

Channels

Free

Samuelsons sell to Jands

No.#1 15 Dec.1991

After almost four years of English ownership, Samuelsons Concert Productions is to be purchased back by the original Australian partners, Paul Mullholland and Eric Robinson. The company is Australia's largest concert production organisation and is based at Mascot, Sydney in a 50,000 square feet factory.

Explaining the move, Eric Robinson, Managing Director of Samuelsons Concert Productions and founder of Jands Concert Productions (as it was known prior to Samuelsons purchase) said: "Samuelsons PLC, an English public company, embarked on an expansionist programme during the mid '80's, acquiring companies in Europe, America, and Australia, resulting in a world wide network of Concert rental companies. The aim was to be able to negotiate with international touring artists for Samuelsons to provide their production requirements for their world tour."

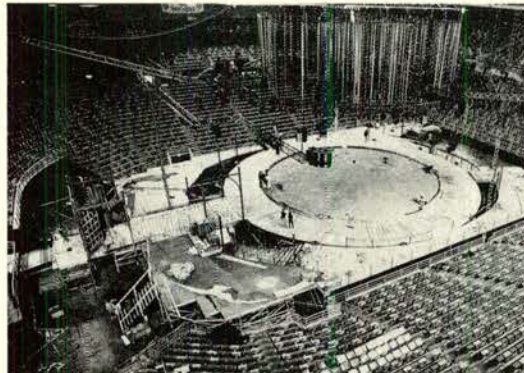
The original purchase of Jands Concert Productions by Samuelsons provided money to fund the expansion of Jands Electronics and JBL Australia. Jands Electronics P/L is now a large and diverse organization supplying both imported and locally manufactured sound, lighting, and stage equipment to dealers throughout Australia. Aided by the exposure and profile offered by the Samuelson connection, Jands Electronics commenced exporting their lighting control consoles, which are now sold in over 30 countries worldwide.

After the Samuelsons purchase, Eric was offered, and accepted the job of managing Samuelson's world wide Concert production and Varilite divisions. He took up residence in London and commenced organizing the diverse individual companies into a single group, offering uniform equipment and consistent service. After 18 months, the extended periods away from his family and the constant frustration of trying to get a large public company to understand the philosophy of running a personalized service company became too much and Eric returned to Australia.

Early this year, Samuelsons (U.K.) concluded that they were not really structured to operate a Concert Production Group and put their

various companies up for sale. Eric and Peter Ratcliff (General Manager), together with the other Jands shareholders made an offer to purchase back the business, which will now be known as Jands Production Services, and will incorporate Varilite Australia. It will remain at Kent rd, Mascot, with Jands Electronics remaining at St. Peters.

The focus will remain as is, with Jands Production services offering a depth of expertise which enables it to handle not only rock but special productions such as the Opera Carmen (see review, this issue), Theatre, large product releases and business theatre. Jands Electronics will continue to concentrate on product development with the aim being to become a serious manufacturer of lighting product for the world market.



Production Review

Carmen

Of all live sound applications perhaps the most challenging task is to "reinforce" opera, to amplify both orchestra and voices alike, on a large stage, and to distribute this combination to every seat in the house. The production of Carmen recently staged "in the round" at the Sydney and Melbourne Entertainment centres was the most ambitious live sound project yet undertaken by Samuelsons Concert Productions.

For starters, the scale of the event ... the entire floor section of the venue became the stage, which itself was shipped in 22 shipping containers from previous locations the Opera

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ABOUT YOUR NEW MAGAZINE

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The date shown at the head of this page is the date the next issue will be distributed.

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AUX 1 > the people column

Well known audio salesperson RAY BOND is to return to Australia early in the new year following long term complications with his U.S.A. work permit. The very envied Ray left our shores in January to take up the hot seat as Export Sales Manager for Professional Audio Systems (P.A.S.) in Los Angeles. Last minute permit hangups followed, resulting in his wife and kids remaining here in Oz and Ray having to leave the U.S.A. regularly. Perhaps Ray could set himself up as an migration consultant upon his return!

It seems that a well known denizen of the Cook's River has been visited by the midnight removals co. We believe much arm waving and back biting has gone on since. The business concerned appears to have closed it's door's for good.

Anyone finding a roof for a three tonne delivery van in the vicinity of Bankstown Golf Course should contact Mr. Tony Martin, at Total Concept Productions. That is, unless the convertible truck pan is a prototype.

Sander Van Brandwyck has left Sound and Stage after many years, for a new position at Sydney's Chameleon Touring Systems. Chameleon is the new name of Tony Davis' lighting business, formerly Starlight.

Seen out in the Western wilderness (no, not Perth)- Philip Salmon, founder of Lightmoves- at least before his brother took over. Phil now trades as "Orange Design", graphic artist. That is, Orange the town, not Orange as in Ragneesh. Also observed out West last month was freelance installation identity John (the Beard) Clinton, at Bathurst racing his car until the clutch failed. Expensive, but fun, he says.

Aux 1, the gossip columnist invites you to, well, ...gossip, tell tales, and generally contribute to the decline of society as we know it. Write to: Aux. 1, P.O. Box 171, St. Peters 2044 N.S.W.

JBL 2226 H/J NEW 15"

New from JBL, the 2226 is rated at 600w AES continuous pink noise power capacity, and offers 30hz - 2.5kHz response, and 97db sensitivity. 2226 has a 100mm (4 inch) edge wound aluminium ribbon voice coil, with JBL's registered design Vented Gap Cooling pumping air through the magnetic gap providing immediate heat transfer and cooling. The SFG (Symmetrical Field Geometry) magnetic structure means weight savings - 2.3kg lighter than the 2225. Apparently the new magnet structure offers much of the advantages offered by rare earth magnet structures, minus the cost penalty. The cone is a new glass-fiber/paper composite, designed to handle the increased power. Response is said to be "smooth", and the product information sheet provides all Thiele/Small parameters.



Telecom Gets A Cadillac

Sydney case fabricator, Cadillac Case Co. won envy with a recent order for 3000 cases (THREE THOUSAND yes, 300 times ten)... from Telecom. Owner Colin Skals tells:

"I got a call from their prototype section asking when could I make four cases. Just like me, I said TODAY!, and then delivered the first two the next morning. The chief procurement guy was walking past, and had a look. The prototype fitted inside the case, but when the guy put his hand in to get it out, the paint wet, and he said "WHEN DID YOU MAKE THIS?"

"I guess he was impressed, because we got this order!" Cadillac are now working three shifts a day, and promise not to neglect their regular customers.

Paragon Hotel Installation

Visitors to Sydney never cease to be impressed by the raw growth of the city centre, the latest development at Circular Quay is no exception. Described as the world's most expensive site by McDonalds, the Paragon Hotel was retained within the huge Gateway project at the Quay front. The two story facade was carefully gaffed up, while all manner of architectural perversion occurred in and around it. The result is the world's most costly McDonalds on ground level, and the Paragon II upstairs.

A very trendy watering hole indeed, the job of Sound and Lighting supply went to Total Concept Productions. Head honcho Richard Borysiewicz says he worked to a nautical brief, and created some pretty snazzy perforated steel neon waves above the dance floor. The rest of the job is subdued disco/sophisticated nightclub type situation, nevertheless costing about \$100,000.

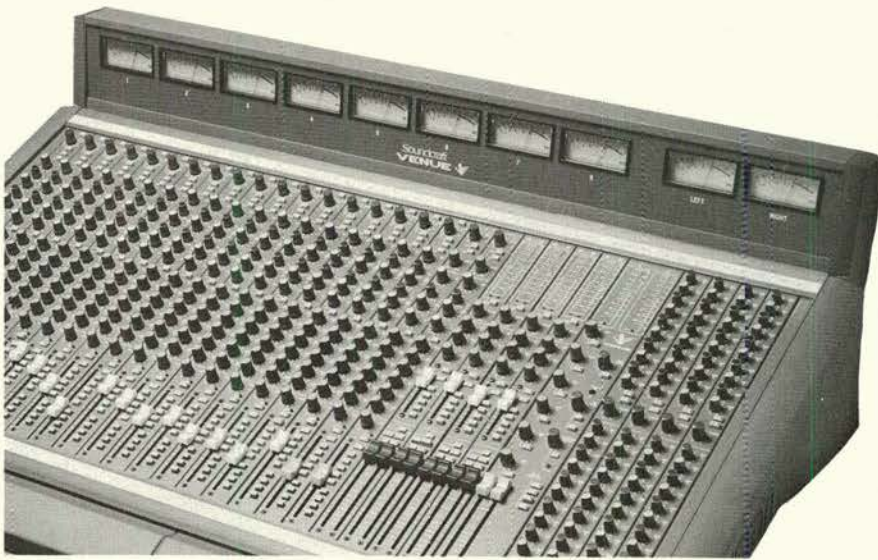
Total Concept Productions also offer Purelight Laser Systems to anyone with a tap, drain and 3 x 30 amp per leg 3 phase power. According to Richard, the 5 watt white laser is unbeatable at around \$150,000 a pop. (The tap and drain are for water cooling.)

T.C.P. are based at Guilford in Sydney's west, but operate state-wide.

Minuette Pursuit Followspot

Sub-kilowatt followspot's are scarce, most applications call for 1000 or 2000 watts, such followspots representing a fairly sizeable package. CCT claim their new Pursuit Followspot at 650w actually produces output equal to 1000 - 1200 watts, due to it's condenser optical system.

Beam spread is variable from 6 to 11 degrees, iris is a 24 leaf, and a blackout disk is standard, as is a trunnion arm friction lock. A colour magazine is optional. Pursuit certainly seems to fit the bill where a compact followspot is required.



Soundcraft Venue

Following the success of the Delta Series (see Overview, page 6) Soundcraft announced their new 8 bus range, the Venue, during the English Summer. Venue replaces the 500 series, and like Delta has module options with modular rear connector panels too.

Venue is a full feature, live console, offering six auxiliary sends per channel, along with comprehensive EQ. Four Mute Masters allow rapid preset muting. Metering is via 20 segment LED bargraphs, one for each of the 8 group masters, and two for left/right/PFL. In addition, a meter overbridge is available as an option on the 24, 32 or 40 channel models.

Modules available are: Mono input module (normal input); Stereo input (with stereo wide control); Dual Group EQ (providing EQ on Groups); Dual Group/Stereo return (providing a fader on top of the group masters for an effect return); Dual Matrix module; and Master module.

Direct group outputs, Matrix outputs and Master outputs are all balanced XLR, and insert points allow access to practically every input, group, and master output.

Venue is more "roadable" than any of its predecessors, Soundcraft having worked on structural rigidity while reducing cable looming.

Yamaha DDL 3 Digital Delay Line

This is more than a DDL, rather a pro P.A. "tool", offering three delay outputs which also can be crossover outputs, or individual parametric equaliser outputs. Maximum delay time is 1300 milliseconds, there are three balanced XLR outputs, in crossover mode slopes of -6, -12, -18 and -24dB/octave are available, and the DDL 3 incorporates digital EQ.

15 user preset memories are available, and settings can be locked off via rear panel switches, providing obvious system protection.

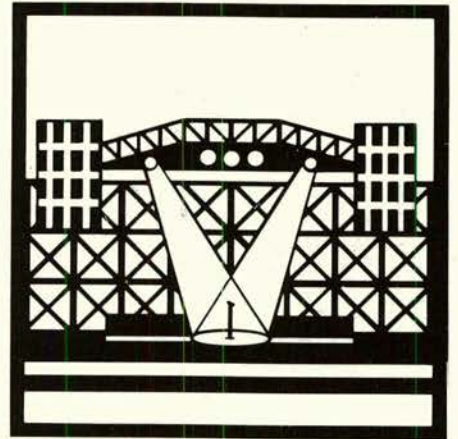
As a P.A. system crossover, the DDL 3 allows 3 way or 2 way with separate subwoofer output modes. Each output may be delayed, phase correction may be applied. Frequency availability is 200hz to 2khz, and 1khz to 10khz, so setup of 0-250hz (low), 250hz-2k (mid), and 2k-rollout (high) or anything similar is possible. Also, lowpass and hipass filters are adjustable.

CHANNELS announce the HELP! column.

Let us attempt to answer your problems-technical, not personal, here in the pages of Channels.

Write to:

Channels Help Column,
P.O. Box 171,
St. Peters 2044 N.S.W.



Production Diary

AEROSMITH

during Sept/Oct.

Light and Sound by Samuelsons, Varilite Australia provided 26 VL2, 18 VL4, Paul Kent, technician. P.A.: 56 Clair S4's, 12 Meyer 650R subwoofers, 32 Phase Linear 700B and 40 Jands 920 amplifiers. 420 lanterns controlled by Avo QM 500, 90 channel desk. 192 dimmer channels. Artist provided F.O.H. desk and foldback system. Transport: 6 40' pantechs.

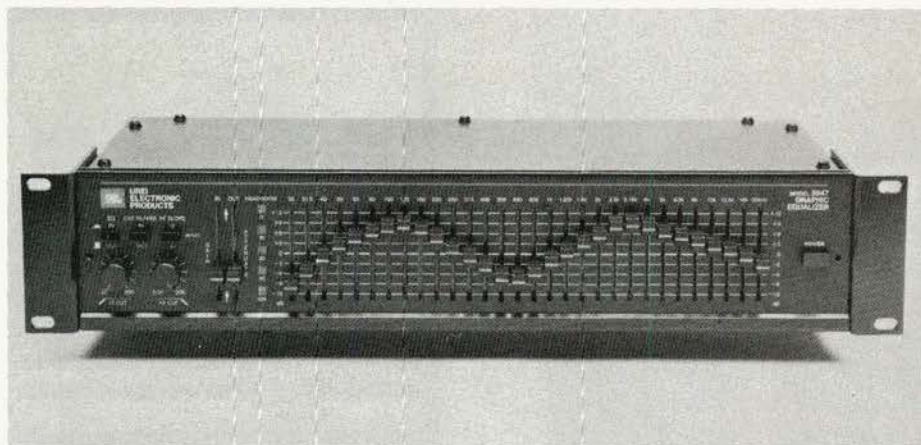
The ANGELS

during Aug/Sept.

18 VL2 and 4 VL3 Varilites, 287 lanterns controlled by Celco Gold, 144 dimmer channels. 24 Concord II, 12 JBL sub-low, 24 Jands 920 and 12 Jands 960 amplifiers FOH. FOH PM 3000/40, F/B: Ramsa 40/18. 4 separate systems were required due to venue run.

WILD ICE ...

The Mode/Cointreau fashion show, lighting by Frank Calvi, 120 lanterns, 12 VL2 and 16 VL3 Varilites, 72 dimmer channels, 28 JBL Control 1 monitors as FOH, 6 W Bins.



3rd Octave Graphic Equaliser- JBL/Urei 5547A

This two unit equaliser is set to assume position at the head of the market, following acquisition of some 40 plus units by Samuelson's Concert Productions. The 5547A is a very ergonomically friendly equaliser of two rack unit's height. The thirty cut/boost bands are at ISO centers, and use a hybrid transistor amplifier optimised to assume the function of an inductor. Thus, this active equaliser provides performance equal to, or in excess of, traditional passive inductor equalisers. 5547 has tunable end cut filters with a 12db per octave slope.

The continuously variable hf filter also may be switched to a 6db slope if desired. Two controls- input amplifier gain, and output attenuation, allow headroom matching/gain structure control. The Input amplifier control adjusts signal from unity to +20dB, the Output amplifier is preceded by an attenuator with a range from unity to -20dB. These two controls are placed side by side for fingertip control. A four segment LED display gives multi-point headroom indication. Each frequency centre may be boosted or cut by 12db, each fader is a centre-detent, 45mm slider.

Noise is said to be -90dBm with all controls flat. Input/output connectors are comprehensive, with a 3 pin XLR, plus a 3 conductor 6.5mm jack for both in and out, plus a barrier strip with ground lift jumper. The 5547 is a very roadable looking unit, and seemingly quite robust inside and out.

Jands 507

Latest addition to the 500 series, the 507 boasts output of 335 watts per channel (at four ohms, both channels driven) in a two unit high package. Mains supply is via two torroidal transformers, with cooling path front to back.



As initiated on the larger 500 series (510 and 516) replaceable option panels allow input and output connector customising, and also different configurations like biamp or bridge operation.

Input sensitivity is 0.775v (0dBV) and inputs are electronically balanced. A "hot pin" reverse switch is provided to allow for differing input protocol. Channel on and clip LED's are provided, along with calibrated rotary type input attenuators.

T.H.D. is typically 0.01%, and signal to noise 'A' weighted is >105db. Weight is a very reasonable 17kg, bearing in mind the 507 is engineered for Australian road conditions.

A basic alternative amplifier is the 107, a 3 unit tall, no frills unit, boasting the same specifications as the 507, including 325w per channel output.

Piggyback Banned

Almost unbelievably the Energy Authorities of Australia have banned the Piggy Back plug. HPM Industries announced that production had ceased in October, and Clipsal (Gerrard Industries) are also believed to have ceased production at the same time. The move follows a directive from the S.E.C.W.A. Approvals branch, who reasoned that it was possible to connect a piggy back plug to act as a socket on a lead, a situation that is certainly dangerous. However, it is equally possible to wire a normal mains plug to both ends of a lead too.

The move means that effectively from November 1st 1990 the approval for the re-wireable Piggy Back Plug is withdrawn. Effectively, it will be illegal to sell, expose for sale, or hire re-wireable piggy back plugs or extension leads. It remains to be seen whether existing users of piggy pack plugs, ie: lighting hire companies, are to be pursued or prosecuted in event they continue to hire existing equipment fitted with piggy back plugs.

The ban does not extend to molded piggy back plugs, ie: non-rewirable, so there is a little hope there but life without the piggy back is almost too horrible to contemplate.

Glossary

The **ABC** of Light
+ Sound

A

ACL: Aircraft Landing Light, also known as A/C.

ACTORPROOF: The ultimate test of indestructibility.

ATTENUATOR: Gain, or volume control.

AMP: Amplifier, or Ampere, a measure of current.

AMP RACK: Frame for housing amplifiers.

ANALOGUE: Non digital.

AA: Acting area floodlight, usually very old. (see Patt. 49)

ATTITUDE: Very important!

Fog Juice Alert

Following a number of complaints relating to sore throats, burning eyes, dizziness and nausea experienced by D.J.'s and punters alike, the W.A. Dept. of Labor and Industry have taken action. Not before time. The Dept. has notified retailers and manufacturers they will be fined if they are found to be selling fog juice not covered by a Material Safety Data Sheet (MSDS). The MSDS should state the components or constituents of the preparation along with all known toxicity results. Jands have submitted a MSDS for their fog juice product, which was prepared by an independant industrial hygienist. Under various D.L.I. and Workers Compensation regulations an MSDS must be provided for all chemical preparations used in the work place. The balloon went up in Perth when it was discovered that certain retailers had been brewing their own, so to speak, creating fog juice containing Diethylene Glycol, which is a known cancer producing agent of extreme toxicity. Some readers may remember a recent case in Sri-Lanka, where a chemical company mistook diethylene glycol for butylene glycol, commonly used in cough syrups, resulting in the deaths of many children.

EEC MAINS VOLTAGE SHOCK

Lamp manufactures have advised they expect to stop making 240v photographic and studio lamps for the U.K. market soon, as the U.K. progressively converts it's power grid from 240v to 220v. For many years now much of what is manufactured in the U.K. has been produced as 220v. Generator sets are being changed as they are commissioned or replaced, to bring the U.K. into line with it's European trading partners. The significance of this move will not be felt for some time, but once lamp manufacturers stop making 240v lamps for the UK, the consensus is they probably wont make them that often for Australia and the parts of Asia that remain the last 240v markets left. A

220v lamp run at 240v is life limited to an appreciable degree, a problem further exacerbated by the nominal nature of any electricity grid. 240v nominal really means plus or minus 10%, plus 10% is 264v, indeed greater voltages than that can be experienced, particularly in industrial area's when heavy industry shuts down/turns on. The lamp industry haven't said they wont build 240v lamps, but the potential for shortages is there. Users with suitable dimming equipment can, of course, put a top set on the dimmer output.

NEW LAMPS FROM PHILIPS

The proximity series are hailed as "The Forgotten Lamps" by Phillips. Reason? Unclear, however these lamps feature an internal, built-in reflector. While certainly of little use in stage lighting fixtures, who knows?

| Code | Lif code | Wattage | Colour temp. |
|----------------|----------|---------|--------------|
| 6999P GX9.5 | CP65 | 650 | 3200k |
| 6999Z G22 | CP66 | 650 | 3200k |
| 6984P GX9.5 | CP63 | 1000 | 3200k |
| 6984Z G22 | CP64 | 1000 | 3200k |

Philips also advise certain of their lamps are now "shock proof", or built better. These are:

| | | | |
|----------------|------|------|-------|
| 6995P GX9.5 | CP70 | 1000 | 3200k |
| 6995Z G22 | CP71 | 1000 | 3200k |
| 6996P GX9.5 | T19 | 1000 | 3050k |
| 6996C P28 | T20 | 1000 | 3050k |

Finally, several new lamps have been built, catering to higher dimmer loadings typically available. The lamps are available in 1200 and 2500 watts.

XI SPEAKER SYSTEMS



From Jands- the people who know sound, comes XI. Made here from U.S. manufactured components, designed by Glen Leembruggen, and priced right!

12 X-I SPEECH, MUSIC

12" loudspeaker system \$799*

Power handling: 200 watts, 8 ohms
Frequency response: 70hz to 14khz
Sensitivity: 98 dB @ 1m for 1 watt
Max. short term SPL: 121 dB at 1m

15 X-I MUSIC, P.A.

15" loudspeaker system \$999*

Power handling: 200 watts, 8 ohms
Frequency response: 70hz to 14khz
Sensitivity: 95 dB @ 1m for 1 watt
Max. short term SPL: 118 dB at 1m

Phone (02) 516 3622 for the name of your nearest dealer.

*Suggested list price including sales tax

JANDS

SOUNDCRAFT 200 DELTA

Product OVERVIEW

All new compact console put through it's paces

Soundcraft's recently released 200 DELTA replaces the 200B range that became the benchmark 4 subgroup mixing console of the '80's. The 200B found favour with sound re-inforcement suppliers and studio's alike, primarily due to it's clean performance and reasonably compact dimensions. The initial 200 range was updated to become the 200SR series, (virtually the same) and the 200B, which offered module options- such as a stereo input module, and a "sweep EQ" input module. The Delta series is entirely new, and offers answers to many prayers, namely standard sweep EQ, six auxiliary sends, and complete modular construction allowing unprecedented flexibility.

The four Group Masters are separate modules, and may be deleted, allowing the console to operate to a straight Stereo output via the Master Module. A 16 input frame (16-4-2) could become a 20-2 combination, for example. Frame sizes are available up to 32 inputs.

Each module now features individual rear output connectors, being formed in a sort of "L" configuration. This construction reduces internal looming and cabling, and eliminates the fixed rear connector panel dilemma. Standard module rear connections allow XLR mic input, with 6.5mm jack line input and insert point. Deluxe module rear panel connections also provide for a direct output jack, handy for multitrack recorder connection.

Interestingly, Soundcraft have designed both a Stereo Input Module, and a Dual Line input module, adding to the options available. The Stereo Input Module provides for left/right inputs from such things as effects units, CD players, keyboards, broadcast carts, and two track tape machines. TWO sets of left/right inputs are provided- (yes, four jacks on the back of the module), with an A/B switch allowing either. This provides the alternative of say, stereo input from your SPX 1000 on input A, and your CD player on input B, assuming you wont need to use your SPX while your background music from your CD is playing!

At the output end of the console, up to four Group Modules may be installed (if required), each Group Module providing a 20 segment, wide range bargraph meter, which is internally selectable to read either Peak or Average ballistics. The meter reads either the group output or the lower of two separate returns provided on the module.

Two returns (inputs) on each Group Module allow tape monitor tracks, effects units or additional line inputs access to the mix bus, or, in the case of the lower of the two returns, the option of access to mix via the group bus. Back panel connections allow XLR Group output, Jack Input's A + B, and an insert jack for the group.

The Master Module contains the six Auxiliary send masters, (each with an illuminated After Fade Listen {AFL} switch) as well as the monitoring, talkback and oscillator- which thankfully has a gain control. The 20 segment wide range bargraph meters provide visual indication of left and right Delta outputs, or any

soloed channel signal. Rear panel connections are: Left output, Right output, Mono output (handy for sub-woofer sends), left mix insert, right mix insert, and the six auxiliary jack outputs.

Delta frame sizes are available from an 8 input rack mount frame (offering several interesting combinations: 8:4:2, or 12:2, or even 24 lines:2), 8 input, 16 input, 24 input and 32 input normal frames. When Soundcraft say "input", they leave room for the Master module AND four Group Modules, so a 24 input frame could also be a 28:2 combination rather than 24:4:2.

IN THE FIELD

The possibilities are many, but your writer, a live sound engineer, thinks a 16 channel frame fitted with 18 input modules, (six of them deluxe), two Stereo Input modules, running direct to the Master module has appeal. Doing away with the four Group modules has given us enough inputs in a compact package.

Why, you may ask? Compact is the keyword, with today's cost effective PA living in the back of a van- No truck, and just two people can carry it into the venue. This is truly the PA of the '90's, and the Delta can give us the feature/size ratio if we think about it. Do we really need four subgroups? In this case, no. The P.A. is run Stereo, so we route direct from channel to left or right out.

This combination measures 798mm wide, 675mm front to back, and stands 208mm tall. One person could carry this Delta, even in a roadcase.

Obtaining the Delta, thus configured, your writer journeyed to Central Western N.S.W., where hard rockers Bastille had scheduled a trifecta of gigs. The P.A. hired by Bastille came with a 24:4:2 mixer that was cast aside for the decidedly trimmer Delta.



Deluxe Input
Module

Channel patch was as follows:

| CH | MODULE | TYPE | INPUT |
|----|-------------|------|--------------------------|
| 1 | Deluxe | | Kick |
| 2 | Deluxe | | Kick 2 |
| 3 | Deluxe | | Snare |
| 4 | Standard | | Rack tom 1 |
| 5 | Deluxe | | Rack tom 2 |
| 6 | Standard | | Rack tom 3 |
| 7 | Deluxe | | Floor tom |
| 8 | Standard | | Overhead (L) |
| 9 | Standard | | Overhead (R) |
| 10 | Standard | | Hihat |
| 11 | Standard | | Guitar 1 (L) |
| 12 | Standard | | Guitar 1 (R) |
| 13 | Standard | | Bass |
| 14 | Standard | | Guitar 2 |
| 15 | Standard | | Semi Acoustic DI |
| 16 | Standard | | Vocal left |
| 17 | Deluxe | | Vocal centre |
| 18 | Standard | | Vocal right |
| 19 | Stereo line | | L & R SPX 90II return |
| 20 | Stereo line | | L & R SPX 1000 return |

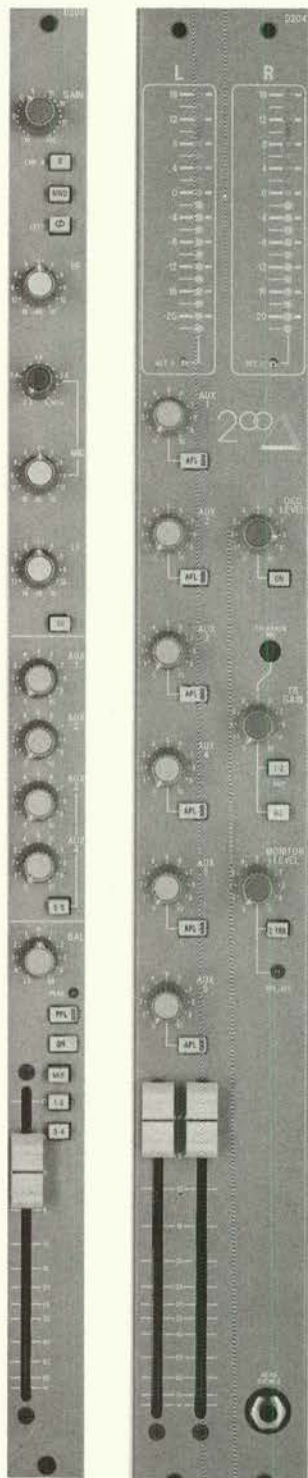
20 AND CD player input (B)

Patch completed we moved to soundcheck, where the Master module bargraph type metering let us quickly setup our input gain on each channel. The padless input attenuation is really useful, no more ...oops! when switching the pad out, just straight rotary control from -2dbu to -70dbu, and seemingly sensitive enough.

Each input was setup at about -4db, according to the meters, then EQ adjusted accordingly. With the channel patch placing the six deluxe input modules where we wanted them, we had no trouble equalising our problem inputs- Kick drums (2) which had to sound the same, a rather lifeless snare, centre tom, floor tom, and the centre vocal. The centre of the three tom's we switched to reverse phase, which seemed to help separation from the outside two a little.

Bastille centre vocalist Gus Dennis has one of those voices- explosive sibilance, tons of gain, plenty of EQ required! We inserted a Urei 7110 Limiter/Compressor over his channel to contain gain and even out the action.

Once each input was equalised we further adjusted input attenuation to allow for what we had added in/taken out with EQ. We settled for 0db setting on the Master Module metering. Thus done, we checked each input channel PFL switch was OFF, simply done due to the fact this switch is illuminated. Having done so, our Meters now read the actual Left/Right Delta output.



Stereo
Input
Module

Master
Module

STANDARD INPUT MODULE:

- Features, from top of module.
- Padless Gain control,
- Phantom power switch,
- Mic/line switch,
- Three band equalisation (EQ) with sweepable (variable) midrange frequency,
- Six auxiliary sends from four controls with a 3-4 or 5-6 switch,
- Pan pot,
- Peak LED,
- ILLUMINATED PFL switch,
- ILLUMINATED On/Off switch,
- Assignment to Mix bus (Master output module) OR to Subgroups 1 and 2, and/or to Subgroups 3 and 4.
- 100mm long throw fader,
- Signal peak LED

DELUXE INPUT MODULE:

The Deluxe Input Module features over and above those offered on the Standard input module:

- Phase Reverse switch,
- 100hz High pass filter switch,
- Four band EQ with 2 midrange sweep controls, in place of standard three band EQ,
- EQ on/off switch.

STEREO INPUT MODULE

- Mono switch,
- Phase switch for the Left input channel
- Three band EQ with sweep midrange,
- EQ on/off switch,
- Six auxiliary sends,
- Balance control,
- Assignment to any output or subgroup,
- Illuminated PFL and on/off switches,
- Signal LED,
- 100mm long throw fader.

DUAL LINE INPUT MODULE

This has two sets of inputs, each with it's own set of controls: Input A and Input B. Each input has:

- Gain control,
- Three bands of EQ with sweepable midrange,
- Four auxiliary controls allowing access to all six auxiliary sends,
- Pan control,
- Rotary volume control,
- Illuminated PFL switch,
- Signal LED,
- Illuminated on/off switch.

Power user tips

FEEDBACK FINDER FOR FOLDBACK MIXERS.

This power-user tip comes all the way from Richmond, VA, USA, where Spence Burton decided it was all very well monitoring your foldback mix via headphones or a monitor amp, but you should be able to SEE what is going to each speaker, too!

Most foldback mixers have separate cue pushbuttons for each output, arranged so that with an equaliser in the loop the effect of that equaliser can be monitored through headphones or a monitor amplifier driven by the headphone output.

This idea is to use a wye splitter (see Figure 1 schematic) to split the headphone output one side to your headphones (or monitor amp) and the other side to the mic input of a Real-time Analyzer, like the Rane RA 27.

With this arrangement, anytime you cue one of your foldback mixer outputs (sends) you hear what's going to that send. You also SEE it, on the Analyzer. If feedback occurs, you can identify the problem area by watching the display go into the red. You turn the display down (less sensitive) and you see the lights drop out of their red condition. The last light out is the main problem frequency. Mind you, some judicious control is needed here, as the band member on the end of the foldback send has probably already exited the hot zone by this time!

The Wye splitter is detailed in Figure 1. You need a regular Stereo Wye adaptor with one Stereo 6.5mm jack going to 2 Stereo 6.5mm sockets. Arista make one, so do Radio Shack.

The special box is a matching transformer, basically matching line level (your headphone output from your mixer) to mic level (the input level of the Realtime Analyzer). It also isolates the D.C. power from the headphone amp to the mic input. The voltage is small enough not to hurt the transformer. Note that the RING connection of the input jack is left OPEN- do not solder it to anything, or you will SHORT OUT one side of the mixer headphone amplifier! Also leave the centre tap connection on the primary open.

Almost any kind of line matching transformer will do, you are matching line level to mic input level, high-z to low-z. One final tip is to mark the equalisers 1 thru 6 (or however many foldback sends you are running) in order that you adjust the correct equaliser at first hint of trouble!

-Channels wish to thank Rane Corporation for providing this Power User tip.

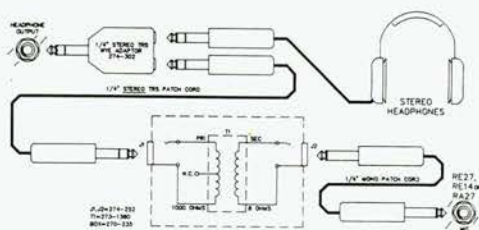
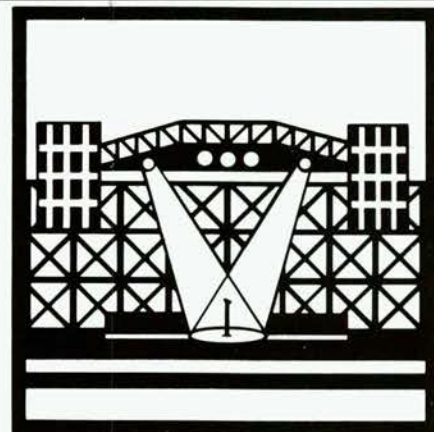


Figure 1



Carmen: Production Review

(continued from page 1)

was staged in London, and Tokyo. The stage contained a revolve, various hydraulic ramps and was built up 3 metres, to a height that brought it level with the first tier of seating.

An Octagonal structure supported both sound and lighting alike, and amplifiers and dimmers were all located on the catwalk above. One tonne of speaker cabling (3000 m) was used, custom made for the production. Each cable was marked according to cabinet location. Some of the speaker cable runs were exceptionally long, due to the placement of amp racks on the overhead catwalk. To minimise line loss, 30 amp speaker cable was used, the cable runs rigged out along the octagon like lighting looms.

Autograph Sound Recording, London, designed the sound, and provided Samuelsons with an explicit brief. The objective was to make the entire opera sound, well, just natural, like there wasn't a P.A. involved at all. To achieve this objective, twelve separate zones were created, each zone a separate speaker/amplifier cluster, capable of receiving its own mix. Peter Ratcliffe, from Samuelsons picks up the story:

"The groups of boxes were individually equalised, and program sent according to position. The orchestra was fed to a pair of clusters, either side of the orchestra pit. If you were down the other end of the arena, the only place you would hear the orchestra sound coming from was the orchestra pit. No where else. The object was, where the sound was coming from was where the event was taking place, be it orchestra playing, talking or singing, wherever."

Accurate equalisation was critical. Autograph provided ten Meyer CP 10 parametric equalisers. The balance of the system was equalised with JBL/Urei 5547-A third octave equalisers.

Phil Leaver, from Autograph, explains how the opera is miked: "The 10 principals wear small radio microphones, either behind an ear or sewn into the front of their wigs. We plant radio mics on the backs of a few chorus members, at shoulder height, and make sure these people mingle, so most of the chorus sound is picked up. There are other mics secreted around the set and among the orchestra." Microphones there were. 22 radio mics simultaneously,

which in itself is daunting, along with \$85,000 worth of condenser microphones, (including 17 x Nueman KM 84 and 8 x U89 on the orchestra) all of which were phantom powered. With 66 x 48v phantom channels open, signal integrity was critical. One suspect connection, with resultant crackle and pop could torpedo the production. Every microphone and multicore connector was sprayed with contact cleaner and pin 1 connections were checked and tested carefully.

London engineer Paul Stantering mixed the performance on two Yamaha PM 3000 40 channel consoles, with a Yamaha 916 sub mixer. Up to 12 output mixes were available, allowing individual access to any loudspeaker group location.

The speaker design called for 14 Meyer MSL 3's, arrayed in two groups of seven each, located at each end of the orchestra pit, purely carrying the orchestra mix. 52 Meyer UM1-A cabinets were arranged in 8 groups around the outside of the octagon. End fill and centre ring fill was provided via 44 JBL Control 1 monitors, providing at least the first four rows with program, as the flown arrays would have missed this inner area. Each group of loudspeakers- 12 in all- had multiple processor control, to allow the top boxes in the group, for example, to be run harder or be equalised seperatly to the lower boxes. 72 Jands J920 and J960 amplifiers powered all loudspeakers. The UM1A's were bought out from the U.K., as not that

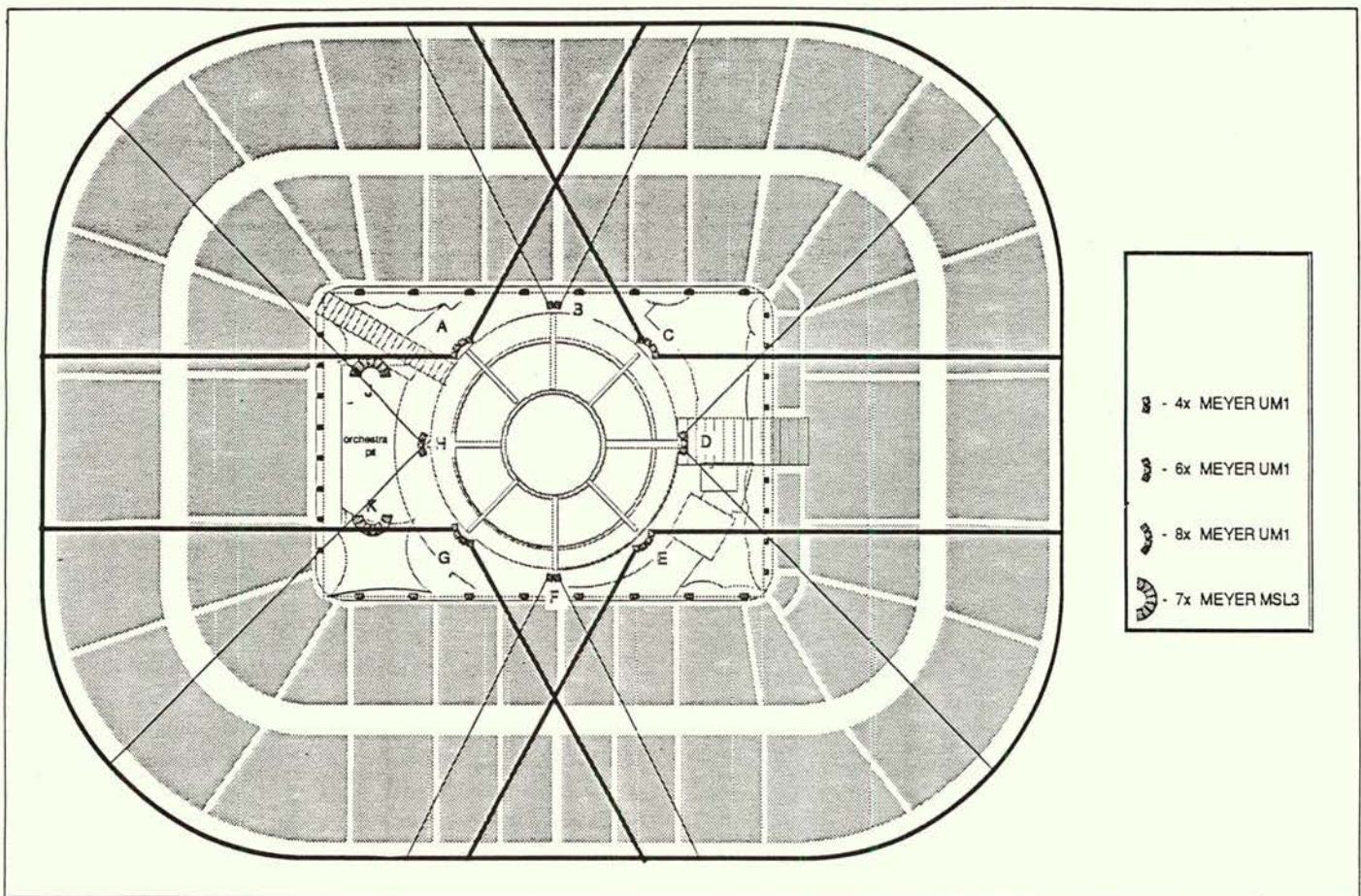
many are locally available. They have a tighter 30 x 30 degree conical horn dispersion, allowing the high frequency to be "squirted" where it was required.

Vocal groups were slightly delayed, with a Yamaha DDL 3 Digital delay inserted over the applicable radio mic subgroup, so that the sound was seen to come from the actual mouth of the person talking/singing. This added to the perception that there just wasn't a P.A. system involved! The resultant press reviews either didn't mention the sound, or specifically praised it, meaning the objective was achieved.

Varilite design was by David Hersey, and was operated by Paul Kent of Varilite Australia. Five performances were staged in Sydney, and five in Melbourne.

Certainly a performance of this scale has the potential to go horribly wrong. In the case of Carmen, carefull design, planning and attention to detail ensured it was a complete success. As Peter Ratcliffe summed up: "People who know say it was the best of the productions yet staged, surpassing London and Tokyo. We certainly look forward to working with Autograph again".

Illustration shows loudspeaker coverage, at Melbourne Entertainment Centre.



Richard Priddle

Talks on speaker design and Mosfet amplifiers



Richard Priddle is a free-lance acoustic consultant, specializing in speaker design. His qualifications as an architect, his science degree and B.A. really mean little in a profession where becoming cocooned in theory is a daily danger. Design of speaker systems can be emotive, over reliance on theory will produce an end product that just does not work or soundwell, right. An ear is required, a datum. Richard looks more like a farmer than a human acoustic datum, he originates from out beyond Forbes somewhere, drives an old Holden, and works from Paradise Beach on Sydney's northern beach strip. We tied Richard down for an hour or so in a noisy cappuccino joint.

Richard worked for Rank, scoring them the Australian Film and Television School, leaving about 8 years ago to design Rhinoceros- the studio now owned by INXS. Since then he has acted as consultant to government departments, architects and sound companies alike. He picks up the story:

"I guess I've learnt "conservative acoustics"! Three years ago, I was approached by a large investing bunch of people to produce some designs and take them and make millions, anyway we created Transound Systems, a company dedicated to building loudspeakers. I really canned R&D for two years trying to keep that thing going. Now looking back I did learn a lot though, about Gorilla proofing designs, about producing designs on time, apt and buildable designs. I think I designed 40 odd different systems there, we identified 13 different categories of loudspeakers, and interestingly enough, there is very little cross-fertilisation between say, HiFi, car audio and professional audio. I design across all areas, Appropriately, I hope. It must be working, because the first speaker I designed for Sony (I design all their local loudspeakers) increased sales five fold in the category.

- Do you think the onslaught of High powered passive boxes is a progression from the recent availability of high powered mosfet amplifiers making headroom available? I mean 8 years ago all these horn loaded monstrosities that were, um , 200 watts power handling were obviously a product of bi-polar amplifier design at the time that gave you 300 watts maximum available power?

That's right, and now you've got 1600 watt mosfet amplifiers which have caused ripples all over the world, big mosfet power amplifiers.

- The effect on speaker design had to flow through, didn't it?

There was another thing that happened too, Thiele and Small produced a bunch of mathematics that allowed very predictable direct radiator boxes to be designed with distinct advantages over horn loaded boxes- although at lower efficiencies. These were smaller and sounded better, in fact you could now have a Sound Reinforcement loudspeaker that was like a large HiFi. In the old days I used to thing in lots of 200 watts, there weren't necessarily that many speakers that could handle 200 watts, I also think that Mosfets are easier on vented boxes than Bipolar amplifiers, in the way they drive the bottom end.

- A lot of people said Mosfets were appreciably softer on the bottom end, there was no real reason for it, they said it just sounded like the early generation mosfet amp's weren't pushing as hard?

Well, one of the things I've done is to go further into what makes them sound like they do ... in earlier times I almost got sued because of the sound of a Mosfet amplifier of New Zealand origin, in a studio. So when I first started hearing Mosfet I said "horrible!". Marantz came out with a hifi amplifier the PM 94, and it just transformed my attitude towards mosfets. Since that time I have worked closely with Stuart McLean, the Australian Monitor designer, and have concluded that early mosfet amp designers incorrectly assumed the complex loudspeaker/crossover load would respond the same as for bipolar output. The mosfet design has better damping and control of the low frequency cone excursion. A low-Q loudspeaker alignment (most professional loudspeakers) would sound much better with an amplifier that decreased the damping. What was needed, and what we now have, is a better understanding of the real load presented to the amplifier by the loudspeaker, and for the amplifier designer to engineer a "transfer characteristic" into the amplifier that suits the load presented. The end result is a sonically superior amplifier/loudspeaker combination. Proof of this is a company like Jands making the switch from Bipolar to Mosfet. I prefer the sound of Mosfet now, I'd always maintained that nothing would come near a valve amplifier, and now I consider these as historical relics, despite the fact that there are some things they do well.

-So with much more power available at the amplifier today, what ratio of power do we need over the passive speaker system's rated power?

How do we rate the power in the amplifier itself? Um .. it's hard to say. What's become a standard in my way of reckoning is the 1600 mosfet amplifier, a brute of an amplifier. I've been interested in peak to RMS ratio of music played too, because that changes with frequency. Call it "Crest Factor", for want of a better term, peak to RMS, and just what is the tolerance of the system to having peaks rounded off or clipped or whatever. I've designed a 400 watt box with 2 150w RMS rated woofers in it, with horn, you can drive it with half a 1,600 watt mosfet amp - that's 800 watts conservative at 4 ohms, all day, never blow it. A good design balances the thermal and excursion limited power handling. The excursion limits are usually met with peaks which are typically 10 -12 dB above the RMS rating.

The most realistic way to rate a loudspeaker system is to say "un-

clipped amplifier signal". As a general rule, I'd say a ratio of 2-1 power. At least. 400 watt box, 800 watt amplifier.

- So keep the clipping out of the box. You're more likely to damage the box with clipping than what people call "overdriving", aren't you?

Oh absolutely. Different frequency groups are damaged by different things. A lot of amps become unstable once the power supply is unable to keep up. We also confuse overdriving with clipping. It has been my experience that in a competently designed system, clipping will thermally destroy the high frequency elements first, and that the low's are usually damaged by excursion at a higher power level. Within the limits of driver technology and the requirements of good technical design, we cannot make a system totally foolproof. As Murphy would say: "make a system that even a fool can use, and only a fool will use it!"

- So what's the immediate future with loudspeakers?

I think in loudspeaker design you can't create a product and etch it in stone and call it law, because the market is shifting so much. One of the greatest influences on the market today is the noise abatement act, and where a band once would use a double 4 way, next thing you know their using smaller gear.

A fixed installation is an ad-hoc design anyway, it's designed according to the acoustics of the place, the size of it, the budget whatever else, it's so rare in Australia you can really select what you like. The Hire companies have embraced the double 15" and horn passive box with open arms- it's just such a good thing. They can say "there it is", put it in, plug it in, away you go. You don't have to worry about the EQ or any of the stuff. With passive network you can put a whole horn management system in, EQ the horn, time align the bass to the top end.

You can have any little high Q glitches in the horn/driver accurately notched out where it does the most good- right on the back of the driver. You've got a FAR BETTER control over it, and ar, so the hire companies, who buy most boxes, have embraced it. A composite passive box is tote-able, you can carry it around. I think most speaker manufacturers have moved to produce loudspeakers that work better in those things, JBL's new 2226 is almost the perfect woofer for a double 15" bin, they've adjusted their specs, you see loudspeakers over the past 10 - 15 years, a 15" speaker had very low Qts..

- And didn't sound so good over 800hz either

They've changed it, taken a totally different approach, got the power handling up, changed the alignment parameters so you can use them in vented boxes, there's a whole new genus of loudspeaker bass loading called band pass that's allowing designers to concentrate bandwidth and therefore being able to manipulate efficiency like a horn, your not set with an efficiency like you are with a standard direct radiator. So in terms of professional loudspeakers that are carted around, in terms of quality it's more Hifi, more fidelity. People are starting to do their sums now on how much backup gear you need to run it, you look at a Turbo type system, you've got to buy a crossover, bunches of amplifiers, tons of gear, you need a degree to make it work.... whereas you buy a twin 15"

and horn box, a 1600 watt mosfet amp, you're away!

- Crossover design is something that's really changed, hasn't it? The changes now are the greatest leap forward, I reckon. In Australia moreso than anywhere else, and I reckon a lot of it's because Glen Leembruggen (noted Sydney consultant-ED) and I have been working on high power passive crossovers, comparing results, and having enough companies here prepared to take product out and let it get welded and burnt and explode ... we know more about passive networks here in a high power application than a lot of other people. The early versions were virtual grenades!

-Let's talk componentry.

For years I've been accused of being blatantly pro Altec. I used a great deal of Altec product in the past, because I intimately knew it's strengths and weaknesses. I now tend to work for particular companies, designing around their componentry. So it's E.V. one day, JBL the next.. If I HAD to select one brand only, it'd be JBL, because of the balance of technical quality between the cone drivers, compression drivers, and horns now they have among the best cone drivers, certainly good very good compression drivers. The CD horns perhaps aren't quite there yet, but I'm sure their working on them. People have got this idea JBL is incredibly expensive, but they're no more expensive than others, particularly if you impute the performance advantages. The 2226 is a stunner, my computer often spits this driver out during sorts for a difficult design. The 2445 is a ball-tearer, the new 2450 Neodymium 2" driver- great. JBL, or Jands, have seen the need for a high power playback systems, not disco, not studio, but audio visual playback systems like very loud hi-fi. No one's providing that, yet.

- What of the future? What next?

Thoughtful evolution. There's been a pile of "fringe designs" and "radical developments", but nothing has come realistically near straight, direct radiator technology. Now we're chasing quality, intelligibility, efficiency, portability, cost appropriateness, whatever else. The SPL are there. The biggest problem will always be the interface between the loudspeaker system and the room. I've recently designed a room that cost millions to setup- Atlab, a THX film mixing room. A great deal of effort is expended in matching the loudspeakers to the room to create an accurate monitoring environment. My greatest claim to fame is the Ba-hai temple, (a Sydney Northern Beaches landmark-ED)reverberation time 11 seconds. I got a loudspeaker system that will actually give intelligible speech.

Loudspeaker design - I could talk for HOURS, I mean, I already do, I give lectures on them, listen to them, design and build them- ever mindfull of the curse of over-enthusiastic designers- that is of producing a brilliant solution to a problem that doesn't exist!

Richard Priddle has kindly offered to assist with our reader's technical problems in the HELP! column, starting next issue. So put your pen to paper, and send your problem to Channels, where we will try to give you an intelligible solution.

(continued from page 7)

Great mistakes (I learnt from that.)

Your writer cut his teeth operating a P.A. owned by a (typical) Sydney covers band in the late 1970's.

The mixing console offered 10 channels, and the effect was a new Ibanez Analogue Delay. The sax player, who was "in the know", carefully set the Delay, so the console operator didn't have to think too much. This was a godsend.

Weekends of three sets a night obviously paid off, the band was hired by Penrith Leagues Club, which even then had a fairly impressive house P.A. system. The mixing console was a Biamp 24 channel- massive and very mysterious! Better still, the delay was a Roland 201 Space Echo great!

The house technician assumed your writer knew more than he did, and your writer didn't challenge the assumption. The band commenced proceedings, the levels were (sort of) set, things sounded- well, OK, and your writer settled his nerves by the fourth number. But all those knobs and buttons!

Best of all was the PFL button, This allowed any individual channel to be routed through the headphones, and meant your writer could now explore the Roland 201 Space Echo, not necessarily a user friendly creature at first encounter.

What was desired was a nice longish (300ms) delay, to make the word "Good" repeat a few times. At the end of Johnny B. Goode. Headphones planted firmly on cranium, band in motion, hand on Roland, many permeations attempted, much dial twisting. The sounds that issued forth were less than encouraging. Different combinations were attempted. Much frustration.

But- what's this? The band have stopped? But the song isn't over yet! Headphones off, and "yurgle gurgle swish swish" ...the band talking un-intelligibly into the microphones, the audience dumbstruck.

Your writer, audio engineer par excellence, thought the PFL button on the echo return OVER-RODE the channel fader, which was set at M-A-X-I-M-U-M, 100% (very LOUD)!

WRITE TO "GREAT MISTAKES".

Your blunder may help others, maybe it happened so long ago you can laugh about it now ... or maybe you would prefer we withhold your name! In either case, write to:

P.O.Box 171
St. Peters 2044
N.S.W. Australia

The SPX 1000 was hooked up to auxiliary 1, a prefade send, and used for vocal effect. The SPX 90II, used for drum reverb, was hooked up to Aux 3, postfader. As we had an on-stage foldback desk, we didn't need to use any of the four remaining Aux. sends for foldback.

Once under way two things rapidly became apparent. First, the transparent sound one traditionally expects from a Soundcraft was there, with extra dimension. Second, those meters let you know what's happening without your eyes needing to focus on them. The overall ergonomics are very good, the desk rake is seemingly just right, and the padded arm rest/side panels support limp parts of the anatomy when required! The bottom cover strip can be written on, but due to the hand smearing the writing when using a whiteboard marker, a strip of tape and a texta are a better option. At least there is somewhere to stick the tape!

Headphone output level at +20dbu seemed enough considering the nature of the test band, Bastille. (Ergo, very loud!)

Our field test concluded that weekend, and proved to this writer at least that sub grouping isn't always necessary. Nice, but ...Delta probably will find it's way into the P.A. market in 24 or 36 channel format, partially loaded with input modules. Perhaps enterprising Soundcraft dealers will offer modules for hire, after all- most 32 channel desks don't need all 32 channels all the time!

Soundcraft have done it right with Delta. The desk offers flexible options and the right balance of features to satisfy not just P.A. owners, but A.V. companies, 8 track studio's and Theatre alike.

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