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 PRODUCTION, POST PRODUCTION,
 SERVING THE BROADCAST

TECHNOLOGY

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Homegrown TV in the South Pacific

by Jeremy Hoare

NUKU'ALOFA, Tonga

The thunderous roar of ocean waves breaking on the distant coral reef was but a murmur by the time it reached the white sand beach fringed with bounteous coconut-laden palm trees. There, in a macrocosm of shimmering light and crystal water, a consummate symphony of dazzling white, azure blue and vibrant green, a dusky, nubile, bare-breasted maiden dozed languidly under...CUT!

So okay, yes, it also rains in the South Pacific, and every other day has a leaden grey sky just like Pittsburgh on a wet Monday in April. This I discovered recently when, as a free-lance lighting director and photographer, I visited the Polynesian countries of Tonga and Western Samoa.

Polynesia is roughly a large triangle across the Pacific with New Zealand in the west, Hawaii in the north and Easter Island in the east.

The kingdom of Tonga is the only monarchy

in the Pacific and has been ruled by King Tupou IV since 1965. The country comprises 170 islands, of which 35 are inhabited by about 100,000 people.

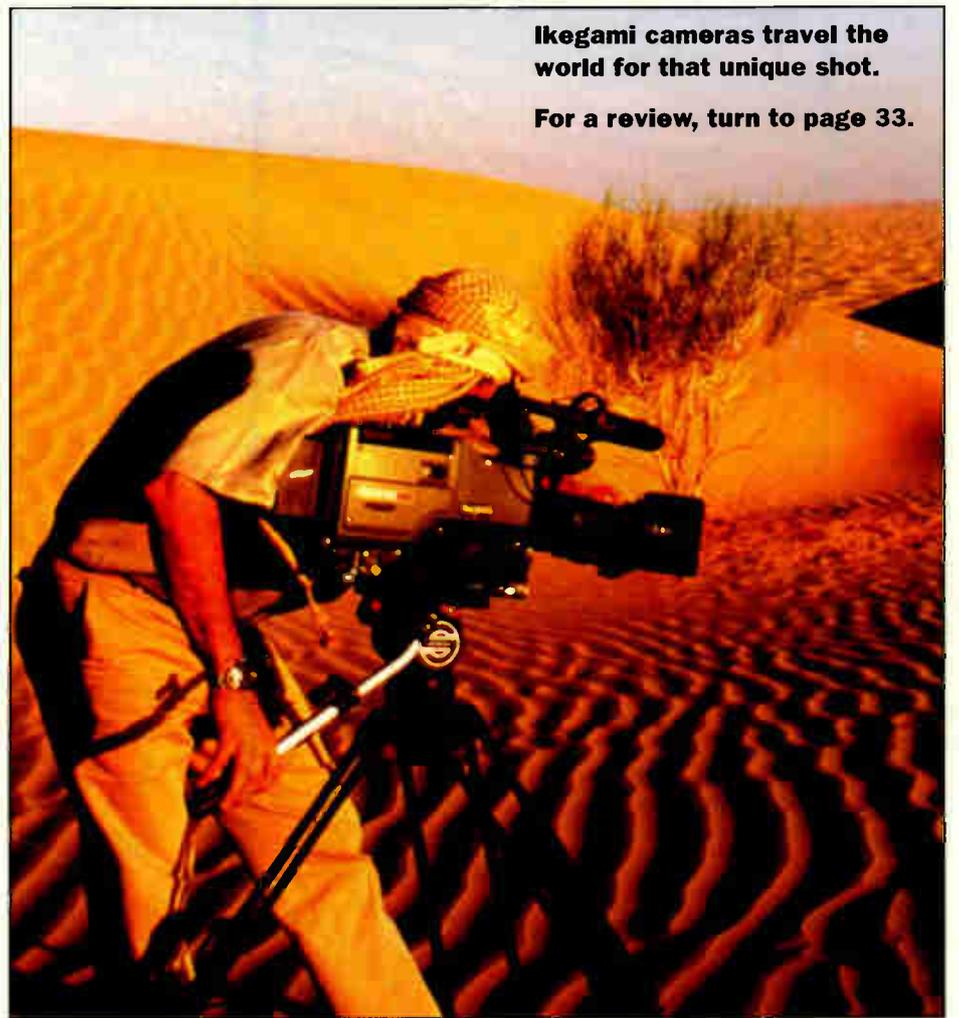
The two television stations in Tonga, OBN and ASTL 3, neatly sum up the battle between soul-saving and money-acquisition that is prevalent all over Polynesia — one station being zealously religious and the other dominantly commercial. A third station will soon be launched by the owner of the Pacific Royal Hotel who originally planned for an in-house service, but decided to broadcast it as well.

SATELLITE LEADER

The really enterprising company is Tongasat Ltd., a satellite agency that in 1991 secured orbiting rights for six prime slots. At the time, it made Tonga the world's sixth-largest user of orbital rights after the U.S., U.K., Russia, China and Japan. The King's daughter, Princess Pilolevu, chairs the company.

Because of the huge physical spread of Tonga, OBN only goes out to the main island of Tongatapu. OBN presents mostly Christian-based programming and is funded on a shoestring budget provided by an American evangelist in Hawaii. The channel started four years ago with a purely religious output but has subsequently been diluted with commercial programs such as "The Bionic Woman." This was largely in response to ASTL 3's more commercial mix that includes pop music videos for teenagers.

OBN is housed in the old Tong Hua Chinese restaurant here in the capital city of Nuku'alofa. Prior to that, the building



Ikegami cameras travel the world for that unique shot.

For a review, turn to page 33.

served as a church. I myself must take some credit for this transformation. Over chop suey in 1990, I remarked that the building would make a good television studio. A Tongan magazine published my idea

for a television service for Tonga, which had none at the time. Shortly after the publication, the king moved the Chinese restaurant to new premises and turned the

(continued on page 11)

Easy Steps to Cleaner Audio
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SYNCHRONISERS



I didn't know Snell & Wilcox did that. For full information: Tel +44 (0) 181 607 9455 Fax +44 (0) 181 607 9466

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PEOPLE

HERSLEY APPOINTED CHYRON CHIEF

MELVILLE, N.Y.

Isaac Hersley has been appointed president and chief operating officer of Chyron Corporation.

Hersley, who joined Chyron in 1986, had served the company as vice president, executive vice president and president of the company's Telesystems and Video Products Division. He served as president and COO of the company between 1989 and 1991. Hersley had also worked for Capital Cities/ABC as vice president of engineering.

"Isaac's broad experience and accomplishments with Chyron during the last nine years coupled with his 17 years' experience with ABC qualify him for the responsibilities he is assuming," said Michael Wellesley-Wesley, Chyron Corporation chair and CEO.

Under the deal, ElectroGIG will blend its GIGTime Reality Tracking system with Illustra's Object-Relational DBMS and Visual Intelligence system. The result will be an asset management system capable of retrieving images based on content, rather than keywords.

"We have long felt that asset management was crucial to the multimedia market," said Leen Zevenbergen, president of ElectroGIG. "However, until Illustra released the first object-relational database, the solutions available have not accurately met the needs of the market."

For further information, contact ElectroGIG at telephone: +1-415-956-8212; FAX: +1-415-956-8213; e-mail: gigsf@electrogig.com, or circle Reader Service 130.

NEW TECHNOLOGY

NEW MODULATOR SPEEDS OPTICAL CONVERSION

LOS ANGELES

A new opto-electronic modulator with three times the capacity of existing modulators has been developed by a University of Southern California-UCLA research team.

Opto-electronic modulators convert electronic signals such as those carried on copper wires to the light beam signals conveyed on fiber-optic cables.

The devices are used by cable television companies to convert electronic satellite signals into the signals carried over optical cable. The technology is also used in telephony and radar applications.

The USC-UCLA team achieved a jump in processing capacity from 20 GHz to 60 GHz by substituting an organic polymer for the lithium niobate crystals currently used in opto-electronic modulators. This substitution converts a much wider band of electronic signals to optical signals. The USC-UCLA team is also working on 100 GHz and 200 GHz devices.

The researchers said that the polymer-based modulators would likely be cheaper to make than the crystal devices. Cable industry fiber-optic component manufacturer TACAN Corp. is collaborating with USC and UCLA to develop the technology commercially.

DATA BROADCASTING

TV AZTECA SETS NEW DATA SERVICE

MEXICO CITY

TV Azteca, Mexico's second largest network, is installing a data delivery service allowing it to control numerous functions at its 195 stations.

Using a customized system from Wavephore in the U.S., TV Azteca will have the ability to operate such functions as local ad insertion, audio and video playback and other tasks at the local stations of its two national networks, Channels 7 and 13.

Currently, the system is operational at 40 stations, with full deployment expected early next year.

"The integration of this new datacasting system is directly in line with our mission to change the future of Mexican broadcasting," said Roman Gomez, director of technology for TV Azteca.

With the TV Azteca system on board, Wavephore is planning to develop what it calls the "Wavephore Channel," a full-featured data broadcasting channel that will be

COMPUTER VIDEO

DOW JONES LAUNCHES NEWS SERVICE

LONDON

Dow Jones has launched its Telerate Live service in London, enabling subscribers to view up-to-the-minute news reports on a small PC window.

The service will focus largely on financial and economic news, as well as feeds from its European Business News satellite service.

A key function of the service is the ability to view video on one portion of a computer screen and simultaneously carry transactions and other functions on the computer.

Dow Jones is utilizing the MPEG Lab Suite encoder from Optibase to obtain real-time compression of analog signals into MPEG streams. At 200:1 compression, images are transferred throughout London along a 2 Mbps fiber trunk that connects to coaxial cable for the final drop to users.

Dow Jones eventually plans to offer video clip storage, as well as the ability to select from various broadcast sources.

For further information, contact Optibase at telephone: +44-1249-460-066; FAX: +44-1249-461-066, or circle Reader Service 47.

MULTIMEDIA

ELECTROGIG TEAMS UP WITH ILLUSTRATE

SAN FRANCISCO

3D animation firm ElectroGIG and database management company Illustra have entered a partnership aimed at developing an object-oriented multimedia management system.

TV Technology announces the opening of its new European sales and marketing offices located at:

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For more information, contact Dario Calabrese at the above address.



combined with systems already operating with Channel America and the Canadian Broadcasting Corp.

For further information, contact Wavephore at telephone: +1-602-438-8700, or circle Reader Service 92.

BUSINESS

CCS GETS NEW NAME

HOLMDEL, New Jersey

CCS Audio Products, following its acquisition by Virtual Express Communications (VirteX), has changed its name to MUSICAM Audio Products to reflect its line of products under the Musicam standard.

The company will continue to provide MUSICAM-based audio systems, including the Prima line of ISDN codecs, the FieldFone codec and the Starguide satellite receiver. The company will also continue with the MUSICAM Express joint venture with Infinity Broadcasting aimed at developing a U.S. digital audio broadcast (DAB) system.

For further information, contact Musicam at telephone: +1-908-739-5600; FAX: +1-908-739-1818, or circle Reader Service 35.

CABLE

BOSCH TELECOM SEES DUTCH FIBER PROJECT

AMSTERDAM

Stuttgart's Bosch Telecom has received a contract from the Dutch electrical utility Edon to install a fiber-optic TV system to reach some 90,000 subscribers by the end of this year.

The project will center around the Groningen district and will act as a pilot project for a network of 500,000 households in the eastern and northern portions of the country.

Each household is to be provided with up to 80 channels of PAL television and other telecommunications services, such as ISDN, telephone, fax and others.

The system is to run at a wavelength 1550 nanometers with baseband between 47 and 862 MHz. The transition stations at the head-end in Groningen will be equipped with externally modulated lasers and optical high-performance amplifiers originally developed by Bosch and first used in the giant Opal fiber-optic network in East Germany.

The Groningen project will distribute the signals to 96 district centers each feeding about 1,000 households. A double passive star design allows the signal to be transmitted from the transmitter station to the district station with amplifiers or other active components.



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NEWS

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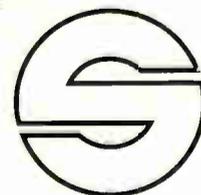
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Support & Lighting

The Changing Face of the DVE

by Wayne Parsons

Digital video effects, DVE, used to simply mean the ability to fly video on and off screen. The term assumed the effect was done in real time, using a television broadcast signal. Keyframe programming quickly created effects.

Today, the definition of DVE needs qualifiers. Is it real-time, uncompressed video? Is a standalone box in use or a video workstation?

If in-house standards permit compression and production methods allow the time for rendering, it could be said that many digital post production workstations can do DVE moves.

WHAT'S NEW?

However, let's assume the format is uncompressed video, with 4:2:2 internal processing, and your production cannot wait for rendering. In this case, what DVE boxes are available? This article is a survey of DVE boxes that output uncompressed video in real time.

Unlike many other areas of video, there is no low-end computer-based solution for high-end digital video effects. Uncompressed real-time effects require such heavy number-crunching that only dedicated processors can handle the job. Today, this is being done in two ways. The first method is to use a traditional standalone box. The second is to use a compositor. First, let's look at the so-called standalone boxes.

The newest high-end product currently shipping is the Grass Valley Krystal 4310 single-channel single-user system. The Krystal is the serial DVE designed to work with the GVG 3000/4000 switcher series. All of the standard features are working. Full graphics capability (wire frame) will be the last feature completely implemented by mid-1996.

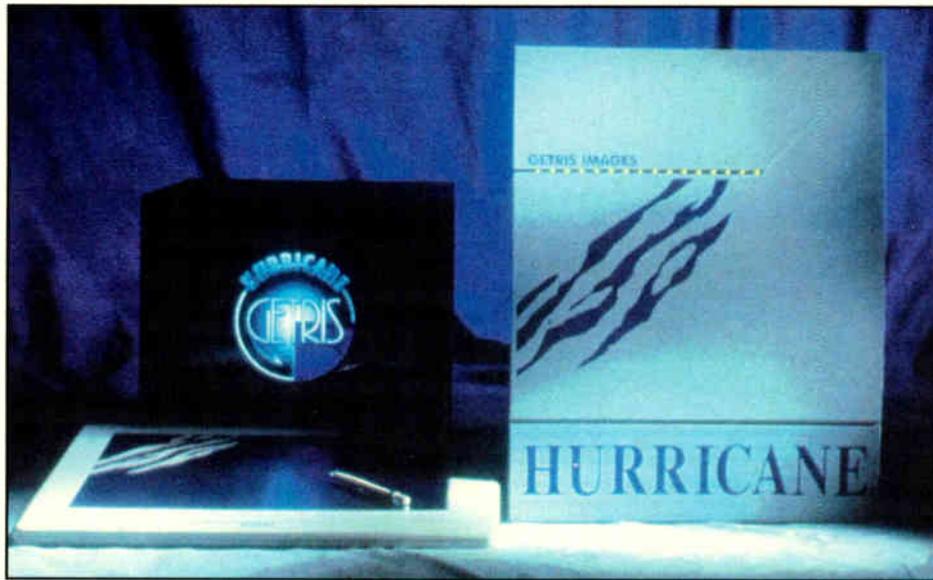
About the time this article appears, the Model 4320 multichannel unit with a 2 x 2 combiner (two foregrounds with key and two backgrounds) will be available. Using an Ethernet, up to four channels can be controlled by two users.

Grass Valley emphasizes the Krystal video processing quality that uses "RISC technology with bi-cubic interpolation." An "Enhanced Image Fidelity" option provides additional processing to reduce artifacts in compression or expansion. This option also provides a full-bandwidth key and drop

what shapes and page turns will be available. If you have a Kaleidoscope channel, the Krystal will be able to control it as an additional channel.

GREEN GRASS

The other DVE box available from Grass Valley is the DPM-700. This is for smaller edit bays that might have a Grass Valley 110 switcher. The 700 is a compact 8-bit video effects system configured for composite analog or composite parallel digital video. A DPM 700 with all options can do



The Getris Hurricane

shadow. Krystal converts to and from all video formats with an external unit. Switching between 4:3 and 16:9 picture formats is part of "suite configuration."

GVG demonstrations emphasize the flexibility of multiple time lines to control every parameter independently. Krystal has two 3D light sources per channel, internal wipes and corner pinning.

While development continues, it is unclear

intersecting planes of video, page turns, defocus, drop shadows and some trails.

If there is any safe decision in DVE boxes it is the Abekas line. When loaded with options, the Abekas A51+ and A57 do all the effects. The A51+ uses field-based processing for composite or component NTSC or PAL video. The A57 uses frame-based processing for serial digital formats. Effects created on either system will run on the other. Abekas effects are stored on DOS-format disks.

The latest available option on both systems is "SuperWarp," with the addition of circular "oil drop" ripples and a "single-channel single-pass" page turn. The A57 page turn can have different video front and back in one pass.

The A57 accepts 8- or 10-bit inputs for both the video and key signals. The A57 internal processing uses 10 bits, going up to 24 in some places. A patented "upsampling" technique "predicts what information should be between the existing 13.5 MHz data samples" to double the effective sampling to 27 MHz or 8:4:4:8.

With a new "Anamorph" software package, the A57 can switch to 16:9 picture format. Output can be 10 bits wide or can fit your particular edit suite needs with 8-bit rounding, 8-bit dither or 8-bit Quantel Dynamic Rounding.

Pinnacle calls its DVE a "video workstation." The first Pinnacle effect I saw mapped live video onto the 3D shape of a guitar, which was impressive enough. But the second move stunningly broke the picture into many puzzle pieces, all with moving video.

The system has three parts. It starts with "Prizm," a traditional DVE that manipulates video in 3D space. Next, an upgrade called Refractor adds single-pass page turns with different video on both sides and light sources. Finally, the DVEator option adds

the ability to map live video onto 3D animations.

For Pinnacle's DVEator, animation must be created off-line on a workstation using software such as TOPAS, by Crystal Graphics. The 3D shape and movement make up an animation file that is transferred to a Prizm equipped with DVEator. The animation file is read frame-by-frame in real time while the Prizm maps live video onto the shape.

Remember: The file defines movement around the screen as well as the 3D shape. The user can alter the animation duration and object shading.

Pinnacle has a large library of shapes. Effects can be keyed over background video or one of 400 internal stills. A single control panel can operate two Prizms with a dual-channel combiner. The Prizm chassis has key and video connections for component, composite and serial digital (SMPTE 259 M) formats. Prizm can switch to 16:9 picture format.

The Magus from Snell & Wilcox is also switchable from 4:3 to 16:9 picture format. Magus handles analog component and parallel or serial digital component video inputs and outputs. Internal processing is 4:2:2:4 with 8-bit Dynamic Rounding. Magus mainframes come in two sizes: 4U for six video and four key inputs, and 8U for 12 video and eight key inputs. Magus is a modular DVE that can grow from just one channel up to two channels with a four-layer mixer that controls priority and transparency.

The single channel with a built-in combiner can key over or transition to background video. Frame stores can be added to DVE or mixer layers. Operational features include trails, drop shadows, internal wipe patterns, key channels and a positionable light source in the combiner.

Magus's single-channel single-pass page turns can have different video front and back. The single-channel page turn can also "split" and peel in two different directions. Other effects include spheres, quad splits, multi-tilt and ripple effects.

DIRECT CONNECTION

Sony's DVE boxes provide direct interface with Sony switchers and editors. Both the DME-3000 and DME-5000 can handle analog and serial digital inputs. The 3000 has up to two-channel operation; the 5000 up to four-channel. Both switch from frame- to field-based processing when the signal contains movement. Both include lighting/shading effects, internal wipes, trails and key channels. Non-linear effects include rings, page turns, cylinders and broken glass.

The 5000 has a nice pixel explosion. Which box is best for you depends on the Sony editor or switcher you have in your system. For example, the Sony DVS-8000 switcher already includes the DME-5000 control panel.

The DME-3000 will interface with several Sony switchers and editors. However, some operators prefer the traditional joystick and run lever arm of the 5000 to the 3000's track ball and Z-Ring controls.

The Microtime Impact is a single-channel device that can make shapes and, to some extent, simulate a three-channel device. Impact has a library of approximately 30 shape definition files. New shapes can be created with optional Shape-Maker software. Some shape parameters can be modified "on-line" with the joystick.

Impact does a single-source page turn that rotates on end to look down the rolled-up page.

(continued on page 11)

For further information:

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Muchas Preguntas para el Futuro

por Karl Paulsen

Las industrias emergentes de servidores de video y de medios tienen mucho que analizar en un cuadro de tiempo muy definido. El ciclo para traer un producto al mercado es largo — excepto cuando uno se pone a pensar lo rápido que cambia el mercado de computadoras. Sólo cuando hay un plan de negocios y se organiza el financiamiento se puede forzar una revaluación del plan.

En estos momentos hay bastante actividad en el campo de la tecnología de medios de distribución de video. ¿Qué rumbo tomará el "I-way", tendrá vías de acceso a la sala familiar — y si es así — en que aparato o aparatos terminará una vez que llegue allí? Tal como los fabricantes, los teledifusores que están apoyando a los sistemas de operación sin cinta deben seguir explorando, evaluando y definiendo hacia donde está evolucionando su industria.

APPLE O MICROSOFT

Hoy en día, las compañías de productos de consumo electrónicos aún dominan la sala familiar. Hay que preguntar: "¿Cuánto tiempo pasará hasta que este mercado pase a las manos de las compañías tipo Apple o Microsoft?"

La mayoría de productos de computadora caen en desuso en sólo un par de años después de lanzados. ¿Por cuánto tiempo cree que el consumidor aguantará el tener que continuamente comprar discos duros,

excitadores de imágenes y procesadores más grandes antes de decir "ya basta"? El teledifusor, el teledifusor por cable, y los mercados de nuevos medios de distribución parecen estar luchando con las mismas preguntas — usando formatos diferentes.

Si se pone a pensar, los televisores de 1980 son tan funcionales como los de 1995. No se puede decir lo mismo acerca de una computadora personal PC-XT o de una

Hablemos de las características de navegación. Casi todo receptor de televisión tiene dos controles básicos: el del volumen y el de cambiar canales. La computadora personal es un animal completamente distinto. La interactividad de un televisor es bastante directa — cualquiera puede hacerlo. No es así con una computadora. Y los controles para los juegos ofrecen únicamente controles de tipo reaccionarios de

**¿Llegará el día en qué estará
integrada la computadora al televisor o qué estará integrado
el televisor al automóvil?**

Apple IIe. Se puede mirar la televisión desde cualquier sitio en una sala familiar típica. ¿Ha intentado alguna vez jugar "Myst" desde dos metros atrás en una pantalla de 14 pulgadas?

¿Por otra parte, cuántas personas usarán "Quicken" para llevar sus cuentas de banco usando un control remoto de cuatro botones como el único instrumento de navegación? ¿Será este escenario parte de la mezcla de televisión interactiva o es ésta la línea divisoria entre la computadora personal y la televisión? El video aún parece ser uno de los pocos escenarios que abarca a esta línea con algún éxito — al menos de una manera marginal.

una funcionalidad muy limitada en cualquier momento dado.

HORA DE JUGAR

Algunos piensan que el aparato de juegos merece una estrategia separada — no entre el televisor y la computadora, más bien una experiencia única en un paquete totalmente distinto. Es por esta razón que los juegos seguirán apareciendo para los televisores y para las computadoras. Para entender este fenómeno, observe la interacción que tienen los que juegan con el aparato. Se sientan en el suelo directamente en frente del televisor, el volumen al máximo mien-

tras ellos se retuercen y maniobran repitiendo los mismos gestos hasta dominarlos.

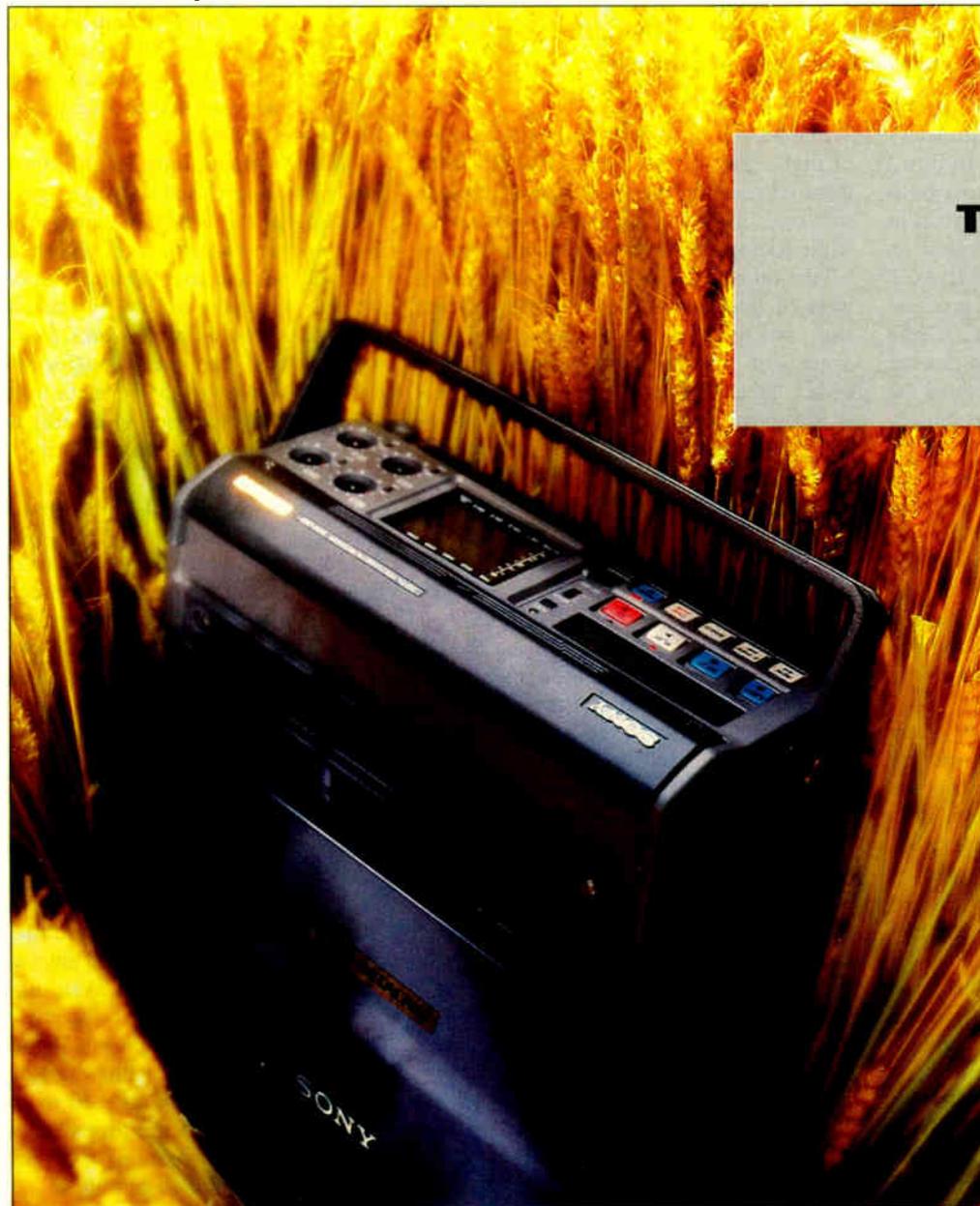
El que juega usando la computadora, con la posible excepción del juego "Doom" y otros pocos juegos de acción, es mucho más enfocado, más directo y por lo general, intolerante de las distracciones. Es que con la televisión, hace tantos años que nos acostumbramos al nivel de "ruido" que ni nos dignamos a prestar un nivel de interacción o atención excepto con lo que pasa a la hora y media hora cuando hay que cambiar de canal.

La computadora aún es un mundo aparte. Es verdad que los usuarios se están haciendo más adeptos. ¿Llegará el día en que estará integrada la computadora al televisor o qué estará integrado el televisor al automóvil? Cada aparato tiene su lugar y su función. Aun el agregar a "Bob" a su programa sugiere un interfaz bien establecido con su computadora. Queda la pregunta: "¿Cuándo será necesario cambiar a los aparatos o será necesario? Mucho tiempo e investigaciones han sido invertidos en el diseño ergonómico del interfaz futuro de video. El colocar la tecnología con la funcionalidad del usuario es un proceso constante de experimentación y tanteo.

¿Y qué de la televisión interactiva? En la exposición de productos electrónicos de consumidor (CES, sigla en inglés) hubo exhibiciones de seis aparatos destinados a re-definir la funcionalidad del televisor en el año venidero. Es más, para el año 1996, el número de aparatos de esa índole será mucho mayor y la interpretación del dilema televisión versus computadora estará en las mismas que hoy, sin definición.

¿Tomará el camino de las compañías

(continúa en la página 9)



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Digital Reigns at SIGGRAPH

by Walter Schoenknecht

LOS ANGELES

The message heard here at the 1995 SIGGRAPH convention was an often-repeated one: Television is marching steadily toward a digital future. And the rising roar of the marchers — more than 38,000 of them — suggested that users of traditional television technology had better join the parade soon.

Named for the Association for Computing Machinery's Special Interest Group for Graphics, the SIGGRAPH gathering historically serves to roll out advances in engineering and the visual arts of an exclusively computer-oriented nature. While the 1995 event certainly had its share of digital drama, the exhibit floor nonetheless showcased a significant collection of technologies and applications more often seen at, say, the annual NAB show, or SMPTE/SBE's World Media Expo. If a "crossover" was once seen when computers first popped up at NAB, the cycle is now complete: The SIGGRAPH crowd is learning TV, and learning it in a big way.

LOOKING AHEAD

Putting to rest fundamental challenges like the changeover from analog to digital, the road ahead, as seen at SIGGRAPH, seems quite promising indeed. In terms of raw computing power, the 1995 exhibits demonstrated vertical growth on parallel tracks: both workstation and personal computer manufacturers were showing — and actually delivering — new systems with big muscle. And it is precisely these increases in speed and power that are helping more and more video solutions find their way into the realm of computers.

Among the most striking trends noted was the marketplace "arrival," once and for all, of Windows NT. NT applications, most often written for either the Intel platforms or the DEC Alpha chip, sprung up like majestic royal palms around the Los Angeles Convention Center. Proponents of Windows NT have long admired its true multitasking environment, not unlike the Unix-derivative operating systems found on high-ticket workstations. The operating system's ability to harness multiple CPUs, linking twin Pentiums for example, has proven to be another powerful lure. At SIGGRAPH '95, perhaps more than at any previous show, entertainment-oriented users could finally assemble a collection of NT-based software to rival either their workstation graphics arsenal or their desktop library.

Equally important, powerful hardware packages were very much in evidence. Apple's PowerPC 604 systems captured the hearts and minds of Mac aficionados; IBM's 604-based offerings drew a large share of the attention at the Big Blue Booth; and the next-generation Intel entry, the P6 chip, was shown in prototype NT packages from Intergraph, the veteran high-performance system bundler. Intergraph's multi-Pentium-based high speed graphics system, dubbed "TDZ", has emerged as a kind of "industrial-grade" product for those who make their living using computers, and the company is well positioned to get a running start with P6, said to offer an 80 percent speed boost over the Pentium chip, once the processor is released.

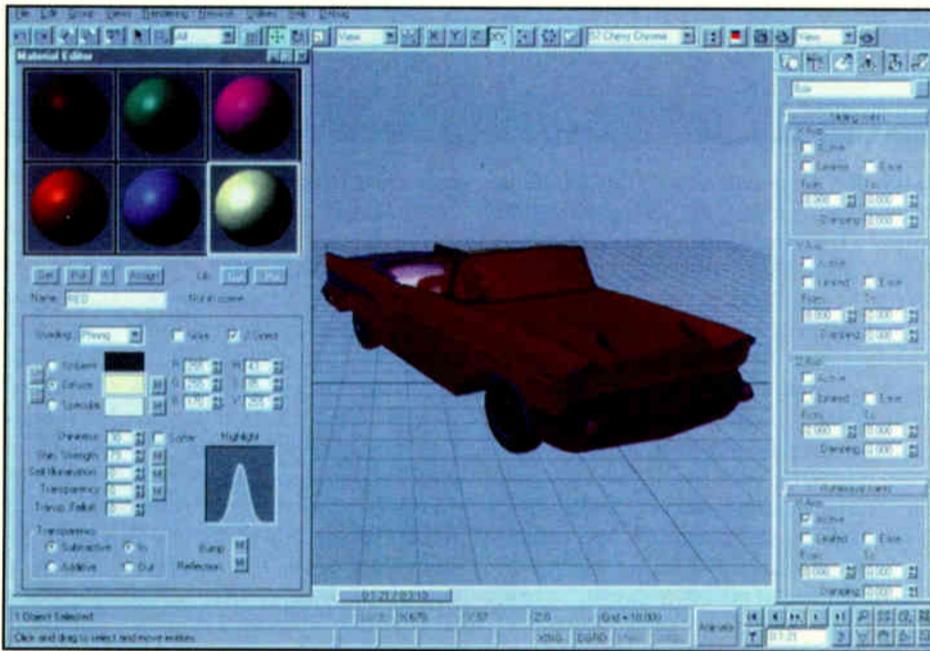
At SIGGRAPH '95, DEC featured NT-capable systems from a moderately-priced desktop, the AlphaStation 200 4/100, to the

top-of-the-line AlphaStation 600 5/300 deskside workstation, with its blinding 300 MHz clock speed. For those into benchmark statistics, this system posts a published SPECint92 figure of 337.8, and a SPECfp92 floating-point number of 503.2. No other hardware at the show, large or small, even came close to matching these numbers.

Other workstations saw similar performance boosts, ranging from powerful entries from Sun and Hewlett-Packard to a newly-arrived member of Silicon Graphics' high-performance Indigo2 family, the

popular small-platform animation software, showed off a nearly-complete Windows NT port of its starring product, re-christened 3D Studio MAX. Most of the re-engineered package's appeal comes from the multi-tasking/multiprocessor nature of its new Windows NT environment, although long-time users of 3D Studio will likely appreciate the shift to a windowed user interface.

Another 3D package that had built a substantial following, NewTek's Lightwave 3D, was orphaned when the Commodore Amiga went out of production last year. As promised, NewTek proudly showed both



Autodesk drew crowds with the 3D Studio MAX for the NT environment.

Indigo2 IMPACT. Designed to ultimately replace the industry-favorite Indigo2 Extreme, the new arrival ships in both "High IMPACT" and "Maximum IMPACT" flavors, with choices based on speed and applications. The IMPACT advantage is not strictly rooted in processing speed; in fact, the top DEC Alpha machine has better SPEC numbers. But the real beauty of Indigo2 IMPACT lies in the astounding things it does with graphics-specific computations.

Everything about the machine — from custom-designed geometry, raster and texture engines to ultra-fast video I/O — is supercharged for the kinds of applications that SIGGRAPH attendees dote on. And with optional boards, IMPACT can add real-time JPEG encoding and decoding, making it a likely choice for non-linear editing applications.

The annual SIGGRAPH show has traditionally hosted a multitude of software debuts, and the Los Angeles show was no exception. One such rollout, though, was the premiere of an entire company rather than a single product: the newly-united Alias/Wavefront, now a division of Silicon Graphics, left a rather substantial impression on conference attendees.

One major Alias/Wavefront announcement at SIGGRAPH was the inception of an initiative called "Project Maya," in which the company promises to update virtually every software offering with user interface improvements, more intuitive features, and tools that add realism to modeled and rendered objects and, more specifically, characters.

Much of the other notable software news from SIGGRAPH '95 centered around the Windows NT boom. Autodesk, maker of

Windows NT and Silicon Graphics versions of Lightwave 3D at SIGGRAPH '95. With these releases, the company stands to regain some portion of its legion of loyal users, while adding new converts along the way.

Two other SIGGRAPH announcements were of interest to Windows users. Strata Inc. announced the development of StudioPro for Windows, expected to ship before the end of this year. The traditionally Macintosh publisher has finally responded to a host of requests for a Windows version of its product, and has wisely made StudioPro available not only to Windows NT users but to Windows 95 owners as well because both systems provide 32-bit application support. And multimedia superpower Macromedia used SIGGRAPH to announce that it plans to throw out its entire line of existing 3D applications in favor of a new, bundled 3D solution called Extreme 3D. The inexpensive suite will be released in NT and Windows 95 versions, as well as for the Macintosh.

VIRTUALLY THERE

One of the most fascinating entries at last year's SIGGRAPH show was the appearance of virtual set technology, in which chromakey technology combines with electro-mechanical coupling of studio cameras to a powerful computing engine to allow tilts, pans and zooms through 3D-modeled virtual space. Accom, whose Elset system is one of the highest-quality examples of the technology, was featured at the Silicon Graphics booth as an example of a robust use of SGI real time rendering engines.

And a newcomer to the U.S. market, Brainstorm Multimedia, demonstrated Brainstorm Estudio, a virtual set system reportedly in use for a year in Spanish tele-

vision. ElectroGIG, the Dutch firm responsible for another high-end virtual set implementation, chose to show its line of software applications at SIGGRAPH instead of virtual set technology.

Another firm familiar to NAB attendees, Avid Technology, was well represented at SIGGRAPH '95. The company, whose non-linear editing products are a perennial hit with television professionals, captivated the computer set with examples of its advanced technology. And graphics users who searched for Elastic Reality's booth eventually found its splashy presence under the Avid umbrella now boasting Digidesign and Parallax products as well. The company is well on its way to becoming a well-recognized name in the computer world as well as in television circles.

EYEING UP THE I/O

One area that has seen a less-than-smooth analog/digital transition has been video buffers ... hardware that allows acquiring or outputting digital signals to analog monitors, recorders and switchers. In the past, high-quality output was only seen on a few devices, like Truevision's Targa and NuVista boards as examples of desktop entries and SGI's venerable VideoFramer as a high-end example.

SIGGRAPH '95 showcased video solutions with a broader range of options than seen previously. In most cases, beefy RAM-caching techniques have turned simple buffers into fast digital video recorders with the ability to take in or spool out respectable-quality images at real-time frame rates. Radius, Truevision and others were on hand with tweaked-up products, many of which were intended to form the backbone of desktop editors or multimedia workstations when coupled with fast, "AV"-grade hard drives like those from Micropolis or Seagate.

On the workstations, analog buffering has gradually faded away, as products like Accom's WSD-XL and Abekas' Diskus take center stage. These boxes, typically packed with 30 or 60 seconds of storage, have the ability to receive and store files over Ethernet links from most workstations. The stored images are then dubbed to analog tape formats, if necessary, or quick-accessed in an edit session using built-in Sony-protocol tape transport emulation.

Of course, the 8- or 10-bit stored digital images are also available on CCIR-601 component digital ports for dumps to Digital Betacam or D-5 or for direct connection to your favorite digital switcher. At SIGGRAPH, both digital disk companies showed newly-updated products: Abekas distributed feature-packed level 2.0 operating software for Diskus, while Accom's WSD added enhancements like improved VTR emulation and editing, a redesigned virtual control panel for Indigo2 applications and a high-speed SCSI interface for Mac users.

As in most years, the SIGGRAPH conclave serves as a good indicator for trends and directions in digital technology. Everything from graphics and animation to production and editing — even digitally-compressed transmission — is now influenced heavily by developments in the computer world. And since this digital world can now be broadly construed to include video as well, more traditional television personnel would be wise to watch some of the group's movements as well. ■

-Walter Schoenknecht is a news correspondent for TV Technology's sister publication, Computer Video.

CONTINÚA DE LA PÁGINA 7

Preguntas se Divisan en el Horizonte

telefónicas la televisión interactiva: agregando teléfono, facsímile, mensajes electrónicos, y servicios bancarios al cambiador de canales del control remoto? ¿O seguirá siendo el aparato de entretenimiento que es hoy — realizada por características técnicas más avanzadas como tres dimensiones (3D, sigla en inglés) el mejor sonido, y diferentes formaciones de imágenes para las películas, los programas educativos, los noticiarios?

CONCESIONES MUTUAS

La habilidad de crear una imagen más aceptable en una presentación de video resulta en algunas concesiones. Pero así como el mercado de reventa para los televisores, que es típicamente las ventas locales en los barrios residenciales o en el vertedero de basuras, el valor de reventa para un monitor CGA o una tablilla VGA en una computadora no es muy alto.

Aun las escuelas (gracias a las donaciones) están repletas de tecnología anticuada en las aulas.

Para la presentación de imágenes la pregunta sigue: ¿Será NTSC el método más aceptable de reproducción de video por muchos años? Suplido únicamente por la inevitable inclusión del transporte digital sin cinta? Son las cajitas negras para el receptor que el consumidor entenderá mejor porque lo distribuido por estas es aún por lo general, NTSC. Sea o no sea digital, la imagen es aún la misma (habrá uno que otro grifo de RGB o S-Video), pero por la mayor parte, cuente con ver NTSC durante el futuro cercano. Esto es lo que cree el mercado de servidores porque aún hace referencia a la calidad BetaSP. ¿Por qué? Porque la mayoría de personas lo aceptan al igual que a VHS.

Será la pantalla ancha o la televisión avanzada (ATV, sigla en inglés) parte de la mezcla? Solamente en el mercado de reventa o en el vertedero de basuras y con un certificado de deposito por cobrar. Para otro tipos de potencia para "nivel de computación" no se aleje de su monitor SVGA porque será, por algún tiempo, el mejor lugar para la interacción!

Este comentario bastante cínico no es tan inverosímil. Antes de poder definir, refinar, producir y hacer aceptar al consumidor el sistema de servidor de video del mañana — a un nivel que rinda ganancia a los muchos que se espera estarán involucrados en el mercado — hay que ahondar en que es lo que queremos realmente.

Para los ingenieros de video o los operadores de cable, todo este ruido alrededor de la tecnología de servidores de video es buena noticia. Ya ha habido pruebas. Ciertas compañías telefónicas norteamericanas están muy intere-

sadas en todo esto. Las compañías de programación (software, en inglés) inmensas están invirtiendo en un futuro que no sabemos cuan bien será aceptado por el consumidor. La investigación continua, la silicóna está en el horno y aún no sabemos que resultará de todo esto y que llegará al mercado.

Para la caja del receptor, MPEG

2 seguirá siendo el estándar. ¿Dónde queda MPEG 1 que recién está siendo adoptado para las computadoras a nivel tablero madre? ¿Cuándo reemplazará MPEG 1 al controlador de gráficos de video (VGC, en inglés) para medios múltiples? ¿Cuándo serán integrados estos cambios a los televisores? ¿Significa esto

que el servidor del mañana tiene que traer MPEG también?

Quedan muchas preguntas, pero sí hay una certitud. Los que empiecen ofreciendo servicios como la compresión y el "mastering" (hacer matrices) digital con servidores de medios deben prepararse para una "montaña rusa" con más opciones que un

mercado abierto. Considere bien el problema. Invierta con cautela — pero no espere demasiado tiempo para hacerlo. ■

Karl Paulsen es vice presidente de ingeniería de Digital Post Graphics, localizada en Seattle, Washington. También tiene una empresa consultoria para la televisión y el diseño de sistemas de medios digitales. Tiene certificación de la SBE, y es presidente del sector Pacífico de la sociedad SMPTE. Comuníquese por correo electrónico: karlp@dpg.com o 72303.2112 @compuserve.com.

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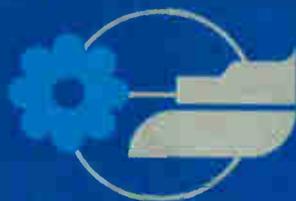
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CONTINUED FROM PAGE 1

TV Grows in the South Pacific

building into the OBN studios. Such is the engine of progress in Tonga.

UNDER CONTROL

On my most recent visit, in a room with a collection of very old, mismatched equipment that serves as master control, I met Steve, an American who is one of a handful of volunteers who runs the station from 7 a.m. to 8 p.m. every day. When I asked why he did it, he unhesitatingly replied "God" and then added that every day he learns more about himself and his part in the world through what he was doing on television.

The equipment at OBN is mostly basic VHS. But for editing, the station uses a pair of ancient Lo-Band U-Matics with just straight cuts. A Grass Valley mixer did not seem to be in use.

Recently, the station acquired a Hi8 camera. However, a Hi8 editing system had to be borrowed from the Ministry of Education to cut coverage of the Pacific Women's Conference during my visit.

OBN puts out a weekday news program and covers church services, so there is some Tongan language input to the mostly American diet of programs.

Lighting is perfunctory in the studio because none of the windows has been blacked out. The kit consists of six antique American lamps: two 1k pups and four 1k broads.

It is difficult to see OBN ever becoming a regional powerhouse because it is so undercapitalized. Although there is certainly a need for religious broadcasting, it cannot be for the public good when it totally dominates a station's output. But it certainly is very Tongan.

Western Samoa consists of two large islands, Upolu and Savaii, with a total population of about 160,000. A traditional stronghold of Polynesian culture, and now rugby, this is where Robert Louis Stevenson, author of *Treasure Island* and other classic novels, lived and is now entombed.

The government-owned television channel, Televis Samoa, was launched in May 1993 as a response to home videos and a station in nearby American Samoa.

STORY-TELLING

Like all of Polynesia, it was only after the arrival of Englishman Captain Cook and other early navigators that the written word was introduced. Previously, history had been handed down verbally, so story-telling and mythology have always been important. The Samoans have made good use of this tradition for its local programming, which typically consists of no more than a narrator's head and shoulders with cuts to graphics.

The channel mostly shows downlinked programs like rugby matches, almost a religion in Samoa, as well as New Zealand news and coverage of local events.

The actual station is an old wooden mansion surrounded by palm trees with a large satellite dish outside. Station managers opted for S-VHS, and the two cameras, vision mixer, VTRs and edit suite are all Panasonic.

In the studio, equipment is mostly used for news and lacks anything other than a chromakey, cloth and a fitted carpet.

Lighting consists of three Arrilites on stands, one as a key and another with spun as a fill. The backlight did not work because the bulb had gone and there was no spare.

The weekend presenter, Lene To'omate, proved that multi-skilling is alive and well here. During the week, she is the private secretary to the Minister of Agriculture.

The director of broadcasting, Tupai Kuka, considers Samoan culture an important subject to get across to the public, but he also likes the idea of doing comedies and soaps

in the future. He is totally opposed to airing sex and violence, nor does he approve of the worldwide obsession with ratings because he feels it leads to downmarket programs.

The week after my visit, the station was to air five days of Taiwan programming, which Kuka considered government intervention. He said he would welcome the challenge of another commercial competitor, although that is unlikely given the country's flat economy.

Lene did well on the air with no prompter,

but it was clear that the station lacked professional expertise. The playout tapes were not cued properly, delivering several seconds of black before anything appeared. Although they have the equipment, the ability to use it properly was woefully lacking.

While it is clear that the South Sea area is not a proving ground for the leading edge of technology, it is a testament to the growth of technology that even remote areas such as Tonga and Western Samoa have their own television services, sparsely outfitted as they may be. And as the Western world continues to incorporate higher-end digital technology, it is likely that mid-level devices will continue to end up here. ■

A native of London, Jeremy Hoare is a free-lance lighting designer who frequently travels to Asia.

CONTINUED FROM PAGE 6

A New Slate of DVE Systems

The page turn values such as fold and tightness can be modified. Three video inputs make a cube in one pass. All six faces can explode away from the central axis point.

To bring one cube face to full screen, you can cheat by using zero time keyframes to resize and reposition the video. Impact supports analog composite, analog component and digital component formats.

FOR.A manufactures a single-channel unit with NTSC composite or PAL component video standards. The MF-300 uses 8-bit quantization. It has a built-in frame synchronizer and full-bandwidth

inputs and two background video inputs. The open architecture of the Macintosh paint and compositing capabilities allows computer graphics to be created and then imported to Zydeco over the Ethernet.

Graphics are stored in any one of eight foreground static frame stores or two animatable (pan or tilt) background frame stores. The images in the frame stores or the active input videos can be DVE transformed in real time.

Individual inputs or frame store images might be divided into as many as 50 cropped pieces and then manipulated. Each of these layers can act as a DVE with X-Y-Z rotation and perspective, X-Y-Z spline path control, user-definable drop shadows, object priority, borders and object colorizers.

Video inputs and outputs are component analog Y, R-Y, B-Y Betacam format in 525 line/60 Hz or 625 line/50 Hz. Internal video processing is uncompressed 10-bit 4:2:2:4. Optional component serial digital (SMPTE 259M) inputs and outputs are available. Machine control is V-LAN master, RS-422 slave or GPI trigger.

With Zydeco, multimedia producers creating QuickTime movies can now render effects in real-time. Broadcast applications include multilayer compositing without generation loss from multiple passes.

OPEN WINDOW

Pinnacle's Alladin is an external dedicated image processor controlled by a PC operating in the Windows environment. The editor of your choice connects to the Alladin by RS-422 or GPI interface. The Alladin has a component digital switcher with four layers of video. The real-time DVE has page turns, ripples, trails and an 8-bit key.

Bundled software includes the Image North Inscrber CG, a paint package with four cut buffers and alpha channel, and

Crystal Graphics Topas animation software. An internal still store uses the PC hard disk for storage.

Alladin accepts four NTSC or PAL composite video inputs or four (optional) analog component Betacam/M-II (RGB/Y, R-Y, B-Y) inputs. Internal 4:2:2:4 processing conforms to CCIR 601 standards.

The Avid 3-D DVE option is a customized Alladin.

FROM FRANCE

Getris Images' Hurricane is a graphics suite that I will include here because it fits my definition of a compositor. The system includes a Pentium PC, the Hurricane main frame, and a Wacom tablet and pen. The host PC is the gateway for importing Autodesk 3D Studio, Adobe Photoshop and Illustrator images and other computer graphics into the D-1 video environment.

In addition to the computer input, Hurricane accepts video in serial digital (Digital Beta) or analog RGB. Internal signal processing is 4:4:4:4.

Hurricane can have up to 10 simultaneous real-time channels of effects in D-1. These layers, called "leaves," can be either a DVE or non-DVE. The DVE layers operate on dedicated hardware. The result is stacked keys in a paint environment with full DVE on up to 10 layers.

Flying Spot, of Seattle, has configured its Hurricane with two full DVE boards — four "leaf" boards. An optional Aramis dynamic RAM board stores up to 10 seconds of full-frame D-1 video. Using the Hurricane for machine control of the source Beta deck, Flying Spot can generate six layers of video in one pass in real time.

According to Getris's literature, a new technology called Real-time Image Distortion Effects (RIDE) allows real-time cross-morphing on still or live images.

This article started with standalone boxes and ended up with compositors and graphics suites. The line between computer graphics and on-line DVE is blurring. Just where in the production stream you do your effects is the relevant issue. ■

Editor's note: Wayne Parsons is the Technical Director for Entertainment Tonight, produced by Paramount Domestic Television. He can be reached via the Internet at wparsons@ix.netcom.com



Microtime's IMPACT system

processing. Effects include trails, a same-video both-sides-pass page turn and a burst explosion effect.



The second method of doing digital video effects is with a compositor. A compositor refers to a computer controlling an external dedicated image processor. Inherent in the term is multiple layers of high-quality video, open architecture and computer graphics. A compositor is different from a digital post production workstation because it controls more layers of video at component resolution.

Zydeco from KUB Systems illustrates the compositor concept. A PowerMac 7100 computer communicates with a Zydeco image processor by Ethernet link. Zydeco has two foreground video and key

BCS '95: Indian TV on Display

by Max Gupta

NEW DELHI

It is being called India's TV Oktoberfest. The biggest names in television equipment manufacturing and programming will showcase their products and expertise at three major broadcast, satellite and cable television exhibitions and conferences in New Delhi and Bombay this month.

October 1995 will mark the advent of India's modern television history. At least a dozen major production studios, thousands of independent producers and 10 Indian and foreign television channels were to have been launched by the end of September.

MARKET LEADERS

Leading the pack of Indian exhibitions in size and scope will be the second international Broadcast, Cable & Satellite exhibition and conference (BCS '95) to be held at the 15-acre Pragati Maidan in New Delhi October 25-28.

As the country's broadcast industry prepares to leap into the 21st century, "the heat will be on the technology firms, channel-owners, producers and cable operators," said Prem Behl, president of Exhibitions India, which is organizing the event.

The conference is sponsored by the Ministry of Information and Broadcasting (I&B Ministry) and the Broadcasting Engineers Society (India). It is certified by the U.S. Department of Commerce and is supported by the National Association of Broadcasters, the Society of Broadcast Engineers and the International Telecommunications Union, among other groups.

The emphasis at BCS '95 will be technology. An impressive list of exhibitors includes a who's who in the video industry. In fact, this year's exhibition has been enlarged to include the First Pro Audio India exhibition, the First Lighting India exhibition and the First TV India exhibi-

tion. Products on display encompass a wide range of audio and video equipment and systems, including lighting and other studio gear, post production equipment, satellite systems, radio and television broadcast transmitters, antenna systems and test and measurement equipment.

An estimated 100 exhibitors and 500 conference attendees are confirmed for the 1995 show and nearly 10,000 visitors are expected. The show will occupy 2,000 square meters of indoor stands, 500 square meters of open area demonstration stands and two conference auditoriums.

Within the conference, a total of six technical sessions will take place focusing on the technological aspects of television. Topics to be discussed include program production and post production, enhanced television, new broadcasting technologies and multimedia opportunities. Also on the agenda is a discussion of the convergence of broadcast, cable, information and communication technologies and an examination of broadcast media on the information superhighway.

ACTION/REACTION

Another equally anticipated event will be the Interactive Marketing Showcase scheduled for October 18-20, also in New Delhi. Originally scheduled for Bombay, the event is organized by the Pan-Asian Broadcasting & Media Task Force, a division of the Institute for International Research.

Among the highlights are an opening address by Ted Turner, chairman of Turner Broadcasting Systems, although rumor had it that he may withdraw due to business developments in the U.S. Still, top entertainment industry executives from India, Thailand, Europe and the U.S. will be on hand to discuss cable and satellite policies and the potential for pay-TV. Among distinguished speakers will be top brass of the I&B Ministry who will deliberate future broadcast laws and spell out the limited privatization for All India Radio (AIR), FM stations and

the expansion of Doordarshan (DD), India's only state-owned terrestrial network.

Lastly, the India Satellite & Cable Television Conference, scheduled for October 30 to November 1 in Bombay, will feature at least 40 key international and local cable and satellite experts who will debate the crucial next steps for India's nascent but dynamic cable industry.

Currently available in about 22 million homes nationwide and growing at about 20 percent annually, the Indian cable industry is poised for tremendous gains throughout the remainder of the decade.

At the conference, broadcasters and cable operators will examine the most efficient ways to optimize infrastructure development and equipment advances to deliver an expected 30 channels by mid-1996.

The Bombay conference will specifically

address issues that are becoming critical to the Indian broadcast environment. Business deliberations will focus on international media alliances and censorship and cultural sensitivities.

As the Indian television market continues its rapid expansion in both the over-the-air and cable sectors, industry watchers expect this country to become a leading barometer not only for the region, but perhaps the entire world.

Ashish Mullick, media correspondent for the Times of India daily newspaper, said he is confident that all three exhibitions will form "the" media event of 1995.

"India is important because what happens here will determine what is going to happen to many giants who are betting on this market," he said. ■

For further information, contact Exhibitions India at E-6, Defence Colony, New Delhi-110 024, India, telephone: +91-11-462-2710; FAX: +91-11-463-3506, or e-mail: india.exhibit@access.net.in

Companies to Focus on Digital Terrestrial TV

by Chris Dickinson

LONDON

A number of equipment manufacturers have banded together with the main broadcasters in the U.K. to jointly develop technology for digital terrestrial TV.

Called the Digital TV Group, the forum is looking for further partners to join. The founding members are the BBC, Channel 4, ITV, British Telecom, Motorola, NTL, PACE and Sony.

DIGITAL DELIVERY

In August, the U.K. government announced that it was preparing to license 18 digital channels, in six batches of three, to cover between 60 and 90 percent of the U.K. population. There will also be at least 42 new digital radio channels, licensed in seven batches of six.

The U.K. proposal is likely to form the blueprint for other digital terrestrial services to be launched in different countries in Europe. All will use the Digital Video Broadcasting (DVB) terrestrial standard being finalized at the moment.

The Digital TV Group said it aims to develop technical systems by the end of 1997, when the new digital TV channels in the U.K. are expected to launch.

A spokesman for the forum said: "Membership of the Digital TV Group is open to all participants in the European DVB project who wish to play an active part in implementing digital terrestrial television (DTT) in the U.K. The founding members wish to emphasize that this is an open forum, not a commercial partnership or joint venture. The aim is to develop an open and competitive market in service provision, receivers and conditional access to ensure the rapid implementation of DTT services."

The U.K. government said that within the new digital channels, the BBC, Channel 4 and ITV (plus Channel 5 when it is established) will be guaranteed frequencies to help digital TV take off. The only stipulation is that at least

80 percent of programs broadcast on the existing analog channels will also have to be broadcast in digital.

The government added that it is waiting for DVB to finalize its standard.

"One issue remains to be resolved," said a government spokesman. "A choice of standards needs to be made for terrestrial digital TV between a system where the digital signal is spread across 8,000 carriers within the frequency channel or one where 2,000 carriers are used.

"An 8,000-carrier system would be able to support wide-area Single Frequency Networks (SFNs), possibly on a national scale. A 2,000-carrier system would require an interleaved system of a number of different frequencies to achieve national coverage.

"An SFN allows very efficient use of the spectrum, but interleaved systems using 2,000 carriers could be introduced faster and would allow for cheaper receivers. In addition, there is scope, even with 2,000-carriers, for many relays to operate on the same frequency as main transmitting stations, increasing the coverage of the signal."

TABOO CHANNELS

Although the matter should be sorted out this autumn, the U.K. will launch the first DTT services alongside the current analog TV services in the UHF spectrum, using the taboo frequency channels.

A year ago, the government set aside spectrum for DTT services on Channel 35. But the proposed channels will not use this frequency, opting instead for six interleaved frequency channels, each capable of providing three program services. Two channels will reach 90 percent of the population; two would reach 80 percent; and two would reach between 60 and 70 percent.

Meanwhile, the digital radio channels to be licensed at the same time will use the EUREKA 147 Digital Audio Broadcasting (DAB) system that was finally approved as a world standard in June of this year. ■

SHOW LISTINGS

11-13 OCTOBER — DIGITAL MEDIA WORLD ASIA

Singapore. Computer graphics and digital technology will be presented at this exposition, based on the European Computer Graphics Expo. For further information, contact organizers at 10 Barley Mow Passage, London, W4 4PH, U.K.; telephone: +44-181-995-3632; FAX: +44-181-995-3633.

16-18 OCTOBER — PAN ASIA TELEVISION CONFERENCE

Singapore. This three-day conference will examine emerging television markets in the Asian region. For information, contact AIC Exhibitions, 12 Prince Edward Road, #03-01, Podium A, Bostway Bldg., Singapore 0207; telephone: +65-222-8550; FAX: +65-226-3264.

17-19 OCTOBER — VISION95

London. The U.K.'s video, film, sound, and broadcast technology show will be held concurrently with the BKSTS Moving Images '95 conference. For information, contact Vision Exhibitions Ltd., 23-24 George St., Richmond, Surrey, TW9 1HY, U.K.; telephone: +44-81-948-5522; FAX: +44-81-332-0495.

18-20 OCTOBER — INDIA CABLE & SATELLITE

New Delhi. The Maurya Sheraton Hotel & Towers will host this event featuring a keynote speech from Ted Turner, president of CNN. For information, contact organizers at 20/F, Sui On Centre, 188 Lockhard Road, Wanchai, Hong Kong; telephone: +852-2531-6100; FAX: +852-2586-1999.

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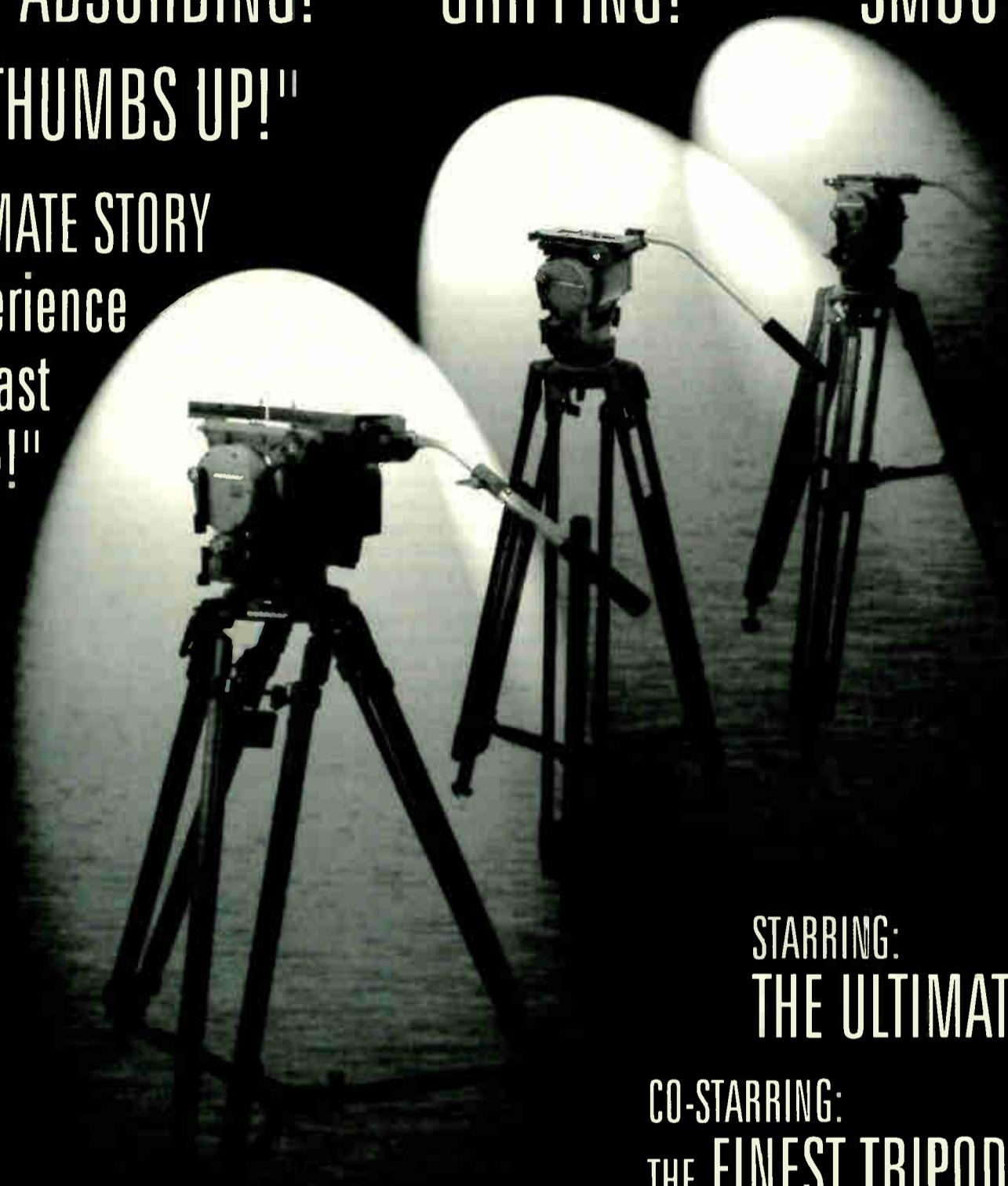
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Engineering Has Its Rewards

by Brian Flowers

ENGINEERING CORNER

University applications in the United Kingdom and France show a declining interest in science and engineering, whereas commerce and psychology courses are over-subscribed. While we clearly need people trained in the latter two subjects, I am saddened by the lack of interest in the former.

I have read numerous articles and attended lectures for prospective university students by leading members of society. In many of these presentations, scientists and engineers are put at one end of a scale and artists at the other end, with accountants, lawyers, etc., in between. The theory is that scientists and engineers are rather dull, logical people, artists are imaginative, creative people, and accountants and lawyers are well balanced between the two extremes.

WRONG APPROACH

In my opinion, this analysis is completely wrong. Such simplistic illustrations are of dubious value anyway, but if the ends of the line are looped into a circle as shown below, the result may be nearer to the truth.

Science and engineering require imagination and intuition, as well as logic. Even mathematics, which most people regard as pure logic, actually requires imaginative and intuitive thinking to find the easiest way of solving complicated problems.

In the mid-1950s, when I was following an aeronautical engineering course at Saunders Roe on the Isle of Wight, the big "Princess" flying boats were being developed. Hull shapes were being tested in a long water tank, but despite careful calculations, the problem of water spray entering the engines persisted. Finally the design engineer just pared down the model hull to the shape which he intuitively thought would be best, and sure enough it solved the problem. Unfortunately, by the time the first three prototype Princesses were flying, the Boeing 707 took to the skies and large flying boats could not compete. Hughes' "Spruce Goose" suffered a similar fate in the USA.

Apparently the two halves of our brains perform different functions. The left half is the conscious part, which performs down-to-earth tasks like talking and reasoning, whereas the right half is the subconscious part, which is artistic, intuitive and soulful. This may explain why people tend to react with more emotion on the telephone than face to face, since we normally hold the phone to our left ear, which connects to the right brain hemisphere. Try to discuss contentious matters with your boss face to face, rather than on the telephone.

It is my belief that the most successful scientists and engineers utilize both halves of their brains in their work. Of course there are scientists and engineers who are very pedantic and there are artists who are some-

what out of touch with reality, but the best of each category uses reason and intuition.

EARLY APTITUDE

Potential engineers can be spotted at an early age because they can be seen building things. In my case, I built mostly hi-fi equipment and model aircraft, including free-flight gliders that utilized my own pendulum control system, since I could not afford radio control equipment.

The idea was based on certain pterodactyls that had a long hollow horn projecting from the back of the head. Biologists could not work out the purpose of this appendage, but to aeronautical engineers, its purpose was obvious. Without such an appendage, the creature's long beak would experience drag whenever it turned its head in flight. This would have required strong neck muscles to resist, but the extra weight of such muscles would be much more than the weight of the hollow horn, which nicely balanced out the turning movement. My gliders used the same principle to enable a relatively small pendulum to activate the gliders' elevators.

Similarly, in my teens I built my own pick-ups, amplifiers and speakers, which was a prelude to a career in electronics. I suspect that most engineers can relate similar activities as teenagers.

If you have an aptitude for engineering, it is a most rewarding career. Studies have shown that crafts people are happy in their work because they create beautiful and/or useful objects. Similarly engineers create useful objects, and we often refer to the state of the art in engineering. Surely a modern airliner is a beautiful object, for example.

I spent five years designing and bringing to fruition the new Eurovision Control Centre in Geneva. To see the new center in daily use, enabling the operational staff to coordinate about one thousand international television transmissions per week, gives one the satisfaction of having created something useful. It is not surprising that most engineers enjoy their work.

Recently there has been much discussion about multimedia, information highways, interactive television and the merging of television and computer technology.

Science and engineering require imagination and intuition, as well as logic.

Personally, after a day's work, the last thing I want to do is interact with my television. I just want to watch interesting programs with good picture and sound quality, and I suspect that most people have a similar attitude.

Obviously computer technology plus worldwide digital networks provide a very useful means of communication, as shown by the success of Internet. However, broadcasting enables professional program makers to deliver high quality entertainment and/or information in a way that will not be supplanted by systems like the Internet. Moreover, I contend that satellite systems, with one uplink feeding many downlinks, are inherently better adapted to the needs of large-area broadcasting than terrestrial networks, at least from an economic point of view.

This same advantage prompted me to conceive a voice conference system based on very small aperture terminal (VSAT) technology, which will enable us to install a cost-effective alternative in place of the existing EBU terrestrial circuit voice conference networks that link broadcasters in 48 countries. Existing voice conference systems have an (N-1) matrix at the network center, which enables all participants to hear each other without receiving their own modulation back from the matrix — hence the name (N-1). With the VSAT approach, the whole system, including the VSATs, becomes one very extensive (N-1) matrix. DAMA (Demand Assignment Multiple Access) technology is used, which enables only three 32 kbps satellite voice channels, plus two 16 kbps control data channels, to meet the conference requirements. After all, it makes no sense for 10 people to speak simultaneously in a conference. The basic system configuration has been patented by the EBU.

It is this idea of creation that I hope will lead young people into the field of science and engineering. I would encourage young people with practical skill, plus an aptitude for math and physics, to go for a career in engineering. The rewards are tremendous. ■

An engineer at the European Broadcasting Union for 33 years, Brian Flowers is the former head of service and project manager for the EBU's Eurovision Control Center in Geneva. He was recently transferred to the Transmission Technology sector at the EBU. He studied engineering at the University of Southampton and served for two years in the Royal Air Force before joining the BBC. He is a member of the Royal Television Society and was recently accepted as a member of the IEEE.

Production Tips from the Field

by Dennis Hamilton

PRODUCTION POINTERS

It goes without saying that a field shoot is only as good as the equipment you use. But to create a truly excellent production, a number of elements need careful attention.

If the script is the "blueprint" of your shoot, then the director is the architect and the crew members are the skilled tradesmen. Try to avoid isolation among your production people. Not everyone can be together for every phase of production. However, it is important to let each element of the staff communicate throughout the project.

CREATIVE LICENSE

Certainly, directors must interpret the script in the best way possible and camera operators must do their best to give the directors what they want (or think they want). But some simple pre-produc-

tion meetings go a long way toward clearing up concerns that may become evident during the shoot when one person is totally responsible for it.

The best directors always consult with the writers and producer to fully understand the physical layout of the script/shoot. Directors should have an absolute understanding of the script from every aspect. They should also be totally aware of what the finished product will look like.

All too often, segmentation and specialization in the workplace allow too many individuals to have too little to do with a final product, and the results show a "choppy" videotape that appears to be the end result of several different production companies. The graphics department is busy creating "more graphics for some other production"; audio is laying tracks and narrations for "some program we are doing"; and the editor sees it as "just another EDL (edit decision list) and more late hours of drudgery."

The best producers insist that each facet of the production has a very clear understanding of the scope of the production itself. Not only will they insist that their "people" know the target audience and market for the video, but they ensure that every element of the production reflects an understanding of just what this program is intended to do and how this is going to be achieved.

Pride in the workplace can be scarce if the employees' creations are never more

evident than, "Well, I've got my part done." Instead, it becomes instrumental for the best quality production to contain the pride that can only come from knowing each person contributed to the final, quality product.

It is hard to imagine, but do you realize that many productions go in finished form to the client without many of the contributors ever seeing the completed program? How can each party be proud of its contribution without ever having the opportunity to see the finished product?

HOW FAR CAN YOU GO?

The very nature of field work affords the production team a wide range of diversity. Often, the crew is working with a script written by people who may have never visited the location. Therefore, directors may be forced to use their own discretion when setting up the shots.

How far the director uses this "discretion" is one of those elements that requires some discussion prior to it. As a matter of fact, the entire field crew needs to be fully "briefed" on the shoot and the amount of flexibility, if any, each element is allowed.

It is wonderful to believe that with a group of "professionals" this will not really be necessary. But creativity is an extremely abstract gift that requires boundaries and parameters to fulfill objectives. What if a director suddenly

(continued on page 16)

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The Proof Is in the Tally

by Jon Hazell

MOBILE PRODUCTION

The tally system is one of the most mundane circuits in a television station. It is permanently wired into place when the production switcher is installed and then forgotten until it fails, usually 15 years later when frustrated engineers can no longer find the system drawings. The tally system on a mobile truck, however, is a much more active and versatile circuit whose configuration is changed for every show.

The purpose of a tally system is to indicate which video source is selected by the production switcher; that is, which source is on the air. It lets a camera operator know when his camera is hot and when it is safe to refocus. It also lets the video engineer know when he can safely shade the camera.

The tally system lets the people in the production control room know which source is on line, and it lets the slo-mo operators

know which camera is on the air so they can choose another one to record a different replay angle. The tally system lets the on-air talent know when a camera is live.

A CHANGING TALLY

These are basically the same functions a tally system performs in a TV station. So why does a mobile tally system need to be changed for each show? First, there is the complex issue of cross-patching. When the technical director in a TV station takes camera one on the switcher, the tally lamps for camera one light up. In a mobile environment, camera one may not be camera one.

The number of each camera is selected before the show by the director. For example, a baseball director may want to call the center field camera number one for his show, but the truck camera with the longest lens may be camera three. Rather than confuse the director, who is usually confused enough as it is, we choose instead to confuse the engineer in charge (EIC), who patches the video from truck camera three into the switcher position for camera one.

When the director calls for camera one, the technical director punches the switcher button for camera one, truck camera three goes hot and the shot from the center field camera is seen by viewers at home. Complicated enough for you? All the other cameras as well as the truck's VTRs and routing switcher outputs are also frequently cross-patched.

Of course, the tally system has to be

cross-patched too. When the TD punches the camera one button, the tally lamps for truck camera three have to light. There are two different types of tally patching systems common in mobile trucks. The first is a matrix system consisting of a row of multiposition slide switches. Each switch represents one of the tally destinations, which usually consists of the cameras; production, video, and tape area monitors; and perhaps some tie lines to the side of the truck.

Along the side of the matrix are the switcher positions, one for each of the production switcher sources. Each switch can select each switcher location. In our hypothetical baseball game, the EIC will move the slide switch for truck camera three to the switcher position for show camera one. He will also probably position a switch for each of the truck monitors used for show camera one so that when the TD takes camera one, the tally lamps for those monitors will light.

SIGNAL ROUTE

The other kind of tally selection system is a patch panel. Patch cords instead of switches are used to route the tally signal from one place to another.

Things are not too complicated so far, so let's add a second truck. Sporting events are frequently covered by more than one truck — one for the home team and a second for the visitors. This allows each director to control his own camera shots. Usually one show uses more cameras than the other. For example, most baseball shows use six cameras, but some add a camera down each foul line and a super slo-mo camera behind home plate.

Most visiting directors will ask for feeds from these cameras to supplement their show. A tally signal from the visiting truck must be fed to the home truck and then routed out to the shared cameras so the operators will know when they are on the air in the visiting truck. Usually this second signal is called the green tally while the first is called the red tally.

Unfortunately, this green tally interconnection frequently leads to troubles. Electronically, there are three ways to light a tally lamp. The first is to apply a voltage to the tally circuit, usually 24 V DC, when the switcher position is selected. The second is to activate a relay contact closure to connect one part of the tally system to another. The third is to make a connection to ground. If your truck applies 24 V and the other truck takes it straight to ground — you will have serious problems. Most EICs know intimately where the tally system fuses are located.

To save big headaches, the EIC usually builds a tally interface box. All of these boxes are different and each reflects the personality of its designer. It may be small or large, mounted inside the truck or used outside. It may use binding posts, D connectors, or 50 pin telco-type connectors. It may be in a Budd box or held together with cable ties and electrical tape. It may have connections for many switcher sources, just a few, or only one.

Plain or fancy, all tally interface boxes have the same purpose: to isolate one truck's tally system from the other while passing along the tally signal. Usually the sending truck's tally system activates a relay in the box, while those contacts are then used to activate the receiving truck's green tallies. If the box has access to

power, LEDs can be wired up to show the system's status, neatly and quickly answering the two questions EICs ask when troubleshooting malfunctioning interface systems, "Does it have power?" and "Is the tally activated?"

TRUCK CONNECTIONS

The tally interface box should be easy to connect at both ends. One neat tally interface system I have seen brings the closures out to a three-pin XLR connector. This way a standard mic cable can be used to route tally between the trucks. A break-out is plugged in to the far end of the mic cable to facilitate the connection to the other truck.

Other systems use binding posts and four-wire JKT telco cable (called "jake") to make the connection. Many trucks bring the tally system connections out to a D connector at one of the interface panels on the side of the truck and connect the box using a standard computer cable. The other truck can easily connect to its side of the box using binding posts and jake.

Tallies are another example of how, despite using virtually the same tools, mobile television is dramatically different from studio television. And, despite being quite prosaic, a tally system is also a good measure of the EIC's creativity and imagination. ■

Jon Hazell is a contract engineer and may be reached c/o TV Technology.

CONTINUED FROM PAGE 14

Challenges of Field Production

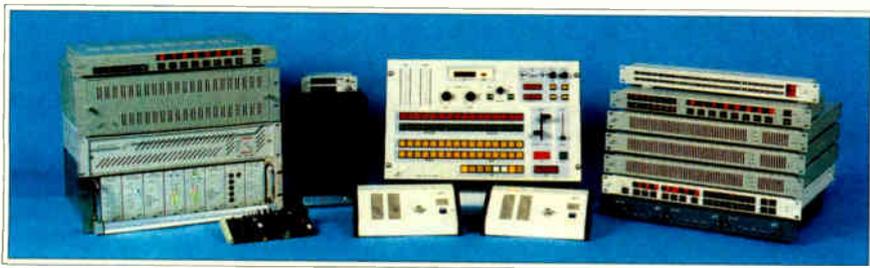
has this tremendous urge to use a "Hitchcock dolly" at a time when those viewing the footage back at the studio do not share the same inspirational surge?

A good camera operator can instinctively give the director great shots provided the instincts are of the same variety. The best camera operators are so good at what they do because they, as stated before, "understand the shoot." It becomes more than just another shoot for them, it becomes another challenge of their professional skills.

The best camera operators are so proud of their work that they are always extremely anxious to return to the studio to see the footage. They also want to comment on the nature of their work. It is common to hear them say things like, "Right here, watch how I shot this scene." This is pride speaking, and when all of the crew shares this same sense of pride, your productions will take on a greater sense of achievement. ■

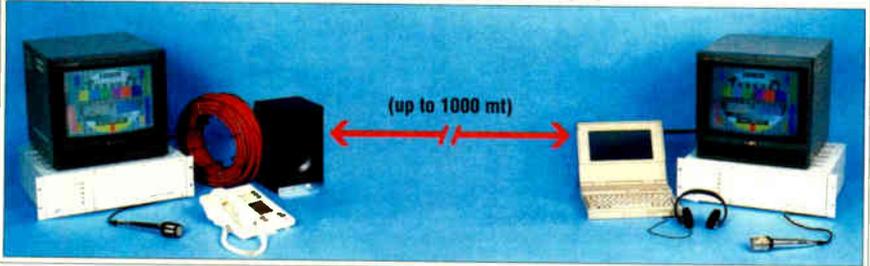
Dennis J. Hamilton is television coordinator for TPS Television in Trenton, Michigan. He has authored more than 30 articles related to television production and has toured the country speaking on production and production techniques. A free-lance producer, Mr. Hamilton has two master's degrees, one of them in television production.

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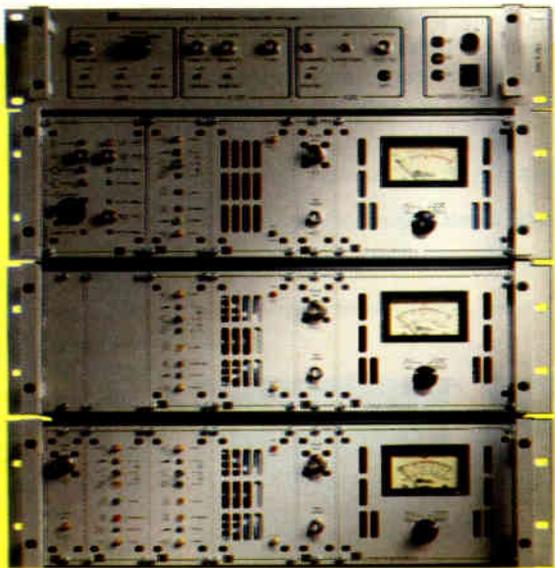


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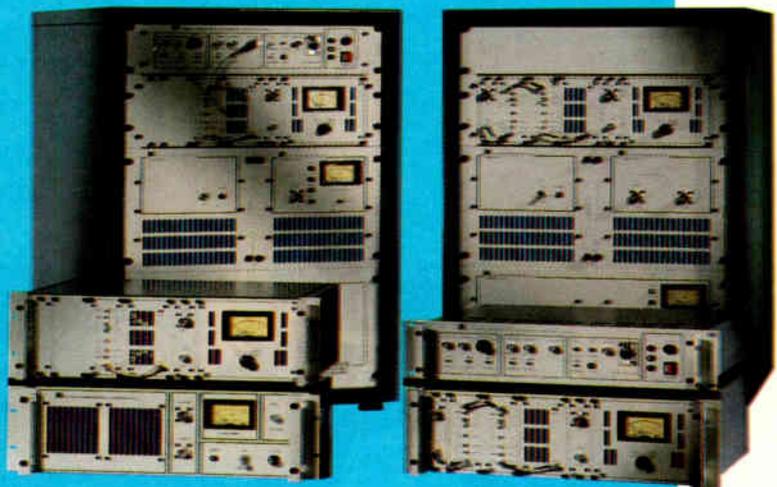
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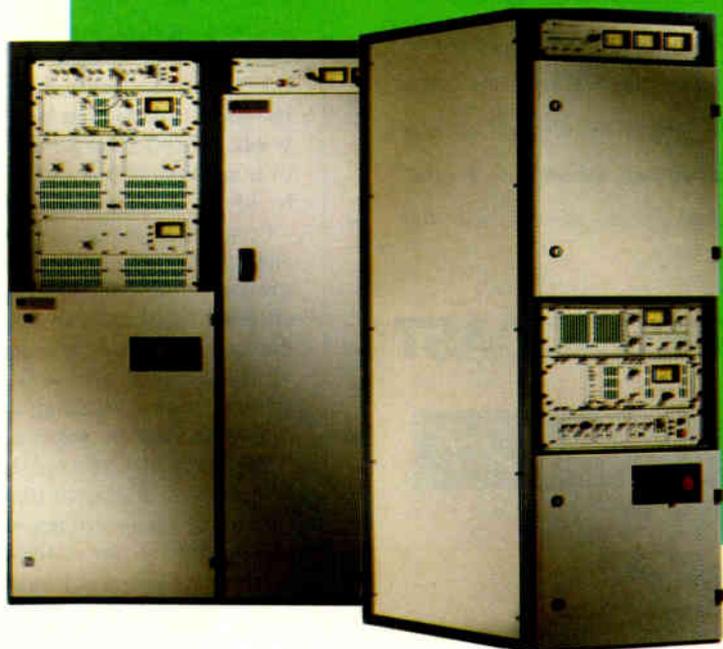


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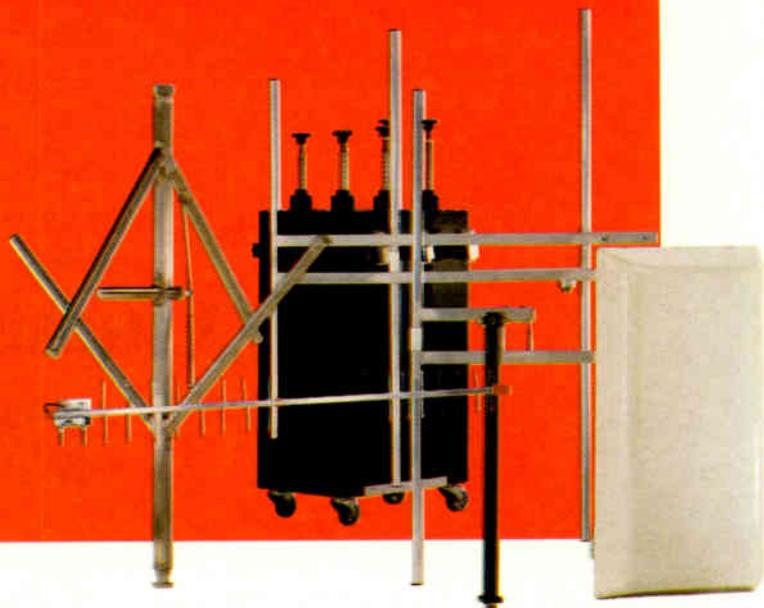


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Coney Island of the Net

Call me strange, but Coney Island Amusement Park in New York — with its bearded ladies, sword swallowers and “giant killer rats” — is one of my all-time favorite Gotham attractions. The seedy, somewhat sleazy quality that permeates the old amusement park by the sea is just the anecdote to the squeaky clean, high-tech Disneyesque entertainment centers of the '90s.

So it is sad news that the big boardwalk sideshow specializing in what is affectionately termed “Americano Bizarro” is in financial trouble and might be replaced by... oh no! ...a McDonald's restaurant.

The Coney Island situation, reports the *New York Times*, pits “McCulture,” the homogenization of the American experi-

ence, against a pithily individualistic celebration of a near-extinct part of American folklore.

Hitting the nail on the head (so to speak) was Fred Kahl (aka “The Great Fredini”) who hammers five-inch nails up his nose and “flosses his brain” by running a tube into his nose and out of his mouth.

“Sadly, a lot of people will not miss this place,” he said. “They will eat at McDonald's and be totally happy. They live lives framed by TV and it does not make any difference.”

The same pressures that threaten the Coney Island sideshow also endanger the Internet (at least as we know it). The Net is now all the things that make Coney Island

so special. It is quirky, individualistic, difficult to control, a bit seedy and has anarchic tendencies. And, like the sideshow, it is not very profitable these days.

The Net equivalent to McDonald's is bandwidth. And, interestingly enough, everyone seems to be for more bandwidth on the Net. It is automatically assumed to be for the good.

More bandwidth, of course, means multimedia. And because multimedia is expensive to produce, expect to pay for it. The arrival of multimedia means the big-time commercialization (and eventual homogenization) of what is now an essentially populist computer network.

This bandwidth boost may be coming

by Frank Beacham

THE BIG PICTURE

sooner than many think. Even though the cable television operators and phone companies are still fumbling with their much-ballyhooed interactive broadband networks, DirecTv, the direct-to-home satellite service, has big plans to offer a broadband data pipe through existing DSS satellite receivers. The service could start as early as next spring.

GLITZ VS. SUBSTANCE

Of course, bandwidth expansion will offer lucrative new business opportunities for the unprofitable World Wide Web. And even though the big commercial information providers will do their best to dominate the new cyber frontier, there will be plenty of opportunity for the little guy to succeed.

Yet, with all the potential, I have a queasy feeling about the future of the Net. Part of the problem is I have seen much of the glitzy “content” that bandwidth makes possible and find it about as satisfying as a steady diet of fast food.

In fact, what I have seen could easily be called visual fast food. It is light on substance and usually does not take long — after the initial luster wears off — for the recognition to come that behind those slick corporate presentations are the same products and the same ideas.

The soul of the Net, in my opinion, rests in its personal pages. These pages are literally thousands of tiny examples of the freedom of speech at work. It is where we get the passionate rants, raves and original insights of individuals with little to lose. It is where intellectual fervor sometimes boils over and we get firsthand “news” unfiltered by advertiser-supported media.

Personal pages are the wild and woolly alternative to the AOLs, CompuServes and Prodigys that try to offer safe, mall-like creature comforts in virtual information theme parks. The “branded” on-line services offer much appeal to a media-saturated generation demanding their information in easy-to-swallow, sugar-coated tablets.

Just as with the sideshows at Coney Island, the “Americano Bizarro” of today's Internet probably will not survive. I guess it is inevitable in our restless, turbo-charged culture. But I suspect I soon will be looking back on today's primitive, slow, crude Net with some nostalgia.

The Great Fredini was probably right. A generation whose lives have been framed by TV cannot be expected to settle for anything less than a Net laced with fast-paced, image-rich multimedia content.

But I feel sorry for those who have not tasted what is outside the fast food world of McDonald's. They do not know what they are missing. ■

Frank Beacham is a New York-based writer and producer. Visit his Web site at: <http://www.beacham.com>. Mail: 163 Amsterdam Ave. #361, New York, NY 10023. E-Mail: beacham@radiomail.net.

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18 FEATURES

U.S. Seeks V-Chip Alternative

by Mary C. Gruszka

NEW YORK

U.S. Networks ABC, CBS, Fox and NBC have created a US\$2 million fund to provide seed money for entrepreneurs interested in rapidly developing affordable "viewer discretion technology" devices that could be adapted to current TV sets and programmed by set owners.

The four networks have asked the National Association of Broadcasters' NAB Technologies subsidiary to write a request for proposal (RFP), disseminate it, receive and evaluate proposals and make decisions about the amount of seed money appropriate in each case.

"Viewer discretion technology," according to the networks, describes a wide range of existing and emerging technologies that would enable viewers, especially parents, to have greater control over what television programs are viewed in their homes.

The move by the networks is an attempt to create an alternative to the "V-chip," a device designed to be installed in new television sets that would read an electronically coded rating within each program and block the viewing of that program if it was deemed inappropriate. A measure mandating V-chip technology is currently pending in the U.S. Congress, although final passage is uncertain. The networks, as well as a number of civil rights groups, oppose this amendment.

"We are putting our money where our mouth is, accelerating the delivery into the marketplace of technology vastly superior to the V-chip, and hopefully bringing certainty and credibility to the case of those in Congress and elsewhere who favor viewer empowerment over government mandate when it comes to blocking programming," said Peter Lund, president of the CBS Broadcast Group.

"The goal is an alternative to the V-chip that is easy to use and affordable ... adaptable to current TV sets and programmable by parents, not television executives or government officials."

Lund added that this effort is a continuation of the networks' commitment to address concerns about violent and potentially objectionable content in programming.

"CBS' commitment to this technology in no way lessens nor lifts our responsibility to seek to uphold reasonable standards appropriate for our audiences," said Lund.

The networks, the NAB and the Electronic Industry Association (EIA) have identified devices that presently exist and are aware of other emerging technologies that could serve as alternatives to the V-chip. Some devices come from companies with sufficient capital to bring their products to market. Others are made by entrepreneurs with little working capital.

"We are putting together the RFP to get as much information as possible to see what is out there. We are already getting calls from people who have heard about this," commented NAB spokesperson Lynn McReynolds.

"This will be open to a lot of different approaches. We will be making the evaluations and granting the seed money for the technologies that meet the criteria and that hold the most promise," McReynolds added, noting that more than one idea might be funded.

According to McReynolds, the networks

approached NAB to administer the project. "We have the infrastructure in place and the technical expertise in house," she said. "We have been involved in various types of technology evaluations and RFPs in the past."

She added that the entire project will be held to a fairly quick schedule. As of press

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The product should be easy

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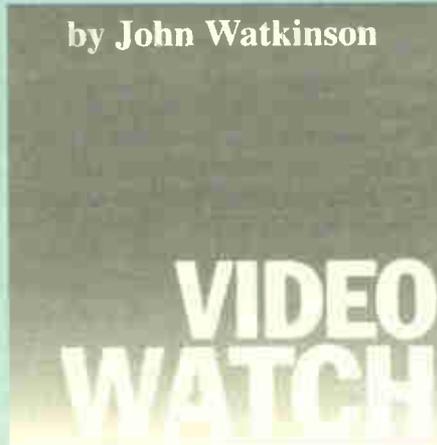
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Easy Steps to Cleaner Audio

by John Watkinson



When television sound was analog, the only synchronizing criterion was to achieve lip-sync. Now that digital audio is increasingly found in the television production environment, the synchronizing criteria have become much more stringent. Failure to implement a proper synchronizing strategy results in pops and crackles as samples are corrupted. This article gives practical hints on locking audio to video based on the underlying theory with emphasis on installations using AES/EBU audio signals.

Analog audio signals can be freely mixed together because they are continuous and unbroken waveforms. The resultant mix is just another continuous waveform and the concept of synchronizing does not arise.

It is not the digital nature of signals which introduces the requirement for synchronizing; it is the fact that signals are sampled. This is clear from analog television, in which the scanning process samples along the time axis to produce frames and samples down the screen to produce lines. Analog television signals can only be mixed/switched if all of the sources concerned are at the same point in the scanning sequence. Otherwise a complete mess results. The principle of genlocking or back-timing was developed to overcome the problem.

All video sources are fed with an identically timed reference from a central source and return signals in the same phase. With the introduction of color, the criteria for synchronization became more stringent because all sources to be mixed had to be synchronized to an accuracy of a few degrees of subcarrier phase.

Much the same problem arises once audio is delivered as a stream of samples. Digital audio mixers work by taking a proportion of the sample value at each input and then add these values together to create the value of an output sample. This process requires samples at all inputs to arrive at the same time and to have the same frequency just as in analog video. Fortunately, in the digital domain it is easy to implement delay in memory so that in practical hardware, a form of time base correction is generally added to all digital audio inputs.

This means that audio signals do not have to be in exactly the same phase. However, they must be at exactly the same frequency, so that exactly the same number of samples is delivered by each input over an indefinite period. Clearly, free-running sampling clocks could not achieve that long-term stability. Instead a reference signal must be distributed and all sources must back-time to it.

If a digital audio system is not synchronized, eventually the delay capacity of time base correction stages is exceeded. A sophisticated, expensive device may re-center the delay by omitting or repeating a few samples so that a small disturbance to the audio waveform results. In lower cost hardware, re-centering is not provided, and the result will be that the actual data value of the sample may be corrupted. Clearly, if high-order bits of the sample are in error in isolated samples the result will be extremely loud high frequency, which is quite unacceptable.

When digital audio is to be recorded on

JVC television sets with a built-in "channel-guard." These sets offer a parental control button and a PIN code that can be used to block the receipt of designated channels for a specific amount of time.

Some cable companies offer channel blocking through the cable converter box. Two approaches have been identified — mechanical and electronic blocking. With mechanical blocking, parents tell their cable operator which channels they wish to block and they receive a key that can lock and unlock access to those channels. With electronic blocking, parents order a cable box that can block out specific channels, some for designated time periods.

Also available is the "TeleCommander" by Protelcon, which can block out individual programs. Slightly smaller than a VCR, it connects to a TV or cable box. Security is through a user-controlled PIN system.

For video-on-demand applications, Oracle's media server products include data management through the set-top box. This allows parents to determine what programs their children can watch.

To date, the EIA has identified 26 different models of television or device that feature parental control of some kind. Companies wishing further information about the RFP and the development fund should contact the NAB. ■

a production VTR, it will use the same heads as the video to reduce cost. A short part of each tape track is set aside for a block of audio data, which is recorded using time compression. All of the audio samples corresponding to a TV field period are squeezed up to fit in the block. On replay they are unsqueezed to their normal time base once more.

The audio blocks on the video tape must contain a whole number of samples, yet the rate at which these blocks are recorded is determined by the video field rate. As a consequence, the digital audio sampling rate and the video timing are irrevocably locked together.

When used with analog audio inputs and outputs, no problem arises, because the internal ADCs and DACs are supplied with a sampling clock generated internally from video timing. However, if digital audio is to be supplied to a VTR for recording, it must be supplied from a source which is locked to the same video reference as the VTR, otherwise pops and clicks result.

In television installations, the use of the 48 kHz audio sampling rate is universal. This is largely because locking 48 kHz to the 0.1 percent shifted frame rate used in NTSC is possible over a five-field period, whereas locking 44.1 kHz is somewhat more complex. In 50 Hz countries, 48 kHz or 44.1 kHz both lock easily to video, but VTRs are only available with 48 kHz.

There are two major ways of achieving digital audio synchronism in a television installation.

a) All audio devices are fed with and lock to a Digital Audio Reference Signal (DARS) from a central generator which provides locked audio and video timing.

b) Video syncs are distributed to audio and video devices alike. All audio devices are fitted with a local reference generator which can produce digital

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U S E R R E P O R T

CPO Gives KPHO a Winning Edge

by Paul McComb
Chief Photojournalist
KPHO

PHOENIX, Arizona

KPHO is the local CBS affiliate here in Phoenix (we were independent until September 10, 1994). As a CBS affiliate, the pressure to remain competitive has intensified.

Our news department has expanded to 48 people and counting. We have grown from only five photographers to a total of 10, and we eventually plan on doubling our staff. Along with this staff expansion, we are in the midst of upgrading our equipment. We have two new live trucks, a satellite truck and a new helicopter in which I spend a good bit of my time.

Our programming is also constantly expanding. We broadcast news at 11:30 a.m. and 6 p.m. and offer a five-minute update at 10 p.m. In the future, we plan to broadcast a 5 p.m. news program and a complete broadcast at 10 p.m. With 10 photographers out hustling everyday, we may turn up anywhere in the Southwestern U.S.

HELPING OUT

As our staff personnel are few in number, most people serve a number of functions and are willing to pitch in wherever needed. We have always had a great reputation and are very selective about the people we hire. Operating with just a third of the staffing of other stations in our market, we still maintain our competitiveness.

One of the ways our staff competes is by using the very best tools. One of my "must haves" is the 0.6X aspheric wide-angle adapter from Century Precision Optics. I have always had good luck with Century Precision's optical accessories, which I have used for some time. When my needs increased, I immediately purchased more of the 0.6X adapters, bringing our total to five. I found that the lens is lighter, exhibits less distortion, offers increased depth of field and

shorter MOD (minimum object distance), and is easy to use.

The weight factor is crucial. Our cameras and lenses are heavily used, so the adapter's weight means less wear and tear on the lenses. This is especially important with the internal focus lenses I am now purchasing.

on every story, but we use them every day. They give us significantly greater flexibility when shooting and help make little rooms look larger. Plus, we can get into tight places that would be difficult to shoot without some type of adapter.

Without the 0.6X, we would be limited to



Century Precision Optics' 0.6X wide-angle adapter

The 0.6X aspheric wide-angle adapter uses a single element with two aspheric surfaces. It greatly minimizes distortion all the way to the corners of the frame without vignetting. In addition, it reduces chromatic aberration. I found that the image quality is simply better than other wide angle options.

We use Sony 300 and Sony 7A cameras equipped with Fujinon lenses, such as the internal focus Fujinon 15x8. So we appreciate the way the 0.6X slides over the lens front and locks in place. A mount apparatus ensures that the adapter can be fastened both quickly and securely.

We may not employ the double aspheres

shooting in a car, a small office or any confined space in which you want more than just a head shot. The wider angle imparts more of a flavor of the surroundings so our viewers receive a better perspective of what, where and how our subjects are doing what they do.

We were recently shooting in a police car, and I was sitting in the front seat interviewing the officer. All I could frame with the standard zoom was from the officer's neck to the top of his head and not much more. By popping on the 0.6X aspheric I could instantly include the interior of the car, the officer's hands on the wheel, the street going

(continued on page 38)

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USER REPORT

Emberley Blooms with Nikon***S9 Wide-Angle Lens is the Only Choice for Veteran Cameraman in California***

by Gordon Emberley
Owner
Emberley Productions

LARKSPUR, California

I opened my studio about 25 years ago in a wonderful old landmark, brick building that was the first brewery built in San Francisco for the Gold Rush. It survived the 1906 earthquake, and my son Bill now resides there.

During my 40 years in the business, I have worked mostly for fashion and travel clients and have done lots of advertising agency work — sometimes for the “who’s who” of the advertising world. In recent years my son and I developed the video end of the business and have produced commercials and corporate video for the same “top-end” clients. A complete list would fill this page, but a few are Levi, Safeway, White Stag, Jantzen, United Airlines, Bank of America, Vassarlette, Royal Cruise Lines, The Wool Bureau and J.C. Penney.

At age 61, I am now semi-retired, shooting and successfully marketing gardening videos. Our two present titles are “Growing Good Roses” and “Great Gardens of England.” We have a partnership called The Larkspur Company and more than 10,000 copies of each title have now been sold.

I had a lot of great experience with Nikon

**I can create
instant sunsets and
I do not have to re-tune
my camera.**

lenses in still work, but I particularly wanted an “internal focus” capability enabling me to use graduated filters for the garden scenes with bright skies and dark green foregrounds. I also wanted the same kind of wide-angle views, similar to the ones with still cameras. That is when I saw an ad for the Nikon S9, 5.5 wide-angle broadcast zoom lens.

It had internal focus and ED glass, so I contacted the company for more information. Nikon was very generous and loaned me the lens for our first garden productions. I took along the “regular” zoom and one other lens, but never used either of them. The S9 was then and is now my only lens. I have never needed more reach than what I can get with the built-in “extender.” My son and I each have one and use them exclusively.

The last few feet of pullback with such a wide lens are very dramatic — not unlike a dolly (or balloon) shot. The internal focus elements are so silky smooth that you can even stop and restart a zoom midway.

The wide angle lets you do walking shots that you could never do before. You can also easily use a Polarizing filter for more sky color and saturation. Reflections on water and glass are no longer a problem.

I use 95mm round filters, custom made by Harrison & Harrison, in ND gray, pola and sunset gradual coral colors. I can create instant sunsets and I do not have to re-tune my camera. The fixed front element accepts filters and, if desired, inexpensive matte boxes with ease. No more gigantic monstrosities that cost thousands of dollars to attach a filter and avoid the rotating front element.

The initial shooting was done on a Sony M7 and many thought that it looked as sharp as a broadcast camera. I am now using the latest aspheric S9 on a new Sony 637 with the PVV3. We shot for a month in Great Britain and videotaped 18 gardens. Two shows will be the result: “Cottage Gardens of England” and “Britain, The Garden Kingdom,” for the British Tourist Authority. We have been watching the “window dubbing” and feel really happy about the results.

Nikon sends us a loaner within 24 hours if we ever need service and the pricing is,

believe it or not, slightly less costly than other lenses in the same category. Everyone I know prefers Nikon lenses over some of the other ones that came with their camera packages. You do have a choice, you know — I know what mine is. ■

Editor's note: Gordon Emberley is an illustrative photographer with more than 40 years experience. He started as an Air Force photographer in the 1950s. In addition, he was the official photographer for the Thunderbirds' first jet acrobatic team and then worked for about 10 years in a commercial studio in Boston.

The opinions expressed above are the author's alone. For further information, contact Nikon (telephone: +813-214-5311; FAX: +813-201-5856), or circle Reader Service 64.

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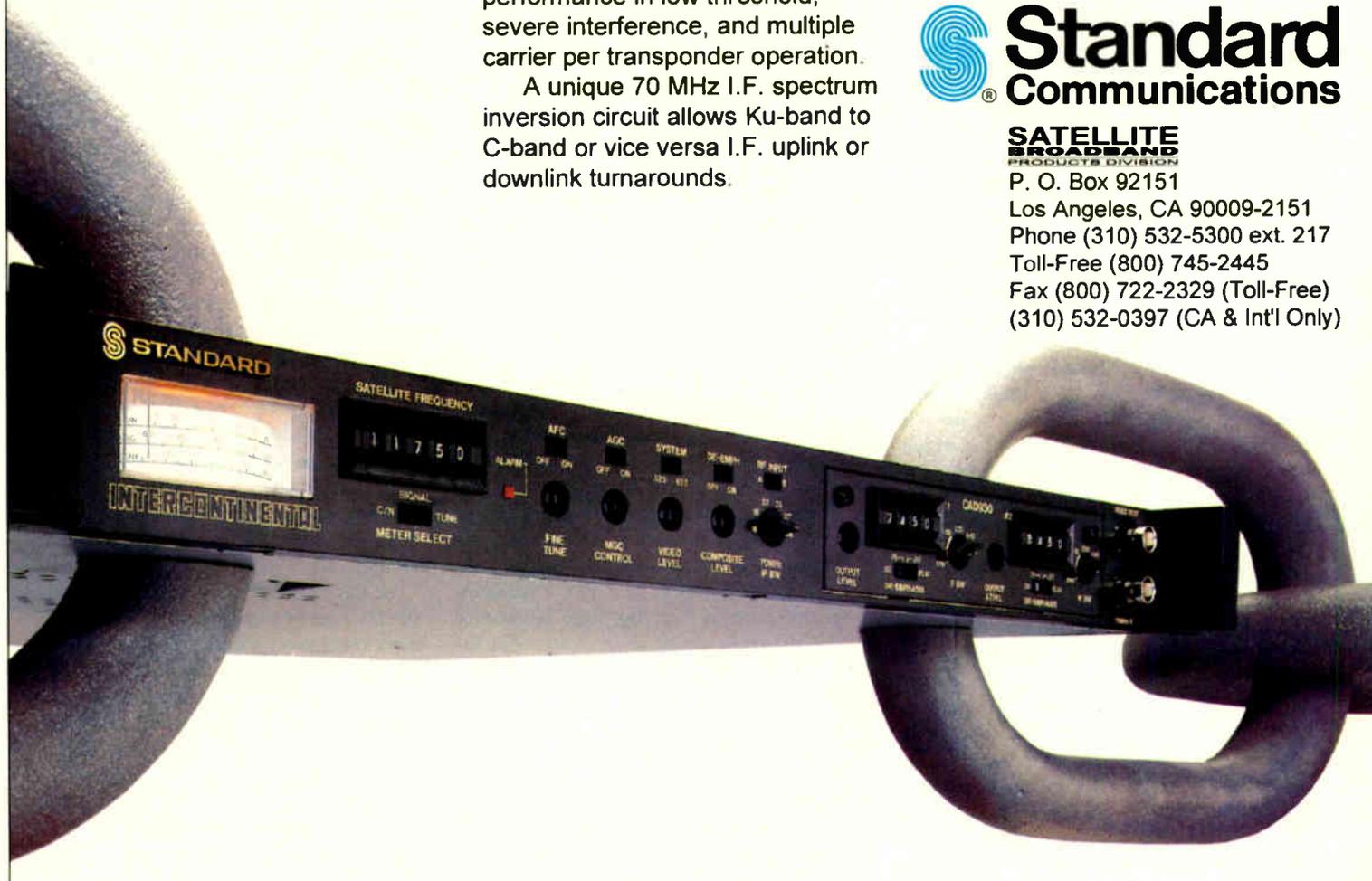
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U S E R R E P O R T

KFMB Stands Tall With Cartoni Support

by Dana Levin
Chief Photographer
KFMB-TV

SAN DIEGO, California

Tripods are an integral part of the news-gathering process. When Cartoni first introduced tripods into the U.S. market, KFMB-TV decided to give them a try.

Weight and cost were important factors from the start. Our station produces 5 1/2 hours of news daily with a staff of 26 photographers and editors. We have 16 sets that include six Cartoni Beta and two Delta model tripods for our Sony BVW 300 and 505 Betacams. Most crews generally cover at least two packages a day and our three live units consistently provide live shots for most shows.

FEATURE PRESENTATION

All of our cameras have Canon J series IF lenses and are powered by BP-90 batteries, along with wireless systems for a total weight range of 22 to 27 pounds (depending on the model). About 80 percent of our news photography is done on a tripod.

We had to replace our older tripods several years ago and did an extensive search for the perfect tripod: one that was light, had a good head for nice moves and was reasonably priced. This level of perfection was hard to find among the major manufacturers. You either had to pay at least US\$6,000 for a support system, the perfect head weighed too much, or the legs were too clumsy to operate.

We contacted Cartoni USA and they demonstrated the Cartoni Beta model with single-stage carbon fiber legs and a mid-level spreader for our photography staff. The weight (13 pounds) and cost (US\$3,300) were the biggest attraction.

For a lightweight tripod, the four-position pan-and-tilt fraction dials along with two counterbalance levers work well with Sony 300 Betacams. We were pushing the weight limit with the older 505 cameras, according to some on our photo staff.

The counterbalance is easy to use and we do not have to move the slide plate back and forth during a severe tilt angle; just reset the counterbalance at the desired angle. Setup with the one-stage legs is quick, and most importantly, reporters love carrying this model. It is very light compared to what we used previously.

One of the important features of the Cartoni tripod heads is that they are hermetically sealed. This means you are not going to get those nasty fluid leaks, which keeps dry cleaning bills to a minimum for those reporters and anchors helping the photographers carry their gear around.

AN ADDED BONUS

Last year, we added two more Betacams and a live unit to our inventory. With lots of live work, we wanted a head comparable to top-of-the-line models from other manufacturers. We consequently bought the Cartoni Delta with two-stage carbon fiber legs.

The Cartoni Delta head has good variable pan-and-tilt fraction controls. The bonus is an electronic counterbalance setting that is very easy to use and handles any camera weight used in news coverage. The elec-

tronic setting is powered by a 9 V battery that also illuminates a leveling bubble, a bonus for night shooting.

KFMB staffers report that this is a very smooth head, and the price is reasonable, starting at US\$5,100 for an entire system. The weight of our system with the two-stage carbon legs is 17 pounds, four more than the Beta model. But if you want a real nice head, you will pay in weight.

The best part in buying Cartoni tripods is servicing. We have had problems in sending other systems to the East Coast and slow service. Cartoni gives a five-year guarantee and is helpful with loaner heads while the original is in for work. And Cartoni's West Coast location is a bonus for us.

An example of excellent service with our new Cartoni Deltas occurred last January while one of our crews was covering a storm. This storm was near hurricane in terms of force and it lasted nearly five hours. Fortunately everything stayed up and running.

However, the tripod head started having

problems a couple of weeks later. We sent it in and it was discovered that water had worked its way inside and killed the electronics and started rusting various parts. Cartoni fixed the head and consequently added fluids inside to eliminate problems from potential water penetration.

As KFMB-TV was the first U.S. station to purchase these Italian-manufactured tripods, we have been pleased with most aspects overall. The Beta is a nice light, on-the-fly news tripod with the ability to make good moves. The Delta is up there with the best of them, a real quality head at the best price for its class. ■

Editor's note: Dana Levin has worked at KFMB-TV for more than 17 years, the last six as chief photographer. He's won and been nominated for awards, including local Emmys and Southern California Golden Mics.

The opinions expressed above are the



The Delta head from Cartoni features a digital display.

author's alone. For further information, contact Cartoni (telephone: +39-6-438-2002; FAX: +39-6-435-88293), or circle Reader Service 76.

U S E R R E P O R T

Hitachi Puts WJRT on the Move

by Skip Orvis
Chief Engineer
WJRT-TV

FLINT, Michigan

As with most television stations, we put our OB cameras through some very rigorous paces. In the 5 1/2 years since we first purchased our eight Hitachi FPC-1 cameras and the year since we purchased six Hitachi Z-One-C cameras, they have excelled in the midst of tornadoes, ambulance rides and a slew of rapidly changing light levels.

Our special projects producer, Mark McGlashen, won a local Emmy for "Best Photography" last year with a special called "Silence the Violence." He gives the Hitachi cameras credit for much of that honor. McGlashen shot the special about local street gangs as part of a public affairs project to combat gang violence. Other local stations were part of the project as well.

SIDE-BY-SIDE

When the other photographers set their cameras next to the Hitachi Z-One-C, they could not believe the nighttime images the Hitachi camera was picking up. While the other networks had their lights on full blast, McGlashen simply increased the gain. I believe the camera has enough gain to capture as much as the human eye.

Both the Z-One-C and FPC-1 cameras are phenomenal in low-light situations. For example, twice a year we shoot the Saginaw Symphony Orchestra's outside concerts. Recently, a concert ran late and the stage lights failed. We shot the entire concert with our Hitachi Z-One-Cs (no lighting) and it turned out very well. With these cameras you can add gain without increasing the noise levels. When shooting in low light you never notice the

fact that the gain switch is turned on.

McGlashen was recently out photographing the touchdown of a tornado with a Z-One-C. The rain was pouring and the light levels changed constantly. With the Z-One-C's four scene presets he was able to shoot easily while staying within the scene conditions. With the flip of a switch the camera's white balance is adjusted.

It makes a photographer's job that much easier. You can concentrate on shooting without worrying about light levels. And when you have the time to stop and white balance a shot, you can do that, too. But it is nice to know there is a feature that ensures great images in not-so-great conditions.

A recent shoot for WJRT's "Health Beat" called for McGlashen to follow medical technicians from the scene of a car accident to the hospital in an ambulance. The entire shoot was done in natural lighting. Inside the hospital the light levels were constantly changing, but there was never a question about getting a decent picture.

Thanks to the real-time auto white switch, McGlashen was able to run from outside to inside the hospital and increase the camera's gain while on the run. The controls are situated in a way that makes them very easy to activate while you are in motion.

The OB cameras take a beating out in the field, so service and the price of replacement parts were a concern when we first purchased the cameras. We consider ourselves lucky to have Hitachi cameras. Not only do the cameras hold up extremely well but the cost of replacement parts is lower than some competitive products.

And the technical support from Hitachi has been great. When something goes wrong we are not questioned by the

Hitachi salesperson. We just let him know what the problem is and it is taken care of promptly.

THEN AND NOW

It was my past experience with Hitachi's FPC-1 cameras that motivated me to go with the company's Z-One-Cs. We evaluated Hitachi's FPC-1 cameras more than five years ago against competitive products and found them to be the most durable. In addition, I think they offer the best performance for the money. Thankfully, we have had the same positive experience with the Z-One-Cs. So far, the cameras have met or exceeded all of our expectations.

My colleagues, such as McGlashen, used Hitachi broadcast cameras in the 1970s and, based on their past experiences, were less enthusiastic about the camera's arrival at our station. But when McGlashen saw the FPC-1 and worked with it a bit, he was immediately won over. He is now the camera's biggest advocate.

It has been a great experience working with both Hitachi cameras and technical support people throughout the years. We will definitely consider the company when it comes time for future purchases. Why change a good thing? ■

Editor's note: Skip Orvis has been chief engineer at WJRT-TV for the past year and a half. He was previously the assistant chief engineer, a position he held for 5 1/2 years. Prior to that appointment, he was the assistant chief engineer at WEYI-TV, in Clio, Michigan for four years.

The opinions expressed above are the author's alone. For further information, contact Hitachi (telephone: +813-3255-8411; FAX: +813-5821-5394, or circle Reader Service 91.

USER REPORT

Sony DVW-700 Hits the Trail

From Costa Rica To Iceland, Sony Stands Up To The Most Rugged Environment

by Matt Cohen
Supervising Producer
Trailside

WESTPORT, Connecticut

Our video cameras are constantly put to the test here at Trailside: Make Your Own Adventure. Trailside, produced by New Media Inc., is a weekly half-hour "how-to" public television series on outdoor activities. We have a crew in the field each week during our shooting season.

By "in the field" I mean the back country, where it often means days away from power and civilization. Our show pushes video equipment to the limit. We may be in the Bahamas shooting in saltwater during 100 degree heat, on snowshoes in the winter chill of Montana's Glacier National Park or backpacking through the extreme humidity of Costa Rica's rain forest.

In addition to the physical challenges to the equipment, we are also shooting video under a wide variety of lighting conditions — from high key light on the peak of Mount Rainier to high contrast light of Utah's slot canyons. The camera we choose is critical. For the last two seasons we have been shooting the show with a Sony BVW-400A Betacam SP and have been pleased with the results.

SHOWING OFF

I recently attended an open house of our post production facility, Palace Production, which had just installed a Digital Betacam editing room. Sony was showing off its new DVW-700 Digital Betacam camcorder and I was surprised to see that the size and weight of the camera is very close to the 400 (with terrific pictures).

We were about to shoot Trailside's third season premiere show in Iceland. A photographic challenge, Iceland is a land of contrasts: black volcanic rock and soil, midnight sun and glacier, steaming hot springs and waterfalls.

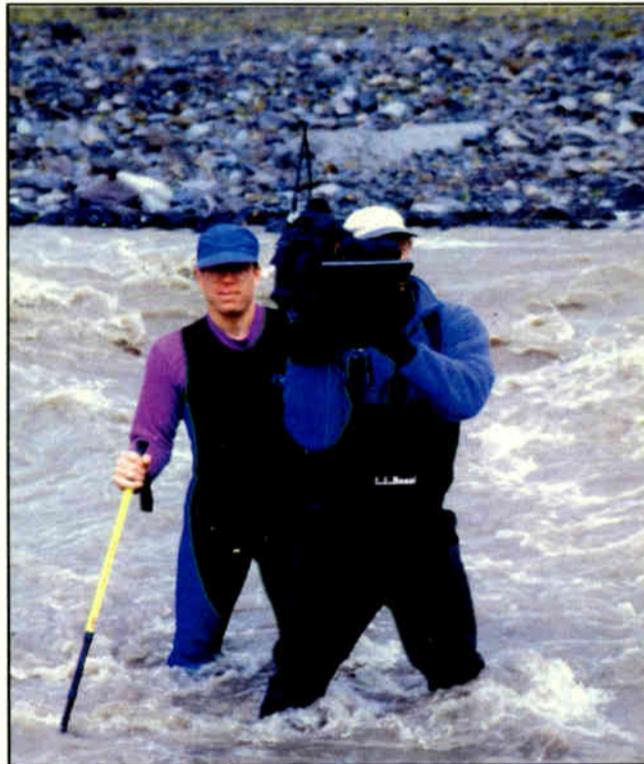
The camera is relatively new, so I was concerned about its reliability. The 400 has performed flawlessly for us. Would the 700 be as rock solid? Just to be safe, we packed our trusty 400 along for backup. We ended up never pulling it out of its case.

We shot in a variety of conditions in the field — in the rain, on cold and humid days, crossing glaciers and rivers — and the camera performed excellently. Jeff Wayman, our cameraman, feels as comfortable shooting with the 700 as he does with his 400.

In fact, he loved the eyepiece of the 700. We will often look at playback in the field and screen dailies at night. The 700 plays back full color without an adapter, a definite advantage when it means one less piece of equipment to lug along in your backpack.

The DVW-700 camera also features a wider range of adjustments to video, set up, hue, chroma and gain — all through an on-screen menu. It also offers the interesting feature of adjusting detail through this on-screen menu, eliminating the need to open up the casing to make this adjust-

ment. Sony also offers plug-in set-up cards that memorize and store your settings. This is a great feature if you share a camera with other people, or as we do, shoot in a variety of weather and lighting conditions. Just pop in the set-up card with the configuration you need and the camera



Trailside takes its Sony DVW-700s to the extreme.

resets to those specifications.

The 700 surpassed the 400 in the levels of gain it provided — up to 128 dB compared with the 400's 32 dB. What's more, recording in Digital Beta is free of dropouts. With the kind of location and action footage we shoot, this is an extremely valuable feature.

One final feature that made this a great camera for "Trailside" shooting was the new generation of its rechargeable lithium batteries. They recharge faster and hold that charge longer, given the same weight of the nickel cadmium rechargeable batteries we were using. This resulted in quicker turnaround times and longer shooting days without the weight of extra batteries. They

also hold a charge better in cold weather, which is great if you're shooting a winter camping episode deep in the heart of Yellowstone National Park.

When posting at Palace Production's Digital Betacam room, we can maintain

The new +WinPlus+ system from **BDL Autoscript** is a Windows-based prompting software providing point-and-click functionality in almost any language.

The system allows the interface to be user-defined and features thousands of scalable fonts. It is also compatible with all major electronic newsroom environments or can be configured for stand-alone prompting.

For further information, circle **Reader Service 78**.

PAG Ltd. has released the MC124 four-channel battery management system suitable for all NiCd batteries from 4.8 to 14.4 volts and 1 to 7 Ah.

Also new is the RTI (Run Time Indicator) system, a dynamic time-to-run battery indicator for NiCd batteries.

For further information, circle **Reader Service 23**.

Anton/Bauer has available the MP-2 InterActive fast charger for the Gold Mount Logic Series batteries. The system allows the battery and the charger to "communicate" to provide an optimum charge for each battery.

The system provides for maximum run times and an overall improvement in

battery life.

The MP-2 provides all the features of the MP-4 unit, but in a two-position model. Features include a multifunction LCD screen that displays battery and charger data such as battery type, age in charge/discharge cycles, power capacity and voltage.

For further information, circle **Reader Service 124**.

The Libec 70 tripod and fluid head kit from **Heiwa Seiki Kogyo Co.** features a counter-balanced tilting mechanism with a four-mode setting to compensate for a camera's weight and tilt angle.

A sliding quick plate offers "touch and go" operation for quick and easy setup and a telescopic pan handle is fully adjustable to all lengths and angles.

The head has a tilt angle of +90/-70 degrees, while the panning range is 360 degrees.

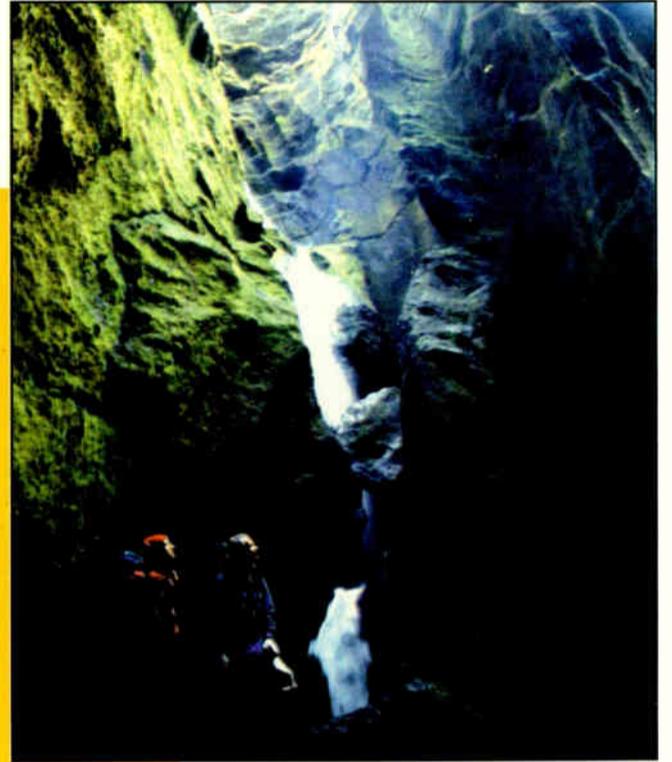
For further information, circle **Reader Service 16**.

The 15x8.3 AIF lens from **Angenieux** has a focal length of 8.3 to 250mm with an aperture of $f/1.7$ to 3.4.

The lens is supplied with a UV filter and a 2x extender.

For further information, circle **Reader Service 122**.

component digital quality throughout the posting process. This results in the cleanest possible signal when the "Treking In Iceland" episode premieres Trailside's third award-winning season on national public television. I am so pleased with the DVW-700's ability to accommodate uneven lighting situations, I am planning to use it again in November when we shoot "Paddling & Poling Louisiana's Bayou Country." We will see how it holds up in alligator country. ■



Editor's note: Matt Cohen, Trailside's supervising producer, has produced programs and special exhibitions for IBM, the Reagan and Nixon libraries, Time-Life and National Geographic. He has extensive experience in film, video-tape and interactive multimedia productions.

The opinions expressed above are the author's alone. For further information, contact your regional Sony sales office, or circle Reader Service 81.

BUYERS BRIEFS

Miller Fluid Heads of Australia has introduced a new range of OB fluid pan/tilt heads and tripods.

The range consists of the Miller 20, 25, 30, 50 and 80 heads and the Lightweight, Single Stage and 2-Stage tripods. The head units are designed for use with Miller's new lightweight aluminum telescopic pan handle, while tripod accessories include above-ground spreaders.

For further information, circle **Reader Service 95**.

Frezolini has introduced a new line of military power products that are now available to television professionals accustomed to harsh environments.

Various kits are available, although typical setups include an AC/DC converter, an HC generator and solar panel kits in one, two- and four-panel configurations capable of charging 12 and 24 V batteries.

For further information, circle **Reader Service 33**.

T E C H N O L O G Y U P D A T E

Vinten's View from the Field

by Chris O'Neill

SUFFOLK, U.K.

The demands and expectations of field production are increasing as the industry becomes more competitive. The expansion of terrestrial, cable and satellite broadcasting worldwide requires new programming to feed the demand, and one of the more popular program-

ming areas is field production.

Ask any camera operator to list the preferred or most important features of field camera equipment and you can guarantee that "lightweight" will be among the top five. Climbing forty feet of stairs in a sports stadium with a tripod and pan/tilt head over your shoulder certainly focuses the mind on weight.

However, when the tripod is fully assembled and the camera is fitted with a 55x lens, the next important feature for the camera operator is stability. Operating on a narrow angled lens is very demanding, and it is critical to have full control of the camera movement. The smallest vibration or wind buffeting can cause the picture image to move very violently.

Imagine a camera position high in the mountains covering the start of a downhill skiing event. Although a full sun may be present in the morning, by mid-afternoon it may drop behind the mountains and the temperature may fall to -10 degrees Celsius. The camera operator needs to produce consistent images throughout the day's production, so the performance of the camera support equipment must be repeatable.

The modern materials incorporated in today's designs to reduce weight can also be vulnerable to temperature changes. Plastics can

become very brittle in the cold and also very malleable in hot conditions.

The fluids that provide the "feel" of a pan/tilt head can also be susceptible to temperature change, so careful selection is required to maintain consistency in performance.

The introduction of portable cameras has brought a new dimension to field productions and has opened up a new era in program-making techniques. Traditionally, the large, full-facility cameras were mounted in fixed positions, but portable systems opened up a wealth of opportunities to place cameras in creative and dramatic positions.

The Vector pan and tilt head designed by Vinten incorporates a unique counterbalancing mechanism that supports camera/lens combinations up to 70 kg. It has the ability to compensate for changes to the camera/lens vertical C of G by the use of a rotary knob. The variable counterbalance will enable any camera/lens/teleprompter combination to be instantly adjusted and is ideally suited to field applications.

FIELD PEDESTALS

Pedestals have not been traditional field products due to their size and weight. But the introduction of the portable camera has created an opportunity to introduce the portable pedestal into outside broadcasting.

Portable pedestals are designed to be smaller and lighter than their studio counterparts. However, the quality of movement and general stability is still critical. Unlike the studio pedestal, the field pedestal is designed to be modular so it can be dismantled for easy transportation.

The modular design is another field compromise between weight and stability. Any modular structure tends to be less stable because two jointed parts are always less rigid than a single structure.

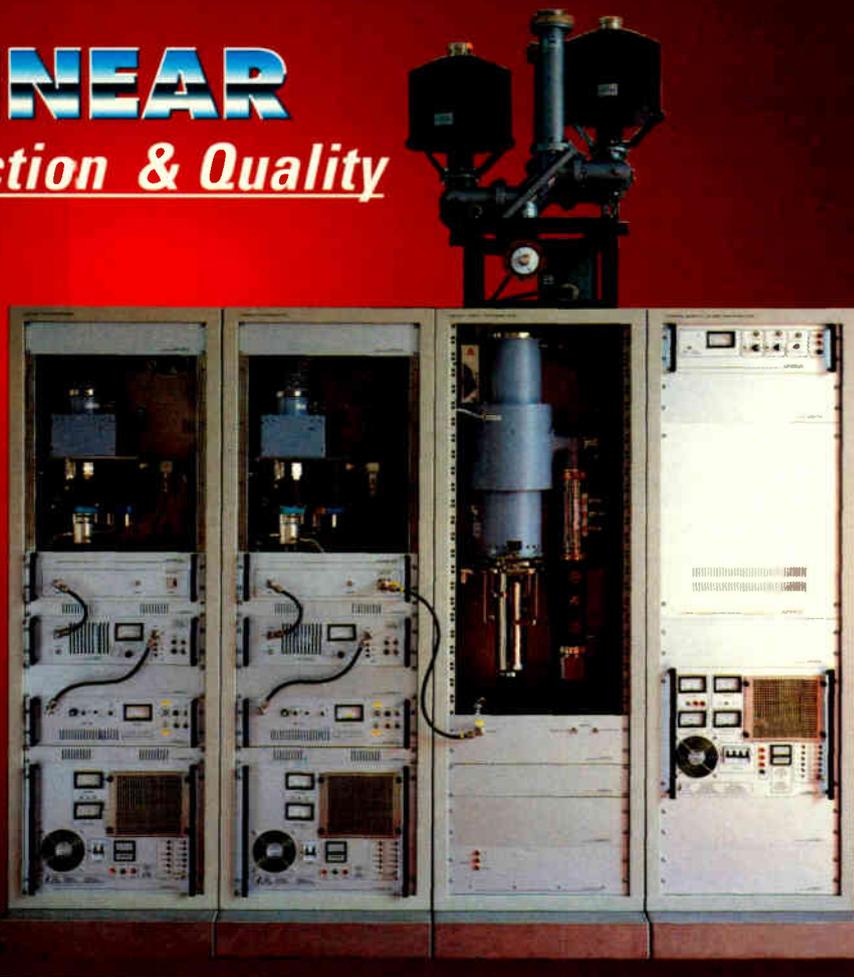
However, modern designs have been improved upon to enhance the pedestal feel and performance. The Osprey Elite, which is the latest field pedestal from Vinten, incorporates a two-stage On-Shot column with exceptional balance. Traditional field pedestals offer single-column movement, which is only suitable for "talking-head" type shows where limited height range is acceptable.

The Osprey modular system also allows the column to be mounted into a lightweight tracking base to offer film-style operation. Future pedestal designs will be of modular design to maximize flexibility and weight, which are key functions in any field production. ■

Editor's note: The opinions expressed above are the author's alone. For further information, contact Vinten in the U.K. (telephone: +44-1284-752-121; FAX: +44-1284-750-560), or circle Reader Service 68.

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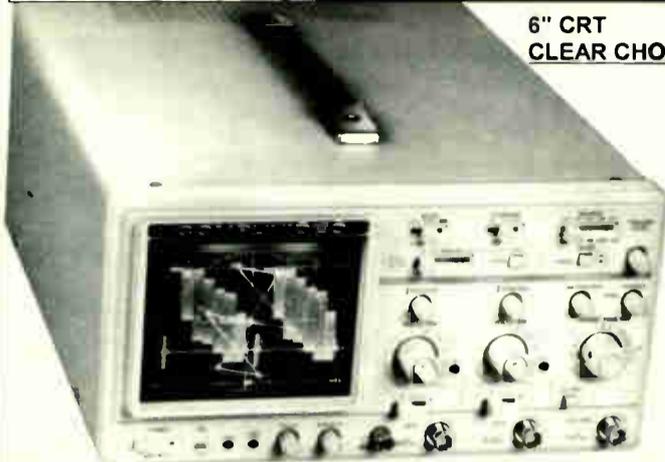
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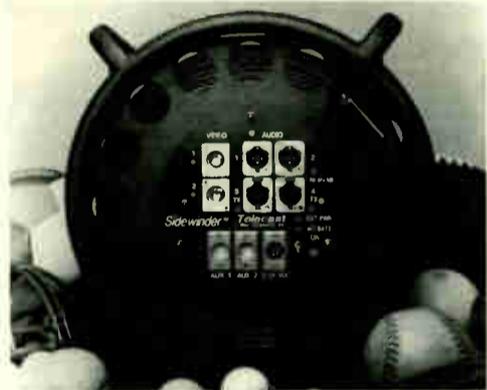
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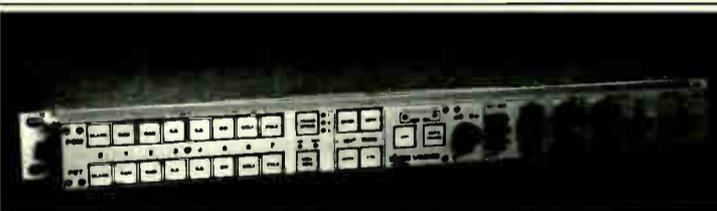
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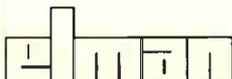
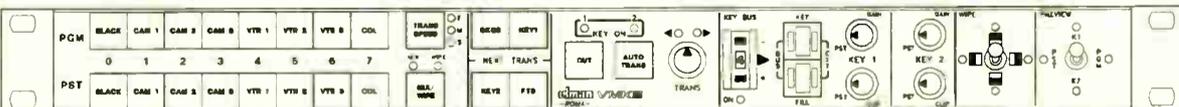
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U S E R R E P O R T

Thomson Finds a Home in Wales

by Dick Forest
Head of Production Resources
BBC Wales

CARDIFF, U.K.

BBC Resources Wales' outside broadcast (OB) vans probably televise more Rugby Union games than any OB operator in the U.K., possibly in Europe as well.

As a consequence of this, the unit as a whole, and in particular the people who work within the unit, have developed the capacity to broadcast this sport at a very high-quality level.

GAME TIME

The results of our experiences have led us to the conclusion that, beyond all else, it is the operators' experience with the sport itself that determines good or bad coverage. This extends to all key people within the crew, from the director through the touchline runners to the slow-motion operators. Without question, it is the reading of the game that primarily enables the crew as a whole to give well-paced, informative and exciting coverage to the viewer at home and still be able to produce a quick-cut version for very fast highlight transmission shortly after the game.

Typically, for a Saturday club match for instance, BBC Resources Wales will employ seven cameras:

—a center pitch wide-angle unit with an 18x or sometimes 30x lens mounted at mid-stadium, usually in the main stand and slung on a platform.

—a center pitch tight camera, normally with up to a 55:1 lens.

—a center pitch personality camera with a 55:1 lens, usually placed lower down the stadium, close to pitch level to enable a level, tight view of a player.

—a center pitch super slo-mo camera with about a 30:1 lens.

—a hoist camera on a very high mount intended to provide a strategy view of the game or enable the use of a video pen for presenters to discuss tactics.

—a pair of units for touch runners, always with 14x or 18x lenses.

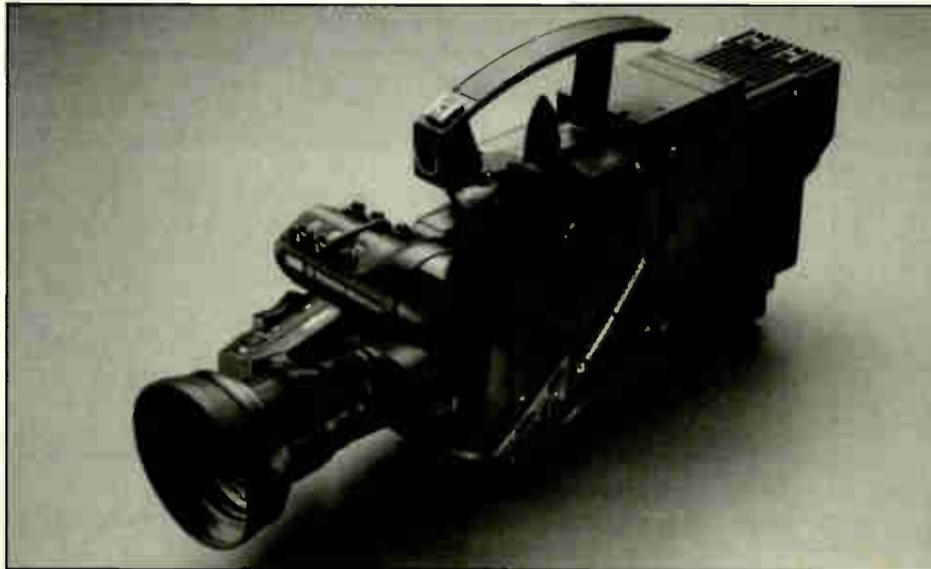
Being a touch running cameraman requires a certain amount of honesty when it comes to physical ability. Ieuan Evens is faster than any cameraman in the country. As a consequence, the ability to be in the right place at the right time is important and, of course, relies on a good knowledge of the game.

A classic example of this is given in a picture of Mike Rayer sliding across the line at the Arms Park. The cameraman in the instance was David Cheetham, and there is no doubt that if he was out of position by so much as five meters, there would have been no way to capture this classic image for the nation.

RUNNING FOR COVERAGE

Typically, touch running cameramen follow the fullback and reposition themselves as soon as they see the game develop a pattern in their direction. It is more important that they be behind the try line when a try is being scored rather than be available for the put into a scrum 30 meters up the pitch.

Slow-motion operators can be worth their weight in gold if they know the sport they are recording. Marking a point on a



The Thomson 1657 Sportcam

slo-mo VTR that is before a scrum and then forcing the audience to watch the put that goes on the produce a try is a classic mistake. Great slo-mo operators will often mark when the ball emerges from the

scrum, so as not to waste time on play-back. Decisions like that lead to fast, snappy, exciting coverage for the people at home and are entirely due to knowledge of the game, rather than knowledge

of the equipment. This is what BBC Resources OBs have in abundance after years of patient effort in perfecting this skill.

As far as the actual cameras are concerned, we use the Thomson 1657 Sportcam. Being able to use the same camera head on large and small lenses without sacrificing the facilities and the overall feel of the system that camera operators expect is a huge benefit. I was interested to hear that Thomson will release a split head system for this camera by the end of the year. This will apparently enable us to use our standard cameras in a split head mode. This will remove the need to get special cameras for split head applications like the T70.

Other cameras we use are the Sony Super Slo-Mo system, and although the Micro-Cams are getting better, we are resisting their use for the time being. Perhaps this new split head from Thomson will give us an answer. ■

Editor's note: Dick Forest is head of production resources for BBC Wales.

The opinions expressed above are the author's alone. For further information on the 1657 camera, contact Thomson Broadcast (telephone: +33-3420-7000; FAX: +33-3420-7045), or circle Reader Service 61.

U S E R R E P O R T

Steadicam Offers Smooth Ride

by Jerry Hill
Owner
Jerry Hill Steadicam

WHITTIER, Calif.

Being a free-lancer in the film and video business, I can safely say that the cameraman's job can be very demanding and rewarding at the same time. My operations include a wide variety of subjects and situations.

I have been a Steadicam operator for five years. In that time, I have shot many different shows, with the Steadicam EFP by Cinema Products Corp. acting as the perfect tool to achieve clients' desires.

I was recently contracted to shoot a series of TV shows in Indonesia (in 3D) with the local crews. The job was a rough one, not only because of the elements (i.e. humidity, etc.) and long hours but also because of the demands on the equipment and the human body.

The length of the shoot was three months. We were in locations all over Indonesia, capturing the local scenery with 3D effects. The Steadicam EFP held up great. We were shooting with a Betacam SP 537 "PAL." The EFP's monitor can accept an NTSC or PAL signal, which is one less thing you have to think about when shooting in exotic locations.

The EFP is lightweight, which is a big plus while doing a shot following talent up the sides of pyramids. To get the full effect of 3D, the camera had to be moving all of the time and the only way to achieve this was with a Steadicam. The Steadicam was used for 90 percent of each of the programs. The inserts and close-ups were done on sticks. The EFP was the right choice in this case.

In addition to being lightweight, the EFP can handle a wide variety of video

cameras as well as some film cameras. It is stored in two compact cases, making it easy for traveling. The electronics are relatively easy to understand and, if you run into trouble, a tech familiar with TV repairs can probably fix it. Because of the uncomplicated electronics, not much can go wrong with the system.

OUT OF THIS WORLD

One of our location shoots for the Indonesia series was the Planet Hollywood restaurant in Jakarta. We shot three scenes while the place was open for business. There was no other way to shoot in the restaurant to get the movements for 3D.

If we used a dolly it would have meant laying down track, lighting it and trying to keep the patrons from tripping over the track. It is still questionable whether or not the management would allow this even to be done during business hours.

The Steadicam EFP is a multiple problem-solver. I can be used in a walk-and-talk shot, while running, in a vehicle, on a crane, at a low angle, Dutch, on stairs, elevators, through doorways, and the list goes on as far as your imagination can take you.

As an example, I was shooting an industrial video for a manufacturing company. The director and client wanted a shot of the manufacturing floor. They both looked at me and asked how we could get the shot of the whole floor in one frame to show the size of the factory. If this had been a feature film we could have used a Chapman crane or a cherry picker.

As this was an industrial video it was out of the question. There was, however, an inexpensive way to give the client what he wanted while adding to the production value of the video. While shooting around the plant I noticed a fork lift. I

asked the client if we could use the lift and his best lift operator for 10 minutes.

When everyone was clear on instructions, I stood on the fork lift and the operator boomed me up 15 to 18 feet. I composed the shot of the entire factory floor, rolled the tape and then the operator slowly let the forks fall back to the ground. As the pallet reached the floor, I felt it hit bottom and continued to boom down a little while stepping off the pallet and walking through the factory, picking up the talent as he starts to explain what the company does.

The shot was a hit. I looked like a hero and the director was happy that his client got more for his money and his factory personnel had a hand in making the video. It was a win-win situation and that client still calls me.

RUNNING WILD

The point is that with Steadicam, your imagination can run wild. You can get shots you thought you never could before. Steadicam is a tool, just like a tripod, and it can be used too much if you are not careful.

Because it is a tool that requires physical operating, it takes some time and practice to get good at operating the unit. If you are a small, in-house production department or a large production company, there are Steadicams available to suit your specific needs. ■

Editor's note: Jerry Hill has instructed many Steadicam workshops, some with Garrett Brown, the inventor of Steadicam.

The opinions expressed above are the author's alone. For further information, contact Cinema Products Corp. (telephone: +1-310-836-7991; FAX: +1-310-836-9512), or circle Reader Service 116.

USER REPORT

Listec Fills a Void at Ryder Video

by Bob Pedrazas

Manager
Ryder Video Services

MIAMI

Ryder Video Services, located in the Corporate Training Center at Ryder System Inc. in Miami, produces 60 to 80 video productions per year. Programs are created for various departments, such as management development, technical training, marketing, sales, safety, environment, and employee and network dealers communications.

All of the facility equipment is set up to be mobile. Production equipment includes two Sony 300-BVW Betacams, Arri lights, Vega wireless microphones, Denny portable chroma curtains and two separate Listec A-6000 teleprompter systems.

We have two editing suites: a Sony digital component system featuring the DME-3000 special effects unit and the Data Translation Media 100 non-linear editing system.

The workhorse of productions is the Listec A-6000 teleprompter system. Ease of operation, speed, reliability and superb customer service places Listec in a class by itself.

The A-6000 was designed to accommodate both TV production and TV news requirements. Functions for speed, next story, previous story, story restart from prompt and pause can be carried out by keyboard, trackball or mouse.

Presentations can be prompted from the "edit" column. Bookmarks and/or cue markers can be inserted anywhere in the text, and the operator can move forward or back between the markers as necessary. You can even advance directly to a specific line if necessary.

Another aid is printing a hard copy, which is formatted exactly as the text being viewed on the prompter monitor. All stories can be printed with or without line numbers or studio cues.

Importing scripts from an ASCII text file

is most practical in our environment. As most scripts are written by different departments, it is easy to import documents into the A-6000. Deleting, adding copy, rearranging paragraphs and changing text at the last minute in the chairman of the board's office is handled swiftly.

The system runs on AC/DC power. Most of our shoots are done outside in sunny South Florida. The true test of a teleprompter is how well the talent uses it in the sunshine. Experienced actors and corporate employees have complimented the clear reflection from the teleprompter mirror.

Finally, Listec really excels in customer service. There have been occasions when pilot error has occurred and things were our fault. Joanne Camarda, president of Listec Video Corp., was our hero. She has helped us at all hours of the day — even weekends.

As a matter of fact, we have another company's teleprompter system as well, but our producers will only use the Listec system. Every producer in our group knows how to use the Listec system and rates it the best teleprompter system they have used. Confidence in the

product means everything. ■

Editor's note: Bob Pedrazas is manager of video services for Ryder System Inc. He has worked for the company for 13 years, and is responsible for video program development, production, editing and managing personnel. He has produced more than 800 video productions.

The opinions expressed above are the author's alone. For further information, contact Listec (telephone: +1-516-273-3020; FAX: +1-516-435-4544), or circle Reader Service 111.

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For further information, circle Reader Service 8.

Nikon's S19x8 OB lens offers a 19x zoom ratio and is available in B1 or B2 mounts with eight or 12 pins.

The lens has a focal length of 8 to 117mm and a maximum aperture of f/1.7.

For further information, circle Reader Service 126.

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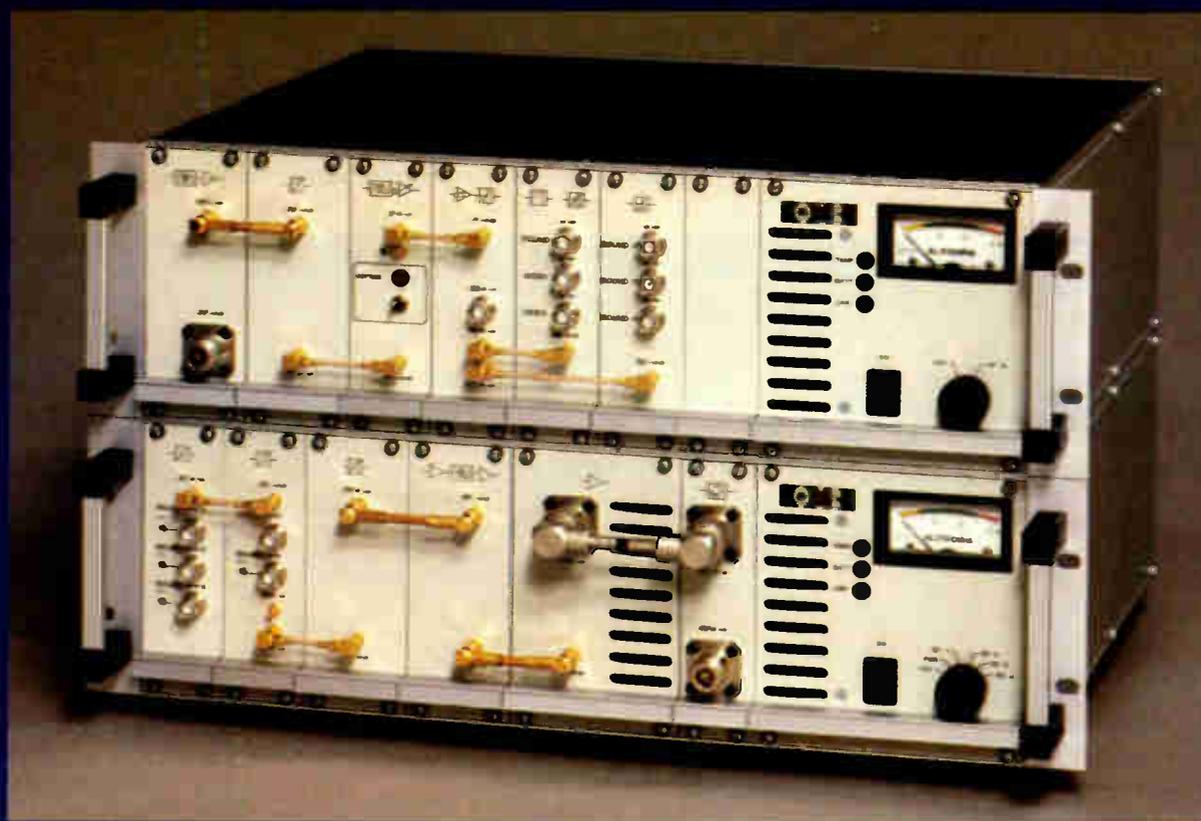
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USER REPORT

BTS LDKs Are a Classic Fit

by Jerry Patton

President
Classic Worldwide Productions

CLEVELAND, Ohio

When Classic Worldwide Productions was deciding which cameras to install in our new 48-foot black mobile unit, the Eclipse, the decision was paramount.

For starters, the cameras had to be compatible with our BTS LDK 90s and LDK 900s. They also had to be durable for road use, easily mobile for a number of sporting and entertainment venues and capable of working in low light level conditions. And, of course, the cameras had to work on triax.

COLD TO HOT

In addition, the cameras had to be stable in hot and cold weather situations, namely baseball fields during the summer and football stadiums during the winter in the upper Midwest of the U.S.

The cameras we chose were the BTS LDK 9s and LDK 9Ps. These cameras have a superior visual image and work extremely well in low-light conditions. The controls for these LDK 9s and LDK 9Ps are interchangeable with our LDK 90s and LDK 900s.

The Series 9000 remote control system allows a simple one-camera setup to complete multiple camera operations. It enables our video operator to manage the parameters of up to eight cameras simultaneously and to apply the parameters of one camera to all cameras.

In addition, we have individual camera control from a single panel. The cameras have been primarily assigned to our mobile unit for major production and sporting events.

When Producers Associates wished to use former CBS News anchorman Walter Cronkite for a presentation on the history of BF Goodrich (a project requiring a high-quality image "Ultimatted" over a graphic design set with 3D dimension), it was necessary to have a camera providing a pleasing visual image and excellent signal quality. The LDK 9P was the camera for the job. It utilized a through-the-lens teleprompter and fulfilled our client's highest expectations.

For our mobile unit, we use three LDK 9s with the Fujinon 55:1 lenses. Our clientele, which run the project-gamut from Penn State football to the Boston Symphony

Orchestra to NBA basketball, have provided excellent evaluations for the cameras and lenses. We have received no less than an "excellent" rating for the look each of these cameras provide, no matter what the venue.

In determining which cameras to purchase, we also examined the entertainment community. We found that anyone who ever used or worked with the LDK 9 or 9P camera was more than enthused about the quality of its image as it relates directly to its initial cost.

Other equipment in our 12-year-old facility includes four on-line multiformat suites

with Grass Valley 200 and 300 switchers and Abekas A-51 DVEs. Each of the post production suites is custom designed to allow producers all the luxuries of a spacious, comfortable workplace.

AVID SUITES

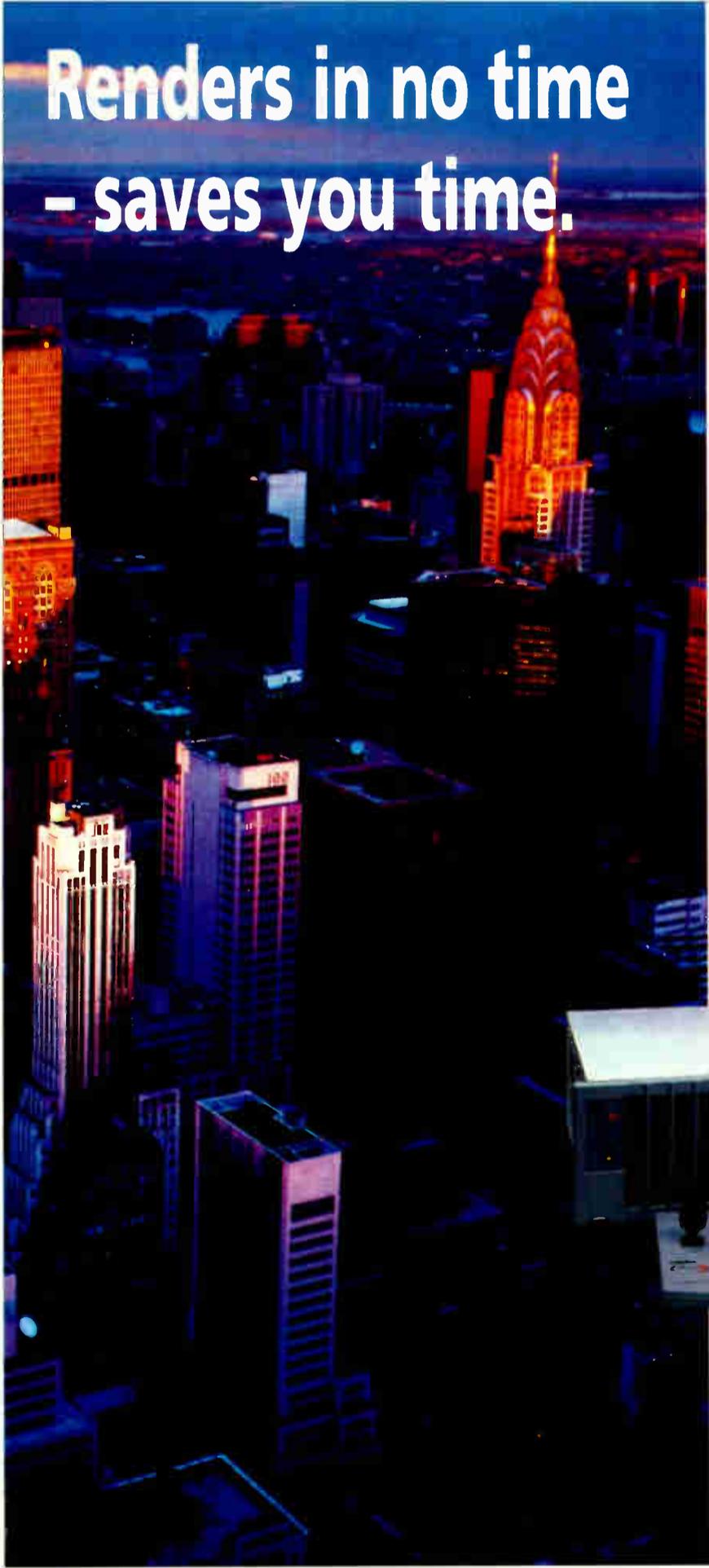
Two Avid non-linear editing suites are utilized for off-line and on-line editing. Classic's graphics and paint facilities include Vertigo, SoftImage, EDDY, nTitle and Colorgraphics DP/MAX software. Our three stages allow Classic to do major infomercials (including audience), industri-

al and training films, as well as commercials of all types.

We have found both the LDK 9 and LDK 9P cameras to be reliable, road worthy and easily serviced. Even more importantly, BTS has stood behind its equipment and provides excellent support whenever we have encountered problems or questions. ■

Editor's note: Jerry Patton is president of Classic Worldwide Productions, which was incorporated in 1983. Currently, the company employs a full-time staff of approximately 55. Patton is a business administration graduate of Ohio University.

The opinions expressed above are the author's alone. For further information, contact BTS in Germany (telephone: +49-6155-870-580; FAX: +49-6155-870-374), or circle Reader Service 49.



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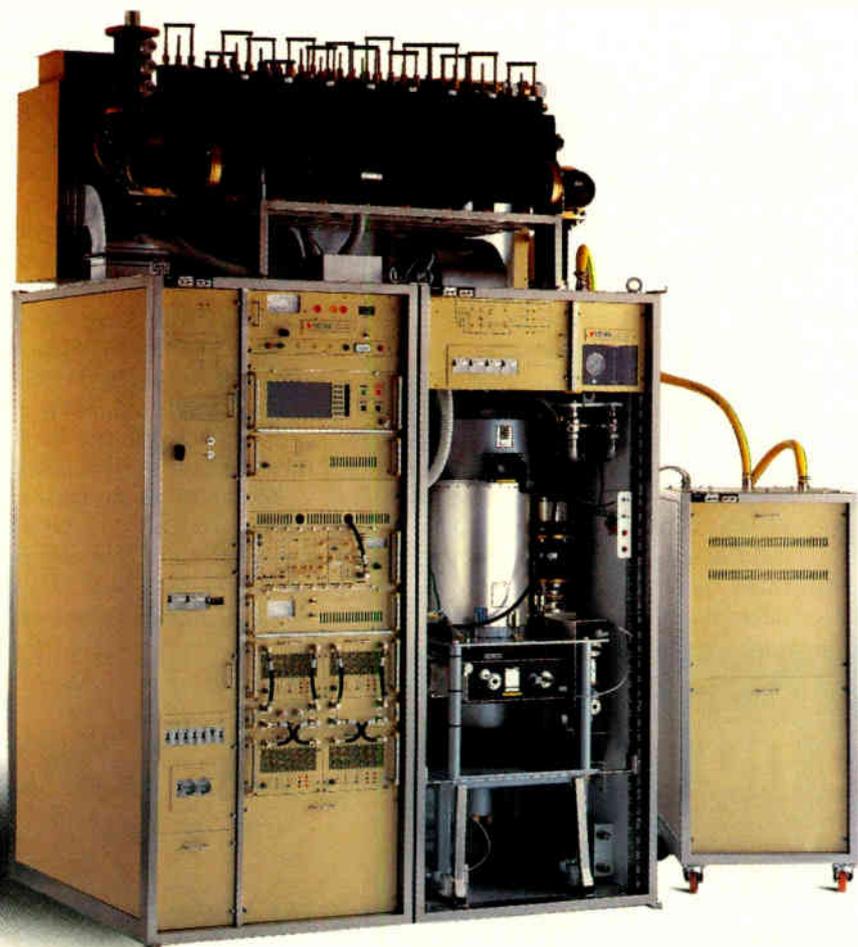
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BRIEF

Canon has introduced the J9aX5.2B.IRS/IAS featuring the company's internal focus technology that offers wide-angle (5.2mm) shots with minimal distortion.

Focal length is 5.2 to 47mm, equalling 94mm with a 2x extender.

Canon's W83 add-on wide converter provides a wide angle of 4.3mm with a horizontal angle of view of 90 degrees.

For further information, circle Reader Service 108.



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Frezzolini Electronics has introduced the Mini-Arc light, a miniature HMI, high output, daylight temperature light. The Mini-Arc provides 5500°K of temperature light, drawing on 24 W of power to output the equivalent of a 100 W quartz bulb. The compact light is self-contained with built-in ballast and controls.



For further information contact the company in the U.S. at telephone: +1-201-427-1160; FAX: +1-201-427-0934; or circle Reader Service 10.

AUTOMATION SYSTEM

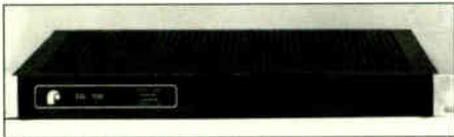
Snap, a PC-based touch screen controlled playout automation system, has been released by Procion. Snap provides a two-channel playout with mixer control or four channels without. Additional channels can be added as desired. Event lists may be entered from a spreadsheet to compile the Automated Playout screen.

For further information contact the company in the U.K. at telephone: +44-1734-756-936; FAX: +44-1-1734-756-937; or circle Reader Service 90.

DATA GENERATOR/INSERTER

The GIL100 digital data generator/insertion from Fougerville Video comes in a 19" IU rack and conforms to CCIR-601 and 656 norms. It accepts 8 or 10 bit inputs and can be used as either a data generator or generator/insertion. The GIL100 also features a 4:2:2 10-bit processing, varying size and number of logos: 256 logos 64 x 64, or 16 logos 256 x 256.

For further information contact the com-



pany in France at telephone: +33-1-3418-1079; FAX: +33-1-3418-1566; or circle Reader Service 114.

ZOOM LENSES

Panther GmbH has modified the Canon lenses for super 16 and standard 16mm film by reinforcing the mechanics for use of follow focus and adjustable fluid drive; and by including a zoom with focal length 10-160 (20-320)mm/lens speed T2.4. Also available is the Canon lens 8-64mm T2.4 with an integrated focus doubler.

For further information contact the company in Germany at telephone: +49-89-613-1007; FAX: +49-89-613-000; or circle Reader Service 27.

EDITOR SOFTWARE

The Virtuoso hybrid editor from AVS Graphics, is capable of working with conventional tape formats and digital storage



media. Virtuoso can be integrated with Tektronix's multichannel Profile disk recorder, using ethernet to perform real-time non-linear editing.

For further information contact the company in the U.K. at telephone: +44-1252-717-151; FAX: +44-1252-717-073; or circle Reader Service 71.

DIGITAL VIDEO RESOLUTIONS

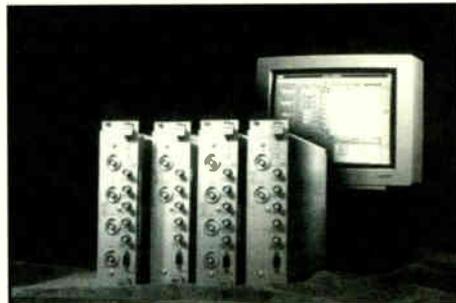
D-Vision Systems Inc. has introduced four new 60-field-per-second scaleable Digital Video Resolutions (DVR). The DVRs are part of Windows-NT/95-based digital nonlinear editing products, and can

run in single-field mode and be scaled back to reduce data rate for draft editing or network playback. The new models are DVR/35, DVR/70, DVR/100 and DVR/160 (35, 70, 100, and 160KB, respectively, per field).

For further information contact the company in the U.K. at telephone: +44-181-540-0515; FAX: +44-181-543-9374; or circle Reader Service 133.

WAVEFORM ANALYZERS

Tektronix has introduced the TVS600 series VXI waveform analyzers, which offer five Gigasamples/second on four

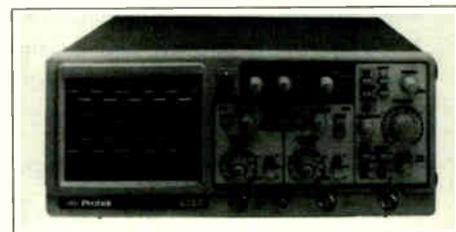


channels simultaneously. The analyzers also include 1 GHz bandwidth and eight bits of vertical resolution, and are C-size VXI cards. The TVS621 and TVS641 analyzers provide two or four input channels respectively.

For further information contact the company in the U.S. at telephone: +1-503-627-6364; FAX: +1-503-627-4486; or circle Reader Service 40.

OSCILLOSCOPE

A 40 MHz dual trace, single-time base oscilloscope has been released from HC Protek. The model 6504 provides X10 sweep magnification, and a CRT display for normal and magnified traces. Other



features include an alternate trigger for displaying unrelated signals, autofocus, Z-axis input and CH1 output, and low 35 watt power consumption.

For further information contact the company in the U.S. at telephone: +1-201-767-

7242; FAX: +1-201-767-7343; or circle Reader Service 28.

DISTRIBUTION AMPLIFIER

Tekniche's 6021 serial digital distribution amplifier has automatic input standard detection and will optionally give analog composite (PAL/NTSC) outputs when the input format is serial digital composite (143/177Mb/s) or serial digital component (270Mb/s). Other options include EDH insertion and checking, and a serial diagnostics port

For further information contact the company in the U.K. at telephone: +44-1483-728-006; FAX: +44-1483-770-195; or circle Reader Service 123.

CAMERA/LOGGER PACKAGE

The Sony UVW-100PK camera and the BVE logger have been combined as a package, offering automatic shot or take incre-



menting, automatic detection and storage of shot start/stop points, recall and display of in/out times, and storage for 100 rolls with 700 events with rechargeable batteries.

For further information contact the company in the U.K. at telephone: +44-932-816-269; FAX: +44-932-817-011; or circle Reader Service 66.

STUDIO LENS

A 2/3 inch format Ah20x7ESM studio lens has been introduced by Fujinon, featuring wide angle field of view, fast aperture, FIND diagnostics system and optional Ratio Converter. The Ratio Converter compensates for change in field angle performance when camera is switched from 16:9 to 4:3.

For further information contact Pyser-SGI Ltd. in the U.K. at telephone: +44-1732-864-111; FAX: +44-1732-865-544; or circle Reader Service 53.

PORTABLE PEDESTAL

Heiwa Seiki Kogyo Co. has introduced the Libec Pedestal P100 portable pedestal. The P100 features a maximum loading weight of 30 kg, including weight of the head; an air pressure system that includes bleed and relief valves and allows adjustment while using the pedestal; and double wheel casters with a track lock mechanism and cable guards.

For further information contact the company in Japan +81-489-95-1301; FAX: +81-489-97-0804; or circle Reader Service 135.

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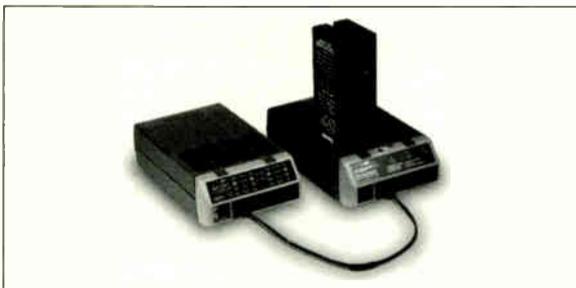


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This new four channel, autoranging model fast charges any four batteries in the range of 12 to 30V (2-10Ah), via XLR4(M) connectors, sequentially. This fast charging technology which was previously only available to lower voltage battery users now enables the charging of higher voltage batteries in 1 to 2 hours. Measures only 9.5"x5.5"x3" and weighs less than 2.5 lbs.

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FREZZI MFIC MINI-FILL

Frezzi's popular Mini-Fill light is now available with built-in dimmer control and has won Videomaker's product of the year award. The MFIC Mini-Fill with pulse width modulation, provides the performance of a 50 to 100 Watt light for added flexibility in different shooting environments. Originally designed by Frezzolini for the first televised Mount Everest climb (ABC Network) the Mini-Fill has become a light of choice among broadcasters.

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FREZZI NPXI BATTERY

Frezzi's NPXI batteries are computer verified. They are compatible with all equipment that uses NPI type batteries. Frezzi's NPXI is readily fast chargeable and is a high capacity eleven cell NiCd battery. This battery extends the running time of cameras even those with high lock out voltages. Overload protected via self resetting cut out, Frezzi's NPXI is suited for use with Frezzi's latest advanced microcomputer controlled autoranging fast chargers.

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FREZZI MFNPI-HC

A new Mini-Fill combined with the NP-I battery holder and universal clamp. Ready to mount directly to your professional camera. Simply attach and plug in any NP-I battery. The most cost effective on-camera professional light.

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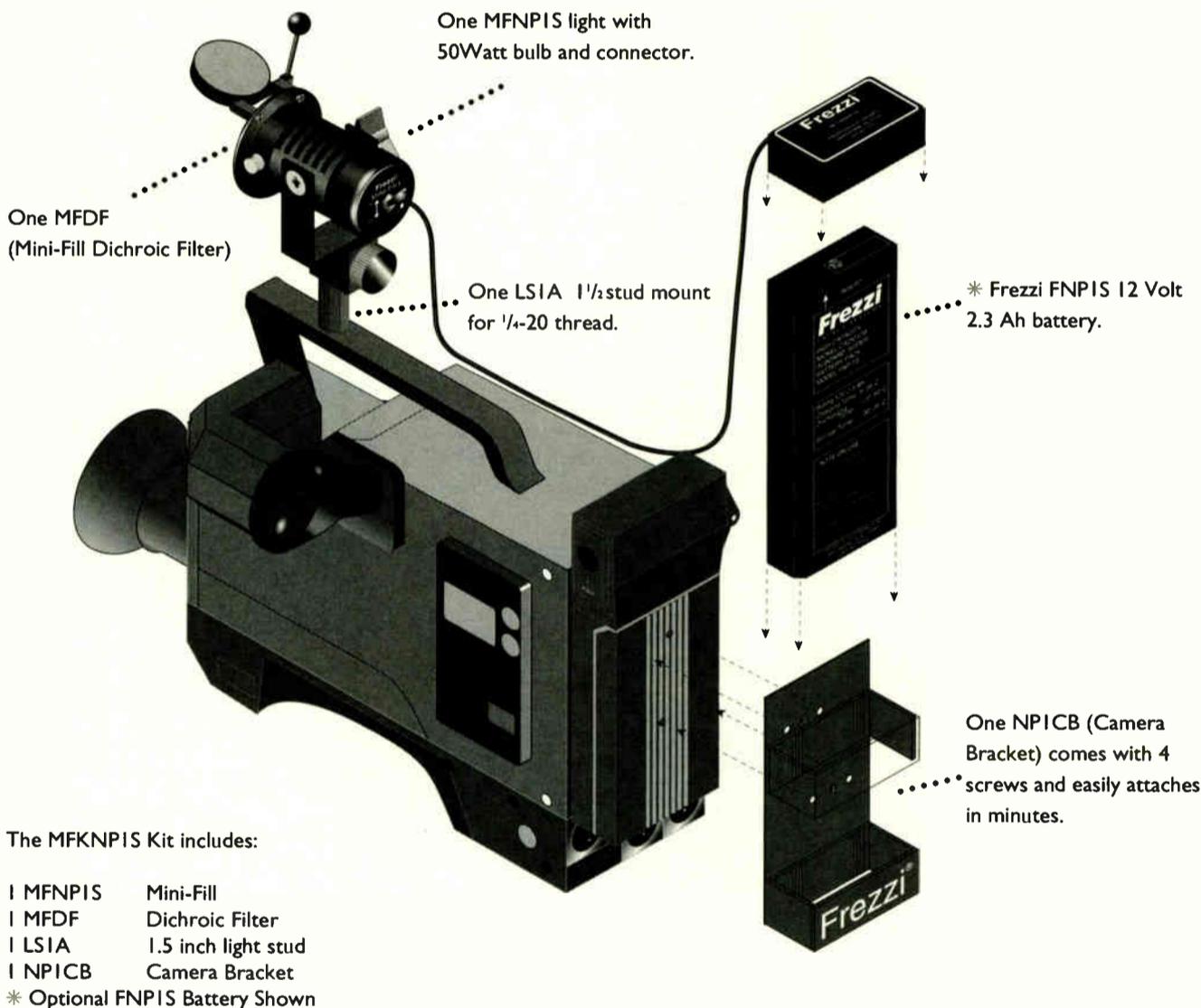
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Frezzi[®]
ENERGY SYSTEMS

Technical Data Sheet for Frezzi NP Bracket System

Model MFK-NPIS Light Kit



The MFKNPIS Kit includes:

- I MFNPIS Mini-Fill
- I MFDF Dichroic Filter
- I LS1A 1.5 inch light stud
- I NPICB Camera Bracket
- * Optional FNPIS Battery Shown

MFNPI Lighting System

The MFNPI is a Mini-Fill light with a NP battery connector designed for professional videographers who use NP batteries. Designed to work with the MFNPIS, is the NPICB (NPI Camera Bracket) which attaches to the back of your existing Sony battery box and provides an extra slot for a NP battery of any

manufacturer to power the MFNPIS. Compared with other lighting systems, our cost effective bracket attachment will let you use your existing NP's to power the Mini-Fill. With a *50 Watt bulb, you will get over 30 minutes of light and with a 20 Watt bulb, you will get over an hour worth of light.

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*50 Watts is the maximum bulb recommended for use.

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USER REPORT

Around the World with Ikegami

MAN QC Creations Relies on The HL-V55 Camera Through Rain or Shine

by Sherie Lynn Kelley
Creative Director
MAN QC Creations Inc.

DANIA, Florida

A typical shoot for MAN QC Creations involves trekking to the top of the Andes Mountains, canoeing through Amazon waterways or bouncing over Arabian deserts. The cameras that bring back our shots — many of which are once-in-a-lifetime — must perform under the most extreme conditions.

We chose two Ikegami HL-V55 Beta SP cameras for the production of our on-going LEGENDS documentary series. Our first episode, the story of an expedition's search for Inca gold in the Andes Mountains, helped in the decision to purchase these particular high-performance FIT three-chip cameras.

Prior to leaving, I learned the mountain range where we would be shooting was cursed with the most horrendous weather — near-freezing temperatures, continual rain, fog, sleet or snow all year. We would have to live in tents for several months at a time.

ON THE LIGHTER SIDE

We decided that the HL-V55's one-piece design, with its built-in Beta SP recorder, would have fewer connections that could corrode or cause problems in a perpetually wet environment.

Another factor was the weight. We would be hiking and climbing at altitudes in excess of 14,000 feet. Up there, oxygen is scarce and even a canteen starts to feel like a sack of bricks. The Ikegami HL-V55 weighs only 15.4 pounds, including the lens, viewfinder and battery. At the time of purchase, it was the lightest of the OB cameras.

LEGENDS producer-director, Michael Mancusi, also had his own criterion: camera imagery. He has been shooting for 25 years and claims he has always been "an Ikegami man."

"Ikegami color imagery is the richest and the most true-to-life," he says.

The HL-V55 met Mancusi's picture quality expectations with its 400,000 pixels, 700 lines of resolution and a signal-to-noise ratio of 62 dB for clear, crisp detail and no smear or comet-tailing.

When the military helicopters dropped off our crew of five on the top of an Andean peak, we knew there was no turning back and that our Ikegamis had better be workhorses. We were now part of a 65-person expedition whose mission was to dive lakes, explore caves, and use high-technology search equipment to unravel clues to the burial place of a lost ransom for an Inca king. Capturing all this action meant that the cameras had to be ready at a moment's notice, as we never knew what each hour would bring.

The 30-degree temperatures and the continual icy rain worried us a little. We kept the HL-V55s in plastic covers much of the time. Because of our remote location and limited fuel, we could not use heated covers to keep the cameras warm. Instead, we just kept the HL-V55s acclimated to the outside tempera-

ture, storing them in an unheated tent when not in use. They performed perfectly.



MAN QC Creations powers up the Ikegami HL-V55 in all sorts of conditions.

Much of the exploration took place in caves, where our cameraman had to rappel a hundred feet or scrape through narrow passages. The HL-V55s were well-balanced and easy to maneuver in these tight spots.

The HL-V55's low-light sensitivity, due to Ikegami's F8 chip, was critical to much of our cave shooting. Even with only the bulb of a flashlight, the cameras captured the detail of chisel marks on the walls of a cave — a sign that the Incas had been there. And Ikegami's hypergain feature made it possible to shoot camp life at night when our only light was the moon.

Of course, long-term reliability is what

counts most. After seven months of shooting in harsh conditions, the expedition discovered a promising ancient underground chamber. The moment when the group broke through the wall into the unknown was no time to worry about electronic fail-

ure. Though the treasure was not in that chamber, it was a significant archeological find and we got it all on tape.

The next trial for the HL-V55s was surviving heat and humidity in the Amazon rain forest. Our story led us down the tributaries of the Amazon river, where we canoed shallow streams and lived in bamboo houses with native people.

It was officially the dry season, but that did not stop the daily rain showers or the flash thunderstorms, which often caught us by surprise while in the canoe. We scrambled to cover the cameras, then kept shooting right through the rain. When the rain stopped, thick mist hung from the jungle canopy and enveloped everything in a

sticky film. Still, our HL-V55s were unfazed and continued to record great images.

WEATHERING IT ALL

In total contrast to our wet experiences, both cold and hot, our next episode took us to the Arabian desert. In a vast sea of sand called the "Empty Quarter," an archeology team discovered a mythical lost city that, according to legend, had been the richest city in Arabia 4,000 years ago.

The desert air was brittle. Our skin turned the consistency of newspaper. There was no shade — not a single tree or even a cloud. Our shoot required that we climb 100-foot sand dunes in scorching midday heat — nearly 130 degrees. While being very careful of blowing sand, we shot the quintessential Arabian landscapes: ripples of shadow and light, the sharp edge of a wind-sculpted dune, the detail of sparkling grains of sand, the brilliant hues of a desert sunset. The HL-V55s, as usual, never let us down.

I once talked to the technical department at Ikegami Electronics about our adventures. I was told the rigors we have put our cameras through exceed the factory test conditions for performance and durability. But they were not at all surprised by our results.

While our shoots may have weathered our crew and given our producer some premature gray hairs, our Ikegami HL-V55 cameras do not seem to be showing any signs of wear. Their pictures are as gorgeous as they were on the first day. ■

Editor's note: Sherie Lynn Kelley has been creative director and head writer for MAN QC Creations Inc. in Dania, Fla. for the past 10 years. A multiple Telly-award winning scriptwriter, she was the only woman on the 64-person expedition to the Andes. She is also a free-lance writer and lives in Fort Lauderdale.

The opinions expressed above are the author's alone. For further information, contact Ikegami (telephone: +813-5700-1128; AX +813-5700-1130), or circle Reader Service 19.

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U S E R R E P O R T

CPC Puts Shooters on the Road

by Jay Hartigan

Co-Owner
Shooters Inc.

CHERRY HILL, New Jersey

Since 1981, Shooters Inc. has been providing television production services worldwide. We are on the road 12 months a year shooting everywhere from the White House to Buckingham Palace. An important part of our field production service is providing prompting to our clients.

Because we are always on location, the prompting program we use must be absolutely reliable and easy to use and must run on portable computers. Based on these requirements and others, we chose the CPC-1000 SmartPrompter from Computer Prompting & Captioning Co. (CPC).

EARLY DAYS

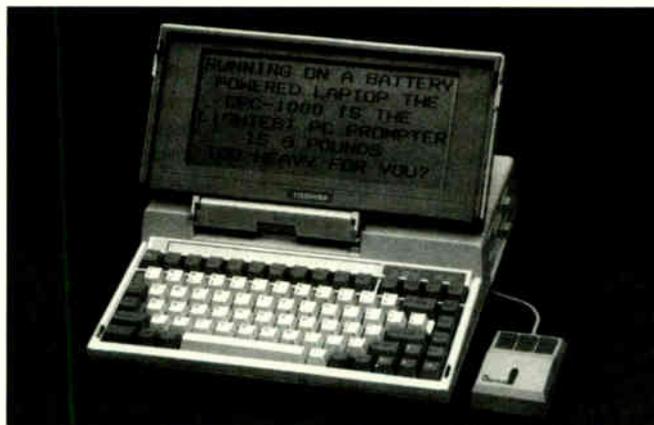
Back in 1987, when almost everyone was using large, cumbersome paper prompters we wanted to offer our clients the ease of computer-assisted editing. We initially ran the SmartPrompter on what passed as a portable computer back then, a 30-pound sewing machine size, Compaq Portable II computer. We have been running it on notebook computers for the past few years.

The CPC-1000 SmartPrompter features:

- A built-in word processor that allows us to make quick changes with text that the client can easily read. When we bought the system, this meant our operators no longer had to handwrite changes, which was time-consuming and difficult for talent to read.
- ASCII file-acceptability. This allows clients to use their own scripts and gives them more control of their production by allowing them to work on the script up until the moment shooting begins.
- Changeable fonts. The talent can choose the font style that is easiest to read. We have found this gives the talent some control over the situation and thus helps them relax

somewhat. We often put older corporate executives with less-than-perfect eyesight on-camera. They really appreciate the extra-large fonts.

- Bookmarks. These are pre-designated places in the text that can be reached instantly. When we shoot or rehearse scenes out of order, our operators can get to these points in an instant, saving time. We never want to hear "Waiting for Prompter!"



The CPC SmartPrompter

Over the years, CPC has provided us with regular free upgrades of the software, such as compatibility with VGA notebook computers. The company has also been very helpful with technical advice when upgrading our prompter computers. Frankly, we were afraid our operators would take a while to get used to a computer prompter after using paper for so many years. But after using the SmartPrompter, there is no way we would ever go back to using paper.

NEW UPGRADE

Recently, CPC provided us with a completely new version of the prompting program, the CPC-1000 SmartPrompter II. We were reluctant to use a new program, since we were happy with the updates of the original SmartPrompter program and were very familiar with its use. After some cajoling, we gave the SmartPrompter II a try.

To our amazement we have found the new SmartPrompter II is twice as good as the "old" SmartPrompter. It comes with many new helpful features, such as:

- Pull-down menus. This gives the SmartPrompter II an up-to-date look. From a functional point of view, the pull-down menus let our operators maneuver between menu items easily and quickly by pointing and clicking instead of having to type out DOS commands.
- Direct acceptance of MS Word and WordPerfect files, in addition to ASCII files. Since the vast majority of our clients use one of these two word processors, it is time-saving and convenient for our operators to load these files directly. There is no more time-consuming re-entering of scripts. This is especially helpful with technical or medical scripts where we do not know what we are writing about.
- Fifteen proportionally-spaced fonts. This greatly enhances the readability of the fonts, and we have found that it improves talent performance. The 15 new fonts are crisp and clear.
- Highlighting text. Individual words can not only be underlined, but also italicized and colored. "Hot" keys, such as "Alt-I," let us italicize single words just by pressing these keys while the cursor is on the word

we want to italicize. This enhances talent performance by letting them emphasize individual words and phrases.

- Built-in spell check. This has become a necessity in a prompter; it allows us to clean up scripts at the last second. Also, when we do have to enter a script we can blast through typing as fast as we can and then fix any errors quickly. This is a big time-saver. We no longer blow a scene because the talent cannot read a misspelled word.

- Fast Keys. These keys let our operators invoke any major function (e.g., scroll, spell check, change font) without even having to go to a menu. We simply press one or two keys and the function is carried out, another big time-saver.

- Storylist. We use this feature at corporate meetings with numerous speakers. These meetings sometimes last four or five hours. To use the

Storylist feature, our operators create a list file containing the title of each speech. The speeches are scrolled in the order in which they are listed in that file. The beauty of it is that by simply changing the order of the titles in the list file, we can change the order in which the files are scrolled as quickly as some directors change their minds.

- Technical Support. CPC's technical sup-

port has always been excellent. Whenever we call, whether we have a software or hardware question, we always get someone who can help. If we have a really difficult question, we are able to speak with Dr. Dilip Som, CPC's director of research and development. Dr. Som has always been a tremendous help to us.

LEARNING CURVE

The only problem with the new program is that it has so many features that it is hard to keep them all in mind while learning the new program. But with the quick-reference chart CPC provides, we can at least see all the features at a glance. We are getting more confident on the system.

Since 1987, our experience with the CPC-1000 SmartPrompter has shown that the software is very reliable and easy to use. It now seems to have a dated look, but it has always worked for us.

Although we were reluctant to replace the "old" SmartPrompter with the "new" SmartPrompter II software, we now believe the SmartPrompter II will let our prompter operators work more efficiently and will provide the talent with improved text. ■

Editor's note: Jay Hartigan, co-owner of Shooters, has been involved in video production for the past 22 years. As well as being an owner of the production company, he is usually out on shoots as a sound mixer. He also provides MIS services for Shooters and is the company's director of engineering.

The opinions expressed above are the author's alone. For more information on Computer Prompting Corp.'s CPC-1000 SmartPrompter II package, contact the company (telephone: +1-202-966-0980; FAX: +1-202-966-0981), or circle Reader Service 67.

T E C H N O L O G Y U P D A T E

Canon Forges an Optical Link

by Kazuya Eguchi
Marketing Manager
Canon Europa

AMSTELVEEN, The Netherlands

Wireless transmission by laser has been a subject of study for more than 20 years. Although it was once the focus of leading research efforts by several organizations, the success of 20 dB/km optical fiber eventually drew much of the attention. Today, fiber technology has firmly established itself in the telecommunications industry and is a major factor in the development of broadband data networks around the world.

Lately, however, the idea of optical wireless transmission has gained followers again. Why has this re-emergence taken place? There are a number of factors.

BETTER AND CHEAPER

The first is the improvement of semiconductor devices, such as the laser diode and the avalanche photodiode (APD). The mass production of laser printers, laser copiers, optical disc devices, compact discs and other products has contributed greatly to the reliability and cost reduction of semiconductors. It is now

possible to obtain very reliable, high-quality laser diodes for output devices, and avalanche photodiodes for input devices.

A second reason for the renewed focus is the limitation of radio waves. Thanks to fiber technology, the capacity of cable networks has increased dramatically. However, the wireless media exist under different circumstances. Radio waves are a limited resource controlled by government authorities. Zone allocation, multiplex transmission and compression are all being examined and used as countermeasures to the scarcity of spectrum.

With the multimedia era just around the corner, various data, voice, video and audio transmissions need to be delivered bidirectionally and on demand in high-resolution, color formats. This is the concept behind B-ISDN networks. With its high frequency, optical communication has broadband/wideband characteristics, something that is not feasible with radio wave solutions because of the bandwidth limitations.

In the development of the Cano-Beam, Canon's wireless optical OB transmission system, Canon targeted two types of users: broadcasters interested in video and audio transmission, as well as HDTV; and Local

(continued on page 38)

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- PCM digital stereo and single channel AFM Hi-Fi recording. XLR balanced audio connectors.
- Quick start 1.5" viewfinder with 550 lines of resolution plus Zebra pattern video level indicator and color bar generator. Also, quick-start recording - takes only 0.5 seconds to go from REC PAUSE to REC MODE for immediate recording in the field.
- Built-in 8mm Time Code generator records absolute addresses. (Either non-drop frame or drop frame mode.) Furthermore the EVW-300 incorporates a variety of time code features such as Time Code PRESET/RESET, REC RUN/FREE RUN & User Bits.
- A variety of automatic adjustment functions for different lighting conditions:
 - ATW (Auto Trace White Balance) - when ATW is turned on optimum white balance is always ensured during recording, even for changes in color temperature. Conventional white balance adjustment is still provided with the Auto White Balance.
 - AGC (Automatic Gain Control) - in addition to manual Gain Up AGC provides linear gain up in the range of 0 dB to 18 dB.
 - Intelligent Auto Iris - for situations where the lighting between subject and background is different (subject is underexposed) the Intelligent Auto Iris automatically examines the scene and adjusts the lens iris for proper exposure.
- Selectable Gain-up from 1 dB to 18 dB in 1 dB steps for Mid and High positions.
- Clear Scan function - provides a variety of selection of shutter speeds ranging from 60-200 Hz allowing recording of almost any computer display without flicker.
- Compact, lightweight (12 lbs with NP-1B) ergonomic design provides well balanced and extremely comfortable operation.



MILLER Fluid Heads & Tripods

The silky, smooth action of each Miller Fluid Head is the product of the finest quality cast and machined parts functioning together in a fluid environment. They are engineering masterpieces, built to operate under extreme conditions. They're engineered to exceptionally fine tolerances and their mechanisms are protected effectively against ambient moisture and dust.

Miller 20 - Series II Fluid Head

- Continuously adjustable fluid drag control
- Sliding/Quick Release camera platform
- Weighs only 4 lbs. will handle cameras up to 22 lbs.
- Counterbalance system designed to compensate for nose heavy or tail heavy camera configurations, and permits fingertip control of the camera throughout the tilt range.
- Includes independent pan and tilt locks, bubble level, dual pan handle carriers and integrated 75mm ball levelling.



#420 - 2-Stage Tripod

- Two extension sections on each leg. Operates at low levels as well as normal heights without the use of mini legs.
- High torsional rigidity, no pan backlash
- Weighs 6.6 lbs., supports 50 lbs.
- Very portable, folds to 27"
- Includes 75mm (3") ball levelling bowl with model 420 model 402 includes 100mm (4") ball levelling bowl.

System 20 Catalog #338

- Miller 20 II fluid head
- 420 Lightweight tripod
- 410 tripod spreader with foot pads.....1549.00

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- Weighs only 4.5 lbs., supports up to 30 lbs.
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- Fast one turn, captive leg locks
- Includes 75mm (3") ball levelling bowl

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- The Vision SD 12 and SD 22 are the first heads with the "Serial Drag" pan and tilt system. The system consists of a unique, permanently-sealed fluid drag and an advanced lubricated friction drag. So for the first time, one head gives you all the advantages of both fluid (viscous) and lubricated (LF) drag systems - and none of their disadvantages. Achieve the smoothest pans and tilts regardless of speed, drag setting and ambient temperature.
- Simple, easy-to-use external control for perfect balance.
 - Patented spring-assisted counter-balance system permits perfect "hands-off" camera balance over full 180° of tilt.
 - Instant drag system breakaway and recovery overcome inertia and friction for excellent "whip pans".
 - Consistent drag levels in both pan and tilt axis.
 - Flick on, flick off pan and tilt caliper disc brakes.
 - Greater control, precision, flexibility and "touch" than any other head on the market.
 - Touch activated, time delayed illuminated level bubble.
 - Working conditions from as low as -40° up to +60°C.
 - SD 12 weighs 6.6 lbs and supports up to 35 lbs.
 - SD 22 weighs 12.7 lbs and supports up to 55 lbs.

Vision Two Stage ENG and LT Carbon Fibre ENG Tripods

- The ultimate in lightweight and innovative tripods, they are available with durable tubular alloy (Model #3513) or the stronger and lighter, axially and spirally wound carbon fiber construction (Model #3523). They incorporate torque safe clamps to provide fast, safe and self-adjusting leg clamps.
- "Torque Safe" requires no adjustment. Its unique design adjusts itself as and when required, eliminating the need for manual adjustment and maintenance and making for a much more reliable clamping system.
 - New hip joint eliminates play and adds rigidity.
 - They both feature 100mm levelling bowl, fold down to a compact 28", and support 45 lbs.
 - The #3513 weighs 6.5 lbs and the #3523 CF (Carbon Fibre) weighs 5.2 lbs.



Vision 12 Systems

All Vision 12 systems include #33643 SD 12 dual fluid and lubricated friction drag pan/tilt head, single telescoping pan bar and clamp with 100mm ball base.

SD-12A System

- 3364-3 SD-12 Pan and tilt head
- 3518-3 Single stage ENG tripod with 100mm bowl
- 3363-3 Lightweight calibrated floor spreader.

SD-12D System

- 3364-3 SD-12 Pan and tilt head
- 3513-3 Two-stage ENG tripod with 100mm bowl
- 3314-3 Heavy-duty calibrated floor spreader

Vision 22 Systems

All Vision 22 systems include #3386-3 SD-22 dual fluid and lubricated friction drag pan and tilt head, single telescoping pan and clamp with dual 100mm/150mm ball base.

SD-22E System

- 3386-3 SD-22 Pan and tilt head
- 3219-52 Second telescoping pan bar and clamp
- 3516-3 Two-stage EFP tripod with 150mm bowl.
- 3314-3 Heavy-duty calibrated floor spreader



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- Carry it in crowds - crush proof aluminum guard protects viewfinder.
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- Holds camera with on-board battery attached.
- Lid closes with Velcro for quick-opening or secure with full-length zippers.
- Two trim exterior pockets and clip board pocket.
- Dual purpose rear pouch is an expandable battery chamber or all-purpose pocket.

Panasonic

AG-DP800 **UPERCAM** S-VHS 3-CCD Digital Signal Processing Camcorder



- Three high-density 380,000 pixel CCDs with half-pitch pixel offset achieves over 700 lines of horizontal resolution, a S/N ratio of 60dB and remarkable sensitivity of 18 at 2000 lux. Additionally the Frame Interline Transfer (FIT) CCDs minimize vertical smear, so you maintain impressive picture quality even in very bright illumination.
- Digital Signal Processing circuitry provides four valuable benefits:
 - 1) Consistently reliable up-to-spec performance.
 - 2) Fine adjustment of a wide range of parameters.
 - 3) Memory storage and instant recall of specific settings.
 - 4) More flexible and higher quality image processing, as well as easier maintenance.

Some of the DSP circuits and their functions:

- CHROMA DETAIL - This function compensates for poor resolution in the high chroma areas of the picture.
- DARK DETAIL - Determines optimum degree of contour enhancement in dark areas to deliver crisp, natural-looking images
- HIGHLIGHT COMPRESSION - Expands the dynamic range of the highlighted areas and prevents halation. The highlight compression circuit allows a wide dynamic range producing detailed images even against bright backlight or daylight.
- FLARE CORRECTION CIRCUIT - Compensates for unsteady black caused by light or by a subject's movements.
- Six Scene File modes. There are two user modes for custom digital parameter settings including Horizontal Detail, Vertical Detail, Chroma and Dark Detail, and Color Correction. The four preset modes are normal, fluorescent, special and Sparkling.
- In addition to regular AGC (Automatic Gain Control), Supercam has a Super High Gain mode. At F1.4 this enables shooting under illumination as low as 2 lux while retaining detail and color balance.
- Synchro Scan function allows flicker-free shooting of computer monitors. Electronic shutter increments can be set variably from 1/61 seconds to 1/253 of a second.
- Built-in internal time code generator lets you record with SMPTE LTC/VITC (Longitudinal/Vertical Interval) time code
- Two hi-fi stereo audio channels with a dynamic range of 80 dB, as well as two linear audio channels with Dolby NR. Normal/Hi-Fi recording is selectable. Uses XLR connectors to further ensure high-quality sound.
- Phantom power can be supplied to an optional microphone. Power can be switched off to prevent battery drain when not in use.

JVC GY-X2B 3-CCD S-VHS CAMCORDER



- Newly designed three 1/2" CCD image sensors deliver 750 lines of horizontal resolution and superb signal-to-noise ratio of 62dB
- New micro-lens technology provides exceptional sensitivity of F8.0 at 2000 lux and LOLUX mode lets you shoot with almost no light! Shoot superb footage with excellent color balance at a mere 1.5 lux
- Variable Scan View allows flicker-free shooting of a computer monitor.
- Quick Record Mode - when turned on the camera is set to the auto iris even if lens is set at manual. Also activated is (ALC) Automatic Level

- Control and EEI Extended Electronic Iris which provides both variable gain and variable shutter. Now you can shoot continuously from dark room to bright outdoors without having to adjust gain, iris or ND filter.
- Full Time Auto White circuit lets you move from incandescent to fluorescent to outdoor lighting without changing white balance or the filter wheel.
- Genlock input allow synchronization with other cameras.
- Dual output system allows camera output to be connected directly to an external recorder

KY-27UB 3-CCD Color Video Camera



- New 2/3" CCDs with 380,000 pixels (360,000 effective) with advanced electronics delivers resolution of 750 horizontal lines and reduced smear.
- Sensitivity of f/9.0 at 2000 lux. Min. illumination 7.5 lux with f/1.4 lens, +18dB.
- LOLUX mode allows shooting scenes that were previously impossible due to insufficient lighting. CCDs are maximized for low light sensitivity equivalent to an electronic gain of 24dB plus a JVC pixel readout system which provides an additional 6dB. Together they provide +30dB without the noise and picture degradation normally associated with this much gain. Excellent color balance is maintained even down to 1.5 lux illumination.
- Auto Shooting Mode where you only have to zoom, focus and record. All other parameters are controlled automatically.
- Enhanced ALC (Automatic Level Control) mode for continuous shooting in all light levels. This allows continuous automatic shooting from dark interiors to bright outdoors. Also features an aperture priority mode. Manually set iris for desired depth of focus, and ALC circuit automatically achieves correct video level.
- The Multi-Zone Iris Weighting system gives preference to objects in the center and lower portions of the picture. The Automatic Peak/Average Detection (APB) provides intelligence to ignore unusual objects such as bright lights.
- Auto knee circuitry extends a scene's light to dark dynamic range reproduction by up to five times without overexposure.
- Has large 1.5-inch viewfinder with 500 lines of resolution and SMPTE color bars. Status system provides audio levels, accumulated or remaining recording time and VTR operation. Also battery voltage and camera setup. Zebra pattern indication and safety zones with a center marker are also provided.
- Equipped with Variable Scan function. This allows flicker-free shooting of computer screens. Variable scan enables a precise shutter speed from 1/60.2 to 1/196.7 of a second in 256 increments to be set, matching a computer's scan rate. Almost any computer display can be clearly recorded.
- Star filter creates dramatic 4-point star effects. Users can also select from a wide range of optional filters.
- Advanced Memory System (AMS) stores customizable settings for various shooting conditions.
- Docks directly to the JVC BR-S422U, BR-S411UB and BR-S420CU professional S-VHS recorders. Optional adapters for docking to Hi-8 and Betacam SP are also available.

Sony BPPG products are not available for sale outside continental USA

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CHYRON Graphics

PC-CODI TEXT and GRAPHICS GENERATOR

A PC-compatible (ISA bus) board, the PC-CODI incorporates a broadcast quality encoder and wide bandwidth linear keyer to provide highest quality realtime, video character generation and graphics display. Used individually or configured with multiple boards, it is a complete and affordable solution for information displays, broadcast, video production or multi-media applications.

- Standard PC/AT ISA bus interface; 2/3 length form factor
- Fully-antialiased displays
- Less than 10 nanoseconds effective pixel resolution
- 16.7 million color selections • Fast, realtime operations
- Character, Logo and PCX Image transparency
- Display and non-display buffers
- Bitstream typeface library selection
- Variable edges: border, drop shadow and offset
- Variable flush
- Full position and justify control of character & row
- User definable intercharacter spacing (squeeze & expand)
- Multiple roll/crawl speeds
- Automatic character kerning
- User definable tab/template fields
- Shaded backgrounds of variable sizes and transparency
- User definable read effects playback; wipes, pushes, fades
- High quality composite & S-video (Y/C) encoder
- Integral composite and S-video linear keyer
- NTSC or PAL sync generator with genlock
- Module switchable NTSC or PAL operation
- Software controlled video timing
- Board addressability for multi-channel applications
- Auto display sequencing • Local message/page memory
- Preview output with safe-title/cursor/menu overlay
- Composite & S-video input with auto-genlock select

PC-CODI Hardware and Software Bundle

- **PC-CODI Board** - Fully anti-aliased text displays, 16.7 million color selection, sync generator with genlock
- **Win CG Software** - Provides complete control of all PC-CODI features from any PC with Windows 3.1. Win CG features include: High Speed Operations, Up to 99 message pages, Dynamic effects such as roll, crawl, fade, matrix wipes, pushed, peels and reveals. Win CG also provides control of the PC-CODI background generator and all page format controls such as center row/page, swap rows, and character font or color changes. A Safe Title/Margin generator with prompt channel is also displayed and controlled by Win CG.
- **PC Font Create** - Software to create anti-aliased fonts from Bitstream master typefaces supplied on 3 1/2" DOS compatible disks. Includes five master typefaces.
- **Windows Font Convert** - Windows Font Convert is a Windows software application that allows for Postscript and TrueType fonts loaded on a PC to be converted for use on the CODI. Control of such attributes as edges, italics and character weight are provided. In addition, custom character placement tables can easily be created with Windows Font Convert.

TAO EDITIZER 3.0

A/B Roll Edit Controller for PC or Macintosh

Hardware Features:

- 3 VCR control ports for true A/B roll. Each VCR port can support a different protocol.
- Dynamic Tracking (Slow Motion) Control provides a "fit and fill" type interface
- Built-in SMPTE Longitudinal (Audio) Time Code generator with external & internal video sync.
- Three multi-speed SMPTE Longitudinal time code readers.
- Auxiliary serial port for full control of Newtek Video Toaster, VGV 100, and Panasonic WJ-MX50 switchers. Also Hotronic AS-11, Pinnacle Alladin and Videonics MX-1
- Audio Control: Mackie CR-1604, TAO FollowMix, Alesis ADAT
- MPC Audio & MIDI support for embedding sounds and MIDI sequences in your EDL.
- DPS TBC II & III support - you can control two personal TBC cards and the Personal V-Scope from a serial port.



Software Features:

- VCR Control - up to three VCR controllers on-screen simultaneously. Jog and shuttle control. You can use either your mouse or keyboard.
- Tape Logging - Multit-event search, copy directly into edit list, multiple log windows may be opened simultaneously, log files or selected events may be printed to a window.

- Includes non-linear editing support
- Time code generator in Drop/Non-Drop frame.
- Multi-event controller/can handle up to 16,000 events. Interactive graphical "Time Line" window. Two audio-video splits per event, cut/copy/paste events.
- Preview, Perform, Review. Automatic and manual EDL ripple.
- Optional support for AutoDesk 3D Studio, Lightwave 3D.

NEW! EDITIZER-DTC

First editing controller to directly control JVC's BR-S500U and BR-S800U (Edit Desk) VCRs. The Editizer-DTC plugs directly into their 12-pin serial bus connectors and consistently achieves accurate edits through control of the BR-S500/800 capstan bump feature.

- TAO's 12-pin interface provides a direct line to JVC's precision-built VCRs and eliminates the need for hundreds of dollars worth of extra control boards needed in an A/B roll set-up.
- Direct connection also means that the two slots in each VCR remain free for other enhancement boards such as TBC cards.
- Editizer's time code generator window provides remote control of JVC's CTL Time Code Generator so there is no need to buy additional time code boards. Plus, this leaves both linear channels free for higher quality production work.

SPECIAL! COMPLETE A/B ROLL EDITING PACKAGE:

- JVC BR-S500U Players (2)
- JVC BR-S800U Edit/Recorder
- TAO Editizer DTC w/cables
- Panasonic WJ-MX30 Digital A/V Mixer
- 3 JVC TM-131SU 13" S-Video Monitors

JVC

S-VHS EDIT-DESK SYSTEM

BR-S500U Player • BR-S800U Edit Recorder
RM-G800U Edit Controller



Fast, accurate and professional style videotape editing is now more affordable than ever. This new "S" editing system, costing thousands less than ever before, consists of the BR-S500U Player/Feeder, the RM-G800U Edit Controller and the BR-S800U Editing Recorder. Linked via JVC's proprietary control bus, these three units offer all of the editing features professionals have come to expect. The VCRs feature a fast, heavy-duty tape drive similar to that used in JVC's renowned "22 Series", and the built-in CTL (Control Track) time code provides unparalleled accuracy and flexibility. Best of all the VCRs feature an open architecture for easy system upgradeability.

OPEN ARCHITECTURE

Two plug-in extension slots on the rear panels (for both VCRs) accept a variety of optional expansion boards. To build a PC-based editing system, add the SA-K27UA RS-232C interface board. To use with more sophisticated editing controllers, plug in the SA-K26U RS-422 board. Other boards include the SA-K28UA 45-pin board for connection to older JVC editing systems, the SA-N50U DNR board with time base stabilizer, and the SA-R50U VITC/LTC time code generator/reader.

CONTROL TRACK TIME CODE SYSTEM

Built-in time code reader (BR-S500U) and time code reader/generator (BR-S800U) utilize JVC's CTL (Control Track) Time Code System. This system records absolute tape address information (hours: minutes: seconds: frames) on the control track, and provides fast and accurate access to any frame on the video tape. This is far superior to control track counters that lose reference when the tape is removed. CTL Time Code can be added to the tape during the recording process or "post striped". For professional SMPTE time code operation there is the optional SA-R50U VITC/LTC Time Code Reader/Generator card.

RM-G800U EDIT CONTROLLER

- Has two GPIs allowing automatic triggering of special effects generators, switchers or audio mixers.
- Features automatic assemble and insert editing, audio insert editing, as well as preview/review for checking edits before and after editing, and goto for direct access to any edit point. A capstan bump function is provided to assure greater edit consistency.
- 8-digit LED counter indicates all edit data in either the TC or CTL mode. Switchable between player and recorder.
- The RM-G800U's Jog control is precise and responsive, making it easy to locate any frame on the tape. You can enter the Jog mode directly and switch between the player or recorder at the touch of a button. The Jog dial can also be used to enter and trim edit points and pulse timing from the GPI ports.

SUPERB VIDEO PERFORMANCE

Has latest picture improvement technologies for razor sharp images, with over 400 lines of horizontal resolution. Digital Y/C separation, chroma noise reducer, chroma aperture correction and a 3-line cross-talk cancellation all combine to offer outstanding image quality, even when dubbing down multiple generations.

32X VARIABLE-SPEED SEARCH

Front-panel search dials featured on both the BR-S800U and BR-S500U provide fast, accurate picture search at up to 32x normal speed. This is possible due to the incorporation of a heavy-duty direct-drive mechanism similar to that used in JVC's "22 Series."

FOUR-TRACK AUDIO

Each features two Hi-Fi stereo channels with a wide frequency response and a dynamic range of over 80 dB and two linear tracks. The linear tracks of the BR-S800U can be dubbed independent of each other and of the video. This is ideal for adding background music or sound effects to an existing audio track. There are two audio level meters, switchable between the Hi-Fi and linear channels. Separate input and output terminals are provided.

LEADER

5850C Vectorscope

An ideal companion for the 5860C Waveform Monitor, the 5850C adds simultaneous side-by-side waveform and vector monitoring. Featured is an electronically-generated vector scale that precludes the need for fussy centering adjustments and eases phase adjustments from relatively long viewing distances. Provision is made for selecting the phase reference from either (A or B) inputs or a separate external timing reference.

5860C Waveform Monitor

A two-input waveform monitor, the 5860C features 1H, 1V, 2H, 2V, 1 µs/div and 2V MAG time bases as well as vertical amplifier response choices of flat, IRE (low pass), chroma and DIF-STEP. The latter facilitates easy checks of luminance linearity using the staircase signal. A PIX MON output jack feeds observed (A or B) signals to a picture monitor, and the unit accepts an external sync reference. Built-in calibrator and on-off control of the DC restorer is also provided.

5864A Waveform Monitor

A fully portable waveform monitor for field use, the Model 5864A is a two-channel unit that provides 2H and 2V sweeps with MAG, FLAT and IRE response, and normal and X4 gain.



5854 Vectorscope

2-channel portable vectorscope is ideal for field use and features A and B phase reference, fixed and variable gain. Both units shown w/optional battery holder and NP-1 type battery.

SONY COLOR MONITORS

PVM-1350

13" Presentation Monitor

- Employs a P-22 phosphor fine pitch CRT to deliver stunning horizontal resolution of 450 horizontal lines.
- Equipped with beam current feedback circuit which eliminates white balance drift for long term stability of color balance.
- Has analog RGB, S-video and two composite video (BNC) inputs as well as 4 audio inputs.
- Automatic Chroma/Phase setup mode facilitates the complex, delicate procedure of monitor adjustment. Using broadcast standard color bars as a reference, this function automatically calibrates chroma and phase.
- Chroma/Phase adjustments can also be easily performed with the monochrome Blue Only display. In Blue Only mode video noise can be precisely evaluated.
- Factory set to broadcast standard 6500K color temperature
- Provides an on-screen menu to facilitate adjustment/operation on the monitor. The on-screen display can be selected in English, French, German, Spanish or Italian.
- On power up, automatic degaussing is performed.
- Also has a manual degauss switch to demagnetize the screen.
- Sub control mode allows fine adjustments to be made on the knob control for contrast, brightness, chroma and phase. The desired level can be set to the click position at the center allowing for multiple monitors to all be controlled at the same reference level.



PVM-1351Q

13" Production Monitor

- Has all the features of the PVM-1350 PLUS -
- Is also a multisystem monitor. It accepts NTSC, PAL and NTSC video signals. NTSC 4.43 can also be reproduced.
- Equipped with a SMPTE 259M Serial Digital Interface. By inserting the optional serial digital interface kit BKM-101C for video and the BKM-102 for audio the PVM-1351Q can accept SMPTE 259M component serial digital signals.
- Equipped with RS-422 serial interface. With optional BKM-103 serial remote control kit all of the monitor's functions can be remotely controlled with greater confidence and precision.
- Equipped with input terminals such as component (Y/R-Y/B-Y), analog RGB, S-video, 2 composite video (BNC) and 4 audio terminals for complete flexibility.
- Aspect ratio is switchable between 4:3 and 16:9 simply by pressing a button.
- Underscan and H/V delay capability. With underscan, entire active picture area is displayed. Allows you to view entire image and check the picture edges. H/V delay allows viewing of the blanking area and sync/burst timing by displaying the horizontal and vertical intervals in the center of the screen.
- Color temperature switchable between 6500K/9300K/User preset. 6500K is factory preset. 9300K is for a more pleasing picture. User preset is 3200K to 10,000K.

PVM-1354Q/PVM-1954Q 13" and 19" Production Monitors

All the features of the PVM-1351Q PLUS:

- SMPTE C standard phosphor CRT is incorporated in the PVM-1354Q/1954Q. SMPTE C phosphors permit the most critical evaluation of any color subject. Provides over 600 lines of horizontal resolution.
- The PVM-1354Q mounts into a 19-inch EIA standard rack with the optional MB-502B rack mount bracket and SLR-102 slide rail kit same as PVM-1351Q. The PVM-1954Q mounts into a 19-inch EIA rack with the optional SLR-103 slide rail kit.

SVP-5600 and SVO-5800 S-VHS Player/ S-VHS Editing Recorder

SVP-5600 and SVO-5800 features:

- By combining the high resolution (400 horizontal lines) of S-VHS with high quality signal processing techniques like DNR, Digital Field DOC and Chroma Process improvement, they deliver the consistent picture quality so essential to editing. They also incorporate a wide video head gap and track width (58mm) for stable and faithful picture reproduction.
- Each has a built-in TBC plus an advanced Digital Noise Reducer (DNR) for both the chrominance and luminance signals to eliminate noise during playback. At the same time, a field memory incorporated in the noise reducer removes jitter to provide sharp, stable pictures. The field memory, also includes a Digital Field DOC (Dropout Compensator), which replaces signal dropout with information from the previous field.
- They also incorporate Chroma Process Improvement circuitry for excellent color picture quality in the playback mode. This advanced circuitry greatly improves the chroma bandwidth, thus enabling sharper and clearer color picture reproduction.

ADVANCED EDITING FUNCTIONS

- For frame accurate editing, both machines employ a sophisticated servo system, an improved quick response mechanism and built-in LTC/VITC time code capability. This makes them ideal for animation and computer graphic recording, where a frame-by-frame editing function is indispensable.
- They are equipped with industry standard RS-422 9-pin serial interface. The 9-pin connector carries edit commands and time code data between the VCR and the edit controller.
- When connected to an RS-422 equipped edit controller, the SVO-5800 functions as an editing recorder. It performs assemble and insert functions and also provided audio split editing capability of normal audio tracks 1 and 2. In the insert mode, video, audio and time code can be inserted independently, or in any combination.

FOUR CHANNEL AUDIO SYSTEM

- They each incorporate four-channels of high quality video. There are two channels with Hi-Fi (AFM) tracks and two with longitudinal (normal) tracks. The Hi-Fi tracks provide a wide frequency response from 20Hz to 20kHz and a superb dynamic range of 90dB. The normal tracks incorporate Dolby B noise reduction for high quality sound reproduction. XLR connectors are used for the inputs and outputs for all four channels.



MULTIPLE INPUTS AND OUTPUTS

- Both machines employ composite and S-Video connectors. With optional SVBK-170 Component Output Board, they provide component signal output through BNC connectors. With the board, the VCRs can be integrated into Betacam SP editing systems.

USER FRIENDLY OPERATION

- Built-in character generator which superimposes characters on the "video monitor output" signal. This allows time code data, control track, menu setup and VCR function status to be shown on a monitor.
- For more efficient operation they have an on-screen setup menu which allows a variety of customized VCR mode operations. Programmed in the form of a layer structure, you simply go through the menu and initialize VCR operation.
- All parameters of the TBC, such as luminance level, chroma level, setup, hue, Y/C delay, sync phase and SC phase are easily controlled from the front panel, and can be remotely controlled from the optional UVR-60 TBC Remote Control, which also accesses field freeze function in the still mode and allows on/off control of chroma and luminance noise reducer.
- Quick and smooth picture search can be performed by either using an RS-422 equipped edit controller or the optional SVRM-100 Remote Control Unit. Recognizable color pictures are provided at up to 10x normal speed in forward or reverse.

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P6120HMP.....	9.49
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SONY

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POWER BELT SERIES

NRG power belts are the ultimate power solution. They provide the power to run lights, camcorders and decks without the fear of shutdown. Advanced high-density nicad power cells provide the lightest weight and longest service life of any power products made. Innovative features such as dual power outputs, power indicator, removable packs, plus accessories like high-speed chargers, solar panels and high-current cables combine to form the complete power solutions for any kind of users.



880 Power-Pro +

- High capacity quick-charge capable 12-volt 10-amp sintered nicad power pack (removable).
- Power chassis with dual 3-pin XLR inputs allows for pack interchange without shutdown.
- 2500-cycle cell life provides lowest cost per cycle.
- Microprocessor-controlled 5-step multi-color power indicator display.
- Belt with cellpack weighs only 4.9 lbs for all day comfort.
- Dual outputs allow simultaneous powering of two devices (eg. camera and light). Output configurations include cigarette lighter and 4-pin XLR in any combination.
- Charge in under 2 hours with the optional 650-III charger.
- Includes Power-Pro+ belt and power chassis, 12-volt 10-amp cell pack, model 600 overnight charger and comprehensive owner's manual. Fits waist size 30"-40". (Available in large size 40"-52" if needed).

970 Power-MAX

- Same features as 880 Power-Pro + Belt Plus-
- Highest capacity quick-charge capable 12 Volt 14-AMP sintered nicad power pack (removable).
 - Rugged high-grade, black leather belt case; chassis assembly with dual 3-pin XLR inputs for pack interchange without shutdown.
 - Belt with cellpack weighs a comfortable 7.5 lbs.
 - Includes Power-MAX belt and power chassis, 14-amp cell pack in 12V or 13.2 volt configuration, model 600 overnight charger, comprehensive owner's manual. Fits waist size 29"-44".
 - Also available in 13.2-Volt 14-amp version. The 13.2-Volt version offers 15-20% longer runtimes because industrial VCRs shut off at higher voltage levels. By not shutting off the Power-MAX is allowed to fully discharge, thus the longer running time.

NRG

VARA-LITE PRO Professional DC On-Camera Light

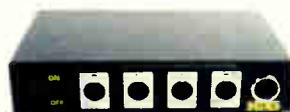
The revolutionary new NRG Vara-Lite Pro combines the ruggedness, light efficiency and versatility of NRG's best selling Versalight Pro (DC only) with a sophisticated electronic light management system. Thanks to on-board control IC's using NRG's Light-Gate technology, light intensity can be infinitely adjusted by the user within a range of 10% to 100% of the lamp's rated power. Now instantly adjust light output to exactly meet changing light requirements. Best of all, the Vara-Lite Pro virtually eliminates color shift and dramatically conserves precious battery power by using only the power required for the selected light level.



- Accommodates bulbs from 20W to 100W DC.
- Prismatic dispersion grid provides smooth even light output and reduced glare without changing light intensity.
- Sturdy all-metal tilt mounting bracket with ratchet action. Eliminates shake under action shooting conditions.
- Optional barn doors enhance light control capabilities.
- Front retainer assembly pops off for instant bulb access without the bother of screws.
- Rugged milled aluminum light head disperses heat and provides years of service under adverse conditions.

POWER STATION-2 SERIES

Just plug the PowerStation-2 into any AC outlet in the world and out comes perfectly regulated 12-volt DC power through four 4-pin XLR connectors and one cigarette lighter connector. It uses an advanced pulse-width-modulated power supply which allows for ultra-light weight and small size. It operates with little heat even at full output. The PowerStation-2 is the ultimate multiple-output professional power source for cameras, decks, lights, monitors, and a host of other video accessories.



- 85-264 volts worldwide auto-adjusting input (just plug in).
- Supply is fully protected from overcurrent.
- Ultra-light weight - under 3 lb.
- Outstanding 300,000 hour mean time between failure is far in excess of any other manufacturer.
- Ultra-efficient PWM regulation generates far less heat than linear type supplies.
- Provides the ultimate in performance and reliability in a universally compatible and compact package.

ARRI

ARRI, the most highly revered name in lighting for motion picture and discerning television production, is now available in its entirety at B&H. ARRI pioneered the HMI, now the industry standard for lighting Hollywood feature films.

ARRI Fresnels

Whether in spot or flood position, fresnel lighting creates a tight, even pool of illumination. The specially crafted fresnel lens directs light into parallel rays with a slight diffusion. "Lensless" instruments, (even with grid spot accessories) can neither duplicate the fresnel's quality nor its efficiency.

300 watt Fresnel

- ARRI introduces to the world of both video and still photography the precision and efficiency of fresnel lighting in a small, light weight location instrument. Choose this very small but powerful fresnel for either quick set-up news and documentary work or very precise, accurate studio shoots.
- Low expansion fresnel lens that's only 3.2" in diameter
 - 16" spot focus beam diameter of 1.4' at 5' to 5.6' at 20'
 - 60" flood focus beam diameter of 5.8' at 5' to 23.1' at 20'
 - 3200° Kelvin lamps for 120 or 220 volt AC
 - Truly rugged, well designed body w/extremely smooth but very tight, accurate control mechanisms
 - Lamps not included.

650 watt Fresnel

- ARRI's 650 watt fresnel instrument includes all of the 300 watt unit's features plus:
- Low expansion fresnel lens that's only 4.3" in diameter
 - 16" spot focus beam diameter of 1.4' at 5' to 7' at 20'
 - 60" flood focus beam diameter of 5.8' at 5' to 28.8' at 20'
 - 300, 500, or 650 watt 3200° Kelvin lamps for 120 volt AC or 650 watt 220 volt AC
 - Lamps not included



Similarly designed ARRI Fresnels are also available in 1000, 2000, and 5000 watt instruments with up to 11.8' lenses for stand mounting or studio hanging.

ARRILITE

- ARRILITE offers the fine precision professionals demand in adjustable general illumination lighting. Ample focus knobs provide wide spot/flood options. Units start at just 3.6 pounds
- ARRILITE 600 adjustable beam angle: 34° to 90° in 600 watts 120 volts AC; 250 watts at 30 volts; 420 or 650 watts 220 volts. Optional Safety Glass and Handgrip
 - ARRILITE 650 adjustable beam angle: 24° to 70° in 120 volts at 400 watts or choose 4 lamp options at 650 watts; 800 watts at 240 volts
 - ARRILITE 1000 adjustable beam angle: 24° to 65° in 120 volts only with 4 lamp options for 1000 watts
 - ARRILITE 2000 adjustable beam angle: 19° to 56° in 120 volts at 1000 or 2000 watts; 2000 watts at 240 volts
 - Lamps not included

ARRI Portable Kits

ARRI offers the "runnin and gunnin" video photographer plenty of kit options. The popular 300/650 Fresnel Combo Kit includes 2 - 300 watt and 2 - 650 watt Fresnels plus an extensive complement of stands, accessories, and a heavy duty case. ARRI's best selling Softbank I Kit comes with 1 - 300 watt and 2 - 650 watt Fresnels plus an Arrilite 1000, a Chimera Video Pro Small and Speedring as well as stands, accessories, and a heavy duty case.



Mini-Flood & Mini-Cyc

These ARRI instruments offer an excellent means of broad illumination. The Mini-Flood's beam spread is twice that of its light source to subject distance, flooding a 50' wide area from just 25' away. Both include a uniquely adjustable, integrated 2 Way Barn Door with Filter Holder. Designed for stand mounting, the Mini-Flood includes a 25' Cable. Typically used for the overhead washing of a cyc wall the standard Mini-Cyc includes a 30' Cable and Pipe Clamp.

- At 120 volts, 2 lamp options each: 500, 750, and 1000 watts; 220 volts 2 - 800 watt lamp options.

ARRISOFT 1000 & 2000

Call B&H for further information on ARRI's compact design for these steel construction soft fill lights and their unique Egg Crate, Filter Frame, and Reflector systems.

Complete line of HMI, Arri lights, Lighting kits and accessories available... Call

MAGNI



MM-400

The MM-400 is a combination waveform and vector monitor especially configured for the cost-conscious producer. A low-cost alternative to CRT-based waveform monitoring the MM-400 produces a video picture of the input signal's waveform and displays it on any video monitor. It provides a simple, affordable and accurate way to set camera levels before a shoot, or to check time base correctors and color fidelity in editing. Problems like hue shift, smearing, muddy contrast and loss of detail are easily identified for correction.

FEATURES:

- Converts waveform or vector display information into a standard video signal which can be displayed on a video monitor or routed around a video facility, no need for additional expensive monitors. Switch between pictures and waveforms at the push of a button.
- Incorporates an advanced SC/H phase and color frame indicator that is a must for editing and post production. At a glance it tells you if a signal's subcarrier-to-horizontal phase is properly adjusted and if the signal's color frame matches the house black burst connected to the MM-400 external reference input.
- Works anywhere and with any analog video format—NTSC, PAL, Component or S-Video. It has automatic detection between NTSC and PAL formats.
- Three loop-through inputs can accept three composite signals or one component, or RGB signal
- No complex displays or special test signals are required for component video monitoring
- Interchannel timing and amplitude display make component analog monitoring easy. Has color bar limit markings for Betacam, M-II and SMPTE formats.
- Waveform and vectorscope controls, including channel, sweep speed, position control, phase rotation are on easy-to-see dedicated pushbuttons.
- Besides instant toggling between picture and waveform, a mix mode combines waveform and picture displays for simultaneous viewing.
- The MM-400 can be readily used by even novice operators. It has easy-to-understand set-up menus for display color, interchannel timing, SC/H phase alarm.
- Usable in any video facility of any size for displaying signals. Its low cost makes it affordable by the smallest studio, while its features and performance make it ideal for monitoring in high-end facilities as well.

HORITA

BSG-50

Blackburst/Sync/Tone Generator

The BSG-50 provides an economical means for generating the most common RS-170A video timing signals used to operate various video switchers, effects generators, TBCs, VCRs, cameras and video edit controllers.

- 6 BNC video/pulse outputs
- Now available: 6 blackburst, 4 sync, 2 subcarrier
- Each sync output individually settable for composite sync, composite blanking, H-drive, or V-drive.
- Separate buffer for each output—maximum signal isolation
- 1KHz, 0dB sinewave audio tone output, locked to video
- Outputs can easily be configured to meet specific user and equipment needs.....

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CSG-50

Color Bar/Sync/ Tone Generator

- Generates full/SMPTE color bars, blackburst and composite sync signals.
- Built-in timer can automatically switch video output from color bars to color black after 30 or 60 seconds. Easy and convenient for producing tape leaders and stripping tapes with color bars and black.
- Front panel selection of full-field or SMPTE color bar patterns or colorblack (blackburst) video output.
- Includes crystal-controlled, 1KHz, 0dB audio tone output.
- Outputs: video, sync, ref frame, 1 KHz, 0dB
- Audio tone switches to silence and color bars change to black when using 30/60 second timer
- Fully RS-170A SC/H phased and always correct.
- No adjustment required.....

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WE STOCK THE FULL LINE OF HORITA PRODUCTS INCLUDING:

- **WQ-50** - Window Dub Inserter
- **TO-50** - Generator/Inserter
- **TRQ-50** - Generator/Inserter/Search Speed Reader
- **TRQ-50PC** - Has all of the above plus RS-232 control.
- **VQ-50** - VITC Generator, LTC-VITC Translator
- **VL-50** - VITC-To-LTC Translator
- **VLT-50PC** - VITC-To-LTC Translator / RS-232 Control
- **RLT-50** - Hi8 (EVO-9800/9850)TC to LTC Translator
- **TSG-50** - NTSC Test Signal Generator
- **SCT-50** - Serial Control Titrer "Industrial" CG, Time-Date Stamp, Time Code Captioning
- **SAQ-50** - Safe Area, Convergence Pattern and Oscilloscope Line Trigger and Generator

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Canon Forges an Optical Link

Area Network (LAN) users looking for Asynchronous Transfer Mode (ATM), Fiber Distributed Data Interface (FDDI) and high-speed computer network capabilities.

The system has been designed to be as flexible as possible. The beam unit and the control unit are two separate devices, making it possible to adjust and control the system from an OB van or camera control room. Setting the system up is extremely easy, requiring only a change in control units. The head units and cables are compatible, and it is possible to work in PAL and PALplus, with ATM and HDTV controllers to be introduced later.

SAFETY FIRST

Canon has also taken a number of steps to secure the safety of the device. During installation, for example, the laser beam is expanded by an optical device. This conforms with the IEC825 international standard, providing a maximum permissible exposure (MPE) of 7.2 minutes at 7mm aperture. This means that installers can absorb more than seven minutes of direct eye contact from the front lens of the head unit.

As can be seen, the system offers a number of advantages over existing systems. In the analog domain, it offers 500 MHz wideband transmission, allowing up to eight video channels, 16 audio channels and intercom, all in real time. Bidirectional transmission of two HDTV channels is also possible. For

digital services, the system offers 156 Mbps high-speed transmission for ATM, FDDI and HDTV Digital Codex.

To secure the transmission, the system has a tracking function that prevents the transmitter and receiver from becoming disconnected. At one kilometer, the system accounts for up to 5 degrees (90 meters from center) of movement of an OB van, tower, stand or building caused by wind, shock or temperature.

Another advantage to the system is that due to its reliance on infrared light frequencies, it is largely free from government control. It already complies with existing international safety regulations, such as IEC825, EN60825, CFR Part 1040, and JIS C 6802. It also meets numerous standards of electromagnetic noise, such as EN50081, EN55022, VDE0878 and VFG147 22/84.

One Cano-Beam system consisting of the HS-40B head unit and the CA-30N control unit provides four channels of video (2 x 2 or 3 x 1), eight channels of audio (4 x 4 or 6 x 2) and a 1 x 1 intercom channel. Users can purchase the necessary number of systems and, of course, all allocation and communication costs are free of charge, even if in use 365 days a year.

A major advantage over other forms of communication is that the Cano-Beam is not influenced by transmission impairments such as multipath, which is found in city centers among tall buildings or under elevated highways. It can also be used amid strong electromagnetic noise, such as can be found near high-voltage power lines. Cano-Beam does not emit electromagnetic noise, and is therefore an ideal communications environment for uses with low noise tolerance, such as at airports, nuclear power facilities and chemical plants.

Installation of the system is quick and easy. After placing the head units in visible sight of each other using a sports viewfinder, all adjustments can be done from an OB van or control room. Monitoring is available from a zoom camera viewfinder that is built into the head unit. A built-in flash lamp is available for operating the system at night, in stormy weather or at long distances.

Other advanced features include immunity from eavesdropping and a digital "3D" function in which data errors are minimized.

At the ITS conference in Montreux, Canon introduced a new version of the Cano-Beam consisting of the HS-40B head, the CA-30N controller and 5D2W coaxial cable with an N-connector. The system provides a maximum transmission distance of 4,000 meters under normal conditions, as well as the bidirectional, multichannel audio, video and intercom capabilities mentioned above. Power is supplied by 220 VAC or 12 VDC, drawing 100 watts with a DC battery balance level check indicator. The video bandwidth is 6 MHz with a signal-to-noise (S/N) ratio of 55 dB. Audio is at 20 kHz with an S/N of 60 dB.

With the combination of a U-4 or U-4E pan/tilt head and an FSK-40 modem, Cano-Beam can transmit head and camera control signals and receive video and audio signals. We can install the remote control cameras in areas that cannot be approached by cameramen.

The Cano-Beam has been put to good use at a number of major world events recently. Going back to 1993, Japanese network NHK utilized two sets to provide HDTV coverage of the Royal Wedding. In 1994, Italian net-

work RAI set up two systems for coverage of the G7 summit in Napoli, while Germany's RTL provided coverage of the F-1 Grand Prix races. Also that year, Finland's YLE put Cano-Beams to use during the World Athletic Conference and the U.K.'s SKY-delivered golfing coverage.

Although we are very anxious for Cano-

Beam to become a standard item in OB van configurations, it is not intended to be a complete replacement of cable and microwave systems. We expect that there will be applications in which Cano-Beam will prove to be the best solution in terms of time, cost and quality, and there will be circumstances in which it will be the only solution. ■

Editor's note: The opinions expressed above are the author's alone. For further information on the Cano-Beam, contact Canon Europa (telephone: +31-20-545-8905; FAX: +31-20-545-8203), or circle Reader Service 25.

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Clean Audio Tips

audio sampling rate clocks from a video reference. An increasing number of digital audio products today have this facility built in. If not, various "glue" manufacturers produce video-to-audio reference adaptors.

PRACTICAL APPROACH

Combinations of the two approaches will be found for practical reasons. Although the two approaches seem identical, this is not quite so. When the first approach is used, all devices will produce samples in the same phase as well as at the right frequency because they are running from one and the same reference. With the second approach, producing 48 kHz from a video signal requires a complex sequence of frequency division and multiplication using phase-locked loops.

While the correct sampling rate results, the phase of the audio reference is arbitrary because it depends on the states which the dividers in the phase-locked loops adopted on power-up. In general these slight phase discrepancies are of no consequence, except for one case which is the provision of clocks for ADCs.

If stereo imaging is not to be impaired, the reference clocks for both channels must come from phase-aligned reference. This will not happen if the ADCs are clocked by two different video-locked generators.

Digital audio reference signals take the form of AES/EBU bitstreams carrying muting or reference level tone and must be treated accordingly. The AES/EBU specification calls for point-to-point distribution without loop through to prevent damaging reflections. This requires high-fan out distribution amplifiers. However, if several devices in the same rack require the same reference, loop through is admissible provided all but the last device can present a high impedance to the reference signal. Some hardware is Hi-Z switchable.

Even if all digital audio sources are genlocked together, this does not guarantee that click-free routing will be obtained. Again, it is a question of economics. A simple and therefore cheap crosspoint router will cause an arbitrary step in the timing structure of the AES/EBU audio signal, causing pops, crackles and even temporary mutes in downstream devices where resynchronizing has to take place. Of course this is no big deal if the router is used only to reconfigure equipment between takes. However, if the router is to be used for hot cuts, perhaps in a presentation suite, these artifacts are out of order. The solu-

tion is synchronous routing where each router input contains a time base correction stage so that the actual routing step does not cause an output phase jump.

Naturally, a synchronous router will cost more than a simple crosspoint. Synchronous routing prevents downstream devices losing lock and eliminates pops and clicks due to sample value corruption when switched on muted data. However, if a hot cut is attempted on program material, clicks may result where the output suddenly slews from the old waveform to the new. This can only be avoided by incorporating a short crossfade or transition instead of a cut.

During the transition, samples from the outgoing signal are multiplied by reducing coefficients, whereas samples from the incoming signal are multiplied by increasing coefficients. The products are summed to produce a crossfaded output. Clearly, having a gain control facility on every input of a large router causes unnecessary expense. The same facilities can be obtained by slaving a simple digital audio mixer to the router.

Prior to a transition, the router switches the incoming signal to a mixer input. The mixer performs the transition, fading away from the previous mixer input. This mixer input can then be cut to the next input by the router. In this way, only a two-input mixer is required per channel, however many signal inputs are available. In fact, the process is identical to that used in a video switcher with auto transitions. Only outputs requiring crossfades need be implemented in this way. Other router outputs can have simple synchronous cuts.

Such a router is ideal as an emergency standby for a presentation suite. Should the presentation mixer fail, the router mixer can take over to provide crossfading and level adjustment. ■

John Watkinson is an independent consultant in digital audio, video and data technology and is the co-author (with Francis Rumsey) of seven books on the subject, including The Art of Digital Audio and The Digital Interface Handbook (Focal Press). He is a Fellow of the Audio Engineering Society and is listed in "Who's Who in the World." Based in England, he regularly presents papers at conventions of learned societies and has presented training courses for studios, broadcasters and facilities around the world. He is currently working on loudspeaker design. John can be reached at +44-734-834285.

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CPO Gives KPHO Winning Edge

by and the terrain beyond. I could better capture the feeling of the situation.

Arizona has some amazing vistas, and this Century adapter helps express the beauty of the landscape more fully. In shooting the Grand Canyon, you just cannot get the feel of its scope without the wide angles afforded by the 0.6X.

With wide panoramic views, or in any situation in which we want to open up the background and give the subject a warmer, more expansive feeling, we use the Century 0.6X wide angle adapter. It simply gives us more creative control.

Our mission at KPHO is to maintain our long-standing audience while drawing new viewers to our CBS banner. To do this, we need to offer them the best possible variety of images. The Century Precision 0.6X is an integral part of how we accomplish this. ■

Editor's note: Paul McComb was named chief photojournalist at KPHO two years ago. He has been shooting footage for the news department at KPHO for more than 23 years.

The opinions expressed above are the author's alone. For further information, contact Century Precision Optics (telephone: +1-818-766-3715; FAX: +1-818-505-9865), or circle Reader Service 65.

Frezzolini Breaks New Ground

by Mark Hallinger

HAWTHORNE, N.J.

Walk into Frezzolini Electronics' offices on any given day and you are liable to see three generations at work on the latest in battery and lighting products for cameras.

Jim Frezzolini, 89, who founded the company 60 years ago, still comes in a few times a week. His son-in-law, James Crawford, now owner and CEO of the company, will also be on hand, as will a few of Crawford's sons and daughters-in-law.

"I have counted up to 10 relatives at work here at one time," Crawford said. "It is a real family business."

Frezzolini may still largely be a family business, but the high-tech products put out by the firm's 30 employees are used around the world wherever cameras require powerful, lightweight and efficient batteries and lighting.

"We are not a giant company but we are known around the world," said Crawford. "Frezzini" lights are also known at the top of the world — the Frezzi Mini-Fill with built-in dimmer control was originally designed for the first televised Mt. Everest climb.

PROUD HERITAGE

Jim Frezzolini's name looms large in television lore. While serving as chief photographer for WPIX in the late 1940s, he built the first conversion camera, Crawford said. He also built some of the first lights that went on cameras.

In the early 1950s, Crawford brought his expertise in engineering products for the military to the Frezzi business. The rest, as they say, is history.

In addition to Frezzi's important role in the televised Everest expedition, the company also played a part in the first from-the-field footage of the Vietnam War.

Crawford said the power packs for the 16mm cameras in use at the time were too heavy — between 15 and 20 pounds — to allow cameras in the field. Frezzi made an inverter that weighed just four pounds. Eight units were delivered to each network on the same day so as not to show favoritism.

"These (power packs) made the pictures possible," Crawford said.

Crawford added that Frezzi has attained its standing through a company philosophy that focuses on innovation. "We do the things that most people thought could not be done."

"We are very imaginative and we take products all the way from concept to finished product." He cited in particular Frezzi's advancements in battery size, systems integration and miniaturization.

The latest product to result from Frezzi's spirit of innovation is the recently released mini-HMI light. Although it is the standard Mini-Fill size of about 4 inches long by 2 1/2 inches around, the light requires less than 30 W of power but still provides a 125 W output.

"This is a very intense light, and it weighs less than a pound," Crawford said. He added that this product is unique because it is a high output, daylight temperature mini-HMI in a self-contained unit.

Another recent Frezzi product innovation, the NP-1 bracket for Sony Professional Broadcast cameras, received an update of sorts at this year's NAB spring show when the MFNP1-HC was introduced.

"The MFNP1-HC was very well received by the crowds at NAB," said Crawford, who added that the show was Frezzi's most successful NAB ever.

The MFNP1-HC combines Frezzi's classic Mini-Fill with Frezzi's universal clamp and an NPI battery bracket for an "all-in-one" wireless video light. "It features no wires and no hassles in a cost-effective package," Crawford said.

Frezzi also introduced its latest Sun Panel solar battery charger at NAB. The product, designed for true in-the-field work, features a high output-to-weight ratio. The Sun Panel has found a large market both in the United States and abroad. The foreign demand for this product has been so high that Frezzolini has begun producing ads in languages other than English for the first time.

All Frezzi products, particularly those like

the Sun Charger, owe a lot to the company's experience in creating low-profile, low-weight battery power solutions for military field communications applications.

"In the military, people's lives could depend on these products," Crawford said. He added that the situation was only slightly less grave in the world of TV news.

"If a product fails and you lose a story, you will lose your job," Crawford said. "We know these products are important to people."

Crawford also said he was especially proud of the fact that his company continues to deal with individual customers when they need some custom work. "We work with one of the largest customers in the

COMPANY PROFILE

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Circle Reader Service 107

world, the U.S. military, right down to the individual level.

"If somebody comes to us with one camera, we will still do it," Crawford said. ■

TECHNOLOGY UPDATE

Big Plans for Avid CamCutter

by Peter Fasciano
and James McKain

IVER, U.K.

CamCutter, the first full-motion field recording system for capturing, viewing and editing material on disk was unveiled by Avid Technology and Ikegami Tsushinki in March of this year at the National Association of Broadcasters conference in Las Vegas.

CamCutter joins Avid's existing line of non-linear products that includes the NewsCutter editor, Airplay playback system, MediaServer central library video server and AvidNet for linking the products together into a completely integrated production system. With the CamCutter now in position, broadcasters can remain in the digital domain from lens to transmitter.

BEYOND THE SCOPE

In designing the CamCutter, Avid knew that, at the very least, the end product would have to work as reliably and consistently as the existing technology in a wide range of conditions.

Machines in use today by broadcasters meet stringent standards of ruggedness and flexibility, allowing operators to concentrate on what they are recording rather than the hardware they are using. A high-quality signal-to-noise ratio, wideband frequency response and other advantages are unquestionable prerequisites. CamCutter produces a signal-to-noise ratio in excess of 50 dB. Frequency response extends to 5.0 MHz in the Y channel and 2.5 MHz in the chroma channels.

The second prerequisite is ruggedness and the ability to perform in all weather conditions. The CamCutter development team undertook a series of subjective field tests based on observations of working camera operators. As a result, CamCutter is able to record without problems if it suffers a 30 G shock for up to 0.5 seconds or a sustained 5 G vibration. The FieldPak media cartridge will endure a 2,500 G impact, which equates to a two-meter drop onto bare concrete with direct impact on one of the corners.

Recording duration is another important consideration. CamCutter's FieldPaks weight approximately 2.6 lbs. and contain sufficient storage for up to 20 minutes of material at AVR-70 and two channels of 48 kHz digital audio. Data is recorded to FieldPaks in OMFI (Open Media

Framework Interchange) and can therefore be read and processed by other OMF-compatible applications.

CamCutter's hard drives are rated for an MTBF (mean time between failure) performance in excess of 100,000 hours, more than 11 years of uninterrupted use.

The final important element in attaining operational sufficiency is CamCutter's camera, mechanical and human interface. The dockable CamCutter connects directly to almost any broadcast field camera via a 79-pin interface. Mating to other cameras is achieved through a 79-to-50-pin adapter plate.

Operators have the choice to mix pictures from CamCutter with analog source feeds via CamCutter's analog composite video output and a composite and component analog input. Also present are four independent audio inputs, each switchable between mic or line level.

The user interface is divided into two sections — the first of which is used for standard record and playback functions and is closely modelled on existing products. Operators will find the record and stop buttons exactly where they expect them to be.

Obviously, one advantage of the disk-based system is the ability to randomly access the material. This allowed the CamCutter development team to design a unique feature called retroactive recording. In short, retroactive recording eliminates wasted record time. Imagine, for example, that the CamCutter operator wishes to capture the exact second when a politician enters a room. With retroactive record, the CamCutter records in a loop — the duration of which is set by the operator. CamCutter will record this loop continuously until the desired event takes place, in this case the entrance of the politician. By pressing the record button, the loop is broken and the CamCutter can be used for continuous record, but it will retain the previous one minute of recorded time. Thus, the recorded media contains video from the time prior to the door opening and continuously after that point.

Another advantage of disk-based systems is their combination of random access capability and computer-controlled file management. By using the file system via the user interface panel, it is possible to manage the media contained in the disk cartridges. Clips are easily reviewed and can even be deleted. "Bad" takes can be

eliminated to free up extra disk space for re-use as a way to increase the effective recording time on the FieldPak.

EDITING ON THE RUN

CamCutter has the ability to create an edited sequence and play it back. Adding the features of a complete cuts-only editing system propels this field recording system well beyond traditional field recorders. The CamCutter operator can be an editor without the need for a separate editing system and the van in which it is carried.

Producers and reporters can rough-cut their stories literally on their laps and view it on the camera viewfinder or on an external color LCD monitor while at the same time listening to the audio over CamCutter's built-in speaker. CamCutter produces either mixed-to-mono or discrete four track audio.

When connected to a camera, CamCutter is able to switch back and forth between the live camera output and playback of the edited piece. A typical application is on live shots with the CamCutter output feeding a microwave or satellite link. The live shot could begin with the reporter live on camera and microphone. Pressing the play button would instantly start playing back the finished story and switches both audio and video from the camera to the disk's playback. When the operator hits stop or the piece ends, CamCutter automatically switches back to the live camera. CamCutter can store and play back multiple sequences, allowing several edited pieces to be dropped into the live field report. The reporter's microphone can remain active during disk playback for a voice-over.

As mentioned above, CamCutter is much more than just a replacement for current field recorders. When CamCutter deliveries begin later this year, broadcasters will see a revolutionary change in news field production. Camera operators will have on their shoulders a complete record, playback, media management, editing and production system in an easily carried package. ■

Editors Note: The opinions expressed above are the authors' alone.

For further information, contact Avid (telephone: +44-1753-655-999; FAX: +44-1753-654-999), or circle Reader Service 118.

Sound Reasoning for Standards

by Robert D. Predovich

SPECIAL REPORT

46 FEATURES

Industry standards. When it comes to communicating with technology in the audio post production business, there are many. This, of course, would seem to belie the meaning of the word "standard," but in reality no single comprehensive standard exists for integrating the various devices that populate the studios of the sound post industry.

Attempts certainly have been made by governing associations such as SMPTE and EBU to establish a "universal" protocol. The "ES Bus," based on RS-422 serial, was first established in the mid-1980s and subsequently published in the last few years as a set of industry standards. Unfortunately, this protocol has not been widely implemented, which certainly has undermined its reason for being.

Many would say that Sony 9-pin has become the de facto industry standard. In fact, there are many dialects of this common communications protocol. Moreover, when was the last time you used this method to issue a cut, copy or paste command to a device?

WHAT'S THE PROBLEM?

Why can't the industry get together and actually implement an all-encompassing standard? Is it because manufacturers have a vested interest not to do so? Do they have higher priorities on their various agendas? Or is it possible that connectivity in the future will no longer be an issue as the industry replaces all of its existing technology with the proverbial "studio-in-a-box" digital audio workstation (DAW)?

Although it could be argued that there are some vested interests at play, and that such integration is not high on certain manufacturers' priority lists, there are realities that tend to sabotage valiant attempts at consensus in this regard. One is the "moving target" nature of our industry at this time.

It is important to remember that sophisticated sound post production has revolved around sprockets and splicing tape for many decades, and that feature films and television series have long relied on this technology. They still do for the most part. However, in the last 10 years we have witnessed numerous attempts to revolutionize the way this work is done.

As manufacturers attempt to overcome the inertia that has set in from the use of the same techniques and technology for such a long time, there is a tendency to overshoot the mark. This "pendulum effect" tends to temporarily give credence to the feeling that existing technology will be usurped by all-encompassing DAW-type devices that will no longer have to communicate with the past, or even to other devices in the present, in a sophisticated way.

But who would have predicted the emergence of an extremely cost-effective new

tape format such as employed by the Tascam DA-88/Sony PCM-800, and one that would so quickly establish itself as a "currency" in our industry? The overwhelming success of this format has given pause to many that vowed that tape was dead. It is simultaneously demonstrating that the pendulum is starting to come back toward the middle.

It would seem that since many "replacement" non-linear audio technologies were not very concerned about comprehensive connectivity, they now find themselves on islands surrounded by tape and sprocket media. However, it is true that a form of connectivity is clearly receiving a high priority through common file formats such as Open Media Framework. As an OMF partner, we support industry initiatives such as OMF.

Yet, a common file format is not enough. Manufacturers of two-inch, 24-track analog multitrack transports agreed years ago to the equivalent of a common file format.

To date, our industry has not been able to successfully integrate the best tools of the past with those of the future.

Although tapes recorded on one can be transferred to another, a Studer machine interfaces with the outside world in a different way than a "file-compatible" unit made by Otari or Sony.

So where does this leave us? Our industry is looking more and more like the United Nations. We have extremely diverse technology, each with its own unique merits, which collectively can produce a whole that is much greater than the sum of its parts. To continue the analogy, it would appear that some form of "simultaneous universal translation" facility is needed to allow everything to communicate together, since there are obviously many distinct languages being spoken.

Since 1982, Soundmaster Group has been accumulating extensive expertise in the practical interfacing of disparate technology, and we have implemented these multilingual skills in our own form of simultaneous universal translation. ION, an acronym for Integrated Operations Nucleus, provides users with a central platform that seamlessly integrates the various technologies from the past, present and future. With ION, a creative operator can employ the most appropriate technology for a given task.

To help understand this philosophy, simply compare our industry's tools to those found in a craftsman's kit. Within the latter a hammer is designed to drive nails and a screwdriver to turn screws. It is true that you can use the handle of a screwdriver to drive a nail, but doesn't it make more sense to use the tool that is best suited to the job? To date, our industry has not been able to successfully integrate the best tools of the past with those of the future. As a result, users have been forced to proverbially drive nails with screwdriver handles, while a hammer lies just out of reach. ION endeavors to correct that problem.

Soundmaster Group wishes to play the role of "facilitator." For example, we realize that there is a great race among DAW manufacturers to produce the most complete and cost-effective modern tool kit with exciting new capabilities that our

industry could only dream of in the past. As we clearly believe that these tools become even more powerful when integrated with those already in existence, we are prepared to do the hard work to achieve this.

In other words, we will learn and incorporate a company's proprietary protocol and then link it with the other protocols we have already mastered via our universal translation process. As a result, that company's technology gains the capability to comprehensively communicate with many others through ION, when on its own it could not.

An excellent real-world example of this has been in use for two years at the state-of-the-art facilities of the Canadian Broadcasting Corporation (CBC) in Toronto. The goal was to reduce the clutter of keyboards and monitors in its television audio post production suites and centralize control over its console automation system, digital video and audio transports as well

as MIDI-based outboard gear.

The CBC wanted to be able to use its Neve Flying Faders automation keyboard as the command center, but the unit's motion control capabilities did not include needed features such as an edit decision list (EDL). As well, the system did not directly communicate with MIDI-based outboard processing equipment, such as digital reverb units. We were confident that through ION these capabilities could be retroactively added to Flying Faders.

We started by having ION learn the protocol used by the automation system to command external synchronizers. At a basic level, this allowed standard transport commands to be carried out by Soundmaster SEVEN application software via our own SYNCRO machine control computers.

However, by connecting these simple commands to ION's internal universal translation engine, which is user-programmable, the same Flying Faders key that originally could only issue a "Play" command now became capable of changing a digital reverb setting on an outboard processor. Another key gained the power of manipulating an EDL within Soundmaster SEVEN. Without any modification to the Flying Faders system whatsoever, we were able to make its keyboard retroactively "soft," including the ability to instantly re-map the system's external control capabilities with the touch of one of its own keys.

SPOKEN WORD

Using the same multilingual philosophy, we were the first to fully utilize Tascam's proprietary protocol to integrate the DA-88 and Sony PCM-800, now known as the DTRS format. This has allowed us to control up to 128 machines comprising 1,024 digital tracks and has provided access to key features that are not available by simply using the Sony 9-pin protocol that the unit also supports.

For example, DTRS has a track delay feature that allows one track to be delayed vis-à-vis another on the same tape by up to 7,200 samples. However, we perceived this as raw material for developing the type of

track slip feature that film re-recording engineers have come to expect from their sprocketed dubbers and recorders. Of course, traditional track slipping not only involves delaying tracks, but also advancing one track with respect to another. Re-recording engineers also require film frames/subframes rather than the somewhat foreign unit of samples.

The proprietary protocol gives us access to inter-machine offset capabilities on a bus that can contain up to 16 machines. By combining direct control of each track's delay register, and some automatic and invisible computer "sleight of hand," a single keystroke now commands DTRS tracks to slip as if they were individual dubbers, including in a positive direction. If this were attempted locally on the machine, the number of keystrokes and manual calculations required would prevent anyone from attempting to use the delay feature in this manner.

When one realizes that this capability allows a linear medium such as tape to reproduce a sound earlier than it was actually recorded vis-à-vis a reference picture, all the while maintaining the former sync relationship of the remaining tape tracks, the significance of this development becomes more apparent.

The DTRS family, as well as new sound processors such as the Otari RADAR solid state multitrack, are excellent examples of new, modular technologies that allow for a natural evolution from the past when properly plugged into an existing work ethic. In the case of RADAR, we are providing total control of all of its functions, including cut, copy, paste and undo, by communicating with the unit via its proprietary keyboard protocol. This same philosophy is being used to tap into the tool kits of digital audio workstations. The resulting "bridge" should help ameliorate their "island" isolation.

ION supports the ability to pick and choose from the strengths of a number of manufacturers to produce a custom palette of technology selected to address users' specific needs. Coupled with Soundmaster Group's patented SMART SYNC process, which enables time compression and expansion in real time, the seamless integration of sprocket, tape and disk media in this way provides for an evolutionary crossover of technique from one to another.

We are pleased that our theories are being used daily on high-level productions on three continents, for those who might question whether this approach is actually practical. In fact, Sound Services Inc. (SSI) in Hollywood, a major user of digital audio workstations, now considers ION to be the center of its studio universe.

We are a neutral company that exploits the most out of each technology we integrate. As a result, manufacturers and end users jointly benefit from the solutions we offer. We would appear to have been slightly ahead of our time, leading one studio executive to comment recently that for years we had provided solutions to problems he had not yet come across. However, he quickly added that these problems are now arising.

As it would seem that it is time for a solution of this kind, we have decided to significantly expand our architecture to provide even more comprehensive solutions to the industry in the years ahead. We welcome your contributions in this regard. ■

Robert Predovich is chairman and chief executive officer of Soundmaster Group in Toronto. For further information on the ION system, contact Soundmaster at telephone: +1-416-741-1312, or circle Reader Service 26.

EQUIPMENT EXCHANGE

CAMERAS

Want to Sell

Sony EVW300, excellent condition, low hrs, Fujinon 12x7.5 lens, Sony hard plastic shipping case, Porta Brace carrying case, microphone & holder, manuals, original owner, \$5000 or B/O. Rick, 410-296-2612.

3 RCA TK-47 color cameras, CCUs, cables, teleprompter mirrors and hoods, spare parts, removed in working condition but offered as is, \$10,000 or Best Offer. J. Snyder, 202-885-2222.

Ikegami 730 camera, 750 lines with 730A CCU, eng config with AC power supply plus full studio config with 5" mounted monitor, remote control servo & focus control, (2) 70 ft. Tri-X cables on spool, (1) 25 ft. Tri-X cable plus shipping case, \$1800. Hugh, 516-595-2818.

Panasonic AG460 SVHS, hard carrying case, 3 batteries, manuals, great condition, \$1350 or B/O or trade for Lectrosonics wireless system. Rick, 410-296-2612.

JVC GYX-1 SVHS-C camera with 14x lens, A/C battery charger, 5 batteries, Porta Brace case, all manuals and accessories, prof. used and maintained, \$3500. Jim, 912-888-2625.

Ikegami HL-V55 camera, Sony lens mount, large viewfinder, extended Clear Scan, 500 hrs on video heads, \$32,700; Cannon J14a x8.5B4 IRS lens, 2x extender, \$5,600; Cannon J8 x6B4 IRS lens, 2x extender, 9 mos old, \$11,500. Ed 507-663-1048.

2 Hitachi FP-C2 3 CCD cameras, Canon J15x9.5B4 lenses with optical doublers, GM-7 high resolution viewfinders, camera adapters CA-C2, Anton Bauer battery adapters, cable, S-VHS docking adapter (to dock AG-7450 recorder) for C2 or Z1, all in excellent condition, will trade for S-VHS editing system. Pete, 302-734-1114 or FAX 302-734-7934.

Hitachi Z-31, excellent condition, with ENG viewfinder, studio viewfinder, Fujinon 16x lens, power supply, extender cards, VTR cable, flight case, tripod plate, full service manual, \$1200 or Best Offer. Maurice, 208-356-1202.

Ikegami 730A camera with Fuji 12x lens and 2x extender, carrying case, 4" studio viewfinder, mounting plate, Anton Bauer battery plate, AC power supply, 2 batteries & command cable; Anton Bauer LSO Lifesaver battery charger; Sony 6800 3/4" recorder, Port-A-Brace case, 4 NP1 batteries, Sony NP1 charger, AC power adapter; Lowell action kit, including 3 Lowell Omni lights with barn doors, tripods, carrying case, Quickset QRT-1 fluid head tripod, good condition, \$4300 or B/O. Louis, 904-234-2125 ext. 35 or 904-233-5885.

Panasonic WV D5000 chip w/ 8/1 AF lens, tripod, case, \$750. Bob, 714-951-1422.

Toshiba 200 3-chip, never used, 16x lens, batteries/AC, Hi-8 & Betacam out, \$6500; Panasonic WV777 3-tube camera, manual, extra batteries/AC, extra body for parts, \$750; Panasonic WV RC30 remote control with 00 ft. cable for WV777, \$500. Joe, 212-490-9082.

Sony DXC 3000A 3 ccd SVHS camera with standard Fujinon 12-1 lens, rarely used, perfect condition, \$3200. Penny, 407-479-0680 or 407-367-0201.

Sony 327A 3-chip 700 line camera with Canon 17x1 lens, Sony Bv1A dockable back with adapter & a 537 CA component back, incl a 327A Sony case, tripod plate, \$9500 or B/O. Jeff, 208-746-8335.

Sony DXC-1820 Tricon color video camera with Canon tv zoom lens J12X10 10.5-126, (2) BP-60 batteries, BC-20 charger, Sony hard case, camera to recorder cable, & manual. Clean w/low hrs, \$750 + shipping. Ron, 619-272-3783.

Sony EVW-300, 70 hours, charger, 5 batteries, \$6000; (2) Sony CMA8 power supplies, \$300 each. Neil, 207-877-8877.

Hitachi FP-21 color camera with Fujinon lens, power supply, & cables, 2 Anton Bauer Bricks, trickle charger, hard case, plate & 3 extra camera tubes, extender boards, & tech manual, \$800. Ron, 213-960-1360.

Ikegami ITC0730a (3), excellent condition, CCUs, VF & camera cables; Sony M3A with tripod adaptor, vtr cable, \$900 each or Best Offer. Terry, 800-748-4982.

Panasonic 200CLE with Canon 12x10, case, plate, power supply/charger, battery, manual, mic, excellent condition, \$2800. AVPS, 703-527-1200.

Ikegami 791 camera including Fuji broadcast lens with X2 extender, studio configuration, power supply, camera control unit, 300 ft CCU cable, excellent condition. Dale, 404-242-3600.

2 Sony CCD-V5000, like new, lots of access, \$1,550 each; 1 new porta-brace quick-draw case, CC505PW fit BVP 90, 70, 50, 5, etc., never used, \$275. Lou, 408-947-7030.

Sony BVW-70 (BTS nameplate), new heads, slip ring, brush assembly, well maintained, excellent condition, \$22,000. Olivier Video Productions 713-726-9866.

Olympus Digital SVHS Camera, reconditioned, incl hard case & access, \$700. Don, 804-588-7054.

JVC KY-20 3-chip camera & JVC BRS-410 dockable recorder, P/S, tripod plate, camera case, camera back & recorder back, with or without Fuji 16x9 lens, Best Offer. John, 702-363-9289.

Panasonic AG-455 UP, S-VHS camcorder, new condition, in original box, hard case, AC power supply, battery, charger, manual, \$1300 + shipping. Ed, 201-955-0089.

CAMERA ACCESSORIES

Want to Sell

Panasonic 19 pin camera/CCU cables, (1) 25', (2) 50', \$50 ea; Panasonic WV-3806B camera RCU, \$100; Portabrace ENG camera case, \$100; Quikset 3/4 height tripod with spreader, takes 75-100mm ball, \$175 (lists at \$550). John, 305-858-2398.

Sony adapter, CMA-8, excellent condition, \$350 or Best Offer. Allan, 206-878-9677.

Plumbicon camera tubes used for RCA TK47, XQ 1410, 1415, also XQ 1427 for Ikegami HL79D and XQ3070, 3075 for HK357 and other 1" cameras, \$300 ea guaranteed good, installation and service also available. Bill, 504-344-4217.

ITE Studio Pedestal model P4, with counterweights, \$2500 or Best Offer; PVT Studio Pedestal, air counterweight, excellent dolly, \$2500 or Best Offer; JVC 5" viewfinder, VF-550u, new condition, Ikegami 5" viewfinder, VFM-571, \$375 ea. Terry, 800-748-4982.

Century Precision Optics .8x zoom through wide angle converter, has attachment ring to fit any 85mm lens such as Canon 8.5 X 14 internal focus, other rings available from manufacturer for other lenses, works great, new in box, originally \$1180, asking \$600 or Best Offer. Ed, 703-573-3426.

Ikegami HL 79D, without lens, \$2000; Ikegami HL 79E, needs eye piece, w/o lens, \$2000; Sony BVP-30, without lens, \$2000; Anton Bauer LSQ4 Brick Quad Charger, \$500 ea; Anton Bauer LPS4 Brick Single Charger, \$250 ea; Anton Bauer Brick batteries, some working, \$50-\$100 ea; Cine 60 belts, 14.4 volts, needs new cells, \$100 ea or B/O; Red-line belts, 12.0 volts, new cells & chargers, 3 available at \$200 ea or B/O; Red-line belt pack, 12.0 volts, XLR \$150 ea or B/O; Coolux camera light w/barn doors, \$100 ea or B/O. Lewis, 818-994-5397.

Video tape, barely used 1" Scotch 479, 90 minute roll, evaluated with shippers, guaranteed usable, \$10 ea plus \$2 shipping; also Anton Bauer LSQ4 charger, \$75. Bill, 504-344-4217.

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EDITING EQUIPMENT

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DPS Personal TBC III full-frame TBC card for Amiga or PC, full proc amp controls, color correction, monochrome mode, frame or field freeze, strobe, exc in Toaster set up, \$500 or Best Offer. B. Jones, 509-332-5858.

JVC RM 86U edit controller with cables, very good condition, \$750. Steve, 704-262-2079.

TAO editizer hardware upgraded, TAO serializer for VO5850/5800, TAO's color-coded editing keyboard, TAO shuttle NOB (CS-1) control station, excellent condition, like new, \$1500. Rang-A-Rang, Inc., 703-319-9688.

Editmaster, JVC, Sony & Panasonic parallel interfaces available at \$800 ea; additional Breakout Boxes, VTR cables & ROMs available for serial & parallel interfaces; Calaway CE-150 4 machine editing system with cables, preview switcher & manuals, \$3000 or Best Offer. Lewis, 818-994-5397.

Convergence ECS-90 Super 90 joystick editor with TC, manuals, cabling for Sony type 5's, including extra unit for parts, \$750 or Best Offer. Pat, 616-592-2719.

Sony BUE900, 910 upgrade, audio board for Sony mixers, can run 4 machines and GPI, \$5000. Jamie, 810-694-0996.

Sony BVE 5000 edit control/SEG system with 6 player deck input & 2 edit deck output, complete with manual & time code cables, \$2500; Ecco VR-5 SEG complete with manuals, \$3200. Hugh, 516-595-2818.

Future Video V Station for DOS, including connectors for 5-pin Panasonic, new in box, \$750; 386 SX-16 PC, WP, Lotus, V-Station 3300, \$350; Videonics video equalizer, new in box, \$185. Ken, 612-922-6449.

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Grass Valley HX64, 64X32 video and mono audio routing switcher, \$14,500. Tom, 213-383-0426.

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GVG 100N with ulse gen. & serial control, \$5500; Video Toaster 4000, 68040 processor with 250 MB HD, 14 MB RAM, 3.1 software, 3.5 floppy, 1084S color monitor, keyboard, mouse & manuals, \$5500 or B/O. Lewis, 818-994-5397.

Cross Point Latch 6139 production switcher, 3 ME, full wipes, downstream keyer and all other bells, etc., top of the line, new condition, \$3000. Bob, 615-226-1122.

Grass Valley 200-2N, linear boarder line key, chroma key, DSK with options, \$27,500. Jamie, 810-694-0996.

Elite Video Luminance intensifier, in box, new condition, \$140. Ed, 201-955-0089.

Sony SEG 2000 switcher with extender board & manual, \$2300; Sony WPX (wipe pattern extender), matches the above switcher, with manual, \$1200. Ron, 213-960-1360.

Sony digital switcher/editor, DME-450, manual, in box, excellent condition, \$2400 or Best Offer; CEL Electronics MAURICE, model P147-30 and P148, no touchscreen, system works with dumb terminal, slower but works, \$1100 or Best Offer. Allan, 206-878-9677.

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Paltex/Abner A/B roll controller with TC card, 2 JVC cables, 1 Panasonic cable, \$2000; Super Gen 2000 and Deluxe Video III software, \$1000; JVC AA610-U power supply battery charger, \$350. Bob or Wade, 406-248-5896.

2-JVC KY1900CH cameras w/wo pwr splys, charger, & two batts, viewfinders, Tamron 10x1 lens w/pwr zooms, hard case for one, also 14 pin-10 pin cables (2), \$2000 both; Dynair sync gen, \$350; Shintron 505 video char gen, 16 pages, crawl, roll, scroll w/manual, \$100; 2 Sony DXC 1820 cameras w/locking case, now pwr splys or batts, \$400 each; BVU-50 3/4" recorder w/manual, \$150; Panasonic NV9300A play record w/TV tuner, works exc, plus extra one for parts, \$650 for both; Convergence ESC-90 edit ctrlr w/time code reader plus JVC CR6600U player and JVC CR8200U rcd, \$2500; ctrlr only, \$1000; Audio-Shure/L series, wireless mike system w/body pack transmitter and 839W condenser Lavalier and rcr, \$250 each; Conrac B&W monitors, 3 avail, 14" size, rack mount, \$75 each; JVC 5000's Two 3/4" players for parts, \$100 both; Panasonic remote ctrlr units, model WV-RC30, \$200 each; 2 WV 777 cameras for parts or make one, \$100 both. Elaine, 904-698-1009.

Knox K60 Titler, page select, crawl, \$125; Rackmount for JVC 8600, \$50; 3M proc amp w/manual, \$350; Faroudja image enhancement syst, record/playback, manuals, \$350. Joe, 212-490-9082.

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Sony VO 5600, very low hrs, 1 owner, \$850. Dayna, 503-386-2321.

Panasonic AG-1960, heads replaced, less than 3 hrs use, SVHS, \$800. Don, 804-588-7054.

Sony BVU800's (pair), time code boards, 1 new head, cables & manuals, top cond, \$3000 ea; Sony BVU50, nearly new, Porta Brace case, 2 camera cables, manual, BO. T. Hopkins, 503-654-3813.

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JVC BR-6400U VHS Rec/PB edit source deck, with RF converter & service manual, \$495. Jeff, 704-322-5115.

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Panasonic AU400 MII dockable vgc., \$2500; Panasonic AU400, good condition, \$2000; JVC TKC50U, \$75; Panasonic AUF65 time code board, new, \$400; Panasonic AG96, new, \$150; 2 Panasonic GPKS102 camera control units less cameras, \$500 each. Arroyo Productions, 913-749-4576.

Sony & JVC 3/4" top loading machines, some working, \$50-\$450 ea, remotes \$50 ea; Sony VO5800, needs work, \$2000 or B/O; Sony VO5850, needs work, \$2800 or B/O; Sony RF converters for top loading machines, \$25 ea; Sony BVU950 with T.C., DNR & TBC, \$8500; Sony BVU920 with T.C., DNR & TBC, \$9500; Sony BVR50 TBC remote, 2 avail, \$500 ea. Lewis, 818-994-5397.

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