

# LIGHTING+SOUND

*International*



THE FANTASY WORLD OF SIEGFRIED AND ROY

- Siegfried and Roy, Magic and Mystery in Las Vegas
- Technical Changes at Le Palais
- Dukes of Chelmsford
- Lighting the Ballet Rambert
- Frankfurt Review
- Checking out Chess On Tour

**APRIL 1990**



## The Scroller. The Choice of Lighting Professionals Here...and Around the World.

When the lighting system in the show room of the Mirage was taking shape, no one was taking chances. Only the best in lighting technology and design would be selected. That's why, when it came to installing nearly 400 rolling color changers of various sizes, they installed the Scroller.

The Scroller is Wybron's newest generation of color changer and like our earlier changers—Colormax and Colorwiz—it continues to set the standards by which all other changers are measured.

So don't leave your choices to chance. To find out how the Scroller can enhance your next installation, write or call us for more detail.

### **Wybron, Inc.**

*Technology Serving The Arts*

1096 Elkton Dr., Suite 200 • Colorado Springs, CO 80907  
719-548-9774 FAX 719-548-0432



# THE DREAMS AND FANTASIES OF SIEGFRIED AND ROY

L+SI sent Julian Williams to Las Vegas to spirit out the background to Siegfried and Roy's magical trickery and theatre mystery at the new Mirage Hotel. The show's essential secrets remain, but David Hersey, Mike Barnett, Wendy Bodzin, Richard Knight, Rick Belzer, Jeff Johnson and Andrew Bridge throw some light on the \$50 million project



The impressive frontage of the Mirage Hotel with multiple lagoons, waterfalls and a 54 feet volcano.

"Anything is possible if you want to throw enough money at it," is usually the remark made to designers by 'realizer' Mike Barnett, who also made this comment to me, as one of the British designers who were congregating in Nevada.

Housed in the \$700m Mirage Hotel, which opened last November, the showroom and show alone cost \$50m. The theatre itself was intended to open on the 18th December and following delays eventually did so at the beginning of February. It has been purpose-designed to house this legendary act with all its wild animals. Siegfried & Roy play three weeks in every four, twice nightly — the theatre becoming available for headliner acts for a week in each month.

As you walk up to the 'World of Mirage' with its palm tree setting and purpose-made river along its quarter mile, \$40million-plus, frontage, you can hardly fail to notice the Volcano.

Every evening, before showtime, the volcano hisses, emits a leaping jet of some 10ft of flames, and then erupts — in 30 minute cycles! It literally stops the Strip.

Lighting designer David Hersey was

asked to design a 'water feature' and his volcano was inspired by a Polynesian Lost World type of scene. "The whole concept was approached like working on a theatre set," said Hersey.

Having previously carried out a million dollar test on a side site during construction, to prove that the steam, gas, water, and flame combination would all work together, they then 'treated' the water to make it respond to light and achieved the right angle for the effect. The sophisticated control system has to monitor all weather conditions and decide which sequences to run in the following cycle. The scene is gently lit in white light, with a red lighting change to complement the 'volcanic eruption'.

"There's no discharge lighting anywhere," explained David Hersey. "I wanted everything on dimmers — the whole lot, even if it is just static, so that it can be balanced."

Once inside the hotel, there are tropical fish tanks, the famous Royal White Tigers of Nevada in their own habitat, and a future home for the Mirage Dolphins. Far away at the back, behind the large array of

gambling tables in the lobby, is the entrance to the Theatre Mirage.

The spectacular design of the show was conceived in collaboration with Siegfried & Roy by John Napier, who also co-directs with John Caird. The lighting is by Andrew Bridge. It is almost as if it was an extension of their highly acclaimed 'Time', still generally considered to be the most 'technical' of shows. And this unique combination of magician's trickery and theatre mystery is all enveloped within a total staging concept and present-day technology.

As you enter the darkened stage 'space age' auditorium you are completely unaware of the fact that this showroom has supposedly the largest-ever fixed lighting rig in it, considered to be worth around \$10m. (Part of it is owned by Irvin & Kenneth Feld Productions — the producers of the huge 'Ringling Bros and Barnum & Bailey Circus' and Disney Ice Spectaculars). They have a five year contract in Las Vegas with this act, and are anticipating a run of over a decade.

John Napier has created a theatrical theme around Siegfried & Roy's famous

illusions and animal show, with a Nordic style of Folklore fairytale, which may be based on similar lines to Wagner's 'Siegfried'.

At the top of the show we journey through a 'magical circle', as the Trolls cautiously walk into the 'otherside' where dreams and fantasies are made. The first part of their show literally hurls us through an hour of non-stop theatre. It takes us through a series of transformations with effects and staging centred around this tale of Acolytes and Trolls, and climaxes with the entrance of a real Dragon — well, almost.

This miraculous piece of machinery is brought to life by wizard Mike Barnett, the 'realizer' of designers' imaginations. This monster has 24 different axes and needs four people to control it.

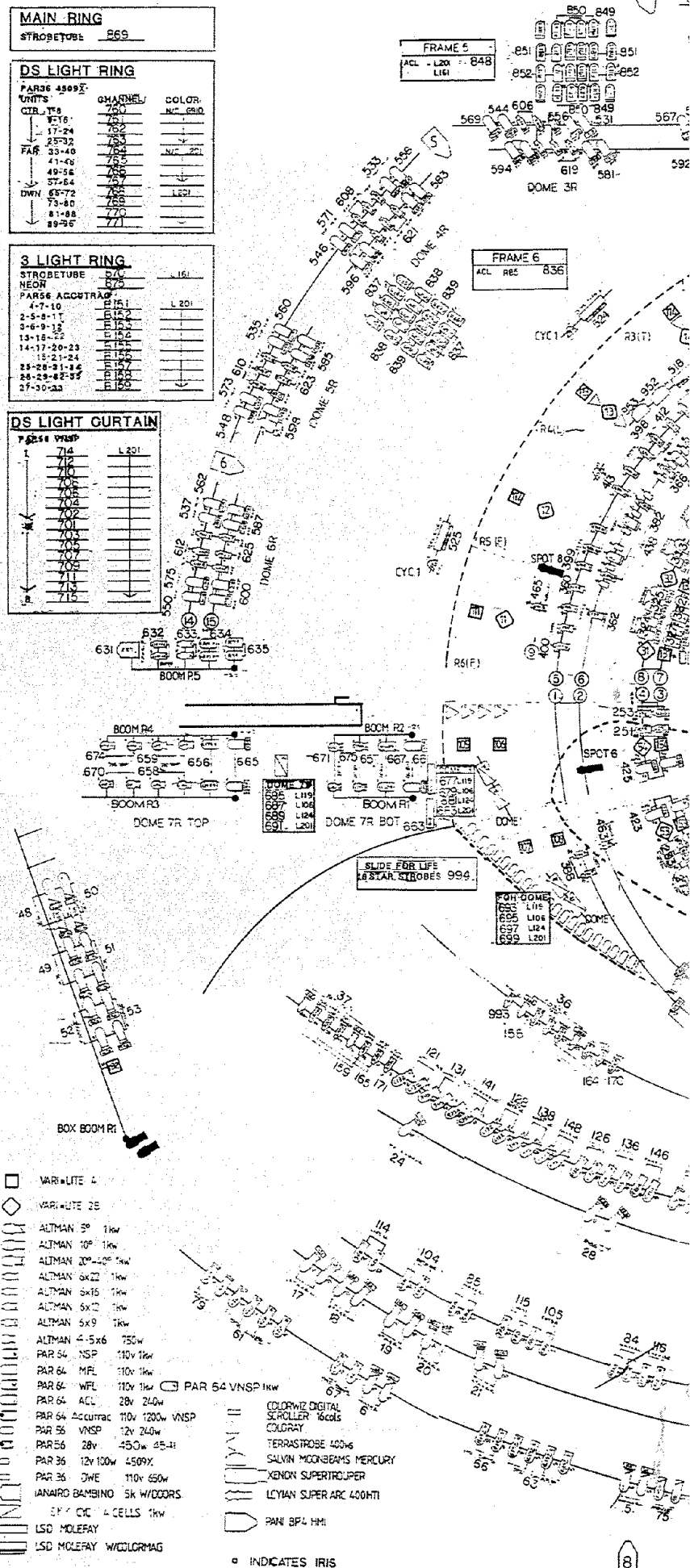
"Everything has to be precision perfect," said Barnett who was responsible for the hydraulics, structure, and mechanics of this beast. He also contributed the 'works' for the 'A' Frame and Gantry electric stage trucks. Showtech Inc., the scenic contractors, organised the computer interface controller for the Dragon, which comes from existing technology as used in the automobile industry. It is simply programmed by recording preset joy stick controllers.

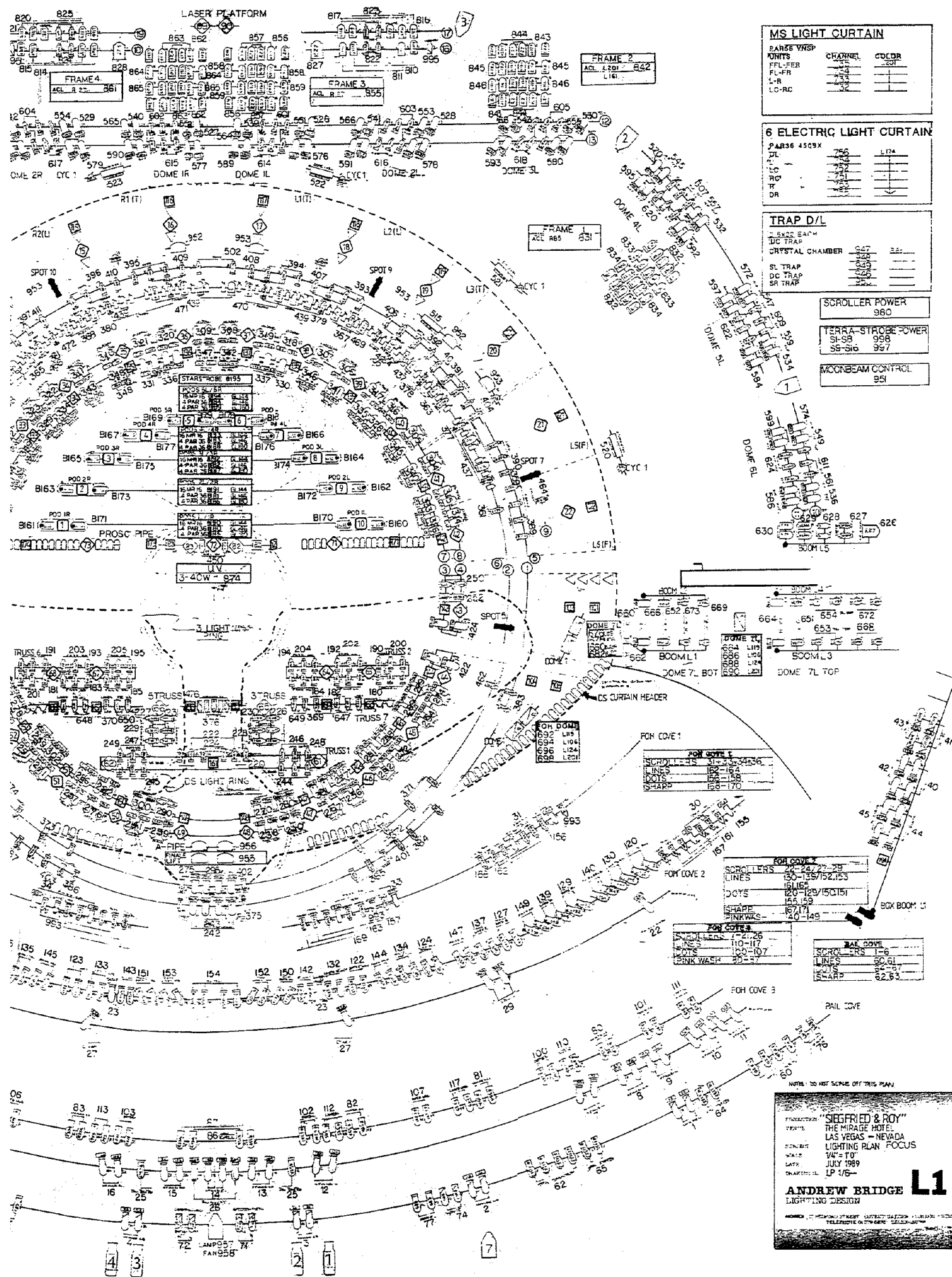
It would seem that the achievement of these tricks of light, so essential to complement the Siegfried & Roy act, may have been an impossible task without the availability and facilities of Vari\*Lites. The units have to be so precisely positioned in this space, both for instant patterns for effect, and for lighting, and in as many variations as the acts themselves — and quickly.

After an opening scene where the entire circular dome backing has rotating shafts of light, Andrew Bridge once again makes his lights become characters. In the opening, moving pods descend forward like several pairs of red eyes peering through the gloom and Siegfried & Roy carry out their illusions intertwined with transformations with their disappearing and reappearing collection of 24 animals, including a snake, a cheetah, a horse and an elephant.

At one of the performances I saw, an illusion forced us to hold our breath as Siegfried had to prevent a covered cage from being suspended, which he had previously showed us with its gate open, and with one of his White Tigers inside. It began to rise from only one end, tipping it perilously towards the other — and for two or three minutes, in full stage light, he calmly corrected the problem without us actually seeing what he was doing, successfully revealing Roy when the cover was taken off.

Talking to assistant lighting designer Wendy Bodzin, who showed me around the rig of almost 4000 lighting instruments (with 2000 dimmers), she explained: "There are 12 panels altogether which surround the set. Four of these are main dome panels around the upstage which do a combination of lifting and tracking to





6 ELECTRIC LIGHT CURTAIN		
PAR36 4509X	756	L17A
FL	1	
FR	2	
TR	3	
DR	4	

TRAP D/L		
3" S&S EAPM	DC TRAP	CRYSTAL CHAMBER
SL TRAP	1	
DC TRAP	2	
SR TRAP	3	

SCROLLER POWER
980

TERRA-STROBE POWER
91-98 998
99-916 997

MOONBEAM CONTROL
951

DOME 7L		
BOOM L1	BOOM L2	BOOM L3
664	654	672
665	653	668

OH DOME		
690	691	692
693	694	695
696	697	698
699	700	701

FOY COVE 1		
SCROLLERS	LINE	SCROLLERS
100-107	108	109-116
117-124	125	126-133
134-141	142	143-150
151-158	159	160-167

FOY COVE 2		
SCROLLERS	LINE	SCROLLERS
168-175	176	177-184
185-192	193	194-201
202-209	210	211-218
219-226	227	228-235

FOY COVE 3		
SCROLLERS	LINE	SCROLLERS
236-243	244	245-252
253-260	261	262-269
270-277	278	279-286
287-294	295	296-303

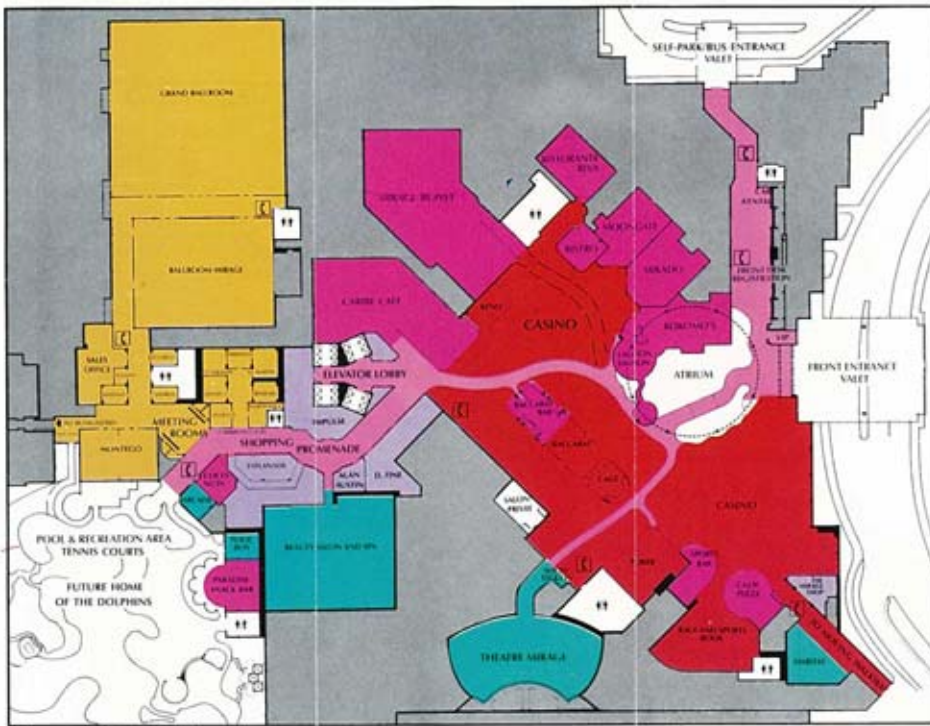
BOX BOOM 1		
SCROLLERS	LINE	SCROLLERS
304-311	312	313-320
321-328	329	330-337
338-345	346	347-354
355-362	363	364-371

NOTE: DO NOT SCREW OFF THIS PLAN

MANUFACTURER: "SIEGFRIED & ROY"  
 VENUE: THE MIRAGE HOTEL  
 LAS VEGAS - NEVADA  
 LIGHTING PLAN FOCUS  
 SALE: YAN'S TOY  
 DATE: JULY 1989  
 DRAWING: LP 1/6-

**ANDREW BRIDGE L1**  
 LIGHTING DESIGN

TELEPHONE: 0 79 666 6666



The world of The Mirage.

create an opening up-stage centre, four panels wide, which forms the backdrop. "These panels are covered with RP screen on one side, with bobinette on the front. In the material of the dome panels they have fibre-optic points in them and Lumenyte. Also, along the base of the panels are strobe tubes. They open in various configurations to let the scenery through — most of which tracks on, such as panels which come on from either side to close down the stage.

"We have six Pani BP4 projectors from behind, projecting mostly abstract images. Each unit has a 32 slide random access slide changer. Also there are three Pani BP4's projecting from the front," continued Wendy. "On the front of these panels are three sets of rotating Par battens controlled by specially designed software from a PC. Also included are a couple of Color Rays and a 2B Vari\*Lite. "We have 126 Vari\*Lites, Color Rays,

and very narrow beam 4509X GE high intensity lamps. There are light curtains above, and Par 56 units uplighting in the stage floor. All along the passarelle there are MR16 mini-strips and above there is a light curtain with Par 56 downlights around the proscenium which we call the canopy here. We also have at mid-stage in the proscenium a set of downlights, interspersed between the Vari\*Lites and Par 56 units.

"In the big dip, down in front of the arch, there is a circular truss that has moving fixtures on it. This comes in and slowly spins at the opening of the show.

"The main light ring, which forms the basis of the rig, is a circular position that goes all the way around the top of the dome and has nine positions on it. It is overhung twice and also has two lower positions. These positions have Par Cans and Vari\*Lites and above that, there is a mixture of everything!

"Underneath the dome at the sides there are five pods on each side, each with one 2B Vari\*Lite, two Par 64's, MR16's, and Par 36's. These pods, which track on and off stage, can come into centre stage, and into a low trim about 10ft from the stage. There are six Lycian short throw follow spots in the ring itself, and four Super Troupers in the light booth."

I was next shown the 'rear wall of light', which comes into its own primarily during the Dragon sequences, and uses some 120 Par 64 lamps.

Wendy Bodzin again: "To run this show requires 28 electricians, all of whom are full time contractors and responsible for



Only in Las Vegas could one discover a Polynesian Lost World coming to life in spectacular style.

the maintenance of their machinery, and who then run the performance twice each evening. There are 10 follow spot operators, a follow spot cue caller and a lighting cue caller, who is also the resident lighting director."

Here in Vegas it seems to be the norm to have a lighting cue caller as well as a follow spot cue caller, but due to the short time available to tech the show, it probably wouldn't, in any case, have been possible to have one person to cue all of the lighting.

There are 15 operators in the light booth, which runs the full length of the auditorium, and they are all connected by Clearcom into, what is reputedly, the largest headset system for a show in the world, with 98 stations on eight channels. Nine of these are for lighting, which includes the lighting director who calls the lighting cues, one who just runs the Par Battens and the Dome which go up and down from a PC, two Prestige 2000 Colortran boards linked together to run the majority of the conventional stage lighting, and the Strand Lighting Impact that runs the lights incorporated with the scenery. Then there's a Panache colour scroller board (controlling 370 units), the Vari-Lite Artisan Board, projection board, Laser Color Ray and Optikinetics strobe controls.

There are two electric gantries which can drive all over the stage, and which house a Vari\*Lite, surrounded with downlighters. Like a kind of fork lift truck, but with self-levelling platforms at both

ends, they transport people and animals onto the set for the various illusions.

One can imagine the problems that will inevitably arise where there is a dedicated lighting rig of this size, particularly in the week of the month that they let in a touring 'headliner act with its own imported rig!

Concluding my tour of the rig with Wendy Bodzin, who has been with the show for almost 18 months, and who was busily completing the plotting at the time with other members of the production staff, she explained: "Everything is documented in terms of position, trim and location. We are as well covered as we can possibly be for that situation, and, yes I am expecting the phone to ring for all of us when we've gone!"

There can't be many technicians who can buy a 19ft Cadillac with a per diem, but Vari-Lite programmer Richard Knight managed it.

He contacted me from Japan, where the ever mobile 'Starlight Express' was once again rolling in for a stop. This time a repeat stadium version in Tokyo, where there was the first attempt to use the 200 series on a technical production two years ago. Today, they are using 50 VL2's and 24 VL4's. Again reducing the conventional rig, replacing par cans and scrollers on the truss.

Speaking of the integration of the Vari\*Lite becoming the core of a stage lighting rig with the new VL4 units, Knight commented: "We now have a new tool available to make it easier.

"There's no real separation," he added,

"between smart lights and dumb lights. In this show they are up all the time and they are used for 'looks' more than the conventional lighting," — albeit they asked for 250 of them.

Knight went on: "My biggest problem on this show was the length of time the whole process took! Inventing the show 'here and now' showed some lack of planning." He felt that this contributed to the lateness of the lighting, leaving him no time for tweaking in the end.

Moving on to the very high standard of the lighting team, he praised the work of production electrician Greg Husinko and Vari-Lite technician Mark Freeman, who made life easier with their technical teams.

In conclusion, he felt the show to be "one of the most effective things I've ever seen. I hope the 'show running crew' are allowed to keep it that way. It's a very complicated show technically."

If you spend four months on the Strip it's hardly surprising you learn to live that way. He's now looking for a buyer for that car!

Vari-Lite L.A. which opened in spring 1988 employs a staff of 15, including contract personnel. The office is dedicated to the Los Angeles market and, through its satellite sales office in Las Vegas, the market there. The television and film industries make up 80% of the clientele, although market share in industrial shows and productions such as Siegfried & Roy is steadily growing. The advancements and new product developments in the Vari\*Lite system are a direct



Part of the show with the circular dome backing housing at the top, Vari\*Lite's and at the bottom, Color Rays.



Siegfried (in the mouth of the Dragon) and Roy — masters of illusion.



The entrance of the Wicked Queen. The circular light ring is clearly shown above.



More magical artistry from the duo.

# YAMAHA DDL3

## DIGITAL DELAY LINE

### THE NEW STANDARD



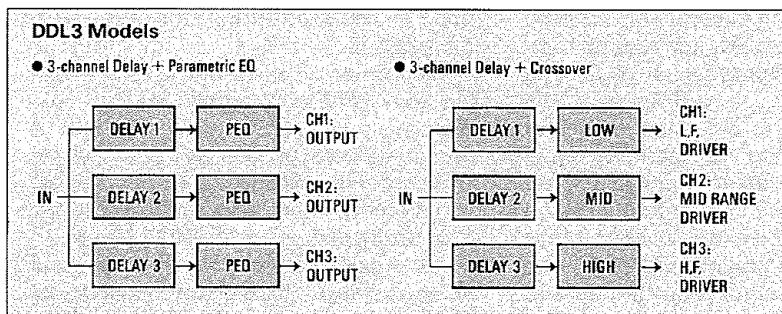
100dB. 1 IN 3 OUT. PROGRAMMABLE CROSSOVER MODE

#### FEATURES AND SPECIFICATIONS

1300 Millisecond Delay.  
20 Microsecond Steps.  
Dynamic range 100dB.  
18-bit Delta Sigma Conversion.  
15 User Memories.  
THD less than 0.03%.  
20 Hz - 20 KHz response.

#### REAR PANEL

Balanced + 4dBm Input/Output.  
Front Panel Disable + Memory Protect.  
Remote Control + Memory Select.



YAMAHA PRO AUDIO SYSTEMS

YAMAHA KEMBLE MUSIC (UK) LTD · PRO AUDIO DIVISION · MOUNT AVENUE · BLETCHLEY · MILTON KEYNES · MK1 1JE · TEL: (0908) 371771

Featured at  
THE MIRAGE

# Prime Mover.

The new A-32 Slide Changer from Production Arts Lighting fits any Pani scenic projector and provides fast, accurate, reliable, repeatable slide movement.

Fully automatic, the slide changer is capable of randomly accessing up to 32 large-format 7" x 7" slides in a maximum cycle time of 2 seconds.

Fully digital, the slide changer accepts a DMX512 control signal for remote control from a lighting console or utilizes its own on-board computer for completely unattended operation.

For more information or to see this first-class mover in action, contact Production Arts, The Systems People.

**PRODUCTION ARTS**  
L I G H T I N G , I N C.

636 Eleventh Avenue, New York, N.Y. 10036 (212) 489-0312 Fax: (212) 245-3723

result of market demands. I asked David Alley at Vari-Lite L.A. for further comment. "The Siegfried & Roy production currently represents the largest installed Vari\*Lite rig." I then questioned him as to whether the VL4 had undergone any refinements. "Due to Vari-Lite's dedication to research and development, both hardware and software advances are an on-going process. The VL4, which first appeared in mid-1989 on the Who tour, is no exception to the rule. However, no refinements have been made specifically for the Siegfried & Roy show."

I then managed to talk to ultra-active associate lighting designer Rick Belzer, who is never without his right arm — a mobile cellular. He keeps everyone in touch, at the same time as speaking with his N.Y. office and organising his summer stock theatre in Connecticut, preparing for the next stop of 'Starlight Express' in Los Angeles, and finalising an 18 month stint with this show. Much credit should go to him for my initiation with this show, as he also found the time to call me regularly in England over the previous months with updates of the show, at a time when it seemed it was never going to open. He had the headache of co-ordinating the lighting, but enthused that "this type of theatre is more fun."

Rick Belzer handles many large musical projects, and big shows are his speciality, he told me, having just turned down a Canadian 'industrial' in favour of a musical in Japan. His first involvement with British designers was with 'Cats' on Broadway, and this show is the first time he has worked with Andrew Bridge.

"When I first came out here, it was just a hole in the ground," he said. "The complete hotel was built in two years and on what they call 'fast track big time'. At one point it was known as the largest and most expensive construction project in the U.S.A. in terms of dollars going out the door!"

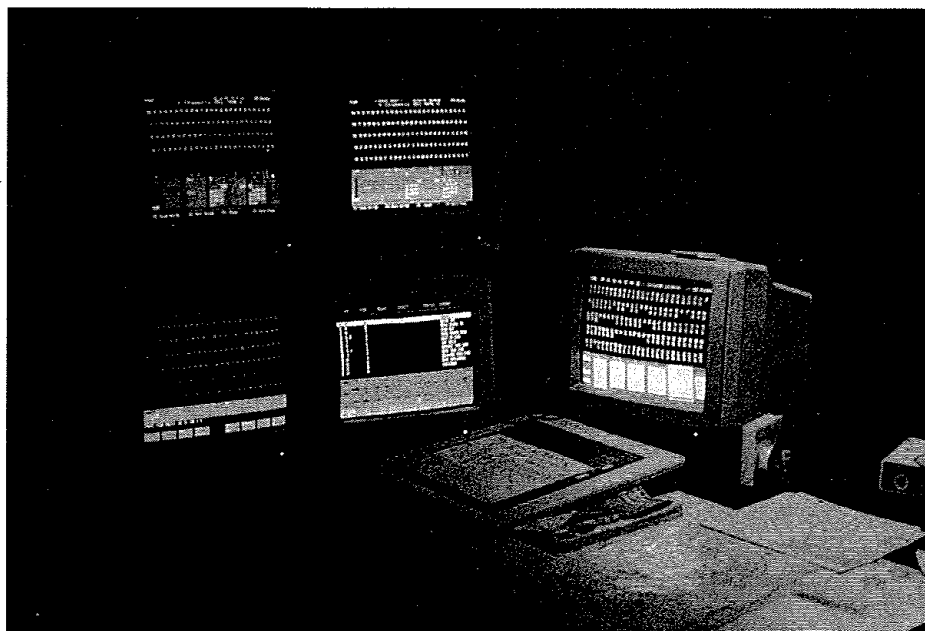
When he arrived he was immediately accused of being behind — the contractors needed to know every circuit in the building in two weeks — soon to be reduced to a single week!

"Two days later I was on a plane to Andrew Bridge's office in London. Andy was doing 'Phantoms' everywhere and I spent an hour or so with him to discuss this project in between," said Rick Belzer.

"We both had to come out to Vegas within two weeks of that meeting to plan the wiring of the building without knowing anything about the show! We covered ourselves, and told them so, overwiring by around 20%. We did multidrops from the grid so they could go anywhere. In fact it's worked out very well to allow for circuits to cover any headliner act," explained Belzer.

During the following six months Belzer and Bridge had many meetings in Las Vegas and in England, and while this was going on there were two different teams working: one with the 'Siegfried & Roy World Tour', then in Japan, and the other on preparations for the Vegas show.

Resident lighting director for the



The control area of resident lighting director Jeff Johnson.

Siegfried & Roy World Tour company, Jeff Johnson, calls the show here. He joined us and I asked him why it took so long, from September, when both teams came together in the theatre, through to February when the show opened.

"There were a lot of problems in co-ordinating the different factions of the show. What was the concept? There wasn't a director for the show until August — a year after I got involved with the tour," explained Johnson.

"There was also a waiting period to allow for the tour to get back and for the dancers and company to rehearse. I was bouncing between Japan, New York, Dallas and here. It needed all of us in one place, and then they got a little behind with the choreography, and so it just snowballed and there wasn't time to tech every move.

"Lighting was ready — we put together the biggest lighting rig in the world. We were ready to go. We would have scrambled. You bash through it, take notes, and you fix it," interjected Belzer. "It's a Broadway calibre show, still in its preview stage, and Siegfried & Roy are perfectionists," said Johnson.

I asked them what they considered to be the technical achievements in the show. Belzer: "The Dragon. In itself it was almost a million dollar piece of scenery. It took four men two weeks to programme the machine."

I asked them if there was anything new about the lighting equipment. "The Wyvern digital scrollers, which were in development, were pushed and used for the show. I think we also pushed the Vari\*Lite development along with the bugs worked out for the model 4's. The Pani projection was using the first random access slide changer, being custom-built and designed. Also the Lumenyte fake fibre optic neon, fed with dichroic colours to enable a blend of any colours," said Belzer.

"Another first was the mini par batten light curtains on the stage. There are 38 separate stepper motors to run them. We did a lot of research on the 4509X lamp, as

it's the only lamp with the beam characteristics in it, but it only has a 25 hour life!"

"It could be the industry's demo theatre — it has every instrument that's going," suggested Johnson.

Why was it intentionally such a big show, I asked. "You're dealing with the biggest act in Vegas for the last 10 years, and you're dealing with the biggest casino/hotel in Las Vegas," said Belzer. "It's definitely a town where they spend a lot to make it the biggest and the greatest. There's going to be a gradual upgrading of the shows here now."

Later I was able to talk to jet-hopping Andrew Bridge in New York before he was about to become entrenched again, this time with the lighting for 'Aspects of Love' at the Broadhurst Theatre. He thought the biggest achievement was "Being able to manipulate the whole system easily. We had so many switchboards, and so many different types and quantities of units, it could have been a nightmare controlling it all. The way we broke it down, and the way we got the lighting design team working, was great," he said. "Rick Belzer was the politician, Vivien Leone (assistant lighting designer) was the gearbox, and I was the pilot. And it was all good," he continued.

"From my point of view, one of the big problems of the long delay was that you can get visually stale. After three months it was sheer tedium to see the same style of lighting, and you couldn't get excited by it, so you didn't know whether you were doing something good or bad. You have to try and get a break somehow and get on top of it again. The other thing that was an achievement was building a show of this scale over the length of time. With so many people involved it was a very difficult, political and technical jungle that we went through, but the artistic side came in at the end.

"I was asked to do this two years ago," continued Andrew Bridge. They were expected to move quickly. "The architects were asking 'how much electricity will I need?' We did the circuit diagram on the



Rick Belzer (right) associate lighting designer with Wendy Bodzin, assistant lighting designer.

building architects plan, and a lighting design just about prior to set design. We did an equipment list before the set was finished, or even what was going to be the show, and we coloured it months before we got on site.

"Having won the battle of a good quantity of Vari\*Lite on the show, with a suitable number of follow spots, I knew that the excitement, visibility and specials could be catered for, so therefore the vast space left could be covered very broadly, which most designers don't have the option to do. I went for three enormous gobo coverages with 400 instruments in each and also the same with the colour scrollers, as block colour.

"We had some backlight on the dome with the projection and some effects, and the rest of it was meant to be a cacophony of beams crashing around in space filling up the atmosphere.

"It's a big area and you need that quantity of gear. Some people might say that with this quantity of equipment you can do anything. But it was a difficult task getting them, and that was possibly one of the most important parts of what I did."

In my efforts to bring you a fully detailed story, I ran into unforeseen difficulties. Photography can be a big problem. For example, on my visit to the Broadhurst Theatre in New York I had hoped to be able to take a picture of lighting effects specialist Howard Eaton, working on part

of the lighting ring for 'Aspects', with some of the technicians there. This was forbidden by the union steward, who said we would have to pay the whole crew if I clicked the shutter.

To some extent one can appreciate management's feelings on such an unusual show as Siegfried & Roy, where we were again forbidden to take any practical working pictures of either the crew, or simply of the lighting equipment, for fear of a flash gun causing a stir. Since writing this piece, however, we managed to break this precedent and obtain permission from the producers for a photographer to take some production pictures on our behalf with the co-operation of Vari\*Lite. And that's the reason L+SI decided to delay this feature to this April issue so that we could include the pictures . . .

But then as Andrew Bridge said in explanation: "You have to realise here, they are the world's highest paid cabaret artists, who have invested millions in the secrecy of their illusions. They wouldn't even let me see some of the illusions I had to light!"

And where you have a combination of a few technical problems and an environment with animals who are not always co-operative, it's no wonder a show can be delayed. Things can go wrong . . .

Palm trees quantity approx 3.5K  
Lighting Control from ETC lighting desk interfaced with computer.  
Intrusion Alarm Electronic Beam system in operation.

#### Equipment List:

**Impact:**  
2 x 4 MR16 JDR-N 120v @ 400 watts  
2 x 6 MR16 JDR-N 120V @ 600 watts  
2 x 8 MR16 JDR-N 120V @ 800 watts  
10 x 8 MR16 EYF 12V @ 600 watts  
8 x 24 MR16 EYF 12V @ 1800 watts  
116 Proj MR16 EXT 12V @ 50 watts  
1 x Proj MR16 ENL 12V @ 50 watts  
5 x Proj MR16 ENL 12V @ 35 watts  
6 x Proj MR11 FTE 12V @ 35 watts  
102 MR16 ELH @ 300 watts  
57 x Par 36 DWE @ 650 watts  
2 x 2 Par 36 DWE @ 1300 watts

6 x 3 Par 36 DWE @ 1950 watts  
2 x 1 Par 36 4509X 13V w/13V trans. @ 100 watts  
2 x 2 Par 36 4509X 13V w/26V trans. @ 200 watts  
4 x 2 Par 36 4509X 13V @ 200 watts  
2 x 3 Par 36 4509X 13V @ 300 watts  
14 x 4 Par 36 4509X 13V @ 400 watts  
2 x 5 Par 36 4509X 13V @ 500 watts  
2 x 6 Par 36 4509X @ 600 watts  
71 x 8 Par 36 4509X @ 800 watts  
10 x 12 Par 36 4509X 13V @ 1200 watts  
2 x 14 Par 36 4509X 13V @ 1400 watts  
4 x 16 Par 36 4509X 13V @ 800 watts  
12 x 16 Par 36 4509X 13V @ 1600 watts  
4 x Par 46 4535 6V @ 30 watts  
8 x 8 Par 46 4553 28V @ 2kW  
36 x Par 56 4541 28V @ 450 watts  
11 x Par 56 VN5P 12V strip @ 2500 watts  
36 x Par 64 Raylight @ 1950 watts  
6 x Par 64 Raylight @ 1300 watts  
20x Par 64 VN5P @ 1200 watts  
8 x Par 64 NSP @ 1kW  
16 x Par 64 MFL @ 1kW  
1 x Color Ray (no wattage specified)  
25 x Color Ray @ 175 watts  
25 x Color Ray PWR (no wattage specified)  
6 x Grain O'Wheat (no wattage specified)  
34 x Lumenyte (no wattage specified)  
10 x Moonbeam (no wattage specified)  
16 x Quartz Fix @ 300 watts  
4 x Quartz Fix @ 500 watts  
10 x 4 Starstrobe (no wattage specified)  
2 x 6 Starstrobe (no wattage specified)  
1 x 14 Starstrobe (no wattage specified)  
1 x 30 Starstrobe (no wattage specified)  
20 x Vari\*Lite 4 @ 400 watts  
24 x Vari\*Lite 2B @ 400 watts  
3 x Fluorescent (no wattage specified)  
2 x Pyro  
8 x Volcano

#### Prestige:

40 x 5 DEG @ 1kW  
20 x CS for 5 DEG  
116 x 10 DEG @ 1kW  
12 x CS for 10 DEG  
84 x 20-40 DEG @ 1kW  
46 x C8 for 20-40 DEG  
6 x 6x9 @ 750 watts  
29 x 6 x 9 @ 1kW  
2 x 6 x 12 @ 750 watts  
168 x 6 x 12 @ 1kW  
12 x 6 x 12 iris @ 1kW  
117 x 6 x 16 @ 1kW  
12 x CS for 6 x 16  
6 x 22 @ 1kW  
12 x 6 x 22 iris @ 1kW  
24 x 4.5 x 6 @ 750 watts  
144 x Par 36 4509X 13V @ 100 watts  
6 x 1 Par 36 4509X 13V @ 100 watts  
3 x 2 Par 36 4509X 13V @ 200 watts  
5 x 6 Par 36 4509X 13V @ 600 watts  
6 x 7 Par 36 4509X 13V @ 800 watts  
22 x 8 Par 36 4509X 13V @ 800 watts  
12 x 2 Par 46 4553 28V @ 500 watts  
3 x 2 Par 46 4553 28V @ 800 watts  
3 x 4 Par 46 4553 28V @ 800 watts  
3 x 4 Par 46 4553 28V @ 2kW  
3 x 6 Par 46 4553 28V @ 800 watts  
3 x 12 Par 46 4553 28V @ 3kW  
3 x 18 Par 46 4553 28V @ 5kW  
32 x Par 56 VN5P 12V @ 240 watts  
41 x 8 Par 56 VN5P 12V @ 1920 watts  
32 x Par 64 VN5P @ 1kW  
118 x Par 64 NSP @ 1kW  
64 x CS for Par 64 NSP  
246 x Par 64 MFL @ 1kW  
200 x CS for Par 64 MFL  
8 x Par 64 WFL @ 1kW  
8 x CS for Par 64 WFL  
48 x Par 64 ACL 28V @ 240 watts  
12 x Par 64 ACL 28V @ 250 watts  
11 x Far cyc  
4 x lanairo fresnel @ 5kW  
12 x Molefay @ 5850 watts  
8 x CS for Molefay  
2 x Moonbeam (no wattage specified)  
10 x Moonbeam @ 400 watts  
1 x Pani Projector @ 2kW  
6 x Strip MR16 JDR-N 120V @ 3100 watts  
12 x Strip MR16 JDR-N 120V @ 3200 watts  
16 x Starstrobe  
4 x Strobetube  
16 x Terrastrobe @ 400 watts  
1 x Neon  
24 x Tapelt  
3 x 4' UV tube @ 40 watts  
39 x Vari\*Lite 2B @ 400 watts  
39 x Vari\*Lite 4 @ 400 watts  
6 x fans  
10 x spots

#### Siegfried and Roy

Production electrician: Greg Husinko  
Resident lighting director: Jeff Johnson  
Head spotlight operator: Tracer Finn  
Assistant lighting designers: Wendy Bodzin, Vivien Leone  
Assistant production electrician: Don Lawrence  
Vari-Lite consultant/programmer: Richard Knight  
Assistant: Mark Freeman

#### Statistics on the Mirage Frontage

DHA sourced the lighting from Production Arts, and the flame control from John Rogers at Aisco.  
GFI- Ground Fall Interruption Breakers are in use.  
3000 Instruments (combination of low voltage, tungsten and Par 56 lamps. Each unit is connected with 600ft cables.)  
Total Hotel Mega watts intake based on approx 70k population capacity.