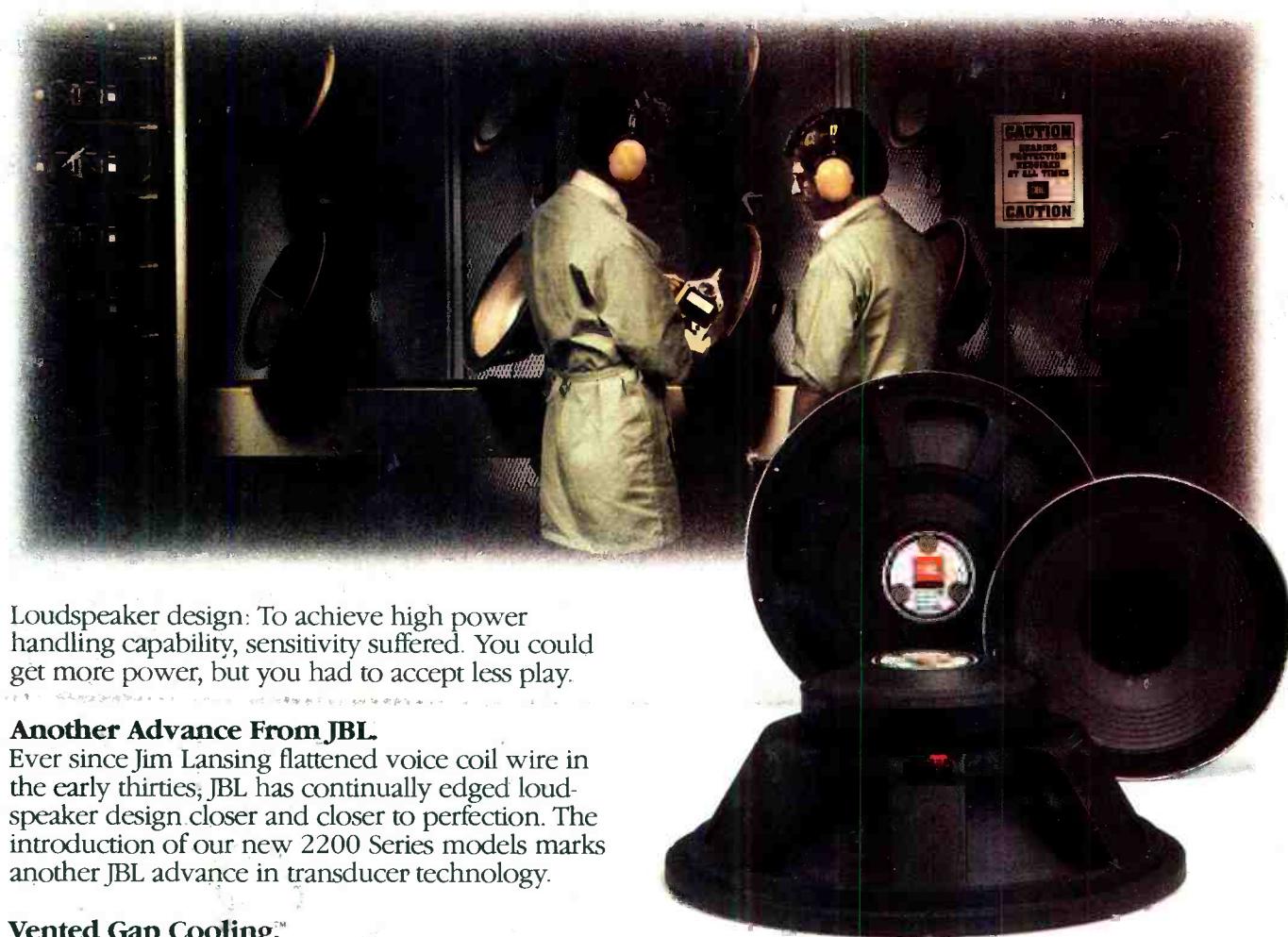


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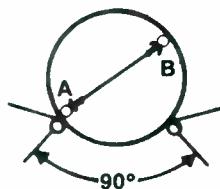
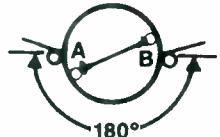
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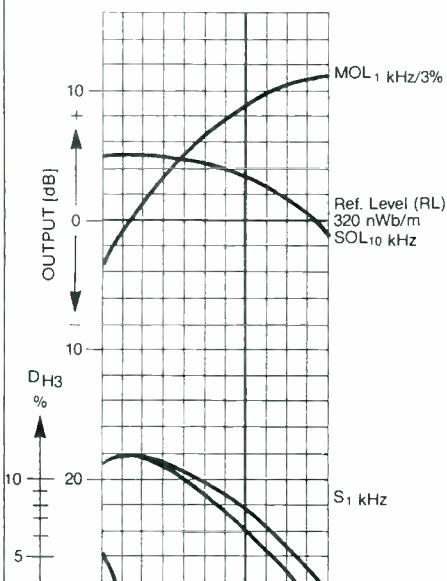
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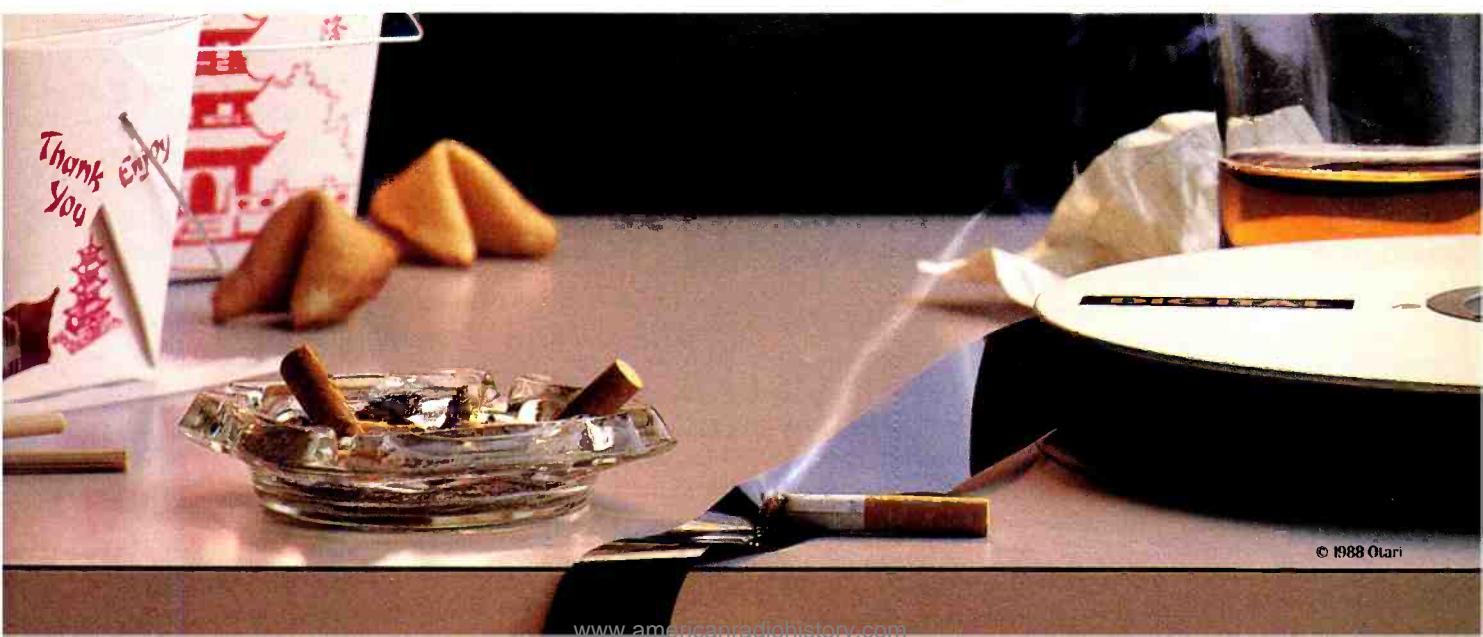
It's your decision, but we can help. After all, Otari can offer you the best in digital, *and* the best in analog. Call Otari at (415) 341-5900, for more information. (And if you own a DTR-900, ask us about how the new features on the "B" can be added to your machine.)

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GUEST EDITORIAL

By Laurel Cash

The Home Studio Dilemma

There has been, of late, a great deal of controversial national media coverage regarding the legalities of operating, for profit, a studio in the home. Many home (or personal-use) studios exist as a place where an artist/musician can lay down or catch musical ideas as inspiration strikes. Nobody in America would question the right of artists to create when, where and how they want to.

The controversy seems, rather, to revolve around residentially zoned "studios for hire," or home studios into which artists go to create commercially released recordings and for which money is received.

The advantage of a residentially zoned "studio for hire" is simple. Overhead is greatly reduced by not having to pay the normal expense of doing business that is incurred by a commercially zoned facility. These include, but are not limited to: rent and/or lease/mortgage payments for a business location; business/corporate tax; business vs. residential phone lines; business/corporate insurance; workman's compensation insurance; and liability insurance. We are talking what could be significant differences in expenses per year. Therefore, this type of facility can charge lower rates and reap a higher profit, even though they are violating zoning laws.

In an ideal world, all things would be equal. Surely the commercially zoned studios in this country are not afraid of valid competition. Most who own and operate a facility of this sort usually invite competition because it often breeds more business. Either the residentially zoned "studios for hire" should pay the same as one that is commercially zoned or vice versa.

In Hollywood, a group of commercially zoned facilities, which primarily record music for CD/LP release, have gotten together to educate and inform studio owners (both prospective and current) as to what the legalities are in operating a home studio. This, however, is not HARP's (Hollywood Association of Recording Professionals) only reason for existence. They have also banded together to explore the possibilities of a group health insurance plan, to go to the mat with manufacturers

on the Pin 2 hot vs. Pin 3 hot controversy, to share technical information, to publish a stolen equipment list, to form an employment education and standards program for second engineers and technicians, and to perhaps do some group purchasing.

There are those, however, in the home studio camp that believe that HARP was formed to be the "big, greedy mega-studio owners" who are tattling on the "little guy home studios for hire." What they really want is for all "studios for hire" to adhere and comply with the laws set down for any legitimate business.

Some of these residentially zoned "studios for hire," for whatever reason, have been shut down by the zoning commission. In one instance, it seemed as if the owner hired a publicist and went on a publicity rampage against HARP and the "big, greedy studio owners." It appears odd to me that the ones that often break the law to reap a higher profit should loudly hurl accusations of greed at those studio operations that are legitimate. If I were the one caught, I would quietly fold my tent and steal off to a low-cost, commercially zoned property. It is ironic to note that some of the "big, greedy studio owners" now being attacked started out just this way. Maybe I'm wrong, but it seems to me that it is better, both personally and professionally, to go about your business instead of throwing a tantrum because you got caught cheating.

SPARS, the Society of Professional Audio Recording Services, has published a position statement on home studios.

To quote from their statement: "We believe in fair competition and also strongly advise members of the recording community to conform to the federal, state and local regulations that govern the spirit of free enterprise, particularly when any other attitude or behavior is damaging to the marketplace...If a recording service is to be considered a professional endeavor charging an hourly or daily rate for its expertise, then it should comply with the same regulations and conditions of civic responsibility which all other businesses must observe."

SPARS continues, "We believe that lack of communication between opposing sides of this issue ... only damages the industry as a whole. We must clean up our own house." I agree. Otherwise, some regulatory group will come in and do it for us.

Laurel Cash is RE/P's executive consulting editor and a freelance writer based in Los Angeles. The opinions expressed in this Guest Editorial are her own and are not RE/P's official view on the topic.



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NEWS

Supreme Court upholds city's right to control mix

By Bill Abrams, editorial assistant

In a case that has far-reaching implications for the live sound industry, the Supreme Court upheld June 22 a New York City noise-control regulation that requires performers to use a city-supplied sound system and sound technician for concerts in Central Park's Naumburg Bandshell.

Justice Anthony Kennedy, writing for the majority in the 6-3 decision, found that the mixer "plays an important role in determining the quality of the amplified sound." But citing a finding by a lower court that requires the city's engineer to be responsive to the artist's desires as to sound quality (although not demands for increased volume), Kennedy wrote, "We must conclude that the city's guideline has no material impact on any performer's ability to exercise complete artistic control over sound quality."

The case is important because it gives governing bodies much more leeway in controlling noise levels. The court's ruling means that a local government can determine who runs the board without violating the First Amendment.

When the case, *Ward vs. Rock Against Racism*, was heard by the court in

February, much discussion centered on the role of the sound mixer in a live performance. Leonard J. Koerner, the city's chief assistant corporation counsel, described the engineer as a technician. William Kunstler, representing RAR (the promoter of an annual Central Park concert), disagreed, comparing the mix engineer to an orchestral conductor.

Industry reaction, while cautious, centered on the rulings' future implications. Mark Gander, vice president of marketing at JBL, said that in spite of Kennedy's wording, "on the surface, the ruling has denigrated the sound engineer.

"Artists and bands will continue to assert their creative rights in both volume and their choice of sound systems and engineers, which is only right. There are a lot of irresponsible people in the industry, but SPLs are a part of the creative process, as is the mixing engineer."

Wil Sharpe, president of Showco, said the "ruling sets a very dangerous precedent for the industry. The live sound mixer fills an artistic role much like a record producer."

If the ruling becomes an industry standard, he said "many artists may choose not to tour or may avoid venues with such rules. This ruling goes far beyond policing SPL by encroaching on artistic expression."

Steve Wooley, director of marketing at

Ramsa, concurred with Sharpe that the court ruling is problem for industry, because it is "wide open to interpretive abuse." In addition, Wooley said New York City's regulation was unnecessary. "Legislation for restricting sound levels already exists. When there are abuses, it should be enforced, but there is no reason for new legislation."

Greg McVeigh, director of marketing at QSC, was somewhat amazed by the whole thing, saying "of all the possible ways they could have gone about this, they end up with a guy turning down the faders."

"I think the problem has really come to the fore because of all these amphitheaters on the circuit now. Pacific Amphitheater in Costa Mesa, CA, has had problems since it was built six years ago. There is a concerned citizens group and the place is on its third sound company. The sound companies have all been good outfits. It's really not their fault, but they have been used as scapegoats. Right now, the ruling is more significant from the artists' standpoint than from the manufacturers."

David Scheirman, owner of Concert Sound Consultants and *RE/P*'s live performance consulting editor, pointed out that "with today's technology and knowledge, there is no reason for powerful sound systems to cause discomfort or hearing damage. But to the detriment of the industry, there is a small percentage

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NEWS

of system operators who use sound systems as weapons with which to assault the audience. The rebellious attitude may work in a small night club, where a particular lifestyle or attitude is cultivated, but when it enters the realm of the community environment, it will no doubt elicit a reactionary response from conservative elements in that community, as evidenced by the case.

"As an industry, we don't want to have people telling us what we can and can not do with sound systems. But this ruling should tell us, before OSHA has to step in, that we have to get our act together. As an industry, we need to do a better job of self-policing, educating ourselves and each other, and fostering a movement toward greater responsibility to prevent hearing damage."

The court's ruling reverses two lower court rulings on the noise regulations. In 1986, a district court held that "protection extends not only to the words and songs presented, but also to the sound which actually emanates from the amplification system...and who controls it."

In 1988, a Court of Appeals ruled that the city's 1986 regulation violated performers' First Amendment rights. The appeals court said that while the city had the right to limit the sound level of concerts, the Constitution permitted only the "least restrictive means available." Control of the mix was too intrusive, the court said.

In a dissenting opinion, Justice Thurgood Marshall wrote the decision "eviscerates the First Amendment" by permitting the state to exercise "exclusive control of the means of communication."

Frustrated manufacturers petition NAMM

By Bill Abrams, editorial assistant

More than 100 Summer NAMM exhibitors, angry at having to subsidize a second NAMM convention to maintain preferred booth assignments at Winter NAMM, have signed a petition demanding that the association change its policy.

According to some manufacturers, NAMM officials have told them that they will lose their Anaheim assignments if they do not attend the summer show. However, NAMM says that no association officials have said this and that no such policy exists in its bylaws.

Robin Gately, president of Joe's Sound and Salami, circulated the petition on Sunday, June 18, the final day of the Chicago

show, and mailed it the following week. The petition read as follows:

Declaration of *Interdependence*

"We, the undersigned manufacturers, realize that through our dues and attendance at conventions, we pay the expenses and salaries of NAMM. As a result, we expect NAMM to be responsive to our interests and needs. The bylaws that force attendance at both shows in order to maintain seniority at the Anaheim show is financially irresponsible.

"The fact that NAMM officials refuse to change the bylaws creates a situation that has become unacceptable. If the summer convention is to survive, it must survive on its own merits, not on false, forced attendance. We now demand that NAMM officials change the bylaws to allow manufacturers to freely choose, without penalty, to keep their booth position at either convention, regardless of attendance at the other. We further state that if NAMM continues to unjustly dictate to us while forcing us to spend money in areas we feel are unjustifiable, we may become forced to declare our independence by creating a National Association of Music Manufacturers."

In a cover letter, Gately said that not all manufacturers want or need to show new products every six months, but that NAMM's bylaws forced them to subsidize the Summer Expo.

When contacted for comment, Donald Griffin, NAMM's immediate past president, said there was nothing in the organization's bylaws about space assignment, and that there was nothing that requires attendance at both shows to maintain assignment status in Anaheim.

Griffin added that the only time attendance at the summer show might come into play was if two exhibitors that had the same size booths and had been exhibiting the same number of years both suddenly wanted new space of the exact same size. In such a case, attendance at the summer Expos could possibly be factored into the organization's equation for determining exhibitor preference, but that it was highly unlikely the situation would ever occur.

"The petitioners' perception of the situation is based on rumor," Griffin said. He considered their use of the word bylaw irresponsible.

"As an organization, NAMM is not a dictatorship," he said. "NAMM exists and organizes trade shows for the good of the industry, and it is up to each member to decide whether or not it made economic

sense to exhibit at either or both shows."

However, Gately said that this was not the impression he was given when buying booth space. According to Gately, Dominique Agnew, trade show administrator for NAMM, told two people at Joe's Sound that if the company did not attend the summer show, it would be moved to the end of the line in Anaheim. In fact, to maintain seniority, Joe's Sound bought booth space at last year's summer show in Atlanta, which it did not attend.

"If it is not a bylaw," Gately said, "it is presented as such."

Vincent said that, as far as he knew, no one in his office had told or suggested to any manufacturer that if they didn't exhibit at the summer show, they would lose their seniority at the winter show. Yet, in spite of the fact that NAMM is officially registered as a not-for-profit organization, Vincent did say, "As in any business, all things equal, we would look to see who has been the best customer."

The petitioners' understanding of the rules is corroborated by Paul McGuire, executive vice president of Electro-Voice, who has notified NAMM that the company will no longer attend the summer expo.

"This move may be considered by some as a self-inflicted wound, since the recent implementation of the new position policy, whereby attendance at both shows is required to maintain space position, means we will lose position in the winter show. It is this type of arm-twisting politics that ensures that show management will be perceived as motivated by pure greed," McGuire said in a letter to Larry Linkin, NAMM's executive vice president.

According to McGuire, he received the minutes from a NAMM meeting conducted with the manufacturers' advisory committee shortly after the June 1988 Atlanta show. At the meeting, NAMM revealed the results of a survey in which 52% of dealers said they wanted only one trade show a year, while 48% indicated they wanted two.

Even so, according to McGuire, NAMM said it would make no decision until the picture became clear. At the same meeting, NAMM announced that future space assignments would be incumbent upon attendance at both shows.

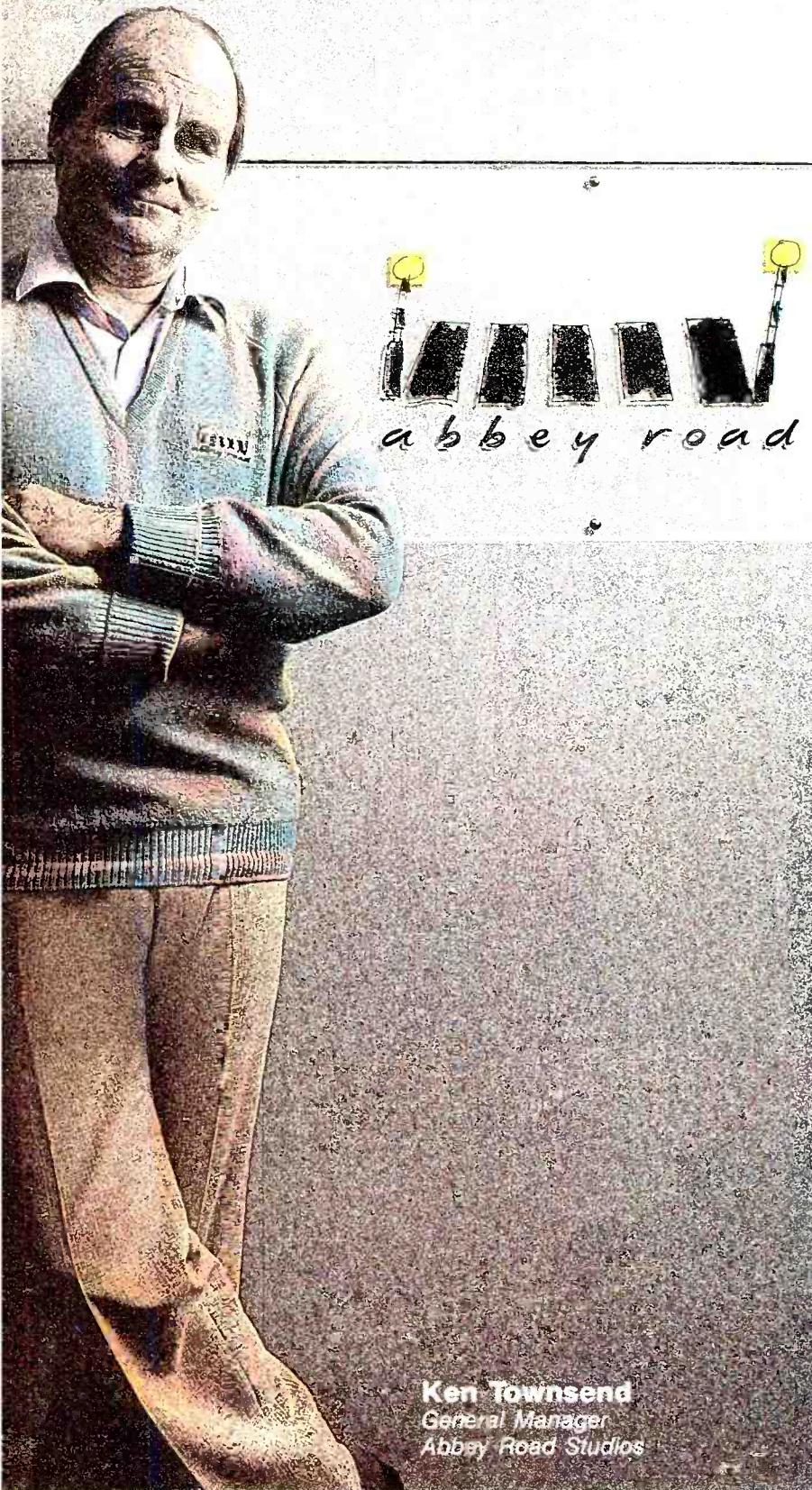
According to Gately, the cost of attending both NAMM shows can eat up between 10% and 20% of a small company's entire budget.

"There have been other situations that seem to serve no one's interest but

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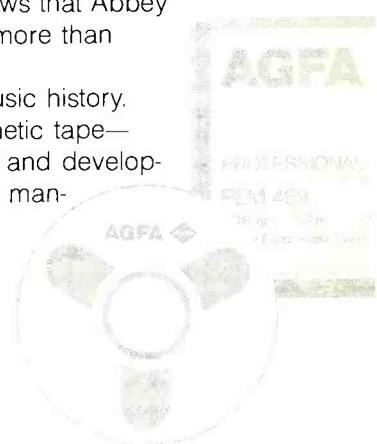
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NEWS

NAMM's," he said. "For example, why does the Sheraton cost \$120 through NAMM, but only \$90 through the weekend package? I thought the purpose of booking through NAMM was to save money."

Gately also echoed McGuire's fear that he had placed himself in jeopardy. He ended his letter with a plea for someone to bring out coffee and doughnuts if, at the upcoming Winter NAMM, he finds his booth in the parking lot of the Anaheim Convention Center.

Sony announces courses, seminars

The Sony Professional Audio Training Group has announced its schedule of technical service training courses for the rest of the year. All courses will be held at Sony's Fort Lauderdale, FL, facility.

The dates and courses are: Aug. 10-11, DASH format seminar; Aug. 14-18, Sony PCM-3324A technical service; Aug. 21-25, Sony PCM-3348 technical service; Sept. 28-29, broadcast console applications; Oct. 2-6, MXP-2000 technical service; Nov. 7-10, APR-5000 technical service; Nov. 13-17, APR-24 technical service; Dec. 6-8, large console applications; and Dec. 11-15, MXP-3000 technical service.

For more information, contact Raymond Callahan or James Gayoso at 305-491-0825, ext. 186.

News notes

American Helix Technology has chosen **FM Acoustics** power amps for use in its quality control department.

Mitsubishi Pro Audio Group has moved its operations to the United Kingdom, and has announced that Neve will distribute its products in the United States. Its new address is Travellers Lane, Hatfield, Herts AL10 8XB, U.K.; 0727-40584.

Solid State Logic has formed a subsidiary, Audio Processing Technology, to develop and market a digital audio compression system. The first product is the apt-X 100. The company will operate out of SSL's Oxford headquarters.

Symetrix has appointed Derek Allen Associates, Toluca Lake, CA, to represent the company in Southern California and Arizona.

Full Sail Center for the Recording Arts has reached an agreement with the

University of Central Florida, allowing Full Sail students taking the Recording Arts Comprehensive Program to earn college credit through the university's department of music.

Clearwind Audio and Case Co., Milwaukee, has purchased eight Marting LE400 bi-amp wedge monitors, two RS1204-3 full-range cabinets, two VRS800 flying cabinets and six MX 4 system controllers. The components will be added to Clearwing's Marting touring systems.

Digidesign has shipped more than 200 Sound Tools hard disk recording and editing systems within the first month of production. The company's Sound Accelerator DSP card has been named "best new emerging technology" of 1988 by *MacUser*.

Video Rentals and A/T Scharff Rentals have merged to form **VRI Scharff Rentals** and will provide a full range of video and audio equipment. Rental operations are at 599 11th Ave., New York, NY 10036; 212-582-4400; administrative offices are at 235 Pegasus Ave., Northvale, NJ 07647; 800-255-2874.

Yamaha has withdrawn plans to manufacture the V80FD digital synthesizer, first previewed at Winter NAMM. The company concluded that the synth could not be built to specifications in the original timeframe.

Solid State Logic's U.S. sales and service subsidiary has been named the North American distributor for Sondor, the Swiss magnetic film recorder and reproducer manufacturer. Also, the Los Angeles office has been expanded by 1,500 square feet, providing extra offices, storage and demonstration facilities.

Rack Attack is a new audio rental company specializing in high-end audio processing rack systems. According to the company, the racks are available at a 70% savings compared with single-piece rentals. The company's address is 3249 Cahuenga Blvd. West, Hollywood, CA 90068; 818-998-1024.

Akai recently held the U.S. premier of the A-DAM digital multitrack recording system at the MiamiWay Theater in North Miami. A-DAM is a 12-track digital multitrack recording system using 8mm

videotape as the recording medium.

People

Donna Zimring has been appointed general manager for Trident Audio USA.

Chris Fichera has joined Klark-Teknik as a product sales representative for DDA.

Claude Kleiman has been named market development manager for wireless microphones at Electro-Voice.

Steve Armstrong has been named national sales and marketing manager for Renkus-Heinz.

Jim Stern has been named national sales manager for AMS/Calrec.

Roland G. Knaggs has been appointed vice president of finance and chief financial officer for New England Digital.

Hugh R. Heinsohn has been promoted to director of corporate development at Gentner Electronics. His duties as director of marketing development will be assumed by **William V. Trowbridge**, chief operating officer.

TimeLine has announced two promotions: **Mitchell Chaplausk**, from senior technician to production manager, and **William Ruggeri**, from purchasing agent to purchasing manager.

Rob Peck has been named marketing manager at Martin Audio Ltd.

Colin Lane-Rowley has been named international sales manager for Soundtracs.

Charlie Day has been named product manager for the apt-X 100 at Audio Processing Technology.



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Circle (9) on Rapid Facts Card



MANAGING MIDI

By Paul D. Lehrman

Veni, Vidi(o), VITC!

This month's column is on a subject I actually know very little about—but I'm learning. On the other hand, unless you've got a lot of experience in video editing, you probably know even less about it than I do. So let's learn together.

The subject is VITC: Vertical Interval Time Code. VITC is a form of SMPTE time code that is embedded in the picture portion of a video signal. It is found in lines of the picture that don't normally show up on the screen because they occur around the time that the picture tube's electron beam is resetting itself to paint the next frame. This time period is called the "vertical blanking interval"; hence VITC's name.

VITC has some wonderful advantages compared with conventional SMPTE time code (otherwise known as "longitudinal" or "linear" time code—both of which, conveniently enough, can be abbreviated as "LTC"). Because it is part of the video signal, which is read by a video deck's rotating heads, and not an audio signal, which is read by a stationary head, it can be decoded when the tape is not moving.

Because a VITC reader does not need to see a certain range of audio frequencies before it will recognize the code, VITC can be read off of a tape moving at almost any speed. It can even be read while the tape is running backward. And because a VITC reader doesn't need to wait for a tape to get up to speed before it can do its thing, it can lock up in the space of a single frame. Dropouts are not as much of a problem as they are with LTC, because there is a high degree of redundancy called for in the VITC spec: The number actually appears four times in each frame.

The audio world has traditionally had little use for VITC, because conventional audio tape decks don't have rotary heads. In a post-production suite, an audiotape recorder may lock to a synchronizer that is chasing VITC, but the audiotape will use LTC. VITC is also not the easiest

format to deal with. The VITC specification is quite loose in some areas: the code can show up on any line between 10 and 20 and it often jumps around. A reader has to be very sophisticated to be able to consistently find it. It's impossible to copy VITC from one tape to another. Unlike LTC, which sometimes lets you get away with second-generation code, you *always* have to regenerate VITC.

At extremely high winding speeds (greater than about 10 times normal), professional video decks tend to lose the very tops of frames, where VITC is located, which is why most video machines also use LTC as well as count tach pulses. Worst of all, VITC hardware has always been very expensive. But in a MIDI-based or hard disk-based production environment, which doesn't use audiotape, you could take advantage of all that VITC has to offer. If you could find a way to convert VITC to MIDI Time Code, you wouldn't really need linear time code at all. As it happens, it may soon be possible to get a device that does just that for well under \$1,000. Think for a minute, and you can envision some major changes this could make to the world of audio-for-video production.

Here's a scenario: You need to line up a sound effect, say a window breaking, with a visual event. You rock the video until you're on the exact frame of the crash.

Now, instead of looking at the SMPTE numbers on the window burn and typing them into your effects-list editor, you simply hit a button labeled "Capture," and the numbers (which don't even show up on the video screen unless you want them to) are instantaneously entered into the computer. Type in the MIDI note and channel that corresponds to the effect you want (which has already been loaded into a sampler), give it a volume setting and a pan position, and you're done. Rock the tape again to make sure the hit is perfect—no matter how slowly the tape is going, as soon as you reach the designated frame, the effect fires.

Here's another one: A sequenced music cue is too short by a few frames. Find the spot on the video where the cue begins, and "Capture" its time code number. Find the spot where it's supposed to end, and capture its number. Now go to your sequencer and tell it to stretch the time of the music cue to fit the numbers you've given it. The sequencer slightly alters the tempo of the music to fill the space. Done.

If you have a digital effects editor that allows changing a sound's length without

altering its pitch, you can do the same thing with an effect, or even with dialogue: in one operation, the tire squeal can be extended so that it lasts right up until the frame where the car smashes into the locomotive. And you don't have to rewind the videotape several seconds before the cue and put it into Play to check your work—just rock it back and forth, in either direction, at any speed.

But integrating VITC with the MIDI studio raises a number of questions that must be dealt with before it becomes commonplace. If a sequencer is reading time code from a tape running backward, what should it do? Should it run backward, too? I don't think you'd enjoy hearing a MIDI sequence in which the note-ons and note-offs are reversed, but maybe sequencers can be made smart enough to know when this is happening, and turn those events around themselves. (Come to think of it, they'd have to do controllers, too, or you'd end up with an awful lot of hanging sustain pedals.)

If the tape is running very fast, should the sequencer try to follow it? Most time code readers, when confronted with tape moving fast, don't send out continuous timing data, but instead issue it in "bursts." Should a sequencer try to interpolate these bursts, or just shut down and wait for normal code? If it tries to follow and does too good a job, this could lead to a massive case of MIDI choke, and resetting all the equipment that gets knocked out of whack by lost commands and crammed buffers would take a lot more time than you'd save.

When the videotape is parked at a particular frame and there's a MIDI event linked to that frame, should that event fire, or should it only occur when you enter the frame, or when you leave it? If the event is a sequence or a "multiple" event like a MIDI controller move, should it complete itself in real time following the initial trigger, or should it pace itself according to the current tape speed? And again, if the tape is running backward, should the effect play backward?

As I said at the beginning, I'm just learning about this stuff, but then, so is the entire industry. There are probably even more serious questions that I haven't begun to think about. If any of you have any corrections or anything to add to what I've said, feel free to let me know. This is going to be a pretty big issue, and it would do us all good to stay on top of it.

Paul D. Lehrman is *RE/P*'s electronic music consulting editor and a Boston-based producer, electronic musician and freelance writer.



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SPARS ON-LINE

By Jerry Barnes

A Viable Alternative

People frequently ask audio engineers how their career choices came to be made. Usually, such questions are posed by youthful seekers attending seminars where leaders of the industry expound upon the dynamics of studio life.

Others may have been impressed with the appealing sights of a recording studio where, surrounded by spellbinding equipment and spectacular sounds, they "heard the call." They longed to sit behind a mammoth console with lights flashing, controlling exotic microphones transducing the best efforts of their favorite artists, magically sliding faders attendant to their slightest touch—oh, yes, and someone known as a "producer" waiting nearby for creative instructions. Visions of gilded plaques with platinum compact discs awarded for their expertise dance across the horizons of their mind.

Does such fantasy ever become reality? Yes, it does. Well, at least some of it might. However, the discrepancy in the numbers of those who make it to the Tom Jung or Bruce Swedien level of our industry and those who do not might discourage many aspiring engineers, especially if the perception of success is limited to superstar status. It is inspiring and proper to select models who epitomize the highest range of talent and quality as do the two gentlemen mentioned.

In the early days of my career, I chose Bill Putnam as my role model, a man whose pioneering leadership in recording has yet to be surpassed. But it is important to recognize that each player in this game must find a niche, a position that promises the greatest fulfillment. This crucial discovery may or may not lead to the lofty plateaus said to be found only in the major recording centers of the world.

This brings us to the subject at hand: a viable alternative. I am suggesting that while we study the work of the great mix-

ers to develop and improve our own craft, we may miss great opportunities for personal achievement by presuming that to succeed, we must somehow acquire not only great skills but equal circumstances. There is only disillusion and discouragement at the end of such a course, at least in this engineer's opinion.

Why not get on with the challenges of starting your own enterprise? After all, isn't it true that most of us strive for a certain level of control, or even to be the boss? At present, there is a significant revival of opportunity for those who have the ability and equipment to go out on location and record. I am referring to a segment of the business that became virtually non-existent in the late 1960s and throughout the 1970s.

There are schools of every description, churches of every persuasion, civic groups, choral societies, barbershop quartets, chamber music groups, soloists, stand-up comedians, symphony orchestras—the possibilities for location recording are limited only by the imagination. There are countless potential clients who will not, or cannot, afford to go into a studio and cannot justify hiring a full-service remote truck. With the advent of digital recording and the dramatic reduction in the size of necessary gear and peripherals, this market is once again alive and well.

Field recording has been going on since the infancy of the 78rpm shellac record. Back in the 1920s, a fellow named Lomax hauled his direct-to-disc recording gear through the Clinch mountains of Tennessee to make the first recordings of the famous Carter Family. In fact, he traveled all over the South recording artists in unlikely locations, with many of them becoming legends.

One lesson to be drawn from such an approach might address those who tend to look down on such recording activity. Simply stated, why risk the frustration of never being allowed to record a superstar when you may be living in the same town with the next Dylan, Springsteen, Jackson or Haifetz? What if you got them first? What if you even had the opportunity to form your own record label?

There is now a ready market for doing exactly what many of us love most: being that special part of a recording, that unique ingredient without which no good recording can be made. All it takes is a bit of ability and readiness to get involved.

The risks are what one makes them.

For the last four years, I have been doing exactly what I now encourage others to do: recording all sorts of groups—mostly large choral and orchestral productions. This work takes me all over the United States and even to Europe. I have had the pleasure of working in great recording venues, and in June, I was back in London, recording a 250-voice chorus with symphony orchestra for *my own label*.

You see, sometimes this "studio in the back seat" approach can lead to some pretty heady stuff. In a relatively short period, it has enabled me to start my own record label, featuring mostly classical products. Along the way I have had to use every technique ever learned in my studio recording days, which also meant getting back to basics.

The challenge of driving up to a location, unloading the gear, setting up the control room, chasing those wonderful ground loops, arranging the recording environment, placing the microphones and rediscovering "omni" or "figure-8" patterns is a genuine kick. Then there is that renewed awareness and need once again to apply disciplines known but overlooked in such areas as monitor selection, monitoring levels and the hazards of multmicing. The exhilaration when it all comes together is very special.

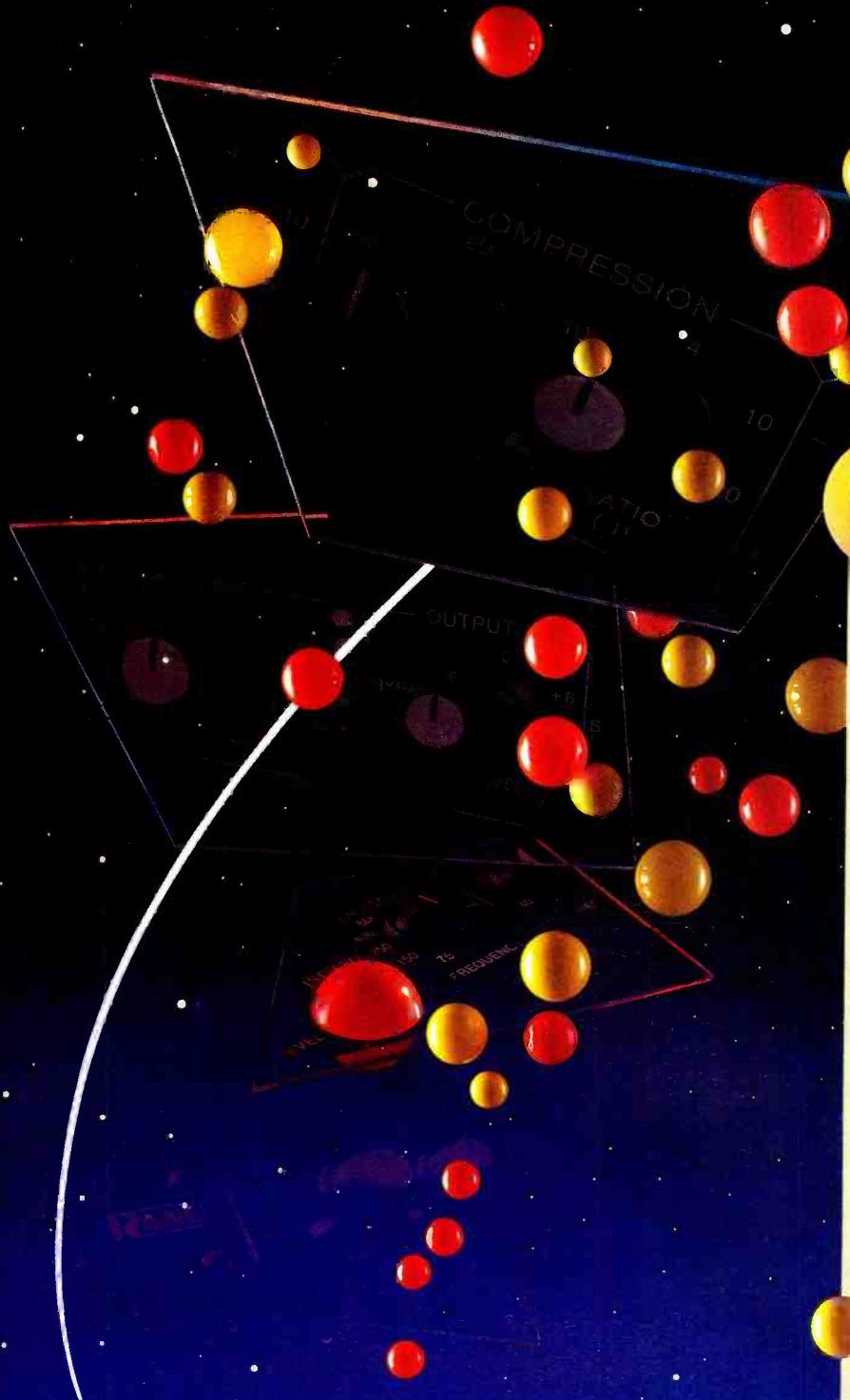
Naturally, being a self-contained recording service has more than a few do's and don'ts. Whether to form a record company is a choice left entirely to the individual, but engineers of all ages have every reason to get out there and sell what they know best to a marketplace ready to do business. If you cannot find the literature that provides guidance, I suggest writing to the SPARS office. I would be pleased to respond to all requests for information, and I'm sure that Shirley Kaye will gladly forward inquiries.

I now have another role model, the man who launched the Record Plant. I aim to become the Chris Stone of wanderlust recording: a DAT-toting, never-step-in-anything-soft, entrepreneurial engineer-at-large.

RE/P

Jerry Barnes is the owner of Resmiranda Records in Manchester Village, VT, and former president and chairman of SPARS.

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Understanding Computers

By Jeff Burger

Computers as Sequencers

It is no secret that sequencing has changed the way much of today's music is made and that it is one of the applications that has made the computer a common fixture in the recording studio. A computer with the appropriate software and hardware has several advantages over a dedicated hardware sequencer.

The first is the most obvious. In addition to sequencing, the computer can do your books, manage your trafficking, write your letters, present your business plan and help design your new room.

The second advantage has to do with upgrade capability. While many hardware manufacturers wave flags about how their latest widget is software-based to avoid obsolescence, few companies actually produce upgraded software before replacing the unit altogether. In the computer world, software manufacturers are hard at work on revisions before the current version even hits the market. And most have reasonable upgrade policies to match.

The third advantage is the fact that computer monitors offer the user a much larger window onto his musical world than the LCDs found in dedicated hardware sequencers. A computer screen can generally display most of the information about a song on one page, reducing the need to fish for information.

The hardware sequencer may seem to offer the advantage of dedicated function buttons, removing the need to remember which key is assigned to which function. In reality, however, most computers used for music and production rely on the point-and-click mouse approach, providing an intuitive method of selection through icons, dedicated on-screen buttons, menus and sub-menus.

Hand in hand with the mouse comes a bit-mapped display that can support fairly high-resolution graphics. High-

resolution graphics pave the way for visual presentation of notes, including their placement and duration. A popular method for displaying such information is on a grid, where the horizontal axis depicts time—complete with measure and beat markers—and the vertical axis represents the note with respect to an on-screen keyboard. With this format, tasks like editing and quantizing become much more intuitive.

Once notes can be displayed, the next step is the actual printing of a musical score. Few sequencers attempt to represent the composition in standard musical notation. The main reason for this is that they lack the level of sophistication and artificial intelligence required to represent notes accurately. For example, before quantizing, a computer trying to translate the average performance into musical notation would probably come up with something that looked like your worst nightmare—littered with dotted 1/128 notes! A more common approach has been to record the music in a sequencer, edit it and then export the file to a scoring program that can print it out, often with manuscript quality. I haven't yet heard of any hardware sequencers that support printers.

When using the computer, rather than plugging one MIDI device into another and downloading data, sequencer programs are often interchangeable with other programs right at the file level. Several programs are now available that create or modify music based on non-standard techniques such as mouse movements and composition algorithms. The use of MIDI Standard Files ensures compatibility between not only these programs, but also, on a simpler level, between files created on older software sequencers and those created on newer ones.

Once a sequence is a file on a computer disk, the files can easily be sent to other locations via modem. I have friends working together on an album, even though they live 400 miles apart. One composes the basic tracks on a Mac in Northern California, then modems the file to a Mac in an LA studio, where his partner orchestrates the composition. They joke about phoning in their parts.

dating is a consideration as well. If velocity and performance controllers such as pitch benders are used even in moderate amounts, a sequence file can get quite sizable. Typically, dedicated hardware has a limited amount of memory with little or no option for expansion. Today, personal computers typically come with at least one megabyte of RAM, more than enough memory for most compositions. And if more is ever needed, most computers can accept more than enough add-on memory to handle an evening of Frank Zappa's finest.

External storage media is another consideration, especially in live performance. Until recently, most sequencers offered either cassette tape or data cartridges for archiving. Tape is slow and unreliable, while data cartridges are very expensive with respect to the amount of data they will hold. Floppy disks are a much better solution; many hardware sequencers now include disk drives as standard. But even floppies can be slow, especially when a producer is staring at you. Hard disks offer significantly faster access time and easier file management.

A few years ago, there seemed to be some fear about moving computers around and using them on stage. While bulkier than a black box, computer systems have gotten smaller. Moving them is not that big a hassle. Personal computers are routinely moved around in everyday life with few problems. Monitors and hard drives should certainly be given extra care by the road crew, but the same can be said of other gear. A word of caution when it comes to hard drives—some are shock-tested and/or shock-mounted; others are not. You can guess which ones are recommended in the music industry.

As you rely more and more on your computer, one last thing to keep in mind is that you may be committing a great deal of time and information to a hard disk drive. While generally reliable, hard disks are not meant for archival data storage. One of the hardest-learned lessons of personal computing is that of lost data due to irregular backup routines. It is not uncommon for a moment of creativity to be lost and never recaptured. Backing-up to a floppy disk is easy and a hell of a lot faster than starting over.

RE/P

Earlier I mentioned the importance of software upgradability, but hardware up-

Jeff Burger is RE/P's computer consulting editor and is president of Creative Technologies in Los Angeles.

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Recording

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AN INTERTEC PUBLICATION

A Fostex D-20 Digital Master Recorder is shown at an angle against a dark blue background. The device is light-colored with a black faceplate. A blue Maxell cassette tape is inserted into the left side. The front panel features several buttons labeled with functions like RECORD, STOP, PLAY, REWIND, FF-WD, and various search and edit controls. To the right of the buttons is a digital display showing "OPEN" and some other data. Below the display are more buttons for audio levels and monitoring. A small pink rectangular box is overlaid on the bottom left corner of the image, containing the following text:

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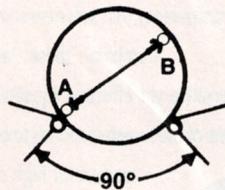
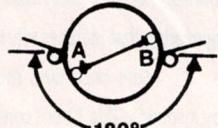
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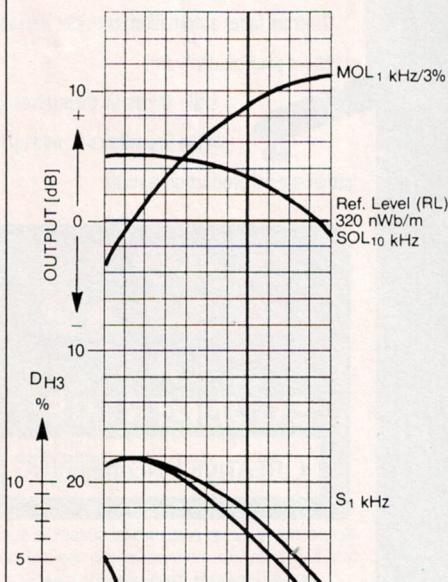


The Care and Handling of DAT Cassettes

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Special Supplement:

The Third Coast Emerges

The Nashville recording community is closer than ever to becoming a total entertainment center. This special supplement is a project between *RE/P* and the Nashville Entertainment Association.



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DAT in the Professional Environment

By John Monforte

DAT is an inexpensive route into digital recording, but problems still remain as it matures as a professional format.

It has been a few years since the introduction of the rotary-head digital audio recording format, better known as R-DAT or DAT. Only now are we beginning to see it mature as a professional format.

In 1983, manufacturers convened the first DAT standards conference. Their mission was to draw on the lessons learned in the standardization of videotape recording formats, as well as other digital audio formats, to develop recorders and tape for inexpensive digital audio recording. To date, there are 85 member corporations involved in the development of either recorders or tape for the new medium.

The DAT format is unique among recording formats in that it was designed for both consumer and professional use. What this means is that the pro audio market can take advantage of the cost benefits provided by the huge consumer market. Once industry has tooled up for the manufacture of tape, head assemblies and the special VLSI circuits needed for reading and writing to DAT, professional recorders equipped with advanced production features can be adapted from these general-purpose machines at a cost far less than machines designed only for professional use.

Ironically, it is DAT as a consumer medium that has fallen short of its goal. Originally hailed as the next wave of the

new home appliances, DAT was expected to turn up in households worldwide and be accepted as well as the VCR and CD player. This lack of acceptance has been attributed to the threat of legal action by the RIAA against any manufacturer that introduces a DAT machine in the American market.

Still, this does not explain the slow start that DAT has had in Japan and Europe. This could be a result of a market percep-

another mode using wider tracks that can be used with cheaper tapes. (The wide mode is most likely to be used for mass duplicated tapes that can be recorded through a contact printing method.) The sixth mode is for 48kHz sampling, and is the same as is used in professional recorders.

All six allow for the use of emphasis, a treble boost on record with a complementary cut on playback. (Because music tends to have less energy in the high-frequency bands, the boost can be done without much worry of overload. The complementary cut process reduces high-frequency noise, giving a higher perceived dynamic range.) The emphasis used in DAT has the same characteristics as the professional-format stationary head and VTR-based recorders, as well as CD.

Program material is recorded along with subcode data that tells the mode and emphasis status, and other information such as program number, timing and table of contents. While similar in function to the subcode in CDs, more than four times the data space has been allotted in DAT. Enough information is available for CD mastering, and the subcode information can be recorded separately, which means that CD mastering can be performed on equipment that costs a fraction of what is in use today.

Rotary-head transports are crucial to making the format cost-effective. Spinning a head across the tape creates a high tape-

Spinning a head across the tape creates a high tape-to-head speed while allowing the tape itself to move at a crawl.

tion that DAT is only an interim technology that will be made obsolete by recordable optical discs. Whatever the reason, manufacturers have continued to develop specialized recorders for professional use.

DAT format standards

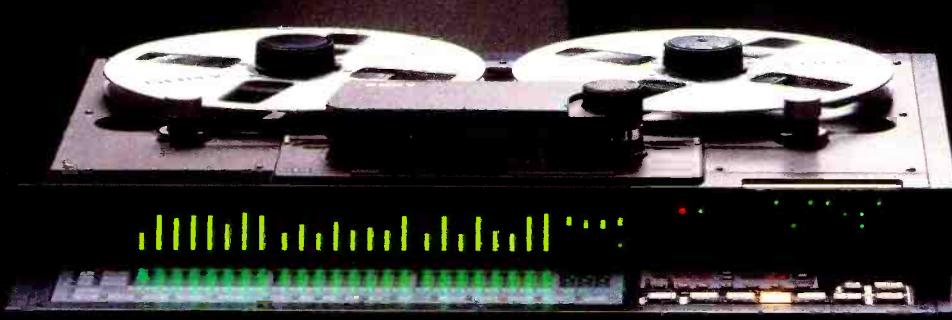
There are currently six data formats allowed by the DAT standard. (See Figure 1.) Others may be added later, as dictated by market demand. Three have 32kHz sample rates to afford compatibility with direct satellite broadcasts (not available in the United States). There is a 44.1kHz mode for CD-compatible signals and

John Monforte is RE/P's technical editor and director of Recording Services at the University of Miami.

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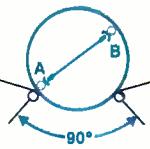
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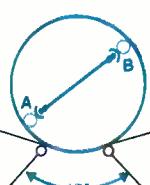
CYLINDER DIAMETER..... 15mm
 TAPE WRAP ANGLE..... 180°
 REVOLUTION SPEED..... 2000rpm
 TRANSMISSION RATE..... 2.352MHz
 SIGNAL DURATION..... 15ms



CYLINDER DIAMETER..... 30mm
 TAPE WRAP ANGLE..... 90°
 REVOLUTION SPEED..... 2000rpm
 TRANSMISSION RATE..... 4.704MHz
 SIGNAL DURATION..... 7.5ms



CYLINDER DIAMETER..... 60mm
 TAPE WRAP ANGLE..... 45°
 REVOLUTION SPEED..... 2000rpm
 TRANSMISSION RATE..... 9.408MHz
 SIGNAL DURATION..... 3.25ms



RECORDING PARAMETER vs. CYLINDER DIAMETER

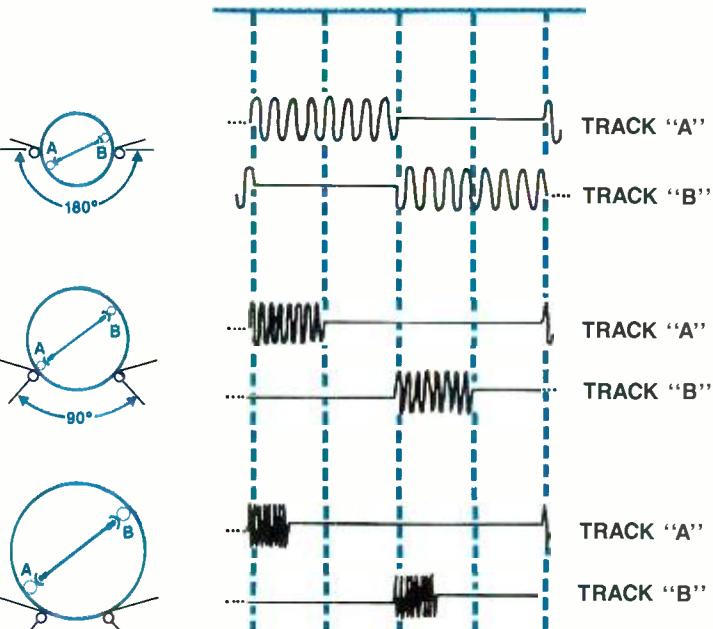


Figure 3. R-DAT scanner configurations.



Photo 1. The PCM-2500 Professional DAT Recorder from Sony.

rates currently provided in the SMPTE standard, it is different from any proposed future standard for film or video.

The DAT format has its own time code, used for locating segments on the tape, but the frame rate problem prevents editing out a whole number of video or film frames and carrying along a whole number of audio frames. This means that no matter what solution is adopted, the

audio must be chopped into fractional frames. This will put extra demands on the electronic editors when trying to conform with picture. Although it is still useful to use SMPTE time code for sync purposes, the frame rate problem and other obstacles must be overcome.

Sony attempted the first time code technique in its portable recorders. DAT has space near the tape edges for two aux-

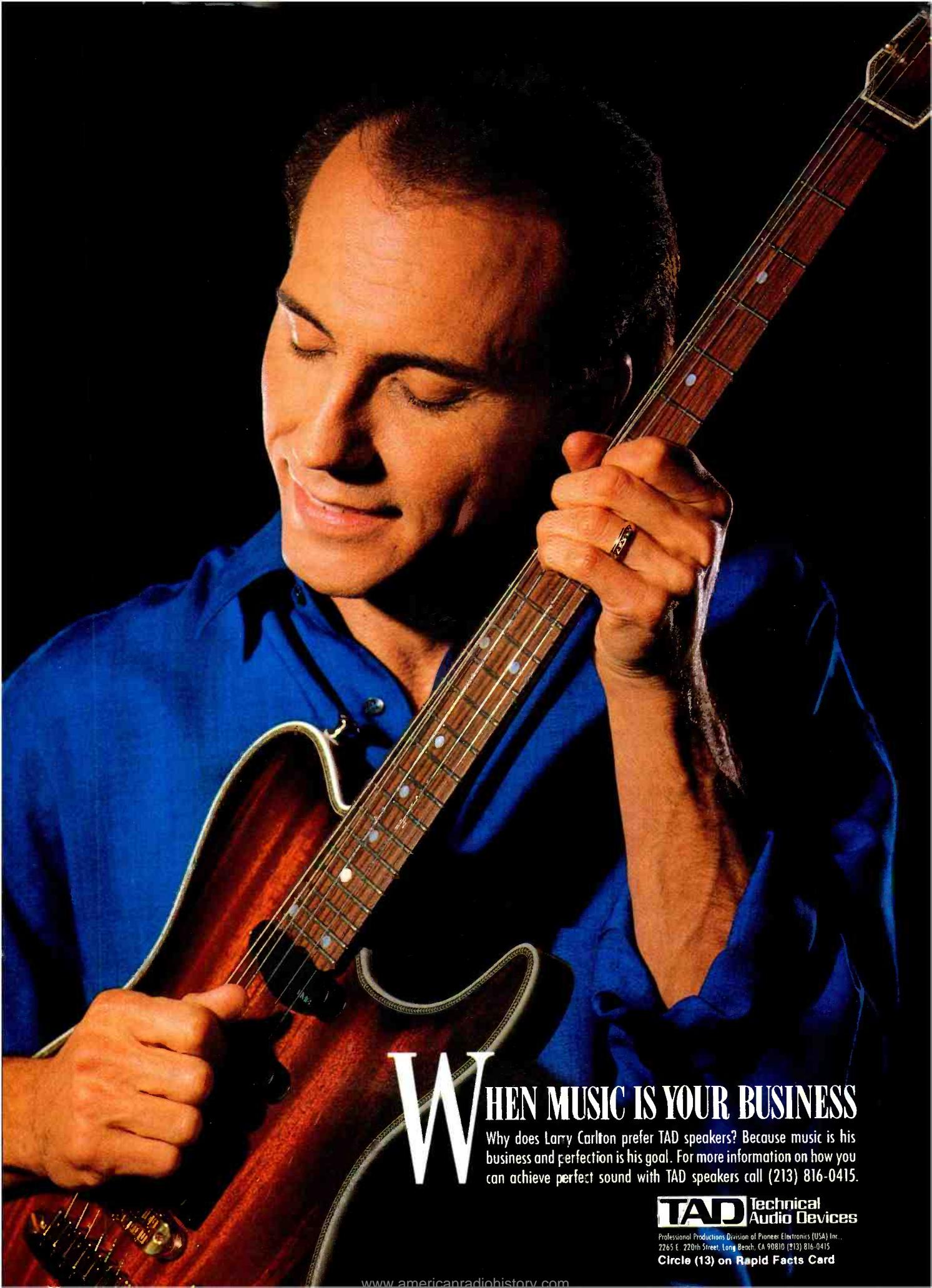
iliary tracks that can be used to record analog signals with a fixed head. SMPTE data can be recorded here just as it is done in analog recorders.

The main difficulty with the Sony method lies in the slow longitudinal tape speed of the format (8mm/sec or around 1/3ips), which leaves each frame to be recorded on only 2mm to 4mm of tape. A slight misadjustment of the distance between the fixed head and the rotating drum is all that is needed to throw off the

Although misadjusted machines can operate well by themselves, rotary-head recording requires precise adjustment to conform to standard.

frame location. Also, because of transport instabilities and the servo requirements of the rotating heads, the actual tape speed also varies widely, causing severe flutter problems for the code. These obstacles make this technique virtually unusable.

Fostex introduced another method. Here, the frame data for the SMPTE code is recorded in the subcode area. Because the subcode is also the home of other essential information, and users need the ability to record time code at any time, provisions must be made to overwrite only the time code portion of the subcode. This



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Photo 2. Tascam's DA-50 DAT Recorder and RC-50D Remote Control Unit.



Photo 3. The Panasonic SV-250 Digital Audio Portable Tape Recorder.

is accomplished in a four head system. The first pair reads the old subcode data and the second rerecords it along with the new time code.

Shortly after the introduction of the Fostex method, the AES and IEC set about to devise an industry time code standard for professional DAT that can harmoniously coexist with the subcode needs of the consumer user. At the time of this writing,

details were being worked out on a method that was developed through the research efforts of Matsushita, Sony, Fostex and the NHK. The essence of the standard revolves around a method that records in the subcode an amount of phase delay that shows where the SMPTE frame edge is in relation to the DAT frame edge. The IEC, currently the guardian of DAT standards, will soon arrive at a worldwide stan-

dard based on the considerations of the study committees.

Problems

While the future for DAT in the professional studio looks promising, there are certain pitfalls. Principally, the DAT format was designed to be compact and convenient. The high data densities that result from this approach leave a larger quantity of data at risk for a given-size dust particle or tape crease. We cannot expect the tape to be as rugged as the current professional formats are in handling abuse or improper storage. For this reason, there is still considerable concern about whether the medium is well-suited for archiving. (See "The Care and Handling of DAT Cassettes," page 26.)

Fortunately, because there is no generation loss in digital recording, backups can be made easily. Our studio habits should adapt to include regular backups of work in progress over periods that are frequent enough such that the loss of a tape will cause minimal client aggravation. The more unique the material, the more important the backup becomes.

Another problem is compatibility among different players. Tapes that are playable only on the machine that recorded them are not uncommon. Although misadjusted machines can operate quite well by themselves, rotary-head recording requires several precise adjustments to conform to standard. These recorders are essentially the same as video recorders and require the same care in setup.

Tape tension, for example, can be adjusted with a great deal more latitude in fixed-head machines. New test tapes and some specialized training for audio technicians who have not had experience with video recorders will go a long way toward solving this problem. Still, the very nature of extremely high-density recording always leaves less room for error.

DAT may always be considered the poor man's digital format. But that may be a small negative when compared to the cost savings it offers as a functional, professional format. The next generation of DAT recorders, along with editors and synchronizers, is just around the corner, and it is likely that DAT will come into its own as a professional tool.

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*Ken Townsend,
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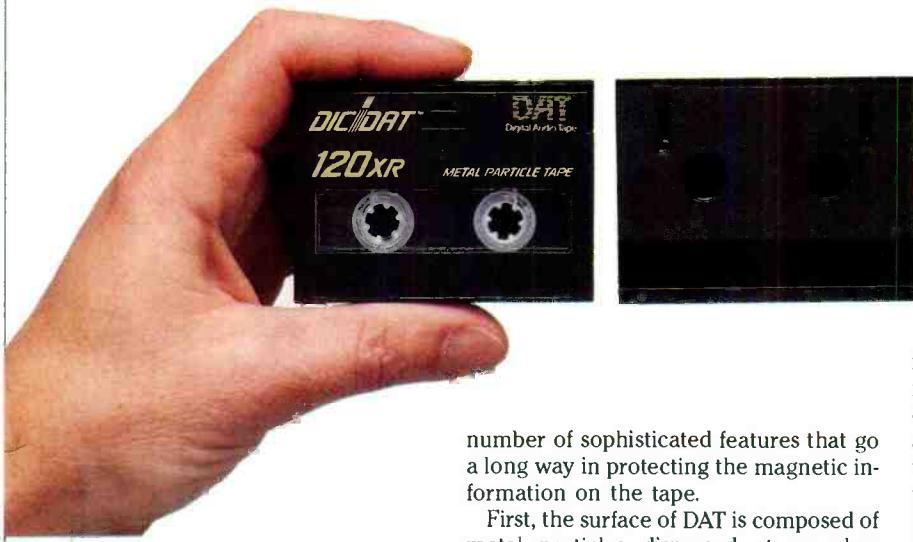
The Queen's Award for Export Achievement to Edendock Ltd 1984, 85 and
AMS Industries plc 1986. In July 1985 Edendock Ltd became AMS Industries plc.



The Care and Handling of DAT Cassettes

By Joe Martinez

DAT is not a toy. If misused or mistreated, it will deliver something less than the pristine sound professionals have come to expect from digital recording.



We seem to know instinctively how to handle large-format tape cartridges and pancake reels: with care. But digital audiotape can be deceiving. The cassettes fit in the palm of a hand or the pocket of a shirt. Indeed, DAT's compact size and low cost are two reasons that it is becoming an increasingly popular digital medium.

Professionals, however, must remember that DAT is not a toy. If misused or mistreated, it will deliver something less than the pristine sound professionals have come to expect from digital recording.

Here, then, are some general guidelines for the use, handling and storage of DAT cassettes.

Good news

Let's start with some good news. Today's high-quality DAT cassettes include a

number of sophisticated features that go a long way in protecting the magnetic information on the tape.

First, the surface of DAT is composed of metal particles dispersed at an electromagnetic density of 1500 oersteds. (Conventional audiotape has a surface density of only 200 to 400 oersteds.) The high-density makes it resistant to data loss caused by environmental factors. (Still, DAT cassettes should not be stored near objects with strong magnetic fields, as this may cause the loss of recorded material.) Also, DAT can't be bulk-erased. Degaussers used to erase analog tape cannot break down the signal encoded on the high-density surface of DAT. Once digital information is encoded on the tape, it can only be removed by re-recording.

You should take fundamental precautions regarding the environment to which you expose DAT cassettes—familiar, common-sense safeguards that apply to virtually all magnetic media are recommended.

DAT tapes should be protected from extremes of sunlight, heat, cold, moisture and dust, as well as strong magnetic charges. Like other tape formats and vinyl

records, you shouldn't store them in a sunny window, on a radiator or near air conditioning vents. Temperature will affect any polyester-based film. In cold, it tends to stiffen; in extreme heat, it can become very pliant. However, neither effect should harm DAT's metal particle surface or cause data to be lost.

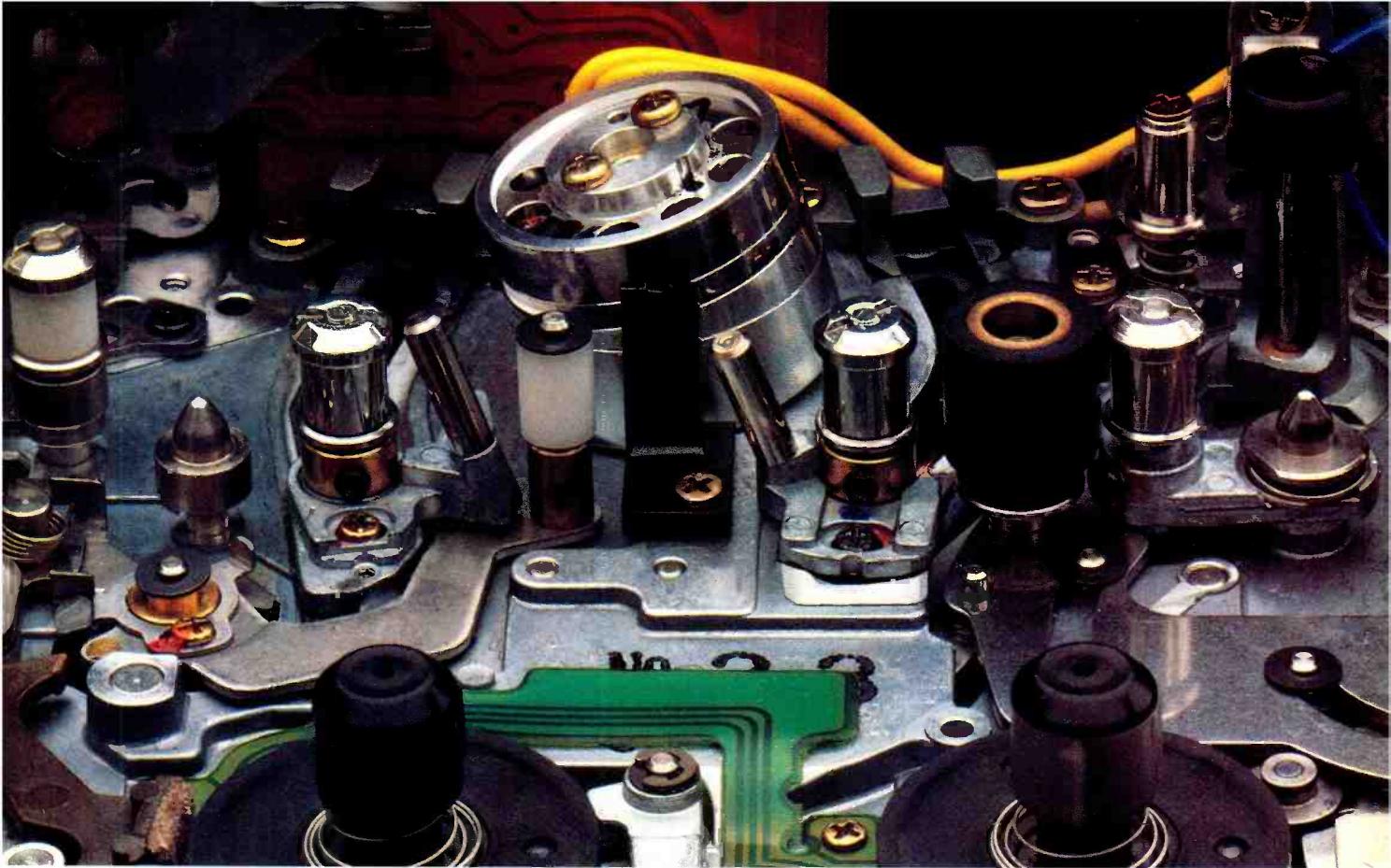
An interesting feature of most DAT hardware is a moisture-prevention cutoff. If any moisture enters the unit via the tape, it will stop running and begin to heat up. Once the heat has dried the moisture, the unit will begin to function again.

To guard against stretching, manufacturers have paid special attention to the DAT base film—the structural backbone of the tape. In addition to building in extra strength, manufacturers generally tensilize, or pre-stretch, the base film. Normal wear and tear should not cause the tape to stretch. Today's cassettes should endure literally thousands of passes, with no stretching or signal degradation.

Another important feature is tape consistency. Unlike conventional audio cassettes, which package a thinner and less durable tape in 120-minute formats, the tape in longer-playing DAT cassettes is of the same thickness and durability as that within shorter-playing ones.

Note that while tape stretching tends not

Joe Martinez is president of DIC Digital Supply, Hackensack, NJ.



Your head is no place for information.

You want the sounds you record to stay where you can get at them and where they'll be safe. Not clogging the heads of someone's transport.

In the digital domain we don't hear the sound of the tape. Differences heard in sound are in the machine's abilities to interpret the stored data. So, your recording is unaffected by the character of the recording medium. However if your recording (data) is clinging to the heads of the recorder it is not much use. Furthermore it will cause write as well as read errors.

The old judgments on tape sonic performance become obsolete. *Quality* becomes critical: Quality tape with efficient binder and backing systems and quality equipment.

In addition to being of high quality, Panasonic DAT tape comes with our exclusive *One Year Road Hazard Warranty**. No matter what happens, if you can scrape up enough tape to send some back, we'll replace it. Guaranteed.

Don't settle for the false economy of inexpensive DAT tape. You have too much at stake. Visit a Panasonic dealer and tell him your head is no place for information.

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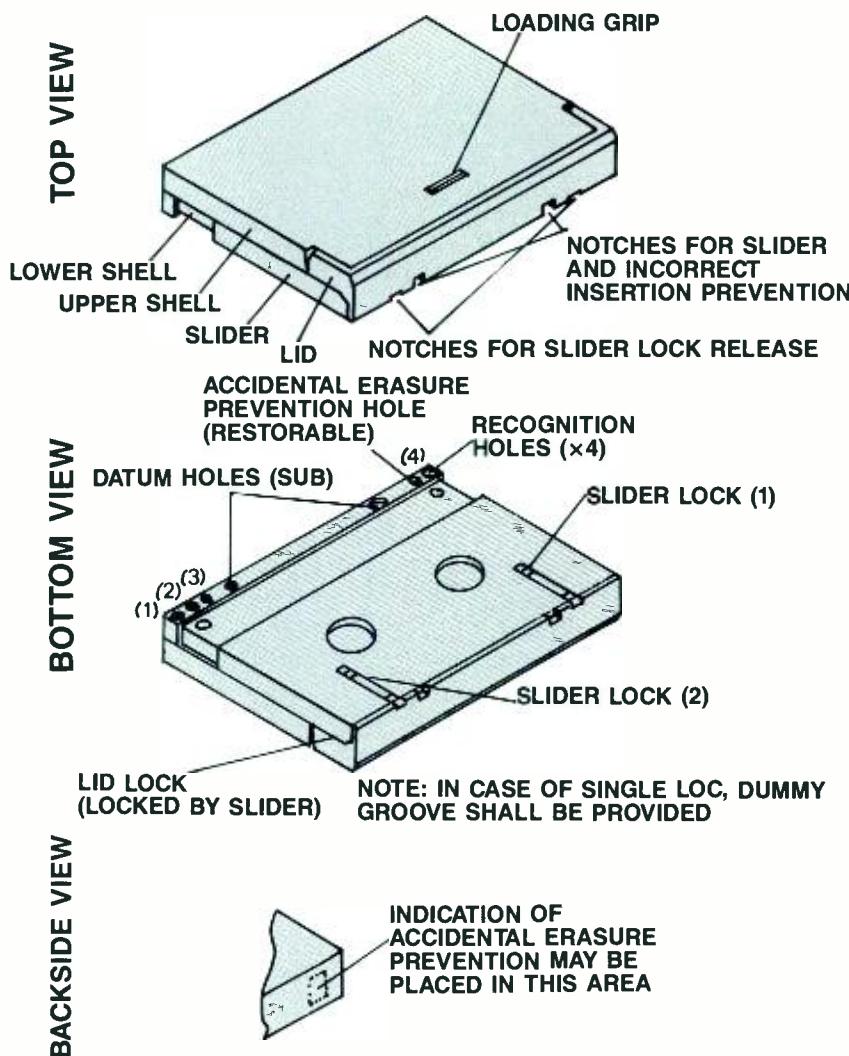


Figure 1. Outside view of a DAT cassette.

to be a problem, when playing or rewinding is completed, users should still take care to remove cassettes from the drawer of a deck promptly. The hardware places a certain amount of stress on the tape. Prolonged exposure could cause the tape to set in position and eventually jam.

Handle DAT like a videocassette

One way to approach the care and handling of DAT cassettes is to treat them with many of the same precautions applied to videocassettes. The two tape formats share a similar concept and construction. Both are designed with a relatively dust-free, self-contained cassette shell. Both can be inserted into their respective hardware only in one position. And both can play and record only in one direction—they must be rewound once playback or recording is over.

But DAT goes VHS one better in that a locked slider—not to be confused with the lid—covers the tape. Once a DAT cassette is inserted into a player or recorder, the slider locks are released, the slider slides up, the two hub locks are released, and the tape is exposed for playback or recording. (See Figure 1.)

The reason for these precautions is dust, the main enemy of consistent, high-quality performance. Dust won't harm the tape itself, but it can be carried into the DAT hardware and lodge on the heads—clogging them, and impairing output and possibly input.

As with videocassettes, don't insert DAT tapes upside down. Keep the drawer of all DAT players and recorders closed when not in use, and never deliberately open the cassette slider to expose the tape.

A good, quick measure of the quality of

a DAT cassette is the integrity of the slider itself. Put a finger on either side and squeeze. If it bows up in the middle, your cassette may lack necessary structural support. Also, check to see whether the slider slides too easily. If so, the tape may become accidentally exposed during normal day-to-day handling.

Dust from within

Dust from outside that DAT system is not the only substance that can clog recording heads. The DAT format that is predominant in the marketplace is known as R-DAT. The "R" refers to the rotating heads that read the digital information

To guard against dust, DAT, like a videocassette, is designed with a self-contained cassette shell.

from the tape. As tape runs in an R-DAT deck, it is cycled across a high-speed helical scan rotary drum that rotates at 2,000rpm. Whenever there is contact between a recording medium and recording head, there is friction. And where there is friction, there is the danger of shedding—the flaking off of particles from either surface. Like dust, these particles can rapidly clog the heads and impair performance.

Fortunately, DAT has another built-in safeguard to resist this problem. DAT is the only kind of audio recording tape that is fully encapsulated. Its high-density metal particle surface is protected by a low-abrasive coating that reduces head wear and prevents the flaking off of particles from the tape. (See Figure 2.)

It is important for all tape that touches the recording heads of DAT hardware to have as low a friction coefficient as possible. This includes cleaning cassettes. It is recommended that you use only wet-type cleaning cassettes; these require a friction-reducing liquid to be applied before they are run through the player. Dry-type cleaning cassettes can shear off particles from recording heads and lead to clogging. This will affect both recording and playback, as DAT achieves both through the same rotating drum.

Static electricity

Another enemy of DAT is static. Like the video playback process, R-DAT requires a length of tape be drawn from the cassette and wound through a fairly complex series of pins and guards before making

contact with the recording head. Because the buildup of static can cause the tape to stick to the inside of the covering lid, it is at this point the tape may jam.

It is important, therefore, to use only DAT cassettes with anti-static treated plastic. It is also important to make sure that all DAT hardware is properly grounded and to avoid putting the tape in contact with static-generating equipment, such as amps, computers and printers.

When packaging DAT for shipment, remember that certain packing materials can generate static. Avoid packing blank DAT cassettes in expandable polystyrene "peanuts" that haven't been static-treated. Never wrap DAT in polyethylene film that hasn't been static-treated. Fortunately, static cannot affect DAT once it has been recorded.

The DAT cassettes themselves are quite sturdy. The best way to mail them is wrapped in padded mailing bags. And by the way, one place you needn't worry about is the airport check-in counter. DAT is not affected by airport X-rays.

Used with care, the DAT format can be an effective tool for the professional.

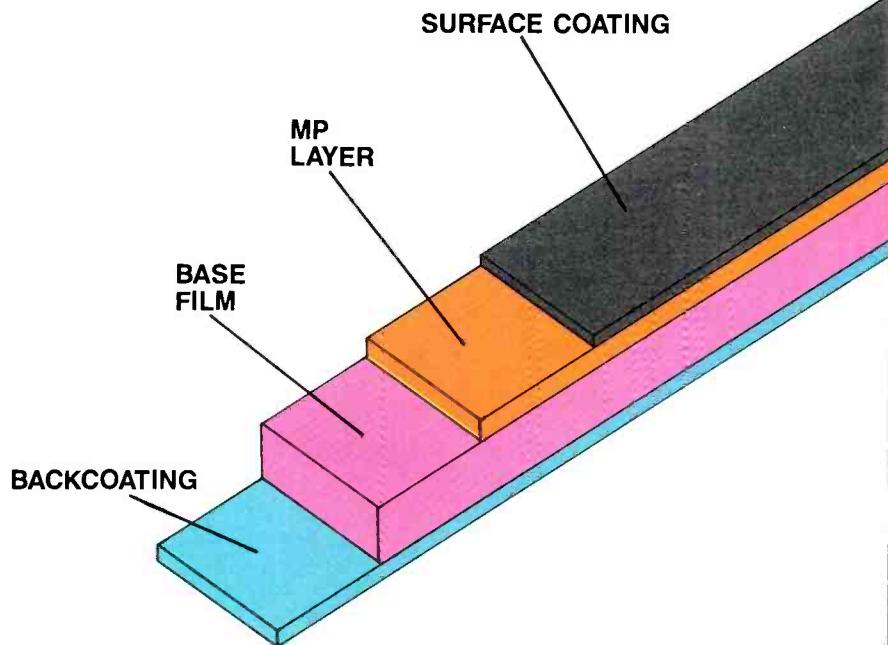
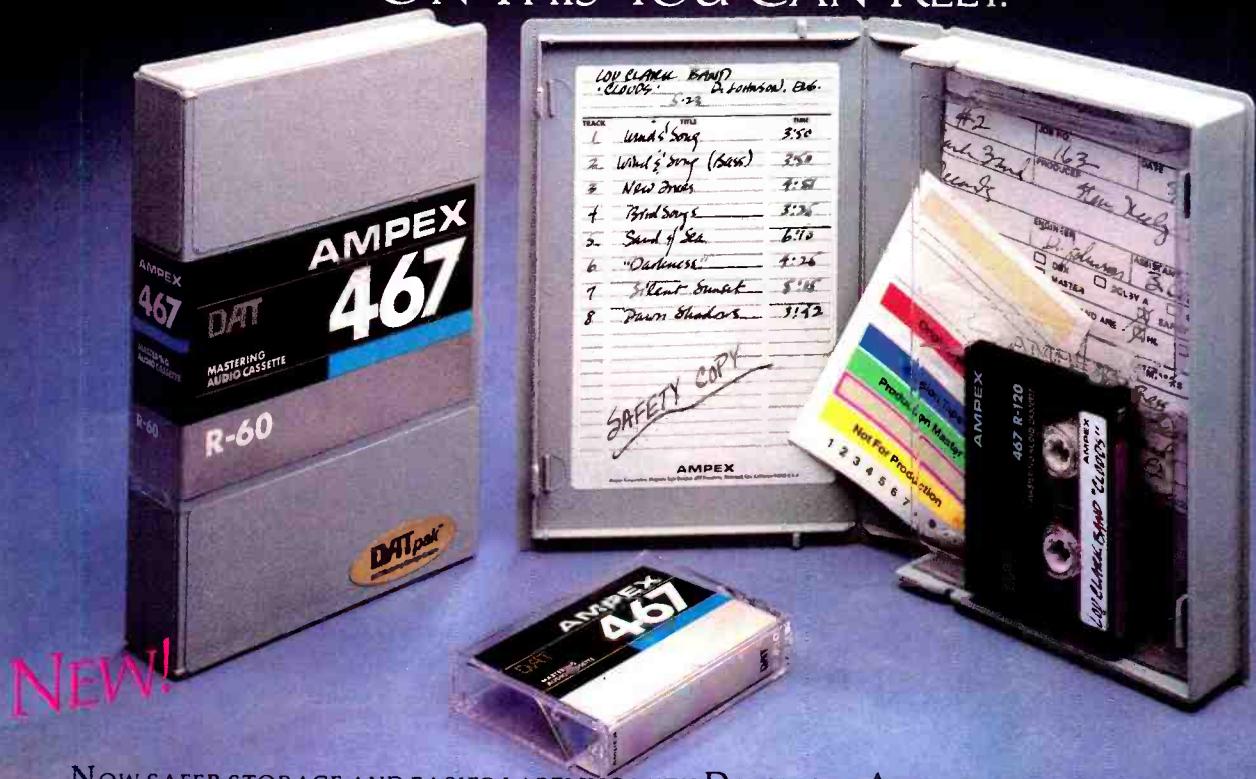


Figure 2. DAT tape has four layers: a back coating, a base film, a metal particle and a surface coating.

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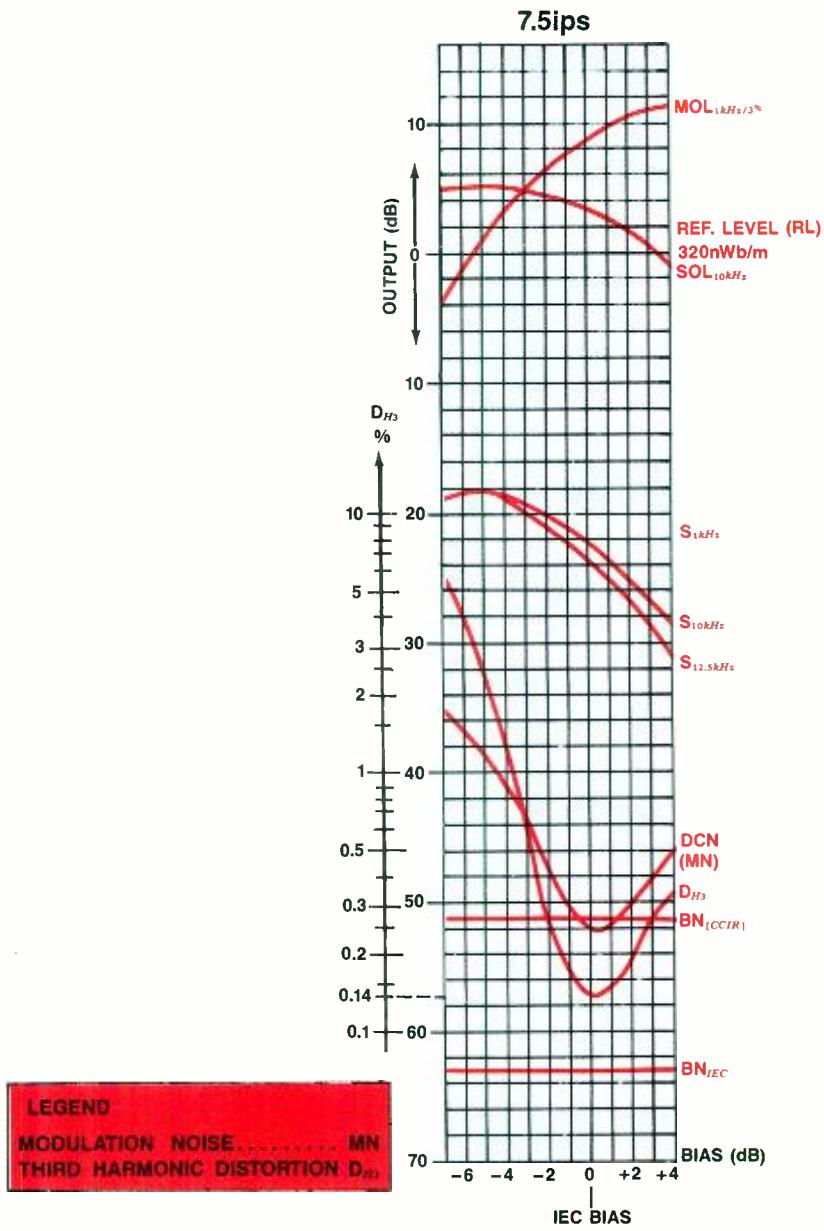
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Are You Biased?

By Larry Glenn

For lower modulation noise and distortion, treat the bias on your cassette deck the same as you do on your reel-to-reel machines.



The current controversy over R-DAT has brought attention to the potential for a quantum leap in quality in many applications of audio recording. Let's welcome it if promise becomes reality, but many people are still concerned about today's most prevalent medium for audio reproduction, the compact cassette. Here's something you can use to improve the quality of cassette recordings.

If you can readily adjust the bias on your cassette deck, set it for lowest modulation noise. How can you do that? By listening while recording a tone of about 20Hz. Although it is rarely applied to cassette recorders, there is nothing new about this method, and I give credit to Warren Simmons, recently retired from Ampex, for suggesting it to me.

Most cassette deck bias-adjustment procedures are based on achieving flat frequency response to about 12kHz, or higher for decks that are capable of it. This is probably because the cassette medium has historically been limited in frequency response, and flatness has taken priority over other concerns.

Have you ever looked at technical sheets on reel-to-reel recording tape? (See Figure 1.) If you have, you know that the recommended bias is chosen for a compromise between minimum third harmonic distortion and minimum modulation noise. Tapes are often designed to have low third harmonic distortion and low modulation noise at about the same bias setting. Why not apply the same method to cassette recording?

Tape specification sheets usually list the recommended "over-bias" point. While recording a tone of a specified frequency, the bias is increased from its lowest setting while monitoring the output level off the tape. After the output reaches a peak and begins to decrease, the bias current is to be increased until the output has dropped by the number of decibels specified for the record gap size of the head. What if you don't know the amount of "over-bias" for the tape you use, or don't know the size of the gap in the record head? This is what makes listening to modulation noise a simpler method.

Record a 20Hz tone and adjust the bias a little at a time to find the setting producing the least modulation noise off the tape. (I hope you have a 3-head deck!) Modulation noise is created in analog recording when a signal of any kind is being recorded on magnetic tape. This is different from putting the machine in record but not feeding any signal into its inputs. That measurement is called "biased tape".

Larry Glenn is an audio recording specialist at the University of Wisconsin, Eau Claire.

The Third Coast Emerges

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Why, you may wonder, have a second supplement on the Nashville recording community, only a year after the first? Have things changed that much?

The answer is yes. The Nashville recording community has experienced lots of positive growth. More so than any time in its history, the community is becoming a total entertainment center.

This year's supplement also allows the opportunity to tell more of the story. Last year's supplement focused on studios whose business largely consisted of music recording. This year, we've broadened our coverage to include support companies that keep the studios running and facilities that cater to non-music markets, such as post-production or electronic music. Also

new this year is the fact that all three feature articles are written by Nashville-based free-lance writers.

For the second year in a row, *RE/P* is proud to donate 10% of this supplement's advertising revenue to the Nashville Entertainment Association. Among the pro audio magazines, we believe *RE/P* to be unique in the depth of its financial and editorial support.

We hope you enjoy this supplement. If you're thinking about doing a project out of town, think about Nashville. It could be the best decision you could ever make.

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Technical and Sonic Excellence

By Tom Behrens

Rather than buying technology for its own sake, Nashville facilities are buying equipment in the quest for sonic excellence.

Several years ago, when digital recording was first introduced to the market, the professional audio community was decidedly split on its merits. Many felt that the sampling rate was just not high enough. Others were willing to overlook some of the initial drawbacks and wel-

comed the concept of digital recording with open arms. They looked forward to the promise of noise- and distortion-free recordings combined with the prospect of long-term storage capability. While some took a "wait-and-see" attitude, these optimists forged a trail. They were the new audio pioneers, embracing an emerging technology with resolve that they hoped would raise their present level of quality to new heights.

Tom Behrens is co-owner of Equipment Pool, an equipment broker based in Nashville.



Photo 1. Eleven Eleven Studios has added a Neve V Series console with a GML automation system. The facility is also renovating the basement for a new tape vault and a digital mastering facility. (Photo by Don Putnam.)

There was a time, in the not too recent past, when Nashville held the distinction of having the most digital multitrack machines in the world. Now that this situation has moderated, with many more machines in other recording centers around the globe, Nashville studio owners have turned their sights toward seeking the best quality in both digital and analog systems.

There has been a resurgence of analog recording lately, with steady sales and rentals of analog multitrack machines. Studio owners are refurbishing or modifying their present equipment to extract the best performance for a minimum of investment and additional installation time.

There are other purchase considerations, which many times are governed by the type of facility. Mastering facilities, for example, are driven both by customer needs and vision for future expansion. They must consider both the tape formats they are currently receiving in addition to those formats they expect to see in the future. Others have the luxury of a secure clientele and base their decisions on what will make their job easier and faster.

New generation of digital multitracks

Georgetown Masters purchased two Sony 3348 48-track digital multitracks last year, primarily for rental purposes. Owner Denny Purcell reports that compatibility

with the earlier 3324 24-track models is meeting the manufacturer's claims, and both machines are booked months in advance. Georgetown also conducted listening tests to determine sonic quality and chose the machines based on those tests.

Purcell also notes that the 3348's features are an added benefit. To complement its mastering operation, Georgetown purchased four 3402s along with a DAE 3000 digital editor.

Digital Associates was Nashville's first owner of a Mitsubishi X-800 32-track and X-80 2-track digital recorders. That decision was forward-looking at the time, because of the fact that there was virtually no multitrack digital rental market established. Recently, Digital has purchased a new X-880, an X-86 and a Dyaxis digital editing workstation, along with adding Apogee filters for both multitracks and one X-80. The third-generation X-880 will further broaden its rental business, with the X-86 and Dyaxis answering in-house needs for album editing, sequencing and manipulation.

Owner Rick Horton made these decisions on both past experience with Mitsubishi products and the return on investment that his X-800 has provided through

rentals during the past five years. Also a factor was the significant market penetration of the PD format in Nashville and increasing demand for X-850 rentals he was able to fulfill.

Some fancy editing footwork has already been accomplished with the Dyaxis in a recent album project, which required the deceptively simple task of lengthening of a quarter-note to a half-note.

"This was all accomplished digitally and completely within Dyaxis, with the finished product being dumped back out the digital ports to the storage machine," Horton says. "We were able to remain within the digital domain at all times, thus eliminating generation losses. We would never have been able to accomplish some of these tricks using traditional tape-based editing techniques."

Workstations

There are several Synclavier and Fairlight systems in Nashville, but probably the most interesting and diverse installation is the NED 8-track PostPro hard-disk recording system at Aesopagus Press. Designed to interface with the Synclavier and driven with a Macintosh II worksta-

tion, the PostPro is a most powerful production tool. Plans are to expand soon to a 16-track system and to include AES, DASH and PD interfaces by the end of June.

In addition, owner Hollis Halford reports that the Synclavier has been upgraded with the new D Series processor, multiple outputs, optical storage for samples and a Macintosh II workstation.

In the interest of its clients, The Castle has always had the philosophy of "keeping up to date and being the first," according to owner Josef Nuyens. This has meant working diligently to keep abreast of the available current technology. Nuyens, who also operates a successful publishing and production company that contributes to the studio income, does not hesitate to regularly recycle his equipment.

Recently, he created the opportunity to sell both the studio's SSL 4000 console and Mitsubishi X-850 when a new SSL G Series console and a Mitsubishi X-880 were desired. The search and location of a buyer were carefully orchestrated and became a significant part in the decision to upgrade. Other new purchases at the Castle include Sony APR-24 and Studer A820 analog 24-track recorders, a Mit-

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Photo 2. Masterfonics has just opened up a moderately priced tracking and overdub room, completing the transition to a full-service facility.

subishi X-86 digital 2-track, a TAC Scorpio console for the MIDI room and rebuilds for the studio and control room.

Neve in an SSL town

John Abbott, manager at Eleven Eleven Studios, has added a new Neve V Series console with a GML moving fader automation system. The response from clients has been "beyond expectations" and he has found no disadvantage in owning a Neve in an SSL-oriented town. Abbott made his decision based on the company's long-standing reputation in the industry and a thorough evaluation of features and sonic quality.

Also under construction at Eleven Eleven is a renovation of the basement for a new tape vault and digital mastering facility. New owner Frank DiLeo has an extensive library of Modern Records masters that will soon be archived into digital form.

Sound Stage has continued to keep current both through new purchases and upgrades of present gear. A new SSL G Series Studio Computer will be installed in the 4000 console for the Front Stage, while maintenance engineer James McFerrin continues in his pursuit to "simplify the audio path" throughout both studio systems.

Sound Stage's situation is unusual when compared to other studios in the area, because it has an advantage in having a long-term lease arrangement in one studio with a major client (MCA/Nashville). Its motivation to excel is similar to other studios in that it originates from client's requests, but different as it only has to cater to that one client's needs.

Sound Stage has undertaken several major renovation and modification projects of the studio's equipment, with the encouragement of the studio manager, Ron Treat, and the client.

Transition to full service

Just down the street at Masterfonics, a new Tom Hidley-designed control room and studio are being added with a Trident TSM and Otari DTR-900 already purchased for installation. When the construction is complete, owner Glenn Meadows plans to offer clients a moderately priced recording studio for tracks and overdubs.

Upon its scheduled opening in July, this new room will be sonically compatible with the already successful Hidley mix room and his two mastering rooms. With this addition, Masterfonics becomes a full-service facility, offering complete production facilities all the way to final preparation and mastering for CD or LP.

To supplement the mastering business, Meadows recently purchased a Sony 3402 DASH machine, Mitsubishi X-86C with AES/EBU ports, another JVC digital processor and a Sony sample rate converter. The most significant purchase was that of the Wadia fiber optic transmission system. After considerable research on fiber optic transmission techniques, he found that Wadia was the only system available that met Masterfonics high standards. Presently, there is one interconnection between Mastering Room 1 and the tape copy room. Additional interconnects are planned for the second mastering room and eventually the two control rooms. Initially, a 2-channel system is being im-

plemented, and Meadows reports that Wadia is currently working on a 32-channel single-fiber transmission system, which will also include a SMPTE channel. So far, he is pleased with the performance of the first system.

At Master Mix, renovations to add offices and lounge areas are just being completed. New purchases include an AMS AudioFile, Apogee filters for the Otari DTR-900 and Sony 1630s, and a Harmonia Mundi digital processing system including fader, equalization, dynamics and mixer sections. Just as the selection of its Calrec UA-8000 console was chosen through extensive scientific listening tests, so was the purchase of the DTR-900, AMS and Harmonia Mundi equipment.

"We knew that evaluating equipment would be a difficult job," says owner Hank Williams, "so we custom designed a computer program to allow us the ability to conduct rigid and repeatable listening tests for accurate selection of equipment."

Technical lifespans

It is interesting to note that, with a few exceptions, most studio owners expect the useful life of their equipment to be in the 5-year range. Glenn Meadows points out that some of his analog machines have performed well for 10 or 15 years. He expects that further tape machine purchases for his mastering operation will have a similar life.

Referring to his Neve DTC 1, Disc Mastering owner Randy Kling expects that his digital console will "last longer than the digital formats that were out there when it was purchased." James McFerrin hopes that performance improvements implemented on Sound Stage's equipment will extend the life of the equipment until a digital recording console is available.

As for the future, Nashville studio owners are quick to look into their crystal ball. Most see some type of digital audio workstation with multitasking and emulation capabilities that will replace all of the present studio equipment as the wave of the future. Others hope to see fast-access optical disc storage of digital audio signals soon.

Denny Purcell, owner of Georgetown Masters, envisions a consumer system that will broadcast all types of extremely high-resolution entertainment signals from the production facilities directly into homes and businesses. Whatever the future will bring, it is very evident that what was the digital revolution in Nashville is quickly becoming a quest for sonic excellence.

RE/P

Lending Support: Nashville's Technical Teams

By Kay West

Support services such as mastering and equipment rental help make Nashville a complete production center.

There are many cities in the United States that aspire to be players in the recording business. All boast fine studios, sophisticated gear and talented personnel.

So what has held them back as little (comparatively speaking) Nashville has surged ahead to become a world-class recording community on par with Los Angeles and New York?

Two things, say industry insiders. First is the lack of commitment by major labels and publishing houses to open and staff full-service offices in those communities.

"My personal opinion as to why other cities have never caught up with Nashville is that there are no major labels headquartered in those cities," says Glenn Meadows, president and co-owner of Masterfonics. "The major labels have made an investment in Nashville. There are viable businesses in those cities but major powerhouses are in the cities where the money is."

Second, the other cities have a lack of technical support companies. According to producer/engineer Ed Seay, who spent 13 years in Atlanta before moving to Nashville almost five years ago, "There are three basic markets in the United States—New York, Los Angeles and Nashville. And, although other cities now have the same gear that these cities have, they don't have the tech support, they don't have the rental companies, they don't have the

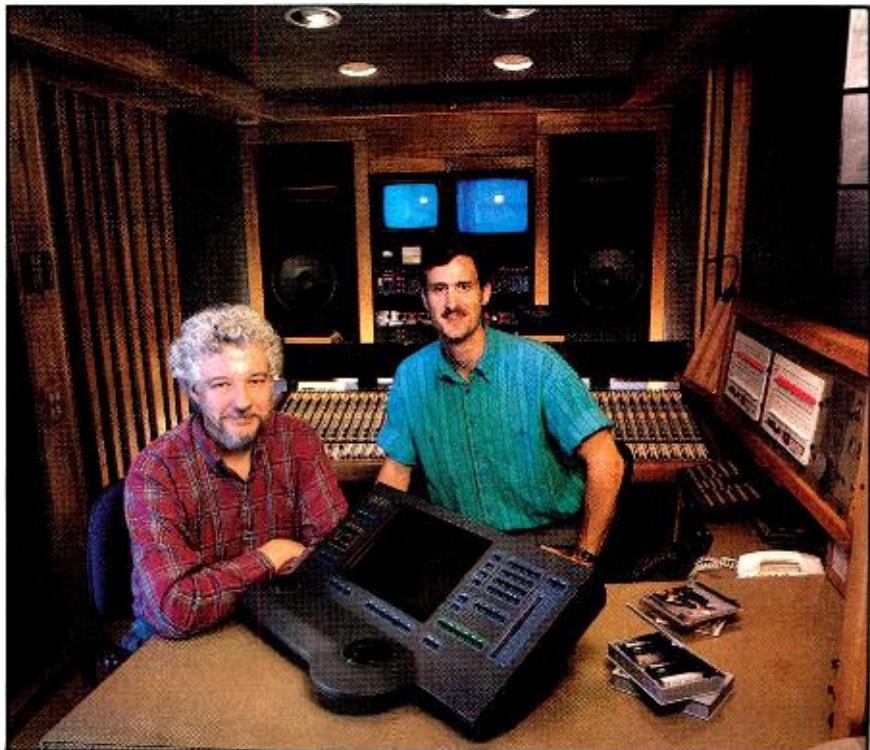


Photo 1. GHL Audio Engineering has recently purchased a DAR SoundStation II. The system will be used as a slave to the multitrack recorder, to provide more control over lead instruments and vocals, for master tape prep and for audio-for-video production. The system is shown in GHL's remote truck with GHL engineers Gary Heden (left) and Jim Kaiser.



Photo 2. Denny Purcell, owner of Georgetown Masters, shows one of two Sony 3348 48-track DASH machines that the facility recently purchased. The machines are the only two in Nashville and are among the six currently in the country.

manufacturing reps, they don't have such a concentration of great players."

Nashville, it seems, suffers an embarrassment of riches. Fanta Sound's Johnny Rosen lists even more. "We have great instrument rental places like S.I.R. We have plenty of cartage companies," he says. "Great rehearsal studios let people save money in the recording studio. Really, least important is the technical support people like us."

According to Rosen, his remote recording company's purpose is to provide an "aural photocopy" of what is happening on stage. It is then taken to a studio and remixed and produced into a record, radio show, TV show or movie.

Fanta has just completed its 5,500th job in 15 years. Its first remote job was for Neil Young, who wanted to record a live album. Young's producer, Elliot Mazer, needed a mobile truck within 11 days and Fanta built one. "His Master's Wheels" as it was dubbed, recorded 63 shows in 90 days. The truck now sits in Young's California backyard.

The current truck is a complete mobile recording truck for analog or digital recording. Its versatility takes it from recording a 16-hour country-rock show in Detroit using 135 inputs to recording a local band in a small club the next weekend using just 18 inputs.

Rosen thinks the support system works both ways. Studios refer business to Fanta and Fanta's work brings business to Nashville studios.

"The support system here may not be technically better than the ones in Los

Angeles or New York, but they treat you better. If you call late at night and ask for a piece of equipment in 10 minutes, they don't treat you like dirt. They say, 'Hey, thanks for the work.'

Gear for hire

There are several equipment broker companies in Nashville and one rental company.

Tom Behrens runs Equipment Pool, an equipment broker business. The company has been in operation since December 1987. He and partner Mike Poston have more than 25 years experience in the audio field.

"We offer a service to the equipment owner and renter," says Behrens. "Lots of individuals in Nashville own equipment but don't have time to find a customer. We take care of booking, rental, delivery of gear, setup, maintenance and instruction, if necessary."

Equipment Pool specializes in SMPTE lockup. The burgeoning post-production video work in Nashville studios has increased the need for the type of equipment packages Equipment Pool can pull together.

Dreamhire was started in London three years ago by Chris Dunn. The Nashville office, located at Sixteenth Avenue Sound, opened in September 1988 after Dunn noted a lack of equipment rental companies.

"We felt like Nashville needed this service," says Patty Sprague, Southeast manager. "Los Angeles and New York have rental companies and Nashville

didn't. We were the first to come here and have our own inventory. As more and more out-of-town engineers come to work here, they are accustomed to calling rental companies and getting what they want very quickly."

Sprague says that her on-site and computer inventory can have equipment on the way within 10 minutes of the call.

Dreamhire specializes in large tape machines and has the only Focusrite sidecar available for rent in the country. It also has a large selection of mics that are no longer being made.

Sprague observes, "Regional tastes vary quite a bit. Focusrite is very big in New York, but lukewarm here. Panners are used heavily in New York and London, but not here. Still, when these guys fly in, they want what they're used to and they're glad to find it here."

Mastering masters

According to Denny Purcell, co-owner and president of Georgetown Masters, there are about 12 mastering companies in the country that do most of the mastering work. Two of them are in Nashville.

"Most of our mastering is in country and Christian music. We do about 35-45% of the top 100 country albums and singles on the charts, and nearly every major Christian artist except Amy Grant," he says.

Georgetown Masters has been in business for four years, since Purcell left Woodland Mastering after 12 years. The coolly elegant Music Row offices house one cutting room and one editing room, as well as several offices for their six staff members. All of Purcell's equipment is hand-built with a proprietary signal process. His system was purchased from Allan Zentz, who used it for his work on the singles from Michael Jackson's "Thriller" album.

Purcell expected the move away from vinyl to happen much faster than it has and reports that reference and master work makes up only 17% of its business.

"I think most people are aware that this is the last creative stage—for whatever format—before manufacturing," he says. "I call this office the EQ Suite."

Georgetown Masters has recently expanded into the rental business. Purcell is very excited about the purchase of two Sony PCM-3348 48-track DASH recorders. There are only six in the country and his are the only two in Nashville.

"New York and Los Angeles are charging \$1,200-\$1,250 a day for this. We are renting ours for \$600 a day, \$3,000 for a 7-day week. That's a pretty good deal, considering it's the same price the Mitsubishi 32-track rents for in town."

Production Viewpoint: Tony Brown

By Lance Cowan

MCA's executive vice president talks about how he casts engineers to get the sound he wants.

The cutting edge of country music has two very important sides. One is what listeners notice immediately. Artists such as Randy Travis, Reba McEntire and Patty Loveless all have performing styles that show a return to the roots of country music.

The other side of that blade is the philosophy many producers are taking on to get new, fresh sounds. They are making music that contrasts to their predecessors' "Nashville sound" by adopting attitudes similar to film directors and pop music producers.

MCA executive vice president Tony Brown is a good example. He has produced such critically acclaimed albums as Steve Earle's "Guitar Town," Lyle Lovett's "Pontiac," Rodney Crowell's "Diamonds and Dirt" and Nanci Griffith's "Little Love Affairs."

As a country music producer, Brown can be compared to Alfred Hitchcock because of his attention to detail. Everything must work flawlessly together. That includes getting not only the perfect script (songs) and the right actors (musicians), but also casting the right production crew (engineers).

Casting engineers is a relatively new approach in Nashville. For years, the Nashville sound stemmed at least in part from record companies and producers using the same engineer for each project.

Today, however, Nashville producers are learning the benefits of experimenting with sounds. For Brown, that means hav-

ing a willingness to try different engineers.

"I like to pick an engineer based on the kind of music I'm doing," Brown says. "If I want to, I have the ability to create different sounds, not only by hiring different musicians, but also placing different engineers at different parts of a project.

"That's where the importance of casting comes in. And I think that's the whole key to where magic records come from."

While at RCA/Nashville in the early 1980s, Brown, like many other producers, used the same engineer for every product, producing hits by such artists as Steve Wariner ("Midnight Fire") and Razzy Bailey ("Midnight Hour"). But using the same people on every project made it more difficult to come up with unique sounds for the artists he dealt with. Brown says there was a tendency for the music to stagnate.



Lance Cowan is a Nashville-based free-lance writer.



Photo 1. When producing Steve Earle's "Guitar Town," Brown chose Chuck Anally to engineer the entire project. The resulting album was noted for its sharp, edgy sound.

New horizons

However, when Brown moved to MCA/Nashville in 1984, joining hit producer Jimmy Bowen (Reba McEntire, Wariner), he began to see other opportunities on the horizon.

"At first, MCA would just sort of put me with whoever was available," Brown recalls. "I ended up working with all five engineers. Pretty soon, I started asking if I could have a choice on my next project. I found out that all it took was asking."

Brown began to experiment with different engineers at different stages of each project. "I would try so-and-so on tracks, and he may not work so well, so I would try him on overdubs," he says. "I just started operating that way."

While experimenting with that system, he decided to use Chuck Anally for an entire project. Anally was hired primarily by MCA for mixing. But Brown was looking for a sound that had more of an edge.

The result was "Guitar Town" by Steve Earle, a critical success in part because of its sharp, edgy sound.

"That was an experiment," Brown says. "It was a chance to see someone whom I had dealt with as a mix engineer stretch out a little bit. And that made the album."

One engineer who has benefited from

this casting approach is John Guess. Before moving to Nashville, Guess began his career in Los Angeles, working on albums by Rod Stewart, Donna Summer, Christopher Cross, Kenny Loggins, Peter Cetera and Jermaine Jackson. The biggest advantage to casting is that it will give Nashville-based records a more diverse sound, he says.

"There are a lot of different engineers coming into town, all of whom have a varied background," he says. "These influences are already beginning to show up on records. That's a real plus. This feels like L.A. did 10 years ago."

For Brown, giving engineers the "chance to stretch" means letting them have more say in the technical setup. Because he is not a technical producer, Brown lets the engineer apply his own taste and ability.

Creating a unique sound

Although making a good album requires excellent casting all around, Brown says that casting the right engineer can compensate when the wrong musician has been cast.

"You may say, 'This guitar player we hired plays out of tune' or 'His gear sounds awful.' The engineer says, 'I'll tell you what, we can deal with this.' And all of a

sudden, the casting of the right engineer and the wrong player works."

Brown casts engineers because of his desire to make each record sound unique. "In country music, you can't stay too far ahead of the sound, because the people in country music are basically creatures of habit. I have to be real careful and try not to stay too far ahead of the cutting edge. I do like to stay on top of it, though, and the only way to do that is to try new people.

"I love bringing in an engineer just for the mix to try him out. The place where I don't take any chances is on the tracks, because if you have a clash during the tracks, it's going to really cost you money. But if you're mixing, and after two songs you hate it, you just say, 'Hey, this ain't working.'

"Another good place to try out an engineer is on overdubs. That's where I'll try out a young engineer."

Being a capable engineer is the main thing, Brown says, because a capable engineer will adapt to his client's taste. Communication skills are also important.

"Some engineers just have a better personality and establish a better working relationship with the artist. And some engineers have a personality deterrent. That's OK when you're mixing, but when you're doing tracks, it's important that the artist is comfortable working with this guy."

Anally worked so well with Earle, for example, that Brown cast him for Earle's second and third albums, "Exit 0" and "Copperhead Road." Anally and Brown are now in the studio with Marty Stewart.

Using Anally on those sessions, Brown is trying to get a similar feel to "Guitar Town," and even cast the same studio to record in.

On the recent Patty Loveless project, Brown cast Anally to engineer the tracks because of his tendency toward a sharper edge. Then, to smooth out her sound, he cast John Guess for the mix.

"Patty can't be too edgy," Brown says. "So this was a real good combination. It worked real well. However, I could work with John Guess through the whole Patty Loveless project and still like it. I could work with Chuck and still like it. It's just that I have the opportunity to cast them, so why not?"

Guess agrees that a good engineer will not actually change the sound of a record, but will enhance the sound the producer is after.

"I don't want there to be a John Guess sound," he says. "I just want it to be a great sound. Whatever I'm into, I try and immerse myself into that."

REP

NASHVILLE UPDATE

Audio Vision owners Jim Reyland and Jim Gilmore were recently interviewed by Japan's CBC network about trends in American broadcast production. In business since 1972, the facility has completed a variety of projects, including radio specials for CBS Records, jingles for the Nashville Network and the soundtrack for a Japanese video game called "DJ Boy," featuring Wolfman Jack. *1102 17th Ave. S., Suite 200, Nashville, TN 37212; 615-321-3612.*

The Bennett House offers the only residential studio facility in the Nashville area. Located in a historic house in nearby Franklin, the facility has two studios and several guest rooms. Lunch is served daily in a formal dining room. Recently, the house has become a popular place to record. Studio A contains a 28-input, 24-monitor Trident A Range console, and Studer A800 and MCI multitracks. Studio B contains a 32-in, 28-monitor Trident 80-B console with Bud Wyatt modifications and a Studer A800. Susan Garrett has joined the staff as office manager. Gene Eichelberger is the chief engineer. *134 Fourth Ave. N., Franklin, TN 37064; 615-790-8696.*

Blevins Audio Exchange is becoming one of the largest dealers of used pro audio equipment in the country. The company sells and refurbishes consoles, tape machines and all other types of studio equipment, from vintage tube gear to complete studio packages. Equipment is on display in a 3,000-square-foot warehouse, and listings from all over the world are available. *1717 Elm Hill Pike, Suite B-8, Nashville, TN 37217; 615-391-0429.*

Brock Music moved June 1 into a new studio and headquarters. The facility includes offices, a lounge, control room, a multi-use room for drums, instruments or vocals, and an acoustically balanced piano/studio room. Additional plans call for adding recording and outboard equipment. *2937 Berry Hill Drive, Nashville, TN 37204; 615-298-2200.*

Digital Associates has added a Mitsubishi X-880 32-track and X-86 2-track recorders to its inventory of rental equipment. The studio has also added a Dyaxis 1.6GByte workstation to its digital mixing/editing suite, which is useful to clients who mix to DAT and require a way to edit,

sequence and rebalance without leaving the digital domain. New to Digital's Infonics high-speed duplicating system are four additional cassette slave positions. *Box 158913, Nashville, TN 37215-8913; 615-297-3900.*

Disc Mastering has purchased a Sony DAE 3000 editor. Hoyt Dooley III has joined the staff as assistant mastering engineer, and Brenda Broadstreet and Laura McCord have been hired to handle office management, public relations and marketing duties. Randy Kling, owner and chief engineer, was the mastering engineer for Anson Funderburgh's "Sins" album, which won four W.C. Handy Awards. *27 Music Square E., Nashville, TN 37203; 615-254-8825.*

GHL Audio Engineering has purchased a Digital Audio Research SoundStation II. The system, to be installed in GHL's dual 24-track production facility, will be used as a slave to the multitrack recorder to provide an enhanced level of creative control over lead instruments and vocals, and for

master tape preparation and audio-for-video production. Recently completed design work includes interface modifications at Creative Recording, Nashville, and the acoustical design and construction of The Bakery, North Hollywood. *2807 Azalea Place, Nashville, TN 37204; 615-269-5183.*

Germantown Studio has installed a MIDI production facility in addition to its 24-track facility. *1209 Fourth Ave. N., Nashville, TN 37208; 615-244-8019.*

The Home Place has updated its control room. New equipment includes a Yamaha REV-5, Sharp SX D-100 DAT machine, a Philips CD player, a Sony cassette deck, and mics from AKG and Neumann. Also, the console has been updated, with design work by Nashville's David La Barre. *3305 Leondale Terr., Nashville, TN 37207; 615-227-7871.*

Hummingbird Recording has added several new pieces of equipment, including a 7-foot Kawai grand piano with

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NASHVILLE UPDATE

MIDI, a Studer A807, an Otari MX55 and a Dolby SR/A noise reduction unit. Additional changes are being planned. *50 Music Square W, Suite 802, Nashville, TN 37203; 615-321-4789.*

Javelina Recording Studios has added an overdub studio, which will feature a Mitsubishi X-400 16-track digital recorder as an economical method of recording digital overdubs. In Studio A, the control room and studio have been renovated, with two iso booths added to the studio area. Studio A, the main tracking room, contains a Mitsubishi X-850 32-track, Trident 80-B console and Tannoy FSMU monitors. *808 19th Ave. S., Nashville, TN 37203; 615-320-5985.*

Music Mill has added two effects racks for in-house rental. Included in the racks are a Publison IM-90 Infernal Machine, a Lexicon 480L processor, an AMS RMX-16 digital reverb, one Amek RM01 signal processing system, a Lydkraft CL-1A tube compressor/limiter, an Aphex Compellor

and a model 612 gate/expander, one Drawmer DS201X noise gate, GML 8200 parametric EQs and 8300 4-channel mic pre-amps, and two TC Electronic 2290 processors. *1710 Roy Acuff Place, Nashville, TN 37203; 615-254-5925.*

Nightingale Recording Studio has added additional outboard gear along with another custom tube microphone. On the business side, the facility has formed two publishing companies and a production company. Nightingale has continued to expand its film and video business, and has since completed two theme songs and the audio for two videos. *1001 17th Ave. S., Nashville, TN 37212; 615-329-4009.*

Oak Valley Sound has expanded its corporate offices to better accommodate its three in-house record labels. In the studio, new equipment includes a Studer A827 24-track machine and a Studer stereo time code deck. *105 Oak Valley Drive, Nashville, TN 37207; 615-262-2600.*

On The Spot Music Productions has added several new pieces of equipment, including an MCI 24-track with SMPTE lockup to video, a Fostex 4010 SMPTE regenerator, two Lexicon LXP-Is, a Voyetra 8 with MIDI, one Gatex, a DigiTech DSP-128 Plus and NED Synclavier software release O. Bryan Talbot has been promoted to second engineer. *1443 12th Ave. S., Nashville, TN 37203; 615-385-2957.*

Recording Arts has been celebrating its grand opening since the first of the year. Its large control room, designed by owner Carl Tatz and Acoustic Sciences Corp., utilizes computer acoustics and Tube Trap technology. New equipment includes an Otari MTR-90II 24-track, a Soundcraft TS-12 console augmented with Focusrite mic pre-amps and a Sony 701-ES digital 2-track. The studio is targeted toward major-label overdub and mixing business. *Box 121702, Nashville, TN 37212; 615-321-5479.*

Scene Three, a full-service studio and location production company, provides



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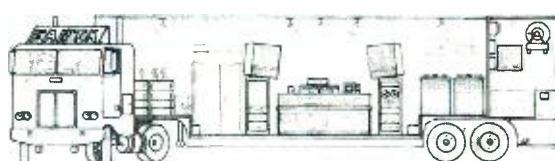


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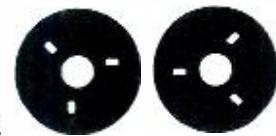


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Westpark Sound is building a 2,000-square-foot complex in the Music Row area, which will include three Macintosh programming workstations and pre and post video scoring capabilities. Steven Durr & Associates is designing and installing the facility. Contracting is by Chris Johnson of Homes Exclusive and the Westpark Creative Group, a creative team recently formed by Westpark that will focus on jingle, industrial, record company and independent artist needs. *3212 West End Ave., Suite 201, Nashville, TN 37203; 615-292-5838.*

Woodland Sound has renovated Studio A and remodeled Studio B. In Studio A, a 60-input Neve V series console with GML automation has been installed. A Neve 8038 console with a Studio A800 tape machine is in Studio B. *1011 Woodland St., Nashville, TN 37206; 615-227-5027.*



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Analog Multitrack Recorders: A New Breed

By Greg Hanks

A new generation of analog machines, with greatly expanded features, has ensured their continued co-existence with digital machines.

DASH and Pro-Digi are at odds as digital standards, and the least expensive digital tape recorders still cost more than \$75,000. These facts, in addition to the emergence of Dolby SR, have promoted the growth of a new generation of analog multitrack tape machines, providing greatly expanded functions compared to those of early hardware.

The evolution of the recorder can be compared to that of the automobile. The Model T performed the basic functions of starting, stopping and turning, but little attention was paid to the creature comforts of the operator.

Let's face it, the classic Ampex MM-1000 doesn't cut it anymore. Engineers demand more from modern analog multitrack machines. For example, in the area of transport, a contemporary machine must accommodate music recording, jingle production, video post-production and film scoring. These varied fields insist upon a transport that can:

1. Lock up quickly to SMPTE time code.
2. Easily accommodate 14-inch reels.
3. Accommodate 7-inch spot reels without transport oscillation.
4. Wind tape at speeds greater than 300ips.
5. Provide constant tension for both reels in all operating modes.

Greg Hanks is founder of New York Technical Support Ltd., Chappaqua, NY.

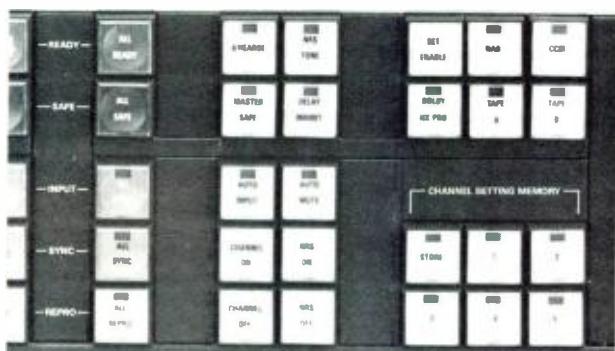
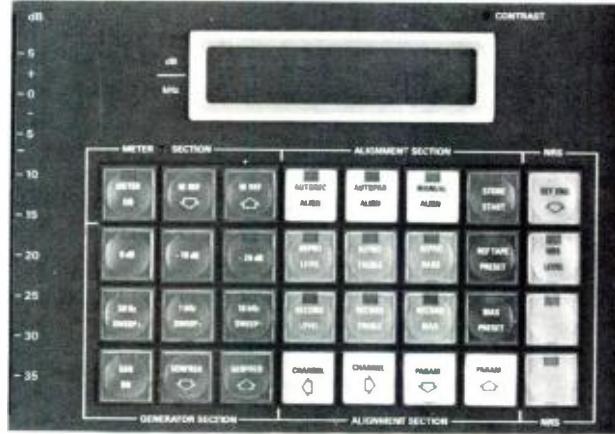


Photo 1. Studer A820-24 master audio controls.

Table 1.

	Auto Alignment	Built-in Synchronization	Computer-controlled analog Audio electronics	Computer-controlled Transport	External Sync Input (Video House sync)	Hardened Head material	Jog Shuttle	Monitor parameters user programmable	Noise reduction frame	Phase compensation
Tascam ATR-80	NO	OPT.	NO	YES	OPT.	NO	YES	NO	NO	YES
Sony APR-24	NO	YES	YES	YES	YES	YES	YES	YES	NO	YES
Otari MRT-100A	YES	OPT.	YES	YES	OPT.	YES	YES	NO	YES	YES
Studer A-820	YES	OPT.	YES	YES	NO	YES	YES	YES	YES	YES
Studer A-827	NO	OPT.	YES	YES	NO	YES	YES	YES	NO	YES

	Programmable/Assignable TC Channel	Reverse play	Serial Port	Spot Erase	Storage of Alignment values	TC Reader	Transformer I/O	Transport parameters user programmable	VITC Reader	Wind Speed
Tascam ATR-80	note1	YES	OPT.	YES	NO	OPT.	OPT.	NO	NO	375 IPS
Sony APR-24	YES	YES	YES	YES	NO	YES	OPT.	NO	YES	475 IPS
Otari MRT-100A	YES	YES	YES/note 2	YES	NO	YES	OPT.	NO	NO	472 IPS
Studer A-820	OPT.	YES	OPT.	YES	OPT.	OPT.	OPT.	YES	NO	600 IPS
Studer A-827	OPT.	YES	OPT.	YES	OPT.	OPT.	OPT.	YES	NO	600 IPS

Notes

- 1 Tascam offers Sync-lock which locks a channel into sync repro at all times.
 2 Otari offers either an RS-232/RS-422 port. Another serial port is optionally available.



Photo 2. Studer A820-24 recorder and remote control.

6. Be externally controlled by other intelligent devices, without compromising either the synchronizer interface or the remote control.

As for the capstan and synchronization, the modern transport system needs to provide:

1. A closed-loop servo design for timing control of the capstan.
2. An external reference input for house sync.
3. Slew up starting, rather than being constantly on. (This is essential for controlled tape handling.)
4. Speed selections from 7½ips to 30ips.
5. Access to the reeling motor servos for fast-wind positioning under synchronizer control, without having to resort to forward/reverse toggling.
6. Access to tach pulses from both the counter roller and the capstan feedback system.
7. Direction sensing.
8. Transport mode tallies.

In the area of remote control, today's machines must provide:

1. Auto location. The auto-locator will have multiple addresses and the ability to loop between them.
2. Capstan varispeed, allowing selection, adjustment and display.
3. Audio mode selection for all channels, both individually and globally.
4. Control by either a console automation system or a synchronizer controller, without having to have its own remote disabled.

Of course, all of these are in addition to providing the basic transport functions:

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play, stop, edit, fast wind, reproduce, record and monitor—with particular attention to the following details.

- In play, the transport must move the tape across the heads at a constant velocity that conforms to industry standards. The height of the tape path must be consistent so that track positioning also conforms to industry standards. The reeling system must provide consistent tension for proper tape-to-head contact. The design must not deform the tape or cause undue wear on the heads and guides.

- In stop, the transport must provide sufficient tension to take up any slack in the tape path, and must also maintain tape-to-head contact to prevent "creep" in either direction.

- In the edit mode, the machine tension must be sufficiently "soft" for scrubbing.

- In fast wind, the machine must provide transfer from one reel to the other without damaging the oxide surface or either edge of the tape. It must also pro-

vide a correct and uniform height for consistent packing and pay-out during play. In addition, the wind tension must be uniform to eliminate both the trapping of air between windings, which results from too little tension, and hard-banding, which is a deformation of the tape caused by excessive tension.

- As for monitoring the record and reproduce processes, the bottom line is simply, "What do we hear?" While working, this is determined by the logic of the recorder/console system and how these two devices are interconnected. Traditionally, a generic monitor switching system provides for playback, sync playback and input. The logic controlling these switching functions is driven through the transport and audio operating modes—with the operator optional selections becoming more and more comprehensive.

Audio alignment

Just as a console with recallable level



Photo 3. Sony APR-24 analog multitrack audio recorder.

and equalization is attractive for its time economy, so it is with a machine that has resettable, storable operating parameters. Think about this. When you're aligning a 24-track and you have to change the operating level, speed and tape type, there are over 168 separate adjustments that must be made—assuming no sync repro EQ adjustment! If you get really fast at line-ups, only spending an average of 10 seconds-per-adjustment, it will still take 28 minutes to set up the machine—not counting the time it takes to change reels, load tape and so forth.

Naturally, there are ongoing demands for lower noise, better erasure, less hum, fewer switching artifacts, and better frequency, phase and transient response. The real changes in today's machines come in the area of adjustment, storage and global resetability. Most of the new machines can store the following settings:

1. Reproduce, sync and record levels.
2. NAB, AES or IEC EQ standards for reproduce, sync and record.
3. Low- and high-frequency reproduce and sync EQ for each speed.
4. High-frequency record EQ for each speed.
5. Bias settings for different tape types and different speeds.

Some less obvious parameters that are now addressable, if not programmable, include:

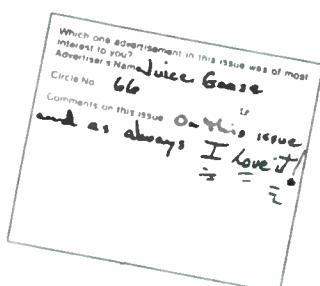
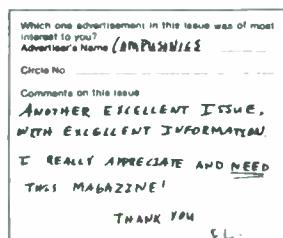
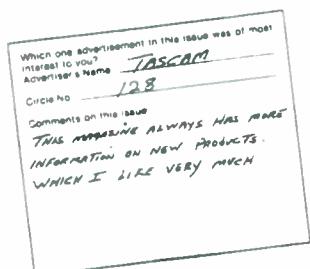
1. The ability to incorporate Dolby into the audio card frame, and switch it in/out from the channel.
2. Assignable time code channel, with EQ following track assignment. (Not all engineers stripe their masters on the same tracks. Assignable TC channels allows the user to adapt to all possible situations.)
3. "Wide-banding" of tracks for wind speed code reading. (Wide-banding is the deviation from standard operating EQ for the optimization of data capture—sacrificing low-end, flat frequency response and S/N.)
4. Mute/mute defeat during high speed winding.
5. Muting of audio (non-muting of TC track) for synchronization parking maneuvers. This saves on headphones, amps and ears.
6. Recording chain phase compensation to accommodate the included 90° of reproduce EQ.

The current crop of recorders use a higher bias frequency and a lower erase frequency than in the past. This means that the bias traps and the erase peaks can be of a much lower Q. A lower Q implies that there is less need for adjustment.

With the ability to adjust all of the previously mentioned features comes some concerns when changing cards. "Is this an even or an odd channel?" "What

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do I have to do for the timing of the erase and bias switching?" Most modern machines address such concerns automatically, but these questions need to be addressed at least once to ensure the machine's proper initial configuration.

Current choices

The flagship machines of the following manufacturers are representative of this new breed. The single most significant feature that differentiates them from machines of the past are their addressable alignment features. In alphabetical order, let's look at some of the offerings that are available.

Otari MTR-90/MTR-100A

Otari is currently manufacturing two professional 24-track recorders, the MTR-90 and MTR-100A. The MTR-100A sports the same pinchrollerless design as the MTR-90, with a substantial increase in available reeling and capstan motor torque. To minimize slippage, the capstan and tach rollers are made of a new material. All of this results in a much faster, more responsive transport, featuring a wind speed of 472 ips and enhanced transition ballistics.

Built into the machine is a mini-autolocator that is used for both tape footage counting and auto location, in-

cluding three memory locations. The RS-422 ES-bus is used throughout the machine for both audio and transport remote control. This is implemented through an Otari "superset" of the ES-bus protocol under the local dialect provisions. Reverse play is available for back timing. The standard audio remote contains both the transport remote and a mini-locator.

The audio electronics are computer-controlled. The CPU performs automatic record alignment, while the reproduce setup is a "live-assist." The self-alignment computer allows any user-chosen frequencies for record level and EQ. There are four presets per tape speed, with three speed operation standard on all machines. The reproduce pre-amplifiers are located directly under the head assembly to keep the wiring lengths as short as possible. There are global settings that use a shuttle wheel as a controller. Phase compensation is performed automatically.

The heads employ a hard permalloy material to improve both frequency response and wear. When used at 30 ips, the asymmetrical head geometry is said to result in a -2dB response at 35Hz and a maximum response deviation of 1.6dB at 65Hz. Dolby HX-Pro is standard. Other options include:

1. EC-103 plug-in chase synchronizer and remote.

2. CB-120 full-featured autolocator with tachometer-based multiple memory.
3. CB-120B that employs time code.
4. Any of three different Dolby noise reduction frames, to accommodate either SR/A and SR cards, or the Cat. 22-type module.
5. Mixing console parallel interface for both transport and audio remote control.
6. Additional RS-232 and/or RS-422 serial I/O ports.
7. Audio interface through a multipin connector in addition to the standard XLR interface.

Sony APR-24

The APR-24 is Sony's version of the contemporary analog machine. The transport is microprocessor-based, with provisions for communication with both intelligent controllers and standard remotes. The key features of the machine include:

1. A remote unit providing audio, transport, locator and synchronizer control in a single unit requiring only one connecting cable.
2. Built-in synchronization that can address any of the 24 tracks. The selected channel's EQ automatically incorporates wide-banding. The synchronizer can read LTC or VITC in various formats, as well as resolve to time code, tone and video. The tape timer reads out in either "tach time" or SMPTE address time. When the transport is in the stop mode, any external time code being fed to the machine appears in the counter window. Provisions for house sync are standard.
3. Wind-speed code handling. While in fast wind the synchronizer outputs "burst" time code, which is not simply a bi-phase clock at wind-speed, but rather a continuous address that is updated twice a second and output at play clock-speed.
4. Digitally controlled analog electronics, with three non-volatile memories per speed. The alignments can be globally or individually addressed using either ± keys or the jog/shuttle wheel.
5. SMPTE-based insert editing management, with five data storage registers.
6. Amorphous heads, providing improved response and long head life.

As of this writing, the serial port interface protocol and the parallel interface for the record and play status lines have not been implemented, but are said to be due shortly.

Studer A820/A827

Studer is currently manufacturing two machines. The recently introduced A827 offers the same transport as the A820, with simpler audio electronics, alignment systems and metering. Where the A820 has full auto-alignment, the A827 offers digital control of analog electronics

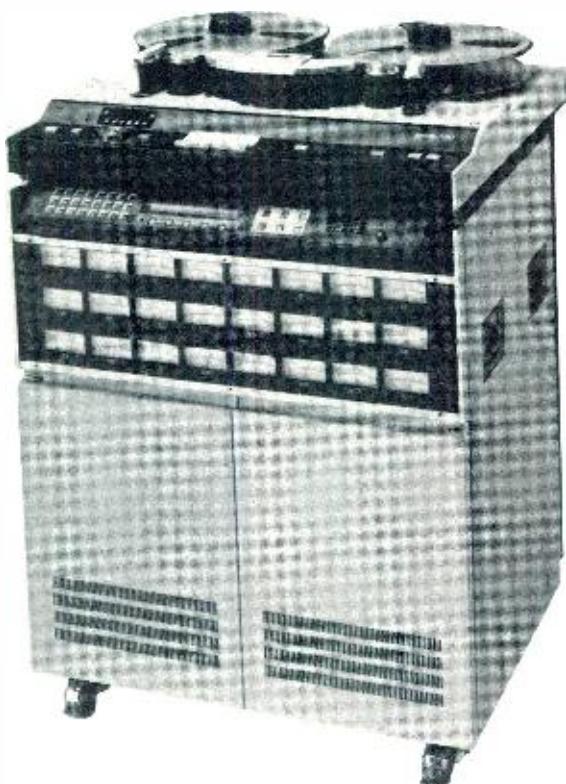


Photo 4. Otari MTR100A analog multitrack recorder.

without analysis and signal generation capabilities. The transports for both models include 14-inch reel capacity; fully programmable 600ips wind-speed; all soft keys; 40 user-programmable transport functions and a library of programmed functions; and varispeed indication in ips, semitones and percentages.

Both machines are predominantly computer-controlled. The variables under processor control are basic transport operation; auto location; audio metering; audio alignment; operational key assignment; and in/out punch timing.

Both machines have separate TC cards that can be physically plugged into any channel, providing a high-speed reader and code re-shaper. There are no global alignment controls on the A820, but they are included on the A827. The A820 provides a bar graph meter display, reading either peak or VU, and also either full range or "zoom mode" metering. In the zoom mode, the full scale display represents a 2.5dB level change. Both machines will accommodate Dolby noise reduction. Alignment is performed in the same manner as the Otari, with a "live assist" in playback and a fully automated record alignment. The A820 auto-aligns



Photo 5. Tascam ATR-80 analog multitrack recorder.

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any included noise reduction. Studer provides an optional serial to parallel audio remote interface for console-audio status switching.

Amorphous heads are used on both machines, with the reproduce pre-amps located under the head block. Erase current and tape tension are both set by head block jumpers. Dolby HX is standard with both machines.

The autolocator is interfaced serially, has 24 memories and is built into the

transport remote. Reverse play is available and is selected as a two-button function. Secondary counters are available and programmable. The A827 remote has VU metering with peak indication and a status indicator for each channel. Spot erase is also included. Optional features include: 1. "Skimming." (Unique to the A820, skimming is a process used to reduce print through to tolerable levels on old tapes that have been archived for years. The erase head is turned off and the bias is ac-

tivated at a very low level—just enough to have the overall effect of reducing the frequencies around 10kHz by 3dB.

2. A fully implemented serial protocol through which all transport and audio functions are controlled and access to the audio alignment and transport parameter registers. (These data are also available optionally as FSK information that can be stored directly to tape through a load/unload routine.)
3. TLS 4000 synchronizer system.
4. An input/output transformer kit.

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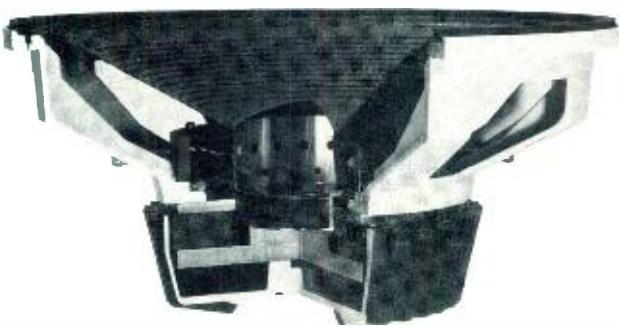
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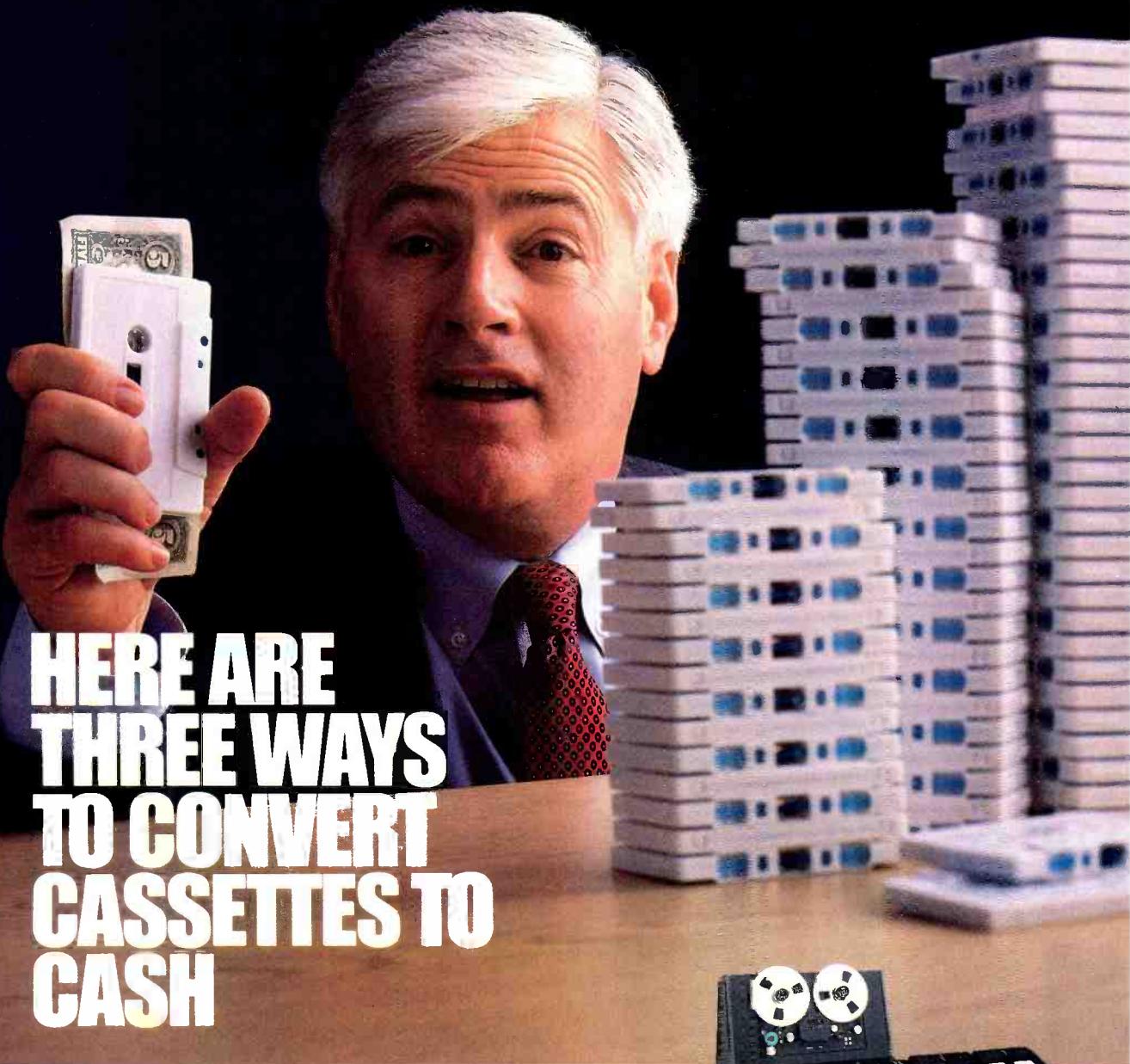
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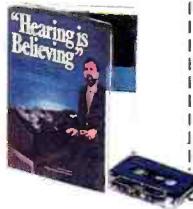
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A

Keith M. Anderson (E/P): 1312 Hutchins, Ann Arbor, MI 48103; 313-665-3868. **Credits:** The Folk Miners with Sam Lapidus (MP-A), Ten Miles High (Mischen Studios); Joe Henry with the Slang (MP-A), Talk of Heaven (Solid Sound); The Slang (MP-S), Pick It Up (Solid Sound); The Confessions (MP-S), Strait Jacket (Pearl Sound Studios); The Slang (MP-S), Out of the Light (Solid Sound).

B

Brian Basilico (E/P): Box 1491, Bolingbrook, IL 60439; 312-759-9311. **Credits:** Jim Raddatz (MP-A), Mouse (Body Electric Studios); Tony Pindrock (MP-S), Do You Feel Sexy (Body Electric Studios).

Ed Bialah (E): 1316 N. Liybourn, Chicago, IL 60610; 312-664-5353. **Credits:** DJ Mouse/Kool B (MP-S), Doctor of Soul (Tone Zone Recording); Abe Look (MP-AT), Abe Look (Tone Zone Recording); Dagoth (MP-A), Dagoth (Tone Zone Recording).

Guy Bidmead (E/P): c/o Siller O'Shea International, 978 Stearns Drive, Los Angeles, CA 90048; 213-938-5088, 213-859-9191. **Credits:** Atlantic Records (UK) Horse London (MP), development; Motorhead (MP-A), No Sleep At All; Motorhead (MP-A), Rock n' Roll; Whitesnake (MP-A), Saints & Sinners; Wrathchild (MP-A), The Buzz Suxx.

Bob Blank (P): 1597 Hope St., Stamford, CT 06907; 203-968-2420. **Credits:** Progress Communications (PP-F), Eversmile, NJ (Blank Productions, RCA); Kaye Productions (MP-S), Wanna Be Club Chaos (Blank Productions); Sunday Productions/Buick (CP-TV), Buick TV campaign (Blank Productions); Catawba Records/Sharon (MP-S), album (Blank Productions).

Allan Blazek (E/P): c/o Siller O'Shea International, 978 Stearns Drive, Los Angeles, CA 90048; 213-938-5088, 213-859-9191. **Credits:** Glenn Frey (MP-A), No Fun Aloud; Glenn Frey (MP-A), Allnighter; the Eagles (MP-A), five albums; The Elvin Bishop Band

Key

Name (Title Code): Address; phone number. **Credits:** Client/Artist (Credit Code-Subcode), Project Title (Facility Used).

Title Codes:

E (Engineer); P (Producer); E/P (Engineer/Producer).

Credit Codes:

CP (Commercial/Advertising Production). Subcodes: R (Radio); TV (Television).

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Subcodes: S (Single); A (Album); AT (Album Track); AR (Album Remix); SR (Single Remix).

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(MP-A), three albums; Jack Mack & The Heart Attack (MD-A), Cardiac Party.

William Bodine (E/P): 8692 Coleman Road, Barker, NY 14012; 716-795-3098. **Credits:** Scott Muir (MP-A), You're So Cool (Image Recording); Walk Don't Walk/97 Rock WGRQ-FM (MP-S), Without You (Image Recording); Voyageur (MP-S), Voyageur (Image Recording); The Mob (MP-SR), Mob on the Floor (Image Recording/D&R Studio); Tim Mordant (MP-S), Reaching At (Image Recording/Loft).

Jerry Bryant (E/P): 10 East Ontario, Chicago, IL 60611; 312-751-1869. **Credits:** WCLR-FM/WTMX-MIX 102 Chicago (CP-TV), Superspots Telemarketing (Chicago AV); KODJ-FM Los Angeles (CP-TV), Oldies Television spots (Chicago AV/Superspots); WQXI-FM Atlanta (CP-TV), Custom Television Marketing (Chicago AV/Superspots); CFNY-FM 102 Toronto (CP-TV), modern rock TV commercials (Chicago AV/Superspots); Pollack Media Group (PP-CI), Image/Profile in House Tape (Chicago AV/Superspots).

Lisa Byrd (E/P): 8904 N. Plaza, Austin, TX 78722; 512-371-3992. **Credits:** Nancy Scott (MP-A), Both Sides of Me (Austin Sound Studio); Two Nice Girls (MP-A), 2NG (Pedernales, Arlyn Studios).

C

E.S. Canevari (P): c/o EUCAN Productions, 4466 Montgomery Drive, Santa Rosa, CA 95405; 707-539-2349. **Credits:** Carm Canevari (MP-A), Lullabies and Starry Skies (Banquet Studios); Village Hope Core International (CP-TV), Kiraithe (on location); Santa Rosa Junior College (CP-TV), Isn't It Time You Went to College? (Banquet Studios); Santa Rosa Junior College (CP-R), Isn't It Time You Went to College? (KSRO Santa Rosa).

Richard Cannata (E/P): 2119 Fidler Ave., Long Beach, CA 90815; 213-498-6492. **Credits:** McPherson Paper (PP-CI/MV), From Trees to Paper (Cantrax Recorders); Totomo Supplies (PP-MV), Wiper Blades vs. the Weather (Cantrax Recorders); Buffalo Arts Group (MP), Summer Festival (Cantrax Recorders).

Scott Chapin (E/P): c/o WIOD/WGTR, 1401 N. Bay Causeway, Miami, FL 33141; 305-759-4311. **Credits:** WSVN TV (CP-TV), They're in the Money (WIOD/WGTR); WTVJ TV (CP-TV), Is This a Great State or What? (WIOD/WGTR); Joker Rolling Papers (CP-R), Rollin Rap (WIOD/WGTR); WGTR Rock and Roll Animals (MP-A) Yadda, Yadda, Yadda (WIOD/WGTR); South Florida Olds Dealers (CP-TV), Smart Lease (WIOD/WGTR).

Nolan C. Church Jr. (P): 9411 Gumtree Park St., Capitol Heights, MD 20743; 301-350-3181. **Credits:** ZM Squared Music Library (MP-A), Themes #61 (Cathedral Sound); ZM Squared Music Library (MP-A), Themes #26 (Ambient); JSR Enterprises (MP-A), Wheel Chair Workout (Orion).

Michael Collins (E/P): 2105 Maryland Ave., Baltimore, MD 21218; 301-685-8500. **Credits:** Black Friday (MP-A) (The Commercial Refinery); Krack (MP-A) (The Commercial Refinery); When Thunder Comes (MP-A) (The Commercial Refinery); W.B. Doner Advertising (CP-R), The Baltimore Sun (The Commercial Refinery); R.M & D Advertising (CP-R), Crown Central Petroleum (The Commercial Refinery).

Jack Conners (E/P): Box 120194, Nashville, TN

37212; 615-360-9950. **Credits:** Jade (MP-A), Jade-EP (Sound Emporium); The Murphy Brothers (MP-S), Peace on Earth (Sound Emporium); The Burdons (MP-A), The Burdons (Pollyfox Grand).

E

James R. Einolf (E/P): 154 Mallorca Way, #3, San Francisco, CA 94123; 415-563-8406. **Credits:** Total Response (MP-A), Total Response (Little Wing Recording); Charles Unger Quartet (MP-A), Captured (Little Wing Recording); Texas (MP-A), Gotcha (Little Wing Recording); Zero (MP-A), Zero Live (Little Wing Recording); The Mix (MP-S), Can't Find the Love (Prairie Sun).

Dean Elliott (E/P): One Astor Place, 10L, New York, NY 10003; 212-689-9514. **Credits:** Brian Morgan/MCA (MP-S), Stop Stop (Reel Hits Studios); Brian and Shelly Morgan (MP-S), Love Your Love (Reel Hits Studios); Cycle Dynamics (CP-R), Cycle D's (Don Elliott Productions); Code Blue Jeans/Dada (CP-R/TV) (Don Elliott Productions).

Jack Endino (E/P): 6534 15th N.E., Seattle, WA 98115; 206-525-7947. **Credits:** Screaming Trees/SST Records (MP-A), Buzz Factory LP (Reciprocal Recording); Skin Yard/Toxic Shock Records (MP-A), Hallowed Ground LP (Reciprocal Recording); Helios Creed (MP-A), untitled (Reciprocal Recording); Mudhoney/Sub Pop Records (MP-A), Superfuzz Bigmuff (Reciprocal Recording); Soundgarden/Sub Pop Records (MP-A), Screaming Life (Reciprocal Recording).

F

Kenn Fink (E/P): 400 Mill Road, Hewlett Woods, NY 11557; 516-791-6755. **Credits:** The Outcast (MP-A), Life Signs (Deep Space Records).

Ray Fishel (E/P): Rt. 6, Box 2272, Austin, TX 78737; 512-471-6223. **Credits:** Two Nice Girls (MP-A), album project (Arlin, Pedernales Studios); Rick Lawn (MP-A), Nova Sax Quartet (Jessen Recording Hall, University of Texas); Anneka Speller (MP-A), album: Wynton Marsalis (MP), live concert recording (UT Performing Arts Center); Dianne Schuur (MP), live concert (UT Performing Arts Center).

Fletcher (E/P): 48 Depot St., Sharon, MA 02067; 617-784-7610. **Credits:** Perforated Square Records/The Promise (MP-A), Seeking Shelter (Inner-city/Normandy Sound/Downtown Recorders/Baker St.); The Joneses (MP) (Active Sound); Stu Kimball/Big Town (MP) (Normandy Sound); Roomful of Blues (MP-A) (Normandy Sound/Newberry); The Good Mother/Touchstone Films (MP-F), Roomful of Blues (Syncro Sound).

Steve Forward (E/P): c/o Siller O'Shea International, 978 Stearns Drive, Los Angeles, CA 90048; 213-938-5088, 213-859-9191. **Credits:** Ray Charles/Dee Dee Bridgewater (MP-S), Til the Next Somewhere; Paul McCartney (MP-A), Press; Robert Palmer (MP-SR), Sweet Lies; Depeche Mode (MP-SR), Flexible; The Damned (MP-A), The Damned Live.

Kent Fox (E/P): 1431 Saundersville Ferry Road, Mount Juliet, TN 37122; 615-754-2444. **Credits:** Jesse McReynolds (MP-A/AR), Mandolin Christmas (Fox Farm Recording); Glenn Parker (MP-A/AR), I Kiss the

Queen Good-bye (Fox Farm Recording); Blake Williams (MP-A/AR), Solid (Fox Farm Recording); KTEL Records/Woods Brothers (MP-A/AR), Hooked on Bluegrass (Fox Farm Recording); Kent Fox (MP-A/AR), Blue Skies (Fox Farm Recording).

Ron Freiheit (E): 1520 Ninth Ave. N.E., Owatonna, MN 55060; 507-451-1503. **Credits:** Jeff Wilday/Rosi Tolzman (MP-AT), untitled (Freedom Sound and Light).

Kirk Furniss (E): 546 E. 20th Ave., Vancouver, British Columbia, Canada; 604-874-7010. **Credits:** Bachelors in Paradise (MP-A), untitled (private MIDI studio).

G

Rocky Giannetta (E): 1615 N. Blackstone, Fresno, CA 93703; 209-233-6531. **Credits:** Pappel (MP-AR), Pappel (On Broadway); Los Reyes (MP-A) (On Broadway); Los Terribles (MP-A), Los Terribles; Piel y Canela (MP-A) (On Broadway); First Priority (MP-A), First Priority (On Broadway).

Mick Glossop: 150 Goldhawk Road, London W12 England. **Credits:** Van Morrison (MP-A), untitled; The Men They Couldn't Hang (MP-A), untitled; View from the Hill (MP-AT), untitled; Van Morrison (MP-A), untitled.

H

Hammer & Slater (P): 4555 Franklin Ave., #9, Hollywood, CA 90027; 213-661-6195. **Credits:** Barry Manilow (MP-S), The One That Got Away (Image Recording/Conway Studios); Animation (MP-S/AT), Do Like I Do, Send It Over, House of Love (Enterprise/Music Grinder).

Steve Hawk, C.A.S. (E): Box 1841, Big Bear City, CA 92314; 714-585-9351, 213-467-1569. **Credits:** Steve Sohmer (CP-TV), KNX 89-102 (Carthay Stage); Bill White Productions (CP-TV), American Family Publishers (Erector Set and locations); Farinacci & Associates (CP-Cl), Beer Academy (locations); James Lowe Productions (CP-Cl), Framing System (locations); James Lowe Productions (CP-TV), People's Drug (Mansfield Stage).

Jonathan J. Helfand (E/P): c/o Trackworks, Two W. 45th, New York, NY 10036; 212-921-7878. **Credits:** Backer Spielvogel Bates (CP-TV), Visine/Three Musketeers (Trackworks); Ogilvy & Mather (CP-R), Roger Miller/Hardees/Glass Packaging (Trackworks), HBO (CP-TV), Western Rap (Trackworks).

Matthew C. Howe (E/P): 434 S. First St., San Jose, CA 95113; 408-993-1040. **Credits:** Centerpoint Distribution (MP-F), Crystals for the New Age (Studio Center); No Rules (MP-A), No Rules (Studio Center),

Apple Computer (PP-Cl), Oasis (Studio Center); AEA Credit Union (PP-Cl), AEA Credit Union (Studio Center); Millhouse Music (MP-S), Hold On to This Moment (Studio Center).

Robert Hunter (E/P): 140 Honness Lane, Apt B, Ithaca, NY 14850; 607-277-2734. **Credits:** Gothic Slam (MP-S), Just Another Face in the Crowd (Pyramid Sound); Indestructible Noise Command (MP-S), The Visitor (Pyramid Sound).

J

Jerry Jacob (P): Nine Sierra Circle, San Rafael, CA 94901; 415-459-2888. **Credits:** Don Lewis (MP-A), Playin' Favorites (Thes Virgos/Tarpan); Children's Hospital (CP-TV), Here for the Children series (Thes Virgos/Tarpan).

Bil Jenko (E/P): Box 10736, Winston Salem, NC 27108; 919-770-3272, 919-748-0370. **Credits:** The Matt Kendrick Unit (MP-A), Bass City (Reflection); AT&T (PP-Cl), Board This Train to Excellence (AT&T); NC School of the Arts (CP-R), Radio Music series (NCSA); David Bishop (MP), NC Shakespeare Festival (NCSA); Servant (MP-A), Sound His Praise (Traxion).

Steve Johnson (E/P): 4853 Cordell Ave., Suite 822, Bethesda, MD 20814; 301-654-3163. **Credits:** Ernest Smith (MP-S/MV), Black by Popular Demand (Sound

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Logic); Dave Sparkman (MP-A), TBAC (Soundstage); Kim Jordan (MP-AT), Kim Jordan (Sound Logic); Laura Shawer and Shades of Blue, with Holly Beth Vincent (MP-A), Princess of Parkness (Balance/Sound Logic); Pink and Black Bond (MP-A), Pink and Black (Balance).

K

John V. Krepol (E): 5147 Walker St., Philadelphia, PA 19135; 215-624-1050. **Credits:** Nickelodeon (CP-TV), Double Dare; Nickelodeon (CP-TV), Finders Keepers.

M

David Mark (E/P): 3781 Silsby Road, Cleveland, OH 44118; 216-321-4321. **Credits:** Kovach and Co. (PP-Cl), Nested Boxes/Metamorphosis (DMA); Magic By Adam (PP-Cl), stage show music (DMA); Gold Mountain/J. Mehrling (PP-Cl), stage show play-on (AVS/DMA); Elyria Savings & Trust (CP-R), various commercials (WEWS).

Soni E. McCann (E/P): 1219 Kittatinny St., #1, Harrisburg, PA 17104; 717-238-8948. **Credits:** Powder River Station (MP-A), untitled; The Freight Depot (CP-R/TV), jingle; Marie Bard (MP-S), Hurricane Love; Ear-itation Production Services (CP-R), Comedy Service pre- and post-production; Albuquerque Hot Air Tours (CP-R), audio post-production.

A.R. McPhail (E/P): Box 6048, Federal Way, WA 98023; 206-838-1815. **Credits:** Rich McPhail (MP/PP-F), Video Postcard (Heymac Productions).

Brad Miller (E/P): Box 8359, Incline Village, NV 89450; 702-831-4459. **Credits:** Oberlin Musical Union & Orchestra (MP-A), Messa Da Requiem (live, Finney Memorial Chapel); Percussion 90 (MP-A), Rhapsody in Blue and Gold (live, West Virginia University); Bainbridge Entertainment (MP-A), Sonic Booms (on-location); National Park Service (PP-F), Johnstown Flood (Group Andre Perry); Taft Entertainment (PP-F), Iron Weed (location).

Raymund T. Miranda (E/P): Sagittarium Building, 10th floor, Costa St., Salcedo Village, Makati, Phillipines; 632-816-3881, 632-818-4189. **Credits:** Basic, Foot Cone and Belding (CP-TV), Sustagen Mother :30s; Swire Properties, Hong Kong (PP-Cl), 2 Pacific Place; Generation Gap/Prettyville Music (MP-A), Mother's Day; Phillipine Department of Trade and Industry (CCTV). Phillipine Mango, Sweden; Jimmy Dee/Hata Adai Productions (MP-AR), Jimmy Dee in Manila.

Robert Musso (E/P): 111 Fourth Ave., Suite 5A, New York, NY 10003; 212-627-9570. **Credits:** Ramones (MP-A), Brain Drain (Sorcerer/Quad/Platinum Island); Presence (MP-A), Presence III (Japan); The Swans (MP-A), The Burning World (Sorcerer/Platinum Island); Murphy's Law (MP-A), Back With a Bong (Chung King/Dreamland); 24-7 SPY2 (MP-A), Harder Than You (Platinum Island).

N

Angelo Natalie (P): 32-R Weed Hill Ave., Stamford, CT 06907; 203-322-0432. **Credits:** RL Productions

(CP-TV), Bringing Up Kids (Carriage House); Bradlees (CP-TV), Christmas Fantasy (Atlantic); Kepke Fink (CP-TV), Children for Children (Quad).

Phil Nicolo (E/P): 444 N. 3rd St., Philadelphia, PA 19123; 215-923-4443. **Credits:** The Hooters (MP-A), untitled third album for CBS Records (Studio 4); Tommy Conwell and the Young Rumblers (MP-A), Rumble (Studio 4, Record Plant); Doug Markley (MP-A), Philly Fillet (Studio 4); Billy Price and the Keystone Rythym Band (MP), Free at Last (Studio 4).

P

Jorge Pacheco (E): 5811 N.W. 201 Lane, Miami, FL 33015; 305-625-0143. **Credits:** Maria Conchita Alonso (PPTV), Calle Ocho 89 (Audio Arts Recording).

Alexander Perialas (E/P): Box 241, Ithaca, NY 14851; 607-273-3931. **Credits:** Island Records/Anthrax (MP-A), State of Euphoria (Electric Lady); Megaforce Records/MOD (MP-A), Gross Misconduct (Pyramid Sound); Outpost/Dirty Blonde (MP-A) (Pyramid Sound); Megaforce Records/Testament (MP-A), Practice What You Preach (Pyramid Sound); WEA Musik Germany/Holy Moses (MP-A) (Pyramid Sound).

Jim Pistorio (E/P): Rotach Str. 45, 8003 Zurich, Switzerland; 01-461-4173. **Credits:** Longines (CP-R), Longines Watches (Sound Design); local spots (CP-R).

R

Scott Rausch (E): 12425 N. Golf Drive, Milwaukee, WI 53092; 414-242-5057. **Credits:** Don Metzger (CP-TV), Germanfest (Milwaukee Sound); Foster Pontiac (CP-R), Beat Any Price (Milwaukee Sound); Don Metzger (CP-R), Entertainment Tonight promos (Milwaukee Sound); Mark McCoran (MP-AR), Loey Nelson (Milwaukee Sound); World Wide Absurdities (MP-SR), Flat (Milwaukee Sound).

D.L. Reddick (E/P): 2550 W. 55th Ave., Denver, CO 80221; 303-455-7571. **Credits:** Saint John's Cathedral (MP-AT), Noyes Fludde (on location); Jesse Christian Band (MP-AT), Estes Park show (on location); Boulder's Dinner Theatre (MP-AT), Jesus Christ Superstar (in-house); University of Colorado, Denver, Electronic Music Ensemble (MP-AT), Fusion I (Viking Studios); New World Productions (MP-A), Mother of Us All (Viking Studios).

Richard Rew (E/P): Box 3341, Fayetteville, AR 72702; 501-443-1424. **Credits:** Tyson Foods (PP-Cl), Cornish Comes Alive (Lane Audio); Peterson Industries (PP-Cl), We are Peterson (Lane Audio); J.B. Hunt (PP-Cl), Driver Safety (Studio 105).

John M. Robb (E/P): Route 1, Box 11-B, Walnut Shade, MO 65771; 417-561-4182. **Credits:** The Olive Branch (MP-A), Jubilee/Living Water (Studio C).

Anthony Roberts (E/P): 163 Amsterdam Ave., Suite 115, New York, NY 10023; 212-459-4802. **Credits:** Benny Sabel (MP-S), Sin Despedirme (SOB Recording); Victor Wail (MP-A), Suviendo Alto (Mora Sound Recording); Joel Abran (MP-S), Ella (Mora Sound Recording); La Orquesta Vibracion (MP-S), Crazyness (SOB Recording); La Antorchia Records (CP), Algo Diferente (Discon Int'l).

Bob Roberts (E): PAC 2.402, University of Texas,

Austin, TX 78712; 512-471-6223. **Credits:** Virginia Dupuy (MP-A), Songs for the End of the World, Diary of Virginia Woolf (UT Fine Arts Media Services); Greg Allen (MP-A), Homage to Arthur Rubinstein, Volume II (UT Fine Arts Media Services).

Ben Rothenberg (E/P): 813 W. Eighth St., Santa Rosa, CA 95401; 707-528-0807. **Credits:** Del Shannon (MP), live concert (Ocean Breeze); Drifters (MP), live concert (Ocean Breeze); Mary Wells (MP), live concert (Ocean Breeze); Percy Sledge (MP), live concert (Ocean Breeze); Shirelles (MP), live concert (Ocean Breeze).

Keith Rust (E/P): 4902 Don Drive, Dallas, TX 75247; 214-630-2957. **Credits:** Safety in Numbers (MP-A), Mow the Sun (Crystal Clear); Ricky Lynn (MP-A) (Crystal Clear); KERA-13 (MP-S), Crossroads (Crystal Clear); KATO (MP-SR), Lethal (Crystal Clear).

S

John Sacchetti & Jim McMahon (E): 3564 Wasatch Ave., Marista, CA 90066; 213-658-8392. **Credits:** Beastie Boys (MP-A), TBA (Westlake Audio); Pillow Parade (MP-A), Wheel of Love (Westlake Audio); Depeche Mode (MP-SR), A Question of Lust (Sunset Sound/Record Plant); Siedah Garrett (MP-AT), Kiss of Life (Westlake Audio); Robert Foxworth (CP-R), American Dialogues (Westlake Audio).

Merl Saunders (P): Box 22184, San Francisco, CA 94122; 415-759-8100. **Credits:** CBS (CP/PP-TV/F), Twilight Zone (Russian Hill/Fantasy); CBS (CP/PP-TV/F), Simon & Simon (Evergreen Studios); Max Gail (MP-A), Max Gail (Hyde Street Studios/Ground Control); KBLX Radio (CP/PP-TV/R/F), Quiet Storm (Reel Studios).

Julian Standon (P): c/o Siller O'Shea International, 978 Stearns Drive, Los Angeles, CA 90048; 213-938-5088, 213-859-9191. **Credits:** Siouxsie & The Banshees (MP-AT), Cities in Dust; Soup Dragons (MP-A), This is Our Art; Big Country (MP-A), concert video; King Blank (MP-A), forthcoming album; Salvation (MP-S), forthcoming album.

Dana Strum (P): c/o Siller O'Shea International, 978 Stearns Drive, Los Angeles, CA 90048; 213-938-5088, 213-859-9191. **Credits:** Vinnie Vincent Invasion (MP-A), All Systems Go; Vinnie Vincent Invasion (MP-A), debut album; Ozzy Osbourne (MP-A), I'm So Tired—Live and More; Slaughterhouse (MP-A), debut album; White Heat (MP-A), debut album.

Rick Sutton (P): 5817 Old Leeds Road, Birmingham, AL 35210; 205-956-9537. **Credits:** Dallas Holm (PP-MV), Against the Wind (EWTFN Studios); Dana (PP-MV), Dana (EWTFN Studios); The Choices We Face (PP-MV), The Choices We Face (EWTFN Studios).

T

Gary Tanin (E/P): 2139 N. 47th St., Milwaukee, WI 53208; 414-671-5500. **Credits:** Billy Wallace (MP-A), Coming Home (Jazz Gallery, live remote); The Essentials (MP-S), The Essentials Project (Curton Studios); J.I. Case (CP-R) J.I. Case 1976 national campaign (Kelley/Bryant Studios); Otto & The Elevators (MP-S), Lady Jane (Plynth Studios); Otto & The Elevators (MP-A), Otto & The Elevators (Plynth Studios).

Bill Thompson (E/P): 1978 Ardith Drive, Pleasant Hill, CA 94523; 415-689-1197. **Credits:** Elvin Bishop (MP-A), Big Fun (Starlight); Denny Zeitlin (MP-A), Denny Zeitlin Trio (Starlight); Walter Hawkins and Family (MP-A), Special Gift (Starlight/Fantasy); Lynette Hawkins-Stephens (MP-A), Baby Sis (Starlight).

The Tyrant Michael (P): 6303 Atoll Ave., Van Nuys, CA 91401; 818-989-0574. **Credits:** Dreams Come True (MP-S/SR), Sweet Magic (Art's Place); Lisa Smith (MP-S/SR), Quicksand (Art's Place); The Tyrant Michael (MP-S/SR), Call of the Wild (Criterion/Art's Place); Tyrants in Therapy (MP-S/SR), Crazy Dreams (Criterion/Skip Saylor); Abbe/Abbe (MP-S/SR), Matter of Time (Art's Place).

V

Tommy Vicari (E/P): c/o Siller O'Shea International, 978 Stearns Drive, Los Angeles, CA 90048; 213-938-5088, 213-859-9191. **Credits:** Billy Preston (MP-A), four albums; Howard Hewitt (MP-S), Forever & Ever; Jeffrey Osborne (MP-A), four albums; Billy Idol (MP-A), forthcoming album; Barbara Streisand (MP-AR), Superman.

Tony Visconti (P): c/o Siller O'Shea International, Stearns Drive, Los Angeles, CA 90048; 213-938-5008, 213-859-9191. **Credits:** Los Rita Mitsouko (MP-A/S), Marc & Robert; the Moody Blues (MP-A/S), Sur La Mer; David Bowie (MP), 10 albums; T Rex (MP-A), seven albums; Thin Lizzy (MP-A), four albums.

W

Flawn Williams (E/P): 4220 N. Hermitage Ave., Chicago, IL 60613; 312-549-7760. **Credits:** National Public Radio (CP-R), Black Music Repertory Ensemble (SCS Sound Mobile System); Merimac Records (MP-A), Volo Bogtrotters II (SCS Sound Mobile System); Augusta Heritage Center (MP-A), 1988 concert sampler (SCS Sound Mobile System); Old Town School of Folk Music (MP-A), Teaching Staff sampler album (Old Town School); NPR, All Things Considered (CP/PP-R), Back to Vietnam reports (NPR Washington).

Laura J. Wirthlin (E): 182 S. Raymond Ave., Pasadena, CA 91105; 818-405-8002. **Credits:** Carol Rosenberger (MP-A), Night Moods (First Congregational Church); Sinfonica da Paraiba (MP-A), Villa Lobos Spectacular (Brazil); Chamber Music Northwest (MP-AT), Suite from Sacred Service (Temple Beth Israel); Eugene Rousseau (MP-A), untitled (Indiana University); En Pointe, Bolshoi Orchestra (PP), untitled ballet series (CMS Digital).

Jeff Wormley (E/P): 311 Poland Ave., Struthers, OH 44471; 216-755-1331. **Credits:** Terry Barrett (MP-A), Ying Yang Telephone (Syndicate Sound); Black Diamond (MP-A), Black Diamond (Syndicate Sound); Yesterday's Future (MP-A), One Month of Winter (Syndicate Sound); Harmonica Gypsies (MP-A), Happy Wanderers (Syndicate Sound); Bradford J. Fraley (MP-A), Bradford J. Fraley (Syndicate Sound).

RE/P

The Engineer/Producer Index is a monthly department. To be listed, fill out the reply card located in the back of this issue. Please note that the Index is for individual engineers and producers; facilities should fill out the Tracks reply card.

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TRACKS

A

A Place of Praise: 2500 E. Vancouver, Broken Arrow, OK 74014; 918-355-3020; Bruce Dinehart, owner. **Credits:** The Nanci Corporation (PP-CI), The Winning Edge (RE: Bruce Dinehart/Steve Broadway; ME: Bruce Dinehart); Teleios Pictures (PP-CI), Demo 89 (RE/ME: Bruce Dinehart); Citgo Petroleum Corporation (PP-CI), The Sign-Up Incentive (RE/ME: Steve Merkel).

Absolute Music AV Post: 623 W. Guadalupe Road, #137, Mesa, AZ 85210; 602-892-1024; Mark Seagraves, president. **Credits:** No Bananas Production (MP-S), Diamonds Are Forever (RE: Mark Seagraves/Mark Stratford; ME: Mark Seagraves); Semper Rock Productions (MP-S), Boots, I Honestly Love You (RE/ME: Andy R. Seagle/Mark Seagraves; AE: Bobby G. Fraiser); Carmichael Productions/Absolute Music AV Post (MP-A), J. Michael Chandler (RE: Andy Seagle/Steven Escallier/Mark Seagraves; ME: Steven Escallier/Mark Seagraves; AE: Bobby Fraiser); Trendmark Productions (CP-R/TV), Best Carpets (RE: Mark Seagraves/Mark Stratford; ME: Mark Seagraves); Jules Heller Production (PP-CI), Heller Art Opening (RE/ME: Mark Seagraves).

AKR Recording Studio: 4313 Valley Fair St., Simi Valley, CA 93063; 805-527-4479; Daniel Clements, chief engineer. **Credits:** Loren Marsters (CP-R), The Ambulance (RE/ME: Daniel Clements); Allen De-Wannes (CP-TV), Mrs. USA Pageant (RE/ME: Daniel Clements); Zygon Corporation (CP), Delta (RE/ME: Daniel Clements).

B

Bill Rase Productions: 955 Venture Court, Sacramento, CA 95825; 916-929-9181. Bill Rase, owner/president. **Credits:** Gary David (RE/ME: Wayne Johnson).

Blank Productions: 1597 Hope St., Stamford, CT 06907; 203-968-2420; Bob Blank, owner. **Credits:** Tetraplex Films (PP-F), Killer Dead soundtrack (RE: Kristin Stone, Bob Blank; ME: Bob Blank; AE: Kristin Stone); Sandy Wilbur Music (CP-TV), Pitney Bowes fax campaign (RE/ME: Bob Blank; AE: Kristin Stone);

Key

Facility Name: Address; phone; contact name/title. **Credits:** Client (Credit Code-Subcode), Project Title (Recording Engineers; Mixdown Engineers; Assistant Engineers).

Codes

CP (Commercial/Advertising Production).
Subcodes: R(Radio) TV(Television).

PP (Post-Production)
Subcodes: F(Film) MV(Music Video)
CI(Corporate/Industrial)

JPR Productions (PP-MV), Split Decision Video (RE/ME: Bob Blank; AE: Kristin Stone); Thomas Valentino Inc. (PP-CI), News Themes (RE: Bob Blank, Kristin Stone; ME: Bob Blank; AE: Kenny Blank); APR (CP-TV), After Hours theme (RE/ME: Kenny Blank).

C

Commercial Sight & Sound: 106 College Ave., LaGrange, GA 30240; 404-884-4400; Pat Patten, owner. **Credits:** Basset/Partain/Becker Advertising (CP-R/TV), Georgia Southwestern College (RE: P. Patten; ME: P. Patten/J. Drew); Basset/Partain/Becker Advertising (PP-CI), Medical Center: Cancer (RE/ME: P. Patten; AE: T. Dumas); Mansour's (CP-R/TV), Mother's Day (RE: P. Patten; ME: P. Hammock/P. Patten); WestPoint Pepperell (PP-CI), WPP Universal Life Insurance (RE/ME: P. Patten; AE: P. Tate/D. Hartman); Mountville Mills, Inc. (PP-CI), Classicmats: Let's Talk Dirty (RE/ME: P. Patten; AE: T. Dumas).

Creative Professionals Inc.: 1245 N. Water, Milwaukee, WI 53132; 414-291-9666; James Kagan, manager. **Credits:** Master Productions (PP-CI), Econoprint (RE: Mark Kagan/Jim Kagan; ME: Ray Fister; AE: Victoria Ray/Dave Michuda); Square D Corp./Ford Motor Co. (PP-CI), (RE: Mark Kagan; ME: Ray Fister); Advertising, Boelter & Lincoln (PP-CI), Wisconsin Dells (RE: Victoria Ray); Northbrook Hospital (CP-R), Kid Net (RE/ME: Ray Fister; AE: Dave Michuda); Tews Brick & Tile Showroom (CP-R), Everyday Is Tuesday, When You Build With Brick (RE: Ray Fister; AE: Dave Michuda).

E

Eastwind Recording: 6820 Ellicott Dr., East Syracuse, NY 13057; 315-463-6759; Michael Jaffarian, owner. **Credits:** DIRT Productions (CP-TV), This Week In DIRT theme (RE/ME: Michael Jaffarian; AE: Kurt Wagner); WNPE-16 TV (CP-TV), Rod and Reel theme (RE: Michael Jaffarian/Ken Hoston; ME: Michael Jaffarian); WNPE-16 TV (CP-TV), Streamside theme (RE/ME: Michael Jaffarian/Ken Hoston; AE: Steve Durkee).

G

Golden State Records Inc./Sonic Arts Corporation: 665 Harrison St., San Francisco, CA 94107; 415-781-6306; L. Kulka, president/engineer. **Credits:** Bain Bridge Records (PP), Virgil Fox at Wannamaker Organ (ME: L. Kulka/Ken Lee; AE: L. Dorren); Bain Bridge Records (PP), Tutti's Trombones/Trumpets (ME: L. Kulka; AE: Ken Lee); Monster Cable (CP), The Kicks Band (RE/ME: L. Kulka; AE: Ken Lee/B. Miller).

K

Klub Kev's Recording: 3177 N.E. 82nd, Seattle, WA 98115; 206-527-2250; Scott Spain, manager. **Credits:** Rico Products (PP-CI), Self Taught book 1 (RE/ME/AE: Ric Senechal); Tachyan Productions (PP-MV), Kyle McKinney (RE/ME/AE: Scott Spain); S2 Productions (PP-MV), Sir Real (RE/ME/AE: Scott Spain); Northwest

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TRACKS

Sounz (PP-MV), Kenny & Tzipora (RE/ME: Scott Spain; AE: Ric Senechal).

M

Mad Dog Studio: 1717 Lincoln Blvd., Venice, CA 90291; 213-306-0950; Dusty Wakeman, owner. **Credits:** Delilah Films/HBO (TV-MV), Neville Brothers—A Cinemax Session (RE: Dave Hewitt; ME: Dusty Wakeman; AE: Micheal Dumas).

Maestro Recording Studio: Jalan Soka 6, Bandung, Indonesia; 022-70279; Jusak J.S., owner/engineer. **Credits:** Diana Record (CP), Medley Defty Kurnia (RE: Daniel P. Siregar; ME: Jusak J.S.; AE: Jan B. Rustandi); Whisnu Record (CP), Nunung Bagia & Cinta (RE: Daniel P. Siregar; ME: Jusak J.S.; AE: Jan B. Rustandi); Sam Bimbo (CP), Dea Bimbo Qasidah Lebaran (RE: Daniel P. Siregar; ME: Jusak J.S.); Whisnu Record (CP), Nining Meida Senam Medley (RE: Daniel P. Siregar; ME: Jusak J.S.; AE: Jan B. Rustandi); J.K. Record (CP), Nais Pop Sunda (RE: Daniel P. Siregar; ME: Jusak J.S.).

Music Mill: 1710 Roy Acuff Place, Nashville, TN 37203; 615-254-5925; Patti Sedon, studio manager. **Credits:** Marie Osmond/Jerry Crutchfield, album (RE/ME: Jim Cotton; AE: Paul Goldberg); Danielle

Alexander/Harold Shedd, album (RE/ME: Jim Cotton/Joe Scaife/George Clinton; AE: Paul Goldberg); Shane Barby/Bud Logan, album (RE/ME: Pete Green; AE: Paul Goldberg); Susan Hudson/Norro Wilson, album (RE/ME: Jim Cotton; AE: Paul Goldberg); Sierra, (RE/ME: Jim Cotton; Paul Goldberg).

Music Shop Studios: 1407 W. Cumberland, Dunn, NC 28334; 919-892-6113; Rick Vannoy. **Credits:** Jay Sigmon (CP-R), Rode Hard (RE: Rick Vannoy; ME: Rick Vannoy/Jay Sigmon); David Choen (CP-Cl), Mercedes Conversions (RE: Rick Vannoy; ME: David Choen; AE: Mark Simmons); Marcus Wood (CP-R), The Wood's (RE/ME: Rick Vannoy).

R

RCA/BMG Studios: 1133 Sixth Ave., New York, NY; 212-930-4050; Larry Schnapf, director of studio operations. **Credits:** United Nations Environment Program (TV-F), Save the Rainforest, Spirit of the Forest (RE: James Nichols/Frank Rodriguez/Jay Newland; ME: James Nichols/Frank Rodriguez; AE: Joe Salvato/Jay Newland); Warner Brothers Pictures (TV-F), A Man Called Hawk (RE/ME: James Nichols; AE: Jay Newland); CBS Records (CP-R), Christmas Album—Wynton Marsalis (RE: Tim Geelan/Dennis Ferrante); ABC-TV (TV-F), Sitcom—Wynton Marsalis (RE: Tim

Geelan; AE: Dennis Ferrante); CBS Records (TV-F), Songs of Puccini/Placido Domingo (RE: Buddy Graham; AE: Paul Goodman).

S

Studio Center, San Jose: 434 S. First St., San Jose, CA 95113; 408-993-1040; Matthew Howe, production engineer. **Credits:** Rosicrucian-AMORC (CP-PP), The World's Oldest Fraternity (RE/ME: Matthew C. Howe; AE: Jerry McReynolds).

T

Toby's Tunes Inc.: 2325 Girard Ave. S., Minneapolis, MN 55405; 612-377-0690; Harley "Toby" Toberman, owner/engineer. **Credits:** Land-O-Lakes (CP-TV), Temptation (RE/ME: Toby Toberman); 3M (PP-Cl), Instant AV Show (RE/ME: Toby Toberman); Hudson's (CP-TV), Mink Sale (ME: Toby Toberman); Control Data (PP-Cl), BMSD 100% Club (ME: Toby Toberman).

RE/P

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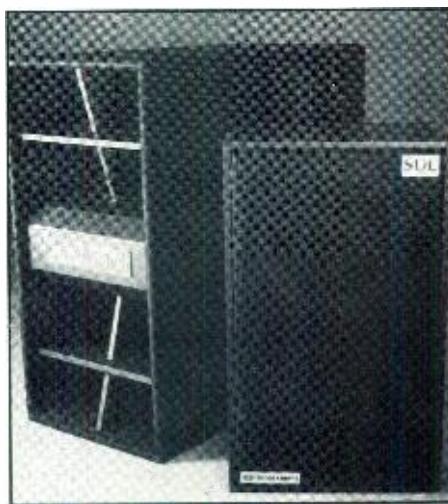
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STUDIO UPDATE

Northeast

John Alberts of **Howard M. Schwartz Recording** (New York) has received finalist nominations for "best audio mixer" and "best audio designer" in two categories in the 1989 International Teleproduction Society's International Monitor Awards judging panels. The nominations were for his "Human Rights Now!" broadcast and the Cinemax special "Les Paul: He Changed the Music." 420 Lexington Ave., Suite 1934, New York, NY 10017; 212-687-4180.

Iris Sound Studio (Royersford, PA) was named studio of the year by the Philadelphia Music Foundation, based on the voting of more than 1,000 radio station personnel, music critics, educators and industry executives. 237 Main St., Royersford, PA 19468; 215-948-3448.

Videomix (New York) is a new audio-for-video post facility. Studio A features a

Sony MXP 3036 console, Otari 24-track tape machine with Dolby SR and a variety of outboard gear. Three additional studios are being constructed. The facility is a partnership of Dick Maitland and Steve Dwork. Julie Grower is the sales representative. 123 W. 18th St., New York, NY 10011; 212-627-7700.

Omega Recording Studios (Rockville, MD) has installed a Solid State Logic 4048E console in Studio A with Total Recall and Primary Studio Computer. The API console formerly in Studio A has been installed in Studio B. Also new are two TC Electronic 2290 effects processors, a Dyaxis system and a TimeLine Lynx synchronizer. Omega celebrated its 21st year in business in April. 5609 Fishers Lane, Rockville, MD 20852; 301-946-4686.

Southeast

Crawford Productions (New Smyrna Beach, FL) received two Crystal Reel

Awards, created to honor outstanding achievement in the motion picture, television and recording industries in Florida, for its work on the music video "Mindbender." Rusty Crawford, president, was awarded for best editor. The second was for best music program/video. Box 1192, New Smyrna Beach, FL 32070; 904-427-6626.

Strawberry Skys Recording Studio (West Columbia, SC) has installed an AKG ARD 68K effects processor, a Panasonic SV3500 DAT recorder, a Studio Technologies Mic Pre-Eminence mic pre-amp and a Neumann U87 mic. An additional isolation booth has been added to the main studio area. 1706 Platt Springs Road, West Columbia, SC 29169; 803-794-9300.

Southern California

Buena Vista Sound (Burbank) has completed the initial phase of its major renovation, which included the facility's two dubbing theaters and machine rooms, transfer department and the engineering laboratory. Work has begun on a new dubbing stage, and the ADR/Foley stages are being reconstructed. John Reitz has joined the staff. 500 S. Buena Vista St., Burbank, CA 91521; 818-840-0044.

West Side Sound (Los Angeles) has purchased a Technics SV-D1100 DAT player, two Lexicon LX1 digital effects processors with MRC MIDI remote control, a Studio Technologies Mic Pre-eminance mic pre-amp, a BBE 822 Sonic Maximizer, dbx 160 compressors, an Alesis Quadraverb and a Roland S-550 sampler. 2265 Manning Ave., Los Angeles, CA 90064; 213-470-3437.

Waves Sound Recorders (Hollywood) has purchased a Magnatech MR-10035-4 35mm recorder to enhance its audio sweetening capabilities. 1956 N. Cahuenga Blvd., Hollywood, CA 90068; 213-466-6141; fax 213-466-3751.

Cantrax Recorders (Long Beach) has purchased an Alesis Midiverb and HR16 drum machine, a DigiTech IPS 33 pitch shifter, a dbx 166 compressor/limiter, two Sony TCD 5 field recorders and three Sennheiser 421 mics. Also in the works is a Revox C278 8-track recorder. 2119 Fidler Ave., Long Beach, CA 90815; 213-498-6492.

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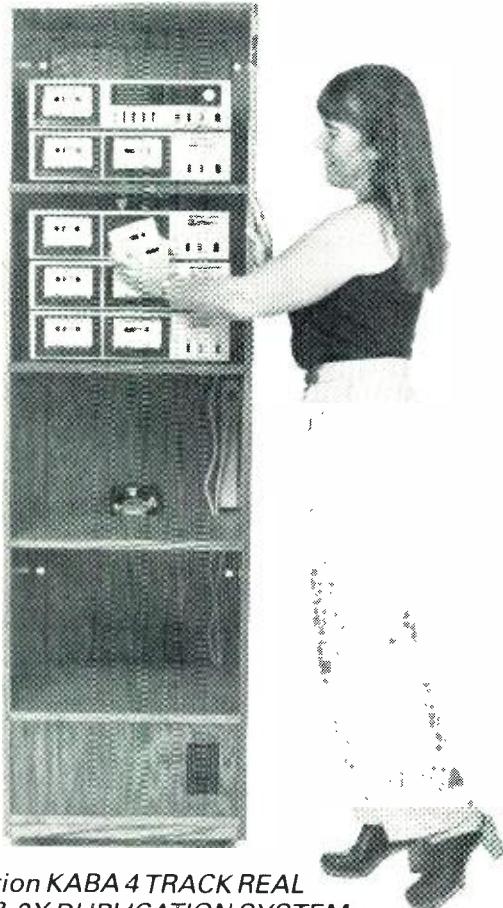
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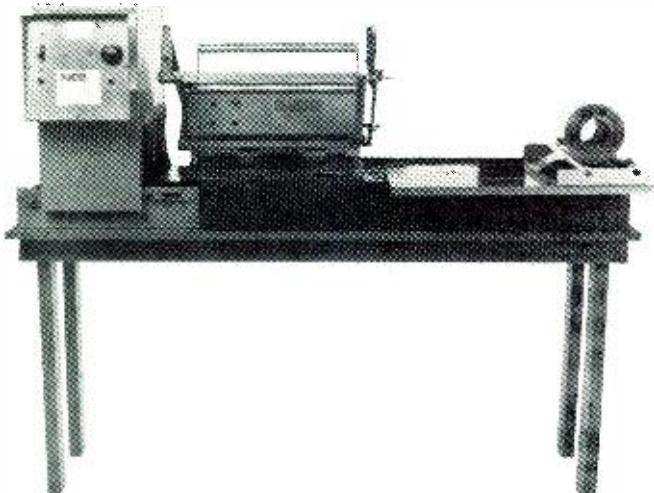
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STUDIO UPDATE

Northern California

TransMedia (San Francisco) has been connected to the Landco Satellite network of recording studios, allowing the studio to record voice talent via the satellite network. The network now includes 14 cities, including New York, Los Angeles, Chicago, San Diego, Seattle and London. *350 Pacific Ave., San Francisco, CA 94111; 415-956-3118.*

Hyde Street Studios (San Francisco) has acquired a Studer A800 MkIII tape recorder with 24 channels of Dolby SR noise reduction. *245 Hyde St., San Francisco, CA 94102; 415-441-8934.*

The Plant Studios (Sausalito) has opened a Synclavier studio, named Studio 01. The new room, previously Studio C, contains a Synclavier and an 8-channel Direct-to-Disk system, plus dozens of synthesizers. The system is controlled by a Mac II in conjunction with a 24-track DDA console, a Mitsubishi X-850 and a video production

system. The room is a joint venture between the facility and Greg Shaw, owner of Gentle Synergy, a San Francisco music production company. *2200 Bridgeway, Sausalito, CA 94965; 415-332-6100; fax 415-332-5738.*

Northwest

Steve Lawson Productions (Seattle) is scheduled to move into expanded facilities in mid-August. Two rooms will be added, bringing the total to five. A second digital audio workstation will be purchased, and its API consoles will be modified. *2212 Fourth Ave., Seattle, WA 98121; 206-443-1500.*

Canada

Comfort Sound (Toronto) has opened Studio B, featuring 16-track, ½-inch audio locked to ¼-inch video. In Studio A, a Soundmaster synchronizer and various audio and video recorders have been installed. *26 Soho St., Suite 390, Toronto, Ontario, M5T 1Z7 Canada; 416-593-7992.*

Vancouver Studios (Vancouver, British Columbia) has installed an Otari MTR 100A, the first such installation in Canada.

Shag Sound Studios (Toronto) has expanded to 16-track with the purchase of a Tascam MSR recorder, a Fostex 1840 mixer, a Sony TCD 1000 DAT recorder and Tannoy PBM-8 monitors. *668 Manning Ave., Box 518, Station W, Toronto, Ontario M6M 5C2 Canada; 416-531-5919.*

Eastern Sound (Toronto) has redesigned and re-equipped its three 24-track rooms. Studio 1 contains a 60-input Neve V Series console, a Sony PCM 3348 48-track recorder, a Studer A820 24-track and a Soundmaster tapelock system. Studio 2 contains a 28-input Neve 8058 console with a Studio A820 24-track. Studio 3 has a Neve 8068 board with a Studio A820 and A80 24-tracks. *48 Yorkville Ave., Toronto, Ontario M4W 1L4 Canada; 416-968-1855.*

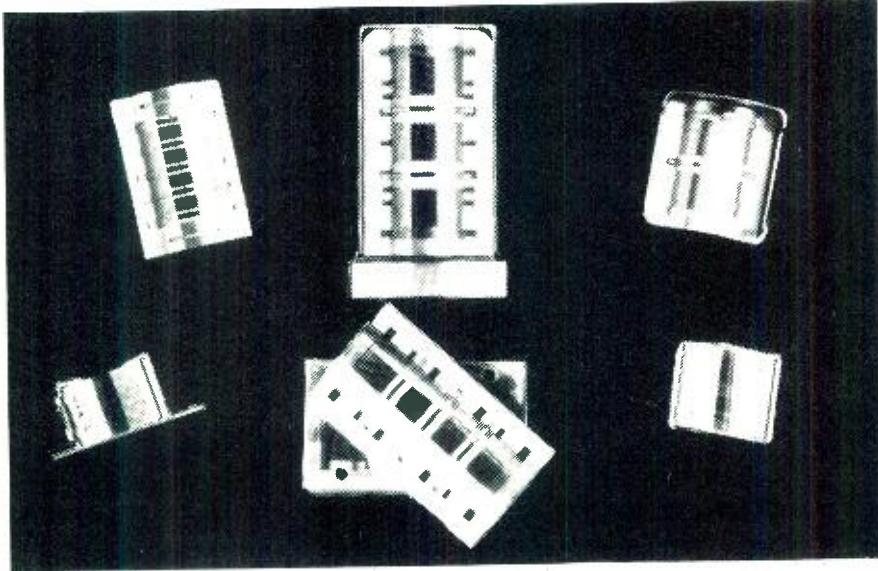
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The Netherlands

Warners Sound Productions (Heiloo) is a new 2-room facility. Studio 1 contains a Raindirk Symphony console and a Tascam ATR80-24 multitrack. Studio 2, to be used for pre-programming and as an AV room, contains a Tascam M600 console and two Atari 1040 computers. Both studios are fully audio- and MIDI-wired. The studios were designed by Alex Balster; the studio manager is Ben Kamp. *Industrieterrein Oosterzij 19, 1851 NV, Heiloo, The Netherlands.*

United Kingdom

Marcus Recording Studios (London) has appointed Nicola O'Leary as studio manager. The studio has also installed audio-to-picture facilities to increase the flexibility of its services. *17-21 Wyfold Road, Fulham, London SW6 6SE, United Kingdom; 01-385 3366; fax 01-381 2680.*

Phillipines

Works Ave. (Makati) has opened a 4-studio production house, featuring a 24-track studio, an automated, computerized edit facility, video to film transfer room and a film-to-video room. *10th Floor, Sagittarius Condominium, H.V. Dela Costa St., Salcedo Village, Makati, Metro Manila, Phillipines.*

West Germany

Union Studios (Munich) has rebuilt its Studio 2. The acoustics have been modified, and a grand piano and a live drum room have been added. Zeke Lund has been appointed as chief engineer. *Allescher Str. 16, 8000 Munchen 71; (089) 798314.*

Manufacturer and dealer announcements

Soundmaster has installed Integrated Editing Systems at EFX Systems, Burbank, CA; Master Audio Productions, Chatham, NJ; The Banff Center, Banff, Canada; Crossroads Communications, Toronto; STS Productions, Salt Lake City; Finale Post Productions, Vancouver, British Columbia; Comfort Sound, Toronto; Yorkshire Television, London; and Films of Bristol, London.

Washington Professional Systems has delivered equipment to Soundsters, Washington, DC; Big Beat Music, Kensington, MD; Premier Recording, Washington, DC; and NFL Films/Video, Mt. Laurel, NJ.

Neve has delivered Flying Faders automation systems to the following facilities: King Records, Japan; Metropolis Studios, London; Rumbo Recorders, Canoga Park, CA; New Age Sight & Sound, Atlanta; Rock Video International, New York; Full Sail Center for the Recording Arts Altamonte Springs, FL; Rockfield Studios, England; Cherokee Recording, Hollywood; Gibson Productions, New York; Estefan Enterprises, Miami; Chung King House of Metal, New York; and Capitol Records, Hollywood.

Audio Kinetics has installed an ES 1.11 Ebus synchronizer at Abbey Road's Studio 3.

Neve has installed a custom V Series film re-recording console at Sonolab, Montreal. Fullersound, Miami, has purchased a Digital Transfer Console.

AMS has received an order from BBC Television Outside Broadcast for a 140-channel Virtual Console System. The Canadian Broadcasting Corporation has installed an AudioFile. Norwegian Broadcasting has ordered a 48-channel Virtual Console System.

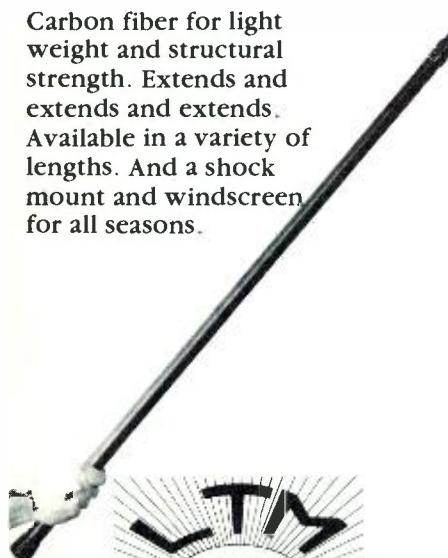
Soundcraft has installed consoles at the following locations: Network Sound Productions, Swedesboro, NJ, 24-channel 600; Saul Zaentz Film Center, Berkeley, CA, 24-channel 500; and Alaska Video Publishing, Anchorage, AK, 200 B/VE.

WaveFrame has delivered an Audio-Frame to Master Sound Astoria, Astoria, NY.

Trident has delivered an 80C console to Echo Sound Recording Studios, Los Angeles.

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THE CUTTING EDGE

By Laurel Cash

J.L. Cooper releases Fadermaster

J.L. Cooper Electronics has developed the Fadermaster MIDI Command Controller. The Fadermaster is a small tabletop remote that features eight user-programmable faders to control all types of MIDI data. Designed primarily for use with a MIDI software/hardware sequencer, digital effects processor or keyboards, the unit is also said to be capable of controlling many other types of MIDI equipment.

MIDI sequencer owners can use Fadermaster to mix MIDI volume using eight faders simultaneously, in real time. This can alleviate unnecessary aggravation when using a mouse or a keypad to mix or edit the volume of sequenced tracks. If there's a mixing mistake, or the need to punch in and out seemlessly, the unit's intelligent design will permit easy and seamless re-recording of MIDI data.

Another feature is a capability to have a special delay mode that can be assigned to any fader. This allows MIDI Note data to be delayed by up to 15ms. For example, you can move drum notes "into the pocket" using faders in real time. MIDI Clocks can also be delayed up to 15ms.

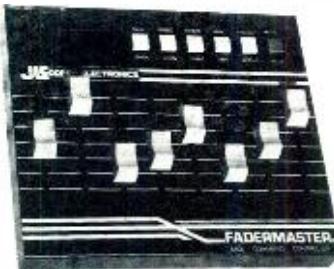
If you hook Fadermaster to a MIDI effects processor, you can use any or all of the eight faders for simultaneous control of any parameter in real time. An example of this is to assign one fader to alter reverb time, another to control delay time and another to perform pitch change or any of eight parameters. Using a fader to control these functions eliminates the inconvenience of pushing buttons or scrolling through subpages to get to the parameters you want to edit.

Fadermaster can be used to program, edit or manipulate the parameters on a synthesizer without having to go through the tedium of page after subpage. According to the company, you can have quick access to the attack, release, filter settings or simply volume.

Fadermaster comes preprogrammed with 25 factory banks. Included are setups for the Korg M1, Oberheim Matrix 1000, Kawai K1 and K4, Roland D50/10/20, Roland MT32, Yamaha DX-7 series, E-mu Proteus and the Kurzweil K1000. Some of the digital effects banks include settings for the Alesis Quadraverb, ART Multiverb and the Digitech DSP 128 Plus. MIDI mix-

ing presets for the sequencing musician have also been pre-programmed.

Programming Fadermaster is said to be easy, and the company claims that nothing has been overlooked. Each fader may be individually programmed to send MIDI volume, pitch bend, aftertouch, program change, MIDI Notes, non-registered controllers and continuous controller data of any time.



In addition, each fader can be individually programmed for MIDI channel number, maximum value, minimum value (if the minimum value is larger than the maximum value, the fader will reverse), rate of data (the fader may be scanned from six to 100 times per second to adjust density of MIDI data to the application) and group assignment (any fader or set of faders may be grouped to any other fader). If you combine this feature with the reversible range feature, one fader may act as a cross-fader, sending volume data out on a number of channels.

In addition, each fader can be individually programmed to provide three different merge functions for input data of the same time (such as note and controller) that the fader is assigned to. These three are: merge on, merge off and merge conditional. Input data not assigned to one of the faders is always merged to the output.

System Exclusive data can be programmed externally via the optional Macintosh or Atari software D/A program. This optional software package also allows for bank storage.

Fadermaster has nine user-defined banks, two System Exclusive banks and 25 pre-programmed factory banks stored in ROM. All presets can be called up from the front panel. The unit is a battery-backed system that is also accessible via System Exclusive.

Circle (150) on Rapid Facts Card

Laurel Cash is RE/P's executive consultant and a free-lance writer based in Los Angeles.

Stellavox announces Stelladat

Said to be the first portable R-DAT player from a Swiss manufacturer, the Stelladat claims to provide all the features that professionals need.

These include varied power supply capabilities, extended battery pack life (comparable to the Stellavox reel machines), shock-resistant, waterproof construction impervious to climate extremes, multiple standard and optional input and output plugs for maximum versatility, I/O for all existing digital standards, large controls for easy field operation, intelligent and easy-to-read metering, sophisticated locator functions, full remote-control capability and automatic remote maintenance.

The unit is said to have an innovative type of high-performance A/D and D/A converters and will provide sonic quality unmatched by any existing digital machine. Smaller, half as heavy and even more rugged than the Swiss portable reel-to-reel recorders, the Stelladat is designed to provide film sound engineers and record editors with the highest sonic quality and ease of editing that today's digital machines should provide.

Circle (151) on Rapid Facts Card

Klark-Teknik DN504

In what is said to be a ground-breaking development, Klark-Teknik has developed the DN504, a 4-channel compressor/limiter in a single rack-space format that



offers such features as variable controls on each channel for threshold, ratio, attach and release, and output level.

One major feature is a switchable hard-knee/soft-knee switch that allows either quick, foolproof setup in the auto mode, or full manual control of the system for more specific, exacting requirements. Another feature is a stereo switch that allows operation of the unit as two stereo pairs. Moreover, LED metering of gain reduction as well as output level is included on each channel.

Circle (152) on Rapid Facts Card

RE/P

bars per staff are all adjustable. Non-standard features such as irregular staff size or spacing can also be imported. System requirements are an IBM or compatible computer with 256K of RAM and DOS 2.0 or later.

Circle (155) on Rapid Facts Card

MicroAudio CS/1

The CS/1 is a 75W power amp with a built-in programmable $\frac{1}{3}$ -octave equalizer. It has a 28 band tamper-proof equalizer programmable by the IBM PC, MIDI controller, Apple Mac and the MicroAudio series of programmers. The power amp section includes a 70V and 25V output, as well as 4Ω and 8Ω and a standard transformer balanced input.

Circle (159) on Rapid Facts Card

Sennheiser MD 518 mic

The handheld dynamic microphone is designed for sound reinforcement of high sound pressure signals, including vocals

and percussion. A smooth cardioid pickup pattern insures maximum rejection of unwanted sounds from the rear of the mic and allows for use in close proximity to stage monitors and sidefill cabinets. Frequency response is 50Hz to 16kHz.

Circle (161) on Rapid Facts Card



Klark-Teknik delay units

Klark-Teknik has introduced two stereo delay units. The DN726 accepts two inputs and provides stereo, in-phase outputs. Delay can be adjusted from 0s to 1.3s, in $20\mu s$ increments. It is suitable for applica-

tions involving satellite delays, or any delay situation in which a stereo signal needs to have perfectly matched delay of the left and right signals in order to avoid phase cancellation. The DN775, a stereo mastering preview delay, also provides a 2x2 I/O configuration. Its frequency response is 20Hz to 25kHz, and the delay range is 0s to 5.5s in 16s increments. Each unit is priced at \$3,900.

Circle (167) on Rapid Facts Card

Sweetwater Sound SW800 Soundblock

The company has introduced the first non-factory option for the Kurzweil K250, Expander and RMX. The Soundblock's featured sounds include the Yamaha DX-7, Wurlitzer electric piano, orchestral hits and harmonica, and it adds 55 new keyboard setups to the existing sounds. The Soundblock consists of 10 IC chips that can be installed in any machine regardless of age or current options. Retail price is \$995.

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NEW PRODUCTS

Toa MR-8A patchbay

The MR-8A matrix assigner/electronic patchbay adds patch-free channel bouncing and input assignment capabilities to Toa's MR-8T 8-track cassette recorder. With the MR-8A as an interface, routing assignments on the MR-8T recorder are made using the front-panel switches. It incorporates two microphone pre-amps with volume controls to ensure low noise when recording microphones. Multiple inputs simultaneously can be routed to the same destination, a function not available using traditional patchbays.

Circle (164) on Rapid Facts Card

Symetrix SX205 digital meter

The SX205 is a microprocessor-controlled, 2-channel level display that measures both VU and watts across 2Ω, 4Ω or 8Ω. Included is a 1,000Hz sine wave calibration oscillator. Each channel may be individually set to display information as average

level (with adjustable peakhold), or peak level (with adjustable peak-hold). Its display driver allows bargraph or dot format to be selected, and peak-hold time to be adjusted from instantaneous to infinite.

Circle (158) on Rapid Facts Card



HME 8100 series wireless intercom

HM Electronics' 8100 series wireless intercom system is a portable wireless system that contains a base station, two Communicator transceiver units, a battery charger and batteries. Any number of additional Communicator units may be added to the system. The Communicator

features two communication channels, the first allowing communication to others wearing a Communicator, the second allowing communication through a monitor speaker of a talk-back speaker.

Circle (156) on Rapid Facts Card

Stellavox Stelladat

Said to be the first portable R-DAT player available from a Swiss manufacturer, Stelladat features varied power supply capabilities, shock resistant, waterproof construction, all existing digital standards for inputs and outputs and full remote control capability. According to the company, it is smaller, half as heavy, and more rugged than the Swiss portable professional reel-to-reel recorders it is designed to replace.

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volume focuses on one specific type of effect and provides an extensive set of variations. The Dynamic Range volume features more than 600 gun and weapon sound effects, including interior and exterior shots, bullet hits, ricochets, silencers and gun handling sounds. Dynamic Range is being released on both DAT and optical disc, the latter for use with New England Digital's Synclavier. It is scheduled to be released on compact disc in the near future.

Circle (165) on Rapid Facts Card

White 4700 EQ

Model 4700 is a digitally controlled, $\frac{1}{3}$ -octave analog equalizer based on an implementation of R-C active filters. The equalizer's $\frac{1}{3}$ -octave filters are programmed in 0.5dB steps. The program is stored in one of the equalizer's 10 memory registers. High- and low-pass filter adjustments as well as output gain settings, are also stored in the unit's non-volatile memory.

Circle (163) on Rapid Facts Card

Publications

Audio education guide

New Ear Productions has released "New Ears: A Guide to Education in Audio and the Recording Sciences," designed to assist students interested in studying audio engineering, music recording and electronic music. The 208-page guide contains hints for planning a career in audio. It features profiles of more than 80 schools, including university, trade school and high school programs. The publication costs \$11.95.

Circle (172) on Rapid Facts Card

H.W. Sams "Modern Recording Techniques"

Howard W. Sams has released the third edition of "Modern Recording Techniques," by David Miles Huber and Robert A. Runstein. The updated version is written for recording engineers, technicians and audio engineering students. It has been revised with new information on state-of-the-art audio topics including digital audio, random access audio and the use of digital technologies in audio production. Retail price is \$26.95 and is available directly from the publisher or in retail outlets.

Circle (171) on Rapid Facts Card

Furman AR-117

The AR-117 line voltage regulator is designed to help solve problems caused by ac line voltage irregularities, such as brownouts and overvoltages, that can cause sensitive digital equipment to either malfunction or to sustain damage. It accepts input voltages from 99Vac to 129Vac

and converts them to the North American standard 117V. The unit uses a toroidal multiple-tap autoformer, with the proper tap switched electronically at the voltage zero-crossing, to minimize line disturbances.

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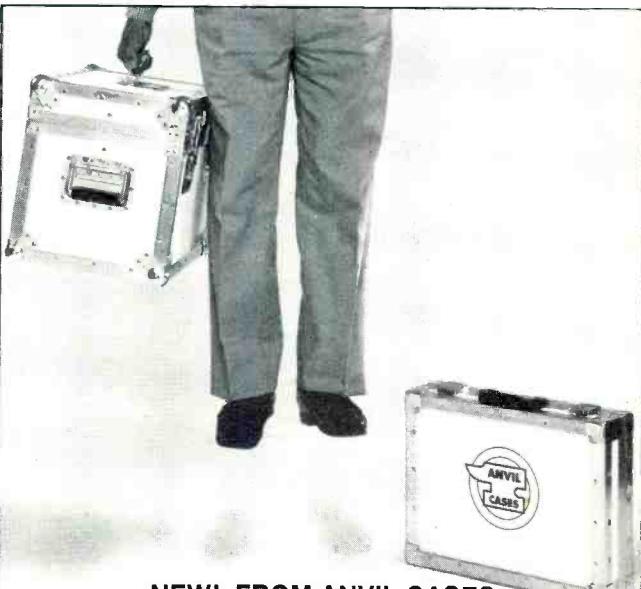
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NEW PRODUCTS

Hardware and software updates

EQ option for Lexicon Opus

With the equalization/filter option, Opus can provide 12 channels of digital equalization. The option is composed of three basic elements. The DSP modules are installed in the Host Card Cage, and an EQ control strip is installed in the workstation. The third element is the EQ Application Software. Each of the 12 channels of equalization contains four independent filter sections, each covering a 20Hz to 20kHz sweep range.

Circle (173) on Rapid Facts Card

Studer PR99 MkIII recorder

The latest version of the PR99, the MkIII is designed for economy and utility in commercial-industrial applications, as well as broadcast production and on-air. It features a solid die-cast aluminum transport chassis and headblock, plus a servo capstan motor and modular electronics. Other features include a true autolocator, built-in varispeed and fader start, VU meters with peak LEDs, and balanced and floating line-in and -out.

Circle (174) on Rapid Facts Card

Time code version of Studer C270

The C270-TC is a time code version of the C270 2-track recorder and is designed to place time code capability within the reach of any post-production studio. The recorder comes in standard speeds of 3 1/4 ips, 7 1/2 ips and 15 ips and includes built-in varispeed and an internal monitor speaker and headphone output with a selector for individual, stereo or mono output.

Circle (175) on Rapid Facts Card

Clicktracks 2.0 from Passport

Passport has upgraded Clicktracks to include a "Make It Fit" feature, which inserts subtle tempo changes into a cue to make stubborn hits fall on the beat, a Lock to MIDI Time Code option, Splice and Move, Time Finder and the capability to control the generation of SMPTE time code using a Jam Box or MIDI Transport. Also, a hitlist can be generated by reading in standard MIDI files.

Circle (176) on Rapid Facts Card

Master Tracks Pro for the Apple IIGS

Master Tracks Pro is a sequencer program based on Passport's version for the Macintosh and Atari ST computers. The version now available on the IIGS is Version 2.5. Master Tracks Pro for the IIGS features 64 recording tracks, a Conductor track for continuous tempo and meter control throughout a composition, automated punch-in and punch-out recording, and tape recorder-style transport controls. Other features include step-editing and cut/copy/paste song editing as well as the MIDI File format for storage.

Circle (177) on Rapid Facts Card

Master Tracks Pro for the Amiga

Passport Designs has announced Master Tracks Pro for the Amiga. The Amiga shares the same features and user interface as the Macintosh and Atari ST versions, such as 64 recording tracks, a Conductor track for continuous tempo control throughout a composition, automated punch-in and punch-out recording, and tape recorder-style transport controls. The software requires a standard Amiga with a MIDI interface.

Circle (178) on Rapid Facts Card

Audio Kinetics ES 1.11 update

The ES 1.11 can now be interfaced with the Fostex D20 DAT machine, the Sony BVW75 video recorder and JVC BR610/810 S-VHS video recorder. The Fostex D20 interface enables full slave or master synchronization of the machine either continuously under servo control, or releasing to external sync for digital dubbing applications. Both the Sony BVW75 and JVC BR610/810 benefit from synchronization capabilities, and remote control enhancements including crawl, but with the addition facilities offered by Ebus.

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Sony APR-24 software upgrade

The analog 24-track's internal synchronization facility has been improved, enhancing the unit's performance in audio sweetening. The unit now has the capability to accept a CTL signal from a VTR, allowing for fast synchronization during the VTR rewind.

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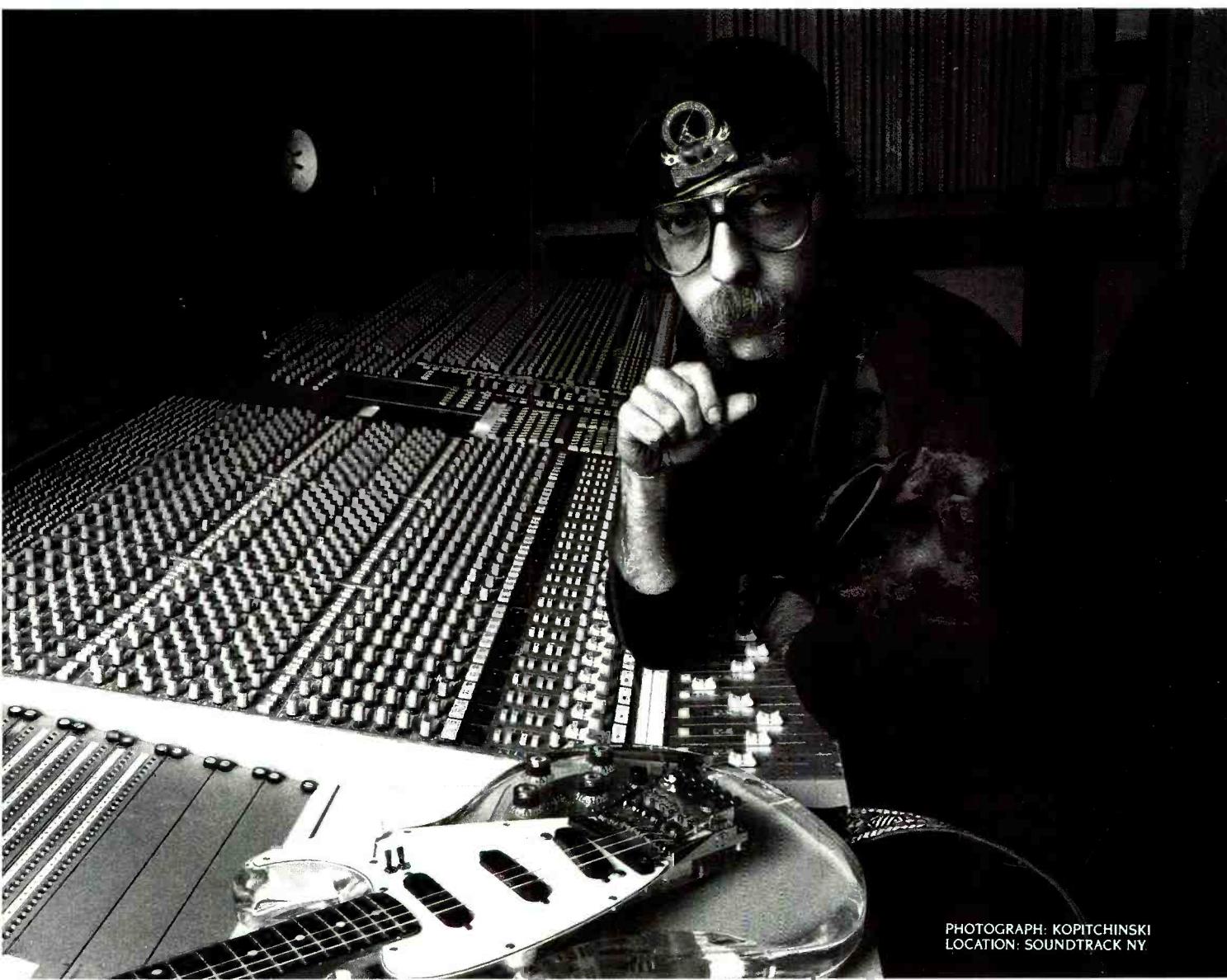
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