was a clinker on [David Crosby's] 'Laughing' that we left in because what followed it was so amazing there was no way we were going to change it." He terms Garcia's long solo on "Dirty Business," which Barncard captured with a single Shure SM56 on Garcia's Fender Twin amp, as "perfect." Garcia would always add some of his own reverb from his amp, and Barncard would reasonably compress with a UA 1176 (silver face, pre LN), add live chambers, and sometimes add delay and print it all to tape.

"Another trick we used on Garcia a lot required a stock Wally Heider item—a Leslie speaker pedal," he recalls. "It's a box with an AC plug-in, a big pedal, a 9-pin socket for a Leslie speaker cord, and then two guitar jacks—through those you could run a vocal mic or a guitar or keyboard. What it does is make the [rotating] Leslie speaker useful as an FX device. We used it a lot on *American Beauty*—you can hear it on 'Candyman'—and you can hear it on Crosby's record and the New Riders. Garcia loved for me to mess with his sound. And I always printed it to tape, so what you heard [during the recording] was what you got and what he himself heard while playing, reacting to the effects."

Studio C, the first to open at the Heider's complex in downtown San Francisco, had a control room equipped with a wonderful-sounding custom Frank De Medio console—his boards were in all of Heider's rooms—with 24 inputs, 8-track monitoring and eight buses. Most of the console electronics were products of De Medio's former employer, United Record-



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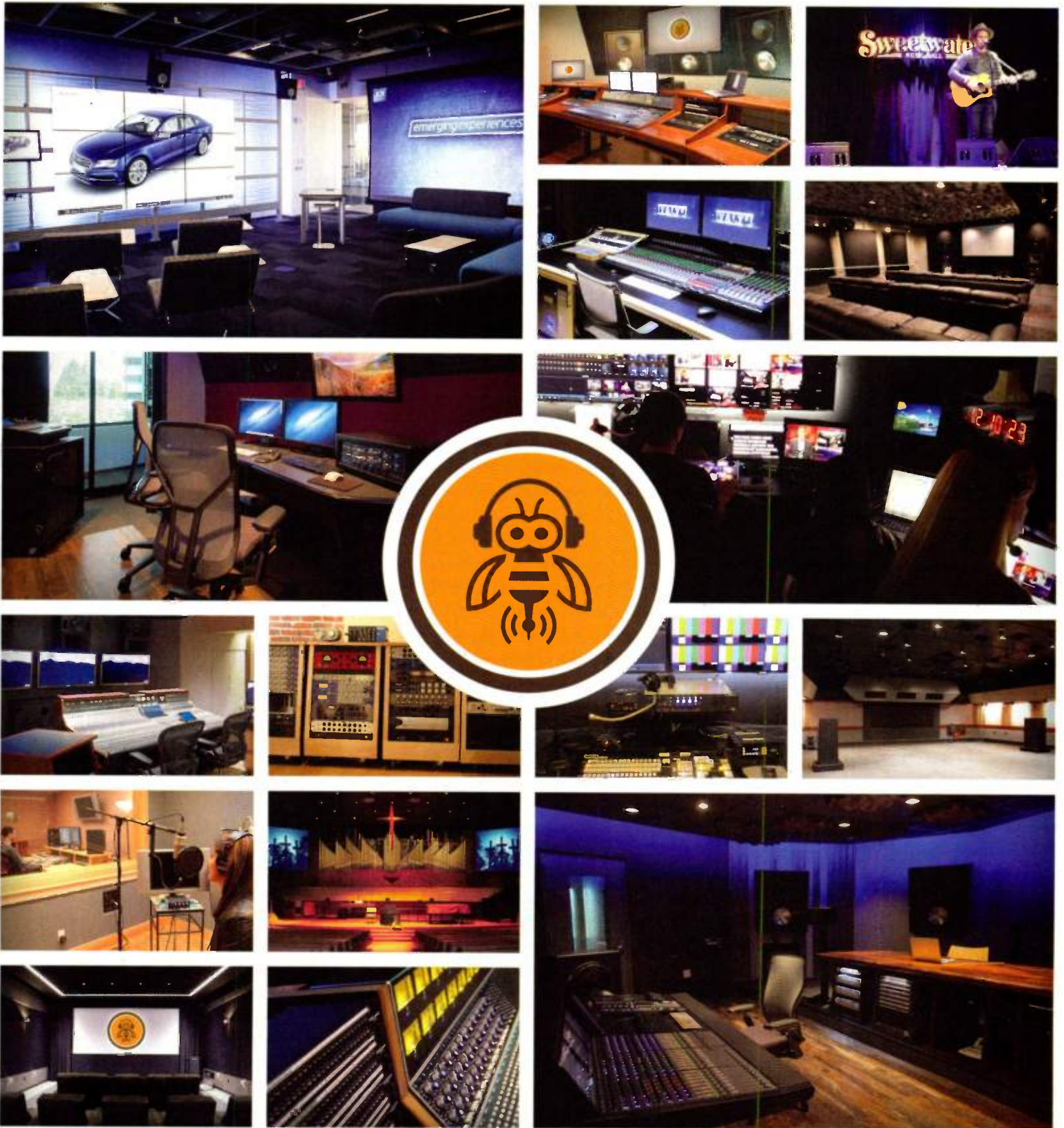
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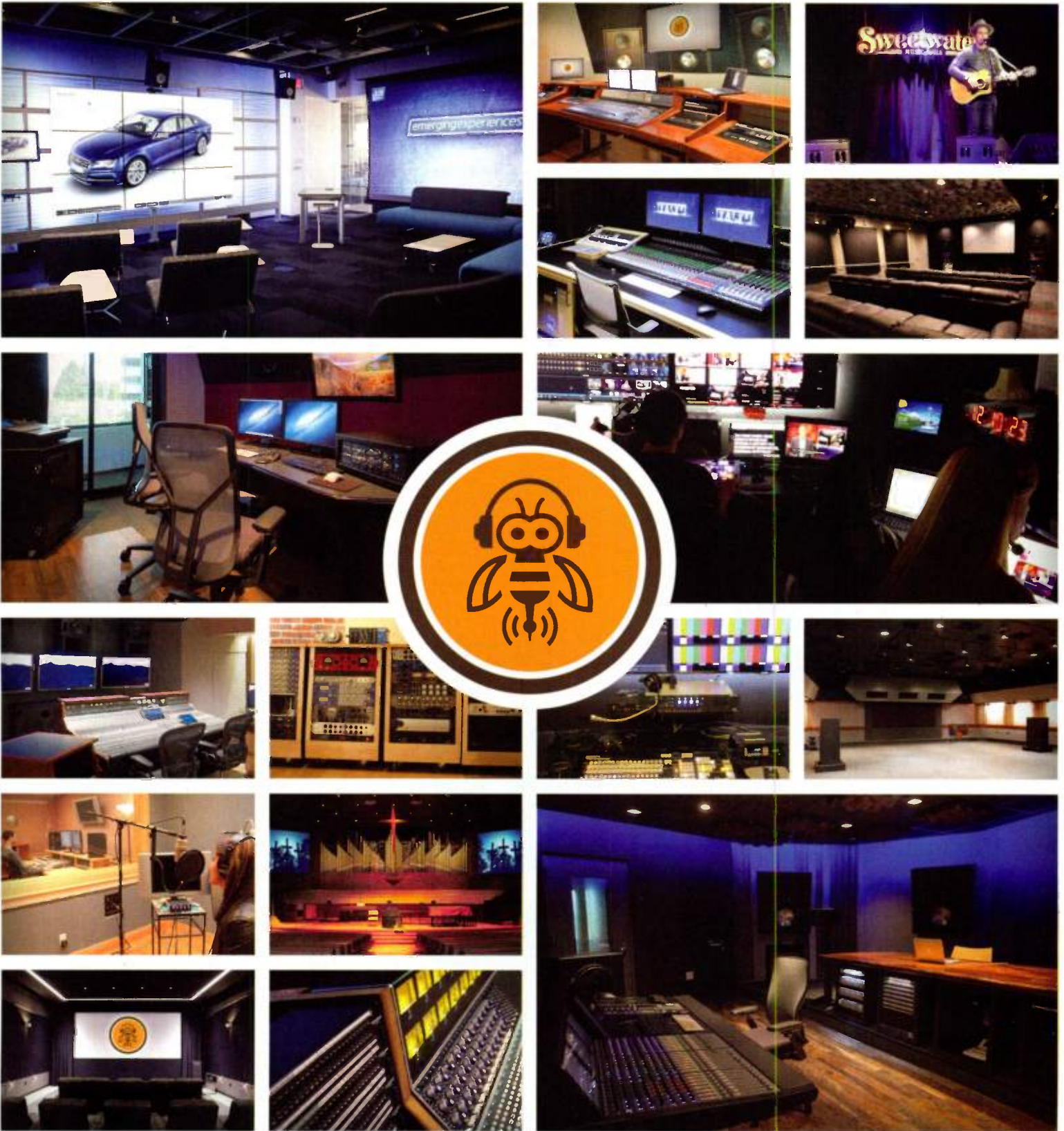
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Pronounced [bug-eyed] — Established 1997

ing Corporation, owned by the legendary Bill Putnam, so the board had UA preamps and equalizers. At that time, Heider's had two 16-tracks to choose from—the enormous Ampex MM-1000 (favored by Jefferson Airplane and some others) and a 3M M56, which Barncard calls “the best tape machine on the planet in those days. The playback was always so clean, and it was the first one to make punch-ins really easy with a very small remote.” He used the 3M for the New Riders sessions. Control room monitoring was on Altec 604 speakers.

Dawson and his acoustic guitar would have been in a booth, so he could also lay down a scratch vocal. His lead vocals were cut separately, sometimes on the same day as the tracking session, using a Neumann U 67. “He was very self-conscious about his singing, because technically he wasn't a very good singer,” Barncard says of Dawson, who died in 2009. “He had

this sort of high, scratchy gold prospector's voice, with a sharp midrange. He had some trouble with pitch, so I went for character.”

Dave Torbert's bass and David Nelson's electric guitar were caught with Shure 56s on the amp (and also a DI for the bass). Barncard says that some of Nelson's solos on the album required a lot of takes and combining because “he was learning his Parsons White StringBender and hadn't gained proficiency on it yet. He wanted that twanging, pseudo-steel sound. After that album, though, he got great. In fact, I'm amazed at how good all those guys got.”

Barncard's recollection is that because of track limitations, drums—it's Mickey Hart on “Dirty Business” and one other song, but mostly Spencer Dryden on the album—he had just a single mic each on snare and kick (probably 56s) and Sony C-37s as overheads. Barncard's drum pickup was influenced by a combination of Bill Halverson's and Glyn Johns' drum setups. Commander Cody (George Frayne) overdubbed some barely audible piano for part of “Dirty Business,” “but I thought it was a little ‘off,’” Barncard says. “I thought the piano was kind of superfluous.”

Barncard gives major props to Phil Lesh for his role in the sessions: “Phil really loved the band and sort of took them under his wing at the beginning. He felt he had a personal responsibility to introduce these guys to the recording world that the Dead knew so well. I would have had a harder time with the band without Phil, in terms of them trusting me. He was there, ass in seat, right next to me every day, on the talkback and also helping work out the [harmony] vocals, which were not that easy. I, too, was on the talkback a good deal; I really had to use my Crosby, Stills & Nash training to get their vocals in line,” he says with a laugh.

Barncard mixed the album in Studio C, as well. The New Riders' self-titled debut was released in August 1971 to favorable reviews in the rock press and impressive sales, though there was no “single,” per se. A number of songs became FM favorites, including “Louisiana Lady,” “Henry” and “Last Lonely Eagle.” The group continued to travel with the Dead even after Garcia stopped playing with them, though adding Buddy Cage on steel also allowed them to finally tour independent of the Dead. Though the New Riders' first three albums—made with Barncard—all sold fairly well, their biggest radio song was probably “Panama Red” in 1973.

A multitude of personnel changes and uneven material prevented NRPS from ascending again to their lofty, early '70s peak, but one version or another has been chugging down the road for most of the decades that have followed—including the solid current lineup, featuring longtime stalwarts David Nelson and Buddy Cage, playing plenty of old favorites and also a slew of fine newer tunes co-written with Robert Hunter. But the first album will always remain the Cosmic Cowboys at their very best. ■



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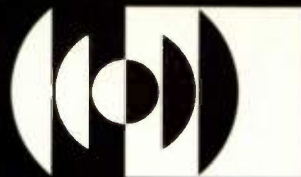


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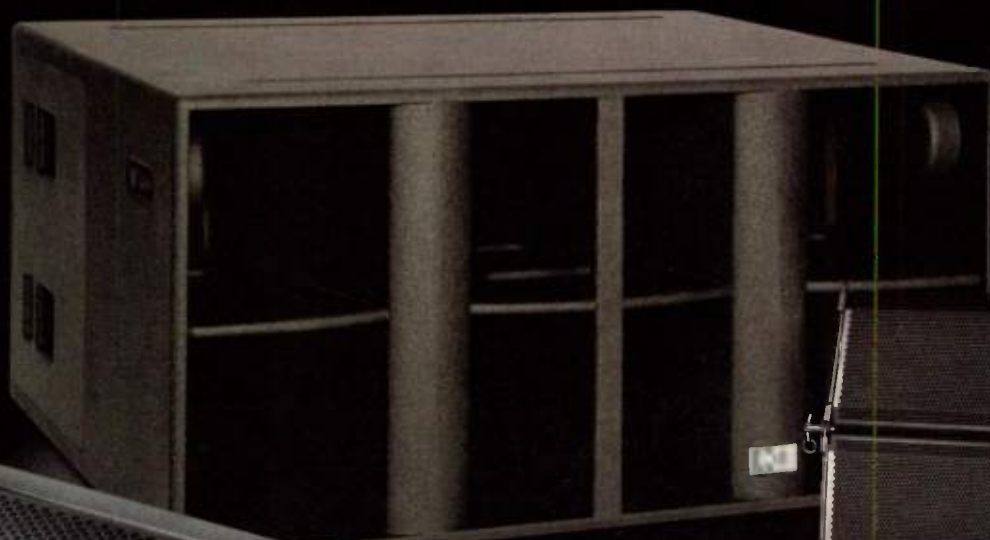
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Pearl Jam rocked the Oracle Arena in Oakland, Calif., in November 2013

PEARL JAM

Rock 'n' Roll Power, With Clarity and Definition By Tyler Reed

Few bands can claim the live performance track-record of Pearl Jam. Neil Young, The Grateful Dead and Fugazi spring to mind, but Pearl Jam's ability to deliver visceral, unpredictable performances year after year is remarkable in today's music landscape.

On their recent 2013 North American tour in support of their new album, *Lightning Bolt*, Pearl Jam rolled into Oakland's Oracle Arena on November 26 and delivered a 37-song, 3-hour and 20-minute opus on a Tuesday night, that was both razor-tight and sprawling in equal measure.

Rat Sound, based out of Los Angeles, has provided the tour package for the band for more than 20 years. Front-of-house engineer Greg

Nelson, monitor engineer Karrie Keyes, and systems engineer Kevin McKenzie have all been with the band for at least 10 years and form the core of the audio crew.

While they have an established way of working, the switch to DiGiCo's SD5 platform marks a notable change to PJ's live rig. Nelson, formerly an Avid Venue and Profile user, is still working completely in the box. However, with the SD5, the leap from 48k to 96k allows for greater clarity and definition in the final mix. "There wasn't a big sonic difference running at 48k between the consoles," Nelson says, "but running at 96k has really improved the overall midrange and bottom end of my mix."

The SD5 is just a part of a system-wide ap-

proach that DiGiCo has been developing over the past couple of years. McKenzie, who sits at FOH with Nelson and monitors amp and speaker performance during the show, explains, "Every input onstage hits a three-way splitter [recording, house, monitors]. From there it hits a DiGiCo [SD-Rack] that lives under the stage. At that point it is converted to digital, sent via fiber to the FOH surface, then AES out to the Lake system EQ and AES right to the LA8 amps—all at 24/96k. And that really does make a difference."

Nelson, who has been with the band since 2004, describes his initial approach to dialing in a mix during soundcheck and then on to the first three songs: "The first thing I listen for is



Front-of-house engineer Grey Nelson (left) and systems engineer Kevin McKenzie



Monitor engineer Karrie Keyes (left) and monitor tech Peter Baigent

how the low end and low-mids are reacting in the room—what frequencies are rolling around that will negatively affect the mix. Is the low end worse in one part of the venue than the other? I think of what can I do to alleviate those factors so everyone in the venue can hear a clean, clear mix. Proper phase alignment is a very important part of those adjustments.”

Pearl Jam will typically do a 45- to 60-minute full-band soundcheck before each show, working out songs that they may or may not play that evening. “Soundcheck and the show are two completely different things,” Nelson laughs. “Once the show starts, it’s kind of just ‘hold on.’”

It’s clear that the sound crew shares the band’s natural, music-first philosophy. “I think dynamics are a really important part of any live show,” Nelson says. “It helps a show become more dramatic. If you are trying to make all the quiet songs the same level as the loud ones, then it diminishes the impact of those big, loud songs. That’s where using a lot of plug-ins can hurt you sometimes. I think a live mix should breathe.”

Nelson admits that mixing the three guitars of Vedder, rhythm guitarist Stone Gossard, and lead player Mike McCready can be challenging, but he’s still able to find clarity. “The guys all have very different guitar sounds, which makes it a bit easier than normal to blend them together. I try

to find the differences in tone and try to accentuate those differences so they blend, [while still being able to] differentiate the players.”

Nelson keeps the mix for singer Eddie Vedder, one of rock’s most dynamic vocalists, fairly simple. “[I use] a bit of mild compression and a de-esser,” he says. As for plug-ins, he maintains a less-is-more approach, using them more for color than for serious compression or limiting. “Using the Waves SoundGrid module enabled me to keep using most of the plug-ins I was using before, although I do miss a few of the Avid plug-ins.”

Systems engineer McKenzie, who has flown L-Acoustics rigs for more than 10 years with Pearl Jam, has integrated some of the new K1 and KARA boxes for this tour. He says, “Everything in the K1 and KARA is a little bit better than the previous V-DOSC. As a total system, every aspect has been improved from rigging to increased throw, wider horizontal, more bass impact and a greater level of clarity.”

Monitor engineer Karrie Keyes has been with the band longer than nearly any crewmember. Keyes first met them when she was monitor engineer on the Red Hot Chili Peppers’ 1991 Blood Sugar Sex Magik tour (Pearl Jam was the co-opener with Smashing Pumpkins). She continued with the Peppers through 2000 but has been with Pearl Jam ever since that first exposure.

Like her colleagues, Keyes emphasizes a natural, unadorned approach. “The stage has always been organic—getting what they need from the monitors to play a live rock show, [and] one where they can change the set lists up and draw from hundreds of songs each night.”

Pearl Jam’s anything-goes live approach means that Keyes is an active mixer. “I must be involved in the show from start to finish. I watch the entire band, but mainly anything they need

is relayed back to me from their techs. My main focus is Ed for the entire show.”

For his mix, Keyes says, “Ed takes his vocal, guitars—acoustic and electric—and kick and snare. There are a few cues that he needs keyboards or Mike’s guitar for the intro of songs. Since we started flying sidefills, we have not needed to use reverb except for outside. Other than that there is no compression or effects.”

Trial and error over numerous tours has led Vedder back to using a more old-school approach. “This tour Ed has gotten rid of the in-ears altogether and is using six wedges and the sidefills only. We have just gotten to a point where he is really enjoying the sound onstage. I do not foresee him ever going back to ears.”

As for the rest of the band, she says, “[They are] a combination of ears and wedges.” Keyes delivers six custom mixes to each band member [Vedder, Gossard, McCready, bassist Jeff Ament, drummer Matt Cameron, also of Soundgarden, and keyboardist Boom Gaspar]. In total, Keyes sends out 17 wedge and sidefill mixes, two stereo mixes, and two mono ear mixes. In addition, there are five mono ear mixes and one stereo ear mix for the respective band members’ techs.

“Matt is on wedges only,” Keyes explains. “Stone and Boom use one ear and wedges. Mike and Jeff use stereo ears and wedges. Their mixes are pretty straightforward—a full mix for Stone, mainly guitars for Matt with a bass and guitar [McCready] cabinet. Boom is mainly bass, keys, vocals, kick and snare. Mike and Jeff blend their instruments with kick and mainly put other guitars from Stone into their wedges. Vocals are in everyone’s mix, loud.”

She previously mixed on a Midas Heritage and then a Yamaha PM5D (briefly) but has been using the Midas PRO9 since 2010. “The switch was determined by running out of outputs and inputs, and production savings on not having to ship it worldwide,” she notes. As for wireless, the band uses a Sennheiser G2 system, which they own.

Pearl Jam has recorded their performances since 2000, releasing them in various formats as part of their ongoing live bootleg series. Recording engineer John Burton describes the process as follows: “Grace M802 mic preamps into Pro Tools 9 using the 192 I/O [with] 72 inputs, recording [to] 96k/24-bit WAV. Multi-track hard drives are sent to [longtime live mixer] Brett Eliason to mix. The mixes are mastered at RFI for CD, HD FLAC, FLAC and MP3 256 VBR.” ■

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See more photos of Pearl Jam at Oakland’s Oracle Arena in November 2013. mixonline.com/012014

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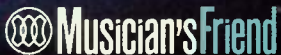
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Late last spring, Rat Sound of Los Angeles debuted a 16-box EAW Anya rig at the Gobi Tent at Coachella, later taking delivery of the first 40 modules. Since then, the system, in one configuration or another, has been out for eight events, the latest being the largest at Mandalay Bay's Event Center for the Fox broadcast of the fourth annual American Country Awards.

Production company ATK Audiotek, led on-site by VP and production mixer Mikael Stewart deployed the Rat rig in two side hangs, each a 10-6-4 stepped profile, wrapped front to side, for the 12,000-seat venue. Each of the trapezoidal modules contains 22 transducers, 22 amplifier channels of DSP and Dante networking capability. The "new" in the all-new system lies primarily in the precision of variable system coverage, horizontally and vertically, through a technology the company calls Adaptive Performance.

Essentially, Adaptive Performance allows an Anya array to rapidly generate virtually any three-dimensional wavefront surface and simultaneously optimize the system frequency response to match the optimal



requirements of any venue. The precision with which a system can be adapted, not just horizontally but vertically, is remarkable.

ATK's Stewart mixed FOH production for the ACAs at a DiGiCo SD5. Ron Reaves, who mixes house sound for the Grammys, the Latin Grammys (also at Mandalay Bay this year) and countless other large-scale TV events, handled the music, also at an SD5.

"I really enjoyed mixing on the Anya system," Reaves says. "It's a very fast, responsive, and accurate system that was very quick and easy to tune once it was configured. In addition to that, the design and technology involved in it is amazing to me. At television shows, it's not unusual to change the trim height of the P.A. a couple of times before everyone is happy from a scenic standpoint. With the Anya, instead of bringing the P.A. down to the floor and re-angling it, we were able to configure just in the software and instantly change our coverage pattern!"

One of the chief benefits espoused by the company is that you can hang the basic rig, then shoot the room and optimize through the system's Resolution 2 software. The system is able to adapt without the need of a separate side hang or outfills, even if the stage or seating configuration changes after flying the rig. In one of the early deployments, the stage was moved back 12 feet, seats were added up front, and the rig was simply recalibrated, not taken down and re-hung. It worked flawlessly without adding front-fills. —Tom Kenny

BRAD BAISLEY IS CMA'S MONITOR ENGINEER OF THE YEAR



Monitor engineer Brad Baisley spent the summer and fall of 2013 supporting Blake Shelton's Ten Times Crazier tour through the continental U.S., appearing in mid-sized concert venues. In October the CMA recognized Baisley's work as he received the 2013 SRO (Standing Room Only) Award award for Monitor Engineer of the Year. The CMA Board of Directors created the SRO (Standing Room Only) Awards in 1990 to honor outstanding professional achievement within the touring industry. "It's pretty much the highest honor

a live sound engineer can get," Baisley says.

Baisley cites the importance of his signal chain in faithfully reproducing Shelton's vocals out on the road, "with less distortion and more clarity," he says. "I wanted a set of physical knobs to turn at any moment without hav-

ing to click through a bunch of plug-ins. A lot of the software processors I was using added too much artificial harmonic content. While sounding impressive initially, it became fatiguing over the course of a long performance. I was looking for a precise yet warm and quiet microphone preamplifier. I wanted a musical equalizer where I could make quick adjustments to the overall tonal balance of the vocal. Discrete electronics almost always sound better than those using complicated integrated circuits.

"I am currently using a Radial Workhorse PowerStrip with a Radial PowerPre microphone preamplifier and Q4 equalizer," he continues. "The PowerPre places the vocal in such a great way in a crowded mix. The Accustate gain control on the PowerPre ensures no additional noise is added to the channel. I love the tone shaping ability of the high- and low-shelving bands on the [Q4] EQ. They seem to have a very gentle slope and by cutting them both, ever so slightly, I am able to emphasize the important vocal midrange frequencies while retaining the low frequency power and high frequency air."

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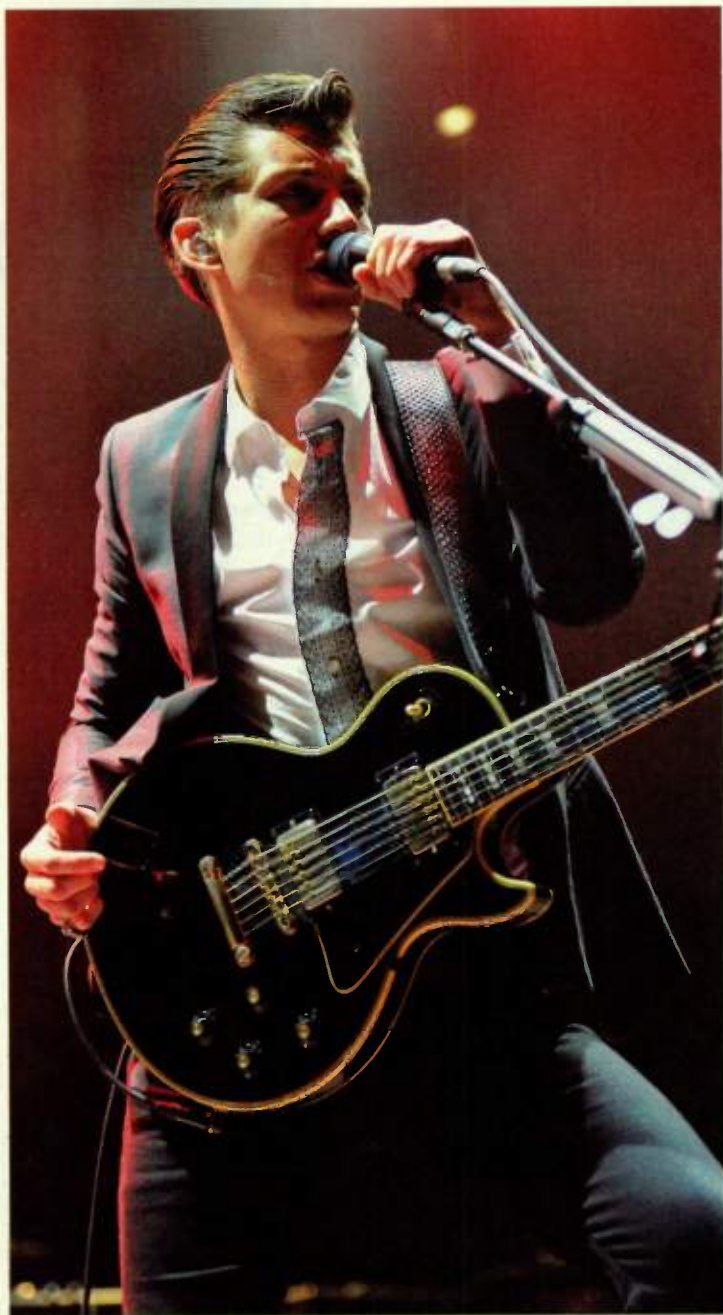
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ARCTIC MONKEYS



The Arctic Monkeys—Alex Turner, vocals, guitar (pictured, singing into a Sennheiser e935); Jamie Cook, guitar; Nick O'Malley, bass; Matt Helders, drums—stopped in at the Fox Theater, Oakland, Calif., in late fall 2013, where they took advantage of the Meyer Sound house P.A.



"I'm mixing on the DiGiCo SD10 with a pair of Waves SoundGrid servers and an SD-Rack," says **front-of-house engineer Matthew Kettle**. "It's a very powerful and flexible system. I especially like the way the Waves plug-in technology is integrated into the workflow of the desk. I'm also using a DiGiCo UB MADI USB interface into Logic Pro X for making archive multitrack recordings and for virtual soundchecks.

"I'm using quite a few Waves plug-ins, including the NLS, SSL Compressor, MPX Tape, CLA-76, Kramer PIE, H-EQ, Doubler, Si-Imager, Renaissance De-Esser, C6, REDD17, RS56 passive EQ—a recent favorite on the stereo bus—H-Delay for tape delays, IR-Live for spring and plate reverbs. I use more of the vintage gear plug-ins with Arctic Monkeys as it really suits their aesthetic. I'm currently really into the IR-Live with them, as it opens the door to so many great classic effects IRs. I deliberately try to exist without outboard gear, for purely pragmatic reasons. We do a lot of travel between continents and have to pick up local production for each leg, often with very little pre-production time. I love the simplicity of having everything contained inside the show file."



Guitar tech Steve Bodie is responsible for guitarist/vocalist Alex Turner. Pictured is a Selmer Zodiac and Estey amp combo miked with a Sennheiser 906 and 421, "a classic combination blended together."



"I'm mixing on a Soundcraft Vi6 for the tour," says **monitor engineer Will Doyle**. "I really like the way the desk is laid out—it's very easy to see a lot of information at the same time, which I think gives it a very analog feel. It also makes it easy to multitask, which is great for monitors. It's possible to work on three mixes at the same time; for example, two on encoders and one on faders. There's no having to assign graphic or parametric EQs to outputs or any nonsense like that. They're just there to start with. One of my favorite features is having VCAs within aux sends. So if a band member wants the drums up, I can just move one fader to oblige, without affecting anyone else. I suppose the most important thing is it sounds great. The preamps are really clean, the EQ ranges from being dead subtle to very effective when you need it, the automation is easy to use and the compression sounds natural.

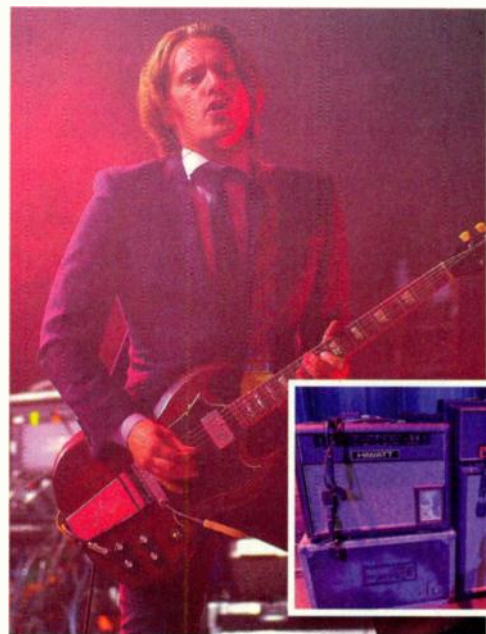
"Everyone has Ultimate Ears UE7s and Shure PSM1000 in-ear systems," Doyle continues, adding that Wireless Workbench makes it quick and easy to find clean frequencies. "To get a bit of air moving onstage there are also three pairs of d&b M2 wedges across the front and a stack of d&b C7 on either side as sidefills. Using wedges for the low end frees up a bit of headroom in the IEMs.



Drummer Matt Helders' kit is miked with a Sennheiser 901 and 902 in the kick drum ("901 for loads of attack and the 902 for body," says FOH engineer Kettle), Beyerdynamic 201s on snare top and bottom to reduce spill, Shure SM81 on hi-hats, Sennheiser 904s on toms "because they sound great and are nearly indestructible," and AKG 414s on over-(under)heads. "I think we nicked the idea for a 904 on drum vocals from watching the Foo Fighters," adds monitor engineer Doyle. "Unobtrusive mics get hit less."



Bassist Nick O'Malley is supported by **Guitar and Bass Tech Scott Gillies**, and plays through a setup of a Fender Bassman 100 and Ashdown 300 amp, each miked with a Beyerdynamic M88.



Guitarist Jamie Cook's amp setup comprises a Hiwatt and Simms-Watts 100, each miked with a Sennheiser 906 and 421, then blended together.

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MODEL 4288 MKII

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Frequency range 24Hz-37kHz

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MODEL 42 MKII patent pending

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DANTE NETWORKING FOR 'THE ARSENIO HALL SHOW'

TEXT AND PHOTOS BY STEVE HARVEY

"From Stage 6, Sunset Bronson Studios, on the world-famous Sunset Boulevard, it's The Arsenio Hall Show!" With that announcement, Hall, who in 1989 was the first late-night talk-show host to successfully challenge Johnny Carson's dominance, returned to the spotlight recently with a new one-hour syndicated show.

The fresh start provided an opportunity for the music-heavy show's audio team to design a flexible, reliable networked system with none of the signal-quality issues associated with copper wiring and splitters, and, of course, one that offered pristine sound. Music mixer Peter Baird of The Remote West Company, a veteran of numerous TV shows and owner of the Little Red Truck, sketched out the ideal workflow. "We called it Peter's Cost-Is-No-Object Arsenio Music Chart," he said, deadpan.

Production mixer Ish Garcia, another TV veteran, had brought Baird onto *Arsenio*. Both are alumni of *Lopez Tonight*, a talk show that ran from 2009-11, as are three members of Hall's house band, known as Posse 2.0. "Basically it's the same show," said Garcia. "We've been there, done that."

Having had to make do with hand-me-down equipment and fewer inputs than they needed on *Lopez*, Baird and Garcia were determined that this time would be different. As things turned out, they got everything they wished for.

The system uses five Yamaha CL Series desks. FOH mixer James Young manages a CL5 for the guest band and a CL3 for the house band, each feeding six stems—left, right, sub, lead vocal, background vocals, and a "guests" stem—to a second CL5, where they are mixed with the production elements. The mix is delivered to the 200-strong audience via three hangs of d&b audiotechnik speakers supplemented by JBL Control 25s under every third or fourth seat. Monitor engineer Greg Keslake mixes the house and guest bands on separate CL5s. Keslake, who also looks after the eight Shure and six Sennheiser G3 wireless microphone systems, feeds as many sends as possible by cleverly using direct and matrix outputs, to the Posse's Aviom 360 personal monitor mixers.

"We wanted anyone on the system to be able to pull off whatever inputs they needed to land on whatever desk they wanted," Baird says,



The core audio team of music mixer Peter Baird, production mixer Ish Garcia, monitor engineer Greg Keslake and FOH mixer James Young

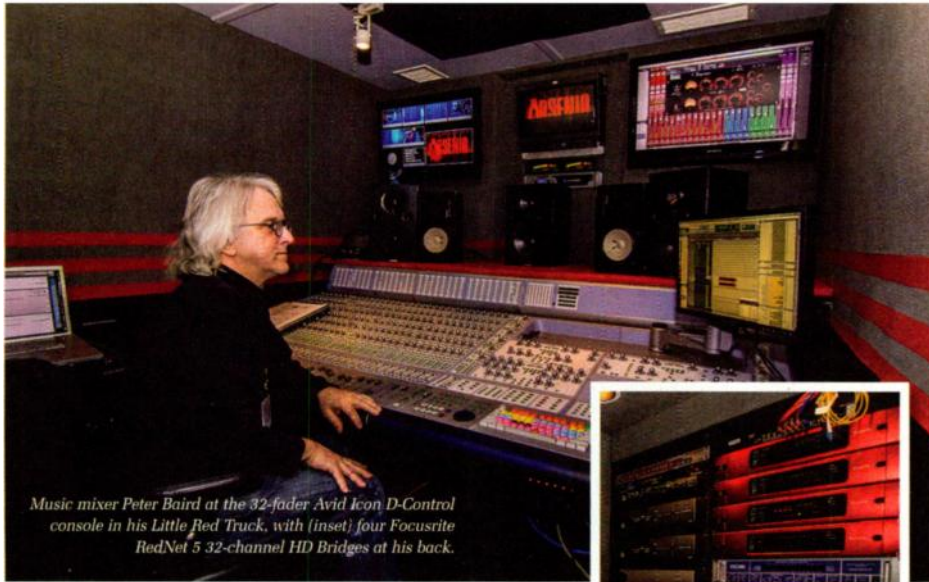
adding that having a networked system with a single set of head amps offered economies of scale.

"At the same time, we wanted both FOH and monitors to have a little bit of immunity," he continues. The guest console at both positions is available to the artist's engineers, if necessary. "If somebody really screws something up on one desk, the production desk is immune."

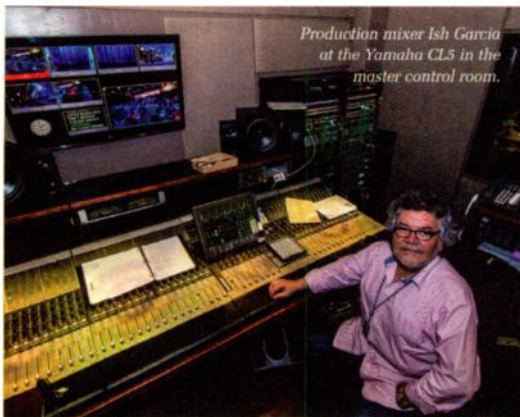
The Yamaha desks are integrated with six Yamaha Rio I/O boxes on a single Dante network connecting monitors, FOH and the truck. "I wanted to have 64 inputs for the guest band. House bands have always engaged in mission creep, and I knew I wanted eight or 10 inputs open for guest artists, so again, 64 inputs," says Baird. The math worked perfectly: two Rios are dedicated to the house band, two Rios to the guest band, another Rio to the production microphones, and a Rio at FOH accepts production feeds from Garcia.

The vendor for the Yamaha consoles and other equipment was Video Equipment Rentals of Anaheim, Calif., which bent over backward to meet the show's needs, Garcia reports. "A big shout-out to Steve Cormier at VER," Baird says. "He really was a huge help in getting us going."

But with Baird's truck parked almost 300 feet away, Cat-6 cable, which



Music mixer Peter Baird at the 32-fader Avid ICon D-Control console in his Little Red Truck, with (inset) four Focusrite RedNet 5 32-channel HD Bridges at his back.



Production mixer Ish Garcia at the Yamaha CL5 in the master control room.

works optimally to about 330 feet, was unable to deliver data error-free over the network and was replaced with fiber.

"It turns out that the switches were not relocking the timing signal from the master Dante clock," explained Tim Kubit, who was hired by the producers and CBS to apply his considerable engineering and administrative expertise to the entire workflow necessary to bring the show to air. Based on this experience, he adds, on similar future projects, "I'm going to go with fiber distribution between switches."

Baird originally planned to mix the music in a room near the set. "I brought [studio designer/acoustician] George Augspurger to look at the stage. He said, 'If you can put it outside the building, it's 99 percent better.' I said, 'I don't mind parking my truck here for a year.'"

With the bottom having fallen out of the truck market for all but a select few, says Baird, he was happy to take the gig, which gave him the financial wherewithal to install four Focusrite RedNet 5 32-channel HD Bridges to interface between the

network and his Pro Tools rig, newly upgraded to Version 11 and HDX3.

"The four RedNet boxes are hooked into two of the HDX cards, 64 channels each. That's how I separate the house and guest bands," he explains.

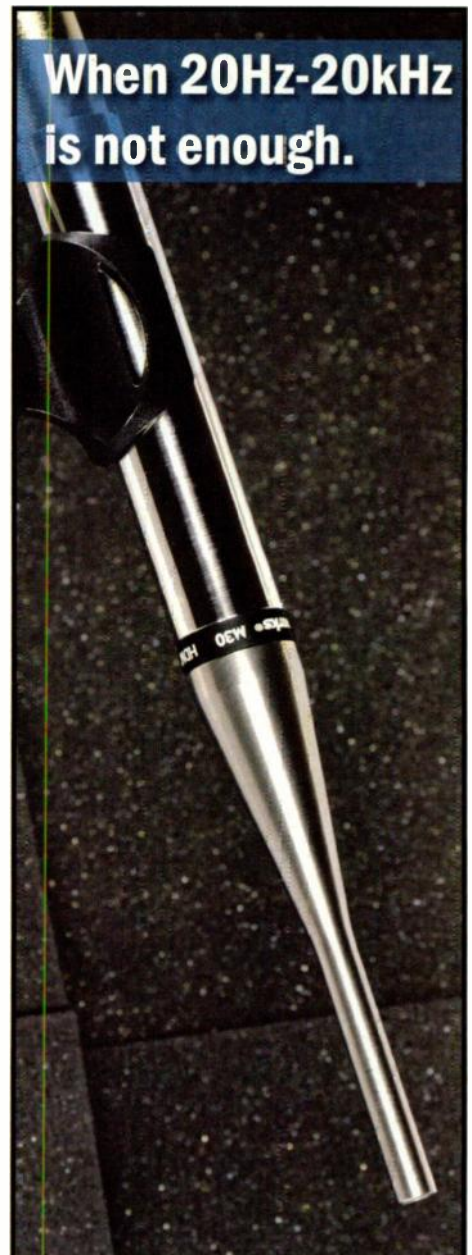
Designated the "network nanny" by the team, Baird manages the system's latencies. "I'm running the RedNet Dante network at 5 ms. Between the RedNet 5s and Pro Tools is half a millisecond, so it's blazing fast." Baird has settled on 1 ms for everybody in the house. "We're very happy with the way this is working right now."

Garcia took the opportunity to extend the capabilities of his sound effects and announcement playback system with the addition of a Novation LaunchPad and Scarlett 6i6 computer interface. Where previously he would have had an assistant firing off cues from a laptop, Garcia now records and edits in a 360 Systems Instant Replay, then transfers the files into a computer running Ableton. He maps the sound and voice cues to the buttons on LaunchPad, which he has next to his hand on the Euphonix, for easy triggering.

"I had [Novation product specialist] Raul Resendiz come out and give me a little hands-on training. This definitely makes my life easier."

Summing up his job, Garcia laughs, "Peter is desperately trying to make the music sound like a CD. Then he hands it over to me and I desperately try to make it sound like a TV show." ■

Steve Harvey is a veteran writer for Mix's sister publication Pro Sound News.



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Crisis Management While Tracking

**SOLVING PROBLEMS
AGAINST THE CLOCK**

BY MICHAEL COOPER

Like a Polaroid left out in the sun, the hegemony of multiroom tracking facilities in our industry is fading fast. With it goes the seasoned team of recording engineers and technical support staff, a brain bank that green assistants and experienced pros alike could turn to when a session suddenly went off the rails.

Those life rafts are gone. Each of us, whether studio owner or freelance engineer, must now face whatever storm a tracking session hurls at us—alone. It's sink or swim, and we'd better get back on dry land before the advancing clock sours our clients on a stalled session. Whatever crises arise, our reputation depends on finding solutions quickly.

This month, *Mix* looks at five nail-biting problems engineers are likely to face at some point in their careers while tracking. We'll offer solutions to get your session back on track quickly, and we'll explain the technical reasons why they work. First up: an instant fix for unruly acoustics.

THE RINGING BOOTH

A band wants you to track all their instruments and keeper lead vocals at once, to capture the energy of their live performance. You stick the singer in a small booth that offers the best isolation. Running down the first song, you immediately know you're in trouble. The powerhouse singer keeps hitting a note that excites a resonant frequency in the iso booth's observation window, polluting the track with a discordant, ringing tone. You rue the day you decided to use an off-the-shelf thermal window assembly in the window's construction; its parallel panes of glass are prone to sympathetic resonance, and the chicken has now come home to roost.

You certainly can't stop the session and replace the window on



Fig. 1: To eliminate sympathetic resonance in an iso booth's observation window, Acoustics First BlockAid Transparent Vinyl Sound Barrier is pressed against the lower left corner of the glass pane.

the spot. In fact, your budget precludes a rebuild at any time. You're stuck with that window.

The solution is to press a small patch of transparent vinyl sound barrier against a bottom corner of the glass pane facing into the booth (see Fig. 1). The vinyl barrier needn't take up more than 20 percent of the pane's total surface area to be effective. Simply breathe on the side of the vinyl that will abut the glass surface to make it tacky enough to stick to the pane, and sit the bottom edge of the vinyl barrier on the sill to support its weight. The barrier will damp the ringing vibration of the glass and, because it's transparent, the performer will be able to see through it. Problem solved in 60 seconds!

Let's take a closer look at this problem and its solution. Sympathetic resonance is a fairly common headache for small booths that use off-the-shelf thermal window assemblies in their construction. When two panes of glass of equal thickness are mounted parallel to each other, they act much like a drum and ring sympathetically at the same frequency. (The rigidity and low mass of glass make it prone to vibration.) In a small booth, it's difficult to place a singer or instrument far enough away from the glass to prevent loud notes at a specific fundamental frequency from exciting it.

Vinyl sound barrier stops the glass from ringing in two ways. First, it damps the glass' ability to vibrate. Second, the vinyl barrier effectively increases the mass of the pane it's adhered to, changing its resonant frequency from that of its opposing glass pane and preventing sympathetic resonance between the two panes. In fact, you can stop the glass from ringing by adhering to it any viscoelastic material (such as rubber or soft plastic) having sufficient mass. Vinyl barrier is a particularly great solution because you can see through it and its pliable, slightly tacky nature allows it to mold uniformly to

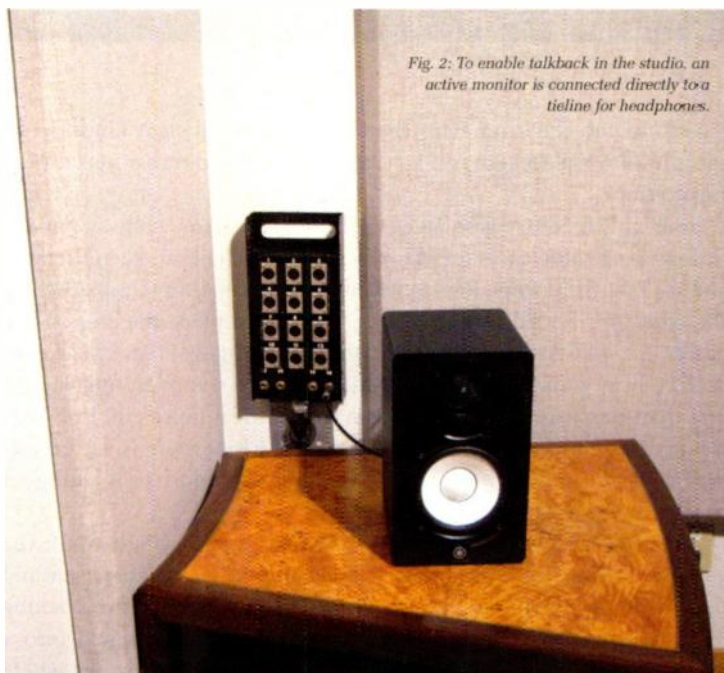


Fig. 2: To enable talkback in the studio, an active monitor is connected directly to a tieline for headphones.

a glass surface when it is barely damp (vapor from your breath does the trick). Acoustics First Corporation sells its BlockAid Transparent Vinyl Sound Barrier at a cost of \$103 for roughly 12 square feet (4 feet wide x 1 yard long, the minimum size they'll ship). Buy a longer roll to completely cover large windows in order to block sound transmission through them while letting in light.

THE MISSING SPEAKER

You're recording a famous Hollywood actor narrating a book, for release on CD. At the start of the session, the talent declares that he doesn't want to perform while wearing headphones, as they sound unnatural and are distracting; he wants to just read the book and hear his voice supported by the natural acoustics of the room. The producer, however, needs a way to communicate often with the talent from her seat in the control room. Problem is, you have no speakers wired up in your tracking room; you've always relied on routing talkback to headphones.

You consider wiring up a spare speaker in the tracking room, but there's a hitch: None of the spare audio cables you have on hand are 50 feet long, the length required to span the distance between the control room and the talent's position in the tracking room. You could patch together multiple cables in series, laying them out on the floor between rooms, but that would still risk having the talent and producer trip over cables as they're walking in and out of the control room and studio.

The solution is to use an existing tieline for headphones to wire up a spare active monitor in the tracking room. To set this up, first disconnect one of the cables that's plugged into a discrete channel output on your headphone amp in the control room; this line should already be hardwired on its other end to a headphone jack on your tieline panel out in the studio. Plug the free cable end directly into an unused aux send on your mixer—specifically, an aux send that talkback can be routed to. In the tracking room, plug a short cable into the headphone jack served by the aux send, and connect the other end of the cable to your spare active monitor (see Fig. 2). To avoid a feedback loop, make sure the output for the talent's audio track is not routed to the aux send you're using to feed the monitor out in the studio. (To keep a session moving along, produc-

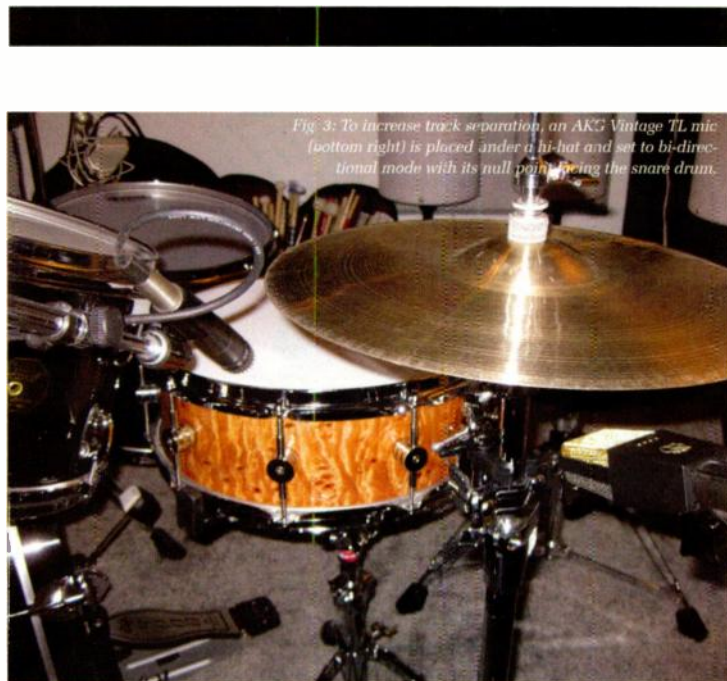


Fig. 3: To increase track separation, an AKG Vintage TL mic (bottom right) is placed under a hi-hat and set to bi-directional mode with its null point facing the snare drum.

ers of high-profile book-on-CD projects typically never play back takes for the talent to hear, but simply have them reread on a separate take any section they feel might not have been up to snuff. An editor cobbles together the various takes later.) It should only take you about three minutes to reroute the headphone feed directly to an aux send and wire up a monitor to the tieline. Problem solved!

THE WIMPY HAT

An inexperienced band is tracking basics in your studio. The drummer is hammering the overhead cymbals and snare drum, but he's playing the arrangement's intricate, all-important hi-hat pattern like an old lady. As a result, the cardioid mic on the hi-hat is picking up bleed from the snare drum and overhead cymbals exponentially louder than the actual hi-hat sounds it's intended to capture. What to do?

Ditch the cardioid mic. Place a side-address, multipattern condenser mic under the hi-hat and, if possible, point it up at the hat from directly below where it's being struck (see Fig. 3). Set the mic's polar pattern to figure-8 mode, and engage a highpass filter to compensate for the pattern's bass proximity effect. Orient the top of the mic—a null point—to point at the shell of the snare drum so it will reject its sound. The hi-hat itself will form an acoustic shadow—a de facto metal gobo—that will shield the mic from bleed from the overhead cymbals. Problem solved in two minutes!

Why does this solution work so well? A figure-8 polar pattern rejects sound 90 degrees off-axis. For a side-address mic, this means the mic will not only reject sound arriving at its sides, but also at its top and bottom and any other point that lies in the plane that is perpendicular to the head capsule. Furthermore, high frequencies have very short wavelengths that have difficulty wrapping around objects—like a hi-hat. A mic positioned underneath a hi-hat will be shielded from the highest frequencies produced by overhead cymbals, provided there is not a clear sight line from overhead cymbal to mic.

THE LOUDMOUTH

You're recording a performer's acoustic guitar in stereo with a spaced pair of mics while simultaneously recording her voice with a third mic.



Fig. 4: The Radial SGI Studio Guitar Interface System can purportedly drive cable runs up to 300 feet without signal loss.

Unfortunately, her singing is louder than her guitar playing. How can you curb vocal bleed into the two guitar mics? Also, the singer has a high, thin voice you may need to bolster by using upper-bass and low-midrange EQ boost during mixdown; you realize any guitar bleed into the vocal mic will also receive that boost, making the instrument sound boomy. You need to minimize bleed into all three mics as much as possible so you can balance levels and EQ for their discrete tracks at mixdown.

Here's the fix: Set up three ribbon or bi-directional condenser mics; that is, side-address mics with figure-8 polar patterns. Position two of the mics (preferably a matched pair) as a spaced pair slightly higher than the guitar, and angle their capsules slightly downward so they aim at the guitar's bridge and 12th fret, respectively. (This is just a suggested starting point.) Fine-tune each mic's height and angle so that the top of its head grille—the mic's null point—is aimed at the singer's mouth, rejecting the sound of her singing.

Hang the vocal mic upside down so that its capsule is aimed at the singer's mouth (or slightly higher or lower as needed to respectively capture more head or chest register). The top of the vocal mic—its null point—will be pointing down at the guitar, rejecting its sound. As an added bonus, the mic's bass proximity effect—substantial with a bi-directional polar pattern—will boost the singer's bass and low-midrange frequencies, bolstering her inherently thin tone.

If the singer's voice sounds too boomy or blurry, reduce the bass proximity effect by pulling the mic away from her mouth. Lower the mic slightly and readjust its angle so that the capsule is pointing back up at her mouth and the top of the mic remains pointing at the guitar.

You may need to compromise a bit in your orientation of the mics' null points. Oftentimes, a little bleed has to be tolerated in order to aim the mic capsules so that they capture the best sounds from the guitar and singer. Nevertheless, using bi-directional mics smartly should give you superior track separation.

THE BLEEDING AMP

While setting up to track basics for a hard rock album, the producer tells you he wants no mic bleed between any of the instruments. Unfortunately, you've run out of iso booths in which to put the guitarist's amp and, judging by the dude's big hair, you just know that amp's going to be cranked up to 11. The drums are in the big room, bass is going direct and the singer and other instruments have laid claim to all of your iso booths. You don't have an iso box big enough to accommodate the guitarist's amp. The guitarist insists he's got to be in the

big room with the drummer—the focal point of all sight lines—so he can cue all the players in real time as to the musical transitions for the rubato track.

Your only recourse is to place the amp in a narrow hallway outside the tracking room or in a bathroom down the hall. To keep the amp and its mic from impeding foot traffic in the hallway and suffering the corridor's horrid flutter echoes, you opt to place the amp in the bathroom. The bathroom presents two challenges: First, it's around 80 feet away from where the guitarist wants to stand; an unbalanced line that long is bound to fall victim to electrical noise and lose high frequencies en route to the amp. Second, the bathroom is very reverberant—not conducive to recording. This conundrum is going to require a two-part solution.

First, break out a Radial SGI Studio Guitar Interface System for the guitarist to use. The SGI system includes the SGI-TX transmitter and the SGI-RX receiver (see Fig. 4). The SGI-TX, placed in the tracking room, will convert the noise-prone unbalanced guitar signal into a balanced signal and drive it over the long haul to the bathroom, where the SGI-RX will convert the audio back to an unbalanced signal the amp can accept. Have the guitarist plug his standard-length guitar cable into the unbalanced input of the SGI-TX. Route a long balanced, low-capacitance mic cable with 100-percent shield coverage—such as Mogami W2549—from the SGI-TX's balanced output to the bathroom and the SGI-RX's balanced input. (The cable's ultra-low capacitance will help preserve high-frequency response, and the full shield coverage will block electromagnetic interference.) Patch a short guitar cable from the SGI-RX's unbalanced output to the guitar amp's input. The SGI system's transformer balancing will reject hum and buzz from ground loops. The guitarist can temper the signal's high-frequency response by turning the SGI-TX's Drag Control pot, which adjusts impedance from 22 kilohms to 1 megohm (1 megohm providing the brightest sound).

On to the next challenge: The nightmare bathroom, which has a tiled floor, sounds like a funhouse. You need to create an acceptable acoustic environment within the bathroom for the amp and its mic. This will require absorbing as many peashot echoes and as much room tone as possible. Place a directional mic close to the amp's grille to maximize the pickup of direct sound. Surround the front of the amp and its mic with tube traps and sofa cushions—anything you have on hand that's absorbent—and place acoustic foam or a blanket over the top of your sound-absorbing enclave. Heap throw rugs and blankets over any remaining exposed tile, leaving a walkway from the bathroom door to the amp so the guitarist can tweak the amp's controls, if necessary. Problem solved!

GRACE UNDER PRESSURE

It's hard enough handling a potential showstopper while tracking, but it becomes even more difficult when anxious clients are looking over your shoulder. How you react to the challenge will set the tone for the rest of the session. So let the storm winds blow and the waves of chaos rush in. But never let 'em see you sweat. ■

Mix contributing editor Michael Cooper is a recording, mix, mastering and post-production engineer and the owner of Michael Cooper Recording in Sisters, Oregon.



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Polar pattern Cardioid

Frequency response 20 – 20,000 Hz

Open circuit sensitivity –25 dB (56.2 mV) re 1V at 1 Pa*

Maximum input sound level 142 dB SPL, 1 kHz at 1% T.H.D.

Signal-to-noise ratio¹ 89 dB, 1 kHz at 1 Pa*

Noise¹ 5 dB SPL

Impedance 50 ohms

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* 1 Pasca = 10 dynes/cm² = 10 microbars = 94 dB SPL
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600MHz Spectrum in Danger, Looming White Space Issues

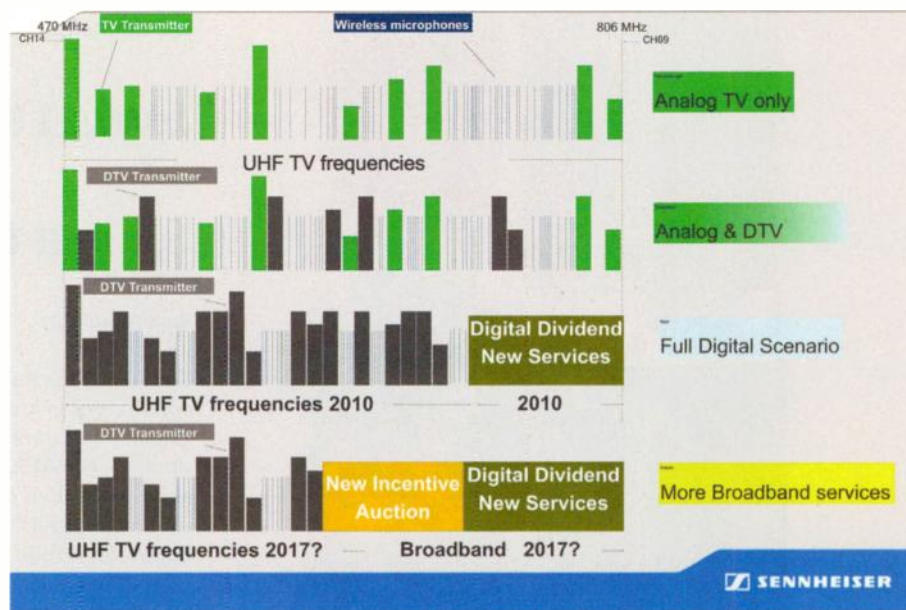


Photo: Courtesy of Sennheiser.

“Wireless microphones and monitors have very high performance requirements that need the favorable wave propagation characteristics that UHF frequencies provide. The telecom industry wants to gain more access to this prime spectrum to expand their broadband services. That’s what is causing this modern-day Range War.”
—Joe Ciaudelli, *Spectrum Affairs Correspondent for Sennheiser*

By Jeri Palumbo

Most people don’t think about the RF spectrum. They love having TV shows on their tablets or songs on their phones, but they don’t really understand what transmitting in UHF means or how it impacts every single person in the U.S. in some way, every day. But it does. Nearly every show on TV was produced using UHF devices. Every concert you attend uses UHF for their wireless mics, IEMs and instruments. Every sporting event uses UHF. Broadway shows use UHF. Breaking news coverage absolutely uses UHF. Oscars, Grammys, UHF. Your favorite game shows? UHF. Houses of Worship, UHF. And, of course, motion picture and film productions use UHF. Smaller venues, corporate events, town halls or local theaters also use the UHF spectrum. Sports, entertainment, worship, July 4th

fireworks shows—all of the content we enjoy on a daily basis uses UHF. That is about to change. Again.

As recently as 2010, pro audio wireless and RF companies lost roughly one-third of the RF spectrum due to the 700MHz auction. A portion was sold to telecom companies to expand broadband wireless services, while another portion was reserved for the National Public Safety Network to be used exclusively for fire, police, medical and emergency responders. It was a major adjustment and disruption for manufacturers, sound companies and users who had large amounts of inventory operating in the 700MHz range. Any organization operating in 700MHz had to replace their equipment to meet the new FCC rules, and manufacturers had to adjust their designs accordingly. It was costly to everyone.

Today, the industry faces a double-whammy, the first being a potential sell-off of the 600MHz spectrum in an Incentive Auction scheduled for mid-2015. If that goes through, wireless microphones, IEMs and comms may have to share some of what spectrum remains post-auction with White Space Devices. Coupled with that is the very real possibility that pro audio could lose exclusive rights to spectrum held in two dedicated TV channels (unique in each metropolitan market), 12 MHz of bandwidth that the industry had secured in the 2010 battle.

IN FRONT OF CONGRESS

The pending UHF Incentive Auction comes out of a bill



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LICENSED VS. UNLICENSED

Licensed or unlicensed? How is this determined? Well, it's rather loose. The FCC Part 74 wireless microphone rules only include broadcasters, cable stations, motion picture producers and over-the-air content providers as eligible for licenses. During the initial meetings with the FCC and the database administration, it was incorrectly assumed there were fewer than 1,000 wireless microphones in operation in the entire U.S., based on the fact that there were fewer than 1,000 licenses granted to broadcasters, not taking into account the large number of actual wireless microphones used by licensed users (a production company with one license might have 5 or 200 microphones under that one license). Nor did it take into account venues like the Staples Center, which is technically ineligible for a license and might use hundreds of wireless mics on any given night.

A large volume of pro wireless users fall into the unlicensed category: touring concerts, concert venues, theater, Broadway, corporations, convention centers, etc. Broadway alone might have more than 2,000 wireless frequencies in use on any given day within an eight-block radius in Midtown Manhattan. The FCC was unaware of this usage until the pro audio community began to raise its voice.

Non-licensed pro wireless users who want to ensure protection from White Space Devices on the channels that they are using will have to "apply for permission" to use a database of frequencies through a reservation system called the Geolocation Database (GLD), which requires a 30-day advance request. This is a practical problem for a majority of wireless users.

Licensed users on the other hand will have priority access to the GLD, which is in place to "protect" pro wireless audio from White Space Devices. To put it in perspective, James Stoffo, RF coordinator for the Rose Bowl, NBA All Star Game and other large-scale TV events, estimates that "unlicensed users are as high as 95 percent of the pro wireless user base."

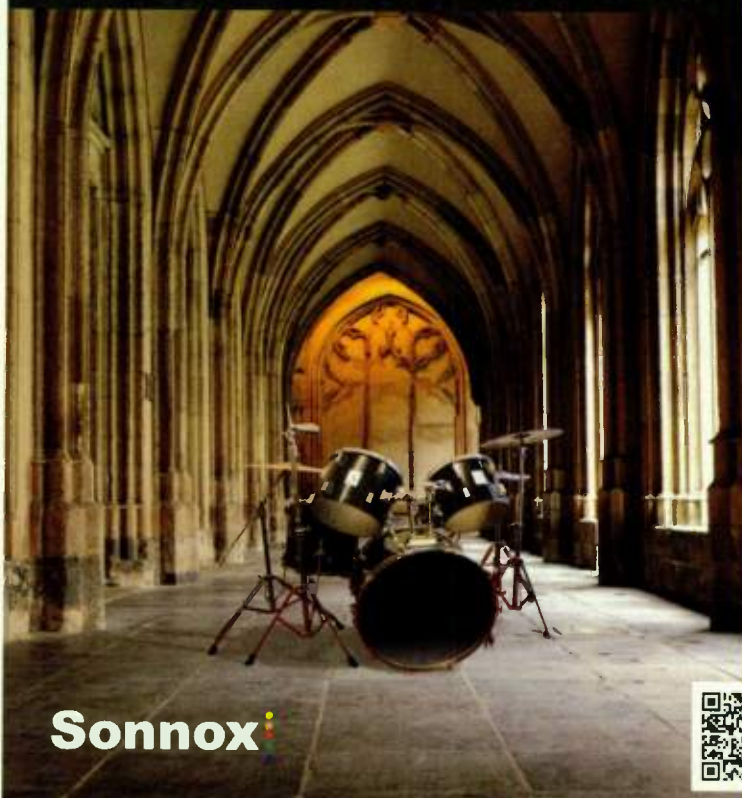
passed by Congress nearly two years ago, the Middle Class Tax Relief and Job Creation Act of 2012. It is a large and complicated bill with several provisions for stimulating the U.S. economy, one of them calling for a second auction of UHF spectrum. There are three goals: 1) fund

the National Public Safety Network (known as First Net); 2) free up more spectrum for mobile broadband delivery; and 3) make money for the treasury. This bill is wrapped with incentives for current over-the-air broadcasters to receive a cut of the auction proceeds.

Mark Brunner, Senior Director of Global Public Relations at Shure, Inc. and a regular in the halls of Congress these past few years, explains: "[Station owners] can resign their current licenses and vacate the business entirely, agree to share a 6MHz DTV channel with other broadcasters, or move to a less desirable channel. Willingness to pursue one or more of these paths is equated with a monetary value that is established in a confidential process called a 'Reverse Auction.' The 'Forward Auction' is the more familiar process by which the spectrum rights are sold to the highest bidders, which will likely be telecom companies such as AT&T, Verizon, T-Mobile, etc."

What does the UHF spectrum really have to do with The Middle Class Tax Relief Act? "Aside from generating revenue for the Treasury, the Government sees spectrum directly stimulating the economy by creating jobs and services in the development of apps, jobs, IT infrastruc-

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ture, LAN systems, tablets, cell phones and other transmitting wireless devices," Brunner states. "Consider spectrum as the new energy of the modern U.S. economy."

In addition to economic stimulus, the Incentive Auction is clearly designed to make room for mobile delivery to smart phones, tablets and whatever delivery devices emerge in the near future. When analog TV channels converted to digital, the vacant channels left over in the 700MHz range that were sold at auction after the DTV repacking process yielded close to \$20 billion. Those are high stakes, and telecom and tech companies have the money and power to play. The irony is that telecom and tech companies live off of the very thing that wireless systems help to create: content.

"The incentive auction focuses on how content is distributed, but what is missing from the debate is the importance of appropriate spectrum for content creation," states Joe Ciaudelli, Spectrum Affairs Correspondent for Sennheiser.

UHF is Prime Time, literally. TV broadcasters were the original occupiers of the UHF spectrum because it works really well. It has great wave propagation characteristics, it goes through walls and buildings, travels through forests, has a good ratio of distance to power and uses only moderate transmit power.

There are a lot of frequencies in the electro-magnetic spectrum that have different wave propagation characteristics but are not suited for wireless microphones, which have a very high and unique performance

requirement. They have to work all the time with no dropouts, have decent battery life, have better than CD quality, full-frequency response and most importantly, low latency.

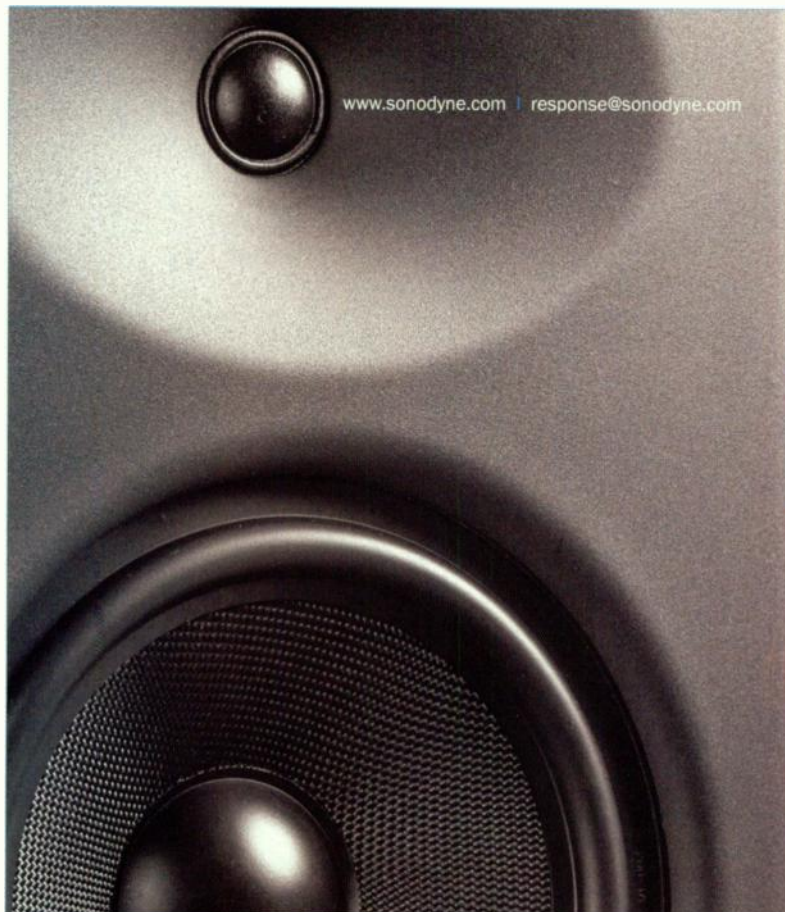
"UHF used to be a 'one-size-fits-all' solution," says Jackie Green, VP of R&D/Engineering for Audio-Technica. "You could make it inexpensive; you could use 3 channels or 30 channels if you had multiple bands. Now you need to spread it out. For example, you might want to use VHF, you might want to use 2.4GHz, you might want to use UWB, and you might want to use more robust FM/UHF."

Participation and outcome of the Incentive Auction will determine how much of the spectrum will be affected, which as of this writing is unknown. It is speculated that it could impact the 608MHz-698MHz range (TV channels 37-51) but could dip as low as the 500MHz bands.

WHITE SPACE UHF LOCATIONS

Today there are operating rules for both Fixed White Space Devices and Portable White Space Devices. WSDs gain their permission to transmit from the Geolocation Databases, which house all of the active DTV information at a specific location, as well as the two FCC-assigned exclusive 6MHz channels for wireless microphones. These will vary by market, and are generally close to TV 37. Neither a Fixed nor Portable WSD can use an active DTV or wireless microphone reserved channel.

White Space Devices below 512 MHz (TV channel 21) will be Fixed only, as Portable White Space Devices are not allowed between TV CH



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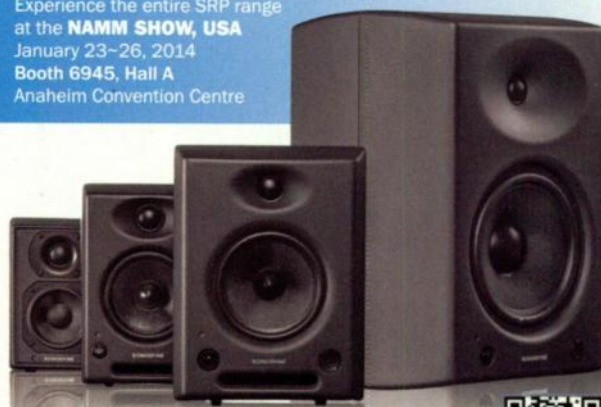
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14-20 (470-512 MHz). Generally, if you are a traveling tour, the exclusive wireless microphone channels are your best bet for the highest priority signals. From there, utilize open channels between TV 14-20, particularly those adjacent to DTV. It is imperative that these are not in use by Public Safety, however. Consult the Geolocation Database to confirm. Above 512 MHz (TV CH 21), there will be an increasing potential over time of encountering Portable WSDs, which will be more similar to today's consumer handheld devices. Unless you have reserved your channel in the database, the PWSs will be free to transmit there and may interfere with your production.

James Stoffo, RF Coordinator for this year's Rose Bowl, explains: "In addition to direct interference, once these devices are deployed in large numbers, some audio professionals also have concerns about their creation of intermod signals because they, in some cases, will have more power than a wireless mic. This problem becomes exacerbated if the devices are in close proximity to each other. Consider the Rose Bowl. You have 90,000 people all sitting next to each other. If only 10 percent, almost 9,000 people have devices on-line, it could create a problem. No one wants 9,000 consumer digital devices transmitting right on top of their microphones. If the microphone gets the slightest amount of interference, it becomes unusable.

"Every city has different TV broadcast channels, so the fixed white space transmissions will also be in different 6MHz chunks," Stoffo continues. "If you ship a package of equipment from the Rose Bowl to another venue, all of the frequencies may have to change from city to city. Not just to work within the RFscape of the other wireless at that particular game, but also due to the Fixed White Space Devices in each city."

LOOKING AHEAD

Leading manufacturers are all investigating new technologies, although there is no silver bullet that will compensate for a large loss of UHF spectrum. With WSDs looming, the challenge will be to create more spectrally efficient microphone/comms systems. We can no longer take up 200 kHz of bandwidth for every frequency we use. Equipment that uses a fraction of that bandwidth is needed so we can pack 10-15 times more wireless systems in that same space. Everyone is still going to want the same amount of wireless on these large events, and we need to find a way to accommodate. Think about moving non-critical "over-the-air" product out of UHF and into other bands. With comms, it's possible to go to VHF. With IFBs, it's possible to go in low-band VHF.

Stoffo has developed a VHF Double Sided Band system at his company Radio Active Designs, called UV-1G, which for comms can fit 10-15 frequencies in the same amount of spectrum as one wireless microphone in FM. Some of the major players with high-end digital systems on the market are: AKG's DMS700,

Sennheiser's Digital 9000 and Shure's ULXD. These are high-performance, extremely efficient systems capable of handling large-scale live events. Audio-Technica has a very robust and high-channel count 2.4GHz digital product called the System 10. They also have an interesting UWB (Ultra Wide Band) 6.35GHz product called SpectraPulse, which is far out of the reach of PWSs.

When considering digital wireless, however, Ciaudelli cautions: "It's a common misconception that a digital system is inherently more efficient than analog. Digital does allow the possibility of compression or data reduction but at the cost of audio quality and higher latency, which are not acceptable for some critical applications."

Continued on p. 81

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RECORDING THE PERFECT VOCAL

A SESSION CHECKLIST FOR NAILING THE KEEPER TRACK

BY FRANCOIS LALONDE

the singer while at the same time maintaining the excitement? Is there enough space in the track melodically for the lead vocal? Do the lyrics convey the right message/emotion for the singer/band? If you have done your job right, these questions have all been addressed. Just remember, the most important thing to capturing a great vocal is to be prepared. Nothing kills a vocal session faster than technical problems, or having the artist wait while you set the I/O in your Pro Tools session.

THE ENVIRONMENT

Always think about vibe first, then sound. The vocal should be done in a relaxed environment, wherever the singer feels most comfortable. Most of the time a singer will want a clean, warm and humid environment. Put up candles, lighting or lamps if it adds comfort. A performer needs to feel good. Sometimes the performance is better sitting, sometimes standing is better; sometimes lying down works, sometimes while dangling from a wire attached to the studio ceiling. There is no use renting out a big studio if the singer does not feel comfortable in the space. The vocals should be done wherever the singer feels the vibe—then worry about the technical side of things.

THE VOCAL CHAIN

I find it important to have a go-to vocal chain that you build on over the years. You know what it's supposed to sound like, you know the gain staging as if it were second nature, and you will be able to tell right away if something is up from the singer's perspective. You also will know right away if it is the right fit for the artist, so you can get to Plan B much quicker.

Your vocal microphone should be natural-sounding but not flat, and it should be versatile. It should be sonically flexible, meaning that it is okay being EQ'd. Some mics sound dull with no EQ but really come to life with a little touch. A good mic should also have a wide dynamic range and low signal-to-noise ratio. A lot of singers like to move in front of the mic during a long session (they don't stay put in one place because



Photo: Alexander Driscoll

Anybody who has been in this business long enough can relate: You've recorded the perfect track, everything sounds amazing! The bass is phat, the drums have the best sound you've ever achieved. The guitars are sounding fresh, and you even worked out a clever hook. Now it's time to record the vocal, and everything starts falling apart.

Vocals need to be thought out from the get-go, from the demo stage. This will allow you and the producer to first assess any musical problems: Is the song the right tempo for the lyrics? Is it the right key for

you told them to!), so audition a wide-pattern mic.

Choose a quality preamp with lots of headroom and flexible gain control—I prefer continuous pots over step gain, and I prefer one that is clean but with a little character. Input/output transformers are great for adding a little character. Some people like to record flat—no EQ or compression—but I like to have my tools handy. I will typically go into a GML8200 parametric EQ, then into a Neve 33609 compressor, but just a touch: 2:1 ratio, 3 to 4 dB of compression at the most.

Use a high-quality A/D converter and experiment with calibration. I typically use a lower setting (-22dB/-26dB) so that I can get more headroom. Use the most direct signal path possible! I will sometimes run a cable direct from the studio to the control room, then patch everything with 4-inch cables with the A/D right there in the rack. Don't skimp on cables; they do make a difference. I absolutely hate using the patch bay... god knows what goes on in there. Dust, cold solder joints, phase inverts and remnants of anything and everything that might go on in a recording studio.

Having said all that, not every mic and vocal chain works with everyone. Experiment on an off day. Try new things. But make sure the producer approves of your choices—who knows what they have at home that they want to use in the event of a later punch-in/pickup.

BEFORE THE ARTIST WALKS IN

Set up the microphone. Make sure the mic stand is sturdy. Set up the pop filter and make sure it is a good distance from the mic. I like three to four fingers wide and attached to the mic. If it isn't, I will tape it so that it is always the same distance from the mic. The first thing a singer does when they get in front of the mic is play with the pop filter. If I find that a singer has a lot of sibilance and the lyrics can't be changed, I will sometimes put a pencil vertically in the middle of the pop filter (between the pop filter and the microphone) to help reduce the sibilance. Then:

- Check the headphones, making sure each side is in phase with the other. Then check the phase of the microphone in the headphone. There will be a setting with more bass; leave it like that. It won't affect the recording, but it will make your singer more comfortable.

- Make sure the latency is acceptable in the headphones. If not, adjust the setting in your DAW, record at a higher sample rate or monitor direct. Some singers can hear the latency even on a Pro Tools HDX system. Recording at a higher sample rate will reduce the latency by half (48k=1.6ms, 96k=0.8 ms, 192k=0.4 ms). It may seem insignificant, but it does affect the singer—not just the delay, but primarily in the comb filtering between the direct internal head sound and the sound coming from the headphones.

- Calibrate the A/D and D/A converter. I like to use -22/-26 on the A/D and the standard -18 dB on the D/A.

- Have someone talk into the mic and check the signal flow throughout the chain. Good level with lots of headroom. Check for hums, ground loops, bad tubes, noisy pots.

- Check the Preferences settings in your DAW and make sure everything is the way you like it: quick punch, scroll options, latch record. Do a couple of passes with someone talking into the mic to make sure the system is stable.

- Create your recording track. Some people prefer a playlist; I like to have 12 tracks ready to record. I find that it helps everyone know where



Always think about vibe first, then sound. The vocal should be done in a relaxed environment, wherever the singer feels most comfortable. Most of the time a singer will want a clean, warm and humid environment. Put up candles, lighting or lamps if it adds comfort. A performer needs to feel good. Sometimes the performance is better sitting, sometimes standing is better; sometimes lying down works, sometimes while dangling from a wire attached to the studio ceiling.

we are, and it's a more visual reference. I name my tracks 1-artist name, 2- artist name, 3- artist name, which registers in the DAW as 1,2,3 and is easier for comping or later reference.

- Set up the headphone mix, play the track and adjust levels for the singer. Remember, the singer needs a clear sense of rhythm and pitch. Avoid or bring down any flange-y, phase-y, chorus sounds; bring the drums, bass and clear-pitch instruments up. Try not to put the vocal too loud in the headphone mix. That will throw the singer off pitch, as will too much reverb. I do like to use EQ on the Master Headphone Music Send, cutting a little 3.5k, -3dB, just to help the vocal cut through a little.

- And finally, make sure lyrics are printed out at a good size, with room for the singer to take notes.

THE SINGER ARRIVES

Be relaxed and make the artist comfortable. Listen to the song in the control room with the artist, and pick up on any clues as to what the song means to them. Do a first pass for the headphone mix, making sure they know that it is only a soundcheck. Adjust the mix and the preamp



pitch. Emotion is the only thing that sells the song, and it's what separates a good take from a great one.

EQ AND COMPRESSION?

I will often use a Radial mic splitter and record two channels of vocals, one with EQ and compression to tape and the other direct into a second preamp. That way the producer and artist (and I!) have choices. I record to a stereo track so that it's easier for comping and keeping everything together. I always try to get as close as possible to the demo effects without using phase-y, flange-y, chorus sounds. If you are using plug-ins, don't record them, and make sure the latency isn't stacking up.

A growing number of engineers have been recording direct into Auto-Tune. I will never say what is right or wrong—but that is totally wrong. I just cannot bring myself to do it—for the latency, for the emotion, for the simple fact that the untreated vocal doesn't exist or isn't recorded. You kill yourself to have the best vocal chain in the world, and then you slap on Auto-Tune!?! Sometimes that blue note is cool.

DON'T BE FOOLED

A lot of tracks these days come L1, 2 or 3'd to death and are EQ'd brighter than a Hollywood star's teeth. The best thing is to leave some headroom and bring the track down to about -18 dB and EQ off a little of the highs. Make a hole for the vocal around 3k, -3dB on the track, and make it natural. Listen to the room, listen to the speakers, and listen to music in

gain, the EQ, the compressor, the overall volume. Note: Make sure there is a lot of rhythm track in the headphone mix. If there is a section in the song with no drums (intro, breakdown), take the time to program a click, preferably before the singer arrives. You can always leave it out.

Then do a couple of complete passes with the artist before focusing on sections, and keep all the tedious punch-ins for last—it's a vibe killer. Always try to start the DAW from the same spot, a bar or two before the punch-in when working in sections. Set up a norm and stick to it. Give the singer a couple of runs with the long intro to help set the mood, then you can cut to a bar or two before the first verse.

Encourage the singer, and give direction without being negative. I have never seen a singer perform better after being told they are off

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COMPING

To quote a famous producer, if you can't get it in eight tracks, it's time to go practice. He is right. I normally do 12 tracks and don't do a playlist because I like to think of it like analog tape. It's more practical for me to have 8 to 12 complete tracks versus little chunks on a playlist when comping, but to each his own.

Some producers will fill up 100-plus tracks of vocals, some will want eight full tracks that are perfect and punch-in on those. It is hard to say which is best, but I do believe there is a natural organic peak. The singer gets better and better and will top herself take after take until "in the zone." You might get one to three takes of the singer at peak performance, and then it will get progressively worse. Your job is to make sure they reach that peak (not quitting before), then know when they have passed that peak (not over-singing for nothing). That is the real job of a vocal producer. Listen for that peak and then get them to do more tracks right away. Most vocalists will want to quit right after they hit that peak; you need a couple more to get a great comp. If they take a moment to think about it, it's gone.

In comping the vocal, I try to tell a story with the performance. Emotion always trumps pitch or timing—you can fix those if need be. Keep clear notes for later changes, and by using the "1-artist name, 2-artist name" system, you will know where you are when comping or changing takes in the comp.

DELIVERY TO THE MIX

Mixers like to have one consolidated track, tuned and timed. Make sure it is at the highest bit rate and sample rate. Try not to overuse the pitch and timing tools; you are working with a live singer, and imperfection is nice from time to time. Make sure all your fades are good, and listen for double-breaths or unnatural sounds. If there are some pop sounds (plosive P or F, too much air) on the comp, you can fix it with a highpass filter at around 90 to 106 Hz, and you can AudioSuite it directly onto the audio clip. Please don't EQ or compress the vocal after recording for delivery to the mix unless it's an effect (à la radio effects). De-essing the comp with a manual EQ is a good idea, but only if its okay with the mixer—go ahead and send two versions, with and without. And then send it off! Tomorrow you start the mix! ■

Francois Lalonde is an award-winning engineer/producer known best for his work with Celine Dion.

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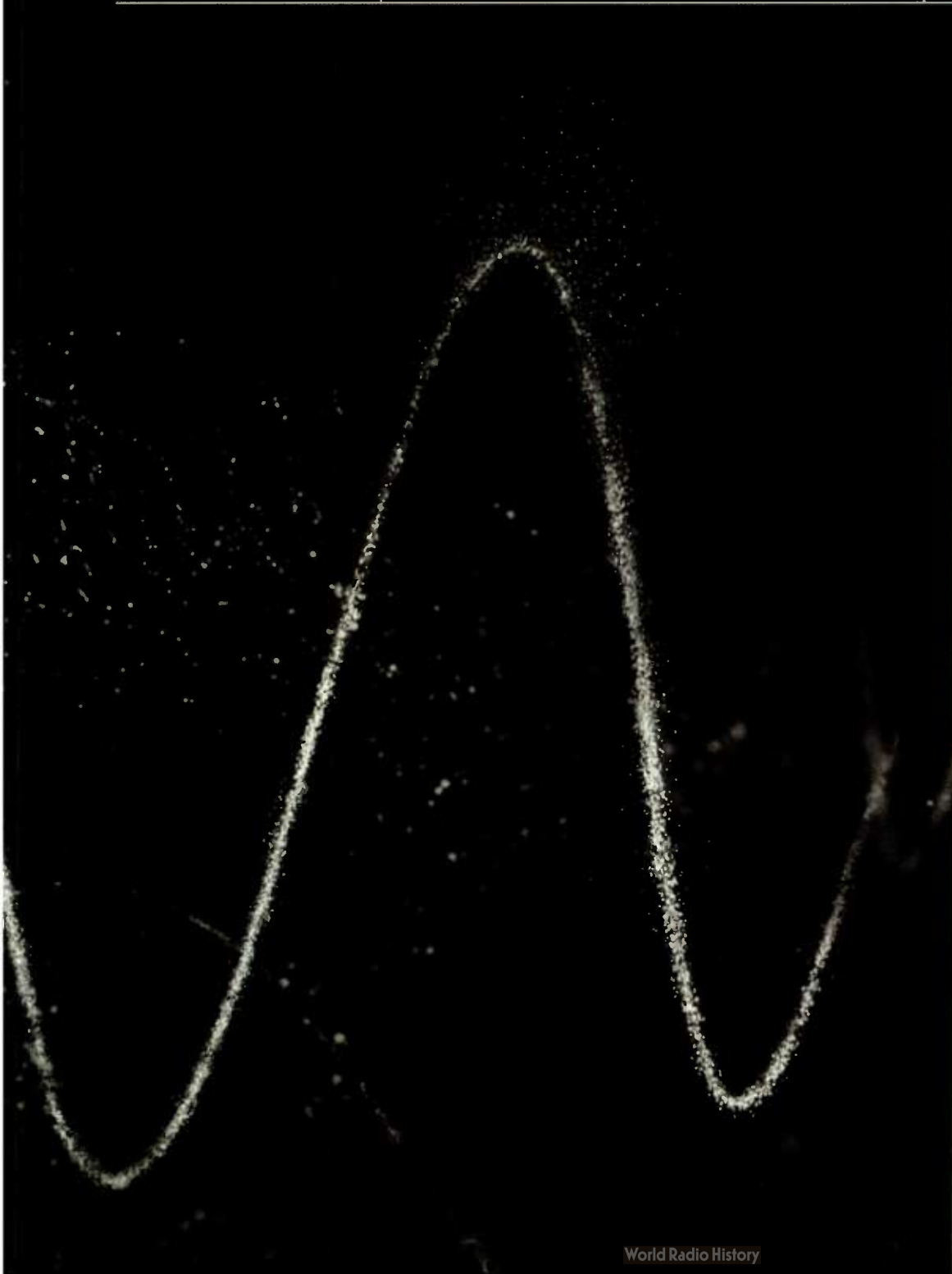
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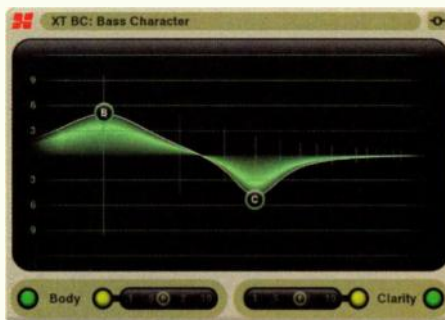
The latest upgrade to Steinberg's Cubase (\$49.99) incorporates important workflow enhancements, version updates to its instruments and new effects. At the top of the new features list is TrackVersions for creating, renaming and managing multiple versions of

one or more audio, MIDI and instrument tracks. Re-record mode features instant record restart at the original position, while Track Quick Control assignments can now be saved and loaded as presets and applied to different track types. Cubase 7.5 and Cubase Artist 7.5 feature Groove Agent SE 4, a powerful MPC-like drum sampler with detailed sound editing capabilities and pattern playback. Groove Agent SE 4 also provides automatic alignment of drum maps with the Drum Editor and Beat Designer, and includes 30 new drum kits and more than 200 grooves.

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New Bass EQ and More

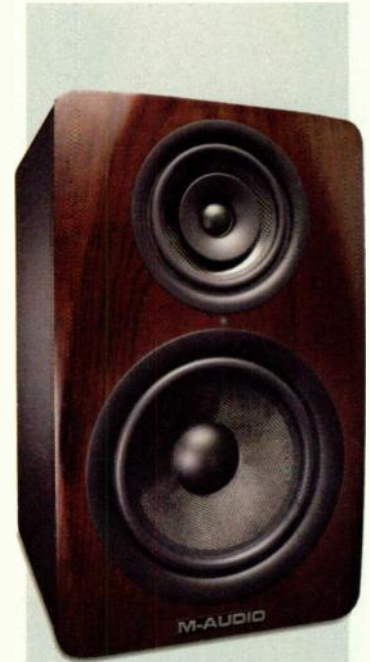
This free update of Mixbus from Harrison brings numerous fixes, as well as a new addition to Harrison's XT Series for Mixbus: the XT-BC Bass Character plug-in. The XT-BC Bass Character is an EQ plug-in from Harrison's R&D department designed to musically alter the tonality and character of bass instruments such as electric bass, stand-up bass and synth bass. Unlike a traditional EQ, the XT-BC is "frequency-agile," meaning that it tracks the pitch of the sound and applies EQ specifically to the note's fundamental or overtones. This new plug-in is compatible with Mixbus Version 2.4.



DENON PROFESSIONAL DN-700R PLAYER/RECORDER

Networked, High-End Operation

The DN-700R (\$1,099) from Denon records WAV and MP3 audio files to solid-state media storage drives, including SD/SDHC and USB. A network-based device, the DN-700R allows users to easily program the unit for scheduled events, record and play back material automatically, and designate locations for audio transfer over or outside networks. Features include a USB port and two SD/SDHC slots. The single-rackspace DN-700R enables audio recording in MP3 using full bit rate, stereo, or mono formats and WAV recordings in uncompressed PCM files up to 24-bit/96kHz. The unit offers scheduling of up to 30 record and 30 playback events while providing the capacity to manage and archive files onto networks via FTP automatically.

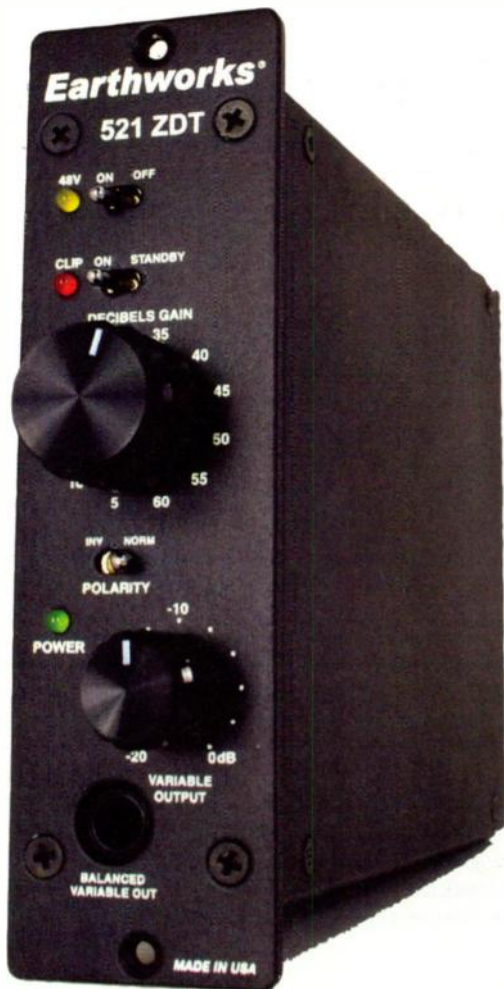


M-AUDIO M3-8 MONITORS

Affordable Desktop Speakers

Featuring an 8-inch low-frequency driver and 5-inch midrange driver made of lightweight woven Kevlar, and a 1-inch silk-dome tweeter, the M-Audio M3-8 monitors (\$349 each) offer a real wood baffle and integrated waveguides.

The M3-8's high- and mid-frequency drivers are coaxial with the midrange driver surrounding the high-frequency driver, allowing for a compact design and wide sweet spot. The cabinet offers tuned bass porting and optimized internal bracing promising the highest levels of fidelity. The three-way system offers 220 watts of Class-A/B power amplification, 3-band EQ with bypass, and low-cut filter.



EARTHWORKS 521 ZDT PREAMP

500 Series Gain Box

Based on ZDT Preamp technology designed by David Blackmer, the Earthworks 521 promises to bring the exacting standards of the ZDT Zero Distortion Preamplifiers to the 500 Series format (\$999). The solid-state 521 features switchable phantom power, polarity invert and peak amplitude clip detection. The transformerless output stage of the 521 will easily drive long cable runs without loss of quality, and gain is switchable from 5 dB to 60 dB in 5dB steps.



MERGING TECHNOLOGIES HORUS AD8D AND AD8DP

High-Res Problem Solver

Offering new options for HORUS, the high-end networked audio interface from Merging Technologies, the standard AD8D (\$1,669) replaces the AD8 and allows PCM recording up to 192 kHz, while the premium AD8DP (\$2,216) replaces the AD8P card and allows recording resolutions of DXD at 352.8 kHz and all variants of DSD up to 256 (11.2 MHz). Features include eight transparent microphone preamps, remote/local switch to line level on a per-channel basis, remote access for all parameter changes and phantom power/phase/low-cut filter switching per channel.

VALLEY PEOPLE DYNA-MITE

500 Series Gain Controller



Offering a dizzying amount of options in a small, vertical space, the Valley People dyna-mite (\$599.99) provides limiting, expansion, gating and ducking. Controls include detection circuit choices for average or peak operation. Other controls include Threshold (-40 to +20), Release (50 ms to 5 seconds), Range (0dB to -60dB) and Output, (-15dBv to +15dBv.) It also has an 8-LED gain reduction meter, clipping LED, switches for Gate/Peak/Avg operation, as well as Limit/Exp and bypass. The

Int/FM/ds/Ext switch allows the user to source the signal fed to the detector from input to output, through an internal EQ (6dB/octave boost above 2 kHz), and from an external source (sidechain).



XILS-LAB R.A.M.S.E.S. MULTI-EFFECTS PLUG-IN

Sonic Grinder, Bender, Shaper

Introducing a new concept in sound design and signal manipulation, R.A.M.S.E.S.

from XILS-lab (\$110) stands for Rhythm And Motion Stereo Engine System. R.A.M.S.E.S. dynamically adds or subtracts stereo depth and space, and reshapes, re-filters, and re-envelopes every sound source. The plug-in uses the mask concept first introduced in XILS-lab's Le Masque delay plug-in, where only masked parts of a time-based grid zone are processed by the delay and associated controls to produce even more rhythmically flexible results. Controls include frequency, filter, LFO, drive, wet/dry, delay level, delay time, offset and stereo spray.

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MONTARBO RAB1815 SUBWOOFER

Cardioid Bass Extender

Featuring a dual-transducer configuration using a 18-inch woofer in a ported reflex configuration, and a second, 15-inch woofer loaded by a folded horn, the RAB1815 radiates in a cardioid pattern from a single enclosure (www.montairusa.com, \$TBA). Design features include neodymium magnets and 4-inch voice coils producing an excursion of ± 23 mm. Both woofers can handle up to 1,600 watts of continuous power, and the entire system is capable of delivering 136 dB SPL. The RAB1815 weighs less than 135 lbs. and is built to act as a base for stacked arrays of Montarbo's RA16 enclosures. A single Neutrik 8-pole Speakon connector provides connection to the powered controller (PLM6800) or to any other power amplifier. A single PLM6800 can drive two RAB1815 units, or each RAB1815 can be driven by a 2-channel amplifier with a rated output of at least 1,600 watts per channel at 4 ohms.



RME MADIFACE XT INTERFACE

Big I/O, Small Package

The RME MADIFACE XT (\$3,149) is the world's first USB 3 audio interface offering hundreds of audio channels in a portable package. The unit connects to the computer via USB 2, USB 3 and external PCI Express. An optional Thunderbolt-to-PCI Express adapter offers longer cable runs for high-speed, big-bandwidth connectivity. The unit offers 64 channels MADIFACE I/O, four MIDI I/Os, one stereo AES/EBU and a word clock I/O. Also included are two digitally controlled mic/line preamps, two balanced line outputs and one stereo phones output, all fully 192kHz-capable.



DPA D:VOTE TOURING KITS

Road-Ready, Multi-Piece Mics

With the choice between a four-piece or 10-piece Peli case package, these new touring kits from DPA feature a tiny, lightweight, rugged and stable design. Features include a versatile, extendable gooseneck, sturdy shock-mount and a detachable heavy-duty cable. Mics can easily be unclipped and repositioned or moved to another instrument using only one hand. Additionally, the d:vote's mic mounting system is designed to be extremely gentle, never marring the finish of an instrument. d:vote has clips for all instruments. The kits come with high-SPL d:vote mics, microdot-XLR adapters, heavy-duty mic cables, drum clips, sax/trumpet clips, universal clips, plus clips for guitar, violin, piano, cello and bass.



MEYER SOUND MJF-210 STAGE MONITOR

Low Profile, High Performance

The MJF-210 is the lightest stage monitor in the company's product line, offering the sonic performance of Meyer's MJF-212A stage monitor with drivers powered by a 3-channel Class-D amplifier. Each monitor measures less than 14 inches high and weighs 67 pounds, with a front slope at 40 degrees and a constant-directivity horn (50°H x 70°V) promising wide dispersion. For real-time monitoring of loudspeaker parameters, the MJF-210 can be integrated into the Compass RMS remote monitoring system using the optional RMS module. Compass RMS features the RMServer and can be controlled in the Compass software.



barefootsound.com

Tech // reviews

SSL LIVE

Legendary Console Maker Enters Sound Reinforcement



It's not every day that Solid State Logic introduces a new mixing console, and since the company has never designed one for live sound, I couldn't wait to get my hands on the SSL Live. The Live console is a natural outgrowth from SSL's presence in the broadcast industry, where downtime is not an option and the highest audio quality must be maintained. Based upon SSL's new Tempest digital audio platform, Live is a scalable system supporting 192 simultaneous mix Paths and a staggering 976 physical inputs and outputs. There is local and remote I/O, and the desk can interface via MAD1 with SSL's Live Recorder option for recording and playback of up to 64 audio tracks at 96 kHz.

The SSL Live console can be purchased in a standard configuration with 16 balanced XLR mic/line inputs featuring SSL's Super-Analogue mic pre, 16 XLR line outputs, and 4 AES3 I/Os with sample rate conversion. The console chassis can be loaded with an additional 16 analog and 4 AES/EBU I/Os, making possible 32x32 analog plus 16x16 digital I/O without need for an outboard interface. A/D and D/A is 24-bit, 96 kHz with 96 kHz/64-bit processing. Two pairs each of redundant optical and MAD1 coaxial connections (expandable to three pairs) are provided; if redundancy is not required, these ports can run separately for increased channel count. An additional MAD1 I/O port is designated for

TRY THIS

Unique to the SSL Live is the all-pass filter built into every full processing path. An all-pass filter has a linear frequency response but varies phase as a function of frequency. This filter may be used for functions such as adjusting phase between two mics on a single source or for eliminating feedback on a wedge mix. To use the all-pass filter to eliminate feedback, select the channel and tap on the all-pass filter in the processor order graphic. You'll see a display of phase versus frequency. Pinch the bands so that a narrow width is achieved, then sweep the band to the offending frequency. The phase at that frequency will be inverted, killing the feedback.

effects routing between, for example, a laptop or effects server. Other rear panel connections include word clock, MIDI and LTC I/O, and GPIO, USB and network ports.

The Live system may be expanded with several SSL remote I/Os, including the ML32.32 analog stage box (32x32 analog, onboard A/D/A), and D32.32 AES/EBU stage box (16 AES I/O pairs). Connection between the stage boxes and console is via MAD1 (co-ax); larger systems can take advantage of SSL's Blacklight II high-bandwidth transport, which carries up to 256 bidirectional channels over a single fiber connection. When Blacklight II is employed, the BL II.D MAD1 Concentrator is used to distribute standard MAD1 co-ax to the stage boxes or to another Live console for monitor mixing (an optional mic split is available). Gain sharing can be implemented whereby one Live desk is designated as the master for preamp gain, and up to three slave consoles automatically apply gain compensation in the digital domain.

U CAN TOUCH THIS

At the center of the Live control surface is the main video display: a 19-inch high-res touchscreen that provides access to menus, channel and system parameters. This is to our knowledge the only multi-touch screen available on a live desk, facilitating operations such as changing width on a mid-band EQ by pinching the ends of the width lines, which I found very useful.

Surrounding this screen are "Tiles." Directly below the main screen is a Fader Tile containing 12 channels, each with 100mm motorized faders, Mute, Solo, and Query buttons, and Quick controls for modifying a

single parameter for 12 channels (aux send level for example), or a variety of parameters for a single channel dependent upon what is currently on-screen. Alongside each fader are separate meters for level, gate and compression—which made it easy to verify dynamics action without paging through menus. To the right of the faders is a set of Layer Select buttons and a "Screen" button that instantly brings the Tile's Mixer View to the main screen, virtually extending the channel strips into the touchscreen.

PRODUCT SUMMARY

COMPANY: Solid State Logic
PRODUCT: Live
WEBSITE: www.solidstatellogic.com
PRICE: Based upon configuration
PROS: Scalable system, outstanding sound quality and versatility, built-in redundancy.
CONS: Does not support third-party software plug-ins.

Tapping a section of this screen expands that section of a channel.

Pressing a channel's Query button instantly shows its routing without having to go to a routing menu. Querying a VCA shows its members (nothing new), but you can go the other way as well: Querying a lead vocal channel instantly shows the associated input, aux sends, Stems and VCA assignments (there are 36 VCAs).

An identical Fader Tile occupies the desk's lower left panel, and a third may be added on the upper left. Fader Tiles organize the Live console's Paths. A Path is an audio bus such as an input, output, matrix, aux send or Stem (a cross between an aux send and a subgroup). Paths can be configured as mono, stereo or L/C/R. Of the 192 Paths, 144 are considered "full" processing Paths: 4-band parametric EQ, high- and lowpass filter, compressor/limiter, gate/expander, two inserts for internal or external effects, an all-pass filter (see the "Try This" sidebar) and channel delay up to two seconds. The other 48 Paths are "dry," featuring only the two insert points and a fader, consuming fewer resources than a full Path. These can be used for inputs that do not require processing such as an effects return, click, etc. The processing order of a full or dry Path is completely independent of other Paths and can be changed on-screen in real time. While mixing, I could drag and drop the EQ before or after the compressor without hearing any audible glitches. Very impressive.

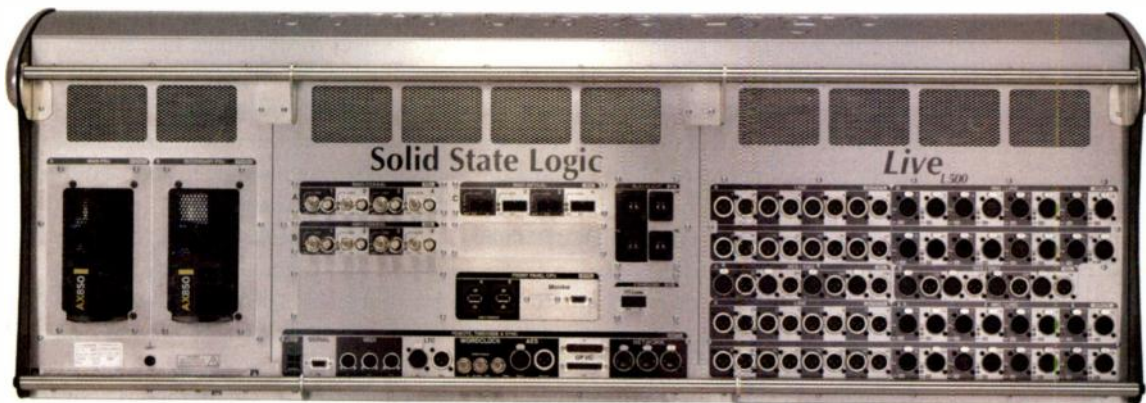
Access to channel parameters is augmented with the Channel Control Tile, which has its own touchscreen surrounded by a set of 15 rotary encoders for the selected "Focus" channel. This area provides dedicated hot keys for quick access to EQ, dynamics, aux sends, VCA, and

mute groups and insert effects, plus a separate Focus fader. For certain adjustments, such as aux send level, I preferred using this Tile's knobs because I could leave the main screen parked at the Mixer View.

As you'd expect, the master fader is found in the Master Tile along with 10 Mute Groups, automation, two independent solo buses with three solo output Paths, and two talkback buses.

Automation functions include scene store and recall, manual or time-code-based scene triggering, and filters to "safe" parameters that need to remain consistent from scene to scene.

Paths are arranged into layers using the Layer Bank Manager. Each Tile has five layers with five banks per layer. Layers may be set independently for each Tile by simply selecting a layer and then dragging and dropping the channels you want into that layer. Any layer can contain





Royer SF-2

"We have many wonderful microphones in the Skywalker Sound locker, but once I tried the SF-2 I knew we had to add a pair. It is a beautiful sounding microphone, especially for orchestra instruments like timpani."

Leslie Ann Jones – Multi Grammy-winning Engineer, Director Music Recording and Scoring at Skywalker Sound

"Who would have thought such a little ribbon mic as the Royer SF-2 would have such a magnificent, smooth, AND detailed sound? I've used these babies as main orchestra mics, main chorus mics, solo vocal and instrument mics, and even on Leslie cabinets. The SF-2 is an essential tool in MY bag of tricks!"

Michael Bishop – Multi Grammy-winning Engineer, Telarc, Five/Four Productions



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any combination of input channels, VCAs, auxes, Stem groups, masters, matrix outputs, solo outputs and talkback channels. I was able to have layers controlling all of my input channels, but I could also have a star vocal layer that duplicated the lead vocal input alongside its associated VCA, aux sends and effect Stems.

The console architecture employs two independent processing engines—one for audio DSP and the other for control surface functions—so layers may be rearranged while mixing with no audible consequences. SSL's Eyeconix graphics allow color-coding to simplify channel management with an assortment of images such as kick drum, toms, bass, etc., assignable to channels for fast recognition—and it's beautiful.

EFFECTS AND MONITORING

Separate from the DSP on the full or dry Paths is an effects rack that can process any Path via its insert point. Algorithms include reverb, single- and multi-tap delay, 32-band graphic EQ with 6-, 12- or 18dB range, dynamics (including de-esser, gate and compressor), dynamic EQ, an emulation of the SSL bus compressor (it sounds just like the hardware version), SSL's VHD Variable Harmonic Drive, and an assortment of modulation effects.

The Effects menu provides access to these effects, which are organized into six racks with up to 16 slots each; a maximum of 96 mono instances are available depending upon the effects in use. Once the Effects page is open, you build a rack by selecting the algorithm, defining the format (mono, stereo, L/C/R, etc.) and inserting the effect into a Path. An inserted effect may be accessed immediately by simply pressing the Insert button in the processing order or channel window, without returning to the effects rack first.

That brings us to the idea of using a Stem Group as an effect return. A Stem Group is a sort of hybrid between an aux send, an audio subgroup and an input. Stem level from a channel may be set to unity as in a subgroup, or varied like an aux send. Once a Stem Path has been created in the System Configuration window, the Stem shows up as a channel parameter. The Stem does not require a separate Path back to the mix bus. When a Stem is used as an effect return, it makes sense to use a dry Path because (a)

you probably won't need filters, EQ and dynamics (and if you do they are probably built into the effect algorithm anyway), and (b) the dry Path sucks up fewer DSP resources. Of course, if you want effects on your effects you can create a Stem using a full Path, or even route one Stem into another.

The Live console's rear panel has a dedicated video output for a System Monitor Screen that shows an overview of all Paths in use, with metering and clipping indicators, solo and mute status. Because this is in addition to the built-in screens, it is possible to view system status without leaving a menu page—a critical feature for battle conditions.

Other features include Spill, which allows individual faders for a Stereo or L/C/R Path to be controlled using a single fader; complete channel and effects libraries including store, recall, copy and paste functions; a calibrated SPL meter; and built-in FFT. I could go on and on, but what you really want to know is.

HOW DOES IT SOUND?

Fantastic. After receiving a brief tutorial from the kind folks at SSL, I was off and running quickly. VCA and mute group assignments are easily accessible. You can edit channels quickly by selecting the channel and using the Channel Control Tile to alter the parameters of each section. Onboard processing is first-rate, and Tempest's processing muscle allows you to do things like sweep an EQ without ever hearing zipper noise, or re-order the channel processing blocks without glitches. Reverbs and delays were lush, and it was a luxury to have multiple instances of the SSL bus compressor onboard.

The EQ section has the SSL sound you expect and is equally effective for fine and broad strokes. The ability to use the touchscreen to adjust parameters was especially nice for things like changing the knee on a compressor or simultaneously sweeping frequency and adjusting gain on an EQ band using one finger. SSL's engineers have managed to furnish a ton of information on the desk without making it feel like you are being overloaded with data. I drive a lot of Chryslers. It was nice to get behind the wheel of a Ferrari for a little while. ■

Steve LaCerra is a New York-based live sound and recording engineer.



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After scanning the manual, I was able to create presets to identify the gear connections and also double-check the digital sync. The factory settings were very finely tuned and found the main sets of I/O needed for calibration in my studio. I fine-tuned the output of my Mac Pro tower to match the output of AES and my UA2192, and began listening to some reference recordings and mixes.

The m905 was sonically transparent and detailed in every frequency range. When turning up the volume, the unit stayed as true as at low levels, even when auditioning the dim switch. Not hearing the stepped clicks of my own familiar DAC took a bit of getting used to, but seeing the SPL levels allowed me to increasingly rely on the RCU. I thought it would be nice to see a loudness meter—maybe it will show up in a future software update.

Next, I removed my own converters and listened completely through the m905. Again, very clear, present and balanced sonics throughout every source I auditioned. The conversion inside the m905 is certainly mastering-quality.

Finally, I connected the m905 to my MacBook Air via the standard USB 2 port. The computer recognized the unit on my first try and within minutes I was hearing audio. I could easily toss this in a rack and use it on

PRODUCT SUMMARY

COMPANY: Grace Design

PRODUCT: m905 Reference Monitor Controller

WEBSITE: gracedesign.com

PRICE: \$3,325

PROS: USB DAC driverless interface for Mac and Windows devices. Mastering reference quality speaker and headphone outputs. Built-in talkback mic and Grace pre that continually measures SPL via the remote.

CONS: USB connection via the upgrade port caused a communication error freezing the remote. Would like to have a loudness meter on the RCU.

single instrument or vocal overdubs. It provided great conversion, a reliable and clean headphone amp, full connectivity, and a great high-gain/low noise floor preamp.

RELIABLE SOURCE

I'm a firm believer in creating the shortest signal path from an audio source, and having a great DAC has surely become one of the most important parts of my studio. It keeps me from making corrective decisions with EQ, and from hearing phantom artifacts. The Grace Design team left no stone unturned in developing their latest DAC

version, and it would equally be at home in a high-end project studio, top-level commercial and mastering facilities, and even an audiophile's favorite listening room. The setup and design is of the highest quality, and is easy to integrate into any studio setup very quickly, so you're not spending time paging through manuals; you're spending more time listening to how great your recordings will sound. ■

Chris Grainger is a producer/mixer/engineer and owner of Undertow Studio in Nashville. Visit his Website, www.itsgrainger.com, or follow him on @itsgrainger.



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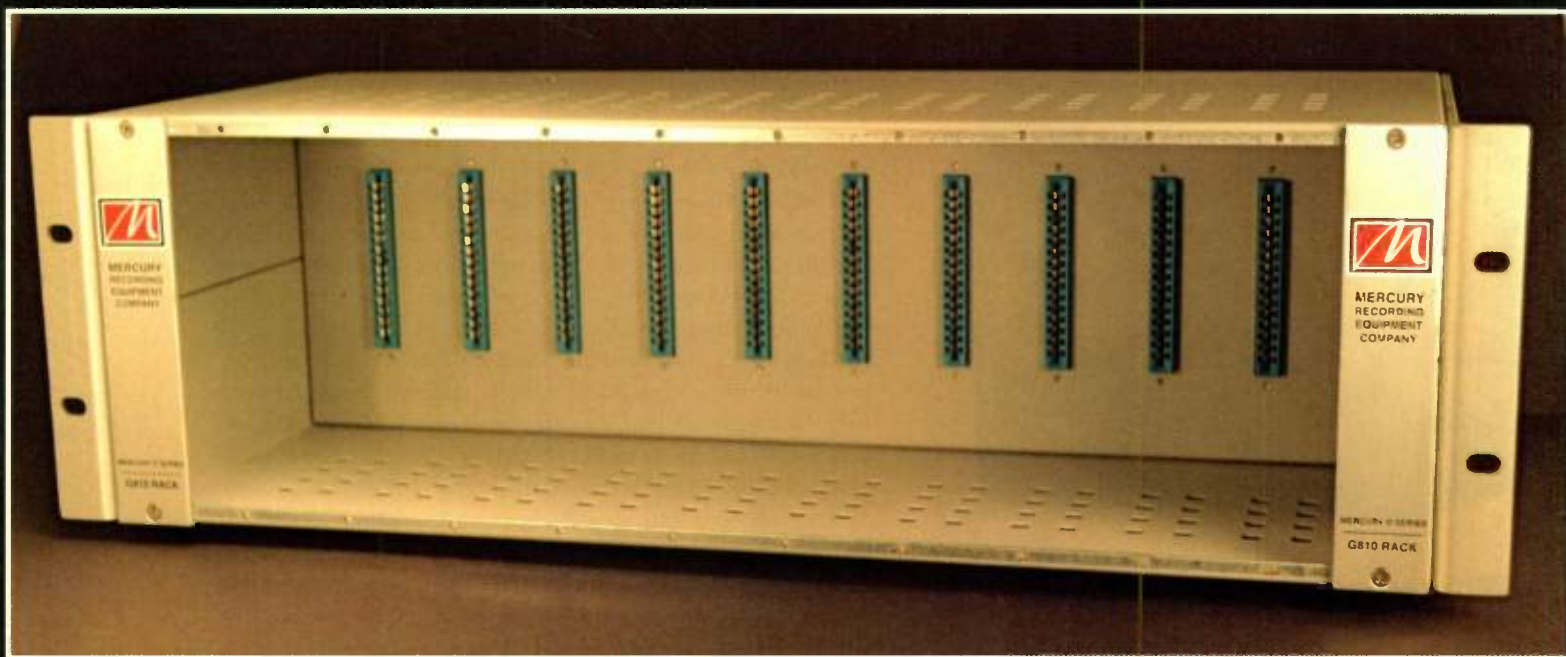




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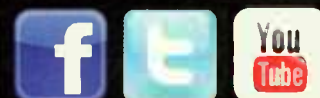
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NEW TECHNOLOGY AND SPECS

In the studio, I look for speakers that will double as large mains for tracking and as near-field monitors for overdubbing and mixing. I'm sometimes guilty of producing very dense tracks, so I need speakers that give me a flat, detailed midrange and open transparency in the high end. I'm used to working on three-way active near-field speakers, and was intrigued by the four-way active configuration. I love the midrange detail on my MM27s, so I was hoping the MM12s would sound even better. The seven active drive units, all housed in separate sealed enclosures, have a frequency response that, on spec, looks pretty flat: 20 Hz to 45 kHz (± 3 dB) and 28 Hz to 40 kHz (± 1 dB). The bass response also looks solid at -3 dB@20 Hz, $Q = 0.707$, slope=12 dB/octave.

There are four settings with the Voice Emulation: Flat, which the user's manual describes as "the optimal setting for accuracy, transparency and most neutral translation." The Hi-Fi setting doesn't seek to emulate a particular speaker—the midrange "is a bit scooped [approximately -1 dB at 4 kHz] and highs are little accentuated [approximately $+1$ dB at 12 kHz]." The Old School setting "emulates the frequency, phase and transient response, along with the dynamic compression and distortion signature, for the NS-10M paired with a '3B' type amplifier." The Cube setting mimics the Auratone 5C, also run through a "3B" type amplifier.

HOOK 'EM UP!

I like working in large control rooms, so I was curious to see how the MM12s' ring radiator tweeter would work in the Foo Fighters Studio 606's large (25x29 feet, 21-foot ceiling) control room.

John Lousteau, the chief engineer at 606, was kind enough to help set them up and patient enough to go on a sonic journey with me. The first thing we noticed was that the MM12s, while not bulky, were very heavy, weighing 132 pounds each. We followed Barefoot's advice and had them ship their custom stands, which are height-adjustable. We set them up in a vertical position, approximately six feet from the center point in front of the Neve 8028. The bottom edge of each speaker sat flush with the top of the Neve, about two feet back from the edge of the console. We placed each speaker at about a 60-degree radius from the center position.

Since the Voice Emulation is one of the new features of the MM12, I wanted to listen to a variety of projects in all four settings. I started with playback of some albums I know very, very well. The recently re-mastered version of *Siamese Dream* by Smashing Pump-

Thomas Barefoot may not be a household name, but any serious recording engineer has heard of his speakers, even if they have not had the pleasure of working with them. I first heard about Barefoot Sound studio monitors about five years ago. At the time, I had been using several different and well-known reference models, including ADAMS, Genelecs and B&Ws.

While I was producing Green Day's *21st Century Breakdown*, Barefoot Sound sent me a pair of its MM27s to audition and I immediately fell in love with them; for the past five years, I have been using them as my primary studio monitors. I have a pair at my home studio—GrungelsDead in Silver Lake, Calif.—and I have a floater pair that I've used on recent albums with The Foo Fighters, Garbage, Against Me!, and Never Shout Never. The MM27s have an incredibly clear and flat midrange, the bass response is full yet tight and focused, and they have a powerful dynamic range that rocks for both tracking and mixing. I love the way they sound, but more importantly, I trust the way they sound.

The MiniMain 12s are the company's new flagship studio reference model. Thomas Barefoot has been pushing the envelope with his speaker designs for years, and with the MiniMain12 he's added Voice Emulation. With the flip of a remote selector, the MM12s have the ability to switch between the state-of-the-art Barefoot sound and the classic sound of NS-10s and Auratones. I was curious to hear what the new 4-way system would sound like, if the voice emulations were the real thing or just hype, and how all the new tech would translate in a real studio setting.

se·lec·tion [səˈlekSHən]

noun

1. the action or fact of carefully choosing someone or something as being the best or most suitable
2. a number of carefully chosen things
3. what you get with Vintage King

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affordable price

BURL B1D

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pre with custom input &
output transformers

ELECTRODYNE 501

Two-stage, discrete,
transformer-coupled
preamp with active DI

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More info at www.vintageking.com/creditcard

kins was first up. I cued up “Cherub Rock” and was immediately struck by the detail I could hear: the snare drum grace notes, the drum transients seeming to fly out of the speakers, the clear ringing harmonics from Billy Corgan’s guitar as the song begins to build up to a wall of sound. When Billy’s fuzz pedal kicks in, the super-sweet saturated fuzz guitar tone had possibly the clearest sound I’d heard since I recorded it: all the frequencies I’d labored over many years ago came blissfully pouring out of the speakers, not hyped, not missing anything, but exactly as I remembered we wanted them to sound when we recorded them 20 years ago. As I flipped back and forth between the Flat and Hi-Fi settings, I could really hear the difference in midrange detail. In Hi-Fi the guitar tones sat slightly back, reminding me of when we mixed the album on KRK near-fields. In the Flat mode the mix sounded a bit more aggressive, with the guitars becoming the prominent focus. When I flipped between the Old School and Cube settings, the midrange balance sounded remarkably like the pair of NS10s and Auratones I used to own at Smart Studios.

Next up was also a blast back to my past: I had A/B versions of all the mixes that Andy Wallace and I did for Nirvana’s *Nevermind*. I had to adjust the levels a bit to get my un-mastered mixes up to Andy’s level, but once I did that it was really easy to hear the tonal differences in the mixes. Andy’s versions sound amazing, and that’s what the world knows *Nevermind* to sound like, but on the MM12 it was interesting to hear how different the drums sounded on “Smells Like Teen Spirit”: Andy’s mixes had a crisp attack. I could hear the compression on the room mics and reverb tails. In my mixes, Dave Grohl’s drums had much more midrange, they were dryer so they had bit of an “indie” sound to them, and Kurt Cobain’s guitars were thicker and beefier than in the final mixes. Both versions sounded great, but quite different. In the past, when I compared these mixes on other speakers, I was not able to hear the tonal differences that clearly, but now as I flipped between the different voice emulations I heard just how revealing the MM12s were.

After listening to some dense mixes, I wanted to listen to something more pristine and organic. I cued up Never Shout Never’s “I Love You More Than You Will Ever Know.” It’s a dead-simple track—acoustic guitar, piano, bass and a few electric guitar flourishes. The whole focus of the song is on Christopher Drew. Chris has one of the most beautiful and expressive voices I’ve ever recorded and I wanted to hear how he translated on the MM12. First, the presence of his opening vocal sounded amazing. It’s a very intimate recording, and on the MM12 Flat setting I could hear every tiny nuance in his vocal bends, all the detail in his voice, from the steamy air we captured to his midrange Elvis-like bendy “oohs.”

The song is pretty simple musically, but the vocal overdubs get denser as the arrangement builds, and I was thrilled to hear all the detail in the mix: the subtle shades of his phrasing, the tonal quality of each different range he sang, the emotional push he gave as the song developed. I tracked this record on the MM27s, and hearing it now on the MM12s gave it an entirely new sound. I could hear more detail in Chris’s phrasing, the space in the room as the vocals and piano notes tailed off. In fact, the whole mix sounded more three-dimensional to me—unbelievably gorgeous.

Next, I wanted to hear some new technology: synths, beats, guitars and deep bass. I cued up one of Garbage’s new works-in-progress. The

PRODUCT SUMMARY

COMPANY: Barefoot Sound

PRODUCT: MiniMain12

WEBSITE: www.barefootsound.com

PRICE: \$19,950 a pair

PROS: Accurate and revealing monitors with clear and flat midrange.

CONS: Too pricey for some.

track is very dense, featuring a lot of synths, but also a fair share of guitars, electric and Moog bass, and several dynamic scene changes. One of the first things I noticed was how well the MM12s handled the bass and dynamics. In several sections of the song there is a synth bend that starts on D2 and bends down a whole octave over two bars to approximately 36 Hz. The MM12s sounded tight and focused all the way

down. I didn’t hear any distortion or dips in the frequency response. I was also impressed with the MM12s’ ability to reproduce the extremely loud dynamic of the choruses. The speakers were easily able to handle the heavy balance of synths, sub-bass, live drums and sampled beats, and I could hear more definition between the tonal balances, especially on the top end, where I could clearly hear the separation on the live and programmed cymbals more than I could at home on my MM27s.

I changed my position a lot while listening to the track, moving to the back and sides of the 606 control room, and was pleasantly surprised to find full-range sound even as I moved farther off-axis. I’ve been working on this track at my home studio on my MM27s and it was interesting to hear how revealing Shirley Manson’s voice sounded on the MM12s. I was able to hear more of the “air” on her vocal in the quieter passages in both the Hi-Fi and Flat settings. Her vocal on the choruses was recorded through a stompbox with varying degrees of harmonic distortion, and the midrange detail, especially in the Flat setting, was very accurate: When she sings low in the chorus, I heard the harmonics just barely breaking up, but when she pushes her voice in the bridge, I sensed all the fuzz overtones in what sounds like breathtaking Technicolor.

Finally, I’ve been recording demos with the Foo Fighters at Studio 606 over the last several months, keeping them very simple, live takes with the occasional vocal overdub by Dave Grohl. They are very raw. But as I’ve made changes in the mix balances, even a half-dB, I’ve been struck by how I can hear those minute changes in many different environments: my lo-fi car system, headphones, even my laptop. In the Flat setting, the MM12s have been very revealing for making changes to the Foo’s three-guitar attack, but I’ve found that if I mix in the Hi-Fi setting, the slight midrange dip makes me push the guitars up louder than I would in the Flat setting, the result being that the guitar riffs sound pleasantly aggressive when I listen outside the studio.

WHAT DO I THINK?

The MM12s are the most accurate and revealing speakers I have ever worked with. I don’t consider them to be “hyped” sounding, even in the Hi-Fi mode. The midrange is extremely clear and flat, very much like the MM27s that I am accustomed to working on. I found myself listening most of the time in the Hi-Fi setting, and, to my ears, the MM12s sound big, open and extremely dynamic. While recording, when I was making critical EQ decisions I almost always deferred to the Flat setting, but found myself mixing on all four voice-emulations, flipping between them to get different perspectives. To put it bluntly, I think Barefoot Sound has come up with a new standard in high-end monitor design. ■

Butch Vig is a producer/musician based in Los Angeles and thanks John Lous-teau at Studio 606 and Mike Murashige for all their help with this review.

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World Radio History

PRESONUS SCEPTRE S6

High-Tech Studio Monitor Features Coaxial Alignment and DSP

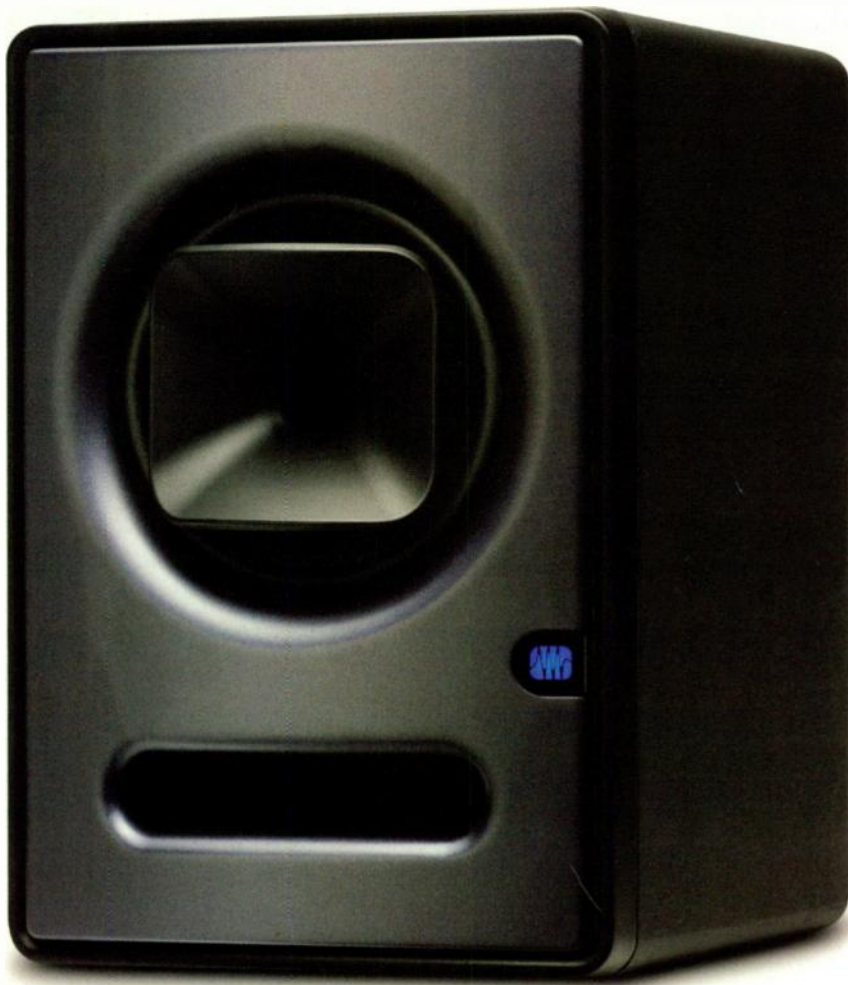


Fig. 1. The Sceptre S6 features a horn loaded tweeter mounted co-axially at the center of a composite woofer.

Coaxial, or dual-concentric, speakers have been around for several decades, falling in and out of favor. The PreSonus Sceptre S6 active studio monitor combines the best attributes of coaxial design with corrective built-in DSP that purportedly removes the artifacts that have been the archetype's downside.

Infinite Impulse Response (IIR) high-pass, low-pass and parametric filters; delay (to time-align the woofer and tweeter); and Finite Impulse Response (FIR) filters.

A front-firing, oval bass-reflex slot

HORN-LOADED DESIGN

In the S6, a horn-loaded 1" compression tweeter is mounted coaxially at the center of a 6.5" composite (glass-reinforced paper) cone woofer (see Fig. 1). The coaxial design causes most of the sound to emanate from one spot in the cabinet, providing virtual point-source imaging.

Despite its advantages, such a design can introduce unwanted artifacts. The upper frequencies produced by the woofer can diffract off the horn positioned in front of it, resulting in an acoustic shadow. (Lower frequencies have longer wavelengths that can more readily wrap around an obstacle to propagate.) The close placement of the two structures can cause intermodulation distortion, wherein the low frequencies from the woofer modulate the tweeter's highs. Sound emanating from the rear of the horn can bounce off the woofer cone, creating a delayed path to the listener's ears and manifesting in comb filtering and smeared imaging.

To correct these artifacts, the S6 uses proprietary 32-bit floating-point DSP along with TQ™ Temporal Equalization Technology designed by Fulcrum Acoustic. Running at 48 kHz, the DSP algorithms use a combination of

TRY THIS

With the S6 oriented vertically per PreSonus' prescription, the horn is centered a little over eight inches above the bottom edge of the cabinet. If you're considering buying the S6 and will need to place the monitors on non-adjustable stands or shelves, use this measurement to determine if vertical orientation will place the S6's horn at the recommended ear level. If not, placing the S6 on a down-tilting Primacoustic Recoil Stabilizer or Auralex MoPad might be all you need to set it up perfectly.

extends the monitor's bass-frequency response. The sides of the vinyl-laminated MDF cabinet are rounded at top and bottom to preclude diffractive effects. I was initially concerned that a slot that surrounds the front baffle around the cabinet's inside edges might cause diffraction of high frequencies. But as you'll read later in my review, the S6's imaging is completely faultless.

The woofer and tweeter are each powered by a 90W Class D amplifier; the amps are fitted with heat sinks inside the cabinet. Other built-in electronics provide output-current limiting, protection from overheating and a subsonic filter. An internal mains fuse protects the speakers from damage. A transient-protection circuit ostensibly prevents popping when powering the speakers on and off. In practice, I heard a low-level click when powering up—nothing of any consequence. An LED lights blue behind a logo on the front panel when the monitor is on; it lights red when clipping occurs (including that caused by powering up).

REAR-PANEL FACILITIES

Three sets of filters on the cabinet's rear panel are adjusted via respective pushbutton controls to change the S6's frequency response; use these filters to compensate for potential suboptimal monitor placement and unbalanced room tone (see Fig. 2). Each time you press a pushbutton, it advances its associated filter to its next preset setting in wraparound fashion. The Acoustic Space filter alternately provides 0, -1.5, -3, or -6 dB shelving cut below 250 Hz and is useful to compensate for bass boost when the monitor is placed very near a wall or corner. The HF Driver filter yields 0, +1, -1.5 or -4 dB shelving equalization above 2 kHz; use it to adapt the S6 to an overly live or dead room. The HP Filter can be set to provide either linear response or 24dB/octave high-pass filtering at 60, 80 or 100 Hz corner frequency; use it to integrate the S6 with a subwoofer. (PreSonus announced their Temblor T10 subwoofer at press time.)

Also situated on the cabinet's rear face, a continuously variable input-level control provides up to 10 dB of gain or alternately attenuates input. Both balanced XLR and 1/4" TRS input connections are provided, along with a power switch and IEC power receptacle. The XLR connector does not latch (a niggle). The supplied AC cord is detachable.

The S6 weighs 18.8 pounds and measures 9x11x13.2" (WxHxD). The monitor does not ship with a frequency-response chart, but PreSonus' website cites the response to be 52 Hz - 20 kHz, ± 3 dB; the response is stated to be 10 dB down at 42 Hz and 23 kHz. If you need more extended bass, check out the PreSonus Sceptre S8 monitor; its response is purportedly 3 dB down at 46 Hz.

The S6 can get plenty loud if you want; its peak SPL at 1 meter is said to be 109 dB. The monitor has a 1-year warranty.

TO THE TEST

The S6's design mandates that it be oriented vertically in order for its horn to properly disperse audio.



Fig. 2. Three filter sets, a level control and balanced input connectors grace the S6's rear panel.

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PRODUCT SUMMARY

COMPANY: PreSonus

PRODUCT: Sceptre S6

WEBSITE: presonus.com

PRICE: \$899.95 each (MSRP)

PROS: Phenomenal imaging and high-frequency detail. Very open sound. Built-in filters with non-volatile settings. Input-level control.

CONS: Weak midrange and uneven bass response. Must orient vertically for proper performance. Pricy. Frequency response chart not included.

Adhering to this precept, I mounted a stereo pair of S6s on Acoustic Sciences Corporation (ASC) Monitor Traps (tube traps purpose-built for use as monitor stands). The Monitor Traps were situated at the outside edges of an ASC Attack Wall positioned at the front of my control room; the Attack Wall, a modular arrangement of tube traps, tightens up imaging and impulse response at my mix position.

Happily, the S6's bass response never sounded too heavy—even when the monitors were placed two feet from walls. Some bass guitar notes, however, sounded either a little lacking in definition or a tad flabby, making the bottom end as a whole sound a bit uneven. This effect did not veil the lower-midrange band—the overall sound remained exceedingly open and clear.

Playing my own mastered mixes, I immediately noticed the S6s delivered phenomenal, pinpoint imaging and superb high-frequency detail. High frequencies sounded a bit eggy to my ears, however, with the S6s'

HF Drivers set for linear response; changing the filters to their -1.5dB setting made the sound much smoother. I was happy to note that I could cycle through all the filter presets while music played without hearing any clicks. All filter settings were retained after power cycling—set 'em and forget 'em.

Happily, the S6's bass response never sounded too heavy—even when the monitors were placed two feet from walls. Some bass guitar notes, however, sounded either a little lacking in definition or a tad flabby, making the bottom end as a whole sound a bit uneven. This effect did not veil the lower-midrange band—the overall sound remained exceedingly open and clear.

Unfortunately, a major contributor to the S6's open sound is what I perceived to be a broad dip in response in the lower-to-middle portion of the midrange band. The overall effect was a deficit in fullness to the sound. A female singer with a high, thin voice noticeably receded into the background of a mix when dropping into her lower range, something I'd never heard using other monitors. Treble-blessed background vocals and electric guitars, on the other hand, often sounded clearer and more present than they had when I'd listened to them using other monitors. I set the HF Driver to the -4dB setting (the next preset lower than my favored -1.5dB setting) to see if that would bring the midrange band into better balance, but that skewed the response too much in favor of the midrange and compromised imaging and detail.

A MIXED BAG

The Sceptre S6 offers incredibly precise imaging and superb high-frequency detail. On the downside, its weak midrange response makes it also sound a little thin, and its uneven bass response can make evaluating the low end of mixes a challenge. The S6 is pricey considering its overall performance, but it's worth an audition if only to hear what truly phenomenal imaging sounds like. ■

Mix contributing editor Michael Cooper is a recording, mix, mastering and post-production engineer and the owner of Michael Cooper Recording in Sisters, Oregon (www.myspace.com/michaelcooperrecording).

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WARM AUDIO TB12 TONEBEAST

Versatile, Great-Sounding, High-Gain Preamp



Getting a signature sound isn't achieved by simply running audio through an old Neve or API console; it comes from variations of cranking up the input gain, bringing down the fader and creating big beautiful tones through harmonic distortion. These days, in the new world of recording, I find that it's not as easy to play with gain structure, if I even can at all. Warm Audio, with its solidly built TB12, aims to give back this option.

Warm Audio has received quite a bit of buzz from its first preamp offering, the WA12, a feature-packed and beautiful-sounding half-rack unit that was released a few years ago. Since then the busy company run by Bryce Young and based in Austin, Texas, has released the WA12 500 Series version and now its latest offering, The ToneBeast.

PLENTIFUL CHOICES

The uniqueness of the TB12 is found in its selectable dual set of op amps, two sets of capacitor chains, and two sets of CineMag output transformers. The layout is very straightforward, even though it gives you many options.

The connections are exactly what I want to see on such a unit: an XLR input on the front and back of the unit, a line level input on the back of the unit and a Hi-Z instrument input on the front. This Hi-Z input allows you to send any connected instrument, acoustic guitar, bass, and keyboards through the entire signal path, including the Discrete 312 preamp design with the coupled CineMag transformers, the op amps and the CineMag output transformers. Balanced XLR and ¼-inch outputs are provided on the back of the unit, along with a send and return effects loop for inserting your favorite compressor or EQ. The back also has a connection for an external line-lump 24-volt AC power transformer, keeping the transformer away while the power supply is built-in.

The front of the TB12 is filled with options, yet there is plenty

of room to work. The input control section comprises switches for Hi-Z and line input selection, +48V phantom power, -20dB pad, phase reverse, and an 80Hz HP filter, each with its own LED. There is also a Tone button that switches the input impedance from 600 to 150 ohms. This not only affects the tone but also adds a volume boost of about 6 dB.

The Tone section is where this unit sets itself apart from everything else in my rack. The op amp selector switched seamlessly between the built-in classic Melcor 1731 style op amp dubbed the x731, and the Deane Jensen-modeled classic 918 op amp, called the x18. Each sounds and distorts differently from the other. Next in the signal path is the capacitor. The vintage selection sends your audio through the tantalum caps, while the clean setting routes through the electrolytic caps. The difference is very subtle. Next is the output transformer. The TB12 has two CineMag output transformers: a custom Steel transformer designed just for the TB12 and a 50-percent Nickel core transformer. For an audio purist approach, you can also bypass the output transformers altogether. This will drop the output signal by 8 dB and change the output from balanced to unbalanced.

In the Gain and Saturation section, the input gain yields 65dB of gain, but can jump up to 71dB of gain with the Tone button pressed, which is more than enough for ribbon mics and even my 1940s Turner mic with its paper diaphragm—which, by the way, sounds better through the TB12 than it ever has. Last is the important Output Volume control. Between the input Gain control and this Output control, you can easily drive this unit well into distortion, from beautiful and clean, to a nice, warm and fuzzy harmonic distortion, to complete overdrive. There are other units that have an output level control on them, but

TRY THIS

A huge benefit of switching between op amps in the TB12 is the different tones and harmonic distortion you can generate. If you are a gear-head, note that both op amps are 2520 6-pin design so you can easily pop in your own.



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noun

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- 2. a number of carefully chosen things
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PRODUCT SUMMARY

COMPANY: Warm Audio

PRODUCT: TB12 ToneBeast Microphone
Preamp

WEBSITE: www.warmaudio.com

PRICE: \$599

PROS: Good sound, highly versatile, full-featured, fully discrete circuit, 71 dB of gain, three U.S.-made CineMag transformers.

CONS: Not as drastic a difference as one might hope for between some tone settings.

none that I know of that are built into a preamp whose focus is to be driven hard.

INTO THE STUDIO

The key to this unit is to use the Gain to drive the op amps, capacitors and output transformers so you are just hitting the point where harmonic distortion is flavoring the sound. The TB12 has a simple five-segment LED level meter that does a decent job of showing when the headroom threshold is being approached. Below the threshold, the TB12 sounds clean and tight, and very appealing. But the real characteristics of the different op amps and transformers come alive once they run out of headroom.

I first tried miking a guitar cabinet. I played the same eight-bar rock chord progression each time, and tried all the combinations. The test was done with a Gibson Les Paul Signature T, into a 1986 Seymour Duncan convertible handmade amp, feeding a 1976 Marshall 412 with its original 25-watt greenback speakers. I used an Audix D1 mic into the TB12, feeding straight into the Apogee A/D into Sequoia. All electronics involved were warmed up over an hour.

The difference between the transformers is much more apparent than the op amps or caps. I could instantly hear and feel the differences in the tone while I was tracking. The Nickel felt as if the low-midrange became more predominant and high-midrange ducked down slightly, yet the presence was still there. The Steel is much more up front with a better definition to its character. It also distorted more easily. Upon listening back and comparing, both transformers have their own sound, and when pushed, they reacted differently to the audio and imparted a slightly different flavor of distortion and slightly different EQ curve, while both added a vintage quality. Both the

1731-style op amp and the 918 op amp gave tight, punchy results.

The next day I started producing the new Chris Kelly album, a modern version of The Cars with all live instruments and lots of opportunities for using the TB12. First up were drums. I ran the large-diaphragm condenser on the floor tom of the four-piece kit through the TB12. Even with the -18dB pad on the mic, I still needed the -20dB pad on the preamp to control the level.

The lowest the input Gain control will go is +29 dB, so there is a lot of gain available. The sound was tight and punchy and worked out perfectly. I see the need already to have eight channels of TB12 available to do an entire kit.

I tracked bass directly through the unit and chose the Nickel transformer setting. This gave me the tonal curve I wanted, and pushing the Gain gave me the warm-fuzziness. We also tracked electric guitars through the TB12 and selected different signal paths to accompany the different guitar amps. It's really like having multiple preamps at your disposal.

Vocals sounded amazing through the unit. I first used an ADK A51TC into the TB12 on Chris' vocals. Using the x18 op amp, the Vintage caps, and the Steel output transformer, I was able to get that wonderful throaty, full, tight male vocal sound we were looking for. The ability to add some hair to the vocal sound with the TB12 made it perfect for the artist's voice and most all the elements on the record.

IMPRESSIVE?

I am very impressed with the level of sophistication in the design of the TB12. For instance, switching between the op amps and transformers did not produce any adverse pops or change in volume. In fact, only switching from Nickel to Steel gave the ever so faint click. Warm Audio is trying to offer the TB12 at a price that hasn't been approached by such a high-quality and versatile preamp. This is not a prosumer product; this sits alongside all the API, Manley, Neve, RND preamps that cost two to four-times as much with fewer options. This unit is staying in my rack. ■

Tim Dolbear is a producer and mixing/mastering engineer at Eclectica Studios in Austin, Texas.

Continued from p. 49

ADVOCACY AND EDUCATION

Bobby Rush is a U.S. Representative from near Shure's home district in Illinois and for years has been working on behalf of the pro wireless industry. The Wireless Microphone Users Interference Protection Act, HR 2911, was introduced in August 2013 in the U.S. House of Representatives. The bill "will require the FCC to expand eligibility for FCC Part 74 licenses to certain wireless microphone users, to maintain access for wireless microphones to the FCC's TV bands database and to maintain two (2) safe haven channels for wireless microphones."

With the pending 600MHz reallocation, those channels previously reserved for wireless mic operations might go away, and any spectrum remaining will be shared with White Space Devices. We need these two safe haven channels in the UHF spectrum exclusively, not only to protect ENG groups and others who are particularly vulnerable to time constraints and do not have a 30-day window to register for breaking news or spontaneous shoots/productions, but for the preservation of pristine and quality content creation.

Ask your representative to co-sponsor HR2911 to preserve these two channels for the use of wireless microphones. You can find the name of your district's House member at www.house.gov. Audio-Technica, Lectrosonics, Sennheiser and Shure are some of the leaders in the FCC campaign, most with valuable information on their respective websites. They are all collaborating and working together to find solutions to this spectral crunch. Visit the company sites. Write your members of Congress.

CONCLUSION

The Incentive Auction is coming, and it is very likely that besides losing some portion of the 600MHz band, our industry could see changes to the two "safe haven" 6MHz channels. So it is crucial that the professional wireless community be heard. We need to retain the protected UHF TV channels, and unlicensed pro wireless users must be afforded the same protection as the licensed user.

In the meantime, start pulling as much non air-critical equipment out of UHF, such as comms and IFBs, and move to other frequencies, like VHF or ones the FCC may free up for that specific use. Look at spectrally efficient digital wireless microphone technology for on-air and live performances. UWB or spectrally efficient VHF might be a work around for small, non over-the-air venues. Tighten up your RF setup by using narrowband filters to reduce interference from out-of-band transmissions. When budgeting for a new system, keep WSD UHF locations and potential Incentive Auction results in mind. It is very important the pro wireless microphone coalition has a Voice, so the voices of others may be heard, uninterrupted. ■

Jeri Palumbo is a veteran broadcast audio engineer and RF Tech on such events as NFL NBA, MLB, NASCAR, Oscars and Super Bowls. Her company, JaideMedia, has assembled a collection of information and educational materials regarding the Spectrum, including links to GLDs, the Bobby Rush Bill, etc at <http://jaidemedia.com/rfspectrum>.

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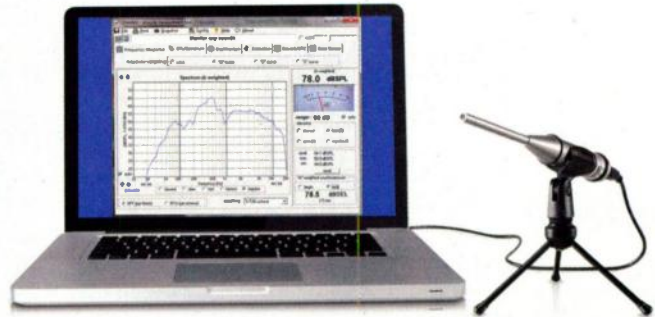
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Continued from p. 14

"In terms of the mix, we have a great system," he says. "I spend a lot of time, I guess, premixing. Instead of telling Manny what I want, I'll automate all the vocals, I'll automate all the drums. What Manny is great at is finding the space for every individual thing—the vocals, the instruments. I make everything pretty big, and I tend to limit my stuff a lot, so he'll make it sound just as loud but it will have way more dynamic range. And he keeps it true to the demo, what I'm feeling. We are at that point where we can communicate without talking."

STUDIO SYNERGY

Marroquin, who has been associated with Studio 2 since "around 2000," remembers first walking into the room and seeing Kevin Davis at the SSL for a project he was working on with Tricky Stewart. "Honestly, it was love at first sight," he recalls. "I'd never seen a room that was that sexy and cool and vibe-y, and I thought this is one of the best I've seen." Fast-forward two years, and he calls then-studio manager Jamie Way looking for a home. He's never left.

Marroquin has exquisite taste and an artist's sense of style in all that he does, from selecting the wine to redesigning his lounge to the mixes he delivers. Over the past few years Studio Manager Amy Burr has overseen the expansion of the two new rooms, at an economic down time when many thought she was nuts.

"It was simply a matter of buy low, sell high," she explains. "We knew it was a bad economy and that we were going against the grain. But you know what? Records are still going to be made. Music is not going away. The monetizing of it has changed but music is still here. Within the first couple of months we do the whole Justin Timberlake first album here, then a bunch of Miley Cyrus, then Linkin Park came in for a couple of months, and they may do more. There's that synergy of people wanting to be in a place like this. They want to be catered to, they want to know that everything works. You have to pay attention to

detail, from the front desk to the hi-hat sound. I learned that from Rose at Record Plant."

"My dream was always to be part of a one-stop shop," Marroquin says. "One spot where you can come in with an idea, record it in the small production room, cut a rough vocal, then go record it in a room, whether it's a live band or programmed synths and drum machine, then walk down the hallway and mix the shit out of it. [Laughs.] The only thing we're missing is mastering, and hopefully someday we'll have that and we can walk down to radio or send it straight to iTunes."

With all that is going on, Marroquin is proud to be part of this 45-year legacy and the "incredible team" in-house. Studio manager Burr, who worked with Rose Mann at Record Plant, came onboard three years ago. His assistant engineers Chris Galland, Delbert Bowers and Ike Shultz, along with personal assistant Jennifer Silvers, make it seamless for him to juggle all his creative and technical duties.

It also helps to have another A-list mixer in-house, three-time Grammy-winner Jaycen Joshua, who lives in Studio 1, the former home of Dave Pensado. Besides T.I., Joshua has done recent work with Rick Ross/Jay-Z, Chris Brown, Ludacris, Katy Perry, Justin Bieber, Beyoncé, and many others.

"I used to work at a music store, Music Plus, when I was 19," Marroquin says in summation. "We had these Saturday morning meetings, and this one store manager who just got hired was super excited. At his first meeting, he said, 'Rule number one of retail: Get 'em through the door!' For whatever reason, that stuck with me, and I've always discussed it with Kevin Mills."

"We've always been confident," Burr says. "Get the artist in the door and watch what happens. We've always trusted in that if we execute it right, if we greet them out front and the service is incredible, and the mixes are amazing, we just need to get them in the door. If we've done our job, they're going to want to stay." ■

Tom Kenny is the editor of Mix.

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- John Vanderslice
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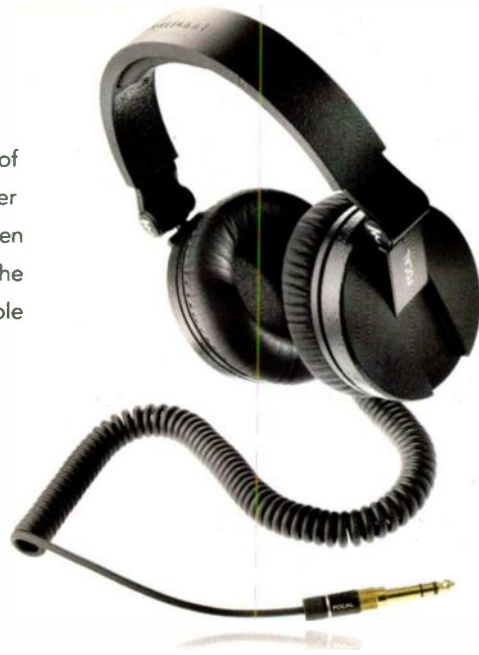
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TRAVELING RIGS



By Kevin Becka

My first exposure to audio tech was as a guitar player. My band had a Shure VA-302-C Vocal Master, and I played my Gibson 335 through a gigantic Acoustic amp with two 15-inch speakers and a blue horn for HF. For me that was the tops. When I moved into recording, I started with a TASCAM Portastudio, then onto a 1/2-inch reel-to-reel 8-track recorder with an M-216 mixer. I got pretty good at bouncing to take full advantage of the real estate. Fast forward to now, and I have a portable Pro Tools rig on a laptop that provides me plenty of UAD-2 powered plug-ins, to go with stellar I/O via Benchmark. I can fit it all in a backpack. Tons of power and capability.

All of this comes to mind because NAMM is in a couple of weeks. I've been going to these shows since the 1980s, and I always get the same buzz from seeing new gear, especially gear that brings quality and ease of use to musicians. So this month I've been thinking about portable rigs for musicians—affordable packages to keep their ideas flowing without emptying the wallet.

It's always been a great idea to keep a recorder around to capture lyrical and musical ideas. If simple, handheld recording is your aim, the Zoom H1 and Tascam DR-05 are great choices. Both are under \$100, have built-in stereo mics, record up to 24-bit/96kHz or MP3 straight to a micro SD card. They are robust, have no moving parts and are road-friendly with long battery life. If you want to kick it up for capturing rehearsals, for location recording or making sure your YouTube feeds have the best possible audio representation, the Zoom H6 is your best choice under \$400. It records six channels simultaneously, has four preamps (XLR/TRS) and a wide range of swappable options including a shotgun mic, MS mic, X/Y mic, and XLR/TRS capsule.

So you've captured the audio, what about breaking it out to a portable DAW so you can do rough mixes anywhere? Auria from WaveMachine Labs for the iPad is a great option. Not only is it full-featured with plug-ins and processing from PSP, it looks and works great. There are just under 40 interfaces that can port pro-quality audio to the iPad-based DAW, but you can also load the content from your handheld. Within Auria, you have all the control you would expect from a proper audio channel—EQ, compression and expansion, plus Convolution Reverb, delay and chorus—and it starts at \$49.99.

PC jockey and not an iPad fan? How about a Windows-based

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laptop running Cakewalk SONAR X3 Producer or Steinberg's Cubase 7.5 (both are \$499). Both DAWs offer tools for advanced music making and carry a wide range of features for 64-bit platforms. SONAR has Melodyne fully integrated, features the latest VST plug-in tech, has unlimited audio/MIDI tracks and sends, and new features like the QuadCurve EQ/Analyzer, virtual instruments like Lounge Lizard piano, XLN Audio Addictive Drums, AAS Strum Acoustic guitar, and more. Cubase 7.5, featured in this month's New Products section, offers unlimited audio/MIDI tracks and sends like SONAR, plus offers the new MixConsole with integrated EQ and Dynamics channel-strip modules, 66 plug-ins, eight VIs and more.

But what if Santa left you with a bundle and you want the best no matter the cost? For starters let's guarantee a top listening experience with the Focal Spirit headphones (\$349). Their wafer-thin mylar and titanium membranes promise studio monitor sound. Next, let's go with the top-of-the-line 15-inch Apple Mac Pro laptop with 2.6GHz Quad-core Intel Core i7, Turbo Boost up to 3.8GHz, ITB PCIe-based Flash Storage, 16 GB RAM, and a USB Super-Drive (\$3,378).

For recording pristine tracks on the bus, stage or hotel room, we'll use Pro Tools HD through the Lynx Hilo with the LT-TB Thunderbolt option (\$2,595). Hilo provides excellent listening via the high-quality headphone amp and back-packable input for Millennia HV-3C preamps powering DPA's ST4011C Stereo Pair with 4011C Compact Cardioids. These mics offer excellent recording from stage to studio, and the whole rig could be put in an oversize backpack or duffel.

So when it's time to create and capture music, whether you're well-heeled or not, you can grab a quality performance, bring it home and develop it for online distribution, finishing that EP or other content creation. That's what it's all about in the new age of audio where everyone is everything, or needs to be! ■



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