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3

SERIOUS NEARFIELD MONITORS COMPARED

& all monitors listed
in our Buyer's Guide

16 PAGE AV HIRE DIRECTORY

FESTIVE NATION:
Change blows into
Australian scene

CLUB BASS FEATURE:

When too much isn't enough!
The Big Bottom End story!

Reviewed:
BABY DIGITAL MIXERS-
YAMAHA 01V
TASCAM TM-D1000

No year 2k
bug stories!



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- * ROCK PIG : THE MUSIC COLUMN
- * FILM & TV LIGHTING SPECIAL
- * SOUND FOR THE ASHES
- * MP4 & MP3: LATEST NEWS-RECORD CO'S LOSING THE INTERNET MUSIC BATTLE!
- * DPC-II CONSOLE REVIEWED
- * LIGHTING THAT BABE/PIG

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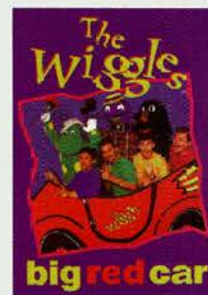
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COMING IN CONNECTIONS:

MARCH: Buyer's Guides: Wireless microphones; Video Projectors, Moving Lights. **Deadline** 15th February. **Onsale** 8th March.

APRIL: Buyer's Guides: Signal Processors, Film Studio & TV Lighting. **Deadline** 15th March. **Onsale** 4th April.

MAY: Buyer's Guides: Effectors, Reverbs, Delays, Effects Lighting. **Deadline** 15th April. **Onsale** May 5th.

Call +61 2 9876-3530 for listings and info. **Deadline for Buyer's Guide is EARLIER!**

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Connections

THE PRESENTATION & ENTERTAINMENT TECHNOLOGY MAGAZINE - FEBRUARY 1999 # 62

Fairlight downloads

Equity sale values Australian manufacturer at A\$44 million

SYDNEY: A venture capital investor has purchased 25% of Digital recording manufacturer Fairlight ESP Pty Ltd have a sold 25% stake to a venture capital investor, to finance their growth- which in the latest year has topped 30%.

Fairlight managing director David Hannay told Connections that the company is seeking to grow via its own products, rather than by acquisition. Reports in finance press that Fairlight sought to take on AVID by way of an acquisition were incorrect.

"I don't intend to head on compete with anyone, I'd prefer we be a bit unique" he said. "We have secured finance for our

growth cycle".

95% of Fairlight's A\$21 million in sales last year was to export markets - half in the USA.

The venture capital comes from a Silicon Valley high tech investor, Walden Group, and Australian Mezzanine Investments. They expect to add a European investor to their consortium shortly.

Fairlight has established its strong market position with relatively little external finance, so the new capital should greatly assist expansion.

Fairlight are expected to work towards a public float, but Hannay cautioned the firm wasn't yet large enough. -JG



MP3 & MP4 to slug it out

By Brendan King

MMP3 stands for MPEG 1 layer 3, MP4 being layer 4. These are ways to transmit and store music files on a computer disk in such a way that the file size is relatively small, but the song sounds near perfect.

MPEG stands for moving picture experts group. It is a worldwide standard developed in cooperation between various companies for compressing multimedia such as sound and video.

You can identify MP3 files because they will end in .MP3, whereas the MP4 files are executables (with an .exe extension).

Typically if you are recording at CD quality (44.1KHz), such as in the WAV file format, it will chew up space at the rate of about five megabytes per minute. MP3's algorithm provides up to 10:1 compression.

At CD quality MP3 uses 128 Kb/s, at near CD quality 80Kb/s and radio quality 64Kb/s.

In testing for a song which is 5 minutes 52 seconds long the space taken by MP3 was 5.5Mb while MP4 used 4.2Mb.

This means on a normal 600Mb CDRom you could fit

FAST Internet audio transmission formats take off - after the Record Co's fail to kill MP3 in court

•Please turn to our Pro Audio News pages, starting page 9.

GUET not to buy Audio Telex

While our normal practice is to reject rumours, a normally very reliable source told us at presstime that cinema outfitter and expanding contracting house GUET (Greater Union Entertainment Technology) would buy Sydney based audio distribution suppliers Audio Telex Pty Ltd.

Rod Craig, CEO at Audio Telex firmly denied the story, as did Russell Scott, Managing Director of GUET.

"Naturally anyone with enough money should talk to me" joked Craig. Scott added: "We're expanding, but not through a purchase like this".

Enter Summer & the Festival Nation

The Summer of '98 saw confirmation that Australia has completely embraced the music festival - a trend fuelled by lower promotion, talent and (surprisingly) production costs. Indoor or outdoor they have been happening in every state. Connections gives you a taste of what went down, and who supplied production.

Homebake

Concentrating on local acts, Homebake was started in 1995. Promoters International Music Concepts managed to get some of the hottest Australian bands along to the gig which was

held at the Domain, Sydney on Saturday 5 December.

Bands included Custard, Frenzal Rhomb, Grinspoon, Jebediah, The Living End, The Mavis's, Spiderbait, and The Whitlams.

Production was provided by

Tony Davies' Chameleon (Lighting), and Ian Richardson's Audio & Recording did the PA.

Vans Warped Tour

Promoter The Frontier Touring Company are presenting the Pacific Rim tour of Vans Warped, which features Suicidal Tendencies, Pennywise, Grinspoon, MxPx, Frenzal Rhomb, The Porkers, Deftones, Beaver Loop, and others

According to the PR, Vans Warped tour celebrates the

•Turn to our new LIVE section, page 65



Australian public broadcaster JJJ-FM 'greatly assisted profitability' of at least one festival, stated the promoter - who must remain nameless. The national FM youth radio network ran 'information bites' for several festivals - which ordinarily would be considered advertising. The promoter added that having a JJJ presents' deal added to a show or tour cuts up to A\$100,000 off the potential cost of advertising - as the network does it for free.

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WRITE FOR CONNECTIONS! We WELCOME well written articles and stories for consideration. Send hard copy, preferably WITH a PC or Mac word processing RTF file and NORMAL file together. RTF means Rich Text File, also known as 'Interchange format'. Most word processors will SAVE a file (in the 'Save To...' field) as an RTF file. Colour Photograph prints preferred. Have them printed at 5" x 7" or larger if possible. Digital images- you CAN email us a high resolution 300dpi JPEG image as an attached file, but not a TIFF image. It takes too long to download. Send stamped self addressed envelope if return desired. No responsibility for loss accepted.. Call the editor if info required.

ETHICS: We operate under the journalist's code of ethics, as detailed by the Australian Media Entertainment and Arts Alliance. We also agree with the principles expressed in Brill's Content magazine. Respect for truth and the public's right to information are over-riding principles for all journalists.

In pursuance of this principle we have always committed ourselves to these ethical and professional standards:

1. We shall report and interpret the news with scrupulous honesty by striving to disclose all essential facts and by not suppressing relevant, available facts or by distorting by wrong or improper emphasis;
2. We shall not place unnecessary emphasis on gender, race, sexual preference, religious belief, marital status or physical or mental disability;
3. In all circumstances we shall respect all confidences received in the course of their calling;
4. We shall not allow personal interests to influence us in our professional duties;
5. We shall not allow our professional duties to be influenced by any consideration, gift or advantage offered and, where appropriate, shall disclose any such offer;
6. We shall not allow advertising or commercial considerations to influence us in our professional duties;
7. We shall use fair and honest means to obtain news and documents;
8. We shall identify ourselves before obtaining any interview for publication;
9. We shall respect private grief and personal privacy and shall resist the compulsion to intrude;
10. We shall do our utmost to correct any published information found to be harmfully inaccurate.

AMAC heralds new approach for Musical Instruments trade

AIMS format replaced with Gold Coast Convention in April/May

April 30 is day one of the new Australian Music Association Convention, a three day gathering at Conrad Jupiters Broadbeach. The three day event seeks to draw together retailers and distributors in a trade only format, distinctly different to the trade and public mix at the previous AIMS trade show.

The convention has all the right attractions-

- A Convention Cocktail function beside the pool,
- A Convention Dinner at Dreamworld,
- A Golf Tournament,
- Industry awards and AMAC Professional Development Sessions.

These include a Keynote address delivered by Larry R. Linkin, President/CEO, of NAMM, the USA National Association of Music Merchants

Other business speakers include Bob Popyk, David Campbell, David Panther, and Wayne Berry. They are all well regarded business and motivational speakers.

An equipment trade show also features, on a somewhat smaller scale. Over 50 exhibitors are expected.

• **Info:** from the Australian Music Association, call +61 3 9867-4222, www.australianmusic.com

NZATT Conference

The NZATT Conference; 'Theatre Industry and the 21st Century' is scheduled for June 4 - 6th (the Queens Birthday weekend) in Auckland. It includes a trade show and various conference topics. Details from +64 3 379-3094 or email them c/o profile@nzatt.org.nz

Memorex Telex & ABC

Memorex Telex Asia Pacific has aided the ABC in upgrading its regional news gathering capabilities with the installation of a new communications and computing network linking 41 offices around Australia.

Program makers now have PCs connected to a local area network and a wide area network, with 64 kilobit ISDN connections. Previously they had dumb terminals linked to a central mainframe in Sydney.

The new system allows stories to be transmitted also.

COLLUSION

SADie and Soundtracs

have announced an agreement to debut a new digital recorder and mixer at the NAB trade show in April. The system will be a digital mixer with a 24 or 32 track hard disc recorder, working in high resolution audio mode.

The 24 bit, 96kHz product will be pitched exactly at the post production market.

Crucially, it is unclear whose distributor network will sell the new device. SADie and Soundtracs don't usually share distributors.

Mackie and RCF...

are cooking up joint products following the buyout of RCF by Mackie last year. At presstime it was expected that new Mackie PA products would be unveiled at the NAMM show in L.A.

Consumer CD hassles

The recent step up in home CD recorder sales has caught some consumers unaware that standard CD-R discs cannot be used. A contact purchased a Pioneer CD recorder for around A\$1,500 in December - but couldn't use it!

Consumer machines require a 'consumer' CD-R which has had copyright paid on each blank CD. These cost about A\$1.10 more than standard CD-R discs. At presstime one store only could be found in Sydney stocking the discs - Continental Records at Botany. Cost is about A\$4.60 ea.

Standard CD burners on a PC using software like 'Toast' will, however, burn CD audio to standard CD-R discs- and faster.

Gentner names Production Audio Services as Master Distributor

SALT LAKE CITY: Gentner Communications Corporation have named Production Audio Services of Melbourne as master distributor for Australia and New Zealand.

Managing Director of Production Audio Services, Colin Stevenson, says that as a dealer for a number of years the firm has enjoyed good success with Gentner.

Gentner make broadcast multi line telephone hybrids and conferencing products. Call PAS on +61 3 9415-1585.

Luncent Digital Radio licences AVC

LAS VEGAS: Lucent Digital Radio has announced it is licensing its Perceptual Audio Coder (PAC) technology to Perth company, Audio Video Communications (AVC).

AVC will use the technology in its newest broadcasting products, including its TieLine bi-directional audio codec. TieLine is expected to enable up to 15kHz of broadcast quality audio to be sent over a 3kHz phone line in real time.

AVC say they will start testing their new system at FM stations during this quarter.

ZECK for Horwood

SYDNEY: Horwood Australia Pty Ltd has picked up a hot new German pro audio line: ZECK Audio. See their stuff at www.zeckaudio.de. Details from Horwood: +61 2 9585-1011.

GUET Restructures

SYDNEY: Greater Union Entertainment Technology (GUET) have restructured as they undergo a planned expansion. Three separate divisions have been created, Wholesale Distribution, Contracting and Cinema.

Since then they have been busy recruiting people to support the new divisions.

Billy Mawer joins GUET as Manager of the Audio, Video and Lighting Distribution division and will be supported by Sue Hickson (Brisbane), Paul Beck (Adelaide) and Paul Rawlins (Melbourne). Billy joins GUET from CMI and has 27 years industry experience including 11 years in lighting and audio wholesale. Billy's background also includes involvement in live sound and lighting, retail sales and studio work.

Another new face in the Distribution division is **Peter Shaw**. Peter is a qualified lighting designer and electrical engineer with over 20 years experience. For the past 5 years, he has been concentrating on developing new lighting applications in the architectural and corporate/retail areas. Peter is based at GUET's Melbourne office and will look after sales of GUET's lighting wholesale range in the region.

Joining Les Jones' national SVL Contracting sales team are a number of people, including **Iain Everington**, who has over 20 years industry experience working with companies including Australian Monitor, Sony and Allen & Heath. Iain is based at GUET's Sydney office.

Bill Martin has been working

in the AV industry for almost 20 years. His industry experience includes establishing a hire and video production business as well as working in the education and corporate sectors. Bill's expertise is in business presentation technology in boardrooms, conference centres and auditoriums. He is based at GUET's Melbourne office.

Bob Tindall has over 20 years industry experience in audio including 10 years with Audio Tel-ex's SA distributor, Electronic Concepts. Bob has also been involved in live audio both as a musician and in production. He is based at GUET's Adelaide office.

Craig Marriott has been involved in the entertainment industry for the last 10 years, starting out as a lighting operator in a NARPAC venue. Since then Craig has worked with the Queensland Arts Council and has also been responsible for audio, AV and lighting installations in clubs, schools and sporting venues. He has extensive experience in intelligent lighting control and generic lighting systems. Craig is based at GUET's Brisbane office.

MOVES

CUSTOM AUDIO INSTALLATIONS has relocated to 150 Maitland Rd, Mayfield 2304 NSW. New numbers: Ph. +61 2 4967-7733, fax +61 2 4967-7736.

CARIBINER are having phone troubles after their move. Get them on +61 2 8218-2000.

(continued on next page).

Apology

We have increased our cover price by .50c in Australia - with slight corresponding rises in all most markets. This is our first increase in four years, and is due to increased editorial and production costs. We have not increased our advertising rates since 1996 either, these are frozen until the end of 1999.

WANTED:

Connections seeks world class freelance material, particularly based on Audio Visual topics and equipment. We are interested in hearing from you if you can write and have a professional technical background in AV. Please contact The Editor, by email: julius@conpub.com.au or on the phone. +61 2 9876-3530.

NEXT MONTH

- Introducing the **WIRELESS MICROPHONE FREQUENCY CHART!** Finally, end confusion about which frequencies work where, and which will not.
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- **REPLitech Europe**, 23-26 Feb, Vienna. Fax +1 914-328-2020
- **MusikMesse**, 3 - 7 March 1999. Frankfurt. www.messefrankfurt.com
- **Dig Media World**, 24-26 March. Sydney Exhib. Centre. Ph. +61 2 9360-6396 www.dmw.com.au
- **NAB**, 19 - 22 April, 1999, Vegas, USA. www.nab.com
- **Music Convention**, 29 April - 2 May. Gold Coast QLD. web: www.australianmusic.asn.au
- **PLASA SHANGHAI**, 13 - 15 April 1999. Ph +44 171 370-8231. web: www.eco.co.uk
- **NSCA**, April 27 - May 1, 1999. Nashville. Ph +1 904 273-2760, web: www.nasca.org
- **AES 106th, *NEW DATES:** 8-11 MAY, Munich. Fax +1 212 682-0477. web: www.aes.org
- **InfoComm**, June 10-12, 1999. Orlando. Info fax +61 2 9531-6777, www.icia.org
- **PALA**, July 8-10, 1999. Suntec City, Singapore. Ph. +65 227-0688.
- **SMPTE**, July 13-16 th, 1999. Sydney, Ph. +61 2 9977-0888.

Here's a good overseas round world study trip opportunity with holiday included...PLASA & AES:

- **PLASA, *Oops! Prev. omitted!** Sept 5-8, 1999. London, Earls Court. www.plasa.org.uk ★
- **INFOCOMM ASIA**, September 15-17, 1999. Singapore. Ph. +65 297-2822. www.icia.org ★
- **AES 107th**, September 24-27, 1999. New York. Fax +1 212 682-0477. web: www.aes.org ★
- **LDI** November 19 - 21st, 1999. Orlando. Ph +1 212 229-2965 web: www.etcync.net
- **NAMM**, 3 - 6 Feb 2000. LA. www.namm.com
- **ENTECH 2000**, March 5th - 7th, 2000. Venue: Sydney Exhibition Complex at the Olympic site, Homebush. Show on sale from March '99. Fax + 61 2 9876-5715. web: www.conpub.com.au ★
- **MusikMesse**, March 15- 19th 2000, Frankfurt. www.messefrankfurt.com
- **SIB**, March 26 - 29th, 2000. Rimini, Italy. Ph +39 541 711711. web: www.fierarimini.it
- **NAB**, April 8-13th, 2000, Vegas, USA. www.nab.com
- **NSCA**, April 27 - May 1, 2000. Las Vegas. Ph +1 904 273-2760, web: www.nasca.org

NEWS

KeyLighting have moved, and can now be found at: Riverview Business Park, 77 Moreland Street, Footscray 3011. The new phone number is +61 3 9687-0244, fax 9687-7866.

The Gobo Factory is now at PO Box 2366, Bendigo Delivery Centre, VIC 3554. Call +61 3 5439-3770, fax 5439-3770.

SoundCorp and **Rutledge Engineering** has moved to better premises at 199 Heidelberg Rd, Northcote VIC 3070. Call: SoundCorp +61 3 9488-1555, fax 9488-1550. Rutledge Engineering: +61 3 9488-1500, fax 9488-1588.

PEOPLE

Congrats to **Meredith Brooks** and **Bill Syrratt** of Soundwarp CD Bureau in Sydney, who tied the knot recently after an 8 year engagement.

Paul Amos takes over as Production Manager at Heaven II - Newmarket Hotel complex in Adelaide.

News: fax +61 2 9876-5715, email mail@conpub.com.au

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PRO AUDIO NEWS

FEBRUARY 1999

MP3 -vs- MP4. Internet audio now fast enough

(continued from page 5)

over one hundred and twenty songs - ten normal music CD's.

The large size of hard drives these days makes it feasible to store forty or more CD's worth of music on your computer in the space of 2Gb. The data transfer rate from your hard drive or CD needs to be fast. If you are doing heavy file transfers or straining system resources you may get jitter or cut outs in the music.

For a good MP3 recorder download the jukebox from www.musicmatch.com. Just put a music CD in your CD-ROM drive, select the tracks you want to record, and click "start".

Tracks are digitally extracted and MP3-encoded at speeds up to 5x faster than normal play time. MusicMatch Jukebox uses the state-of-the-art Xing MPEG encoding technology, previously available only in commercial configurations for multimedia professionals, and supports the Intel MMX commands set for faster MP3 encoding. The Musicmatch jukebox can be purchased over the internet for US\$29.95.

Storing CD's on your hard drive makes playing and finding music a lot easier than shuffling CD's in and out of your CD player, and the MP3 players have all the functionality and more of a normal CD player.

As each MP4 file is an executable, they need to be selected and opened to run. You can open many MP4 files at once. MP4 files have a queue button, so if you make a multiple song selection you have to then go through each file and select the "queue" button to play them continuously.

The face of the MP3 players often have the same look of a

normal CD player, and can include reverb, 3D effects, graphic equalisers and more.

Additionally, MP3 files can be downloaded to new devices called MP3 players. One, the RIO player, is on sale around the world for a couple of hundred dollars, after the American recording industry failed to block its sale in court. Consumers download MP3 files to the player, which uses flash-RAM (not a hard disk). Download-for-a-small-fee kiosks are appearing in Asia right now.

Most MP3 programs include additional functionality. Jet-Audio features an impressive home audio system interface.

When you insert a CD the Jet audio CD player will check the serial number on the CD against a CCDB on-line database on the internet. If it finds a match it will display all the tracks on the CD and the album name - as it plays!

For a windows based player try www.winamp.com, or get the Jet-audio player from www.cowon.com. Mac users can get an MP3 player from www.macamp.com.

Free MP3 music is available for download from any of the above sites, from www.mp3.com and many other sites. Type in MP3 on any search engine.

There has been some controversy lately over the legality of MP3 players, with record companies attempting to block their use for fear of loss of royalties. It is legal to encode MP3s from your own CDs and keep them to yourself. But it's illegal to encode MP3s and trade them with others - unless you have the permis-

sion of the copyright holder of the music. To put it another way, MP3 is simply a file format that can be used either legally or not.

MP4 is a more secure standard from a legal viewpoint, but they still have the capability to be illegally transferred.

Sites like www.musicnow.co.uk/ provide a purchase by the track facility (at about \$1.20 per song,

based on the song length). This is great, as you do not have to spend \$25 for the whole CD if you only want a couple of songs.

You will see more of the CD selling sites offering the ability to download samples of songs before purchasing and buy single songs or whole CD's over the Internet. This is the future of music distribution - even if the record companies don't like it.

What the record companies DO like however is the Web's latest audio format, MP4.

US Hi-Tech innovator GMO (www.globalmusic.com) released the MP4 at presstime. GMO claims MP4 has advantages over the MP3 format, including smaller audio files than MP3 for the same or better

CD TRACK LENGTH AS FILE SIZE:

In testing a song which is 5 minutes 52 seconds long, the disk space taken by MP3 was 5.5Mb, while MP4 used 4.2Mb. An uncompressed (normal) CD file this length would be about 50Mb!

MODEM STILL TOO SLOW?

It may take 30 - 40 minutes to download a 5 Mb file using a standard modem. But in Australia BigPond have ramped up their cable modem coverage. It's blistering fast, and runs off your cable TV wire.

Go to www.bigpond.com/cable/ or call 1 800 060 391. The cost? \$29.95 install, \$495 to buy the modem, then \$65 per month for the first 100Mb of downloads, then .35c per Mb.

sound. As the Player is embedded in audio file, no install is necessary. And crucially, all songs are distributed under the authority of their owners

The free redistribution of MP4 songs provides residual value to the artist or copyright owner as each MP4 player features a hyperlink back to the owner's website or product mail-order site. MP4 songs each contain a digital watermark from Solana Technologies that can be identified and tracked, even in a normal AM/FM broadcast signal. All mostly good for the record companies, not for the user.

In practice Connections found MP3 was more useful, with easier manipulation of song lists, fully featured players, wider availability and the ability to easily create your own MP3 files.

The CD quality MP3 recording also sounded better than the MP4 songs listened to, although the MP4 file was admittedly smaller. The other main disadvantage of the MP4 standards is it will not run on a Mac, only Windows 95 or NT

MP3 runs on Mac or Win. If you would like to test the new MP4 format, CMM, the Ozemail hatched on-line music store has released 15 tracks on the Web. Download these tracks for free at www.cmm.com.au/mp4

The MP3 & MP4 standards are here to stay. The record companies will want to push MP4, but users may win out with the MP3 standard. It's a reliable standard, it delivers good quality audio, there are many free and shareware players coming out every day, and people can conveniently test and purchase songs.

Vive MP3!

• *Brendan King is Connections' IT advisor. Email him at bking@ozemail.com.au*



Budget Babies TASCAM TM-D1000 & YAMAHA 01V DIGITAL MIXERS

Is price the issue? If so, start with these, the lowest priced examples of their kind (For now!) Zenon Schoepe explores:

TASCAM TM-D1000: I'll make absolutely no excuses for raving about this little console – despite the fact that I fully expected to dismiss it as a project studio oriented play thing. While its ambitions in the TM-D1000 (pictured at top on left) are not enormous, Tascam has managed to cram an unnerving level of functionality into this tiny little console which takes up about as much room as the opened up magazine that you're reading.

What you are presented with is a row of 21 short-throw non-motorised faders handling the 16 input channels, four group/aux masters and the main stereo output. It will handle incoming 16, 20 or 24-bit lengths and if I describe what it has you'll get the picture.

There are eight analogue line inputs, four of which also offer mic XLRs with phantom power and inserts. Eight digital I-Os on TDIF come up at faders 9 to 16 while there is one stereo digital input and two stereo digital outputs on paralleled AES-EBU and SPDIFs. There are four group outputs which can also act as aux sends, external stereo inputs, stereo outputs and a monitor output plus a headphones circuit complete with switch operated monitor source selection. There are two inbuilt stereo effects and four dynamics devices.

Options include the fitting of an additional TDIF interface card with extra AES-EBU and SPDIF I-Os and sample rate convertor and an additional effects board which doubles the on-board effects processing. Hard channel control is sparse as would be expected.

The channel faders are complemented by dedicated and detented pan controls (nothing multichannel here), channel mutes and Select keys, the last assigning control to the small LCD which works in conjunction with four soft rotaries to access the 3-band EQ (sweepable shelving HF and LF and fully parametric mid) and the aforementioned effects. It's not a terribly elegant means of control and requires a lot of scrolling through and along menus with a data entry knob.

The real let down is the LCC which is restricted to

(continued on next page)

YAMAHA 01V: It's important not to confuse the 01V (pictured above right) with the Pro Mix 01 – but by the same token it is important not to confuse it with the operational elegance of the 03D or 02R even though it shares their processing genes.

The feature list is predictably impressive given this desk's lineage but it is yet another example of still further trimming of the original offering in order to create a new price point. Convertors are 20-bit with 32-bit internal processing and 44-bit EQ processing.

Out of the box you are presented with 12 mic/line inputs with switchable phantom power in blocks of six, plus two stereo

returns. However, a single rear panel slot can take 8-channel TDIF, ADAT and AES-EBU flavour I-O interface cards with the inputs

arriving at channels 17-24 and the outputs assigned for function within the desk. There's also a 4-channel analogue I-O option card – and for the record none of these cards are compatible with the 03D and 02R.

As a point of interest only channels 1-16 have access to full channel processing, optical inputs have only 2-band EQ for example but to counter this it is possible to swap channels from the option interface with fully featured channels 1-8.

In terms of group buses the 01V has four and these can emerge via four so-called 'omni out' sockets or via a fitted interface card. Omni outs can also be assigned to deliver aux outputs, extra stereo outs or as direct outputs from the first 16 channels. Throw in two internal stereo returns from the two internal multi-effects processors with full EQ and routing and the self contained nature of this desk cannot be denied.

Internal effects take in 42 presets and 57 user locations while a total of 22 dynamics processors are arranged in 40 factory and 40 user patches.

On-board automation is restricted to 100 complete desk snapshots but if its dynamic automation you want then its to the sequencer and MIDI you must go.

(continued on next page)

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TASCAM TM-D1000 & YAMAHA 01V



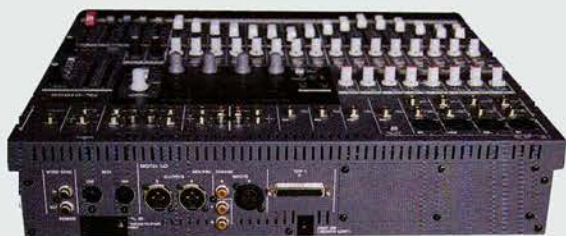
alphanumeric and it's out of keeping with the spirit of the rest of the product. Given its meagre panel surface, the TM-D8000 is absolutely peppered with controls and switches, even down to the number of soft controllers which greatly exceed the number on the Yamaha 01v, for example. However, the display is limited in the density of information it can show at any one time in comparison to the 01v, for example. This puts a stick in the spokes of any rapid progress and while I'm not saying that the desk would be clearer to operate if the screen was larger and more elaborate, it's just that it may have felt as if it was.

Routing and EQ bypass are handled on keys which also double as MMC transport controls complete with track record arming via the Mute keys. On-board automation is restricted to snapshots but dynamic automation can be realised by capturing the MIDI generated from channel parameters. The fact that most functions are hidden away and require a fairly intimate knowledge of this console to truly master does not detract in anyway from its usefulness. I was surprised and encouraged at just how recognisable a lot of the operating system and configuration is, and this aligns this box far more with an experienced digital user than with the novice. I'm not sure if this is necessarily what is intended but I reckon it would blow the brains out of a cold-start bedroom recordist hoping to get creative in a hurry. They would never get past the manual.

It is almost too well loaded with features and the configuration routine, particularly with regard to organising I-Os, is very involved and matters are complicated by a curious imposition of Record and Mixing modes that seems inappropriate.

But if you are not intimidated by these sorts of things and have a good idea of what you would use this desk's abilities for then at the price it is among the finds of this millennium.

Yes, you can mix on the thing but running it to the extremes of its capabilities is probably missing the point, this is a device that you can sort small little jobs on. The fact that Tascam now has in its IF-TAD- a box that will translate between its own TDF and



There is no surround or multichannel mixing capability and frankly there shouldn't be.

Channel faders are 60mm motorised types with associated on, solo and Select switches, the last of which assign the chosen channel to the adjustment of its internal parameters.

In terms of non-fader controls you get dedicated buttons for utility, MIDI setup, view, dynamics, EQ/attenuation, phase reverse/delay, and pan/routing - some of which will be familiar to 03D and 02R users. Repeated pressing of said buttons calls up successive screens which are adjusted via cursor and dial.

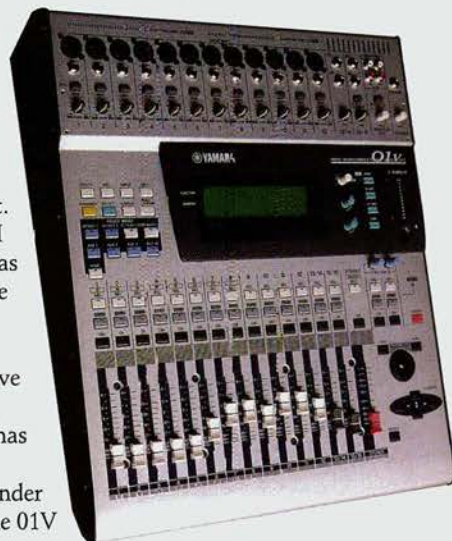
A cluster of fader mode buttons carry over the established practice of being able to set effects 1 and 2, aux 1, 2, 3 and 4 levels from the moving faders. The Option I-O key accesses the under layer of 8 inputs derived from the optional rear panel interface board, if fitted, while the Remote key assigns the faders to internal and external MIDI data generation duties and can be used to create faders as group masters. All pretty established stuff this, at least in Yamaha digital desk land.

On the other side of the LCD a pct is dedicated to pan on the selected channel, while two more handle part of each band's fully parametric EQ. Annoying things include a noticeable lag in the EQ curve display when administering tweaks - long enough at first encounter to make you wonder if there is something wrong. You also have to contend with the vagaries of doing EQ on two dedicated pots for frequency and boost, selecting bands is on dedicated keys admittedly, while the data dial is used for Q value. You get used to this eventually but the dial has a peculiar resistive feel to it that is not helped by its size. It's substantially smaller than the dial found on the 02R and this means you're turning it from closer to its axis with the usual mechanical laws applying.

The dial performance is a pity as you have to use this control an awful lot.

I'd have to wonder what I would have made of this box had I not already become well acquainted with the operation of the 02R and 03E before it. I'm inclined to think I may have regarded it as something of a culture shock rather than regarding it first and foremost as a derivative of existing consoles.

However, Yamaha has the benefit of other models in the series under its belt and as such the 01V



ADAT optical bidirectionally further extends connectivity.

You could use this desk for rough mastering, premixing, getting signals into the digital domain for output to somewhere else, purely as a digital monitor mixer with a DAW, or simply as a spare digital mixing resource for simple tasks if the bigger stuff is otherwise occupied or deemed too grand.

It's interesting to note that following the first trial generation of digital desks, the next wave concentrated almost exclusively on the big buck monsters. Many of us looked on pathetically longing only for something simple that would allow us to interface with all the bits of gear that we had assembled with digital ports on such as DAT machines and hard disk systems - something that would allow us to manipulate the digital stream cheaply.

It's so clever, so dinky and solves so many irritating problems. I love it to death. • Around A\$3,000 retail

(YAMAHA, continued)

avoids many of the pitfalls that might have enticed it. If this was anyone else's first stab at a desk with this sort of power for this sort of money then I would suspect that it would have made its compromises in far less acceptable areas than Yamaha has here.

Once you're into its mind set then operation becomes logical and predictable even though the business of actually administering an idea can be painfully protracted. You'll know how to do everything on this desk fairly quickly, it's just that you're not exactly encouraged. For example, with the 01V I've realised why you would want to have EQ and dynamics memories because with them you shoot for the nearest approximation of what you want and alter as little as is possible rather than having to go through the convoluted business of starting from scratch each time.

Comparisons to the 03D and 02R are ultimately unfair as they occupy significantly higher price points. As such the 01V targets a different type of user, one that doesn't want to work to picture, nor mix in multichannel on a compact but intelligent work surface, rather it's someone for whom the fact that the desk is digital and can interface to digital multitracks cheaply and directly is the overriding concern. It's a killer little submixer perhaps for keyboard rigs or instances where things are preset and the clever stuff is achieved pre-

dominantly on the faders instead of within the channel processing. It's a good little tool box too with coaxial digital I-Os, phono 2-track I-O, headphones, main stereo and monitor outputs and the ability to cascade two desks digitally.

For the money it's quite phenomenal value and that's something that has to be restated repeatedly and it's pro enough in the right hands to perform a useful role in the right job. It's not a toy.

By the same token I would not want to leave anyone thinking that the 01V is in some way the 03D trick all over again but for less money. The 02R and 03D stand head and shoulders above the 01V in terms of operational ease and functionality. The 01V is a different proposition altogether and, in my opinion, makes the original Pro Mix 01 obsolete despite the fact that the new model is more expensive. • Around A\$4,000 retail

*Zenon Schoepe is executive editor of Studio Sound magazine

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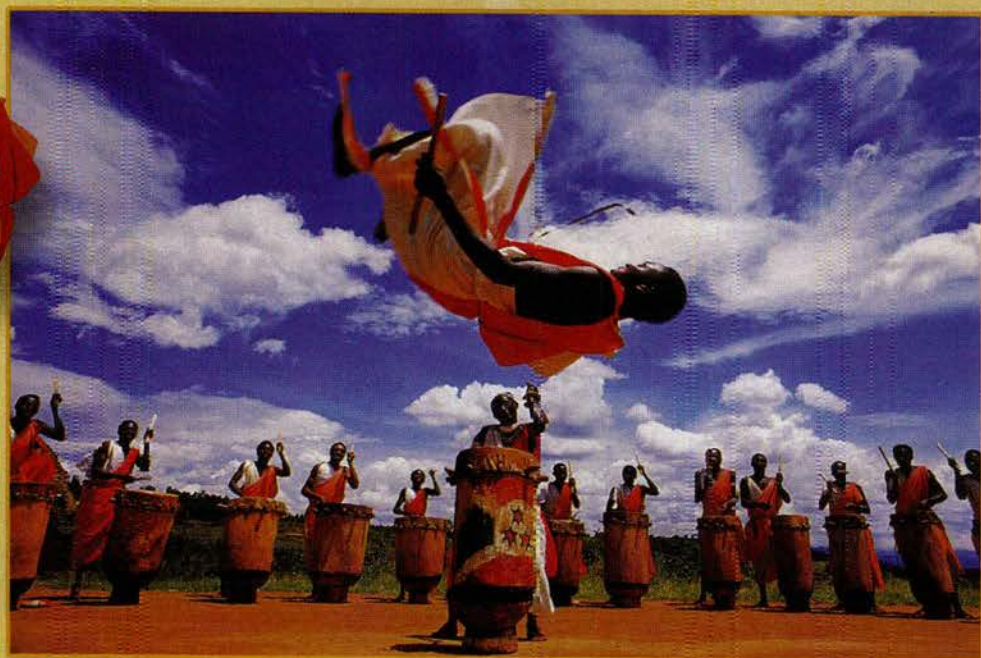
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Soundtracs DPC-II Digital Production Console

Post, Music, Film, Theatre – distinctions blur. How specialised SHOULD a mixing console need to be?

By Julius Grafton

Someone had to break down the classification between large format automated mixers. Having a console that is expressly just for music recording, or for post production, or for broadcast, or live theatre, is a luxury that has no real place in 1999.

Soundtracs may have come close to making a console for everyone with the DPC-II Digital Production Console. When we say everyone, we mean everyone at the top end of professional audio, where flexibility, 40 busses and surround sound are required. Stop reading if you think A\$150k, and up, is outside your ballpark.

I sat in on a demonstration of the DPC-II after seeing it attract a lot of attention at the latest tradeshows and having been aware of a good sales takeup in the Northworld recently. A demo example found its way to a location near where I am, and the Australian Soundtracs distributor Syncrotech System Designs had some serious audio professionals in to have a look. I went as well. Steve Marsden did the demo, after unpacking the console, previously unsighted and unknown.

The hardware approach of a digital assignable console is everything. Software changes, but the hardware work surface you live with. Soundtracs have a winning hardware solution, with the console featuring 160 channels and 40 busses – no matter how much or how little control surface you buy.

In its most basic form, DPC-11 has a master section and a single input block of 16 faders to the left. Disregard the humungous configuration pictured above. No one normal will need to buy this much console, especially with those big patchbay things either end. A far more likely configuration would be several channel blocks, not the six shown above.

The console is raked up from the engineer with a top meter bridge, middle and lower section. Touch sensitive TFT screens are installed, these can be seen off axis, and handle the touch part quite well. I barged at them in several different ways and discovered the firm press

of one finger seemed to work best.

What matters is the way you use the console. At the input block of 16 faders there are eight faders at bottom, coloured black, and eight above which are coloured chrome.

These are 16 discrete faders for 16 channels, not an inline concept where the channel path is either input or monitor. Every channel input is the same, whether used for inputs or monitor returns.

Each fader has an eight digit 'scribble strip' readout to denote what it fades. An actual QWERTY keyboard is located on a little draw at front centre of the console for inputting text. Above the two rows of faders is a TFT screen, and to its right a control area for these 16 channels. This comprises eight pairs of assignable pots for auxiliary control, or dynamics.

The TFT screen allows visual representation of any eight of your 16 channels, and on its right are rotary controls for EQ and dynamics.

A surround pan pot sits here too.

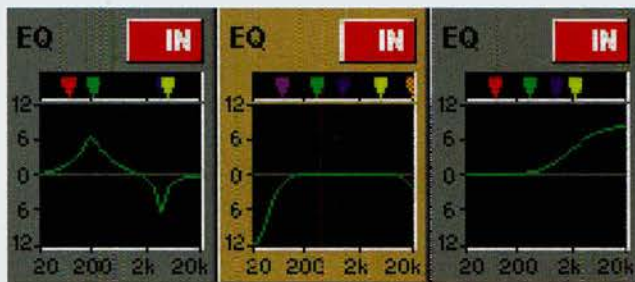
Up top the meter bridge has eight 40 segment LED ramps, one for each of the eight selected channels.

DOING A MIX

From at the input block, with the two rows of eight faders in front of me, the TFT screen above. I know which fader is selected on the TFT screen, because there is a green LED on each fader to tell me. I've got immediate fader control of every channel here.

If I wish to select a channel to the TFT screen, say the second fader on the top row, I touch it. That channel springs up on the screen above it. Eight dedicated input gain controls are atop the control section, so I can adjust any selected eight of the 16 channels in the block. One button allows 'all' of the first eight or second eight faders to be quick grouped together on the TFT screen. Or, I can select an upper, a lower, then a few lower, then a few upper

~ OVERVIEW ~



This is the standard visual indication of EQ on each channel. A very detailed EQ display can be tied up for the selected channel.

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Soundtracs DPC-II Digital Production Console *(continued from previous page)*

channels to my screen. Selection is fast and intuitive.

Suppose I need to change EQ on the four band fully parametric equaliser, on –say– channel 15. I've allocated its fader as the upper (chrome) fader at the far right of this input module. I look at the TFT screen and see the lower (black) fader is selected, confirmed by a green LED over the black fader. I can hit a flip button between the upper and lower faders to select either, or I can just touch the actual fader. Doing so springs the channel to the screen.

Then I simply dial whatever EQ setting I choose from the actual rotary controls at screen right. A teeny little frequency sweep map on screen gives me a rough idea what is already set for EQ on each. For full EQ visualisation, I just touch the little EQ map on the screen, and the whole EQ section pops up, covering about 25% of the whole screen. This shows me a visual representation of a full four band parametric EQ, with pot and switch positions. I can still see the vital signs for all other selected channels, while I tweak and fiddle with the EQ on this channel.

Crucially, I have fader control over un-selected channels at all times.

The Dynamics section is equally friendly, either look at a small representation of what each channel is doing (gating and/or compression) and adjust parameters on the real rotary faders. Touch the dynamics section, and the whole gate/limiter springs up on screen.

All this screen touchy stuff is pretty optional, you could run a mix without touching a screen. I'm not into punching a screen myself, spending too much time with the Windex trying to keep my Mac screen clean!



ROUTING

So, understanding how easy it is to actually mix on the fly, which is what an engineer must do first, we come to the routing, assignment and automation world.

DPC-II is a fully digital console, meaning all audio comes in fully digital or is converted from analogue (mic input) to digital (data). This differs from the approach of some, where audio remains in the analogue realm and is controlled by a digital work surface.

Then when the audio departs the desk, it leaves either as digital (to feed digital recorders) or as analogue (to feed control room monitors, or a PA, or an external effects device).

Because of this, the audio processing is done outside the desk, at a rack which houses conversion interface cards. Use more racks for more channels. The rack/s connect to the desk with a simple MADI cable. A MADI cable can run for some distance. Audio conversion in and out is done at 24 bit rate.



Possible DPC-II interest from Nine Network Australia. OB Engineering Manager David Ritter checks out the DPC-II in Sydney.



Top of the channel block, showing a detailed EQ screen. The actual EQ rotary controls are those at the right, above the surround panner.

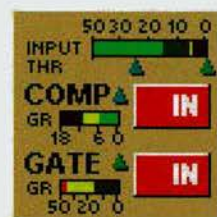
Processing is done inside the desk. A four Gb hard drive is on hand to store settings and automation. It is of sufficient capacity to store automation for an average feature film. Backups can be done to ZIP, and there is a floppy disk drive for small data exchanges.

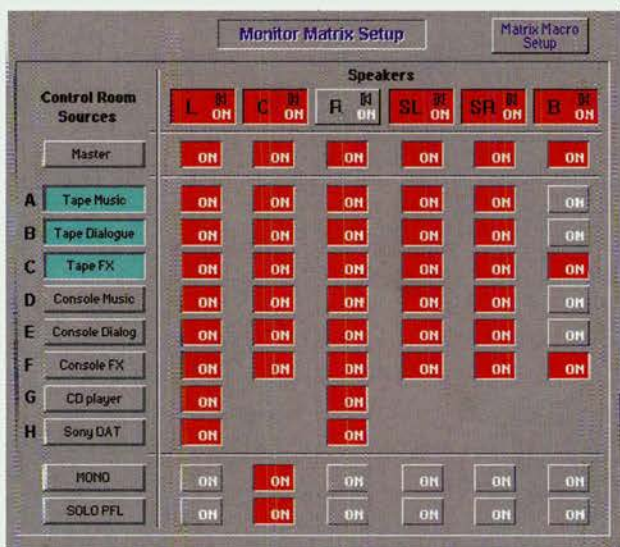
Software for desk processing is written on a proprietary protocol by Soundtracs, and the actual file management and display screen software is written over Windows. Cold startup takes about 50 seconds, so a UPS (uninterruptible power supply) would be a good investment for this and any other similar digital audio product.

Dealing with the potential 160 input channels and 40 output buses is a matter of deciding what input and output modules you need. These vary according to task, so one module may have eight analogue inputs, another 3 outputs, a module may have a TDIF connection for a DA-XX, or AES/EBU. You choose. It comes down to the mission statement.

Suppose you configure the desk in a fairly traditional format, with 16 auxiliary sends on each channel, eight subgroups, and a stereo output pair. These 26 busses leave another 14 un-allocated. Auxiliary sends can be stereo, desk outputs can be 5.1 or even 7.1 surround.

It's the inbuilt surround capabilities which is attracting TV networks to the desk, as HDTV is a 5.1 (6 output) surround format, and it starts quite soon – in early 2001. Because of this, virtually all audio post is converting to surround, even the most basic advertisement or promo will be mixed in 5.1





Real-time possibilities. The surround capabilities of DPC-II tell it all... everyone needs to mix surround for vision and DVD these days!

soon now. Music on Super Audio CD can also be presented in surround, as can DVD audio- if the spec is ever finalised.

DPC-II has great surround mixing capabilities. Any selected channel can be panned with the input module panner, or via one of the central control module.

CENTRAL MODULE

This is also well considered. The eight faders and one master fader here assume whatever role you elect. The master may control the 5.1 or 7.1 surround output, and the eight faders can be used for fine tuning the surround. Or, assign any eight channels to these. Or, set them up as pseudo VCA masters of several other groups or channels.

The central module has a lower TFT screen with an identical set of EC controls, so it may act on any selected channel/s instead of the engineer going over to the actual area where the channel is assigned.

Several of us at the demo thought a musical could be wholly mixed on the central module, with the snapshots and automation cued off time code and those required wireless mic channels and subgroups assigning to the centre module scene by cue.

There's all the other stuff you expect to see, including a track ball and a jog shuttle wheel under some industrial strength machine controls.

WRAP

There's a lot of software depth, lists and screens, as well as features relating to interfacing and clocking.

But the fundamental success of this desk rests on how easily engineers can relate to it. My somewhat limited appraisal indicates that this is something Soundtracs have put an enormous amount of work into. I'd see DPC-II selling up against Euphonix CS-3000 - but it is also a very plausible theatre audio console where possibly a pair of automated analogue consoles may be the current choice. DPC-II would certainly save revenue seats in theatre!

- Priced upwards from **A\$145,000.**
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SOUND FOR THE ASHES

THE STORY SO FAR:

For reasons completely unknown, the English Cricket team continue to visit Australia in the hot heights of summer, and continue to be resoundingly beaten. Flogged. Thrashed. This is where our story starts.....

Audio for the Ashes is a science which the team at the Nine Network in Australia have perfected over the past twenty years. Back at the start, the (then) audio director Colin Stevenson pioneered the start of the art of stump mic'ing.

"We shoved a Sony ECM 30 into a condom - a non lubricated one' he told me. "Then we tried to bury it near the stumps, but the groundsmen wouldn't hear of it!" Intervention by network heavies soon cleared the way for some digging under a hot sun, amongst a cloud of blowflies.

"A condom swelled up in the sun one day, and Rod Marsh jumped on it - it nearly blew the headset off my head!"

Today, the stump mic's are still Sony, but now ECM 77's, when on a line (wired). Most stumps have conduits run to them these days, for stumpcam and audio purposes. No condom is used, as the pitch is covered whenever rain threatens.

For some time the Network Nine sound department experimented with transmitters in hollow stumps. This had a shaky start, when the first model was destroyed at the first test bowl, lobbed by Denis Lilley. Why the hollow stumps? For some years the national broadcaster (ABC) had reciprocal rights to broadcast the Ashes regionally. They duplicated the microphones, and the groundsmen decided that there were too many holes getting dug. They banned digging!

More recent hollowed stump attempts have generated mixed results as the transmitters didn't enjoy the experience when subjected to a direct hit, for some reason. They don't make them tough enough perhaps.....

The hollow stump mic is pretty well standard issue in the world of cricket these days, but are a distant second choice where ground mic's could be used instead. These are placed on the ground just behind the stumps, and two are used if on cable. Where cable isn't possible, Sennheiser 800 meg wireless lapel mic's are used. These are powered with a Lithium battery, which is good for about six hours use. Previously, a 200 meg wireless system was used, but



ALLSPORT/Clive Mason

abandoned due to RF interference.

Audio Director of Outside Broadcasts, Peter Fragar says the ground position is better for sound, picking up more localised talking as well as the stumps getting smashed by the ball at 50 miles per hour. "The acoustics in the stumps weren't great" he added.

THE MIX

There are almost 48 inputs plugged into the Calrec Assignable Console in OB Van. One. Aside from the four stump mic's, there are eight crowd effects mic's, a mixture of Sennhieser 816's and 416's, the odd MS mic like a Shure VP88, typically placed on the roof of the grandstands - plus a couple of dropper mic's.

These created a memorable incident several years ago at The Gabba in Brisbane. The game had settled down to a dull roar, and was into its third day- when during a particularly boring period of

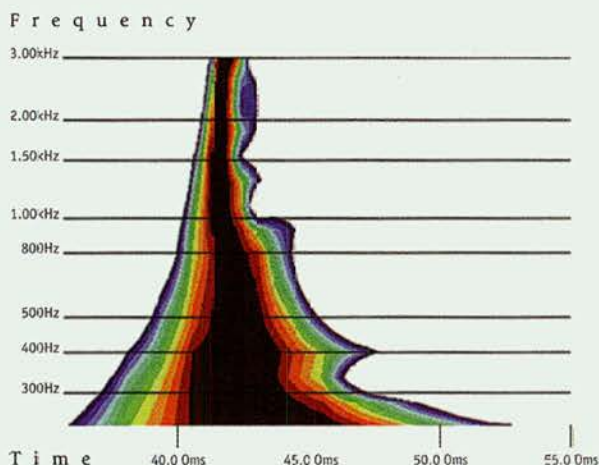
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Sound for The Ashes *(continued)*

play a new weird and different commentary appeared at the mixing desk. It was quickly isolated to one channel, and a Policeman was dispatched to the roof to arrest the pair of Englishmen (Poms) who were sitting on the edge of the roof with the dropper mic, adding their own dubious commentary!

Then there are the outputs from the nine video replay units, 4 studio lapel mic's (ECM 77's), 3 ribbon mic's for the commentators and a couple of SM 63 interview mic's. Some of the camera mic's are also fed into the mix, and occasionally used.

The Audio Director mixing the stumps has a job requiring full time concentration. His job is to mix the audio from the stumps, so that we don't hear the 'expletives deleted' or other un-sports-like language. He also has to try to mix the levels so that the sound FX are somewhat in perspective. as you can imagine, there is a big difference between the wicket keeper keeping for a spin bowler and keeping for a fast bowler - about 20 metres, in fact! The AD searches for the return of the ball FX and the umpires calling 'overs. He virtually plays his own game on the faders. The goal, of course, is not to miss any balls in a match, or test.

The other Senior Audio Director mixes the rest of the coverage, including the slow motion replays. Here, the trick is to try and search out the 'hits, snicks, and flicks' of the ball on bat and pad, while trying not to make the slow motion audio sound as though it is grinding on.

The commentators have come to use the 'stump and replay FX' quite a lot as a basis for their commentary. The public don't notice it so much during play, but become very aware of its absence if it is not there.

FEEDS

The Ashes need a lot of audio feeds, with the composite program going to air around the region - but international and radio feeds are also needed.

A mix of crowd effects and the stumps is sent back to the studio in Sydney, for editing into the highlights cut. Radio gets a mix of stumps and crowd, less the replays.

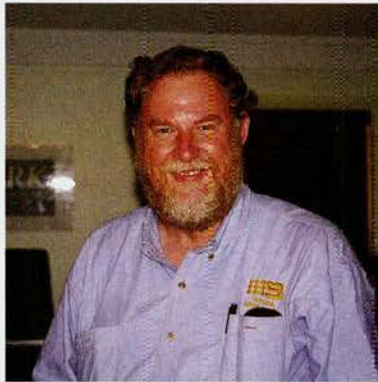
B-Sky-B in Europe take a number of pre and post fader splits. They get it all, minus the local commentary. They also get an independent split from the replays, which come in stereo from up to nine video players. They take the main composite mix as well.

Currently the match audio is produced in stereo, but in 2001 the Australian networks will commence transmission in 5.1 surround, as HDTV is to be introduced. "We are looking forward to mixing in 5.1" says Peter Fragar, "and as an exercise we mixed the Grand Prix (held in Melbourne earlier in 1998) in surround. Initially we'll go with the existing consoles, and add equipment to generate the mixes - which'll restrict us a bit. We've got a hell of a lot to do with monitoring and routing first".

Some of the crowd mic's are MS (Matrix Stereo) types, which are ideal for surround as they produce some out of phase material from some areas in the pickup zone. The surround decoder will send out of phase material to the back as ambient sound.

ON THE ROAD

The Ashes this season were played in Brisbane, Sydney, Perth, Adelaide and Melbourne at the height of Summer. This is typified by the imagery generated of people and players baking under a hot sun- and no doubt seen by envious personages from the



Nin'e Peter Fragar

Northworld, huddled in their igloos in the early twilight, trying to thaw out.

The Network Nine crew arrive at each ground a day prior to the match and put in a whole shift setting up the van and the ground mic's. These days many of the grounds are pre wired, which saves a lot of time as the longest mic run is 300 metres!

The console takes a lot of time to set up, as there are up to ten on-site feeds additional to all the multilateral feeds - so the matrix outputs and auxiliary sends are virtually all used up. The on-site feeds go to crew and studio foldback, and program on the talkback.

Three crew and one communications crew member do the setup, then on the day, two audio directors and two assistants work on the coverage. One assistant works around the commentary booth and studio, some distance from the OB van, while the other is roving, being available for trouble shooting, pitch reports and interviews.

The OB skills of the Network Nine crew are legendary, especially considering the conditions under which they work. If the climate isn't extreme enough, then there are the barmy army to cope with - who seem somewhat under the weather, often in more ways than one!

• By Julius Grafton.

This story first appeared in Studio Sound magazine.

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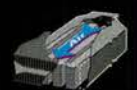
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When

TOO MUCH BASS

...is never enough!

Club owners, DJs and sound designers keep on calling Connections - usually at five minutes to closing time - and the talk is always about BIG BOTTOM END!

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Connections presents the BIG BOTTOM END special for everyone in audio!

All About Bass

By John Matheson

I like a big bottom end, in my music, not my partner, that is! There are lots of schemes to generate it: infinite baffle, transmission line, bass reflex, single, double and triple band-pass, "J" and "W" bins, even canons and motor driven "servo" systems.

The fundamental problem with bass is wavelength: you have to move a large volume of air to achieve any kind of useful SPL. If you want to know what I mean, try this little experiment (or use your imagination): Take a canoe sized paddle to nearest Olympic swimming pool when closed, stick it in one end and wiggle it vigorously. You should be able to send wavelets off to the other end of the pool and in no time the whole pool will be awash. Congratulations, you've just simulated an unbaffled mid-range speaker filling a large room with tone. Now see if you can get a wave that is half the pool in length between crests. Suddenly the size of your implement is terribly important!

As much as some would have you believe otherwise, the same laws of physics bind all speaker manufacturers. Some may well apply them better than others, but none has an exemption as far as I am aware! Let's have a look

at the different issues around each approach.

First a word about loudspeakers, accuracy and energy storage. If we consider an "accurate" loudspeaker to be one that is able to reproduce a recorded acoustic signal that sounds like the original acoustic source, then it stands to reason that it can not add or take anything away from the signal. The three critical parameters in achieving this are energy, frequency and time. That is, an accurate loudspeaker must produce the right amount of energy at each frequency at the right time, no more, no less.

The most common representation of a speaker's ETF (energy, time, frequency) response is the waterfall plot, which in two dimensional representation on a page, shows energy from bottom to top, frequency from left to right and time towards you. The accurate loudspeaker described above would not look like a waterfall at all; it would look like a sheer, straight cliff face. Each ridge extending out of the page represents a resonance or ringing, a consequence of the system storing energy and releasing it over time. Worse still some resonances change frequency over time. See Figure 1 on the next page for a waterfall of a very low stored energy system. By my definition of accuracy, most audiophile speakers are pretty poor and PA speakers are TERRIBLE.

please turn the page

Dancing & Bass

Nick O's theory

We all know that nightclubs play loud music and serve grog, but there hasn't been a study of how the veracity of the bass system affects bar revenue. Until now.

Jands club expert Nick Orsatti recently presented a paper called 'The Club Bass Phenomena & the JBL solution', in which he theorised that what goes down can be kept up.

A study was done with innocent clubgoers at a venue which must remain nameless. With a full dancefloor, the subbass was reduced by 10dB. The punters left the floor. Turn the subbass back up again - and they came back.

Hardly rocket science, you say?

But the number of dancing and drinking patrons is directly proportional to the amount of sub bass in a venue, argues Orsatti.

To support this theory, Orsatti has correlated the nickos axiom of club bass which goes like this:

$$\begin{aligned} \text{No. of punters dancing} &= \frac{\text{SPL/m}^2(\text{df})^*}{[\text{price of 1 standard spirit} \times 0.05]} \\ & * \text{SPL capacity per m}^2 \text{ of dancefloor} \end{aligned}$$

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When TOO MUCH BASS... is never enough!

(Continued from previous page)

OK, lets get back to the bottom (end) of things. The accepted range of human hearing extends to 20Hz, much below this and you feel sound rather than hear it. Hum, the scourge of all PA's, is usually 100Hz (and its harmonics) because of frequency doubling by rectification in equipment power supplies. Occasionally you'll get a pure 50Hz hum and you'll notice it is very deep. Each octave you go down (halving) in frequency requires double the volume of air moved to achieve the same sound pressure level. Mechanical excursion is what usually limits the maximum available SPL.

Most commercially available subwoofer systems are designed to work from between 20 and 50Hz to somewhere between 100 and 200Hz. At 20Hz the wavelength is near enough to 16 meters long; 1.6 meters at 200Hz. A "little" 18 inch bass driver isn't going to make much of an impression in free air where the positive pressure wave emanating from the front of the speaker is only centimetres away from the negative pressure wave from the rear.

Infinite Baffle

The simplest (and most accurate) solution is an infinite baffle (Figure 2a), otherwise known as an acoustic suspension or sealed box system. Here all of the energy from the rear side of the driver is contained within a sealed cavity. A carefully designed system will exhibit a flat frequency response down to a "corner" frequency, below that the response will decline at 12 dB per octave. Because the driver will need to make large excursions there is the potential for a significant amount of harmonic distortion. Driver quality is paramount. Mechanical limiting or poling will result in a very loud "crack" from the speaker.

Unfortunately the excursion linearity and limits of real drivers limit these systems to audiophile applications. Regardless of the stated power handling (and remembering speaker manufacturers are pathological liars!) mechanical excursion limits will mean the maximum available SPL will fall at 6dB per octave. For example, if the system is capable of 110 dB at 200Hz, it will have a maximum output of only 92 dB at 25Hz, assuming it was flat to 25Hz in the first place!

There are a few notable infinite baffle designs such as the Philips 12" and Velodyne 18" motional feedback systems. These use an accelerometer on the cone to provide a feedback loop to the amplifier to reduce distortion and control excursion. Philip Glass's orchestra tours with Philips boxes modified for keyboard, guitar and drum foldback use and some studios use the Velodynes for accurate bass extension. (Mind you, motional feedback does not negate the laws of physics, it just allows better use of them!)

Transmission Lines

It doesn't take too much thinking to realise that potentially half of the energy in an infinite baffle system is being lost (inside the box). One of the first attempts to use this energy to augment bass extension was the transmission line system (Figure 2b), so called because it feeds the driver's rear energy into a tube or "transmission line" which is folded back onto itself so that sound energy exits adjacent to the driver. The purpose of the line is twofold.

Firstly it must delay the signal from the rear of the driver for a half wavelength so that it exits in synchronism with the next opposite excursion from the front of the driver. This is obviously

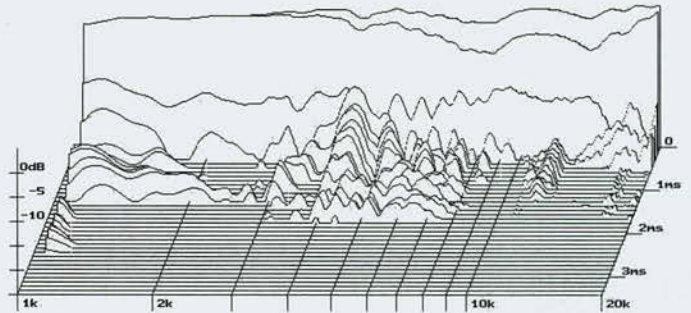


Figure 1: Exemplary waterfall response of VAF DC-X loudspeaker. They don't come much better than this. If you need HiFi loudspeakers, buy these! See VAF Research at * www.vaf.com.au *

proportional to wavelength (or inversely proportional to frequency), so a good design makes sure this will occur at a frequency below the cut-off frequency from the front of the driver. Long fibre wool is often used to slow down the wave velocity in the line to reduce its necessary length; remember a half wavelength in free air is 8 meters at 20Hz. The second purpose of the line is to attenuate all energy above the half wavelength frequency of the line. Fortunately the stuffing also helps here.

Good 'lines can sound nearly as good as a good infinite baffle system and have the benefit of some additional bass depth. They suffer from a half cycle "time smear" at the line's operational frequency. Poor 'lines suffer from undamped standing waves due to the folds in the line. My first bank loan was to purchase a pair of 'lines based on 12" Richard Allans built by Scott Krix, in the embryonic days of Krix Loudspeakers.

Scott installed a system that comprised five or ten (I can't remember) identical 'lines a side in a naughty old nightclub in Adelaide called CountDown, where I once worked at getting drunk as a kitchen hand. (Those were the days when you had to buy a legitimate meal to be allowed to drink in a disco, but then there were acts like Cold Chisel as a cover band and Geoff Duff's Hush to compensate! CountDown

eventually burnt down, saving a whole generation.) Generally you won't see lines outside of audiophile applications because of their bulk and weight.

Bass Reflex

The best way to understand bass reflex systems is to go and play with a dingbat. No, not your mates girlfriend! (Adelaide humour. Bear with him. -Ed) One of those cheap show bag toys that consists of a ping pong style bat with a ball attached by a piece of elastic. I think the objective of the game is to hit the bat with the ball, not your head. Anyway, the point I am trying to make is that the ball and elastic form a mass spring damper system driven by the bat. For the purpose of this exercise we don't want the ball to hit the bat or your head.

Start by waving the bat up and down very slowly. The ball follows the bat almost exactly. Slowly increase the driving frequency and you will discover a rate at which the ball oscillates wildly with almost no movement of the bat. Wave the bat faster still and eventually at a high enough frequency the ball will almost stop moving, even for large excursions of the bat. These three states correspond to: below the reflex tuning; system resonant

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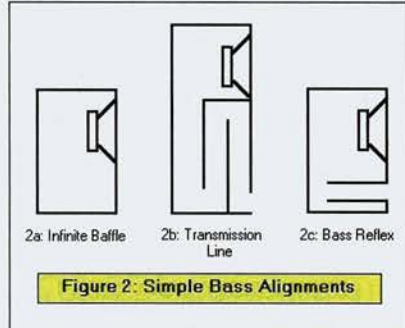


Figure 2: Simple Bass Alignments

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PS-M3 personal powered studio monitoring system with sub-bass.



When TOO MUCH BASS... is never enough!

(Continued from previous page)

frequency; and above the tuning, respectively. Now let me translate.

The bat is analogous to the speaker cone, the elastic string to the springiness (compressibility) of the air in the box, and the ball to the mass of air in the port, respectively. Above system resonance the speaker cone does all of the work and the port does (hopefully) nothing. Through resonance the port does all of the work and cone displacement is at a minimum. Below resonance nothing does any work and if you push the point you'll soon have a re-cone to do. Below cut-off response falls off at double the rate of a sealed box, ie 24 dB per octave.

In a reflex box (Figure 2c, previous page) the resonance of the system is determined by the weight of the "plug" of air in the port against the total springiness of the driver/box combination. Lengthening the port adds mass and lowers system resonance. Remember the fog horn sound you can get by blowing air over the top of a bottle – it's a similar principle. A longer neck (more weight) or larger volume (softer spring) bottle will give a lower note. In a reflex box the "neck" (port) protrudes into the "bottle" (cabinet).

The objective here is to create a system resonance of a suitable "Q" below the cut-off frequency of the box/driver combination to add as much extension as possible to low frequency output. Going back to the ball in our dingbat experiment, you may have noticed that at resonance the ball is travelling in the opposite direction to the bat. That's handy because it means that the energy off the rear of the speaker cone will drive the plug of air in our port in-phase with the energy from the front of the driver.

Handy point number two is that at system resonance, just where cone excursion would start to become excessive in a sealed system, we find the port doing all the work and the cone hardly moving. So bass reflex systems can achieve much greater output SPL within the cone excursion limits of a given driver. At frequencies below system resonance, however, there is no excursion control; in fact the port acts as a short circuit, so it is prudent to use a high pass filter in PA applications.

So what are the down sides?

Firstly standing waves and other nasties from inside the box can get out through the port and colour the sound unless port position and box are well designed. Port turbulence can cause farting noises, if the designer hasn't done her homework properly. Lastly, this is a resonant system. Remember our dingbat, even when excited at its resonant frequency it takes several oscillations for the ball to reach maximum amplitude, and when you suddenly stop the bat, the ball continues to oscillate for several cycles. So output energy in a reflex system at the system resonance builds and decays over time.

Does it really matter?

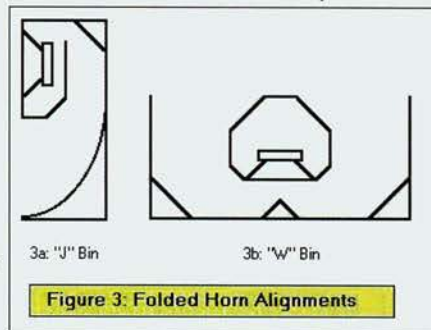
Well it depends on what signal you want to listen to. It's not accurate by my definition. But so what if you're reproducing bowed double bass, electric bass or organ, all of which have slow attack and decay characteristics much longer than the speaker's are likely to be. Vocals are another matter. For years it has been industry practice to route signals to subwoofers separately, rather than just put the subs across the main PA sends. The reason was to prevent vocals and some instruments becoming muddy.

Try this experiment: grab a large drink bottle and hold its neck close to your mouth whilst you sing or talk; it'll instantly muddy

up your vocals! The worst reflex systems are those with little damping. Transients from percussive instruments (including piano) contain a splattering of all frequencies and will excite any system resonances. Once you have identified the system resonance, you will hear persistence at that frequency in everything the system reproduces. To understand what I mean, try holding a drink bottle up to your ear whilst listening to music. In waterfall measurements the bass reflex system resonance will exhibit at least one ridge of energy that does not decay as rapidly as other frequencies.

"J" & "W" Bins

"Scoops" or "J" bins (Figure 3a) are a hybrid design with direct radiation from the front of the driver, with the rear side driving a folded horn (the scoop). Some systems didn't sound too bad, mind you it was a long time since I last heard one! The horn couldn't possibly be long enough in a practical design. Frequency response looked like a motor-cross circuit. It's too painful to think about the time response!



"W" bins (Figure 3b) were a giant version of the hand held loudhailer or megaphone and sounded awful for the same reasons. They are both folded horn designs. Unfortunately sound waves do not fold, so energy is reflected at each discontinuity of the horn. And unlike transmission lines it is not possible to damp out the standing waves because all of the sound is radiated through the horn. These systems have fortunately had their day. My advise is don't do business with anyone who owns one unless it has been turned into a cocktail cabinet with neon lighting.

Band-Pass Systems

It is probably easiest to think of band-pass systems (Figure 4) as double ended reflex systems. There is a seemingly unlimited range of possible configurations. One of the first commercially available, the Bose Acoustimass system in its various incarnations, can be imagined as a large and a small bottle joined at the bases with a driver in between. Other band-passes have two tuned cavities radiating into a third tuned cavity through which the sound radiates out into the world.

Now if you like your bass to sound like it's being played by blowing on two or three different sized bottles, then band-pass is for you! So why do apparently reputable manufacturers make them?

The Holy Grail of current PA speaker design is SPL combined with more SPL.

Band-pass systems achieve high efficiency by exploiting resonance. They also claim better "distortion" performance, because harmonics are trapped in the box, unable to escape. It is true that in the frequency domain, distortion can be lower. However in the much more important time domain (at least for bass frequencies) distortion performance is disastrous!

I have not seen a waterfall for a band-pass, but I expect it would show one ridge of slow decay for each tuned section, with gullies showing rapid decay in between. Even if a given band-pass system has a perfectly flat frequency response, the resonant frequency of each section will be clearly audible as a colouration, because these frequencies will have unnatural persistence. Band-pass designs have very steep roll offs either side of the design pass-band.

please turn the page

VETERAN REVIEWERS AND ENGINEERS CONFRONT REALITY. MACKIE'S HR824. THE GROUNDWELL OF HR824 MONITOR RAVES BECOMES A TIDAL WAVE

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HR824

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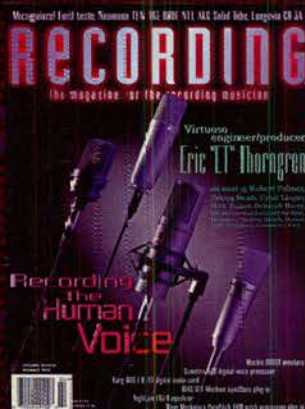


"Performance, features and a cost-not-barred design make this product a very good value. In the words of one person involved in these listening tests, 'I have a feeling that [the HR824s] will become the NS-10 of the late '90s and beyond'...ubiquitous."

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"HR824s give systems costing twice as much a run for their money in terms of sound quality... they deliver a solid low end

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"Very musical. Very accurate. We actually move them between our five rooms." Glenn Meadows, TEC-nominated mastering engineer, Masterfonics



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When TOO MUCH BASS... is never enough!

(Continued from previous page)

Cannons

In the cannon design, a driver is typically positioned one third of the way down a tube of the same nominal diameter as the driver (Figure 5a). I think the Bose cannon was about 3 meters long.

If the air in the canon acts like a column, then one effect will be to add a lot of mass to the system, lowering system resonance and cut-off frequency, both useful, but also lowering efficiency, not so useful. Remember the force equation $Force = Mass \times Acceleration$. In a speaker, acceleration is proportional to displacement, which in turn is proportional to SPL.

The other interesting aspect is the phase relationship between the output from either end of the cannon.

This relationship would be different for every position in a room, so the amount of constructive or destructive recombination of the two sources would also be different, leading to varying frequency responses. What about the time response? Well here's another little science experiment! Find a piece of downpipe, any length you like and a rubber thong, size 8 or larger. Now thwack the end of the pipe with the flat sole of the thong. I haven't heard a canon in use, but that's the kind of colouration I would expect a pipe to produce on transients. (See following article on Cannons. Ed)

"Servo" Systems

Some time ago a number of motor driven so called "servo" sub woofers became available. They were not a true servo system in the sense that they did not use feedback to control output. Rather the term servo was used to imply the method of driving diaphragms indirectly by belt drive from a rotary shaft motor was superior to moving coil speakers. Let me make something perfectly clear, speakers are linear motors anyway and the force equation $F (force) = B (magnet field strength) \times I (current)$ applies exactly as in a rotary motor. The additional mass in the indirect driving system must reduce system efficiency, all other things being equal.

The problem with indirect drive results from the conversion of rotary to linear motion (Figure 5b). Remember your mother's sewing machine, it did a similar thing converting rotary motion into reciprocating linear motion. That annoying mechanical clicking noise was caused by backlash in the linkages, and if you listen closely you'll hear similar clicking noises in a "servo" subwoofer. In every other respect, these systems are limited by the same rules governing excursion limits, low frequency cut-off and maximum output SPL's as any other similarly loaded system, be it band-pass, reflex or sealed.

The BottomEnd Line

I would have to say that my preference for PA subwoofers is a bass reflex system, slightly overdamped. Some readers may remember the Electro Voice "Step Down" designs, where the tuning was lower in frequency than for an optimally flat alignment.

special equalisers to bring the response back up, but I much preferred the unequalised sound as the eq emphasised the ringing of the system tuning. Without it the base response died gracefully as frequency got lower.

A simple "fix" for over "ringy" reflex systems is to put a small amount of damping in the port. Try a strip of rolled up Dacron ("Innerbond") or similar. Be careful not to cause a buzz as a lot of air oscillates in the port. You might have wondered why Bose 802's have a filter in their ports. It isn't to keep vermin out, but to set the system damping and improve driver control.

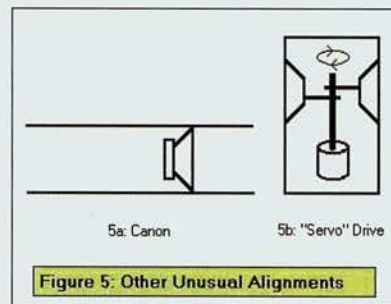
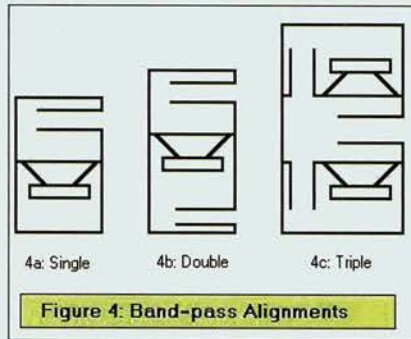
I haven't auditioned any subwoofers in the current crop, so my impressions relate to some years ago. The most impressive subs I have used are the Turbosound TSW 121's. These are a 21" reflex design with awesome output capability and absolutely tight bottom end. I used six a side a couple of times at an outdoor world music event and they kick arse! The first time we used them (with TMS 3's up top)

we got three paragraphs of a newspaper review extolling the virtues of the PA! Rare indeed!

Club and house music generally needs a lot more low frequency output capability than the same volume of rock music, as well as another half an octave or so of extension. If you're into house, look for a sub that claims 35 - 38Hz, at least you should get a good solid 50Hz. I had an installation in a club that used 26" "earthquake" drivers in a 13 cubic foot reflex system that was absolutely solid to 25Hz. This coped with anything thrown at it - until the punters kicked the cones in!

A word on power handling is probably prudent here. Imagine you build a wooden box, line it with a nice fluffy insulating lining and then stick an old-fashioned 1000-watt bar heater into it. How long until it catches fire? Now do you believe that 1000 watt sub rating?

At least 90% of the power delivered to a bass driver ends up as heat dissipated in the voice coil, which is nicely enclosed by an insulating magnet structure stuck in a nice little thermally insulated box! (The other 10% may end up as sound in a really efficient system.) If you really must try to run your speaker up to it's rated power handling, it won't be long before the speaker becomes an expensive fuse, protecting your amplifier from gross abuse!



Your writer: After a long stint at the Adelaide Festival Centre, **John Matheson** now works at Bassett Consulting Engineers.

He has joined the Bassett team to add electro acoustics and theatre design to their existing portfolio of mechanical, electrical, acoustics, fire, risk management and industrial engineering. Bassett's have offices in all mainland capitals.



Question: **When TOO MUCH BASS is never enough - what do you DO?**

Answer: **BUILD YOUR OWN BASS CANNON!**

By John Grimshaw

Firstly, a warning for the acoustically challenged. Constant low frequency sound at high sound pressure levels WILL PERMANENTLY damage your hearing.

That being said, here is how to make it happen!

If you have ever wanted to add that beefy bottom end to a big room, and you wanted an easy and relatively cheap way to do it, this may be the answer for you. As many of you would realise, the low frequency sounds that are sometimes needed in various performance and display situations can be difficult to achieve, particularly in very large rooms. The "loudness" of a low frequency sound wave depends on how much air needs to be moved in the room it is generated in. The larger the volume of air in a room, the more energy needed to move low frequency sounds in it. That is why it is very easy to make a car stereo with a very good bottom end, and very impressive when an outdoor concert sound system can knock you on your backside with each kick drum hit. It takes a lot of energy to make an outdoor sound system do that, but there is a solution that may be for those of you with small budgets and big ideas.

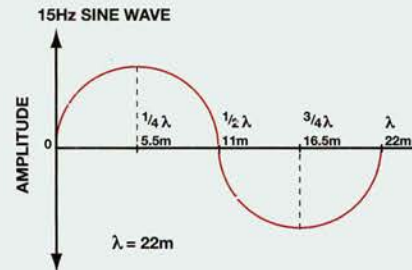
The Bass Cannon is a simple idea - Bose still make one that is tuned to frequencies the 802's and the 302/502 bass bins are not able to cope with in large rooms. The theory behind it is easy enough for most people to grasp, and building it is even easier.

Theory first...

(Otherwise you won't understand what you are doing)

Using physics currently taught to NSW Year 12 HSC students, you find out that $V=f\lambda$. ("V" is the speed of sound - use 330 m/s, "f" is the frequency in Hz, and "λ" or "Lamda" is the wavelength in metres) Fascinating stuff, eh?

Using this formula you can work out that the wavelength of 15Hz is 22m. You might think that 22m is a bit long for a speaker - and you would be right. It turns out that if you put 15Hz of sound in one end of a pipe that was 22m long, you would hear nothing at the far end regardless of how high you turned up the amp.



The above sine wave is a rough description of the full wave of a 15Hz signal. You can see that the waves are at their peaks at 1/2 and 3/4 of the wavelength. It is at these points that the sound particles are jumping up and down most furiously. Conversely, the sound particles are oscillating with the smallest amplitude at 1/2 of the wavelength and at the full distance of the wavelength. The points at which the sine wave returns to a zero value are called "nodes", and the peaks of the waves are called anti-nodes. It is the anti-nodes that we want.

So what frequencies can you tune your pipe for? The table below shows various frequencies, and their respective wavelengths, nodes and anti-nodes.

For any frequency you choose to tune your Bass Cannon for, there will be a harmonic frequency that will also be acoustically amplified as well. You can see this in the table above where both the 20Hz and 60Hz frequencies have an anti-nodes at 4.125m. At the same time, there will be two anti-harmonics for every frequency, one of which will be right in the middle between your two acoustically amplified frequencies. You can see this at 40Hz in the above example.

Building The Cannon

So, how can you use all of this information to build the cannon? Well, some very useful coincidences have occurred in manufacturing that can be used to great advantage.

Buy yourself a 6.1m, 250mm outside diameter (OD), PVC sewer
Please turn the page

Tuned Frequency	Freq Wavelength (node)	1/4 Wavelength (anti-node)	1/2 Wavelength (node)	3/4 Wavelength (anti-node)	Frequency Harmonic	Anti Harmonic
15	22	5.5	11	16.5	45	22.5
20	16.5	4.125	8.25	12.375	60	30
25	13.2	3.3	6.6	9.9	75	37.5
31.5	10.48	2.62	5.24	7.86	94.5	47.25
40	8.25	2.06	4.125	6.18	120	60
50	6.6	1.65	3.3	4.95	150	75
60	5.5	1.375	2.75	4.125	180	90

Build your own BASS cannon!

Frequencies, wavelengths, nodes and anti nodes

NB: using 330m/s as the speed of sound will be accurate enough for what we are doing.

When TOO MUCH BASS is never enough - what do you DO?

Build your own BASS cannon!

Continued from previous page

pipe and you are half-way to having your new speaker. This product is referred to as "225 Sewer Heavy". If you source a second hand pipe, I would highly recommend ensuring that it was not previously used as a sewer pipe. NOT using a recycled, previously used sewer pipe – for obvious reasons. Purchasing this a new pipe could will set you back \$600, if you are not friendly with a plumbing supplier. Also source an 8" sub-woofer driver. You can probably pick one up from the usual sources like Jaycar or Altronic. The one I used was from WES Components, who have Cerwin-Vega 150W RMS 8" sub-woofers for around \$159. They also carry a 250W RMS model for \$199.

Cut a 150mm piece off the unflanged end of the pipe, and then cut a small section out of the cut piece so that it will fit snugly inside the remaining 5.95m of pipe.

Mount the 8" sub-woofer inside the cut piece, using the small angle brackets and counter-sunk head bolts you can buy at any hardware. Be sure to keep the fit inside the main pipe as snug as possible as the speaker requires a reasonable seal for it to work properly. Attach at cable to your speaker and slide the completed driver unit into your pipe. You are now ready to tune your speaker.

You will notice that the 1/4 wavelength anti-nodes for 25Hz and 31.5Hz are 3.3m and 2.62m respectively. Conveniently, the sum of these two lengths (5.92m) is very close to the remaining length of pipe. So, you could slide your driver roughly 2.62m into your pipe and then you have tuned your pipe for 25Hz and 75Hz on one side of the pipe, and 31.5Hz and 94.5Hz on the other. In PA use, hopefully your existing system could handle frequencies down to around 50Hz. If you can send a good low pass signal to this speaker, it will add the punch right down the bottom that you are looking for. I would suggest only allowing 50Hz and lower signals to the speaker as the harmonics can sound like they are recorded in a train tunnel.

Some things that will reduce the effectiveness of the cannon are holes in the pipe, and a sloppy seal around the driver. The acoustics of this design depend on the pipe and the sliding driver remaining airtight.

If you find you want *even more* bass sound and you have already installed the largest wattage bass driver you can find, you could mount two drivers together, facing each other, with one wired out of phase with the other. This theoretically doubles the output of the one driver, but I haven't tried this (yet!).

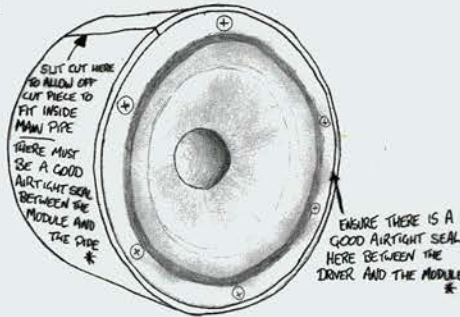
Another option to get more energy would be to cut the pipe into the desired frequency lengths, mount the driver (or dual drivers) right at the end of each new pipe, and seal the pipe at the driver end. You will get an advantage in the acoustic design doing this,

and you will also need a driver for each pipe.

Because you are using twice the number of drivers and a better acoustic design, this will immediately more than double your output. However, this option will only work if you seal the pipe at the end that you mounted the driver. A cut piece of 18mm ply or MDF will be fine, and will also provide a place to mount the cannon / speaker connector. Make sure that whatever the connector you use, no air can escape through it.

BASS CANNON DRIVER MODULE

FRONT VIEW



*TAKE NOTE !!!

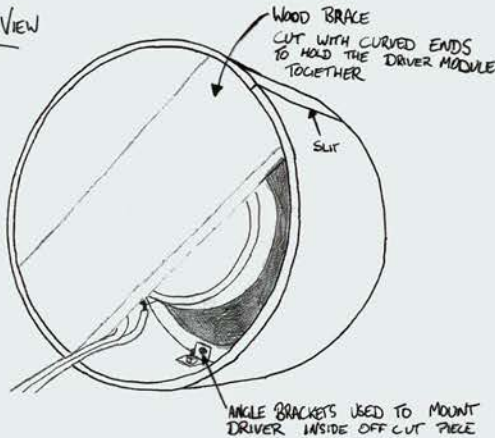
Testing The Cannon

If you don't have a spectrum analyser handy, don't worry. Get yourself a copy of the Alan Parsons Sound Check CD from RS Components. (He recently released a sequel to this popular CD, called Sound Check 2, which has some additional tracks to the original). Using this, a reasonable microphone and a VU meter (preferably analogue), you can test your new speaker. Play the track with the 25Hz signal, place your mic in front of the 25Hz output port – or the end of the pipe that is furthest from the driver, and plug your mic into

the device that has the VU meter. Now move the driver in and out until the VU meter is at it loudest point. You have just tuned your pipe to 25Hz.

If you are using the 6m version of the system, you will find the other end of the pipe will be tuned to approximately 31.5Hz. You can test this using the sine wave sweep track on the CD. As the sound sweeps up from less than 25Hz to around 50Hz, you will hear the peaks and troughs in the sound for each end of the pipe. With both ends tested in unison you should find a reasonably flat response from 22Hz to about 36Hz.

REAR VIEW



Using The Cannon

Fly the speaker into an unobtrusive position in the ceiling, and you are done. Although, sometimes it is hard to be unobtrusive with a 6m length of 250mm pipe.

In reality, what this speaker will do is add bass energy into a room. In a room that is 10m x 20m x 3m, (600m³) the test

results were very impressive. Windows rattled, and we all threw our hands to our ears. You may not be as impressed when you hear the speaker by itself in a larger room like an 800 seat auditorium, but as part of a full PA system it will have a profound effect.

ABOUT your writer:

John Grimshaw is the theatre manager at Sydney Grammar School, where the students call him DR G. He is also acting technical manager at the Ensemble Theatre.

Email address: jwg@sydgram.new.edu.au



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3 very nice nearfield studio monitors

MEYER SOUND HD-1 High Definition Audio Monitor, ATC SCM20 ACTIVE PRO SERIES monitors, and JBL LSR28P Linear Spatial Reference Bi-Amplified Monitor System compared and auditioned. Sid Kidman reports:



In the following discussion, the above three very nice pairs of self powered studio monitors are compared and evaluated by the author, with the help of three people who have well developed listening skills, associated with their professional studio "connections".

The three judges who kindly volunteered their ears and time are: **Bruce Bedwell**, Operations Manager, Channel Seven Brisbane, who gained early experience at the BBC

studios in London. **Mat Connolly**, is a recent B. Mus. graduate from Griffith Uni. in Music Technology / Sonology, as is **Leon Zadorin**. Mat has recently purchased a Pro Tools hard disk recording system, and has been sharing time between doing sound for film and video, and consulting to customers of various high-tech equipment.

Leon has recently completed a Masters degree at QUT in modern composition and technology, and also has engineered at Grevillea studios.

Each "listening" session was conducted individually, with the same pseudo-random presentation of speakers, and single blind listening so that no visual cues were available. The listener was seated at the axial junction of each pair of monitors, such that an equilateral triangle (sides 1.3 meters) between the speakers and the subjects ears was formed. The setup minimised room reflections, in particular, early reflections which are those under 50 milliseconds.

This is in keeping with best studio practice.

The location was the author's studio, and listening conditions were judged acceptable by each of the participants. Each judge used personal reference material to compare the monitors, and each test was carried out at a consistent reference level.

A five point Likert scale (excellent, good, average, poor, bad) was used after each listening subset, to obtain ratings from each judge, on various attributes, listed as:

- Definition - ability to reproduce detail.
- Balance - correct weighting of high, mid, and low bands.
- Functioning of High, Mid, and Low, considered individually.
- Stereo capabilities: Appropriate Field Width, Depth, & Detail.
- ... and the Speaker Transparency - the ability of the physical presence of the speaker to disappear from the sound.

The judges were also asked to rate the monitors with respect to versatility - ability to cover different styles.

At the end of each blind session, all was revealed, and further discussions took place. Whilst the full set of scaled results are not printed in this article, an analysis of results and trends has formed the basis of this discussion comparing the three models. It is worth

~ COMPARISON ~

noting that each judge, whilst not able to distinguish which speakers were presenting at any particular instant, gave consistent ratings across tests. This gives good weight to the validity of the testing procedure, and the listening expertise involved.

Physical Characteristics & Appearance

The MEYER HD-1 monitors are the most traditional in construction and appearance, employing tried and proven methods. The construction is of well braced wood ply with an attractive black gloss wood grain finish.

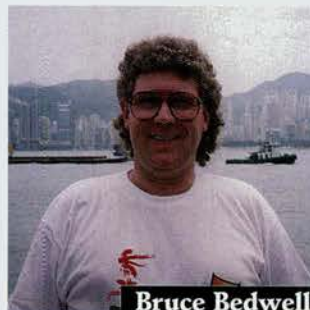
Weighing in at 23 kg, the HD-1 stands 406 mm high, 305 mm wide, and 420mm deep, including the heat sink at the back. The edges are radiused at 10 mm. The front panel houses the 200 mm low frequency transducer (50 mm coil) and the 25 mm HF unit (25 mm coil) in conventional layout.

The internal volume is vented by two tubes of 50 mm ID and 335 depth, one adjacent each lower corner.

Both drivers are proprietary designed, the HF unit having an impregnated (bright green) silk domed radiator. The MEYER SOUND badge, and a dual purpose led, (green for normal operation, red for overload), complete the front facade, along with corner inserts to carry the grill.

The rear panel is routed to fit the black powder coated steel chassis, which internally carries the

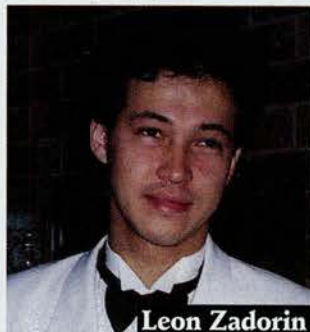
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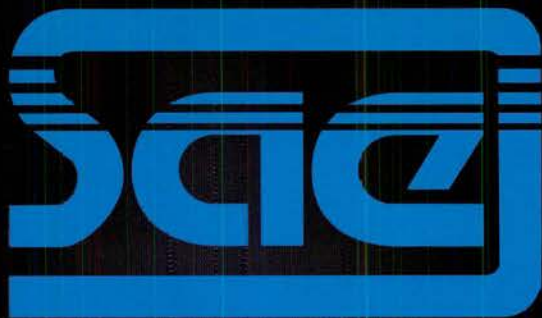
Bruce Bedwell



Mat Connolly



Leon Zadorin



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PRO AUDIO NEWS

3 very nice nearfield studio monitors

(continued from previous page)

preamp, electronic crossover ("pole-zero" optimised for flat phase response), power supply, and high and low frequency mosfet amps, and the heat sinks externally. The low and high amps are quoted at 150 and 75 watts burst power respectively. Across the top are arranged the on/off switch, AC power input, supply voltage selection, diagnostic terminal, toggle for +4/ -10dB input level, and signal input XLR.

Meyer offer a substantial warranty, and see fit to install a shock registering device on the back, to protect their warranty. The visible machining and fitting are of the highest quality, and probably indicative of this quality being carried throughout the internal manufacture.

A pair of the HD-1s will set you back about eight grand.

The ATC SCM20-A monitor is a radical departure from traditional presentation. (They even come in special fibre glassed travelling cocoons.)

A cast composite material speaker baffle is bolted to a cast metal case with large cooling fins at the back, to form the enclosure. Here, beauty is definitely in the eye of the beholder, but the method of construction in physical and mechanical terms proves to be practical, if somewhat heavy, at 30 kg.

It occupies rectangular dimensions of 448 mm high, by 270 mm wide, and 310mm deep. However it is far from rectangular. Just below the middle of the speaker baffle is the specially developed 160 mm low frequency driver with the 25 mm silk impregnated dome tweeter just above it. The baffle bevels away at almost 20 degrees, into a radius of about 15 mm.

The outline of the sides and back, including the heat sink fins, subscribe a half ellipse (long axis). The top and bottom are gently convex upwards. The ATC super linear decal is recessed and in subtle black badge with blue printing, just under the LF driver, with the on/ overload indicator led in the centre bottom.

A rectangular block at the lower rear houses the on/off switch, power receptacle, voltage regulation, fuse, level adjustment, input XLR, and a bass increment six position switch, ranging from 0 dB + 6 dB. This monitor is of infinite baffle construction. The crossover point is 2.8kHz, and the claimed substantially class A type amps produce 250 watts for the bass/ mid driver, and 50 watts for the high frequency unit. Two rubber feet in front, and an adjustable screw type leg at the rear, support this speaker. The cost is listed at 12 Australian grand for a pair.

The JBL LSR28P monitors adopt a spatially conventional presentation, but there all similarities end. Clever use of current technology and compounded plastics are



ACTIVE-LOUDSPEAKERS

dB TECHNOLOGIES

employed in production. The speaker baffle is the front panel, and is contoured at the edges in an elliptical shape, with a front to back radius of 35 mm and 20 mm for the side to side radius.

The remainder of the cabinet is a moulded plastic, with a mat black stippled finish. The edge radius is 10 mm all round. The thin silvered plastic strip which smooths the eye line over the junction of the front panel to the rest of the cabinet, gives credence to the idea that JBL have deliberately avoided costly cosmetics. The various components are finished with neat edging, and then mounted and sealed into cutouts in the mouldings. This looks like cost saving on production, which is passed on to benefit of the customer, considering the purchase price around six thousand dollars a pair.

The monitor weighs in at 20.5 kg. and stands 406 x 330 x 324 mm (H x W x D). Mounted on the speaker baffle are a specially developed 200 mm low driver with twin 38 mm voice coils, and an intermediate motional feedback coil, and a HF unit with a 25 mm damped titanium diaphragm at the throat of an Elliptical Oblate Spheroidal Waveguide.

A tiny led mounted in the lower left corner of the HF flair indicates operation status. A small JBL badge is sunk into the lower right corner of this flair.

The upper three fourths of the rear panel mounts the combined cast heat sink and box vent. The vent is about 230 mm deep, and elliptical in cross section. The vertical axis is 50 mm in the middle, where the horizontal axis measures 110 mm. Half the rear of the vent is a plastic extension, and each end is well flared a more discussion on this later.

A rectangular panel at the base holds (from left to right) a dual input, accepting both XLR and stereo 6.5 mm jack, a recessed input trim, a bar of eight recessed micro-switches, which activate input trim, 4 and 8 dB attenuation, and five positions of speaker alignment, with regard to roll-off, and shelving options. On/off switch, voltage selection, fuse, and power receptor follow in placement.

There is a claimed 200 RMS watts of low frequency power, and 70 RMS watts for the tweeter. The crossover point is 1.8 kHz, and is achieved by a fourth order Acoustic Linkwitz- Riley.

Some company philosophy

Meyer have for a long time been big on phase alignment, having done much research and development with SYM System II, an instrument of analysis particularly with regard to phase. Meyer place emphasis on correct phase response, as well as amplitude response in the frequency domain, through the crossover.

Phase became big in the seventies, but a number of published papers differ in their findings. Harwood, ("Wireless world" January 1976) says phase linear systems are nonsense, while Aldose, ("Hi-Fi News and Record Review" April 1976) concludes subjects can hear the difference between phase aligned and non-aligned.

The jury is still out, but phase may be quite important in transients.

ATC have put much effort into eliminating linear and non linear distortion in the midrange. To achieve this they build a large and complex motor system for their mid range drivers. The voice coil is well underhung. (Yes, it refers to size. The coil winding depth is a good deal shorter than the length of the magnetic gap, allowing all the coil to remain in the full magnetic flux at full excursion.)

Also, compressed magnetic powder is used in the magnet structure, to reduce back EMFs due to eddy currents in the iron magnet. The latter appears a little in the realm of theory, but the results certainly were there in the tests.

JBL, have gone for a concept of "Spatial Reference". This idea has great merit. The Critical Distance is a reference which is defined as the distance from a source at which the reverberant field is equal in

(Please turn the page)



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3 very nice nearfield studio monitors

(continued from previous page)

strength to the direct sound. It would be much less than the listening distance in many studios, and hence an attempt to control the listening field from the source is worthwhile. In this case it appears CD is increased by increasing the Q (ratio of on axis sound to total sound) of the HF unit.

Some performance factors

The spiel in the brochures accompanying each monitor system couch each performance in best light, but in terms that are not precise. Only JBL quote RMS power, whilst Meyer quotes an accurate frequency response at +/- 1 dB, (40 Hz to 20 kHz) and ATC quote +/- 2 dB from 80 Hz to 12kHz. Each give special emphases, as previously mentioned, to that area of development where a sales edge is sought.

All three systems are limited by their maximum power output, to use in the near field region, if they are to function accurately.

With this in mind, both the HD1, and the LSR28P, are rather bulky in appearance at close range, as is the AT20, even with it's slightly thinner profile. Each needs substantial support.

Of course, each has more than adequate ability to generate enough SPL for even the most hardened of ears in the near field.

It is interesting to bear in mind that the function of near field listening is to eliminate early reflections, so that an engineer may hear without interference the early reflections in the recording room that are influencing the sound being recorded, due to such factors as mic placement with respect to near by surfaces produc-

ing specula reflections. This condition is probably not met in many studio control rooms.

Whilst each manufacturer has attempted to deliver the best result within budget limits, the speakers do have different responses, but each is in the class of very good, and it boils down to a question of individual preference, as will become apparent.

The two striking differences in design are bass reflexing in the JBL and Meyer, as opposed to infinite baffle (sealed enclosure) in the AT20, and the use of a damped titanium diaphragm (with flair) in the JBL - as opposed to impregnated silk domes in the Meyer and the ATC.

There was definitely more potent response from the two reflexed units under 100 Hz, compared to the flat response from the AT20s. The AT20s are provided with up to 6 dB of bass gain for situations where the lower response is deemed too weak.

In spite of the claim that the response of the HD1s are flat down to 40 Hz, both the JBL and Meyer exhibit up to 6dB of lumpiness at 40 Hz and 80 Hz, above room resonances, and above the response of both the ATCs and existing room monitors in this studio.

With a 40 Hz sine wave, at close to full power but before speaker breakup, there is a noticeable amount of noise from turbulence generated at the ends of the ports in the HD1s. This does not happen with music because there is not enough 40 Hz content. Also, it is the reason for the flanging on the single port of the JBLs. This flanging is effective in smoothing the air flow from the porting into the internal and external bodies of air.

At the other end of the frequency spectrum, there was more source hiss evident from the LSR28Ps. This is strong evidence that

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the titanium diaphragm is more efficient (peaky) in the 10kHz to 12kHz region.

Analysis of Likert Scale data

Statistical analysis of this data is not attempted in this article, but some trends are noted, and clearly indicate the relative merits of the three systems. Over all the tests, the raw data shows the number of times each speaker system was rated in each category.

Speaker	Number of rating incidents				
	Excellent	Good	Average	Poor	Bad
HD1	15	66	18	0	0
AT20	24	36	27	5	1
LSR28P	11	68	13	0	0

In the end he decided that the AT20s were probably exposing poorly recorded source material.

Mat was prepared to be more brutal in scoring where he considered weaknesses were evident, being quite picky with respect to results in the discrete areas of high, mid and low frequencies. As testing progressed, he tended to warm to the AT20s, but often favoured the Meyers. Both Bruce and Mat agreed that the AT20s revealed some quality of listening that was not immediately apparent, but offered great accuracy, and a higher degree of speaker transparency.

Only a Michael Jackson track provided the non synthesised material for Leon's session, and only in this track did the AT20s score highly. Leon proved to be a JBL man. Basically for Leon, the
(please turn the page)

Clearly, the Meyer and JBL mostly rate good, whilst ATC exhibit much excellence, but a degree of dichotomy. Closer analysis of results shows that the AT20s consistently scored well for detail, midrange function, stereo detail and transparency, but were sometimes thought deficient in aspects relating to bottom end. General opinion was that whilst the lows were accurate and possibly more tactile, the vented systems were preferred when considering bass response.

The ratings were clearly susceptible to the style of music being compared. Bruce Bedwell chose the widest selection, which included rock, jazz rock, big band, and some orchestral and some operatic music. Mat Connolly chose mainly rock, guitar rock, some techno, and some orchestral, and Leon Zadorin was big on techno.

Whilst the judges were not readily aware of which speaker was presenting during blindfolded tests, the trend was to rate the AT20s more highly where live music was the source material. Bruce uttered comments such as "very good", and "very good too", "superb", and "excellent", but "awesome" was uttered several times for the AT20s. He sometimes found it difficult to decide whether some imperfections in material he knew well was source or monitor, and this occurred more frequently with the AT20s. He brought along one CD that he had mixed himself. After hearing it on the AT20s, he wasn't quite so happy with what he had done.

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design achievements of the LSR28Ps excel in reproducing techno, and in particular, the efficiency of the titanium diaphragm in its wave guide, suit the high content, and the flared porting works well with the often heavy and very low bass content. This was consistently indicated in Leon's scoring.

More technical considerations

In the past, building good speakers was considered as more of an art, and builders gained a reputation if they produced good results. Experience played an important part. Now science also plays an important part. For example, one may wonder about the concern for radiused edges on the speaker baffle. Most people concerned with good sound are now aware of placement of speakers with respect to walls. Walls cause reflections back to the speaker, and some frequencies are in phase, and some out, depending on the path length to the wall or walls.

The inverse of this happens at the edges of a speaker box. The baffle is a half space reference, (except for designs such as JBL's wave guide), and falls away to three quarter space at the edge. This is a type of impedance change in the air, and will cause some back reflections, which will in turn be in or out of phase with the output of the speaker. Of course the dimensions of the wavelengths effected must be comparable to the dimensions of the box, and mainly the function of the HF unit will be compromised.

Cutting away the edges helps alleviate this problem, and it is here we may look at the three monitors concerned and make some

assumptions about high frequency response. The complex beveling off of the AT20 may give it an "edge" in performance, but the wave guide on the LSR28P, is another approach.

Also the walls enclosing the speakers will vibrate in a number of modes which will interfere with the propagation of the sound. A simple check is to place one's hands on the various surfaces whilst pumping a goodly quantity of sound. The amount of vibration felt will be some indication of what may be escaping as panel resonances. Interestingly, whilst each monitor is quite differently constructed, they all exhibit minimal vibration.

Each of the monitors are self powered. The advantages of this pertain to building the most suitable amps for the speaker system involved. The powers differ by up to 100 watts, but only JBL quote a standard spec. so no comparison of the figures is meaningful. The best that can be said is that each has sufficient power. The AT20, whilst it has a very sophisticated low frequency motor, is in difficult territory for low Hz, because the small volume displacement of its piston reduces greatly its efficiency compared to its competitors. That it can compete at all says much for ATC driver technology.

A last word

As mentioned, at the end of testing, the blindfold was removed, and further discussion took place. Also there was some instance of more listening to settle curiosity. Bruce and Mat agreed that the AT20s were the most transparent, and that these would be the least tiring for a long session of mixing or mastering. Leon didn't think the AT20s were all that impressive, and rated the LSR28Ps as the most transparent.

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Each judge was somewhat tired at the end of each test, (the test run taking about two hours), because information had to be memorised and carried during each comparison run, which required great concentration. Credit is due though, because, as mentioned at the outset, responses were very consistent with respect to the speaker and the music track, for each party across the entire test. Even some common results appeared across judges for similar types of music.

After discussion, Bruce decided that all three sets of monitors were very good, but his choice would be the AT20s, followed by the Meyers, and then the JBLs. Mat chose the AT20s for film and dialogue, classical and jazz, the JBLs for electronic music, and the HD1s for rock and theatre. Leon, once the monitors were revealed to him, and he noted the number of times the LSR28s scored well, said "I'm glad of that"; and: "Now I know I don't have to spend a lot of money on monitors."

Each of these monitors will help you make recordings with care and quality. The choice lies with the prospective buyer.

ABOUT your writer:

Sid Kidman started as a musician in the '70s before realising that, well, owning a PA and truck would be a better idea. Perhaps he was wrong. More recently he is most of the way through a Masters Degree in the Design Science Audio programme at Sydney Uni. Sid lives in Brisbane.



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This year the ladies of the Fry household informed me that we would be holidaying in Port Fairy, a seaside holiday town on Victoria's south coast.

I hadn't been there since the middle 80's when it was a stop on a country tour with the Jerries. Their gig was at the historic old bluestone hotel, the Star of the West.

The Jerries, who would all root a brown dog on a chain if someone held it still for them, sang testosterone laden 'cock-rock' songs about girls and their rightful place in society *as they saw it!* Not a band that was overly in touch with their feminine side, but one that had a steady following of aggressive males.

So the audience that night consisted of the usual desperates who followed the band, plus a bunch of guys having a buck's night, and oddly enough, since you couldn't imagine that it was the sort of music that they'd like, a large group of women with

crew cuts and boiler suits - the local branch of the 'sisters are doing it for themselves' society.

Trouble brewing, you might think. And you'd be right!

It was a warm night, so the band had already knocked off a slab before the gig, and were encouraging the lads from the buck's night who were making a creditable effort to drain the pub dry. I'm not sure what the sisters were drinking, but it wasn't improving their opinion of the band or the audience.

Halfway through the band's cover of Billy Squier's 'The Stroke', where the buck's night boys were jumping on the table indicating exactly where the girls could indeed stroke it, one of the sisters snapped. A solid girl, with a bum like a working bullock, she leaped out of her seat and floored the nearest partygoer. Wham!

One punch and he was investigating the woodgrain of the floorboards the rest of the night.

The room erupted into chaos,

with the boys and girls slugging it out on the dancefloor and on the tables. The band, to their credit, could see the likelihood of them getting paid rapidly disappearing out the door and did their best to try and calm the audience down, but the girls were having none of it. They continued to hurl abuse and jugs and chairs at the guys, until the pub owner and most of the local footy team who had been drinking in another bar came in, herded everyone out into the street and closed the pub!

You know a gig must be really bad when it's too rough for a country football team!

The pub owner apologised to the band, paid them and gave them another slab as a bonus, then showed them to their luxurious accommodation while Wally and I packed the truck.

An hour or so later, we wandered up to the band and crew sleeping area which consisted of a single large room with a pool

table in the centre and eight mattresses spaced out around the walls. Truly hog heaven to the band, who were in the process of getting totally shitfaced.

As I drove past the pub last week, I saw they had a band playing, so I stuck my head in the door to see what the level of production had risen to, 15 years on.

Then, I had taken full production in there, with 2 ARX 1812 cabinets a side, 24 channel Gigmaster, fully miked up drumkit, separate monitor desk, and Wally's humungous lighting rig. Typical 80's over-the-top setup - I think there was still a little space left for the audience!

The band this day was using an eight channel desk for an on-stage mix, 3 vocal mics and a single passive 15 and horn box each side of the stage. Monitors? Forget it. Effects? Nope. It was a 90's version of the very basic systems I used to hire from Hughie Maclean's parents in the 60's!

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Phone: (02) 9667 0062
Fax: (02) 9667 0266
Email: jtlee@bigpond.com
Key Staff: John L'Estrange, Owner;
Al Craig, Productions Manager;
Shayne Kemp, Hires Manager



Lots of Watts Pty Ltd

1 Mary Parade,
RYDALMERE NSW 2116
Phone: (02) 9638 0302
Fax: (02) 9638 0331
Email: hire@lotsofwatts.com.au
Key Staff: Philby Lewis, Production
Manager; Daniel Munro, Hire.

Macsound Theatrical Supplies

11 Plane Ave,
URALLA NSW 2358
Phone: 1800 684 090
Fax: 1800 684 911
Email: info@macsound.com.au
Web site address:
www.macsound.com.au
Key Staff: Bruce McRae, Proprietor;
Julie Vanry, Sales Consultant.

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Email: saltbush@spin.net.au
Key Staff: Alan Moran, Partner;
Duncan Ritchie, Partner.

Showcorp Production Services

32 Punch Street,
ARTARMON NSW 2064
Phone: (02) 9966 9888
Fax: (02) 9966 9944
Email: admin@showcorp.com.au
Web site address:
www.showcorp.com.au
Key Staff: Jenny Gander, Marketing
Coordinator; Colin Baldwin,
Managing Director; James Burton,
General Manager.

**Sound and Visual Innovators
(SAVI)**

5/108 Warrane Road,
WILLOUGHBY NSW 2068
Phone: (02) 9417 4388
Fax: (02) 9417 2118
Email: savi@zip.com.au
Key Staff: Edgar Kramer, Director;
Ian McLean, Director; Harald
Mueller, Hire Co-ordinator.

T-PAC Sound & Light

141 Edwin Street North,
CROYDON NSW 2132
Phone: (02) 9799 7219
Fax: (02) 9799 7219
Email: t.pac@bigpond.com
Key Staff: Michael Orland, CEO;
Jim Piesley, Chief Audio Foreman;
John Pascoe, Chief Lighting
Foreman.

tp events

Suite 13, 51 Spring Street,
BONDI JUNCTION NSW 2022
Phone: (02) 9386 9494
Fax: (02) 9386 9490
Email: mica@tpevents.com.au
Web site address:
www.tpevents.com.au
Key Staff: Danny Yezerski, CEO/
Producer; Micaelely Gibson,
Business Development Manager;
Agastino Marcello, Production
Manager.

Lighting



Bytecraft Theatrical Pty Ltd

5/31 Bridge Road,
STANMORE NSW 2048
Phone: (02) 9550 3955
Fax: (02) 9519 3977
Key Staff: Paul Rigby, Hire
Manager; David Storie, Business
Development Manager.
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Activities specialise in supply of
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Bourke Road,
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Phone: (02) 9310 5222
Fax: (02) 9310 5511
Email: tony@chameleon-
touring.com.au
Key Staff: Pip Robinson, Senior
Production Manager; Brad Gander,
Production Manager, Scot Bason,
Production Manager.
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Email: samcomet@peg.apc.org
Web site address: peg.apc.org/
~samcomet
Key Staff: Sam Bienstock, Chief
Lighting Technician.

DMC Lighting and Sound

613a Elizabeth Street,
SURRY HILLS NSW 2010
Phone: (02) 9319 7177
Fax: (02) 9310 2685
Key Staff: Drew Muirhead,

Manager; Paul Hodder, Sales
Manager; Damien Hoffer, Hire
Manager.

Electric Sunshine

51 Nelson Street,
ANNANDALE NSW 2038
Phone: (02) 9550 6000
Fax: (02) 9550 5500
Email:
lights@electricssunshine.com.au
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Web site address:
www.gearhouse.com.au
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Chris Murphy, Lighting Manager,
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Email: graftons@idx.com.au
Key Staff: Robert Vanderent, Sales;
Adam Burbury, Hires; Kevin
O'Connell, Production.

Kandleworx Lighting

PO Box 1050
ARTARMON NSW 2064
Phone: 0419 613 109
Email: lucius@bigpond.com
Key Staff: Gavin Wright, Lighting
Designer

Laservision Macro-media Pty Ltd

50 Carters Road,
DURAL NSW 2158
Phone: (02) 9658 1000
Fax: (02) 9658 3217

Email: laser@laservision.com.au
Web site address:
www.laservision.com.au
Key Staff: Steven Johnson,
Presentation Manager; Trudy Cook,
Sales/Presentations; John Eustace,
Marketing Manager.

**Lightmoves Technologies (NSW)
Pty Ltd**

631 Parramatta Road,
LEICHHARDT NSW 2040
Phone: (02) 9560 0000
Fax: (02) 9568 2333
Email: lightec@lightmoves.com.au
Key Staff: Keith Sullivan, Hire
Manager; James Chung, Sales
Consultant; Jonathan Ciddor,
Managing Director.



Oracle Laser Productions Pty Ltd

5/222 Headland Road,
DEE WHY NSW 2099
Phone: (02) 9938 4466
Fax: (02) 9938 4504
Email: oracle@oraclelaser.com.au
Web site address:
www.oraclelaser.com.au
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Key Staff: Phil Planner, State
Manager; Andrew Davey, Hire
Manager.



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Email: tony@actionsound.com.au
Key Staff: Tony Hystek, Managing
Director; Alanna Ewin, Office
Manager; Brett Lunney, Audio
Engineer.

**Audio & Recording Australia Pty
Ltd**

35-38 Daphne Street,
BOTANY NSW 2019
Phone: (02) 9316 9935
Fax: (02) 9666 3725

Email: ian@audiorecording.com.au
Web site address:
www.audiorecording.com.au
Key Staff: Ian Richardson,
Managing Director; Garry Hall,
System Design; Damien Leonard,
Event Manager.



ASC
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Audio Sound Centre

1 McLachlan Ave
ARTARMON NSW 2064
Phone: (02) 5901 4455
Fax: (02) 9438 5069
Email: asc@audiosound.com.au
Web site address:

www.audiosound.com.au
Key Staff: Peter Mega, Audio
Rentals Manager; Nick Blaxell,
Audio Rentals Manager; Stuart
Glastonbury, Audio Rentals
Technician.

Band-Tech Productions

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Phone: (02) 9580 4838
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Email: codamail@coda-audio.com.au
Web site address: www.coda-audio.com.au
Key Staff: Michael Wilkie, Director; Philip
Murphy, Director; Leigh Williams, Administrator.

Compact Monitor Systems Australia

10 Stewart Street,
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Phone: (02) 9326 4076
Fax: (02) 9326 4340
Email: compact_oz@onaustralia.com.au
Web site address: www.compactmonitor.com
Key Staff: Bill Richardson, Managing Director;
Michelle Richardson, Partner; Gerry Wilkins,
Partner.

DMC Lighting and Sound

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SURRY HILLS NSW 2010
Phone: (02) 9319 7177
Fax: (02) 9310 2685
Key Staff: Drew Muirhead, Manager; Paul
Hodder, Sales Manager; Damien Hoffer, Hire
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Fax: (02) 9697 9900
Email: sydney.av@gearhouse.com.au
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Web site address: www.productionaudio.com.au
Key Staff: Matt Shaw, Branch Manager.

AV/Staging

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Phone: (02) 9318 1700
Fax: (02) 9318 1711
Email: austsyd@ozemail.com.au
Key Staff: Bruce McIntyre, Director; Joe
DeAbreu, Director; Ivo Frleta.

Big City Productions

26 Mitchell Road
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Phone: (02) 9318 2354
Fax: (02) 9319 3929
Email: bigcity@acay.com.au
Web site address: www.acay.com.au/~bigcity
Key Staff: Brian Findlay, Managing Director;
Alistair Peters, Account Manager; Alan Simpson,
Account Manager.



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Fax: (02) 9439 0377
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Key Staff: Brett Fitzpatrick, Account Director; Steve Brlekovic, Director of Operations, NSW; Matt Kirby, Technical Director.



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Fax: (02) 9697 9900

Email:

sydney.av@gearhouse.com.au

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Web site address:

www.haycomstaging.com.au

Key Staff: Annette Talarico, General Manager; Gabrielle McMahon, Sales Co-ordinator; Scott Saunders, Technical Director.

Staging Connections (Australia) Pty Ltd

Cnr Lilyfield Road & Gordon Street,
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Phone: (02) 9556 8888

Fax: (02) 9556 8800

Web site address:

www.stagingconnections.com.au

Key Staff: Peter Kolevas, General Manager.

Staging Connections (Coffs Harbour) Pty Ltd

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COFFS HARBOUR NSW 2450

Phone: (02) 6658 0410

Fax: (02) 6658 0420

Web site address:

www.stagingconnections.com.au

Key Staff: Chris Speedy, Managing Director.

Staging Connections (Wollongong) Pty Ltd

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Fax: (02) 4227 1149

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Key Staff: Phillip Delangen, Managing Director



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 www.videoreplaysystems.com.au
 Key Staff: Howard Christian,
 Managing Director; Peter Reedman,
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Other

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 CHATSWOOD NSW 2017
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 Web site address: www.icr-
 rentals.com.au
 Key Staff: Riad Frijat, National
 Sales and Marketing Manager

Pollard Productions Pty Ltd
 5 Bay Street,
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 Phone: (02) 9700 1233
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 Email: rigs@pollardprod.com.au
 Key Staff: James Ring, Managing
 Director; Valdis Sells, Project
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 Mackie, Accounts.

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 Web site address:
 www.topendsounds.com.au
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 Kerrie Alterator, Administration,
 David Houghton, Production.

Queensland

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 Email: allset@quicknet.com.au
 Web site address:
 home.quicknet.com.au/allset
 Key Staff: Wayne Appleton; Steve
 Hartley; Wendy Brough.
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 Glenview Road
 UPPER COOMERA QLD 4210
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 Key Staff: David Lee-Jay, Partner;
 Sheila Lorraine, Partner.

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 Fax: (07) 5527 3181
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 Director; Sandra Barreau, Confer-
 ence & Special Events Manager.

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 Email: odcp@odyssey.com.au
 Key Staff: Russell Coffey, Hire
 Manager; Nicole Derepas, Office
 Manager; Ann Condon, Administra-
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 Email: scl@winshop.com.au
 Key Staff: Leon Schuster, General
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Skypak Lighting & Production Services Pty Ltd

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 Key Staff: Craig Fussell, Brian
 Story.

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 Email:
 stagingdimensions@bigpond.com
 Key Staff: Tony Noble, Production
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 Email: selconnell@aia.net.au
 Key Staff: Selwyn, Owner.

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 Phone: (07) 3219 0500
 Fax: (07) 3219 0511
 Email: visualinn@universal.net.au
 Key Staff: Cam Gunning, Sales
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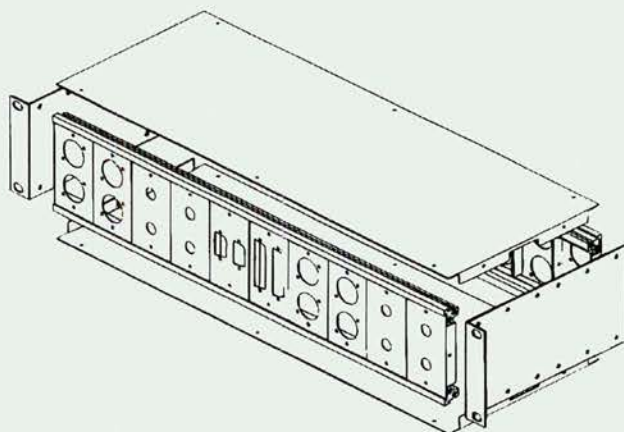
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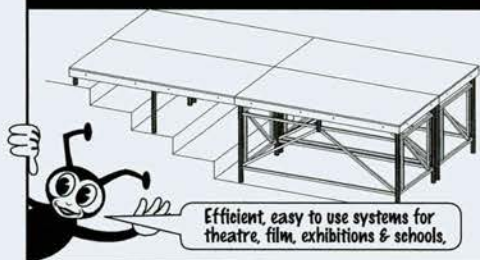
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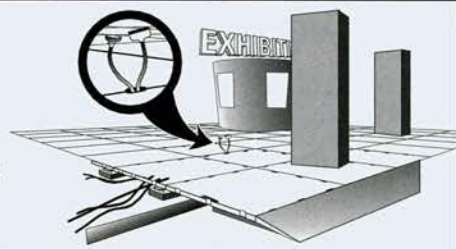
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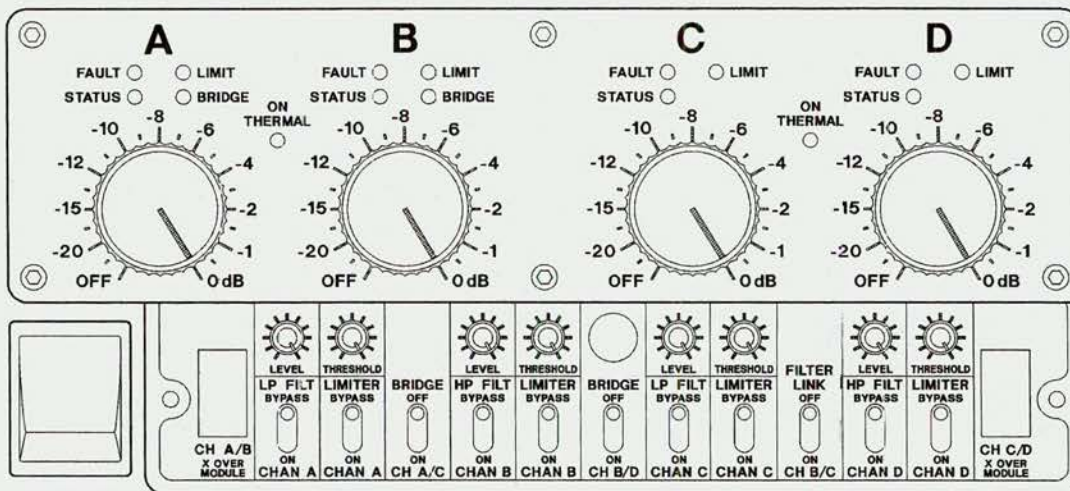
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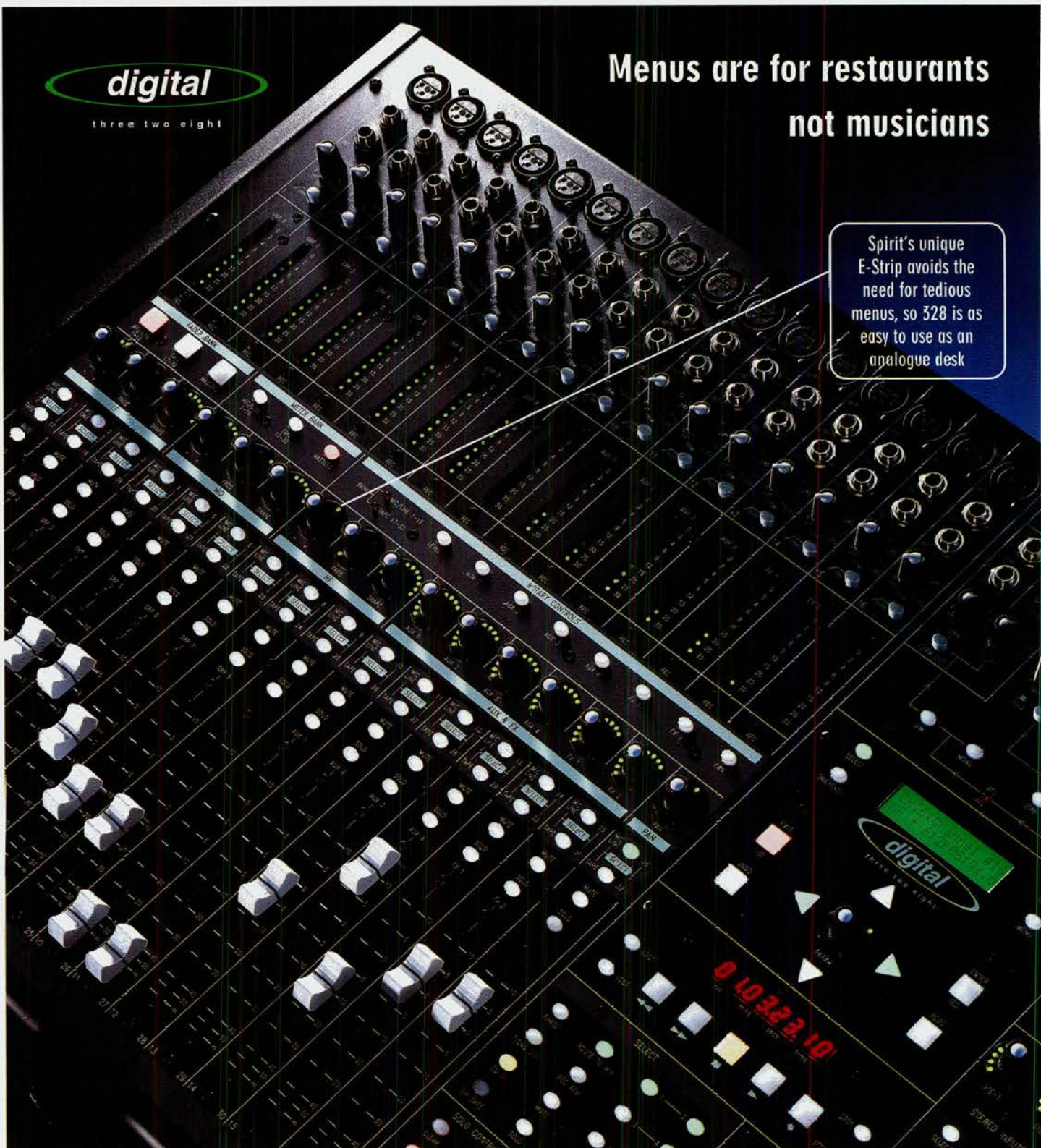
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Gearhouse Perth

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ing Director; Pam Bell, Operations
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Fax: (08) 9221 4991
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Other

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Phone: (08) 9221 9661
Fax: (08) 9221 9662
Email: perthav@perthav.com.au
Key Staff: Peter Bluewett, Manag-
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How to do it

DUNCAN FRY'S LIVE SOUND MIXING SERIES

- CABLES & CONNECTORS (Part 11)

Lead Me To It

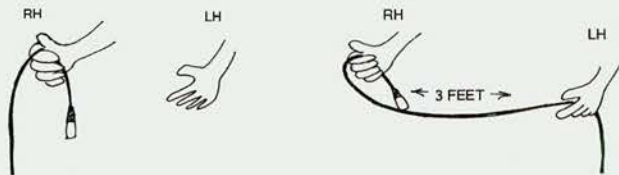
Leads and cables connect the whole system together, and faulty ones are the curse of the PA business. They will all break down sooner or later in strict accordance with Murphy's Law, but with reasonable care in their handling it can be much later rather than sooner. So the first thing to learn is:

How to coil up a lead

Rule #1:

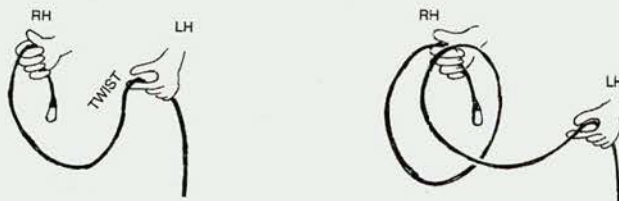
'Never loop leads of any kind over your arm and elbow.'

There are several ways that you can wind up leads safely, and the following is one of the most common.



Hold lead in Right hand with the plug facing towards you.

The Left hand loosely takes hold of the lead in front of the Right hand and slides along the lead until the hands are about 3 feet (1 metre) apart.



Hold the lead between the thumb and first finger of the Left hand and bring it towards the Right hand, giving the lead a small twist away from you as you do it.

Loop it up in the Right hand next to the existing lead and start again.

Sounds very complicated, but get someone to show you once and it's so straightforward that you'll never forget it. You'll also find that the lead has a particular way it wants to wind up, so try to follow what the lead wants to do. Don't force it.



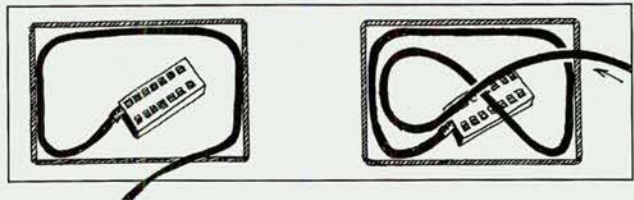
When all the lead is looped up in the Right hand, tie the loose end around the looped up lead in a half hitch. Not too tight - just enough to hold it all together. Put it in the leads case and find another. Look after all your leads like this, and you lessen the chances of them dying on you at a crucial time.

The Multicore Snake

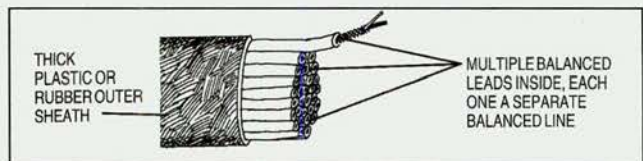
This is the thick cable that runs all your microphone lines down to the mixing console, and your outputs back up to the amplifiers. It is the PA system's lifeline, and you must look after it. Treat it very gently, let it coil the way it wants to. Don't force it to coil up

against the way that it wants to. Even a couple of non working lines in it can cause severe problems at the gig.

When you are packing the snake, put the stage box end in first and start to lay the cable out in the bottom of the case in the biggest loop you can make. If it doesn't want to go one way, halve the loop size and make a figure-of-eight pattern until it starts to lay flat again. Continue looping it until it is all in the case. Don't tie any knots in it; just let it lie there. Don't try to loop it up on your arm; it's not good for it and it gets very heavy.



Although the multicore snake looks very thick and strong, in reality it is a lot of very thin leads. It consists of individually shielded multiple pairs of cables, and is known as 12 pair, 20 pair, 32 pair and so on. All these individual leads are sheathed in a thick layer of plastic for protection.



At one end the snake is connected to the stage box, either permanently or with a multi pin connector that enables the stage box to be disconnected for packing. This stops the cable being strained where it joins the stage box.

Just make sure you remember to pack the stage box as well!

The other end is fanned out into tails, each with a male XLR type connector on it, that plugs into each channel on the mixing console. When you are plugging these in to the console, make sure the weight of the cable is supported. Don't let the whole weight of the cable dangle from one connector, or you'll have problems when that one little solder joint gives way.

If you are fond of speedy setups, you could tape a separate pair of long microphone leads to the multicore snake as main Left and Right sends to the power amplifiers.

Purists will throw their hands up in horror, but since the console and the effects rack must be on the same AC power as the rest of the system, you could also loosely tape a long power cable to the multicore snake as well. If you find it induces a lot of hum, well just untape it and don't do it again! Personally, though, I've done it for years with no problems at all. It's up to you.

Just remember to have the power cable turned around the right way! Socket at the console end, plug at the other. It's a lot of retaping if you get it wrong!

This is extracted from the top selling book: **LIVE SOUND MIXING**, by Duncan Fry. © D.R. Fry 1998. ISBN0 646 11235 X. Retail: \$39.00. Available from book stores and music shops everywhere, also through the Connections Shop, call 1-800-635-514.



BASF NATIONAL TRACKING GUIDE

ARTIST PRODUCER ENGINEER/PROGRAMMER NOTES

New South Wales

A # Sharp Jeff Cripps Tel: (02) 9153 9988 Fax: (02) 9541 1518. 24 Track 1"				
Oatley West Primary School	Jeff Cripps	Jeff Cripps		CD
Mercantile Mutual	Jeff Cripps	Jeff Cripps		CD
Ret Law	Jeff Cripps	Jeff Cripps		CD
Dennis McNamara	Jeff Cripps	Jeff Cripps		CD
ABH Recording & Rehearsals Richard Bartolomei Tel: (02) 9601 4552 Fax: (02) 9601 4552.				
16 Track Digital, Voice Overs, Demos, 5 Clean Rehearsal Rooms				
IBM	Richard Bartolomei	Mitch Wright	Telephone Voice Recording	
CardLink	Richard Bartolomei	Wayne Camilleri	Telephone Voice Recording	
Jennifer Hilary	Richard Bartolomei	Mitch Wright		Demo
Aphek Studio Greg Dixon Tel: (02) 9876 8170 Fax: (02) 9868 5435. 16 Tracks 1" Analogue				
Mark Peterson	Artist/Greg Dixon	Greg Dixon		Album
Sai Paradise	Band/Greg Dixon	Greg Dixon		Album
Logosdor	Andrew Heap	Greg Dixon	Kid's Songs	
Greg Dixon	Greg Dixon/Doug Williams	Greg Dixon		Album
Baraka	Band	Greg Dixon		Demo
Humble	Band	Greg Dixon		Demo
Audioscapes Jim Blackfoot Tel: (02) 9550 4205 Fax: (02) 9550 4205. ProTools 24 Post Production				
Geraldine Turner	Brian Castles Onion	Jim Blackfoot		Album
Max Lambert	Artist	Jim Blackfoot	"Playschool" Album	
Monica Trapaga	Julian Gough	Jim Blackfoot		Album
NSW Ames	Darrell Hiltton	Jim Blackfoot	Educational Tapes	
Paul Chubb	Burbank Animation	Jim Blackfoot		Post Sync.
Charing Cross Recording Studios David Sykes Tel: (02) 9387 8362 Fax: (02) 9369 3910.				
Quality Neve 24 Track Automation				
Colour Blind	Dave Trump	Dave Trump		Album Mixing
Big Heavy Stuff	Wayne Connelly/Band	Wayne Connelly		Album Mixing
Blue House	Jeremy Allom	Jeremy Allom		Album Mixing
Bluebottle Kiss	Jordan Bach	Jordan Bach		Tracking
St Jude	Wayne Connelly	Wayne Connelly		EP Mixing
Damen Gerard Studios M chelle Owen Tel: (02) 9660 8776 Fax: (02) 9692 9915.				
24 Track 2" Tape Machine				
Lucy De Soto	Artist	Russell/G. Clark		Album Mix
Bloom	Band	Russell/Carter		Demos
Kill Lilli	Band	Russell		Demos
Nicola	Mark Williamson	Marshall		Album
Flywheel	Band	Russell		Album
Enrec Steve Newton Tel: (02) 0418 683 431 Fax: (02) 9874 0008. Analog/Digital Small Studio				
John Williamson	Artist	Steve Newton (E)		Album Tracking
Krystabell	Steve Newton	Steve Newton		Meditation CD
Festival Mastering Blanka Vukelic Tel: (02) 9395 8070 Fax: (02) 9395 8072. Mastering				
Mark Stockley	Mark Ovenden	William Bowden (E)		Album Demo
Yowie	Marty Irwin	William Bowden (E)		
Bock	Mark Henderson	William Bowden (E)		
Leadlight	T.J. Eckleberg	William Bowden (E)		EP
John Hill	Jackie Orszaczky	William Bowden (E)		
Festival Studio Blanka Vukelic Tel: (02) 9395 8000 Fax: (02) 9395 8072. Recording Studio				
Hard Ons	Ed Kuepper	Mark Thomas (E)		Mini Album
Josh Abrahams	Artist	Matt Lovell (E)		Single Tracking
Search Party	Jeff	Matt Lovell (E)		Album Tracking
Mark Stockley	Mark Ovenden	Matt Lovell (E)	Strings (Recording)	
Golla, Date & Zog	Wally Wrightman	Matt Lovell (E)	Album - Record & Mix tracks	
JMF Recording Studio Fran Esther Tel: (02) 9790 4097. X850. 24 ADAT, Grand Piano				
Paul Turner	Paul Turner	Mike Ward		CD Album
Leonie Butler	Erin Hellard	Mike Ward		Demo
Darko Zvic	Artist	Ralph Esther		CD Album
Jukebox 90	Band	Ralph Esther		Demo
Darryl	Artist	Guy Saminaden		Demo Tracking
Nu-Town Studio Greg Hopping Tel: (02) 9516 3306 Fax: (02) 9516 3306. 16 Analogue/32 Digital				
Lonnie Gordon	Greg Hopping/Neven	Greg Hopping (E)/Loizou (PR)		Album Tracking
Roanna	Greg Hopping/Loizou	Greg Hopping (E)/Loizou (PR)		Single Demo
ELE	Greg Hopping/Loizou	Greg Hopping (E)/Loizou (PR)		Demos
Paul Nee	Greg Hopping/Loizou	Greg Hopping (E)/Loizou (PR)		Demos
Shield	Greg Hopping/Neven	Greg Hopping (E)/Loizou (PR)		Album Tracking
Paul Bryant Mastering Pau Bryant Tel: (02) 9748 0222 Fax: (02) 9748 6152. Mastering Suite				
Scalene	Rob Specogna	Paul Bryant (E)		CD Master
CJ Blues Band	Ian Casey	Paul Bryant (E)		CD Album
Bill & Audrey	Bill Chambers	Paul Bryant (E)		CD Album
Pete Wells Band	Russell Pilling	Paul Bryant (E)		CD Album
Grant Luhrs	Artist	Paul Bryant (E)		CD Album
Q Recording Richard Muecke Tel: (02) 9212 4851 Fax: (02) 9211 2627. Music recording studio				
Dannii Minogue	Ian Masterson	Richard Muecke		Tracking - Single
Suze De Marchi	Nuno Bettencourt	Richard Muecke		Mixing
Iva Davies	Artist	Simon Leadley		Orchestral Recording
Wendy Matthews		Brent Clarke		Orchestral Recording
Diana Ah Naid	Daniel Denholm/Buzz Bidstrup	Daniel Denholm/Paul Gomersall		Mixing
Rockinghorse Anthony Lycenko/Michael Worthington Tel: (02) 6688 4005				
Mobile 016 281 551 Fax: (02) 6688 4115. Studio A - 24 Track Analogue, Studio B - Pro Tools				
Grinspoon	Band	Greg Courtney		Album Tracks
Roller	Band/Anthony Lycenko	Anthony Lycenko		Album Demos
Marva Wright	Peter Noble	Michael Worthington		Album Mastering
Plastic Smash	Jo-Soledad/Zubin Henner	Zubin Henner		EP
Almo 8	Christian Pyle	Anthony Lycenko		Album Tracking
Sony Studio Sarah Tel: (02) 9383 6461 Fax: (02) 9383 6467.				
Recording facility with audio and video production				
Human Nature	Simon Tonx	Simon Tonx		Recording Track
CDB	Saturday Disney Channel	Tod Deeley		Interview & Recording

ARTIST PRODUCER ENGINEER/PROGRAMMER NOTES

Cherry	Michael	Tod Deeley	Further Recording
Funnel Web	Band	Simon Tonx	Recording CD
Agent 4	Band	Tod Deeley	Demo
Sound Level John Soane Tel: (02) 9552 3200 Fax: (02) 9692 9552. 24 Track Digital Hi8.			
Paris Digital Editing			
Brad Shepherd	Artist	Jason Blackwell (E)	Solo Project
Knuckleheads	Pat Salloch	Pat Salloch (E)	EP
Rodney Hollens	Pat Salloch	Pat Salloch (E, PR)	Spoken Word Album
Willie McCracken	Artist	Jordan Briebach (E)	Album
Fusion	Pat Salloch	Pat Salloch (E)	Album
Soundwarp Meredith Brooks Tel: (02) 9905 7144. Mastering/One off CDs			
Jersey Road	Matt Murphie	Meredith Brooks	Album
Blacksmith Hopkins	Artist	Meredith Brooks	Album
Gas	Mark Atkinson	Meredith Brooks	EP
Jack Nolan	Mike Stavrou	Meredith Brooks	EP
Katya	Artist	Meredith Brooks	Album
Studio Arts Productions Ed Lee Tel: (02) 4227 1715 Fax: (02) 4226 4204. Professional Recording Studio			
Agoraphobia	Ed Lee	(E) Ed Lee/Ben McGregor	Album
Rick Manns	Ed Lee/Artist	(E) Ed Lee	Album
Settlers Match	Band/Ed Lee	(E) Ed Lee	Album
Steve McQuade	Ed Lee/Artist	(E) Ed Lee	Album
Women Against Violence	Various Artists/Ed Lee		Compilation Album
Studios 301 Mastering Jacqui Espie Tel: (02) 9211 7301. CD Mastering Facility			
Mushroom 25 - Various	Mark Opitz	Don Bartley	Album
Stella One Eleven	Band	Don Bartley	Album
Utopian Babies	Dave Wilkins	Oscar Gaona	Single
Pollyanna	Matt Handley	Don Bartley	Single
Wendy Matthews	Stuart Crichton	Steve Smart	Single
Tumbleweed	Phil McKellar	Don Bartley	Album
Tiger Recording Greg Devine Tel: (02) 9922 4700 Fax: (02) 9922 3604.			
Human Nature	Paul Begaud	David Hemming	Album
Cherry	Michael Szumowski	David Hemming	Singles
Felicity	Paul Begaud/John Cain	David Hemming	Singles
Vanessa	Paul Begaud	David Hemming	Album
Top Cat Recording Studio Brad Wann Tel: (02) 6628 0843 Fax: (02) 6628 6331.			
Automated 24 Track Analogue 1" - 16 Track Digital. Mastering			
Synchronicity	Brad Wann	Brad Wann (E)	Album & Mastering
Renee Jonas	Brad Wann	Brad Wann (E)	EP & Mastering
School Production	Shane Parry	Brad Wann/Peter Evans (E)	Album & Mastering
Nodsphere	Shane Parry	Brad Wann/Peter Evans (E)	Album & Mastering
Instep	Band	Brad Wann (E)	EP Mastering
Trackdown Digital Simon Leadley Tel: (02) 9550 6890 Fax: (02) 9519 1258.			
Digital Music: Post & Film Recording			
Passion	Matt Carroll	Simon Leadley (E)	Album for Film
Hi Five	Chris Harriott	Simon Leadley (E)	TV Show
Flipper	Yoram Gross	Tim Ryan (E)	TV Show
KFC	Big Bang Theory	Simon Leadley/Tim Ryan(E)	TVCs
Iva Davies	Artist	Simon Leadley (E)	Album Overdubs
Troy Horse Mickey Levis Tel: (02) 9319 1799 Fax: (02) 9698 9494. 24 Track 2"			
Eskimo Joe	Mick Mullett	Mark Worrall (E)	Album
Dostumlar	Chris Wood	Mark Worrall (E)	EP
Harem Tree	Dave Trump/Band	Dave Trump (E)	EP
Young Liberals In Love	Burrito Boy	Mickey Levis (E)	TV Promos
D.I.G.	Band	Matt Shaw (E)/Blain Munning (PR)	Mixing
Velvet Sound Recording Studios Dave McCunn Tel: (02) 9283 5968 Fax: (02) 9264 3490.			
Automated 32Ch 24 Trk 2 inch			
The Whittlams	Rob Taylor	Rob Taylor (E)	Mixed 13 Tracks
Yeska	Charles Fisher	Daniel Clinch (E)	Tracked 2 Albums
The Charismatics	Simon Day	Tony Wall (E)	Track & Mix EP
Utopian Babies	Craig Portells	Craig Portells (E & PR)	Track & Mix Album
James Blundell	Artist	Greg Harris (E)	Tracking Album

Queensland

Arctic (AKA Looking for Cool Music) Alan Buchan Tel: (07) 3844 2199. Huge room, Neve & Otari 2"			
Chaise	Sam Panetta	Magoo (E)	Single
Chaise	Gary Kee	D.C. (E)	Album
Digital Paradise Ian Peters Tel: (07) 5527 0722 Fax: (07) 5527 0733. 32 Track Digital			
Various	Lee Conway	Ian Peters/Barry Pearson	Commercials
Various	Barry Pearson	Barry Pearson	Commercials
On Hold Plus	Ian Peters	Ian Peters	On Hold Phone Tapes
Trinity College	Ian Peters	Ian Peters	Demo Tracks
Kathleen Lackey	Ian Peters	Barry Pearson (PR)	Album Pre-Production
Grevillea Studios Jean Tel: (07) 3262 8422 Fax: (07) 3862 1422.			
Rough Red	Band	Bruce Jacobson (E)	Mastering
Scott Andrews		Bruce Jacobson (E)	Mastering
Vicky O'Keefe	Artist	Bruce Jacobson (E)	Mixing & Mastering
The Concubines	Band		Recording & Mixing
Vandersound Studios Eric Vandersande Tel: (07) 5546 8100. (07) 3806 8100 Fax: (07) 5546 8866.			
O2R, All Digital & Valve. Mastering, Multimedia			
Ian Robinson	Eric Vandersande	Eric Vandersande	Edit & Master to CD-R
B Grade	Russel Tomlin/Andrew Hines	Russel Tomlin	Mix, Edit & Master
Living Waters	Liviana Caloussi/Eric Vandersande/Andrew Hines	Liviana Caloussi	Tracking, Pre-Master
Brett Rattray	Eric Vandersande	Eric Vandersande	Edit & Master to CD-R
Zengari	Eric Vandersande	Eric Vandersande	Edit & Pre-Master
Arrowmist	Kyran Halpin/Andrew Hines	Kyran Halpin	Demo



How to do it

TOM MISNER'S PRACTICAL STUDIO TECHNIQUES

- PRACTICAL EQUALISATION (Part 11)

Parametric and Sweep Equalizers

A sweep equalizer offers control over cut and boost, and centre frequency. A parametric equalizer differs from a sweep equalizer because it offers a third parameter known as bandwidth - or 'Q' - which determines how large a band of frequencies, either side of the centre frequency, will be affected by any cutting or boosting.

Both parametric and sweep equalizers are very useful tools, allowing the engineer to isolate a particular frequency and boost or cut it. Parametric equalizers are the most useful and powerful, and are very popular with engineers. Some equipment manufacturers say their products have parametric equalizers, but in fact they only have sweep equalizers. A parametric equalizer must offer control over all three parameters (centre frequency, cut and boost, and bandwidth), or it cannot be called a parametric equalizer. Some parametric equalizers use rotary knobs for continuously variable control of bandwidth, while others offer a number of preset bandwidths that are selected with a switch.

Combination Equalizers

The equalizers found in mixing consoles usually offer a combination of different types of equalization. There is no such thing as the best mixing console equalizer, it is a subjective matter and you will find as many opinions as there are engineers. The one that the engineer is most familiar with will be the most suitable equalizer. A typical combination equalizer would include two parametric midrange bands and sweep /shelf type for the lows and highs.

Equalization in practice

The equalizer is the engineer's tuning instrument and, if used correctly, can blend sounds together while preventing them from blurring. The parametric equalizer, although the most versatile, can also cause the most damage: it has a tendency to smooth out the uneven response of most control room monitor systems, making your mix sound good in one control room but totally different in a second control room. (Control rooms often have a problem known as an 'acoustic well' which swallows up a certain frequency range. If the engineer boosts frequencies which are in this acoustic well, there will be no apparent increase of these frequencies in the monitor system. However this boost will be recorded by the tape).

Equalization is always done by ear and not by memorizing some frequency settings and applying them in all situations. The list below is only a guide to frequency ranges and their characteristics from the equalization point of view:

RECORDING INFO: Miking snare drums

To get a more explosive snare drum sound, use two microphones. Place one microphone a few centimetres away from the snare and another microphone about 2 meters above the snare. Place a gate across the distant microphone and key the gate with the close microphone. Mix both sounds onto one track of the tape recorder.

Extreme low frequencies: 20 Hz to 60 Hz

These frequencies are more felt than heard. They have very limited application in modern music recording other than for effects. If the producer wants these low frequencies they should only be applied for short periods of time, which increases their effectiveness. Too much extreme low frequency content will 'muddy up' the sound and send excessive level to tape. A further problem exists if the recording is played on radio: the radio station's broadcast limiter will react more strongly to a tape with excessive bass, making it sound quieter.

Low frequencies: 60 Hz to 300 Hz

This is the frequency range which is most important to the feel of music, and it contains most of the fundamental tones. Excessive boosting of this range results in a very 'boomy' sound, while excessive cutting results in a very thin sound. It is important to be aware of phasing problems which can be introduced by the equalizer if the bandwidth adjustment is too narrow.

Lower Midrange: 300 Hz to 2500 Hz

The entire midrange bandwidth (lower and upper) deserves the greatest time and attention because all sound systems can reproduce it. (Tip: If you divide your equalization time for each instrument into 100 units then you should spend about 50 units in the midrange area, 25 units for the highs and 25 units for the lows.) Adding too much lower midrange creates a 'telephone-like' quality because it tends to mask all other frequencies. Too much boost around 800 Hz will give a horn-like sound.

Upper Midrange: 2500 Hz to 5000 Hz

The upper midrange is important for acoustic instruments and vocal sounds. Boosting around 3 kHz will add clarity without increasing the overall level. Excessive boost will create a thin and distant sound and can also exaggerate tape noise/distortion.

Presence: 5000 Hz to 7000 Hz

Boosting this range often makes the sound thin and annoying. However, applying a boost of 3 to 6 dB around 5000 Hz will add additional clarity to a master tape and creates the impression of extra loudness. On the other hand, cutting a few decibel in this range will sometimes give an instrument a warmer sound.

High frequencies: 7000 Hz to 20000 Hz

Boosting this range while recording acoustic instruments will give clarity and transparency, but boosting these frequencies after processing through effects units will tend to add noise and add a 'hardness' to the sound. Boosting cymbals and vocals at around 12 kHz will "clean up" their sound. Cutting in this range will make the sound compressed and unclear.

This is extracted from the top selling book: PRACTICAL STUDIO TECHNIQUES, by Tom Misner. ©Tom Misner 1988. ISBN0 646 16704 9. Retail: \$40.00. Available from book stores and music shops everywhere, also through the Connections Shop, call 1800 635 514. Tom Misner is the owner of SAE International.



BASF NATIONAL TRACKING GUIDE

ARTIST PRODUCER ENGINEER/PROGRAMMER NOTES

South Australia

Adelaide Tape Duplicators Al Sankauskas Tel: (08) 8212 7111 Fax: (08) 8212 7228.			
Mastering/CD Manufacture			
Taste Like Children			CD Release
Turquoise			CD Release
Catholic Schools 1998			CD Release
Festival Music 1999			CD Release
Royden			CD Release
Disk-Edits Belinda Kent Tel: (08) 8340 1377 Fax: (08) 8346 3081. Mastering			
Pornland	Band	N. Clark	CD Master/Album
Kinetic Playground	Band	N. Clark	CD Master/EP
Black Taxi	Bradford/Wayman	N. Clark	CD Master/Album
Chris Finnen	Burge/Artist	N. Clark	CD Master/Album
Mike Festa	Artist	N. Clark	CD Master/Album
The Barkers	Bradford	N. Clark	CD Master/Album
JR Recording Darren Conway Tel: (08) 8410 6488 Fax: (08) 8295 3940.			
Temporal Lobe	Eddie Sikorski/Band	Eddie Sikorski (E)	Album
Sativa Witch	Eddie Sikorski	Eddie Sikorski (E)	Album
Queen Of Sheeba	Eddie Sikorski	Eddie Sikorski (E)	Album
Rufus	Eddie Sikorski	Eddie Sikorski (E)	Demo
Gifted Nigel	Eddie Sikorski	Eddie Sikorski (E)	Demo
Mixmasters Productions Mick Wordley Tel: (08) 8278 8506 Fax: (08) 8278 6295. 24 Track 2"			
Janet Seidel	David Seidel	Mick Wordley	Album
Borderers	Jim Patterson	Mick Wordley	Album Tracking
Chaotic Lounge	Les Karski	Mick Wordley	EP
Kaleidoscope		Mick Wordley	Mix
"E Type Jazz"	Mick Wordley	Mick Wordley	Album
Powerhouse Recorders Kim Horne Tel: (08) 8364 5669 Fax: (08) 8364 5669. 24 Tr Analog & 8 Track HD			
Alleygators	Ric Dance	Kim Horne (E)	CD
Roadblock Band	Joseph Baarda	Kim Horne (E)	CD
Bolix	Bob Armstrong/Band	Kim Horne (E)	CD
Tall Tails	Gita & Helen & Richard	Kim Horne (E)	Single
Turbo Love (France)	Didier et Didier II/KH	Didier & KH	Single
"the fridge" Nigel Sweeting Tel: (08) 8231 3588.			
Indulgence	Nigel Sweeting	Nigel Sweeting	Mixing Album
Fruit	Nigel Sweeting/Nissa	Nigel Sweeting	Demo
Snap To Zero	Band	Nigel Sweeting	CD
Missing Trees	Nigel Sweeting	Nigel Sweeting	CD
Southgate Productions	Lestee	Nigel Sweeting	Fashion Parade

Victoria

Back Beach Recording Mark Rachele Tel: (03) 5988 6948 Fax: (03) 5988 6948. 2" 24 Track, AutoMixing			
Non Intentional Lifeform	Band	Mark Rachele	Single Demo
Vicious Vinyl	Andy Van/Arden Godfrey	Mark Rachele	Various Singles
Bazark	Band/Adam Rhodes	Adam Rhodes	B Sides
Waylayd	Band/Greg Long	Greg Long	EP
Volition	Band/Greg Long	Greg Long	EP
Crystal Mastering John Ruberto Tel: (03) 9326 2318 Fax: (03) 9326 2318. Mastering			
Non Intentional Lifeform	Band	John Ruberto	Mastering EP
Shirley Billing	Artist	Joe Carra	Mastering Album
Circus Oz	T. Cole	John Ruberto	Mastering Album
Plasticine	Band	John Ruberto	Mastering EP
The Mistakes	Band	Joe Carra	Mastering Album
Dex Mastering Adam Dempsey Tel: (03) 9372 2266 Fax: (03) 9376 5118. Pro Mastering & Rest, 17 Yrs.			
Berth	Band	Adam Dempsey (E)	Single
Little Murders	Rob Griffiths	Ben Hurt (E)	Single
Ointment	Ken Shulman	Adam Dempsey (E)	EP
Leslie Avril	Greg Macainsh	Adam Dempsey/Chris Corr (E)	Album
Disney Records		Adam Dempsey (E)	Remastering
Lo Ricco Sound Studios Marcello (03) 9701 6220 16 Track ADAT			
The Methinks	Mic & Vic Strangers	Marcello Lo Ricco (E)	Demo Tracks
Re Sound	Thomas Reiner	Marcello Lo Ricco (E)	Post Production
Sophie Koh	Marcello Lo Ricco/Artist	Marcello Lo Ricco (E)	Demo
Globe	Marcello Lo Ricco	Marcello Lo Ricco (E)	Demo
Anthony Costanzo	Marcello Lo Ricco/Artist	Marcello Lo Ricco (E)	MIDI Program
Petrophonic Productions Petros Georgiades Tel: (03) 9553 0176 Fax: (03) 9553 0176.			
Digital Multitrack Recording/Midi Suite			
Mari Hall	Petros Georgiades	Petros Georgiades (E)	Backing Tracks
Client Direct	Jeff Richardson	Petros Georgiades (E)	Australia Post Tapes
Dr Jan Hall	Petros Georgiades	Petros Georgiades (E)	Hypnosis Tapes
Mark Joseph	Petros Georgiades	Petros Georgiades (E, PR)	Solo CD
Nick Charles	Petros Georgiades	Petros Georgiades (E, PR)	Documentary Tracks
Sing Sing Phil or Kaj Tel: (03) 9428 4622. 48 Track Analogue/Digital			
Something For Kate	Brian Poulsen	Brian Poulsen	Album & Mix
Screaming Jets	Ross Wilson	Kalju	Album
Dirty Three	Band		Film Soundtrack
Josh Abrahams	McGoo	McGoo	Mix
Robert Palmer		Julian Mendelsohn	Mix
Studio 52 Paul Higgins Tel: (03) 9417 7707 Fax: (03) 9417 5294. Studio A: 32 Track Automated, Studio B: 24 Trk Automated ADAT XT			
Steve Holgate	Artist	Trevor Carter/Andrew Meakes	Album
Cannon Jack	Band	Andrew Meakes	Album
Carols By Candlelight	Trevor Carter/Paul Higgins	Trevor Carter/Andrew Meakes	Live Album
Jaymz Phillips & Hinge		Andrew Meakes	Demos
Mark Samarias		Andrew Meakes	Demo
True Form Music Services Neil Gray Tel: 0500 509 509 Fax: (03) 9391 0907. 24 Track Digital, 12 Track Analogue			
Snakehipps	Neil Gray/Band	Neil Gray (E)	Mix Album

ARTIST PRODUCER ENGINEER/PROGRAMMER NOTES

SURDO	Rosco/Band	Ross O'Driscoll (E)	Album
Roger That	Neil Gray/Band	Neil Gray (E)	EP
Black Seed	Rosco/Band	Ross O'Driscoll (E)	Album
Plasticine	Rosco/Band	Ross O'Driscoll (E)	Single
Wombat Rd. Recording Studio Barrie Clissold Tel: (03) 5145 4204 Fax: (03) 5145 4204.			
32 Tk. Digital, 16 Tk. Analogue.			
Young Voices of Sale	J. Ward	Barrie Clissold (E)	Live CD
John Couzens	Artist	Barrie Clissold (E)	Live Recording/Video
John Turner	S. Thorpe	Barrie Clissold (E)	Album Tracking
D & J Steele	D. Steele	Barrie Clissold (E)	Demo Tape
J. Meehan	Barrie Clissold/Artist	Barrie Clissold (E)	Demo Tracks

Western Australia

Bonsai Recording Studio Tom Thorpe Tel: (08) 9246 4408 Fax: (08) 9246 4408. Pro Tools Digital			
Next Of Kin	Tom Thorpe	Tom Thorpe	Album
Peter Davies	Tom Thorpe	Tom Thorpe	Demo
John Meyer	Tom Thorpe	Tom Thorpe	Album
Joob	Tom Thorpe	Tom Thorpe	Demo
Susie Vanderhark	Tom Thorpe	Tom Thorpe	Demo
Poons Head Sam Tel: (08) 9339 4791, Fax: (08) 9339 4791. 48 Track Music			
Parkah	Rob Grant	Rob Grant (E)	EP
Zanic Art	Rob Grant	Rob Grant (E)	EP
DM3	Rob Grant	Rob Grant (E)	Single
Penglobe	Rob Grant	Rob Grant (E)	EP
Spooky	Rob Grant	Rob Grant (E)	Single
Satellite Recording Studio Darren Halifax Tel: (08) 9470 4003 ProTools			
Bill Reid	Darren Halifax	James Hewgill	CD
Zydecats	Band	James Hewgill	CD
Homunculus	Band	Darren Halifax	CD
Atlas	Band	Darren Halifax	CD
David Hymes	Artist	Darren Halifax	CD
No Flowers	Band	Darren Halifax	For Video Clip
Sonic Lab Mark Whitehouse Tel: (08) 9375 3902 Fax: (08) 9375 3903. Sonic Solutions Mastering Facility			
Oz Concert	Bruce Culver	Liam Collins	Oz Day Concert Live Show
Perth City Ballet		Mark Whitehouse	Live Show Compilation
Jane Darcy	Ward Darcy	Mark Whitehouse	Classical Guitar CD
Lynda Nutter			CD Production
Ross Bolleter	Rob Trevor		Sound FX - CD Master

NEWS: Alan Buchan has joined **ARCTIC RECORDS** to manage the place. They have an early NEVE and 24 track Otari. (07) 3844-2199. **ROCKINGHORSE** have recently acquired an MCI half inch machine with Dolby 361 modules. Studio B is undergoing a redesign, and the Production Room is blessed with a new pair of Genelec 1032A monitors. (02) 6688-4005. **Q** Busy times at **Q recording** since the G+SSL console was installed - with major acts like Cold Chisel et al. A new Studer A827 2" machine has also arrived. (02) 9212-4351. **Tom Misner's Mirage Studio** approaches opening at Mitchell Rd Alexandria. Rival studio owners have been peeved to see the premises painted up with a sign, confirming their very worst fears. Misner is deadly serious about the new facility, which promises to do well - with a SSL G+56, Neve Legend VR and everything else you'd expect. We will profile the new studio once it is ready. (02) 9698-5888. **DEX** are developing a new high-end valve mastering EQ, designed by Daniel Desiere. (03) 9372-2266. **ABH Rehearsal & Recording** studio are expanding into voice over IVR telephone recordings, and jingles. (02) 9601-4552. Oh - Congrats to the two owners, Richard and Jennifer, who have just got hitched! **Wombat Road** are extending the building, and it is now all fully airconditioned. (03) 5145-4204.

YOUR BASF TRADE SALE OUTLETS:

NSW:	Audio Visual Designs (02) 9281-2444 Silver & Ballard (02) 9439-5355 Independent Tape Services (02) 9436-0666
VIC:	CATS (03) 9529-3177 Chapple Tape (03) 9580-6620 DEX Audio (03) 9372-2266 MTA & Assoc. (03) 9819-6455
SA:	Adelaide Tape Duplicators (08) 8212-7111 Pro Media (08) 8276-6793
WA:	Ausmag (09)314-1953 Pro Copy (09)375-3902
QLD:	Musiclab (07) 3862-1633 Tek (07) 3239-4000



BASF YOUR MUSIC IS SAFE WITH US

STUDIO MONITORS

Prices INCLUDE sales tax and were correct on 15th January 1999. All care taken, no responsibility for errors. Four models only are shown in each category although these manufacturers have many more. Indicative only.

POWERED

ATC

Technical Audio Group (02) 9810 5300
SCM20A Pro nearfield 7" mid/bass 1" HF 2-way featuring soft dome mid and HF technology. All aluminium construction with built-in 250w bass and 50w HF amplifiers. 30kg. \$11,995.
SCM50A Pro near/midfield/main 9" bass, 3" soft-dome mid, 1" HF 3-way active. Built-in 250w bass/100w mid/50w HF amplifiers. Vertical or horizontal configuration. 49kg. \$22,995.
SCM100A Pro near/midfield/main 12" bass, 3" soft-dome mid, 1" HF 3-way active. Built-in 250w bass/100w mid/50w HF amplifiers. Vertical or horizontal configuration. 65kg. \$25,995.
SCM300A Pro main monitor 2 x 15" bass, 3" soft-dome mid, 1.25" HF 3-way active. Includes external amplifier pack with 2 x 275w bass/200w mid/100w HF amplifiers. 140kg. \$69,995.

AUDIX

Production Audio Services (03) 9415 1585
PH3s mini nearfield 3.5" LF cone driver, 0.75" polymer dome HF, 20w inbuilt power amp per ch. 87dB SPL 1w/1m. Freq. Response 100Hz - 20kHz (-10dB). \$699.
PH5vs nearfield 5.25" poly LF cone driver, 0.75" polymer dome HF, 25w inbuilt power amp per ch. 90dB SPL 1w/1m. Freq. Response 75Hz - 20kHz (-10dB). \$965.
PH15vs nearfield 5.25" long throw LF cone driver, 0.75" polymer dome HF, 45w inbuilt power amp per ch. 86dB SPL 1w/1m. Freq. Response 50Hz - 20kHz (-10dB). \$1399.
PH25vs near/med field dual 5.25" long throw LF cone driver, 0.75" polymer dome HF, 50w inbuilt power amp per ch. 89dB SPL 1w/1m. Freq. Response 50Hz - 20kHz (-10dB). \$1945.

DYNAUDIO ACOUSTICS

Amber Technology (02) 9975 1211
BM6A active 2-way nearfield monitors: features 170mm woofer + soft dome 28mm tweeter powered by dual high-performance 100W mosfet amplifiers. Extensive protection circuitry, optical HF limiter, ADJ HF and LF trim control. \$4750.
BM15A high-performance active 2-way nearfields: features 240mm woofer + "Esotech" 28mm tweeter. 100W + 200W Mosfet amplifiers, slow-attack optical HF limiter. All monitors matched to within 1.5dB. \$6650.
M4S-1 one of several M4 active system configurations: features 4 x 300mm drivers + 2 x 150mm mids + 28mm "Esotar" tweeter. Supplied complete with 2 x DCA 750 amplifiers and internal crossover. From \$68,000.

ELECTRO VOICE

EVI Audio Australia (02) 9648 5585
Sentry 100EL Two way near field monitor with 50 watt amplifier attached. Balanced in on XLR with earth lift. Eight inch with superdome tweeter. Ideal for audio, video and broadcast applications. Video

shielded. \$4998.

GENELEC

Studio Connections (03) 9874 7222, (02) 9873 3994
1029A high power compact monitors with optional subwoofer. Metal cabinets provide magnetic shielding making them ideal for workstations, video and multimedia and home theatres. Dual inputs per speaker with front panel on/off and volume. \$2830.
1030A small nearfield monitors for broadcast and post production. Ideal for p[ro]ject studios where space is limited. 55Hz-18kHz +/- 2.5dB, magnetically shielded. Can be used with 1092A or 1094A subwoofers to extend bass response. \$4500.
1031A nearfield monitor 48Hz-22kHz. 8" bass two way provides 5.1 surround for small production spaces. \$5495.
1032A largest of the Genelec two way systems with 300W. 42Hz-21kHz +/-2.5dB. With a subwoofer, CD mastering and main monitors in small rooms suit these speakers. \$6830.

HAFLER

Australian Audio Supplies (02) 4388 4666
TRM8 electronically and acoustically matched, Transnova DIAMOND circuitry, active 24dB/octave Linkwitz-Riley crossover, 45Hz-21kHz +/- 2dB, 1" soft dome HF driver, 8" polpropylene LF driver, 75watts/tweeter, 150watts/woofer, magnetically shielded. \$3495.

JBL PROFESSIONAL

Jands Electronics (02) 9582 0909
LSR28P is a bi-amplified system that builds on the foundations of JBL's proprietary Linear Spatial Reference (LSR) technology. Consists of two new JBL LSR transducers, the 218F 8" low-frequency transducer and the 053Ti High-Frequency transducer. Freq. Resp. (+1, -1.5 dB) 50 Hz - 20kHz; max Peak SPL (80 Hz - 20 kHz): >111 dB SPL / 1 m. Amplifier: Low Frequency: 250 Watts (<0.1% THD into rated impedance); High Frequency: 120 watts (<0.1% THD into rated impedance). \$5495.
6208 Studio Monitor 2-way bi-amplified monitor with shielded 8" woofer and gold/titanium hybrid dome tweeter. Freq. Range: 38 Hz - 21kHz (-10dB); Sensitivity: 89 dB SPL (1W, 2.83V @ 1m). Amplifier: Power output: (2x) 50 watts continuous Distortion: <0.05% @ 1 and 10 kHz for 0.01 watt to full power. Power Capacity: Cont. Pink Noise: 75 watts. \$2595.

KRK

Syncrotech (02) 9879 0800
Expose 8 nearfield with 8" Kevlar woofer and 1" inverted dome Kevlar tweeter. Amplifier is complimentary/symmetry design. 140W to each driver. \$9999.
V8 nearfield with 8" Kevlar woofer and 1" inverted dome Kevlar tweeter. 130W lows 70W high. \$3699.

MACKIE DESIGNS

Australian Audio Supplies (02) 4388 4666

HR824 high Resolution Active Studio Reference Monitor, 8.75" driver, 1" aluminium high frequency driver, 150watt/woofer, 100watt/tweeter, mass-loaded passive driver (rear), 39-22kHz +/- 1.5dB, electronic limiter section, acoustic space switch, Ictronic crossover Linkwitz-Riley 24dB/octave, balanced female XLR and 1/4" connectors, power switch on front! \$2995.

MEYER

Meyer Sound Australia (07) 3252 4493
HD-1 nearfield powered monitor, 8" woofer, 1" dome tweeter. 32Hz-22kHz -3dB. Optimised pole-zero filter combinations complements transducers to achieve acoustic transparency and flat phase. \$11,000.
HM-15 + Sub nearfield powered monitor with 7" woofer, coaxial 1" soft dome tweeter and separate enclosure with 10" sub. 42Hz-20kHz +/- 2.5dB. +/-20⁰ 250Hz-15kHz. \$6400.

SONY

Sony Australia (02) 9887 6666
SMS-2P powered nearfields for project studio monitoring, 2 way bass/reflex, 16cm WF/2.5cm dome TW, bi-amp construction. 50W/WF and 40W/TW. Two bal/unbal inputs with mixing and EQ. \$2780.
SMS-1P small powered nearfield ideal for studio PC audio. Bass/reflex, 10cm cone driver, 15W power amp, magnetically shielded, front controls for EQ and levels. \$980.

SPIRIT BY SOUNDCRAFT

Jands Electronics (02) 9582 0909
Absolute 4P High definition linear phase design, Flat on- and off-axis frequency response. Integral 100W (LF) and 100W (HF) low distortion power amplifiers, with full protection/limiting for both drivers and amplifiers. XLR connector for balanced signals, RCA phono-type sockets for unbalanced signals. Amplifier Power Output: HF - 100 Watts RMS/LF - 100 Watts RMS; Frequency response (half space on axis): 40Hz - 22kHz, -3dB; Efficiency (half space): 115dB max SPL @ 1m. \$2995.

YAMAHA

Yamaha Music Australia (03) 9693 5164
MSP5 Internally bi-amplified (shielded) with waveguide technology to ensure uniform dispersion without distortion or colouration. Combined power of 67W with level and 2 band EQ control. XLR and ack inputs, 85dB SPL. \$795 each.
MS1011I 10W, 8" full range driver, Mic. in, line in (2), line out, 2 band EQ & vol, 75Hz - 18kHz. \$345 each.
MS202II 20W, two 8" full range drivers, Mic. in, line in (3), line out, 2 channel mix, 2 band EQ & volume, 70Hz-18kHz. \$545 each.
MS20S Featuring Yamaha Active Servo Technology for increased bass response, 20W, full range driver, Mic/line input, tone control, 70Hz-15kHz. \$595 each.

POWERED WOOFER

DYNAUDIO ACOUSTICS

Amber Technology (02) 9975 1211
ABES active bass extension system with 2 x 12" drivers + 300W amplifier + crossover. Ideal for s/s or 5.1 monitoring with both near or midfield monitors. 35Hz-95Hz freq. resp.; 126dB max SPL. \$13,850.
BX30 compact high-power active sub: ideal for smaller 5.1 monitor systems. Integrated 130W amplifier with user-selectable filtering and continuously variable phase. Features 1 x 12" driver with 4" voice coil. \$5595.

GENELEC

Studio Connections (03) 9874 7222, (02) 9873 3994
1091A a compact subwoofer designed to work with the 1029A active monitor system. 38-85Hz +/- 2.5dB with a maximum SPL @ 1m > 103dB. \$1845 per unit.
1092A designed to be used with Genelec models 1030A, 1031A, 530C and 1032A. 33-80Hz +/- 2.5dB with a maximum SPL @ 1m > 115dB. \$3050 per unit.
1094A a single speaker intended for use with the 530C, 1032A and 1037B. 29Hz +/- 2.5dB response with a maximum SPL @ 1m > 120dB. \$5150 per unit.

JBL PROFESSIONAL

Jands Electronics (02) 9582 0909
LSR12P a powered subwoofer that builds on the foundations of JBL's proprietary Linear Spatial Reference (LSR) technology. Designed to be compatible for both the LSR28P self-powered speaker system and the LSR 32, as well as offering multiformat compatibility with Dolby® AC-3, DTS® and other surround audio systems. Freq. Resp. (-6 dB): 28 Hz - 80 Hz. Amplifier: 260 Watts (<0.5% THD into rated impedance). \$2895.

UNPOWERED SMALL

ALESIS

Electric Factory (03) 9480 5988
Monitor One drivers - 6.5 low, 1" silk dome high - Crossover - 2.5kHz - Freq. range - 45Hz-18kHz +/- 3dB, power handling 120W program, 200W peak, nominal impedance - 4 ohms, sensitivity 88dB SPL. \$999.
Point Seven drivers - 5.25 low, 1" silk dome high - Crossover - 2kHz - Freq. range - 85Hz-27kHz +/- 3dB, power handling 50W RMS, 100W peak, nominal impedance - 4 ohms, sensitivity 86dB SPL. \$699.
Monitor SMS Freq. response - 80Hz-20kHz +/- 3 dB, Crossover system - 2kHz 3rd order (left, centre, right), 2kHz 1st order (surround). 86dB SPL, 4 ohms, 50W RMS, 100W peak. 5 speaker set up (L,R,C) + 2 surrounds - SMS - Surround Monitoring System. \$2199.

ATC

Technical Audio Group (02) 9810 5300
SCM10 Pro nearfield 5" mid/bass 1" HF 2-way featuring soft dome mid and HF technology. Recommended 250w ampli-

buyers guide:: STUDIO MONITORS

fier. 80dB @ 1W @ 1m. 10kg. \$3995.
SCM20SL Pro nearfield 7" mid/bass 1" HF 2-way featuring soft dome mid and HF technology. Recommended 250w amplifier. 83dB @ 1W @ 1m. 23kg. \$6295.

AUDIX

Production Audio Services (03) 9415 1585
MM15 nearfield 5.25" long throw LF cone drive, 0.75" polymer dome HF, 100w power handling. 86dB SPL 1w/1m. Freq. Response +/- 3dB 55Hz - 18kHz. \$879.
MM25 nearfield dual 5.25" long throw LF cone drive, 0.75" polymer dome HF, 100w power handling. 89dB SPL 1w/1m. Freq. Response +/- 3dB 55Hz - 18kHz. \$1175.
Studio 1A nearfield 6.5" LF cone driver, 1" cloth dome HF, 250w power handling. 87dB SPL 1w/1m. Freq. Response +/- 3dB 50Hz - 18kHz. \$1869.
Studio 3A midfield dual 6.5" LF cone driver, 1" cloth dome HF, 350w power handling. 91dB SPL 1w/1m. Freq. Response +/- 3dB 47Hz - 19kHz. \$1869.

DYNAUDIO ACOUSTICS

Amber Technology (02) 9975 1211
BM5 2-way nearfield: 170mm woofer (75mm voice coil) + 28m soft dome tweeter; 100W RMS; 88dB sensitivity; Freq. resp. 50Hz-20kHz; video shielded; all cabs. matched to within +/- 1.5dB. \$1545.
BM6 2-way nearfield: 170mm woofer + "Esotech" 28m tweeter; 150W RMS (1000W peak); 86dB sensitivity; Freq. resp. 43Hz-22kHz; adjustable rear port. BMGA active version also available. \$2295.
M1 high power 2-way nearfields with contoured response for meterbridge positioning: 2 x 128m woofers + 28mm dome tweeter; 300W RMS (1000W peak); 88dB sensitivity; Freq. resp. 50Hz-20kHz; 122dB SPL @ 1.25m. \$5895.

EASTERN ACOUSTIC WORKS (EAW)

Production Audio Services (03) 9415 1585
MS20 nearfield 6.5" LF 2 way with 1" soft dome HF. Passive, crossover. 100w AES power handling. 89dB SPL 1w/1m. Freq. Response +/- 3dB 50Hz - 20kHz. \$2095.
MS30C nearfield 8" LF 2 way with 1" soft dome HF. Passive, crossover. 200w AES power handling. 90dB SPL 1w/1m. Freq. Response +/- 3dB 45Hz - 19kHz. \$2485.

ELECTRO VOICE

EVI Audio Australia (02) 9648 5585
S 40 Two way near field monitor. Four and a half inch bass driver with dome tweeter. Video Shielded. Available in Black or White. \$769.
S 60 Two way near field monitor. Six inch bass driver with dome tweeter. Video Shielded. Available in Black or White. \$1390.
Sentry 100A Two way near field monitor. Eight inch with superdome tweeter. Ideal for audio, video and broadcast applications. Video shielded. \$1998.

HAYES

Australian Audio Supplies (02) 4388 4666
f80 near field studio monitors that achieve true spatial imaging, features Fractal Spatial System (FSS), omni-directional, two-way passive/time aligned design, 70Hz-20kHz frequency response, sensitivity 86dB @ 1M/1W, 25mm fluid cooled aluminium dome tweeter, SEAS 125mm

polypropylene woofer, rear tuned port. \$995.

JBL PROFESSIONAL

Jands Electronics (02) 9582 0909
Control One compact 2 way control monitor suitable for use anywhere where space is of a premium. Available in versions with and without magnetic video shielding. Freq. Range: 70 Hz - 20 kHz (-10dB); Power Capacity: 150 Watts; Sensitivity: 87dB 1W, 1m; Nominal Impedance: 4 Ohms. From \$550.
4206 Studio Monitor 2-way monitor with shielded 6" woofer and titanium dome tweeter. Multi-radial baffle aligns the acoustic centers of the high and low frequency transducers. Transducers are magnetically shielded to allow placement near tape recorders and video monitors. Freq. Range: 42 Hz - 21kHz (-10dB); Sensitivity: 88 dB SPL (1W, 2.83V @ 1m); Nominal Impedance: 8 Ohms; Power Capacity: Cont. Pink Noise: 75 watts. \$895.
4208 Studio Monitor 2-way monitor with shielded 8" woofer and titanium dome tweeter. Multi-radial baffle aligns the acoustic centers of the high and low frequency transducers. Transducers are magnetically shielded to allow placement near tape recorders and video monitors. Freq. Range: 38 Hz - 21kHz (-10dB); Sensitivity: 89 dB SPL (1W, 2.83V @ 1m); Nominal Impedance: 8 Ohms; Power Capacity: Cont. Pink Noise: 75 watts. \$1195.
4408A Studio Monitor 2-way monitor with 8" woofer and titanium dome tweeter, designed for smaller recording or broadcast studios. Freq. Range: 30 Hz - 30kHz (-10dB); Sensitivity: 89 dB SPL (1W, 2.83V @ 1m); Nominal Impedance: 8 Ohms; Power Rating: Pink Noise: 100 watts. \$1795.

KRK

SyncoTech (02) 9879 0800
ROKIT nearfield 6.5" long stroke woofer 1" tweeter. Small and compact. 75W. \$995.
K-ROK nearfield 7" long stroke woofer 1" tweeter. Video shielded version available. \$1499.
M6000 nearfield with 6" polyglass woofer, 1" inverted Kevlar tweeter. Industry standard console top monitor. 75W. Video shielded version available. \$2420.
M7000B nearfield 7" Kevlar driver with 1" inverted Kevlar tweeter. 150W. Video shielded version available. \$3795.

SONY

Sony Australia (02) 9887 6666
SMS-3P reference nearfield monitors. 2 way 20cm WF/3cm dome TW, max power capability 300W, nominal power 100W. Diecast aluminium frame, magnetically shielded. \$3990.

SPIRIT BY SOUNDCRAFT

Jands Electronics (02) 9582 0909
Absolute Zero Power handling (typical music signal content): 95 Watts RMS; Frequency response (half space on axis): 55Hz - 18kHz, +1/-3dB; Impedance: 8W nominal; Sensitivity (half space): 89dB/2.83V/1m. \$895.
Absolute 2 Power Handling (programme) 100 Watts RMS; Frequency Response (+2dB, -3dB) 45Hz - 20kHz; Impedance 8 ohms nominal; Sensitivity, for 2.83V @ 1m 90dB. \$1095.

YAMAHA

Yamaha Music Australia (03) 9693 5164
NS10MST Professional 60W 2 way near field studio monitor for reference applications, remarkably flat from 60Hz - 20KHz. \$1,045 per pair.
NS40M Professional 100W 3 way studio monitor with dual woofer for main monitoring applications. Remarkably flat from 50Hz-20KHz with excellent imaging. \$1,045 each.

UNPOWERED MEDIUM

ALESIS

Electric Factory (03) 9480 5988
Monitor Twos drivers - 10 low, 5" mid, 1" silk dome high - Crossover - 1.5kHz and 6kHz, combination 2nd and 3rd order filters, Freq. range - 40Hz-18kHz +/- 3dB, power handling 150W program, 200W peak, 4 ohms, sensitivity 90dB SPL. \$1599.

DYNAUDIO ACOUSTICS

Amber Technology (02) 9975 1211
BM15 2-way near/midfield reference monitors: 240mm woofer (100mm voice coil) + 28m tweeter; 88dB sensitivity; Freq. resp. 40Hz-22kHz; 250W RMS; 108dB SPL @ 1.25m; BMISA active version also available. \$2945.
M1.5 2-way midfield monitors: high-output compact design with pin-point accuracy; 200W RMS; 88dB sensitivity; Freq. resp. 40Hz-20kHz; 120dB SPL @ 1.25m. \$7295.
M2 3-way midfield/main monitors: extremely flexible design (suitable for midfield or main monitors as well as O/B); 400W RMS; THD + IMD < 1%; 125dB SPL @ 1.25m. \$11,750.

EASTERN ACOUSTIC WORKS (EAW)

Production Audio Services (03) 9415 1585
MS63 medium field 12" 3 way with 7" carbon fibre cone mid range and 33mm dome on waveguide HF. Passive/Biamp. 400w AES power handling. 95dB SPL 1w/1m. Freq. Response +/- 3dB 50Hz - 19kHz. \$7350.

ELECTRO VOICE

EVI Audio Australia (02) 9648 5585
Sentry 500 One hundred watt mid field monitor with twelve inch and superdome tweeter on 110 x 60 degree constant directivity flare. \$3998.

JBL PROFESSIONAL

Jands Electronics (02) 9582 0909
LSR32 JBL LSR speaker systems are based upon Linear Spatial Reference technology and combines JBL's latest in transducer and system technology. Input Impedance (nominal): 4 ohm; Anechoic Sensitivity1: 93 dB/2.83V/1m (90 dB/1W/1m); Freq. Resp. (60 Hz - 22 kHz)2: +1, -1.5 Low Frequency Extension, 2 -3dB: 54 Hz, -10 dB: 35 Hz Enclosure resonance frequency: 33 Hz Long Term Maximum Power (IEC 265-5): 200 W RMS; 800 W Peak Recommended Amplifier Power: 150 W - 1000 W (rating into 4 ohm load). \$5495.

4410A Studio Monitor 3-way monitor with 10" woofer and titanium dome tweeter, designed as a vertical line array. The system delivers incredibly fine transient response and spatial details. Freq. Range: 33 Hz - 30kHz (-10dB); Nominal Impedance: 8

Ohms; Power Rating: Pink Noise: 125 watts. \$2495.

4412A Studio Monitor 3-way monitor with 12" woofer and titanium dome tweeter, designed for applications requiring maximum low frequency output from semi-nearfield sized monitor. Freq. Range: 30 Hz - 30kHz (-10dB); Sensitivity: 89 dB SPL (1W, 2.83V @ 1m); Nominal Impedance: 8 Ohms; Power Rating: Pink Noise: 150 watts. \$2795.

4425 Bi-Radial Studio Monitor 2-way monitor with 12" woofer and Bi-Radial horn loaded HF transducer. The use of the Bi-Radial horn provides 100 x 100 degree coverage pattern for the hi-frequency signal. Freq. Response: 40Hz-16kHz (+/- 3dB); Sensitivity: 91 dB SPL (1W @ 1m); Nominal Impedance: 8 Ohms; Power Rating: Pink Noise: 200 watts. \$4395.

KRK

SyncoTech (02) 9879 0800
M9000B medium field with 9" composite woofer and 1" inverted Kevlar tweeter. 150W. \$6199.
M13000B medium field 3 way design with 12" polyglass woofer and 5" Kevlar mid and 1" inverted Kevlar tweeter. 200W. \$7999.

UNPOWERED FULL SIZE

DYNAUDIO ACOUSTICS

Amber Technology (02) 9975 1211
M3-P 3-way main studio monitors: 2 x 12" bass + 2 x 5" mids + 1" dome tweeter; bi-amp configuration; 650W RMS; 40Hz-20kHz freq. resp.; THD + IMD < 1%; 120dB SPL @ 2.25m. \$21,900.

EASTERN ACOUSTIC WORKS (EAW)

Production Audio Services (03) 9415 1585
MS103 medium field 15" 3 way with 7" carbon fibre cone, mid range and 33mm dome on waveguide HF. Passive/Biamp. 800w AES power handling. 95dB SPL 1w/1m. Freq. Response +/- 3dB 40Hz - 19kHz. \$9325.

JBL PROFESSIONAL

Jands Electronics (02) 9582 0909
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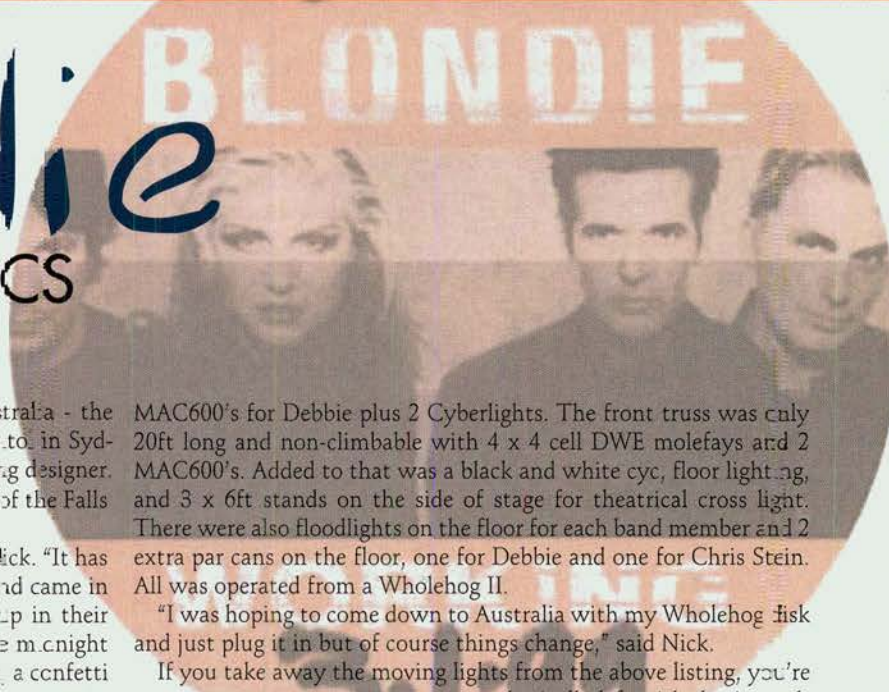
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L I V E

PRODUCTION NEWS

Blondie

BACK TO THE BASICS



Here we are on a crazy three-show tour of Australia - the Falls Festival and two sold-out shows at the Capito in Sydney," laughed a rather weary Nick Sholem, lighting designer. Adding to the effects of jetlag was a nasty cold courtesy of the Falls Festival in Victoria where programming began at 3am.

"The Falls went well, they're nice people there," said Nick. "It has a fairly small stage and it's flipping cold at 3am. The band came in at 7am for their sound check which woke everybody up in their tents! The band went on a 11.15pm stopping just before midnight for the New Year countdown, which Debbie did. At zero, a confetti cannon on the roof went off, it was really cool."

In essence the official Blondie tour hasn't started yet although they have just finished an extensive run in Europe. The band release a new album in February and there are plans for a 'proper' tour starting in March. Having not played for sixteen years, the band decided to play a few clubs in Europe at the end of last year to see if the interest in them was still there.

"And it is, big time," said Nick. "On the European tour we just used whatever gear was in the building. Basically I walked in with just a bag of gel. I'd twiddle around re-ge. the rig and get some floor floodlights on each and member."

The UK leg of the tour was designed using Bar.ite Lites and programmed in their warehouse. The rear truss had 5 x 5 lamp bars as well as 4 x MAC600's. A mid truss had 5 pars cans with Color Faders on them to use as key lights on each band member and 2 x



MAC600's for Debbie plus 2 Cyberlights. The front truss was only 20ft long and non-climbable with 4 x 4 cell DWE molefays and 2 MAC600's. Added to that was a black and white cyc, floor lighting, and 3 x 6ft stands on the side of stage for theatrical cross light. There were also floodlights on the floor for each band member and 2 extra pars cans on the floor, one for Debbie and one for Chris Stein. All was operated from a Wholehog II.

"I was hoping to come down to Australia with my Wholehog disk and just plug it in but of course things change," said Nick.

If you take away the moving lights from the above listing, you're basically left with the Australian show which was more like the European club shows

"I've been very restricted - which is no bad thing - Chris and Debbie had more 'don'ts' than 'do's', said Nick. "Don't flash, don't use a load of colour and don't have wiggle lights going 'wiggle wiggle'. That meant that I did everything in white, CT orange and CT blue - I've one bar of amber, one of blue. When I had the Martin lights, I did move them but in a very subtle way. The two Cyberlights were used as an onstage spotlight for solos."

However a stripped down, colour-free rig suits the band enhancing the down and dirty, punky, early-eighties feel to the show. It's stark lighting used to it's maximum and certainly a contrast to the band Nick was lighting previously - Yes. The band don't like spots but understand that they are sometimes a necessity, they prefer to rely on the pars and floodlights. The monochromatic look Nick deploys for most of the show

FULL HOUSE::THEATRE NEWS

● It wouldn't be Summer in Melbourne without outdoor shows. This year's offerings include the thriller *The Turn of the Screw* on the lawns of Rippon Lea, *The Wind in the Willows* for children at the Royal Botanic Gardens, and *Much Ado About*

Nothing, also at the Botanic Gardens. Glenn Elston's production of *Much Ado* has undergone a modern treatment - instead of tights and corpieces the design influences are The Sex Pistols. The show features lots of hard rock and lots of leather

against the gorgeous setting of the botanic gardens at night.

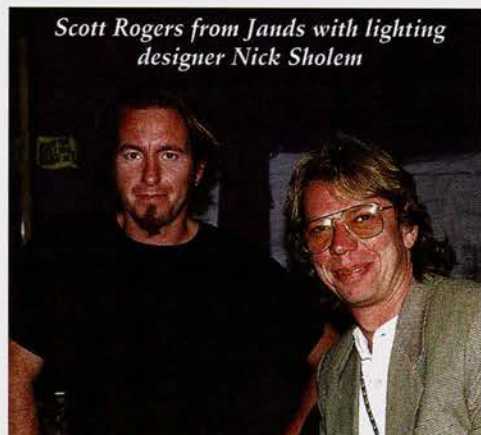
● A Bendigo woman has lodged a complaint with the Equal Opportunity Commission after being told she could not breastfeed her baby at the

Regent Theatre, Melbourne. Ms Mayor-Cox was planning to attend the recent production of *Fidelio* on the roof with her six week old baby until she was told she would have to purchase a ticket for the baby. She was then informed she would not be allowed to breastfeed the baby inside the theatre.

never looks tired and quite frankly I couldn't imagine the band under a curtain of heavy colour.

Nick was particularly impressed with Sydney's Capitol Theatre as a venue and he wanted to make sure that the theatre's two permanent crew got a mention - Mark and Jim - as they were 'just fabulous'.

"Anyone reading this that wants to do a show in here, come do it," he said. "It's ridiculous that more shows aren't in here as it's fabu-



Scott Rogers from Jands with lighting designer Nick Sholem

lous and a great building to work in. Architecturally, the lighting is great and I thought 'I'm not going to black this out for the show'. So I've set a level with Jim, the head electrician, so that there's a glow in the theatre.

Sound Engineer Dave Lester works out of Showco where he's been for over two

of subtleties that happen within a song - Chris Stein does some very subtle things with his guitar and you have to bring that out. It can be quite full plus with the keyboards, two different guitars and the driving rhythm section. It's definitely a hands on show.

"When I'm using a Showco system I use a Harrison HM5 mixing console which I find very warm and really enjoy using. I don't mind a PM4000 which is very user friendly and it works."

The monitor desk was a Midas XL3. Debbie and Jimmy were using in-ear monitors although wedges were still used - Clare Bros AM wedges powered by Crown.



years. He has worked with a diverse range of bands from Judas Priest to The Wallflowers.

As with the lighting, gear at the Capitol was supplied by Jands and included their Clare Bros S4 cabinets, and a Yamaha PM4000 FOH desk. Effects wise there were a couple of H3000's for vocal processing as well as a Lexicon PCM80. On the drums is a TC Electronics M5000 along with a SPX1000.

"I'm using your typical gates and compressors - a Drawmer 1962 compressor on Debbie's vocals otherwise dbx compressors," said Dave.

Dave was obviously having a bit of a hard time with the sound in the Capitol

"I'm sitting against a wall, underneath a balcony on a hollow platform," he laughed. "I am mixing in the most unideal spot. The sound here is very unnatural, you're in a bass trap. I have the systems engineer, Bart from Jands, walk around upstairs telling me what's happening up there. Theatres have so many different zones that you have to be aware of and take into consideration."

Dave admits that he has to work on Debbie's vocals as they are very 'airy and light' at times, and combined with a hard driving band, a bit of a challenge.



FOH engineer Dave Lester

"We tried a few different vocal microphones on Debbie, finally settling on a Beta 58a which she is very comfortable with," said Dave. "It really helps project her voice over the band. The focal point of the show is to get her vocal above the band, there are really two different styles combined into a song and it can be a challenge. There are a lot

ROUGH RIDER

I've never really been much of a fan of merchandising, though I can appreciate that it's a topic guaranteed to light up the bloodshot eyes of your average money-conscious, overworked tour manager who's opted for a share of the gross with a clause in his contract that in essence states: "No consideration will be given to your health, sanity or demands on your time during this tour but to compensate we'll give you a percentage of the take which includes the merchandising." This basically means he will be worked like a dog, abused by the artiste and either become an alcoholic or slip off the wagon he was forced onto after his last big tour: BUT nobody will give a damn. If you've ever wondered why tour managers are either grumpy or sublime to the point of incoherence, think of what they have to put up with. If you think you have it bad by having overpaid, egocentric artists in your venue for a short time - think about what it would be like to hit the road with some of them. Scary huh? Would you want to face someone like Noel Gallagher first thing in the morning month after month? I suspect not.

I don't think anyone on the technical side of the business would disagree with the statement that touring is a fast trip to stomach ulcers, broken relationships and a forced intimacy with tacky motel rooms and steerage class on aircraft. Even your dog forgets who you are - and that's a really sad reflection on your life. Bluey has never looked at me quite the same since 1979 when I slipped out for a nine-month truck and bus tour that took in every country pub and church hall from Balingup to Ballarat.

If I was going to tour with anyone these days there is only one megastar I would sign up with: the Pope. Not because I've recently found religion, but because I think the Pope has his finger on the pulse. This man knows all about his target audience and he gives them exactly what they want. Apparently he's just released a range of clothing bearing the Pope logo, forget Gucci or Donna Karan and head straight for the Pope summer collection. He's over his tacky signature Pope-Soap-On-A-Rope stage and he's into his and her wash-n-wear clothing with matching designer sun-glasses.

Sadly though I don't think we can expect to see him "at a venue near you" anytime soon as he has recently released a statement asking that the world "stop worshipping technology and listen to the sounds of silence." I guess that would certainly piss the audio crew off now wouldn't it?

● Cat Forcer

FESTIVAL NATION

continued from page 5

intrinsic link between punk rock and high adrenalin sports such as bmx racing, surfing and skate boarding. Brisbane firm Australia Concert Productions are doing the audio, continuing a strong push into markets to the South.

Woodford Folk Festival

This annual folk festival is held on a 97 hectare site in Woodford, Queensland from December 27 - January 1. Produced by the Queensland Folk Federation the festival had an attendance of 76,000 over 6 days, not bad considering the last two days were a wash-out. 35% travelled from interstate to attend the festival. The festival featured 500 acts made up of 3650 individual performers including Fairport Convention, John Williamson, Tiddas, Colin Hay, Shane Howard, Ted Egan, The Whitlams, Skunkhour and Ernie Dingo.

With over twenty different stages ranging from capacities of 20,000 to 200, production was provided by a large number of local companies with ACP (Australian Concert Productions) looking after the main stages. Plans for Woodford 2000 are already underway.

Glenworth Valley

Held at the Glenworth Valley Riding School, south of Gosford NSW on the 28th and 29th of December. Around 10,000 people attended the two day festival organised by Promoter Brandon Saul Management.

The festival featured Grinspoon, Superjesus, TISM, Troutfishing in Quebec and Marie Wilson among others. Mudhoney didn't turn up after apparently missing their flight out of Seattle. Acts were spread out over 3 stages - an outdoor main stage, a big top stage, and a smaller forest stage.

According to organisers all went well except for a brief power interruption when a food stall holder plugged into the main generator during the encore for headline act Superjesus. With great weather and a well behaved crowd bigger than expected, the organisers were happy with their first year effort.

Lindsay Hall's Hunter Sound from Newcastle provided audio and par cans. Brian Walsh's BLM Productions provided Intellabeams and Martin moving lights. Hunter Sound have a perfectly functionable collection of older Martin RS-1200 composite PA boxes,

amongst other such treasures. They charge less than many other audio production firms.

The Falls

The 6th year of The Falls was held at 'The Farm' in Lorne, Victoria on New Year's Eve by Promoter Simon Daly. 12,000 people camped out to see the 50 bands, 20 DJ's, and to have a go at the Cybercircus Tent and skate ramp. Headline act Blondie counted in the New Year.

Production was supplied by Bruce Johnston's Big Beat Audio and Trevor Lloyd's CLS (Concert Lighting Systems). Overall a very successful festival with a well behaved crowd, the only problem was one punter who wandered off into the bush for three days eventually being rescued by emergency services.

Summer Nats

Held at the Exhibition Park in Canberra (EPIC) from January 1-3 to record attendances. Organised by Street Machine Magazine featuring a drag strip, lots of burnouts, car audio 'sound-offs', wet tee-shirt contests and the all important crowning of Miss Summer Nats. Connections missed that opportunity!

A rock show was held on the main stage inside the grandstand featuring Sydney band The Sugar Cats. An Apogee sound system, Martin Mac 500s & 600s, and AV screens were all provided by Nick Nonas's Novatopstage Productions.

Mudslinger & Mudslinger Junior

Mudslinger is a two day festival held on two different locations. The first day was an all ages gig called Mudslinger Junior held at Murdoch University on January 3rd, to 2000 people. The second day was held at Metroxolis City in Perth on January 4th, to around 4000 people. Promoter Paul Sloan attracted an impressive line-up featuring



FULL HOUSE :: THEATRE NEWS

● The fifth biennial Womadelaide world music festival will be held from February 19 - 21 at Botanic Park. The program is the biggest and best yet featuring 200 artists from around the world including India, Cuba, Scotland, Ireland, Tibet, Hungary, Israel, Argentina, Finland, New Zealand and Australia combining for fifty hours of performance. Among the featured acts are Baaba Maal, Drummers of Burundi and Dave Dobbyn. Australian will be represented through a number of groups including Bangarra, Mornington Island Dancers, and

the Adelaide Symphony Orchestra.

● A canopy has been erected over the open-air theatre at the Sydney Olympics Site with the help of a 400t crane and a team of rock climbers. The design features a 60m wide 'sail-like canopy' which is suspended under an arch of curved steel measuring 60m long. Belmadar Constructions built the arch and Shade Structures Pacific won the contract to provide the canopy which will provide all weather cover over the events area.

● Monty Python member Terry Jones has given permission to a small Melbourne theatre company to perform a production based on his best-selling book Lady Cottington's Pressed Fairies. Written by members of the Stonnington Theatre Company, the show will be performed in the heritage gardens of the Stonnington Estate for a two week season in February where the fairy and pixie characters from the book will appear 'Unpressed'.



FESTIVAL NATION

ing Jebediah, Eskimo Joe, Sodastream, Screamfeeder, Matt Walker & Ashley Davies, Even, Jeff Lang, Dave McCormack, Something for Kate, Frenzal Rhomb, Happyland, Kim Salmon, Buffalo Tom, Mad Professor, You Am I, and Dirty 3.

Tim Bradsmith's Concert and Corporate Productions provided 10 Martin Macs, 100 par cans and a Jands Hog for the main stage, and Matrix provided tree lighting, disco and stage effects for the second stage. Keith Crammond's Audex Concert Sound supplied a large EAW system for both stages.

Big Day Out

The biggest billed festival on the annual calendar. Playing around the country, starting on the Gold Coast on January 17th, on to Sydney, Melbourne and Adelaide, and finishing up in Perth on the 31st. An amazing line-up including Hole, Marilyn Manson, Powderfinger, Regurgitator, Manic Street Preachers, Sean Lennon, Fat Boy Slim, and heaps more. Eric Robinson's Jands Production Services are providing the main production and local companies also providing gear in each state. Tim Marshman's GoLight from Adelaide were doing the second stage in some states with an EAW rig.

Aquarius Music Festival

22 - 24th January at 'Woodstock', a 30 acre site in northern Tasmania. Festival organiser Doug Kelly has put together a festival dedicated to the presentation of high quality original music, dance, art and theatre covering a broad range of styles. Over thirty diverse musical acts including Muddy Puddles with Hat Fitz, Alchemy, Flight 101, Earthsea and Shake Sugaree. Audio is supplied by Doug

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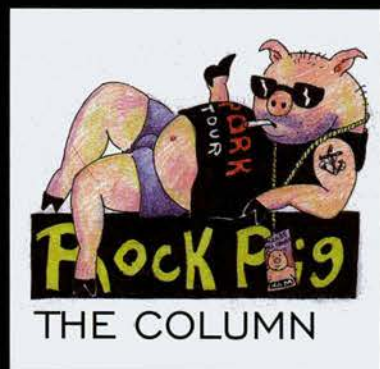
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Reading Thorpie's new book (*Most People I Know Think That I'm Crazy*) brings back that famous moment or urban myth from some years ago when *The Legend* first returned home for some shows. He's done the interview thing at Channel Nine and is in the lift going down with Michael Chugg. A guy in the lift introduces himself: "You're Billy Thorpe - I'm Paul" he says as they shake hands. "I used to manage a band myself" continues Paul. "So whaddya do these days?" asks Thorpie. Of course you know the answer: "I'm the Prime Minister of Australia".

● The Playroom on the Gold Coast lives on. This bastion of touring reopened a while back, and has done bumper hot summer nights during the holiday season. Current touring phenomenon The Whitlams sold the place out in January. But the Playroom is under siege with a proposed development maybe sending the place dark for good.

● Where are they now? Old Sherbert-ies reformed for the Elle McFeast Countdown special on the ABC New Years Eve. While Brathwaite and Porter are still doing well, what about the others? Harvey James is a guitar rep in Melbourne, but former axeman Clive Shakesphere and bass player Tony Mitchell rose from obscurity for the gig. Drummer Allan Sandown missed out.

● Heard the other day that the Old Man River Band are still (somehow) touring the USA when required, apparently the only remaining semi original member is Steve Housden - who joined some years after the group started. Weird huh? But the genuine version(s) of this band were an all time Australian crew favourite.

● SHOW ME THE MONEY DEPT: So who is making what? How about Spice Power, a group of youngish females, paid \$200 each to sing over a DAT tape! Lessee now, 5 x \$200 = \$1000. Someone is having a good earn here, with gigs costing AT LEAST \$3000.... Meanwhile, how much for crew pay in 1999? The corporate AV co's will pay \$250 - \$300 per day for good crew, the rock music business is straining to meet \$150. This is for the standard 2pm - 2am average gig. On a closing note, isn't it funny how the price for a music act changes according to who is paying? A corporate gig paid the band \$10,000 but the same group is doing a door deal at the Eastwood Hotel --- and obviously taking about \$3,500. But what about the free gig at a pub - who is paying the band there? Sometimes the drinks cost 50% more, two middies and an OJ for \$13 is a current Sunday night special we know of.

● Complete crap dept: Veteran tour manager Howard Freeman featured in a story in *Ralph* magazine late last year, which was either (a) made up by the writer, or (b) a joke. It was an off-the-wall put down of 'roadies', the term 'roadies' used in a derogatory manner in the magazine. You know, drugs, violence, grog, sex - most of which just plain doesn't happen to roadcrew in a workplace (or at a gig), let alone in the proportions inferred by the *Ralph* writer and attributed to Howard Freeman.

● Good/old OZ LP of the month from The Pig Collection: The Wa Wa Nee debut album, engineered by Jim Taig.

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FESTIVAL NATION

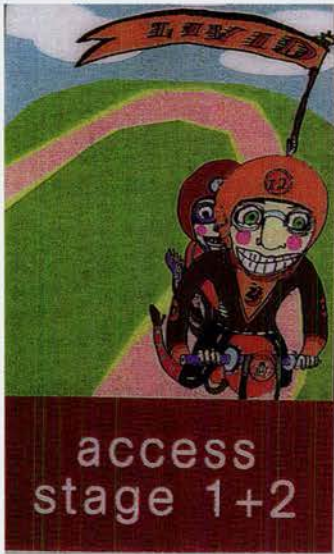
Kelly's Woodstock Music, and lighting from Andrew Carpenter's Glow Productions.

Peaches n' Cream

This is the working name for the 28th year of the Cobram festival, held on the banks of the Murray River on the Victorian and New South Wales border. Held on January 23 featuring The Living End, The Superjesus, and the return of Silverchair to the live scene. Production is provided by Jands. Organised by the Cobram Apex club between 8,500 and 10,000 people are expected to attend the main rock show or the other events held during the festival including a country music night, Music on the Murray, and a rodeo, fireworks and stuntman show at the local showgrounds.

Livid

Livid was an early intro to Summer, held at the RNA Showgrounds in Brisbane on October 3 (OK, OK, this was in Spring) and managed to attract over 30,000 people despite it being election day. The promoters pulled in the big international acts with a line-up including Public Enemy, Pulp, Sonic Youth, Regurgitator, The Living End, Dandy Warhols, The Whitlams, Grinspoon, Jebediah, Fourplay, Custard and Even. Production provided by Mick Privitera's Australian Concert Productions and Greg Hughes' East Coast Lighting.



• Please note, at the time of writing not all festivals have occurred so we are relying on information relayed by promoters and our HUGE network of spy's, moles and secret informants.

Compiled by Mandy Jones and Julius Grafton.

SHOWS WE'VE SEEN LATELY

A Punter's Perspective

THE WIGGLES TOOT TOOT SHOW

(that's the automobile Toot Toot not another substance associated with live production)

Most Australian bands reckon they've hit the big time once they play the Sydney Entertainment Centre. So I think it can be said that The Wiggles have made it. True, they did play in a 'reduced mode' but to your average toddler we're talking the equivalent of U2 at Wembley Stadium.



A clean, bright stage was flanked by video screens which thankfully kept the young audience entertained while waiting for the show to start. Some cynics may say they were used to flog Wiggles videos particularly the one where they are represented in puppet form. Gee, that must have been a hard work for the boys to do. Can you imagine bands like Cold Chisel being totally represented by puppets? Hhmm, then again.....

Having successfully steered *His Materialistic One* into the venue without him catching sight of any merchandising outlets (a skill any SAS crack team would admire), I was rather dismayed (or in true speak - pissed off) to see 'merchandising usherettes' weaving their way through the seating with such necessities as Dorothy The Dinosaur tails. Much as I like The Wiggles (I'd like anyone who could occupy *The Attention Seeker* as much as they can), I get the impression that they never miss a marketing opportunity. Having showered *The Spoilt Brat* with all manner of toys/books/cutlery bearing their name, I think they could have another look at the quality of such stuff. But I digress.....

The show was vibrant and well, just right. Not too long, not too complicated, no boring talking bits. The Wiggles arrived in their Big Red Car driving up a ramp onto the stage, definitely an entrance to rival many a band. Unfortunately, the same said ramp proved irresistible to many toddlers who decided it was their time for 15 minutes of fame. Burly security guards, more used to mosh pits, looked a little perplexed at having to usher little people gently away.

The audio was pretty good as was the moving light rig. A bubble machine caused a few toddlers to perform manoeuvres worthy of an Olympic medal in gymnastics. Stairs, chairs, parents, 60ft shafter drops all become invisible in the pursuit of a single bubble. A roaming video camera was used to project members of the audience on to the video screens - most turning into stunned mullets once they realised what was happening.

All crew members wore black including what must be one of the most sought-after clothing items I can think of - a long sleeved, black T-shirt bearing the immortal words The Wiggles CREW. Forget all your other crew shirts, this is the one.

Afterwards, I wondered how the Entertainment Centre catered for a Wiggles audience - where did all those hundreds of strollers go? Were three year old groupies offering lollies to get backstage? I phoned Arthur Carruthers, Operations Manager, but he was on holiday.....a very long holiday.

• Cat Forcer

FULL HOUSE::THEATRE NEWS

● A new 364 seat venue at the Sydney Opera House called The Studio will open on March 5 launching a ten day festival of contemporary local and international art music. Designed by architect Leif Kristansen, the Studio has a performance floor area of 15 metres square, flexible four sided seating, a mechanically variable acoustic system, a 36 channel lighting desk, and an adjoining recording studio. Situated between the Drama Theatre and the Playhouse, the space will be a showcase for new music, comedy and dance.

● Two groups of developers are battling for the contract to transform Luna Park in Sydney. Metro Edgley - a \$65 million bid from Metro Theatre, Michael Edgley, BT and Multiplex visualises turning the park into the home of Circus Oz, the Flying Fruit Flies and international troupes. A purpose built big top would be a new feature, and a return of free entertainment such as street performers and jazz would recapture the original 1930's feel of the park. Rival bid Tourism Leisure Concepts plans to divide Luna Park into four sections - a

convention centre, a garden, a show alley and a harbour terrace. A government committee will make a decision by March.

● Chief executive of the Entertainment Industry Employers Association, Jan Stoneham, is lobbying the Victorian state government to dump the planned Crown Casino Lyric Theatre. Industry leaders agree if the theatre construction goes ahead, the venue will do more harm than good as it is a venue that nobody wants and no one can afford. The theatre was

due to be completed by November next year but was given a three year extension to avoid \$73 million in late penalties.

● A great new website has been launched to help Australian artists and companies with arts marketing. Called Fuel4arts the site has lots of references to help arts managers tackle marketing in an effective way. The site will feature case studies and has a free marketing handbook that can be downloaded. Check out: www.fuel4arts.com

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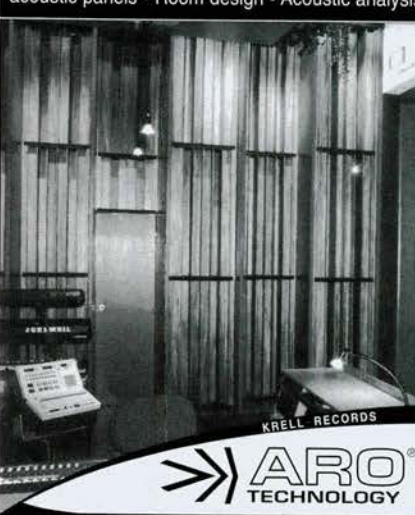
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Although based in Melbourne, Concert Lighting Systems has long been a supplier of lighting equipment and services to many Sydney venues, concerts, exhibitions and theatrical productions. Now Sydney-based clients can deal direct with a CLS office in their city.

"I see Sydney's entertainment market expanding with many organisations looking for quality equipment and support," said Trevor Lloyd, Managing Director of CLS.

CLS' manufacturing business has a long history designing and manufacturing trussing, stands, clamps, gel frames, pattern holders, video brackets, hoist control-

lers and power distribution. The Sales Team at their Melbourne showroom keep a large stock of lighting equipment and accessories of international brands. Expect to see a Sydney showroom and warehouse in the near future.

Recently CLS production crews have been involved in setting up large lighting rigs for special events such as: *General Motors' 50th Anniversary Dinner* at the Dome, Homebush, Sydney; *The Falls Festival* at Lorne, Victoria; *The Trade Warehouse Party* at Victoria Docks and *The Big Day Out*.

Head Office CLS Melbourne: +61 3 9646 8444; CLS Sydney +61 2 9328 0688.

A QUIET DIMMER FUTURE

Jands Announces Sinewave Dimmer

Jands has prototyped a new low-noise dimming system which they expect to eventually replace conventional phase controlled dimmers.

Unlike their standard counterparts, the Jands SP sinewave dimmers use MOSFET switching to dim in a way that Jands say produces no filament buzz in luminaires or dimmer choke rattle, does not induce noise into nearby sound systems, and is kind to the power grid it draws its power from. In addition they meet international standards for low frequency mains harmonics, and will comply with future regulations that are expected to eventually ban the use of

phase controlled dimmers.

The SP dimmer incorporates electronic current limiting so that the dimmer can survive indefinite short circuits and overloads and will function normally as soon as the fault is removed. This feature can be extended to limit the current inrush to cold lamp filaments, increasing the lamp life and minimising the supply dip when several lamps are switched on simultaneously.

One of Jands' R&D projects over the last couple of years, they say the SP Sinewave dimmer does not have the power consumption problems associated with standard dimmers. The latter dimmers,

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PROMINENT LIGHTING DESIGNER IN SERIOUS ACCIDENT



SYDNEY: On Thursday January 14th, lighting designer Allan Stone was hit by a car and seriously injured.

Allan had just left the Sydney Festival offices when a car hit him, catapulting him through the air. His shoulder took the brunt of the impact and was consequently badly damaged. Allan was rushed to St. Vincent's Hospital where he underwent seven hours of surgery.

Allan told me he is just glad his shoulder took the impact rather than his head.

Although Allan had to spend over a week in hospital he was let out for a day to attend one of his Sydney Festival projects at the State Theatre.

Allan is the lighting designer responsible for lighting some of Sydney's most prominent buildings in the Sydney Festival colour - red. These buildings included the Opera House, Museum of Contemporary Art, Mitchell Library and the AMP building. Gear was supplied by Chameleon Lighting.

• Cat Forcer

INSIDE LIGHTING

Television & Film Special



LIGHTING BABE

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INTRODUCTION TO TELEVISION LIGHTING

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MARKET OVERVIEW: LARGE FORMAT LIGHTING DESKS

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FOX STUDIOS

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BUYERS GUIDE: TRUSS, FLYING GEAR, RIGGING

LIGHTING THAT PIG

Gaffer Simon Lee talks about *Babe, Pig in the City*

When Babe leaves the country, he winds up in a vast metropolis, with elements of Blade Runner, and film noir. The city, designed and built from scratch, began life as a bitumen lot, and ended up an urban pastiche, with dozens of street lamps, and over 20 buildings five stories high.

The lighting crew spent seven and a half weeks of night shoots, on the Fox backlot set, from 5pm to 7am. Simon Lee was Chief Lighting Technician on Babe, Pig in the City. Ten people worked on the main unit, plus a full time rigging crew, headed by Matt Buchan. His crew ranged from 3-20 guys, who pre rigged, and struck the gear from the huge sets.

IT'S VERY DARK AT NIGHT

The night shoots needed a lot of access equipment, including five condors, or boomless cranes. ON the set, they used six Dinos, ten Dinettes, three 16kW, four 4kW Xenons, and a plethora of smaller lights. Every window of every building had an adjustable light in it, and they were all cabled through a DMX dimmer system.

"We had total control of any light," said Lee. The housings of the street lights were spun to fit a superwide Par 64 globe, sourced out of England. Some of the street poles had two light heads on them. "Each street light could be split into a separate circuit, so we had control of everything on the set. We didn't drive it through a computerised lighting desk, we went through a pre-set board. We used two 60-way Jands Event boards slaved together. That meant that we had fingertip control on 240 lights, plus we had other stuff in memory. Our board operator, a fantastic guy called Greg Little, had plans of the set, plus he had a video monitor, with a split from the camera, so he knew exactly what the camera was seeing. We could talk to him from the camera, and tell him exactly what we needed done."

All the cabling for the whole set, including the big 400 amp cables went underground. They had four 400 amp supplies leading into the set. Because everything was exposed to the elements, at night they brought the booms down, and tarped all the boards up. The whole system had to be made weatherproof, with lots of earth leakage protection throughout the system. Gillespie cranes got into the spirit, and painted their machines black, so that they wouldn't be seen against the night sky.

"Fox has environmental concerns about the heritage Moreton Bay Fig trees," Lee said. "So we had to build an aluminium roadway to bring in the cranes, and disperse the weight of the machines rather than compressing the soil on one particular boundary of the set."

Lee and his crew would film on the backlot at night, and each morning, Lee would leave a set of plans for Matt Buchan and the rigging crew. During the day, the crew spent about at least five hours repositoning machines, and relocating lamps.

THE BANQUET HALL

The big octagonal banquet hall set, was about 17m high, and 23m in diameter. "To get the glow in the dome of the banquet hall, we pumped 48 blondies in, just for the ambience," Lee said. "We had six blondies on each of the eight panels, putting an ambient glow onto the sailcloth type material. To key the set, we chose to go through the dome. We had two 24kW Dinos on each panel."

The set was two storeys high. The dome was made of a steel frame, and then covered with hundreds of metres of gridcloth. Each of the 14 windows had a 10kW outside. All the ones on the second floor were mounted on small boomless rigs, so the lights could be moved easily. The DOP - Andrew Lesme - was shooting multicamera, so Lee couldn't have a bulky scaffold rig anywhere in sight.

On the big main window, there was a 10kW, a 20kW and a 4kW Xenon. They were all mounted on their own machines. And every light on the set went back through a dimmer system, in the same setup as the city racks.

There were over 150 practical lights in the set; on the walls, and

the tables. These were each controllable through the dimmers. The banquet set was being pre-rigged while the backlot was being shot. Four 400amp feeds went into the set, with miles of cable and distribution. All the lights had to be flicker free, because of variable speed photography.

GENERATORS IN THE COUNTRY

The crew worked at Robertson, home of the original Babe farm, for three and a half weeks. They had to supply all the power, down at the farm, with enough for lightning strikes. The terrain is what you might expect in the country; hilly, with only one dirt road. Grant Atkinson was the best boy, and explained that, "We had a 300 kVA generator at the top of the hill, and 400m of powerlock running down to the farm. We had another 400 kVA generator for the lightning and for the flash effects when the photographers take pictures at the gate."

The scenes here needed three sets of lightning strikes which had to be run from a separate power source. They mainly used 24kW Dinos, 24kW Dinettes, 4kW Xenons, and 18kW HMI's. They shot during the day.

"Getting the power systems installed was tricky," Atkinson said. "We had two power runs on each side of the farm, from the top of the hill, right down to the bottom. We had kilometres of thick cable down there, and because we were doing such wide vistas, we had to hide the cables."

A 150 kVA and an 80 kVA generator were floaters. If the weather was bad, they had to be flexible enough to move into the little interior set on the farm.



"The hardest thing was getting the equipment down to the bottom of the hill and back up again. We had to use 4WD motorbikes. The road was the picture road, and we couldn't drive on the grass, so we had to ship the gear in early in the day, or carry it down. So most of us ended up carrying it all down, and we got pretty fit! We were running up and down the hills all the time. I haven't been so fit in years!"



Jands Announces Sinewave Dimmer

continued from page 73

under certain circumstances, can consume more current than the supply is designed to handle, and have poor power factor. The improved power factor and lower harmonic generation of the SP dimmer mean savings all the way up the power generating ladder with less waste heat in wiring, switchboards and substation generators, lower copper costs in new installations and less carbon burnt per kilowatt of power delivered.

Jands anticipate that the new SP dimmers are likely to find markets in critical applications and performance spaces where exceptional low acoustic noise performance is demanded and in building management applications where long-term efficiency will bring significant cost savings.

Technical Details

Standard phase controlled dimmers take the incoming mains waveform, chop sections out of each half-cycle and feed the rest to the lamp loads. The bigger the chopped

out section, the less power is available to reach the load. A side effect of this chopping is high radio frequency emissions and poor power factor (the load current is only consumed during the un-chopped sections, and these are only ever in phase with the incoming mains at full power). The chopped waveform is also an undesirable source of acoustic noise in the dimmer chokes and the lamp filaments.

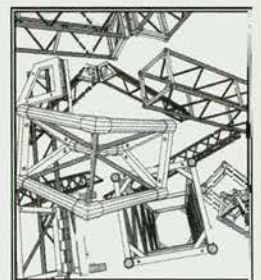
Sinewave dimmers like the SP take the incoming mains waveform and chop it at a high frequency, typically 50kHz. The on/off ratio of the resulting high frequency pulse train is then varied to control the power to the lamp loads.

The loads receive a heavily filtered version of the pulse train which, due to the filtering, is the same shape as the input waveform (ie a sinewave). The output waveform power factor is purely dependent on the load itself and the result is a dimmer that produces less radio frequency emissions and less acoustic noise overall.

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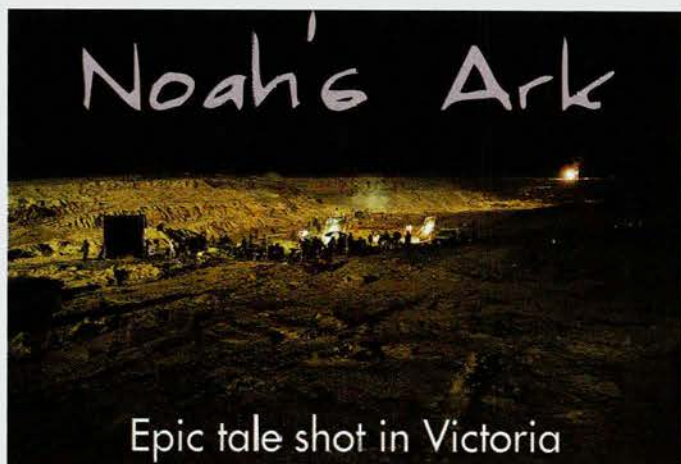


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The filming of *Noah's Ark* (a 2 x 2 hour television special for America's Hallmark Entertainment) at Point Cook, Victoria has just wrapped. The film stars Jon Voight, James Coburn and Mary Steerburgen.

"The lighting for *Noah's Ark* certainly was diverse," said Ian Dewhurst, Gaffer. "The shooting schedule was interspersed with many night shoots on a very large scale."

DOP Mike Molloy decided to use a Musco which Ian described as a God-send for mainly the backgrounds. They also used 18K HMI's, 12K HMI's, 6K Pars and 20K Fresnels to provide a lot of soft bounce light. Filter combination for the HMI's was mainly 3/4 CTO and white flame green.

The largest interior set of course was the Ark which took up the length of an aircraft hanger.

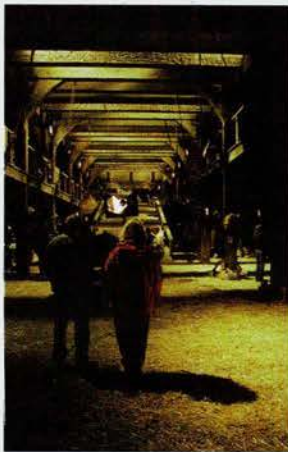
"Here we used a combination of 20K, 10K, 5k Fresnels etc," said Ian. "The set had a central light well through which we hung 50 Blondies and aimed these through a ceiling of 1000H. In total, when the Ark was all lit and running, we were drawing half a mega watt."

To help out with the interior, the Ark was plumbed for gas and numerous gas torches were utilised.

"The result of this interior was quite spectacular," said Ian. "This was a challenging job, however most enjoyable."

Ian supplemented his truck of lighting gear with equipment from Key Lighting.

There was also a full time special unit that ran for six weeks with Nick Payne as gaffer and a Visual Effects unit with Stewart Sorby as Gaffer.



new products::

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There are now 2 **Fabric Egg Crates**

for the Rifa-lite, to help reduce spill and better control the light. Available in both 200 and 400 dispersion angles, for all three sizes of Rifa, each Egg Crate attaches quickly and afterwards folds up to be stored in its own small lightweight bag.

There's a **Rifa-lite Kit** available in hard or soft case for each of the 3 light-efficient models (500, 750 and 1000W max). Compact, lightweight and self-contained, the Rifa-lite uses a simple design approach as old as the umbrella to achieve its quick and easy setup and strike capabilities.

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The **CF 1200 Zoom al** was conceived, designed, and developed for the television studio, but finds itself at home in a variety of applications. This unit utilises an incandescent lamp and a full CMY colour mixing system, along with a separate dichroic colour wheel, offering the convenience of instant access to commonly used dichroic colours.

Output exceeds the general performance of most 1200w fresnels, and operation is almost silent. A progressive zoom system varies the beam angle by moving the fresnel lens longitudinally within the fixture, minimizing loss of light and avoiding undesirable spill. Beam shaping (Par effect) with the ability to fully shape the beam even whilst operating the zoom system is a notable characteristic.

Additional features include a totally electronic dimmer, complemented by a fast strobe effect and a separate black out shutter.

Also new to the CF Range is the **CF1200 Hard Edge Compact (HEC)** and the **CF1200 Hard Edge (HE)**.

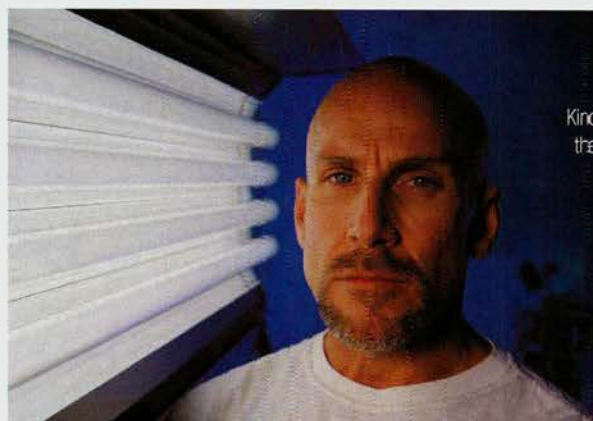
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The **Strand 510i** is a rack-mounted lighting controller for use in show control systems. As a tracking backup for any 500-series consoles the controller provides all of the connectivity of a full console with channel capacity to match even the largest systems.

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BY: Rohan Thornton

An Introduction to TELEVISION LIGHTING

Television or Video lighting is perhaps the most misunderstood of all lighting disciplines. Gone are the days where we were required to flood a stage or a studio with hundreds of 10 K's and 5 K's, as the sensitivity of cameras has now reached a point where often none or very little lighting is required. Whether you are lighting the Opening of the Olympic Games or your goldfish's Barmitzvah, with a little thought and a little effort you will be able to make every frame a Rembrandt. The techniques between theatre, television and touring are getting more and more similar. If you have experience in other fields, it is only a matter of adapting the skills that you already possess, to achieve good results.

The fundamental purpose of lighting for video is to create dimension. There are many other technical requirements you have to be mindful of along the way, but ultimately you are creating the depth in the picture. If you line up ten different Lighting Designers and tell them to light the same scene, you will end up with ten different plots. However, they will all have components of the basic techniques and guides that are to follow. I stress that this is a guide to get you started and it is up to you to experiment and develop your own styles and techniques.

THE LOOK

This is the most critical element. You need to know in your own mind what you want your shot to look like. The mood, the environment, the style are to be factored in conjunction with your equipment and area restrictions. A clear image in your mind at the beginning is the most effective way of achieving a good result at the end. The other element to bear in mind is that you are lighting for the shot not an audience.

Keep in mind to achieve your "look", you have to consider both the foreground and the background of the shot. If the shot is a person on a couch, more effort may need to be put into the background to create the depth required.

The basis for the look are five different lights: **KEYLIGHT**; **CLIP**; **BACKLIGHT**; **FILL**; and **DRESSINGS**.

THE KEY LIGHT

As its name suggests, this is the first and most important light. The Key light forms the basis of your shot. It is situated in the general direction of the camera. The angle away from the camera will depend on your mood. Directly above the camera and from a shallow angle, will give a very flat appearance to the shot. It will also create the most spill on the background. Consequently, the steeper the angle and the further left and/or right of the camera, will create increased shadows on the face but reduce the spill on the background. A handy hint for the placement of the Key is to look directly at the camera with the ideal placement of the light just inside your peripheral vision. Use of various diffusion gels can be used to soften a Key light. The level that the key light is to be set at will determine the balance for every other light you place for the shot.

CLIP

The clip is used primarily to light the side of the face on the opposite side to the Key Light. Its usual position is at right angles to the position of the camera. Again you can experiment with its position to create the desired look. Experimenting with coloured gel can help as well. If you are trying to get that silhouette effect, you can use a clip as your key light.

BACKLIGHT

The humble backlight is, I feel, the next most important light. You can go without every light but if you forget the backlight the shot will look flat and lifeless (however, if that is the way you want it to



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With the Pars there are also two basic body styles: small die cast aluminium luminaires PAR 200W and PAR 575W; and large stainless steel luminaires with aluminium extrusions and die cast components PAR 1.2kW and PAR 4/2.5kW.

Both ranges have a comprehensive range of accessories interchangeable with existing Quartzcolor luminaires.

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DIVA-LITE 400

The Diva-Lite 400 is a portable softlight for electronic field production especially Kino Flo engineered for the digital video generation. With features to control the spread and intensity of the beam it has an onboard dimming ballast for precise brightness control. The ballast operates directly off available power anywhere in the world and draws as little as 1 amp. The light is flicker free. The Diva-Lite 400 is the first in a series of new DV lighting fixtures designed for the rigors of video field work.

Call Panavision +61 2 9439 6555.

KOBOLD LIGHT

Coemar De Sisti Australia have added the German-made Kobold Light range of television and film lighting to their inventory. Kobold manufacture

an extensive range of portable lighting products such as DC powered, camera-mounted, directional spots for television news crews and, in particular, the Cinemagic range of fluorescent lighting systems. The Cinemagic system has a removeable wiring harness which allows lamps to be disconnected whilst the unit is

on with no damage to the ballast.

Call Coemar De Sisti Australia +61 3 9467 8666.

ROSCO mfx CONTROL ADAPTOR

A controller for use with Rosco Animation Motor Units and Rosco Gobo Rotators for people who prefer an inexpensive, non-DMX control from their lighting control board. Dozens of new effects are available when a Gobo Rotator is combined with the Animation Effects system and operated at differing speeds using a controller.

The mfx control adaptor is plugged into the Varispeed Rosco device, effectively converting it for control from any dimmer, and providing 0-9 rpm. Available as a single unit giving forward movement only (\$87 plus tax) and a double unit giving opposing directions for double Gobo rotator (\$110 plus tax).

Call Rosco Australia +61 2 9506 6262.

An Introduction to

TELEVISION LIGHTING



look, then that's okay). Traditionally, the backlight is placed directly behind the subject you are lighting. If you are unable to place it there, just simply move it left or right to suit. If you are using a clip, then move it to the side that the key light is situated, but if not, place it on the opposite side of the Key. Another option is to go with what is called three quarter backlights. This involves using two backlights instead of a clip and they are placed at a 45° angle off the centre axis behind the subject. A steep backlight will light the hair of a person, with a shallower backlight edging the shoulders. Again play around with a few combinations, maybe add some gel to achieve what you are looking for.

THE FILL

We all love a fill light. Many mistakes have been cured over the years with the Soft Fill. It is basically a soft light of some description that is placed between the Key and the Clip. It is used as its name suggests to fill in the holes and shadows created by the other lights. It is placed a little higher than lens height. Fills are also very handy to add some light to the background, if required, while simultaneously lighting the subject.

DRESSINGS

Dressings are lights used to highlight anything in the shot other than the person. Plants, paintings, or any other objects may need to be lifted in intensity to achieve the image. Even a bland wall can be assisted by the application of a well-placed light doing something as simple as slashing the wall to lift the subject out of the shot. A profile with a gobo is a great way to break up the background and add some life to an otherwise bland image.

COMBINATIONS

Just about every situation can be resolved with a combination of all or some of the above lights. In some situations only a fill light may be required. I find that the best approach is to initially determine what is called a source light. More often than not, it is the key light. In a situation where you may have a subject beside a window, the light coming in may end up being the source light as you may have little or no control over it. A desk lamp in a dark room may be in shot, and you might decide that is the primary source light. It always comes back to having a clear idea in mind for the image. While experimenting, set up a shot with all of these lights then play around with different combinations to achieve different moods.

INSTRUMENTS

The lighting fixtures are similar to other disciplines. The only real specialised instrument is the soft light. All of the major manufacturers make a range of models for a variety of prices. An increasingly

popular soft light on the market is the Kino Flo range. They are a fluorescent soft light that provides a nice even light and is cool in terms of heat for those confined areas. As for Key, Clip, Back and Dressing lights, they can be combinations of lights we all use such as Fresnels, Profiles, and open face lamps such as redheads and blondies. Again, it is simply a matter of experimentation to develop the style you want which will in turn determine your fixture selection. If your budget allows, discharge lamps like HMI could be added to your inventory.

COLOR TEMPERATURE

One more handy hint to get good quality pictures is to be very mindful of colour temperatures. The many different situations could place you in a situation of differing color temperatures. Tungsten and Quartz Halogen will generally burn at around 3000-3200°K. On the other hand, daylight could burn between 5400-6800°K on any given day. HMI lamps depending on the quality of the globe, will run at about 5600°K.

Although the white balance on the camera will compensate to a

certain degree, you may need to do some Colour Temperature converting. This can be done simply by using colour correction gels. In the case of converting tungsten lamps to match that window, ° C.T. Blue will convert from 3200° to 3600°. Half C.T. Blue will convert from 3200° to 4300° and full C.T. Blue will convert from 3200° to 5700°. The same system works converting daylight down to tungsten. Again, it is a matter of experimenting with the gels and your camera.

This guide is only scratching the surface of an ever evolving subject. The radical changes in Broadcast technology has caused some major changes in the way we light video over the last ten years. The one thing that is worth mentioning, is the age old battle between film and video. You cannot make video look like film and visa versa. Each has there own niche in the market and different circumstances will call for one or the other. The best thing to do is watch a lot of television try and figure out how other people do the things you like then try it your self.

I am quite happy to help any one out and I can be e-mailed at - Rthornton@ninet.net

THE ROLE OF THE GAFFER

(as opposed to roll of gaffer)

The Gaffer is by far the most important person on the film set. It's his perspective on lighting that makes the film beautiful. The picture is bought to life with his brilliant, original lighting concepts such as:

- "We should put light on the people so that we can see them sometimes"
- "We shouldn't put lights on top of the camera"
- "When it's night, it should be dark outside"
- "I think my meter says that the sun is really bright, maybe we shouldn't point the camera at the sun."
- "We should keep the lights far enough away from the actors that they don't catch on fire"

In addition to lighting, the Gaffer is responsible for critical, yet unheralded tasks, such as coaching the actors, testing bulk erasers on the audio departments tape stock and opening each and every can of film to make sure that the film was properly exposed.

STOP PRESS

Chameleon Touring CEO Tony Davies has won another award, this time for his mother's external home Christmas lighting extravaganza in suburban Ermington (Sydney). The award, from The Professional's Real Estate, was accompanied by a cheque for A\$300. Davies was modest about the accolade, but says proper credit must go to Mr Fairylights in Neutral Bay, who apparently deals out the right stuff.

Davies says that Mrs. Davies is very persistent each year, and complains that the work is never done early enough. She took the unprecedented step of booking a crew from Chameleon to do the job last Christmas when Davies wouldn't take her calls. Now suitably recognised for his work, Davies has undertaken to complete this year's spectacular early, so we may feature a photo (if we are impressed, that is) in the Christmas issue.

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STUDIO BASICS \$34

By Richard Mansfield. This book covers what happens on the studio side of the glass, from the artist's point of view. Subjects covered include logistics, preparation, repertoire, instruments, and how to listen to tapes. 164 pgs. 1998.

MIDI SYSTEMS & CONTROL \$55

By Francis Rumsey. 2nd Edition. Covers MIDI control principles and how they can be implemented in practical systems. Deals with MIDI in studio, musical and lighting equipment, mixer automation plus information on the latest additions to the MIDI spec. 202 pgs. 1994.

PRACTICAL STUDIO TECHNIQUES \$40

By Tom Misner. Includes a bonus CD, a practical demonstration of a complete mixdown session including setting up effects, uses of the compressor, gating of sound, various types of equalisation, selecting reverb settings & more. 102 pgs. 1994.

EFFECTS FOR THE THEATRE \$49

Edited by Graham Walne. Divides effects into four sections: scenic, sound, lighting and special. An exciting range of techniques are explained, with consideration for budget. 150 pgs. 1995.

IT'S BACK! EFFECTIVE AUDIO VISUAL \$80



By Robert Simpson. 3rd edition demonstrates how the computer is fast becoming an effective show delivery platform in its own right. Applications covered are business presentations, conferences, training sessions, museum exhibits, visitor centre displays and multimedia. 255 pgs. 1996.

SOUND ENGINEER'S POCKET BOOK \$50

Edited by Michael Talbot-Smith. Compact source of essential data for every sound technician. Covers noise measurement, acoustics, microphones, loudspeakers, mixing equipment, CC's, DAT and MIDI, telephony, ISDN, digital interfacing, ultrasonics. 157 pgs. 1995.

PROFESSIONAL LX HANDBOOK \$105

By Verne & Sylvia E. Carlson. Details technical foundations, equipment and methods of lighting for film and video productions. Packed with practical insights, tips and troubleshooting techniques useful on the set. 224 pgs. 1991.

CONCERT LIGHTING \$70

By James Moody. 2nd Edition covers every aspect of rock & roll concert lighting equipment and techniques, including CAD, moving lights, hi-bred consoles, rigging safety and special effects. 279 pgs. 1998. WAS \$94

STAGE LX CONTROLS \$89

By Ulf Sandstrom. Explains the general principles of modern computerised lighting consoles and the relevant control standards such as DMX512, MIDI and Ethernet. Covers the basic aspects of controlling moving lights and scrollers. 215 pgs. 1997.

PROJECTION FOR THE PERFORMING ARTS \$80

By Graham Walne. Gives a brief historical overview of early projection attempts, then looks at equipment and the planning and design of every kind of indoor and outdoor live performance. 139 pgs. 1995.

CONCERT TOUR PRODUCTION MANAGEMENT \$39

By John Vasey. Provides basic information needed to manage the production of a touring concert from start to finish. Discusses different types of venues, who's who on the road, crew management, riders, contracts, and even electrical formulae! 165 pgs. 1998.

MODERN RECORDING TECHNIQUES \$65

By Huber & Runstein. Addresses the area of project studio recording, the new base of home music production, using multitrack, Hard Disk and MIDI technologies. Descriptions of the toys, tools and practices of music recording and production. 4th ed. 500 pgs. 1995.

LIVE SOUND MIXING \$39

By Duncan Fry. 3rd Edition addresses the basics on how a PA system works, and details on troubleshooting when it doesn't. Covers EQ, processing, mixing, sound-checks, effects, monitors. 176 pgs. 1997.

OTHER BOOK TITLES:

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BASIC STAGE LIGHTING Mark Carpenter	\$17.00
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detailed:: MAJOR LIGHTING CONSOLES

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AVOLITES

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Whilst a market leader elsewhere in the world Avolites are still establishing their name here in Australasia. Former distributors LSC Electronics sold a **Diamond II** and a **Sapphire** (now superseded by the **Sapphire 2000**) to *Jands Production Services* as they are frequently required by overseas lighting designers on tour. They also sold a top-of-the-range **Diamond III** to *Production Works* in Tasmania. Last year ULA took over distribution and have sold a quite few of the lower price models such as the **Pearl** (*Theatre Lamp & Lighting*, New Zealand; 3 to *Spotlight Systems Concert Lighting*, New Zealand; *Entertainment Lighting Systems*, Gold Coast; and *Schusters Concert Lighting*; Gold Coast) and the **Azure** (*PC Audio Visual*; *Planet Nightclub*, Adelaide; and *Southport Sharks Club*, Gold Coast).

All Avolites consoles share a similar operating philosophy which makes them all appropriate to a wide variety of markets and applications. For example all consoles offer the possibility of live hands-on shows, theatre-style plotting and playback, clubs operation with environmental control, fully time-coded industrial shows, live MIDI synchronisation, automatic scheduler control

AVOLITES SAY THEIR UNIQUE FEATURES ARE

- Shape Generator - allows fast creation of complex patterns.
- The high number of channels - the Diamond II and Diamond III has over 3000 down to the smallest consoles, the Pearl, Azure and Sapphire, all with 2048 channels (consisting of up to 200 fixtures and 200 dimmer channels spread over four DMX lines).
- A large number of playback faders (Diamond II = 30, Diamond III = 20, Sapphire = 20, Pearl = 15 and Azure = 10 + 40 button playbacks) compared to most other modern consoles - with such a diverse selection of fixtures being controlled from one console these days, this feature is a popular benefit.
- The 3D tracking system, which enables real time follow spot style tracking of performers (see below).

WHAT AVOLITES SAY THEIR CONSOLES DO BEST

Hands on, direct access to all fixtures and palettes during the show. Avolites consoles are a favourite choice for the festival environment in Europe, with its unique requirement for fast programming, live "takeover" facilities and quick response

Ease of use of all Avolites consoles. The reason Avolites say their



desks are such a popular choice with rental companies abroad is that new users can become familiar with the console very quickly.

UNIQUE TECHNOLOGY ASSOCIATED WITH AVO PRODUCTS

● The **Avolites Graphic Tablet** - their most obvious and totally unique peripheral. The main benefit of this is the real-time colour mixing of any CMY fixture. Closely followed by the ability to map out one's entire stage and use the 3D tracking facility to track performers live or vastly speed up your programming of preset focuses. The Graphic Tablet also offers direct access to all fixtures, groups, palettes and fixture attributes

● The **Avolites Focus Finder** - a new, totally unique, patented product. Focus Finder obviates the need to point every fixture at a new stage position before updating the position palette on which all memories and cues are built. The Focus Finder is simply placed wherever the LD desires the lights to be focused and by pressing the 'Focus' button on top of the unit, the fixtures scan the stage and locate the Focus Finder. The Focus Finder then reports back to the console that it has found the fixture and a restricted scan process identifies the exact centre of the beam. Once the last fixture has been focused exactly on the new stage positions by "Homing In" on the Focus Finder, the console automatically stores the Pan/Tilt data into its Position Palette.

● The **Avolites Stage Visualiser** - a combined software and hardware package allowing the preprogramming of a lighting rig. The hardware comprises a 1000 channel DMX reader card, while the software allows simulation and display of intelligent fixtures on your PC.

Website: www.avolites.com

COMPULITE

Coemar De Sisti Australia +61 3 9467 8666

Israeli company Compulite have been manufacturing computer based lighting controllers for over 20 years. During this time they have grown rapidly to the current position of employing over 60 staff in multiple countries.



detailed.: MAJOR LIGHTING CONSOLES

Compulite consoles are currently in use at the following Australian venues: *Playhouse Theatre*, Perth, WA; *Australian Film and TV School*, Ryde, NSW; *ABC TV*, Melbourne, VIC; *Channel 7*, Brisbane, QLD; *Pentecostal AOG church*, Melbourne, VIC; *Channel 7*, Sydney, NSW; *Channel 9*, Adelaide, SA; and *Star City Casino*, Sydney, NSW

Compulite released the world's first computerised lighting console, based on a microprocessor, in 1978. In 1984 they pioneered moving light control with the TELESCAN Lighting Computer. Then they became innovators in the development of INTEGRATED moving light consoles. The first of these was the Animator, released in 1990, which soon became the most popular integrated moving light console in the world. It is still to be found in almost every stage and themed show in Las Vegas. Their large scale consoles include: **Sabre**, **Ovation 4D**, **Micron 4D** and **Nexus**.

In the last few years Compulite have continued to provide innovations such as Ethernet links on consoles, on-line internet remote diagnostics, 3D visualisation software and multi-user concurrent programming via multiple networked consoles.

COMPULITE SAY THEIR UNIQUE FEATURES ARE:

- **Operation** - all Compulite consoles use the same programming system and menu functionality. This makes it possible for a user to move directly from the largest to the smallest console without any retraining. Even the menu numbers for system functions are the same, the smaller consoles simply skip menu numbers for functions that are only available on the larger consoles. This has been a big plus for most users.

- **Compatibility** - Compulite consoles are all fully show compatible. A show recorded on the smallest Photon console can be loaded onto the largest Ovation 4D console without any editing. Even more user friendly is the ability to load a show from the largest Ovation 4D console down to the smallest Photon console.

- **Integration** - integration of conventional and moving lights. On the larger consoles moving lights and conventionals can be programmed independently or simultaneously. Even if they are programmed separately they can be recorded to the same cue numbers to enable single operator playback.

- **Events** - these are actions assigned to a particular scene. When that scene is triggered during playback the event can perform any operation on the console, such as activate a macro, load a show, change the softpatch, etc.

- **Proprietary Protocols** - all Compulite consoles can output a number of specialised manufacturer protocols as well as DMX. By adding an S-Mix converter the consoles can talk directly to High End, Martin, Telescan and other fixtures in their native data protocols.

Large Format Consoles: Sabre; Ovation 4D; Micron 4D; Nexus.

WHAT COMPULITE SAY THEIR CONSOLES DO BEST

- **True Dipless Crossfade** - many modern moving light consoles do not provide a true dipless crossfade, say CDA. Compulite provide two independent split crossfades on their large consoles and a single split crossfade on the smaller units.

UNIQUE TECHNOLOGY ASSOCIATED WITH COMPULITE PRODUCTS

- **Add on Wings** - macro playback wing and Sub master wing allow the user to increase the number of available buttons and sliders for playback control.

- **CompuCAD** - this is a Windows based 3D CAD package that provides realistic high speed renderings of a lighting design. This links to the consoles via ethernet to provide a virtual reality theatre in which the user can program the console. CompuCAD even has a full function off-line editor for the entire range of Compulite consoles that operates as an integrated part of the software.

website: www.compulite.com

GTV9 PURCHASE MOVING YOKE INTELLIGENT LIGHT SYSTEM

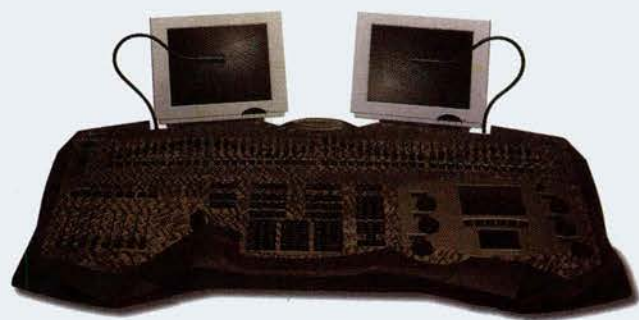
Coemar De Sisti have won the contract to supply moving lights to GTV9 Victoria. This contract is understood to be the first large scale purchase of a moving yoke light system by a TV station in Australia. The management of TV stations have realised that moving lights are now a serious part of lighting inventory and that they have matured into a reliable product that is a worthwhile asset to purchase.

Once the capital expenditure budget was approved at GTV9, lighting director Rohan Thornton undertook a major research project into the market sector. He spent considerable time finding out about not only the fixtures themselves, but also the companies who manufacture and import them.

To ensure that they purchased the best light for their needs Rohan arranged for a side by side comparison of the short listed brands and models. This included the Clay Paky, Martin, High End and Coemar range of fixtures. All the fixtures were set up in a Studio for a period of 4-5 days to allow all of the GTV9 lighting staff to get a good feel for the fixtures.

At the end of the trial a wish list of the 'perfect' fixture was put together. The CF series from Coemar was the closest to their ideal, with just a few small changes needed to fit their exact needs. These included a wider zoom angle, faster colour spin speed and other minor software changes. Due to the close relationship between Coemar De Sisti Australia and the factory engineers, these were all agreed to within 24 hours of the request.

The total order consists of: 16 x Coemar CF Zoom al; 10 x Coemar CF 1200 HE; 13 x Coemar dual fixture roadcases; and Compulite CompuCAD 3-D lighting design software.



ETC

Jands Electronics +61 2 9958 0909

American company Electronic Theatre Controls is one of the world's largest suppliers of theatrical lighting consoles, manufacturing an extensive product range for small theatres to large, multi-venue complexes.

Introduced in Australia in the late '70s, ETC's distribution was taken on by Jands about 10 years ago and recent installations include the *Queensland Performing Arts Centre*, the *Mackay Entertainment Centre*, *Channel 10* and the *Theatre Royal* in Hobart.

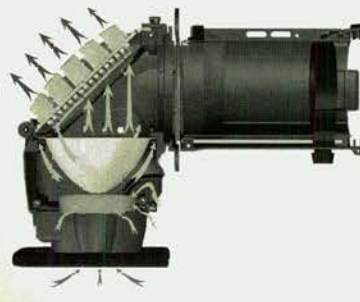
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planetary gear peak/flat lamp adjustment, precise positioning from cool controls.

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from today's compact filament and arc lamps.

Robust, lightweight, electrically insulated plastic components.

Versatile: Choice of two zooms — 12°-26° & 23°-50°; and 20°, 30°, 40°, 50° fixed beams. 600w & 1000w tungsten halogen, 575w MSR, 70w & 150w CDM — a light source to meet your requirements.

Easy to use: 350° rotatable lens barrel. Two pattern mounting slots. Interchangeable lens that simply slides in. One lens tube serves the 23°-50° zoom and the four fixed angle lenses. Rotatable pattern holder for fast, simple image alignment.

Safe: Power supply is disconnected as the lamp is withdrawn. Cool operating controls.

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detailed.: MAJOR LIGHTING CONSOLES

Two of ETC's best selling large format lighting desks are the flagship Obsession II, and the Express range.

The award-winning **Obsession II** is popular with Broadway lighting designers and features radical modern styling and a supportive, ergonomic layout. Controls are easily accessible and located according to priority and frequency of use.

Already popular in Australia's performing arts complexes, Jands say the Obsession II is fast and powerful, providing spreadsheet editing, integrated moving light control and multi-user functions. Its cutting edge Pentium processor frees users to spend critical setup and rehearsal time working rather than waiting, while its intuitive command syntax significantly reduces programming time. With up to 3000 channels, Obsession II can handle large and complex shows.

ETC's **Express** range comprises five models from the compact Express 125 and 250 with 24 submasters, to the Express 72/144 with 72 channel two-scene or 144 single scene operation. Preferred in education, small to medium theatre, TV and hire applications, Express uses the same operating system as ETC's larger Expression 3 including a moving light software package with 16-bit resolution and X/Y trackpad control. Familiar, intuitive syntax and ergonomic layout makes the console easy to operate, say Jands.

Dual DMX outputs on the Express provide control of up to 1024 dimmers with full proportional patch. Turn-on macros, remote macros, MIDI and MSC inputs and a real-time astronomical clock provide powerful programming functions to rival larger, more expensive consoles. The Express range is also available as rackmounted enclosures without the complement of faders and buttons for stand-alone playback control applications.

ETC SAY THEIR UNIQUE FEATURES ARE:

- All families of systems such as the Express range of consoles allow show compatibility, and the ETC software upgrade policy provides backward compatibility.
- Dual (or greater) DMX outputs ensure a level of redundancy and permit logical layout of peripheral devices.
- The ETC website (www.etcconnect.com) provides free access to the latest information on all ETC products including manuals, software upgrades and so on.
- ETC console users are supported by a 24-hour telephone help service and are protected by a two year warranty on all ETC purchases.

WHAT ETC SAY THEIR CONSOLES DO BEST

- Ergonomic design, intuitive layout and ease of use
- Off-line editing
- Integrated moving light control
- Show compatibility across the range

UNIQUE TECHNOLOGY ASSOCIATED WITH ETC DESKS

- **ETCNet**, provided on all ETC desks, is an ethernet based network which enables systems to be arranged with ultimate flexibility within a given installation. Peripherals such as remote consoles, remote focus units, remote video systems and full tracking backup systems can be connected to any point in the network.
 - **ETCLink**, which connects desks to dimmers on a dedicated network to provide "dimmer feedback" direct to the desk, so there's no need for clumsy stand-alone fault detection systems.
 - Fast and powerful Pentium processors.
- website: www.etcconnect.com



HIGH END SYSTEMS, INC. AND LIGHTWAVE RESEARCH

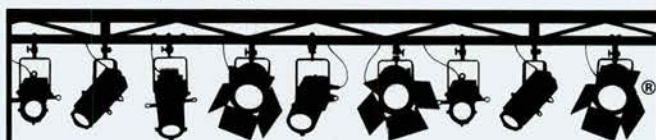
Greater Union Entertainment Technology 1800 773 187

The **Status Cue** has the ability to control fixtures such as Technobeam, Technopro, Technoray, Trackspot, Intellabeam. Studio Color, Dataflash AF1000, Cyberlight and EC1 and offers preset fixture types for numerous additional DMX controller lighting instruments and generic fixture types.

The Status Cue has proven successful in such lighting jobs as: *Metallica* "Across and Under" tour (Gearhouse lighting); *Ansett Airline Temporary Departure Lounge* at Sydney Airport (Clearlight Shows); *BMW 3 Series Australian Tour* (Premier Lighting); and Australian premier of "*Batman Forever*" at Warner Bros. Movieworld (Entertainment lighting Supplies).

The Status Cue' is comfortable and easy to learn and it features control architecture that makes sense, say GUET.

Versatility and reliability are the two headlining attractions with the Status Cue, say GUET. It supports MIDI, MIDI Show Control, MIDI Time Code, MIDI system can be a master or a slave controller



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depending on your requirements and superseded Status Cue systems can be easily setup using MSC.

Status Cue interfaces with a Pentium (recommended) or 486 personal computer fitted with one or more Linkcards that in turn interface with the fixtures. The Status Cue software (Status Cue for Windows) runs under Windows 95, which then provides such functions as menu and window driven display editing and program storage. Software updates to console and fixtures are easy.

Because the Status Cue software may be utilised on any Windows™ compatible laptop or portable computer it allows Scenes, Sequences, Songs and Cues to be created and edited from a hotel room, in an aeroplane, backstage or anywhere else a portable computer may travel. The data can then be transferred to the desktop PC, where it can be run on-line. Memory storage is limited only by the computer hardware.

Other features of the Status Cue include 128 palettes for "preset focus" of all parameters, 16000 Scenes per show, 1500 Scenes per sequence, unlimited number of Sequences, unlimited number of songs, unlimited number of cuelists, 48 user-definable Presets per song, 128 fixture Groups, 128 Macros, 16 control faders with flash buttons, master dim, crossfade time up to 36.4 minutes, instant blackout function, "human engineered" ergonomic design, easy access to hardware for maintenance and troubleshooting, and convenient console internal storage trays.

Backed by High End Systems, Inc. and a worldwide network of service providers (GUET in Australia and New Zealand), the Status Cue comes with 2 years warranty. Website: www.highend.com



JANDS

Jands Electronics +61 2 9958 0909

Jands Electronics is Australia's premier lighting control manufacturer with a history dating back to the introduction of the JL24 desk 15 years ago. The company's comprehensive range now includes the Stage, ESPII, Event and JandsHog consoles which have established the company's reputation throughout the world.

Jands' latest offering, **Echelon**, was released at Entech in March 1998 and is already popular in moving light control with recent gigs including the *Cold Chisel* tour, *Mushroom's* anniversary concert, *The Footy Show*, *Hey Hey It's Saturday* and as well as applications in Europe, the UK, Japan and the US.

Echelon uses the Wholehog II operating system so users who are proficient on a Hog can easily make the changeover. Features such as the auto-menus and palettes for beam, colour, position and groups make initial programming quick and simple, while subsequent alterations can be carried out on palettes with no need to make changes to each and every cue. User definable fixture libraries and auto-menus make patching and setup very quick and easy, regardless of the complexity of the rig, say Jands.

Playback can be as simple as playing a single cue list in a struc-



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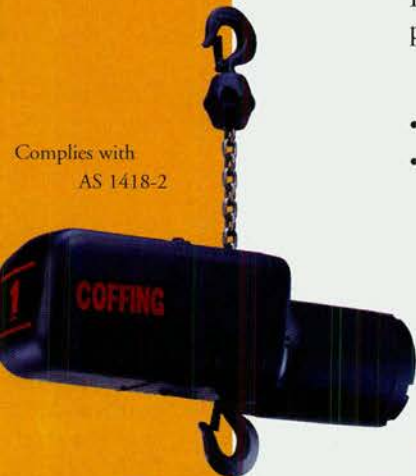
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detailed:: MAJOR LIGHTING CONSOLES

tured show, and any cue can be quickly called from memory. 16 fader playbacks allow simultaneous activation of multiple cue lists, chases or effects, and timing options include wait, delay and learn.

1000 control channels are available and output consists of two streams of DMX-512. For external control, a MIDI interface permits reception of MIDI show control, notes, timecode, and command strings. Echelon also accepts SMPTE timecode. Show storage is on a standard 3.5-inch floppy disk and shows can be fully or partly merged with other Echelon, Wholehog II or Jands Hog shows.

JANDS SAYS THEIR UNIQUE FEATURE ARE

- Auto-menus.
- Fast and simple programming.
- User definable fixture libraries.
- Compatible with the industry standard Wholehog II.

WHAT JANDS SAY THE ECHELON DOES BEST

- Powerful and simple operation.
- Sophisticated Effects Engine⁺ provides built-in effects with instant selection, creation and adjustment.

UNIQUE TECHNOLOGY ASSOCIATED WITH JANDS ECHELON DESKS

- Wholehog II operating system.
- Effects Engine⁺ software.

Website: www.jands.com.au



MARTIN

Show Technology +61 2 9898 1111

Used internationally in touring, rental and musical applications, multimedia shows, large clubs and theatre installations, **Martin**

Case consoles are durable lighting desks which have provided years of service to the market for lighting control.

The Martin Case range includes the **Case Pro I**, which is a touring standard lighting console offering 512 to 1536 channels. The **Case Pro II** console contains all the features of the Pro I, for touring and show products yet designed for applications requiring 1,024 to 2,048 channels. Case Pro controllers can handle up to 140 luminaries with up to 32 attributes for each. The **Case+** has been specifically designed to provide extra feedback facilities, increasing the 10 standard playbacks by 32 for a more flexible total of 42 playback. The Case+ has been designed with features optimal to studio, theatre, TV and production studios.

Chameleon Touring Systems are using 2 Case I's in their hire and production department. Sydney's newest and largest nightclub *Home* has a Case II controller supplied by Avsound. A Case I was also installed in the Melbourne's *Metro Nightclub* and *Osmond Electronics* also use the Case II for production and hire. Perth based company *AVLA*, *Skypak Lighting* and *Visual Innovations* both in Queensland, *Staging Connection* in Canberra, and *Show Corp* all have Martin Case I controllers for production and hire.

The reason for their popularity is the large amount of channels available, the PC based fixture set-up display, ease of upgrade and automated programming as a indispensable aid to the rapid creation of a show, say Show Technology.

MARTIN SAY THEIR UNIQUE FEATURES ARE

- Playback can be programmed with individual fade-in and fade-out times resulting in very smooth cross faders.
- Colour Fixture library containing all well-known lighting brands
- Colour monitor set-up display, as it appears on stage. Set-up can be exported and printed out together with the addressing setting information.
- Effects Generator, choose from 72 different pre-programmed movement patterns, effects can be created with minimal commands.
- Trackball for ease of use

UNIQUE TECHNOLOGY ASSOCIATED WITH MARTIN DESKS:

- Case+ has been specifically designed to provide extra playback facilities, increasing the 10 standard playbacks by 32 for a more flexible total of 42 playbacks, easing the control of improvised shows.
- Can be interfaced with Martin Show Designer, Lighting Design software and Martin Lighting Director 3D automated followspot System.

Website: www.martin.dk

STRAND LIGHTING

Bytecraft Pty Ltd +61 3 9587 2555, +61 2 9550 3955

For over 80 years Strand Lighting have supplied lighting equipment, control systems and software for lighting designers working in theatre, architectural, television, film and the themed environment. Bytecraft are the exclusive Australian distributors and have sold over 70 **Genius™** and **GeniusPro™** soft-

LSC FACES UNCERTAIN FUTURE

Brand likely to continue, but existing company structure may be woundup

MELBOURNE: The future of lighting control manufacturer LSC Electronics is unclear following the appointment of an Administrator late last year.

While the company may be wound up, the brand will almost certainly continue, sold to another manufacturer or reborn after an injection of outside equity. LSC Electronics Pty Ltd could face a deficiency of as much as A\$1.2 million in the worst case, says the administrator Gregory Shilton.

Shilton reports that continued trading under the current structure is not viable because of the debt level. In addition to proven debts LSC also faces a legal action by a firm called Growth Partners, seeking \$200,000. The debt is disputed by LSC who say they are counter claiming for damages, and doesn't form part of the overall liabilities dealt with by the Administrator.

The position unearthed by Shilton shows the company was trading somewhat worse than revealed in the last issue of Connections. At that time LSC director Alan Graham told Connections it was possible that assets would exceed liabilities. Shilton then reported that this relied on selling the intellectual assets (the brand and designs) at A\$800,000.

At presstime Shilton was seeking to sell the rights to the intellectual property, being the brand and designs, to the top bidder. At least one local manufacturer is thought to be interested.

★ *Julius Grafton*

Apology to Alan Graham. This writer incorrectly reported his name in the LSC article last month. Very sorry Alan.



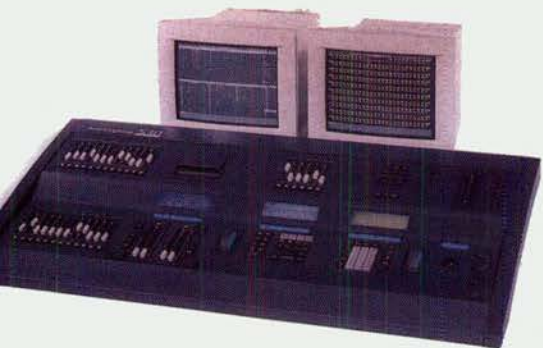
ware based lighting control desks in Australia, including *Victorian Arts Centre, Sydney Opera House, the two Pay Television Networks, Regional Theatre Networks of Victoria and NSW, Regional and Capital Television networks, Film studios, professional and amateur theatre companies and schools.*

STRAND SAY THEIR UNIQUE FEATURES ARE

- Strand introduced the updatable software concept of lighting control with the release of the GSX and 430 desks several years ago and this approach has been successfully carried through the 500 Series desks. These mid to high capability lighting control consoles offer the flexibility of user selectable channel capacity, operating style and application programs.
- The consoles can be specified at a base level of channel capacity and functionality but are readily extendible with incremental channel capacity upgrades, optional application software and a range of peripherals. Each console can therefore be tailored to a users requirements today but can grow to meet expanding system requirements. Standard packages are also available.
- All "I" series consoles feature Pentium II processors allowing expanded channel control and dimmer capabilities when using ShowNet™ networking. All systems now support up to 8192 DMX outputs with up to 6000 control channels and 2000 attributes.
- Hire departments and theatres with a varied client base (including foreign designers) can offer a desk which can be programmed to run like a preset style operation (UK, AUS) or command line/tracking style (US) console and have screen prompts in a designer's native language.
- Version 2.2 software released with the new desks offers a host of new features and improvements. Enhancements include a 3000 event

SMPTE time code cue sheet, expanded moving light fixture libraries, 16-bit trackball operation and dimmer status reporting.

- Redefined automated luminaire controls feature easy access with enhanced label-



ling and large work space. The large trackball permits precise control with full 16-bit operation. A high degree of tactile feel has been designed into the trackball to provide smooth accurate positioning of moving lights.

WHAT STRAND SAY THEIR CONSOLES DO BEST

The 500 Series desks are specifically designed to control lighting for professional theatre, architectural, television, film and the themed environment. The desk is friendly enough, say Strand, for inexperienced operators to figure out how to get lights up while offering the more experienced user powerful flexibility including the ability to quickly integrate automated fixtures into an overall control system.

Bytecraft say you don't have to be a computer wizz to customise the consoles to work the way you want. You are able to personalise the way the system works, for example the number of monitors used, the screen layouts, the way the level wheel works, two-digit or single digit level entry, are just a few of the variables. Onboard displays allow you to watch the stage and desk during playback and know where you are without having to watch a monitor.

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FOX FILM STUDIOS

The lighting verdict



The Fox studios, which opened officially in May this year, are surprisingly attractive. You have to check with the security guards in the booth before you drive into the 60hectare old Easter Showgrounds. Big fig and gum trees shade the winding roads, and each intersection sports discreet little signs pointing to studios, or other enterprises in the lot. Spectrum, Soundfirm, casting agents, special effects companies, and a script development house make this a genuine old Hollywood-style backlot, with everything under one roof. Now all we need is Irving Thalberg and Gloria Swanson.

This is 20th Century Fox's first big studio complex outside America. *Babe in the City*, *The Matrix*, the TV series *Farscape*, and commercials have already been shot here. *Star Wars* is planning a 2000 shoot. Apart from Warner Brothers, Fox is the only big purpose built studio complex in Australia.

have three phase power at several points around the floor and gantry walls.

A brief visit is enough to see that this has been carefully conceived, and money has been spent. The overall consensus is that these are great facilities, pleasant to work in, and a big plus for Australia. But some details in the lighting department are still not perfect.

POWER

The studios are adequate for a medium sized production. But a big feature will need to bring in a generator. Stage 2, the most powerful studio, has 2000 amps a phase. On a big shoot, 4000 amps could be needed. Ports through the walls allow cable entry, but they could be larger. Power points are well distributed around the stages. The cables are run along the walls at head height, and exposed to damage by people leaning sets against them.

There are a lot of outlets, and good flexibility about using them. They cater well for our distribution systems.

There is no earth leakage protection on the outlets of the motorised lighting hoist of Studios 5 and 6, the TV studios. According to Rod Allen, at Fox, it is not a requirement, because they are regarded as a fixed installation. "They probably wouldn't work anyhow, because they are run through dimmers, and RCD protection doesn't work downstream from dimmers."

But it is possible to put this protection at the supply end. The Australian Standard says that each and every final sub circuit must have earth leakage protection. One film worker feels that, "they are splitting hairs about this. It's a shame, in a studio where they spent so much money. It's a big regret that they haven't made it comply, and that there is a possibility of someone being injured."

Global television will be onsite, and supplying equipment.

Four film stages, and two TV studios are dotted around the grounds. All but one have been purpose built. Stage 1 is the old Government Pavilion, and has 3500 square metres of floor space. Stage 2 has 3000 square metres, and the others range from 1,324 sq m, to 745 sq m. All the stages are fibre optic linked, sound proofed, air conditioned, and

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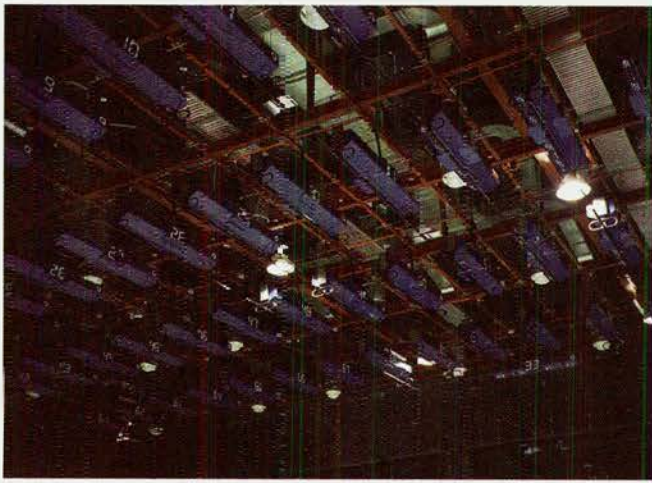
GRIDS

The grids are good. They are basically mother grids, intersecting beams at gantry height. From here, grids can be built down, to sit above the set. The grid is designed to take any sort of rigging. There are weight restrictions on the roof, so when people go in there, they should read their specs carefully.

CATWALKS

The catwalks are a good width, but they are made of a mesh aluminium, which poses two problems. When cables are run in one direction, it's fine. But when they are run in the other direction, the mesh rips the cabling.

The holes in the mesh mean that screws and small things can fall through to the floor many metres below. The catwalks should have ply, or



some solid covering. In the States, the floor must be cleared below a gantry, when people are working.

The solution would be to cover the catwalks, but Fox may be reluctant to spend the money, or to increase weight in the gantries, which would take away from weight allowances from the roof.

ACCESS

Access to the studios is very good, and there is ample parking room for trucks inside the studios. However, the parking area for trucks outside could be bigger.

new products::

METEORLITES MIRRORBALLS

Instead of the normal round mirror ball, Meteorlites produce different mirrored shapes including the 12 pointed mirrored star known as the Gladiator star. Each star is individually made, and is designed with safety the overriding issue.

One of the main problems they have had over the years is being able to hang the Stars at various venues and so they have built a stand for them. The stand has its own lighting incorporated into it. It comes with a range of height options, will flat pack for ease of transport and storage, offers a range of colour options and a bar from which you can hang working on.

Meteorlites can supply the stand with a normal Mirror Ball, Gladiator star or they can design any shape or size you desire. As they use professional lighting a whole spectrum of colours are available in gels.

Call: Meteorlites +€1 3 9227 5590.

detailed:: MAJOR LIGHTING CONSOLES

WHOLEHOG II

Jands Electronics +61 2 9958 0909

Flying Pig System's **Wholehog II** is known world-wide for its ease of use, speed and design. The multi-discipline desk masters all types of lights in any environment, and excels in programming both moving and conventional lights, say Jands. Its advanced RISC processors ensures plenty of processing power and Window based touch screens let users configure the console to suit their needs.



Wholehog II features the unique Effects Engine' which allows users to select built-in effects or create new effects quickly and easily, and adjust speed, size, colour and intensity instantly. With 6000 channels, 12 DMX outputs, 20 fader masters and 28 button masters, users should never run out of space of playback capability.

FLYING PIG SYSTEMS SAY THEIR UNIQUE FEATURES ARE

- Revolutionary one-touch programming system with useful shortcuts and a portfolio of ready-made effects take the pain out of programming.
- Unparalleled connectivity - Wholehog II is designed to work with other consoles and equipment, making it the most flexible console on the market.

WHAT FLYING PIG SYSTEMS SAY THE WHOLEHOG II DOES BEST

- More power and greater reliability than any other console available.
- Excels in programming both moving and conventional lights.
- Fast and simple operation.
- Highest possible degree of refinement in controlling light shows.
- Adapts to individual operating styles.

UNIQUE TECHNOLOGY ASSOCIATED WITH THE WHOLEHOG II

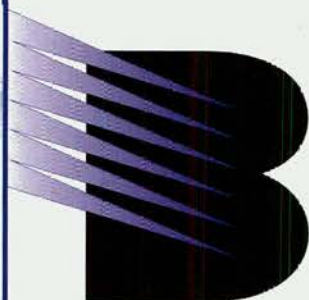
- Industry standard Wholehog II operating system.

Website: www.flyingpig.com

Strand 500 Series

Advanced Lighting Control Systems

- Total System Control of Intensity, Movement, Colour
- For: Professional theatre, concert halls, TV Studios and touring
- Automated light and network ready



BYTECRAFT

BYTECRAFT

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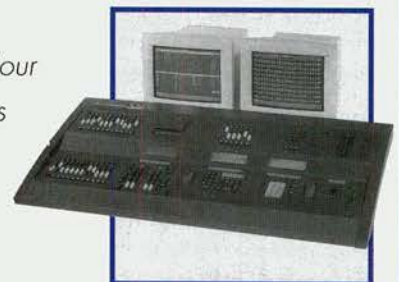
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TRUSS, FLYING SYSTEMS, RIGGING

STANDS

ADJ

Show Technology (02) 9898 1111
3m Lighting Stand sturdy T-bar stand ideal for small bands and mobile DJs. Holds 4-8 par cans per stand. \$204.10.

ALE

Chameleon (02) 9310 5222
A2001 ALE 18" winch up. Folding leg. All steel construction, industry standard. Australian made. \$1015.
A2002 ALE 12" winch up. Folding leg. All steel construction. Australian made. \$870.
A2023 folding leg push up stand, 2.8m max height available in black or chrome finish. \$254.
Various ALE manufactures a wide range of stands for lighting and audio. Stock and custom designs available.

CLS

Concert Lighting Systems (03) 9646 8444
4m Winch Up Stand \$528.
3.3m Telescopic Stand \$200.
Followspot Stand \$275.
Floor Stand \$16.

KONIG & MEYER

The Resource Corporation (03) 9877 8233
KM 24630 Lighting Stand all steel, height adjustable from 1955mm to 2915mm, 20kg centre load. Extension rod features M10 female thread. \$390 per pair.
KM 24640 Lighting Stand extra tall steel tube construction with 2 extensions, infinitely variable height adjustable from 1590mm to 4025mm with locks and safety rings, 20kg centre load. Extension rod features M10 female thread. \$885 per pair.
KM 246/1 Winch Up Lighting Stand aluminium with steel extension rod, height adjustable from 1840mm to 3050mm by easy action hand crank, 30kg centre load. M10 threaded extension rod. \$1260 per pair.
KM 21393 Lighting Crossbar slip-on crossbar to suit any 35mm diameter stand. 1455mm long, 10 mounting holes for lights, supplied with 4 screw fittings. \$98 each.

MANFROTTO/AVENGER

Miller Professional Products (02) 9439 6377
070U Follow Spot Stand with a maximum capacity of 40kg, minimum height 88cm, max height 147cm, weight 6.8kg. \$275.
680B Autopole 2 height range

2.1m - 3.7m with black finish. Tallest Autopole in the range with Upgraded Locking mechanism. \$192.
40" C Stand complete with griphead and 40" arm in black or chrome finish. Includes levelling leg or detachable base. \$327.
A320 Overhead wide base, capacity of 40kg (196cm diameter), with max height of 557cm with multi function head. Available with optional wheels. \$510.

PROEL

C.M.I. (03) 9315 2244
PI-90 diecast aluminium stand with galvanised steel winch. Diecast aluminium tripod base with anchoring facility. Winch load capacity 75kg. Max height 2.7m. 1200 kg load steel wire. Fully collapsible. Weight 17kg. \$1299.
KP-150 aluminium tripod style stand with safety locking pin. Quick set up - height extends to 2.9m. Horizontal telescope T-bar available for cross mounting (to 2.3m).

TRUSS

ADJ

Show Technology (02) 9898 1111
Mobile Truss a complete truss system easy to transport and set up. Full kit includes 2 x 1.5m lengths of flat truss, 2 T-bars. Truss diameter is an inch and a half. All fittings can be secured to truss by nut and bolt, which are supplied. \$409.02.

ALE

Chameleon (02) 9310 5222
300 Series Tri Australian made 300 C to C Tri-truss. Lengths from .7m to 6m, various corners, adaptors and accessories. Custom sections, circles etc are available. From \$292.
14" Steel Box steel 14" box truss. Lengths from 24' to 20', various corners, adaptors and accessories. Custom sections, circles etc are available. From \$400.
18" Steel Box steel 18" box truss. Lengths from 24' to 20', various corners, adaptors and accessories. Custom sections, circles etc are available. From \$500.
Custom ALE has qualified staff to assist with any custom truss project, contact Chameleon.

ASHBAR

Ashton Admor (08) 9478 3800
Ashbar proprietary extruded aluminium lighting bar with flat slide to accommodate architrave. Flush power outlets for optimum safety. Full range of accessories- cap ends,

junctions, clamps. \$27.40/m.

Ashcap a PVC extruded capping allowing ease of cabling and installation to Ashbar bars or grid. Useful access for maintenance or extension. \$4.65/m.

Ashjunction cast aluminium 4 way 2 piece junction to convert Ashbar into full lighting grid. Also enables simple suspension and installation of grid. \$17.25.

Ashend extruded aluminium end plug to finish ends of open Ashbar with a flush seal. \$2.75.

CLS

Concert Lighting Systems (03) 9646 8444
300mm Alloy Heavy Duty Tri-Truss straight sections, curves, corners, cables etc (3m sections). \$531.80.
300mm Alloy Heavy Duty Flat Truss (3m sections). \$425.
450mm Alloy Heavy Duty Folding Truss (3m sections). \$1365.
500mm Alloy Heavy DutyBox Truss (2.4m sections). \$900.

MEC TRUSS

Show Technology (02) 9898 1111
MEC Truss fabricated in Australia from alloy under license from MEC (UK). Has over 70 standard components as well as custom components.

PENN FABRICATION

Penn Fabrication (03) 9335 6455
ST2510 square aluminium truss, 250mm x 250mm x 1.6mm tube, metre length, weight 5kg. \$147.
TT2510 triangular aluminium truss, 250mm x 250mm x 1.6mm tube, 4 metre length, weight 3.5kg. \$205.

SLICK

Slick Systems (02) 9144 7971
Slick LiteBeam light duty truss, 2.5 metre length - \$508.
Slick Folding truss 2.4 metre length - \$1254.
Slick MegaBeam extra heavy duty truss, 2.4 metre length - \$6256.
Custom orders priced on application.

FLYING GEAR

CLS

Concert Lighting Systems (03) 9646 8444
Video Flying Brackets for Barco, Sony, NEC, Fujitsu. From \$72.50.
TV Clamps & Dropper Bars From \$66.
Chain Hoists CM Loadstar, Demag, Kito. From \$2000.

CLS Hoist Controllers 2 way, 4 way, 8 way, custom. From \$3000.

CM LODESTAR

Slick Systems (02) 9144 7971
Model L CM Lodestar chain hoists: one tonne capacity hoist only - \$2384.
Model RR CM Lodestar chain hoists: two tonne capacity hoist only - \$3632.
CM Star alloy chain for customised Lodestar lift applications, per metre - \$45.
CM STAC alloy long link rated rigging chain, per metre - \$36.
Custom rigging components and fabrications - on application. Custom Hoist and rigging accessories.

SKJONBERG

Slick Systems (02) 9144 7971
Skjonberg Hoist Control systems and motion control systems - on application.

CLAMPS/ACCESSORIES

ADJ

Show Technology (02) 9898 1111
Plastic "O" Clamp has a 25k capacity. 2" stand but 1.5" inserts available. \$8.20.
2" Hook "G" Clamp traditional style steel clamp. \$8.20.

ALE

Chameleon (02) 9310 5222
ALE/Various Chameleon Professional Lighting Sales stock a wide range of lighting rigging and accessories. Clamps, spansets, chain, shackles and safety equipment.
A1040 2" standard duty hook clamp suitable for fixtures up to 12kg. \$8.
A1040 2" standard duty hook clamp suitable for fixtures up to 35kg. \$9.
A1002 2" to 1" hook clamp used to attach 1" tube par bars etc to 2" (50mm) pipe. \$8.

ARNO

Lighting by Design 0755 377 002
ARNO Quick Release Straps 25mm wide polypropylene strap. 250kg won't slip but they're not rated. Replaces octopus straps, rope, gaff, cable ties, electrical tape. Easily linked. 50cm - \$4ea or \$150/50. 100cm - \$5ea or \$200/50.

ASHBAR

Ashton Admor (08) 9478 3800
Ashclamp extruded aluminium hook clamp. Ideal for use on Ashbar, angled tri-bolt eliminates slipping under load and over tightening. Also allows use on off-standard bar sizes. \$6.95.

NEWS

CLS
Concert Lighting Systems (03) 9646 8444

Hook Clamps from \$5.
Heavy Duty Hook Clamps from \$8.
'C' Hooks from \$8.50.
Boom Arm Brackets from \$20.

DYNAMITE
Disco World (03) 9735 0588
50 MM large hook clamp includes Tri Wheel 3/8th. \$7.
16 MM large hook clamp includes Tri Wheel 5/16th. Medium. \$7.
C-Clamp C clamp (Gemini) up to 25lbs. \$8.
4 MM SW Dynamite safety wire 4mm with snap hook. \$7.

KUPO
Show Technology (02) 9898 1111
Half Couplers are supplied complete with a rated M12X50 bolt and lock-nut. Suitable for use with large lighting fixtures. \$38.95.
Swivel Coupler provide firm attachment between adjacent bars or pipes, while allowing a full 3600 movement. Can be easily fixed in a 900 configuration with the supplied drift pin. \$73.77.
Eye Ring Coupler incorporates a freely rotating M12 Eye Ring. \$40.98.

Truss Adaptor is suitable for all triangular/square truss sections. \$138.52.

MANFROTTO/AVENGER
Miller Professional Products (02) 9439 6377

C100 Junior Pipe Clamp cast pipe clamp for lighting fixtures with 26mm spigots with safety locating pin for lighting bars and grids. \$98.
C1575B Super Clamp case aluminium standard clamp accepts 16mm spigots includes safety release button with rubber jaws for extra grip. \$39.
C350B Barrel Clamp designed for lighting grids approx. 52mm in diameter. The barrel clamp tightens and accepts fixtures with 28mm spigot. Incorporates safety locating pin.
C150 Swivelling Clamp adjustable "C" clamp for various diameter grips. Incorporates a rotating lower section accepting 28mm spigots or 16mm socket.

next month::
MOVING LIGHTS
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SPACE CANNON DISTRIBUTOR

Coemar De Sisti are proud to announce their recent appointment as exclusive Australian distributors for the entire Space Cannon line of architectural and searchlight luminaires.
 Space Cannon have long been one of the innovators in high power Xenon fixtures. However in more recent times they have diversified into the field of architectural lighting.
 The entire Space Cannon range consists of over 20 different models, from 1000w fixtures up to 10kW Xenon units for maximum light punch. They are the only manufacturer to offer a maintenance free colour mix system on a searchlight unit, say CDA.
 CDA will also be able to offer the Space Cannon event hire facility. This involves up to 70 of the IREOS PRO fixtures, (complete with 7kW Xenon lamp, CMY colour mix, dimmer, 20Hz strobe, focus and frost), available for hire out of Europe. This means that large scale events can be catered for by Australian event companies without ridiculous purchase costs that would not be recovered in the Australian market place.
Call CDA for details +61 3 9467 8666.

SELECON NEWS

At LDI 98 a prototype 90° super wide angle lens system for the Pacific range was displayed attracting a lot of attention from both consultants and users. This will be released early in the New Year.
 At the annual Illuminating Engineers Awards dinner held in Brisbane the Pacific luminaire was recognised by a Premier Award. The judges made mention of the 'stunning design, using state of the art light sources, precise optics and ingenious detail'.
 Nearing completion in Spain, the new Bilbao Opera House will open with over 230 Selecon luminaires, including Arena Fresnels and Zoomspots, Aurora Cycs and Groundrows and Compact P.C.s.

LIGHTING BY DESIGN

Sega World in Sydney are the first to receive the new 400 linescreen full colour gobos from Lighting by Design for their Cyberlights.
 Lighting by Design have their website up and running featuring an on line gobo catalogue, moving and fixed light specifications and suitability for projections, free 2nd-hand advertising as well as links to industry sites - www.LBD.com.au

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THE PA PAGE

With Michael Orland

LADIES AND GENTLEMEN, A BIG HAND FOR THE BAND'S M.D.!

Every night, when I'm home, I sit and give my new baby daughter her final feed before she goes to bed. She gazes at me with huge blue eyes that say "I love you, daddy. I trust you and I know you would never lie to me." The sheer beauty of such unspoilt innocence fair melts this poor old roadie's heart.

Another full house. Thunderous applause as the curtains close. I prepare to make my way to the band room where a sumptuous food and drink rider awaits, when I'm approached by a well dressed amiable looking man in his mid sixties.

"G'day mate, I'm Frank". Before I can report the status of my GAFometer, he adds "and I'm the president of this RSL Club. I don't make a habit of doing this, but I just wanted to say how impressed I am with tonight's show"

"Yes, they're very good."

"And the sound! Spectacular!"

"Yes, I'm very good too!"

"Even my wife was commenting on how clear the drums and percussion sounded! How did you get those sounds?"

"Sub-miniature electret mics. Not even visible from the audience."

"And who was that keyboard player? I thought I knew all the top club muscos. He must have been with the band for years to learn to play all those parts!"

"Actually he's filling in for the regular guy. He's never played with the band before tonight."

"Amazing! You know, we had an act who did a similar sort of show in here a couple of years ago. Mind you, nowhere near as good as these guys. Anyway, it turned out most of what the audience was hearing was on this thing called a sequencer. Bloody fakes! Anyway, since then this club has had a strict policy of only booking honest talent!"

"Good to hear. Those sorts of shennanigans really make me sick! Now, if you'll excuse me; there are things I need to attend to in the band room"

Towards the end of the second half, the frontman does the usual band introductions while the followspot operator singles out each introduced member. "...and last but not least, Charlie, our Musical Director. The real star behind the stars! Ladies and gentlemen, a big hand for the band's M.D.!" Phil, our spot operator, tightens the house spot (a Clay Paky Shadow) right up and goes straight to the little Mini Disc player sitting next to the drummer.

Aghast, I put on my intercom headset in time to hear Paul the L.D. saying dryly: "most amusing, Phil.

And such a novel way of giving your notice..."

Last month, December, was the busiest hire period we've ever known. On all but two days, as well as our regulars, there was a private Christmas party with some full time covers band. And a staggering 80% of those bands used either DAT or Mini Disc. Most not just using the machine now and then, but actually basing their whole show around it, so that if the machine crashed, so would the show. MD is fast becoming the preferred format due to the instantish accessibility to different tracks and the foolproofish readout that can go with them.

It is everyone's nightmare that the MD will start skipping, giving the whole game away. A few years ago a one hit wonder visiting Sydney caused a riot when the CD she was miming to (backing AND vocal) started skipping during her show. Before you could say BettyBooisdointhedointheddoo Bet-Bet-Bet... a room full of very angry punters were demanding ticket refunds. MDs have similar drives to CDs and can be just as susceptible to skipping. More expensive units sort of read ahead and prepare for error correction.

But frankly, if I was putting all my credibility on the line every night, it wouldn't be with a player from a discount chain designed for sitting around lounge rooms. I'm amazed that some of the \$5000 per gig acts we've worked for actually do this. Professional players are available. They are usually about the size and shape of a loaf of bread. Why? Because their biggest pro market is broadcast facilities still using cartridge players of similar dimensions. The size and shape of the pro MD players make them an easy upgrade for them to install. And they are almost impossible to make skip.

We spent a month last year touring with the Nashville Chicken Lovers. Three excellent vocalists with superb six part harmonies. Before each show I was required to fade down the CD muzak and bring up the MD channels for the pre show announcement. "Ladies and Gentlemen, the Chicken Lovers' show will commence in two minutes. All voices during the show are those of The Chicken Lovers. There is NO miming. Enjoy the show!"

With such an announcement, you'd expect them to be pretty serious about their playback system, and they were. Two identical cart type MD players in a shockproof rack with a huge A/B switch between them, wired to their outputs. The digital domain being what it is, identical disks could be placed in each player. And they were only operated with a wireless remote. Think about it. Identical tracking/playback systems. In the event of a glitch with whatever player/disc was connected, the stage guy would only have to flick the switch for an almost seamless crossover to the backup. The stage guy said there had been no glitches since their change to pro machines but he wasn't taking chances. If it ever happened and he wasn't ready, then no matter where in the world it happened, he'd be walking home.

Regardless of the MD player used, and even if you've only got one in your rack for muzak between sets, you should always install a transit disk before transporting. This is a small MD sized piece of plastic, available from serious suppliers for under \$20. The idea is you insert the disc and press play. The player's mechanism clamps down on the disc to read programming information. And while it is doing this, you turn its power off. That way the player travels with its mechanism clamped down, insuring long term reliability. And how many of the MD acts we've worked with follow this procedure? In round numbers, and they don't come much rounder, 0. So many embarrassments just waiting to happen!

Michael Orland (All thanks, no blame to Ivan Tomsic) runs T-PAC, Ph/Fx: (02) 9799 7219, Email: T.PAC@bigpond.com.au

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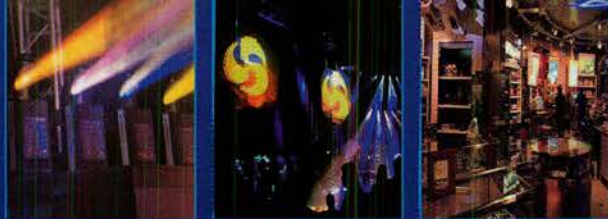
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JUST A FEW MINUTES TURNS A WASHLIGHT INTO AN EFFECTS LUMINAIRE OR VICE VERSA.

STAGE COLOR 1200 - Washlight

- HMI 1200 hot restrike lamp.
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- 6 rotating gobos + three-side prism.
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