Español
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17 y 23

TV TECHNOLOGY™

Vol 11 No 1 January 1993 International Edition

Indonesia Opts for New DBS System

by Mark Timpany
and Arief Juwanto

Indonesia is preparing to leapfrog all of its broadcast service transmission problems with an integrated DBS system for television and radio.

Indostar is the name of the satellite system being prepared to blanket the nearly 1,250,000 square kilometers of this archipelago nation. Indostar will provide full broadcast television and radio services directly to the entire population, without the need for any terrestrial rebroadcast stations.

Geography always has been a major obstacle in developing the communications infrastructure in Indonesia. The nation is composed of more than 13,000 islands of widely varying population density. Communication and broadcast media services are abundant in the major cities, yet unavailable to a significant percentage of the country's population.

The perspective of the geosynchronous satellite, however, views all of the nation's territory as equal. The government expects Indostar to be a major asset in the economic growth of this developing country.

The Indostar project already is two years old and countless hours have been spent optimizing the system. The receive dish size has been balanced with satellite orbital spacing so that receiver costs can be minimized, while allowing other nations to access the limited orbital slots. Frequencies were selected considering the heavy seasonal rainfall in a country straddling the equator.

Indostar will be a truly Indonesian system. Its development is also unique. The satellite is fully funded and will be owned by Bimantar Citra, a private corporation with a diverse portfolio of broadcast and other interests in Indonesia.

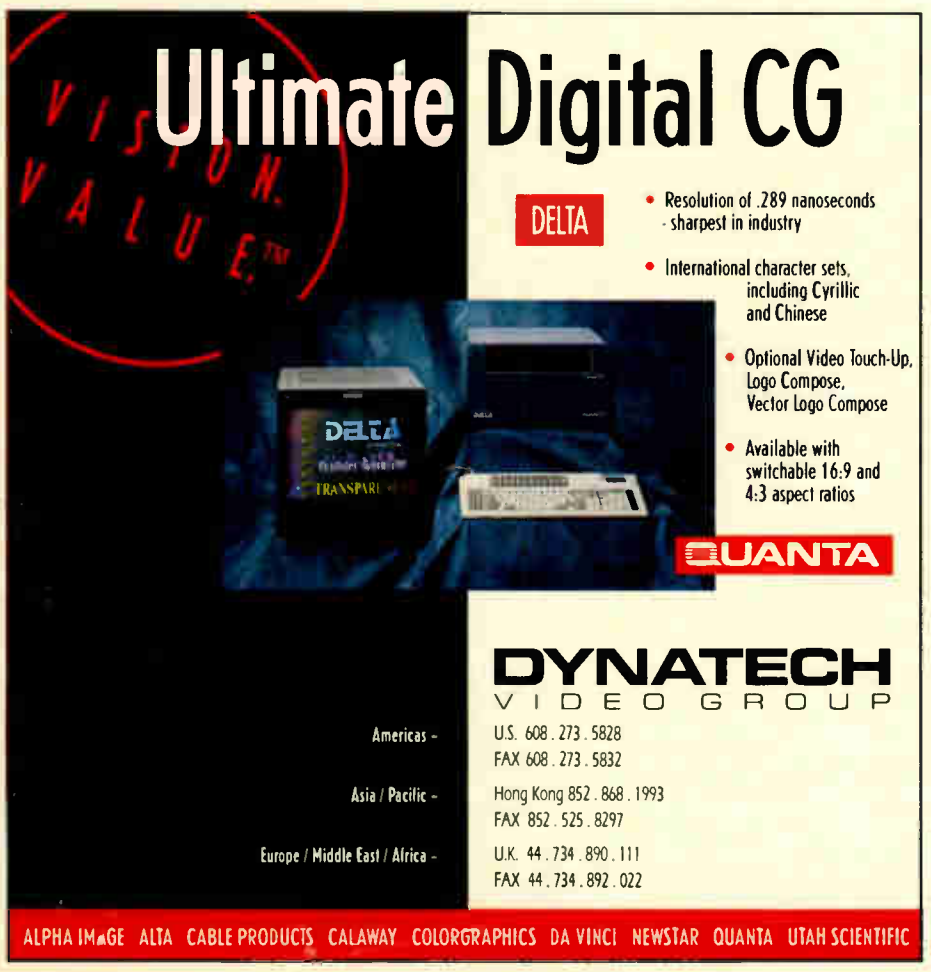
MediaCitra Indostar, the sector behind Indostar, grew out of research on creating a national broadcast network. The new satellite system will do just that, as well as provide service for the national television (TVRI) and radio (RRI) programs. MediaCitra Indostar has offered free service for the government programming. Another service expected on Indostar is that of Televisis Pendidikan Indonesia (TPI), whose educational programs are now available only in several of Indonesia's larger cities.

International Technologies Inc., based in McLean, Virginia, has been involved with the project from the beginning and has been selected as the turnkey contractor. The system will employ LIGHTSAT technology, making use of relatively small satellites that can be placed into orbit with medium-size launch vehicles.

Use of a LIGHTSAT spacecraft reduces launch costs significantly and allows growth of the system, which more closely mirrors market growth, a feat not possible with larger conventional spacecraft. The satellites are designed for 10 years of oper-

(continued on page 10)

DeluxePaint has become the standard for paint programs on the Commodore Amiga.
See User Report on p. 16.



Circle 79 On Reader Service Card

Concert Marks HD 'First'

by Frank Beacham

NEW YORK Walking into Madison Square Garden, John Diaz sensed the world's most expensive rock concert was a prescription for television disaster. As a veteran video producer, he knew there were simply too many "firsts" on this job for good judgment. It would be the biggest and most sophisticated live high definition production ever mounted. It would be the first time high definition CCD and tube cameras were mixed together on a major production. To make matters worse, standard NTSC cameras would also be incorporated into the mix.

With an estimated half a billion people worldwide in over 50 countries watching, a technical glitch could become an international incident. So Diaz, television producer of "Columbia Records Celebrates the Music of Bob Dylan," approached the makeshift control room in the Garden with the apprehension of a man headed into the heart of darkness.

Multiple productions

To complicate matters, the Dylan tribute was not one, but several, television productions. There would be the live pay-per-view telecast, the tape-delayed pay-per-view, the HDTV direct-to-home telecast, the network television special, the NTSC long form video and the HDTV long form video. And, yes, the audio portion of the concert would be simulcast live on radio throughout the world and a 48-track digital mix would be released as a commercial recording.

The ambitious telecast, which occurred on 16 October, was a co-production of Japan's NHK and RadioVision International of Los Angeles. Outside the United States, the show was sold to 68 international territories, including the United Kingdom, Japan, Germany, Spain, Sweden, Italy, France, Scandinavia, Austria, Iceland, Denmark, Holland, Israel, Portugal and Switzerland.

Three camera types

The various presentation formats called for a highly unusual mix of television equipment. Among the total of 11 cameras, three were Sony's new HDC-500 CCD high definition camera, four were Sony's HDC-300 tube high definition cameras and four were a mix of standard NTSC CCD cameras. According to the producers, this was the first major production use of the new high definition CCD cameras and the

(continued on page 8)

Arrest The High Cost Of Character Generation

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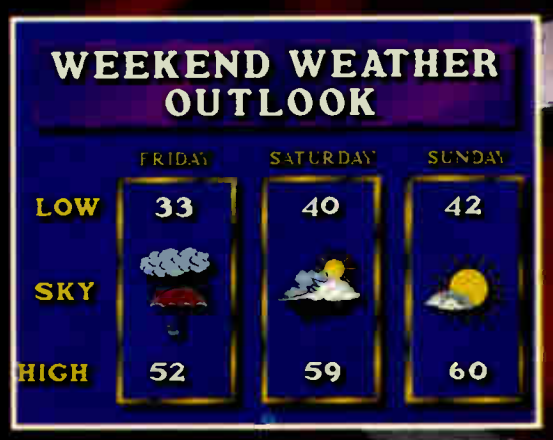
- Instant Italics
- Position & Size Underline and Line Background
- Special Effect Transitions



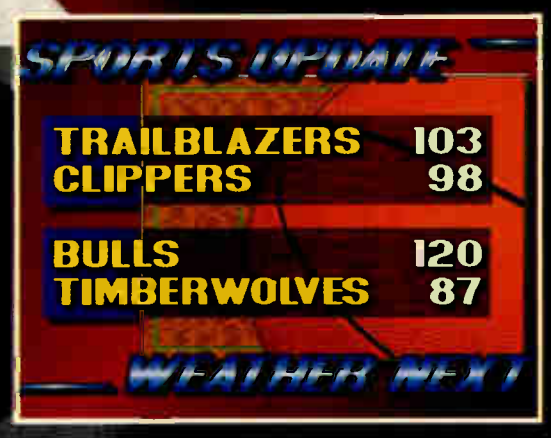
THE EVIDENCE:

Sports Update
Gradient boxes, fonts and screen background. Digitized video of basketball imported, sized and positioned.

Community Calendar
Gradient background, boxes and fonts. Mat box for insertion of stagecoach video.

Weekend Weather Outlook
Gradient background and boxes. Weather Cinnamon color fonts.

News Bumper
Gradient boxes and fonts keyed over cityscape video.



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News From JAPAN

Researched and compiled by Masakatsu Ueda

Sony Markets New Video Workstation

TOKYO Sony has begun selling a video workstation, the VWX-6000, that produces and transmits graphics, including full color titles for broadcasters.

The workstation is priced at ¥5.15 million (US$41,869) and utilizes 30 kinds of Japanese character fonts and 16.7 million colors. Shipments are expected to begin 1 April 1993.

The product features a 20 MHz CPU and a 64-bit, 32 MHz graphic engine, which provides speeds up to 10 times greater than current models.

Sony has also begun selling a video-interface unit, the VWI-6074, priced at ¥1 million (US$8,130), that converts the workstation's data to high-quality video signals.

Fujitsu Develops Plasma Display

TOKYO Fujitsu is planning to become the first company to market a plasma display that can reproduce 260,000 colors.

The company plans to sell the 21-inch model at a price of about ¥900,000 (US$7,317) with initial sales projections of about 6,000 units annually.

Initial applications include street-level advertising displays, with a possible future market as a consumer TV when prices drop because of mass production.

The display is 32mm thick, weighs 4.8kg, and is available as a wall unit.

Two-Beam Laser Designed by Sony

TOKYO Sony has developed a two-beam laser that incorporates two semiconductor lasers in one chip and is able to emit two parallel laser beams 100 microns apart.

With an output power of 50 microwatts, the new laser is expected to be used for high-speed reading and writing of optical magnetic discs, as well as simultaneous processing.

Company officials say they have already confirmed the laser's long-term reliability and will be ready to market it shortly.

Meanwhile, the company is working on a prototype four-beam laser that can emit beams 50 microns apart.

BUSINESS

COMSAT Offers Digital Leasing

CANNES COMSAT Corp.'s World Systems business unit recently announced new customers for its new, full-time, international digital television service, which it commercialized 1 September.

Two U.S. television networks—ABC and CBS—committed to seven-year digital television leases. Both opted for 36 MHz of capacity to relay news feeds from Europe to the U.S.

The leases are available for pre-emptible or non-pre-emptible service in satellite bandwidths ranging from 100 kHz to 72 MHz; for operation in C- or Ku-band frequencies or a combination of the two; and for lease terms from one to 10 years.

For more information, contact Janet Dewar at COMSAT in Washington, D.C.: 1-202-863-6571.

Dynatech NewStar Announces Sales

WOKINGHAM, England Dynatech NewStar announced three NewStar II Newsroom automation system sales in Norway, Germany and Johannesburg.

Norwegian Television Network TV2 went on air in September with two new systems, one in Bergen and the other in Oslo. The two sites are now able to cooperatively develop news programming.

Seventy-five workstations were installed in October at NTV in Berlin. NTV's system is a dual studio arrangement, using fully automated character generators, a Sony DNS still store and a Sony LMS cart machine, all under NewStar II control.

The South African Broadcast Corporation (SABC) in Johannesburg is scheduled in November to install 100 workstations. They will use extensive machine control in three studios to drive the character generators, still stores and cart machines in each studio.

FOR.A Cameras Meet Needs of BBC Birmingham

LONDON FOR.A Corp. announced that the BBC in Birmingham, England recently placed an order for its second HMC-1030 still image capture camera.

The BBC is using the camera, with its digital CCIR 601/656 output, as a high resolution input device to a Quantel V Series Paintbox.

Using a single moving CCD, the SMC-1030 can capture and store a 720 x 580 pixel image in 160 msecs.

For information, contact Per Sjofors at the FOR.A office in London: +44-81-788-7664, or circle **Reader Service 105.**

SMPTE

First European SMPTE Show Draws Over 200

COLOGNE, Germany The first SMPTE European Conference, held concurrently with Photokina here 18-20 September, was attended by more than 200 people from 27 nations. The three-day event, entitled "Film and Television—Ways to the Year 2000," offered a comprehensive technical program.

Approximately 30 papers were presented during the conference, including "Motion Pictures and the New Horizon" by Brad Hunt, Eastman Kodak and "Trends in Program Production in Television" by Francesco Pinto, RAI.

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Clear-Com, Telos

SHOW LISTING

Upcoming conventions, meetings and exhibitions:

18-21 January
Middle East Broadcast '93

Bahrain. The Middle East Broadcast '93 will be staged at the new Bahrain International Exhibition Center focusing on radio, television and program production. Contact Organizers: Arabian Exhibition, Management WLL, P.O. Box 20200, Manama, Bahrain; telephone: +973-250033; FAX: +973-242381. Contact Worldwide Agents: Overseas Exhibition Services Ltd., 11 Manchester Square, London, W1M 5AB, U.K.; telephone: +44-71-486-1951; FAX: +44-71-935-8625.

17-20 February
Indonesia 93

Jakarta, Indonesia. The 5th International Professional Sound, Film, Video and Lighting Exhibition covering Southeast Asia. Contact worldwide organizers: Overseas Exhibition Services in London at telephone: +44-71-486-1951; or FAX: +44-71-486-8773.

19-22 April
IAB '93

Las Vegas, Nevada. The 23rd General Assembly of the International Association of Broadcasters will be held in conjunction with the 1993 National Association of Broadcasters Convention. Three days of meetings will be held at the Las Vegas Convention Center.

19-22 April
NAB 1993

Las Vegas, Nevada. The 1993 National Association of Broadcasters Convention, with exhibits and sessions, will be at the Las Vegas Convention Center. For information write NAB at 1771 N. Street, N.W., Washington, D.C. 20036-2891 USA, or contact at telephone: +1-202-429-5409; FAX: +1-202-429-5343. [Future show: All located in Las Vegas, Nevada\22-25 March 1994].

13-21 May
SVIAZ '93

Moscow, Russia. The 6th biannual Communication, Data Transfer and Processing Equipment Show held in the EXPOCENTR in Moscow. For information on SVIAZ '93 contact Ms. Susanne Hess, Exposition Manager at TNT Productions Inc. P.O. Box 717, Callao, Virginia, 22435, USA; telephone: +1-804-529-5510; FAX: +1-804-529-5057.

10-15 June
Montreux '93

Montreux, Switzerland. The 18th International Television Symposium and Technical Exhibition. For information contact: +41-21-963-3220; FAX: +41-21-963-8851.

8-10 July
Broadcast '93

Hong Kong. The 2nd Hong Kong International Broadcasting, Sound, Film and Video Exhibition. For exhibiting information contact: Overseas Exhibition Services in London at telephone: +44-71-486-1951; or FAX: +44-71-413-8230.

3-4 November
SBES/Techcon

Birmingham, U.K. 18th Sound Broadcasting Equipment Show and the Radio Academy Techcon '93 conference at the Metropole Hotel. For information contact Point Promotions, P.O. Box Wallingford, OXI0 0XP; telephone/FAX: +44-491-38575.

Send announcements to TV Technology International, P.O. Box 1214, Falls Church, Virginia 22041 USA, or FAX: +1-703-998-2966.

Italy's IBTS Breaks The Recession Spell

by Dario Calabrese

MILAN, Italy Expectations were gloomy last October at the eve of IBTS, Italy's big yearly broadcasting convention. There was a heavy spell cast by an apparently unending worldwide recession, coupled with an especially nasty Italian version, to which the still uncertain enforcement of a two-year-old media law must be added.

But if one listened to the exhibitors' comments at the end of the show, it didn't turn out so badly after all. About 14,000 visitors showed up at the Lacchiarella Fairgrounds to inspect the goods exhibited by over 150 companies, both figures representing more or less a confirmation of the previous year's results.

MeM and Mediatech

The importance of the Italian convention was stressed by direct participation by several prestigious international organizations: NAB, SMPTE, SIGGRAPH and France's INA.

Among concurrent events, this year marked the first real success of MeM, a convention and exhibition of program producing companies.

Mediatech, the convention proper, consisted of a rich series of high-level seminars, exhaustively covering all aspects of broadcasting management and technologies, with several international lecturers.

Obviously, all the large international video and audio companies were there, either through direct subsidiaries or local representatives. The only three exceptions were Quantel, Thomson Broadcast and Panasonic: Quantel has always followed a strict policy of exhibiting at major international shows only. Thomson was caught in the process of terminating its Italian distributor while still looking for a replacement. Panasonic's absence was due to its having only one Italian subsidiary in charge of both consumer and non-consumer equipment.

Traditionally, Italian manufacturers serving the television industry have been considerably strong in a few selected areas, such as lighting systems and components, camera support equipment and transmitting systems.

However, a few companies manufacturing studio equipment and accessories could also be found. Notable among them was a Milan-based company, representing Italy's first entry into the new field of desktop video. This company, DeskTopVideo, introduced Frame-Talk, a video editing software running on Amiga 2000/3000 and (Videomedia) V-LAN compatible.

Elca Srl, a company established for some time, showed a full line of character generators, clock and logo generators, routing switchers and even a teletext system. All featured extremely attractive prices and thus were aimed at small private TV stations.

Other domestic exhibitors of the same category were CPE (routers, patch-panels, connectors), Elpro Broadcast (routing switchers and distribution amplifiers), Hantarex (monitors), Indelt (Beta-, S-VHS- and U-matic-based cart-systems), Videotelecom (more cart-systems) and Professional Show (components for video-cassette dubbing systems).

In addition to the above mentioned Elca Srl, two more companies exhibited teletext equipment: Microtex showed a teletext-generating board for PCs working in a Windows environment, and Telesia Microelettronica introduced a family of very fast systems. These systems are capable of transmitting in the vertical interval of a video signal all kinds of digital information, from conventional teletext to any other type of software, encrypted if necessary.

Among audio equipment that could also be used for TV, Pastega was showing its wide range of wireless microphone systems, AEV exhibited a family of telephone hybrids, also for ENG, and Radio Sata showed its advanced "Octopus" mixing console, provided with direct fiber-optics connections.

Lighting and camera support

DeSisti Lighting, an internationally known manufacturer, showed its customary complete range of equipment. Prominent were its popular HMI Series of hoist systems and several new Fresnel-type spotlights, among which was the new 10 kW unit of the Leonardo family. Another company, Spotlight, well known in the theater business but a newcomer to TV, also showed a complete line.

The usual wide line of mid-range camera support equipment was exhibited by Manfrotto. Cartoni, a very popular supplier of top-of-the-line heads and tripods, chose this IBTS to launch C20-S, a new fluid head with a 23 kg (50 lbs.) load capacity. It features an innovative optional accessory called "Multi-angle," in practice an additional head capable of shooting at the wildest possible angles.

Rome-based Multycam showed a family of remote-controlled automatic dollies. Originally developed for the movie industry, they enable one to shoot in narrow spaces.

Antenna systems of all kinds were exhibited by Aldena and Protel. CTE, a company better known for its wide range of FM transmitters, has recently entered the TV field with a 100 W channel-to-channel transposer.

One of Italy's most dynamic manufacturers of TV transmitters and microwave links is ABE Elettronica, also manufacturing a 2 GHz link for ENG-camera mount. Its latest product is a 1 kW TV-VHF solid state (MOS-FET) amplifier.

Complete lines of transmitting equipment for very wide ranges of frequencies and power outputs were shown by Ghisellini and DB Elettronica. The latter company's newest product was the CC series of wideband (VHF/UHF) transposers, with powers up to 5 W, for battery- or solar cell-operation.

More medium- and low-power transmitting systems were shown by Linear, Teko Telecom and TEM. Full ranges of high-power systems were exhibited by ABS, Elit, Technosystem and Itelco. Itelco launched its first European-made 40 kW transmitter based on an IOT tube.

Several microwave links, most of them for 10 and 14 GHz, were exhibited, in addition to the already mentioned ABE Elettronica and TEM, by Elber, Geritel and IPR. Also, Teko Telecom showed a new series of synchronized offset systems, a type of device aimed at minimizing interference in fringe areas. Finally, more synchronized offset systems were also introduced by Screen Service, at its first IBTS show.

For more information on the companies mentioned, telephone, FAX or circle the Reader Service numbers listed:

Company	Phone	Fax	RS#
DeskTopVideo	+39-2-4980566	+39-2-4980566	10
Elca Srl	+39-363-44763	+39-363-301951	17
CPE	+39-2-38002600	+39-2-33402724	21
Elpro Broadcast	+39-11-7071955	+39-11-706210	78
Hantarex	+39-55-49731	+39-55-4220129	43
Indelt	+39-586-429482	+39-586-408334	24
Videotelecom	+39-143-489332	+39-143-489697	58
Professional Show	+39-424-560661	+39-424-560706	72
Microtex	+39-41-415969	+39-41-5100227	91
Telesia Microelettronica	+39-6-4074450	+39-6-4074449	36
Pastega	+39-424-512873	+39-424-35683	25
AEV	+39-51-950249	+39-51-950201	84
Radio Sata	+39-51-521407	+39-51-522574	56
DeSisti Lighting	+39-6-9345013	+39-6-9345015	94
Spotlight	+39-2-76110081	+39-2-744721	27
Manfrotto	+39-2-5697041	+39-2-5693954	46
Cartoni	+39-6-4396499	+39-6-4388294	16
Multycam	+39-6-7234045	+39-6-7231780	35
Aldena	+39-2-48705940	+39-2-48700422	32
Protel	+39-2-4561645	+39-2-48910803	70
CTE	+39-522-921212	+39-522-921248	74
ABE Elettronica	+39-363-52550	+39-363-50756	30
Ghisellini	+39-331-946989	+39-331-964065	99
DB Elettronica	+39-49-8700588	+39-8700747	52
Linear	+39-30-711643	+39-30-7000634	97
Teko Telecom	+39-51-6256148	+39-51-6257670	33
TEM	+39-2-89200131	+39-2-89200129	82
ABS	+39-863-995150	+39-863-995215	14
Elit	+39-2-33402992	+39-2-38000136	68
Technosystem	+39-6-2282049	+39-6-2282355	87
Itelco	+39-763-26231	+39-6-26236	23
Elber	+39-185-380334	+39-185-383190	19
Geritel	+39-131-898015	+39-131-899106	48
IPR	+39-332-284093	+39-332-283369	62
Screen Service	+39-30-2667070	+39-30-2667087	29

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SMPTE Offers a Forum for Engineers

by Blaine Baker
SMPTE President

The Society of Motion Picture and Television Engineers (SMPTE) is the world's leading technical association for professionals in motion pictures, television, electronic imaging, and the related arts and sciences. SMPTE disseminates technical information and provides a forum for the standardization of equipment, materials, and practices used in the industry.

SMPTE members are engineers and technicians, executives and consultants, teachers and students. They are producers, directors, cameramen, editors, specialists in post production, computer imaging, sound recording, lighting, optics, manufacturing, and distribution. And, they live and work in more than 70 countries.

Our organization was founded in 1916 as the Society of Motion Picture Engineers (SMPE); the "T" was added in 1950 to embrace the then-emerging medium of television.

Standards activities

One of the prime goals of our society is to provide a forum for standardizing equipment and techniques. Although compliance is optional, SMPTE standards are accepted around the world. The standardization efforts of the society have been recognized with several national and international awards.

Our volunteers work in committees to develop Standards, Recommended Practices and Engineering Guidelines; review existing documents to ensure that they are current and compatible with international standards; recommend and develop test specifications, methods and materials; prepare tutorial material; and institute any action necessary to ensure compatibility and interchangeability of products falling within the scope of the society.

One of our recent achievements was the adoption of the Report of the SMPTE Task Force on Digital Image Architecture. The report is the result of extensive studies that have considered the essential requirements of the architecture for future digital imaging systems.

Anyone who is qualified in a committee's area of focus is invited to participate in the society's standards work; SMPTE members and non-members are welcome. More than 200 volunteers from around the world are working on SMPTE engineering committees.

Our Technology Committees include the Committee on Film Technology, the Committee on Motion Picture Projection Technology, the Committee on Motion Picture Laboratory Services, the Committee on Audio Recording and Reproduction Technology, the Committee on Television Recording and Reproduction Technology, the Committee on Television Production Technology, the Committee on Television Signal Technology and the Committee on Hybrid Technology.

GUEST COMMENT

International standardization

The society is also actively involved in international standardization, assuming the responsibility for recruiting delegates to represent the United States' position at meetings of the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC). SMPTE administers the Secretariat of the ISO's Technical Committee on Cinematography (ISO/TC36).

Standards subscription service

The society provides a standards subscription service to assist those who wish to establish and maintain a complete and current file of approved SMPTE-sponsored American National Standards and other SMPTE documents.

Test materials

The society offers a full line of test materials based on SMPTE Standards and Recommended Practices to help engineers maintain their equipment at peak performance levels. The materials include monochrome test patterns, color TV subjective reference films and slides, optical and magnetic sound test films, and a complete range of projector performance films.

SMPTE sections

Twenty-seven sections of the society host more than 200 meetings a year at which experts present engineering papers and demonstrate state-of-the-art equipment. SMPTE Section Meetings provide members and guests with an opportunity to stay technically current, while discussing common concerns with their colleagues from the region. Each section elects officers and plans its own programs, offering members direct input and leadership opportunities. Any group of at least 50 members from one area may petition the society's Board of Governors to form a new section.

SMPTE currently has sections throughout the United States, as well as in Australia, Canada, Germany, Italy, Russia and Sweden.

Annual events

The Annual SMPTE Technical Conference and Equipment Exhibit is the major

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TV TECHNOLOGY
INTERNATIONAL EDITION
Vol 11, No. 1 JANUARY 1993

International Editor: Marlene Lane
TV Technology Editor: Richard Farrell
News Editor: Arthur Cole
Technical Consultants:
Jim Cutright, Lew Zager
News Correspondents:
London: Phil Parker; *Tokyo*: Masakatsu Ueda
Italy: Dario Calabrese
New York: Frank Beacham, Mary Gruszka;
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Publisher: Stevan B. Dana
Associate Publisher: Carmel King
Marketing Consultant: Albert Leon
Ad Coordinator: Caroline Behan
Circulation Director: Tiana Hickman

TV Technology (ISSN: 0887-1701) is published monthly by Industrial Marketing Advisory Services, Inc., 5827 Columbia Pike, Suite 310, Falls Church VA 22041. Phone: 703-998-7600. FAX: 998-2966. Second-class postage paid at Falls Church VA 22046 and additional mailing offices.
POSTMASTER: Send 3579 forms and addresschanges to TV Technology, P.O. Box 1214, Falls Church VA 22041.
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READERS FORUM

Have something to say about **TV Technology**? Send letters to Readers Forum, **TV Technology**, Box 1214, Falls Church, VA 22041 or MCI Mailbox #302-7776

More on microphones

Dear TV Technology:

Mike Sokol's article in the October 1992 issue made interesting reading!

As a bit of a boffin on sound effects collection and realism, I was impressed with his version of the dummy head routine.

I use a pair of Crown boundary mics placed back to back in a 450 degree "V" on a pole. It's effective, but slightly awkward. I like the idea of the "Bandana Technique."

Tell me about the Countryman mics—he seems to like them. Could you also tell me where to get them? I would like to get their specs.

Thanks for the article. I look forward to more.

Regards,
Barry G. Butler, Managing Director
Speakeasy Digital Ltd.
Singapore

Mike Sokol replies:

Thanks for your comments on my article. I'm always interested in techniques that others are using for collecting and editing sounds and music. There is a lot to learn.

The Countryman Associates microphones are similar in appearance to the Crown GLM100s. The CAIs are very rugged and have been with me through a hurricane, 43 degrees C EFPs, and even an artillery range with real mortar shells whizzing by a binaural head. (I used a dummy head, not my own, for that one). The CAIs are available in a variety of patterns, including omni, bi-directional, and cardioid. You may order high or low sensitivity depending on your application. I use the low sensitivity units for the cannons and other very loud effects.

They work very well using 18 volts available from either the CAI phantom supply or a home-brew supply of my own design. In this issue, you'll see my article on constructing a phantom supply that should be useful to you.

Following is the address and telephone number for Countryman Associates Inc. I'm sure they'll be glad to provide you with technical information on their whole product line:

Countryman Associates Inc., 417 Stanford Avenue, Redwood City, CA 94063 U.S.A.; telephone: +1-415-364-9988; FAX +1-415-364-2794.

PALplus or PALminus?

Dear TV Technology:

I would like to make some comments on your article, "PALplus May Be PALminus," published in the October 1992 issue of TV Technology.

First I would like to explain to you what PALplus adds to PAL:

- It adds to PAL the possibility to display 16:9 pictures on PALplus receivers in full screen while offering the same spatial luminance resolution to the consumer as today's 4:3 standard PAL receivers do by receiving standard PAL signals.
- During PALplus transmission displayed on appropriate sets, the well-known cross effects of PAL are reduced to a minimum.
- PALplus will offer to the consumer echo cancellation as an option as well as improved sound quality.
- As a receiver option, progressively scanned pictures can be displayed, reducing the well-known interlace artifacts.
- Last but not least, I would like to remind you that PALplus signals can be received and displayed in letterbox on any 4:3 standard receiver in the market.

During the development of PALplus, the compatibility had the highest priority because this is a must for any new analog terrestrial transmission system introduced in Central Europe. There is no frequency spectrum available here for a simulcast system with a frequency demand analog systems normally have.

Furthermore, I would like to explain to you what kind of luminance resolution we have in practice on today's 4:3 PAL receivers and on future PALplus receivers.

In your argument you did not take into account that color was added to monochrome at the expense of horizontal resolution. Consequently, the horizontal resolution was reduced in practice from 5 MHz to about 3.5 MHz due to the simple low pass filtering for chroma/luma separation in color TV sets and due to the notch filters in standard PAL coders.

Taking this into consideration as well as the introduction of an intelligent chroma/luma separation for PALplus, it is possible to get again 5 MHz for the luminance resolution on appropriately equipped TV sets receiving PALplus signals. In practice this means that the subjective horizontal resolution (pixels/inch) on 16:9 PALplus sets will be the same as on standard PAL sets of today, although the picture width is increased by a factor of 1.33. The vertical resolution will of course be the same as on the present 4:3 sets, i.e. 576 active lines.

I hope that this information is useful to you in order to understand what PALplus will offer versus not offer to the consumer. It will of course not offer HDTV quality, but PALplus represents an excellent possibility to make the European consumer familiar with widescreen.

Best regards,
Dr. A. Ziemer
Chairman of the
PALplus Steering Committee
Germany

Mario replies:

I hope you don't mind my bringing the information to the attention of my readers

(continued on page 6)

Technology Shows Set To Take Place in Bahrain

BAHRAIN The Arab World, with more than 20 countries in North Africa and the Middle East, has been targeted as one of the largest and fastest growing broadcast and communications markets in the world. Appropriately, it will be the site of two major technology events, Middle East Broadcast 93 and MECOM 93.

Both will be held concurrently at the Bahrain International Exhibition Centre, 18-21 January.

Middle East Broadcast 93 promises to provide a meeting ground for manufacturers and end users in every segment of the industry, including broadcast, production and post production, professional audio, lighting and professional recording.

In the exhibition area, manufacturers will show their latest offerings—everything from antenna systems to computer graphics to signal processing and everything in between.

In addition to the exhibits, a two-day program is planned, "Digital Techniques in Broadcasting and HDTV." Dr. Hala Al-Umran, assistant undersecretary for radio and television for the Ministry of Information in Bahrain, will open the program. Amin Basyoni, head of the Broadcasting and Television Union in Egypt, will be the keynote speaker. (See program listing.)

Sharing exhibit space with Middle East Broadcast 93 will be MECOM 93, known as the Gulf's communications and computer showcase. Here the world's communications equipment and services suppliers will convene to display a broad range of products, including broadcast equipment, antennas, ISDN, satellite and cable equipment, and test and measurement equipment.

MECOM 93 also plans a two-day conference that will address subjects of specific interest to the region's users and buyers. The welcoming address will be presented by Dr. Rasheed Ashour, chief of telecommunications for the Ministry of Transportation in Bahrain. (See program listing.)

MIDDLE EAST BROADCAST 93 PROGRAM
Digital Techniques in Broadcasting and HDTV

Day One:

9:15 a.m.	Keynote Speech
10:30 a.m.	Chairman's Introduction *—Raouf Basti, Director General, ASBU*
10:45 a.m.	"Broadcasting in the '90s—The Needs of the Arab World"
11:25 a.m.	"The Middle East Perspective" *—One or more senior engineer(s) from the Arab Broadcasting World will give their comments after this and each subsequent session.*
11:30 a.m.	"Overview of HDTV Systems—*Eureka; NHK; Enhanced Digital and Compatible Systems"* *—Phil Parker, former Director of Engineering, Yorkshire TV, U.K.*
14:15 p.m.	Introduction *—Dr. Al Umran*
14:25 p.m.	"Studio Requirements in HDTV Production" *—Dr. Chris Dalton, Head of Technical Development, ITV Association, U.K.*
15:15 p.m.	"Transmission of HDTV—Digital or Analog?"
16:30 p.m.	"D2-MAC: Encryption" *—Ray Gallaghor, Director of Public Affairs, British SKY Broadcasting*
17:30 p.m.	Close of day one and reception for speakers and delegates, hosted by Bahrain Radio and Television

Day Two:
Session 1: Video and Digital Recording Techniques (including HDTV recording)

8:30 a.m.	Re-registration
9:00 a.m.	Chairman's introduction *—Dr. Al Umran*
9:15 a.m.	"Broadcaster's Overview of All Available Systems" *—Richard Ellis, Engineering Director, Granada* Television
9:45 a.m	"View of the Manufacturer" *—Panasonic, Sony, BTS and Ampex will explain the development and advantages of their recording systems.*
12:15 p.m.	Discussion and questions

Session 2: Post Production Techniques in the Digital Studio

14:25 p.m.	"Editing Techniques and Digital Effects—The Different Approaches to Editing" *—Peter Owen, Engineering Director, Quantel Ltd., U.K.*
15:45 p.m.	"Routing in Digital" *—John Aslet, Director, Grass Valley Group, U.S.A.*
16:30 p.m.	Questions and close of day two

MECOM 93 PROGRAM
Developing Arab Communications

Day One:

8:30 a.m.	Registration
9:00 a.m.	Welcoming address by Dr. Rasheed Ashour, Chief of Telecommunications, Ministry of Transportation, Bahrain
9:15 a.m.	Keynote Speech—*Andrew Hearn, General Manager, Bahrain Telecommunications Company (Batelco)*
10:30 a.m.	Chairman's Introduction—*Dr. Saad Bakry, King Saudi University, Riyadh*
10:45 a.m.	"Project Financing and Aid"—*David Lomax, Chief of Telecommunications, Industry and Energy Division, World Bank, Washington, D.C.*
11:30 a.m.	"International Experiences in Liberalization from the Network Regulator's View"—*William Wigglesworth, Deputy Director General, OFTEL, U.K.*
14:15 p.m.	"The Establishment, Management and Operation of Saudi Arabia's Fiber Optic Network"—*Sami Al Basheer, Director General, Saudi PTT*
15:00 p.m.	"Network Planning Issues for the Arab World" *—Dr. Saad Bakry*
16:30 p.m.	"The Development of Digital Services in Bahrain" *—Abdul Wahed, Text Services Engineer, Batelco, Manama*
17:15 p.m.	Questions and close of day one

Day Two:

8:30 a.m.	Re-registration
9:00 a.m.	Chairman's Introduction—*Nigel Cawthorne, Managing Research Editor, EMC Publications, U.K.*
9:15 a.m.	"ISDN Technologies: Market Situation and Evolution —Experiences of a Manufacturer in Setting Up Live ISDN Services"—*Jacques Dunogue, President, Networks and Services Division, Alcatel CIT*
10:00 a.m.	"International ISDN Services: Practical Experience of an Operator"—*John Griffiths, Head of Digital Services, BT*
11:15 a.m.	"The Future Role of Satellite Communications in the Development of Arab Communications"—*Director of Inmarsat*
12:15 p.m.	Discussion and questions
14:15 p.m.	"Cellular Mobile Communications, International and Gulf Developments"—*Nigel Cawthorne, Managing Research Editor, EMC Publications, U.K.*
15:30 p.m.	"The Development of GSM"—*Göran Söderholm, Ericsson, Sweden*
16:15 p.m.	Questions
16:45 p.m.	Close of Conference

READERS FORUM

(continued from page 5)

by printing your letter. I wish I had the space to print some other things along with it, like a string of technical papers, beginning with one from the BBC in 1976 that indicate that the glorious freedom from color artifacts you attribute to PALplus is neither a new idea nor something that requires PALplus to implement.

You see, I'm afraid I forgot to neglect to take color issues into account when I wrote the column. I even took into account your likely response; remember this line?

"The way *they* (PALplus supporters) see it, *I'm* the one who's outta *my* mind, 'cause PALplus includes better luma/chroma separation, and without that PAL won't meet PAL specs."

In the U.S., we've had improved luma/chroma separators for years. We call 'em "improved luma/chroma separators," not NTSCnicer. We just approved a standard for a signal to help echo elimination. We call that one "ghost cancelling," not NTSCnobler. We've even used the astounding mechanism that allows 16:9 pictures to be received on ordinary NTSC TV sets. That one's called "letterbox," not NTSCnotable.

As you are no doubt aware, we, in the U.S., went through a long period of evaluating hidden subchannels in the NTSC signal to achieve compatible picture improvements including those that are the goals of PALplus. In addition to stuffing vertical helper signals into letterbox stripes, we looked into additional subcarriers, quadrature modulation of the picture carrier, Fukinuki hole stuffing, pixel subsampling\even use of excess signal-to-noise ratio. Nothing was perfect, and neither is PALplus.

The Colour Plus luma/chroma separation technique that PALplus uses for movies is an interesting one, but for video you're back to adaptive comb filters. As best I can tell, PALplus does nothing in transmission to assist de-interlacing in sets, and the same seems to be true, at least for now, with regard to echo cancellation and improved sound quality.

How do you propose the subtitles currently broadcast in the black bands beneath letterbox pictures be dealt with in PALplus? How will PALplus deal with the differential phosphor decay I mentioned in my column? Most important, how will viewers with ordinary sets react to getting letterbox stripes *full-time* on PALplus channels?

I'm glad I could provide this forum for you to express your views. As for this American, I stand behind every word I wrote.

Your pal,
Mario

SMPTE: International Forum for Engineers

(continued from page 5)
event of the year for motion picture and television engineers from around the world. Delegates can listen to a designer explain his prototype in a technical paper and then examine the equipment up close on the exhibit floor—all in an international atmosphere of learning and information sharing.

The technical program contains more than 100 presentations by renowned engineers and executives.

Technical conferences

SMPTE sponsors a two-day conference focusing exclusively on advanced television and electronic imaging technology. ATV, HDTV, digital television, and the merging of computers and television are some of the topics that have been introduced and debated at this conference. Special-interest tutorials and hands-on workshops, planned and presented by technical authorities, are an integral part of both the Technical Conference and the Advanced Television and Electronic Imaging Conference.

Technical conferences are also held in Europe and the Pacific Rim.

The International Conference of the SMPTE Australian Sections features an equipment exhibit and a four-day conference program addressing a wide range of topical issues. SMPTE '92, "New Horizon—Creative Production and Global Distribution," took place 31 August to 3 September 1992 at the Sydney Convention and Exhibition Center. The event featured keynote addresses from Richard Wiley, former U.S. FCC chairman; Joerg Agin, vice president and general manager of motion picture and television images, Eastman Kodak Co.; and Tom Burton, broadcasting policy journalist, Sydney Morning Herald.

The technical program included sessions on broadcasting, film, and post production. Approximately 300 manufacturers and suppliers showcased the latest technologies at the concurrent equipment exhibit.

SMPTE Journal

To keep members abreast of ongoing engineering advances, the Society publishes the monthly SMPTE Journal. This publication contains authoritative technical papers, industry news, new product listings, standards updates, reports on SMPTE Section activities, and an employment listing.

Receiving the Journal is one of the most valuable benefits of membership in the Society. A subscription to the Journal includes the annual Progress Report and Directory For Members, two important reference issues.

Other information

The proceedings of the Advanced Television and Electronic Imaging Conference are published in a bound volume every year. Taken as a collection, these books trace the progress of the medium from its early days into the future.

Videotaped seminars on special interest subjects are available for members to study at their own pace. A complete list of educational materials is available from SMPTE headquarters. Members receive discounts on all SMPTE publications and videotapes.

"News & Notes," an informative newsletter, is sent to members every month to keep them apprised of Society activities.

Honors, awards, fellowships

The Society recognizes individuals who have made significant technical contributions to motion pictures or television by presenting them with medals and awards at a ceremony during the Annual Technical Conference. Agfa-Gevaert, Ampex, Eastman Kodak Co., Fuji, the National Film Board of Canada, David Sarnoff Research Labs, Technicolor and Warner Brothers Inc. are among the sponsors of SMPTE awards encouraging these pioneers.

The greatest distinction the Society confers is Honorary Membership, given to individuals who have performed a lifetime of eminent service in the advancement of motion pictures, television, or the allied arts and sciences.

The Society's premiere medal award is the Progress Medal, presented in recognition of an individual's outstanding technical contributions to the progress of engineering phases of the motion picture or television industries.

Fellowship in the Society is an elevated membership grade bestowed upon those who, by their proficiency and contributions, have attained an outstanding rank among engineers or executives. Fellows are formally presented to their peers at a private luncheon held during the Annual Technical Conference and Equipment Exhibit.

If you are interested in any facet of the material discussed here, or would like additional information on the Society of Motion Picture and Television Engineers, I encourage you to contact SMPTE headquarters at 595 W. Hartsdale Ave., White Plains, NY 10607-1800; telephone: +1-914-761-1100; FAX +1-914-761-3115. We would be happy to serve you.

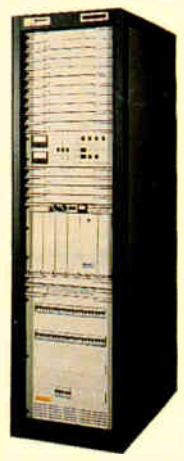
In addition to being president of the SMPTE, Blaine Baker is president of MPL Film & Video, Inc. in Memphis, Tennessee.

Cool Operator

GEC-Marconi's Solid State UHF transmitters are somewhat unique.

Launched at IBC 92, the adoption of a liquid cooling system in such equipment is a remarkable innovation. Occupying less than half the floor area of their peers, these transmitters also exhibit a very low acoustic noise level.

However, liquid cooling means much more than this. The superior efficiency of heat removal afforded by a liquid when compared to air means that the transmitter runs cooler by about 10°c. That means a doubling of the output transistor MTTF and a dramatic increase in reliability.



But, it is in the earth's hotter places where liquid cooling really scores. Whilst the average air-cooled transmitter struggles to cope with high external ambient temperatures, the GEC-Marconi transmitter remains cool.

Add to this, fully wideband (470 to 860 MHz) modules, no circulators, module changing on power and very gradual failure modes and you have a world beating transmitter - one of the new breed of Solid State transmitters from GEC-Marconi.

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Circle 11 On Reader Service Card

A NOVA ONDA DE TELEVISÃO

Por Carlos Eduardo Behrensdorf

BRASILIA, Brasil A comercialização na televisão foi o tema principal do painel de reuniu diretores das grandes redes de televisão do Brasil, no 18° Congresso Brasileiro de Radiodifusão, promovido pela ABERT (Associação Brasileira de Emissoras de Rádio e Televisão) e que for realizado durante os dias 16°, 17° e 18° de setembro passado, no Minascentro, em Belo Horizonte, Minas Gerais.

Participaram dos debates Rubens Furtado, da Rede Bandeirantes, São Paulo; Rubens Carvalho, do SBT, São Paulo; José Luiz Franchini, da Rede Globo, Rio de Janeiro e Xerxes Gusmão, da Rede Manchete, Rio de Janeiro. Em uma avaliação, todos os executivos concordam; os problemas causados por uma crise econômica da qual o país nunca se liberta, e que os atrapalha so atrapalha os negócios.

Para Rubens Furtado, da Rede Bandeirantes, o mercado no momento está muito difícil, mas como Brasil é um país de crises cíclicas "a gente acaba acostumando." Apesar de todos os contratempos, Furtado diz que a Rede Bandeirantes está muito bem. Em seu entender, a tendencia da comercialização nas televisões brasileiras deverá seguir o caminho da segmentação, cada vez maior.

"Algumas televisões facarão com as classes A e B, outras com a C e D e outras como esporte, por exemplo. Como consequência, elas proeurarão comercializar produtos que interessam seu público específico," concluiu Furtado.

Rede Globo

José Luiz Franchini, da Rede Globo, acredita que o futuro da comercialização em televisão no Brasil pode ser resumido em alguns ítens, que enumera, a seguir:

"O homem de contato terá que ser muito mais ágil do que atualmente. Ele vai trabalhar diretamente com o anunciante. Vão acabar as vendas pelas vendas, isto é, elas terão de ser bem fundamentadas. A distribuição dos sinais vai ser o grande diferenciado na preferência do anunciante e as televisões terão que procurar o índice zero de falhas ténicas. Além disso, o talento do produto final a ser mostrado será a marca do êxito comercial," concluiu. Para Franchini, se ainda existe algum amadorismo nas televisões brasileiras, ele terá de desaparecer, pois chegou a hora e a vez do profissionalismo.

Rede Manchete

Além da crise brasileira, a Rede Manchete viveu uma crise interna, o que provocou modificações na emissora. A constatação feita por Xerxes Gusmão, no entanto, já mostra um futuro mais alentador pois "a crise interna está sendo superada."

Um ponto da nova estratégia foi revelado no encontro de Belo Horizonte . . .

Ele também analisa o êxito ou não das televisões em alguns ítens que considera fundamentais: "Crise, criatividade e segmenta ção já são os norteadores dos negócios em televisão." Ele esclareceu que a Manchete apelou para formas diversas de comercialização, como o merchandising, e que está dando resultados. Sobre o uso do merchandising ele faz o seguinte comertário:

"Ele tem uma linha muito tênue coma aceitação do telespectador, Xerxes acredita que a sofisticação é una marca de resultados positivos, e a Manchete quer fazer uma programação de boa qualidade para todas as classes.

O SBT não tem motivos para reclamar. De acordo com Rubens Carvalho, o SBT já faturou 125 milhões de dólares no ano passado. Este ano deverá faturar um pocuo menos, em torno de 105 milhões de dólares, nopor culpa exclusiva da confusão que envolve o presidente da República, Fernando Collor. Nesmo assim, e diante de um quadro contrubado, o SBT está otimista e pensa em fazer investimentos e inovações. Um ponto da nova estratégia foi revelado no encontro de Belo Horizonte: a emissora já contratou um profiossional para cuidar, exclusivamente, da comercialização das festas do interior do país.

18ºCBR

Para o presidente da ABERT, Jaoquim Mendonça, que foi re-eleito para o biênio 92/94, a imprensa livre, tendo como fonte de receita a propaganda de empresas privadas e competitivas, é a única garantia de que aqueles que pretendem tomar a lei em suas mãos, estarão sob vigilância. Para Mendonça, o desenrolar da crise brasileira, sem precedentes, no entanto, serviu para mostrat que o regime democrático deve a pode funcionar.

No Minascentro, onde foi re onde foi realizado o 18° Congresso Brasileiro de Radiodifusão, dois outros eventos paralelos foram programados: o 12° Seminário Téchnico Nacional e a 14a. Exposição de Equipamentos para a Radiodifusão.

No 18° CBR foram debatidos ainda outros temas que trataram da compressão de faixas na televisão e o relacionamento com o Congresso Nacional.

Carlos Eduardo Behrensdorf é editor de Revista ABERT e repórter especial do Jornal de Brasília. Ele reporta para TV Technology International.

Circle 126 On Reader Service Card

Bob Dylan in HD and NTSC

(continued from page 1)

first time three such cameras had ever been switched together on a telecast.

To create a control room, NHK built a 40 x 40-foot temporary television facility behind the stage at the Garden. Two switching areas were constructed, one for the seven HDTV cameras and one for the four NTSC cameras. Once the HDTV cameras were switched for the live broadcast, the 1125/60 high definition format signal was converted to NTSC and routed to the second switcher for mixing with the NTSC cameras.

Gavin Taylor, the director, personally switched the seven high definition cameras, according to Diaz. "That HD feed was then converted to an NTSC signal and fed to the NTSC switcher, which was operated by a TD. With the director calling the shots, the TD then switched the NTSC cameras into that final NTSC mix. The result was an 11 camera NTSC shoot and that is what went out live," Diaz explained. HDTV viewers would see only the output of the HD switcher.

Isolated shots from several of the cameras were recorded. Those tapes could be used for editing. "We ISO'd four HDTV cameras which we downconverted to NTSC and we ISO'd all four NTSC cameras which gave us an 11-camera, eight ISO shoot for NTSC editing," said Diaz. "In Japan, they got a seven-camera HDTV shoot which they (edited) with the four HD ISOs."

Mixing it all

Mixing the HD and NTSC cameras was not exactly easy. A two-frame delay caused by the HD to NTSC conversion process had to be offset through computers, Diaz said. There was the matter of color matching all of the cameras. There was also the question of placement of the more light-sensitive CCD cameras (about one *f*-stop) with the older Saticon tube HD cameras. And there was the matter of being the first to use a 40-to-1 zoom lens on a HD CCD camera.

"Nobody believed this would work," recalls Diaz. "We always thought we would have to go a backup position of dropping the four NTSC cameras for the live broadcast and just go with the seven-camera live HDTV switch."

Then, as technical director Terry Donahue worked with the Japanese engineering team from NHK, miracles began to happen. The mood of the 107 television crew members at the Garden lightened as the concert approached.

"The night of the concert it worked like a dream. We were totally surprised," said Diaz. "The NTSC mixed in perfectly. It was the first time anyone has successfully switched NTSC and high definition video in a multi-camera concert shoot. There is no way you can tell which camera I am on."

To avoid lag or tube burn from shooting into stage lighting, the HDC-300 tube cameras were placed in the audience area and used for straight-on artist shots. One CCD HD camera was placed on a Louma Crane (another first), another was used handheld and the third, equipped with the Fujinon 40-to-1 lens, was used for wide shots of the audience and the concert lighting grid. All performed flawlessly.

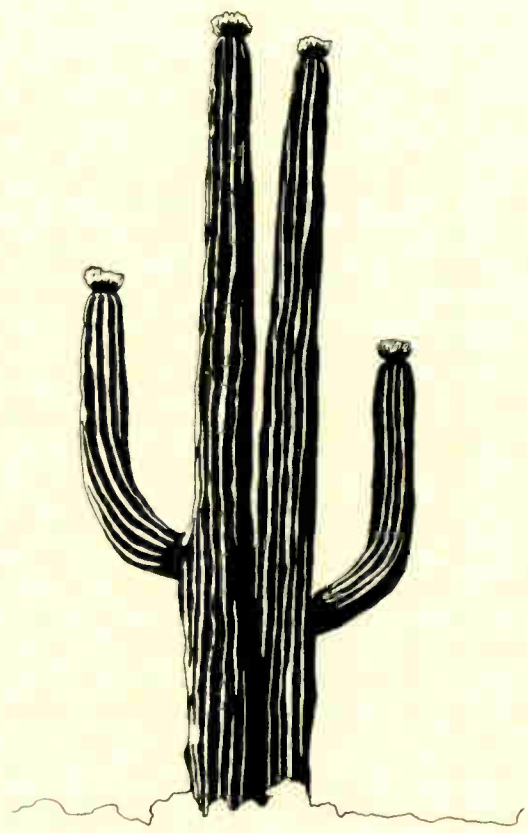
"We learned a lot from the concert," said Diaz. "We could be better next time but only in terms of putting the equipment together, not in the result."

Come Face-To-Face With Your Future!

You won't want to miss the National Association of Broadcasters convention, NAB '93. It is the world's largest marketplace of products, services and ideas in broadcasting, post-production, HDTV and multimedia. At NAB '93 you will make connections with 52,000 other leaders and innovators from throughout the world.

More than 800 companies will occupy 50,000 square meters of exhibits. And, NAB '93 includes special exhibitions for HDTV, multimedia, radio/audio products and services and more than 250 seminars and technical workshops conducted by industry experts. Your registration to NAB '93 includes full participation in these events.

Attend NAB '93... and come face-to-face with your future.



Register Today!

Call NAB in the USA at (202) 775-4972 or fax (202) 775-2146. European delegates can register and make travel arrangements through American Express/Germany.

Ask for Mr. Conrads at (49) 911/232397.

NAB93

SUNDAY, APRIL 18–THURSDAY, APRIL 22, 1993
LAS VEGAS CONVENTION CENTER

Engine Speeds Market Process

by Arthur Cole

PRINCETON, New Jersey Getting new product ideas from the drawing room to market quickly has always been the bane of electronics development.

Having to first design and construct a new unit, then run it through tests, revise the hardware, run more tests, etc., etc., etc., can make getting out the latest electronics quite time consuming.

But a high capacity signal processor known as the Princeton Engine, developed at the Sarnoff Research Center here, could cut that time considerably. With up to 2,048 parallel microprocessors able to process uncompressed video in real time, the engine can significantly reduce development projects, standard-setting procedures and scientific research.

Elite group

There are four Princeton Engines in use today—all in the U.S. Two are at Sarnoff, one is at the National Institute of Standards and Technology (NIST) in Washington, D.C., and one at Thomson Consumer Electronics in Indianapolis, Indiana.

Stan Knight, chief developer of the machine at Sarnoff, said the device aids research projects in two ways. First, it enables a user to program in various algorithms and other parameters of theoretical devices, much like the so-called "supercomputers" of scientific research. The computer-simulated equipment can then be tested and altered without having to develop and reconfigure hardware.

Second, because the machine can move uncompressed video in real-time, test results can be seen first hand on a computer screen rather than viewing reams of alphanumeric data.

"What once took months can now be done in days," Knight said. "Someone who comes up with a new algorithm for frame-rate conversion, for example, codes it into the machine. At the same time, test data is recorded with an HDTV camera and the tape is fed into the engine where we can evaluate the performance."

The engine can also run video through two algorithms simultaneously and display the results side by side on the same screen.

Working as a team

Knight's machines at Sarnoff contain 1,024 parallel microprocessors, each with 640K memory, or enough to capture one frame of video should he wish to store a clip. Of course, even with a total memory of 0.65 gigabytes, he can only save about 34 seconds of uncompressed video.

The microprocessors are arranged in modules consisting of two processors each controlled by a single VLSI (Very Large-Scale Integrated) chip. A second chip in each module governs communications and can input and output data at speeds up to 1.9 gigabits per second.

Knight said he is currently working on ways to increase the engine's storage capacity to a terabyte (10 to the twelfth bytes) using a 1.8-inch hard disk linked to each processor via a high-rate interface and bus package called Image Vault.

But along with the increase in processing power, Knight is also working toward miniaturization and has completed the design of the Mini Princeton Engine, a single insert board for Sun Microsystem servers and Silicon Graphics Crimson workstations.

"The future workstation will have one gigabyte of RAM and have one gigaflop of computer power," Knight said. "Probably the most conservative way to get there is through parallel processing."

Knight added that a top-of-the-line Mini PE would offer 10,000 mips (million instructions per second) while an average one could handle 5,000 mips.

How low can you go?

But a board-sized Princeton Engine is only half the battle. Knight is also working toward even smaller modules for desktop use, either as a standalone box or inserted into a PC.

Using advanced packaging technology developed by General Electric, Knight envisions a "Micro" Princeton Engine consisting of stacks of four-inch by four-inch modules. He estimates that an eight-inch stack of modules could net one gigaflop of power.

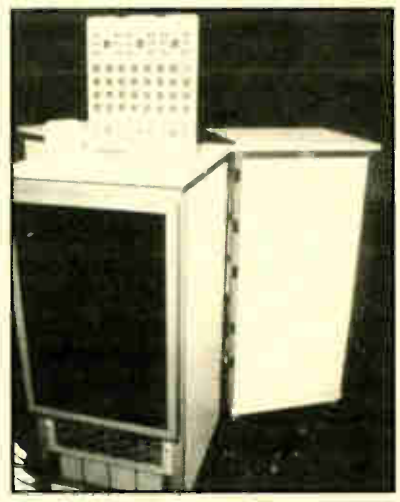
Until these new machines are available, Knight and other researchers will have to work with the full-sized engine, which is about as large as three small desks.

Knight's machines are controlled by Apollo Metrographics workstations using Mentor software in a computer-aided design (CAD) environment. They are used to evaluate potential new HDTV equipment, mainly frame-rate converters, interlace-to-progressive scan converters and compression/decompression technology.

But devising new video products is not the only way the engine has proved its worth.

Researchers at NIST (an agency of the U.S. Department of Commerce) are studying such things as how chemicals react and how lightning moves through liquid.

"Large scientific computations can generate so many numbers that it can be difficult to understand," said Dr. Robert Hebner, deputy director of NIST's electronics and electrical engineering lab. "The easiest way to assimilate information is visually. Our computers work the numbers while the engine turns it into video."



Sarnoff Labs' Stan Knight recently completed the design of the Mini Princeton Engine, shown here atop the original Engine.

NIST is also involved in hardware research for the Department of Defense, and is developing standards for advanced video systems, a process that virtually all experts agree needs to be shortened.

"The ability to look at results in real time is the main advantage," Hebner said. "The computer can evaluate tests in a shorter time and improve the quality of those tests."

The NIST machine is less powerful than those at Sarnoff; it has processors with 120K storage.

Although Hebner said actual hardware tests will still be necessary for a new product to reach the market, researchers at Thomson CE, where an engine is used for advanced digital video research, are looking at skipping hardware tests altogether.

"We think we can go directly from the engine to the integrated circuit. We can eliminate the hardware cycle altogether," said Steven Patton, senior member of Thomson's engineering staff. "It will not cut a big chunk off the design cycle, but it will be significant."

Sarnoff's Knight said he is currently testing the limits of the engine, trying to find new applications where it could be useful.

"We have not found out what it cannot do yet," he said. "We are exploring applications involving large image processing—neural networks, ultrasonics, radar and sonar signal processing. It offers power for all these applications, but we have yet to see what its limits are."

Indonesia Opts for DBS Route

(continued from page 1)

ation and are not expected to have any empty channels from day one.

Strategic planning

Some of the planning phase of Indostar has been strategic as well. One necessary hurdle was WARC 92. Thomas van der Heyden, ITI's general manager, and Arief Juwanto, director of MediaCitra, were both in attendance at WARC 92 in Torremolinos, Spain as representatives of the Indonesian government. They came back with the spectrum needed to make Indostar work.

van der Heyden has been very pleased with the support given to Indostar by the Indonesian government.

"The government continues to take active steps to ensure that this technology will be available to serve its people as soon as possible," he said.

Each Indostar satellite will have five transponders, some dedicated to television broadcast and some to radio. FM analog television, the most spectrum-hungry of the transmission methods, uses a full 27 MHz transponder. The same transponder is capable of up to eight channels of television programming using digital encoding and compression.

Audio transponders will carry from one to eight channels for audio service. The audio channels may each be used to carry two FM-quality signals (each FM stereo), four signals of less than FM quality, or one CD-quality signal.

Indostar Television

Indostar television is designed around a one-meter parabolic TV receive antenna. Television transmissions are in the S band, from 2520 MHz to 2670 MHz. This makes for required satellite spacing of about 9 degrees.

This spacing allows other Asian countries to operate DBS satellites. The first Indostar satellite will be located at 106.1 degrees East. The second launch will place a satellite at 115.1 degrees. The two remaining satellites of the Indostar constellations will reside at 105.9 and 114.9 degrees.

Radio reception is done with the simplest of antennas. The radio receive antenna will see both satellites at all times. The digital encoding and compression scheme is based on MUSICAM, developed with the Eureka 147 system.

That, however, is where similarities with the European system design end. Because the Indostar system was designed for fixed receive locations near the equator and designed for low-cost receive implementation, an advantage of about 10 dB can be had compared with the Eureka program, which plans to use the Advanced Digital System II (ADS II).

The Indostar audio transmission technique is robust enough to perform well with low-power operation and co-exist with terrestrial systems within the L band spectrum, from 1467 MHz to 1492 MHz. (After 1998, the spectrum will expand to 1452 MHz and 1492 MHz.)

Receiver technology

ITI also is developing the television and radio receiver technology for Indostar. The analog TVRO system will cost between US$100 to $125, exclusive of a conventional television receiver. Costs of a radio receiver should be about US$125. The DVRO (digital) receiver system will be available for between US$450 and $500.

Indonesia, by being the leader in implementing this technology, will be in a position to manufacture and export this equipment. van der Heyden stressed that the technology and manufacturing for the receive side of the system would be in place for the launch of the first satellite.

The first phase of the project, involving engineering, regulatory efforts and coordination, is on schedule and almost complete. The construction, launch and utilization phase is expected to go smoothly with Indostar-I orbited during the first quarter of 1995. Indonesia will save hundreds of millions of dollars by using DBS, compared with trying to achieve the same coverage and quality of transmission with terrestrial transmitters.

The entire project will have been funded by an indigenous private enterprise effort to establish a national broadcast utility. Government broadcast services will have, for the first time, the tool for disseminating news, information and educational programming across the whole of Indonesia.

Mark Timpany is a Jakarta-based correspondent for ***TV Technology's*** *sister publication, Radio World. Arief Juwanto is director of MediaCitra Indostar and program manager for the Indostar project.*

For information from ITI in Virginia, contact Tom van der Heyden at telephone: +1-703-883-1050; FAX: +1-703-883-9656; or circle **Reader Service 113.**

Crafting a PC-Based Editing System

Many entrepreneurial editors are intrigued by the promise of revolutionary PC-based edit systems for running their own post production businesses. "But the devil is in the interfaces," they exclaim, "and I'm not a systems magician! What kind of a total editing package can I put together on a limited budget centered around one of these PC-based systems?"

This month we're going to get some insight on this complete system challenge from six leading developers of PC-based edit systems.

by Jay Ankeney

FOCUS ON EDITING

In addition, in an attempt at consistency, the total system we are fantasizing about should be suitable for both industrial-level, on-line work (i.e., an A/B-roll system capable of simple effects, with low-cost tape transports) and/or broadcast-level, off-line service (i.e., a system that performs frame-accurate edits referenced to SMPTE time code and outputs EDL disks in most industry-standard MS-DOS formats).

Finally, please keep in mind that it is impossible to include all equipment that qualifies, and the ideal mix will vary depending on individual needs and tastes. Necessarily, we are going to emphasize the uniqueness in each point of view whenever possible.

Ground rules

First, here are some definitions. Under "PC-based edit systems," often called "desktop editors," we are talking about products that come as software and controller cards designed for your own home IBM, Macintosh or Amiga computers.

Ensemble cast

Let us start with Russ Srole, owner of Editing Technologies Corp., which manufactures the Ensemble line of editors.

"Keeping costs in mind," Srole begins, "I'd recommend our Ensemble Pro 3 A/B-roll editor. You will need an IBM AT or clone with a hard drive."

When it comes to tape transports, Srole recommends Sony's industrial-grade U-matic SP decks, the VO 9800 (playback) and VO 9850 (recorder), Panasonic's S-VHS 7650 (playback) and 7750 (recorder) VCRs, or JVC's BRS-822 and BRS-622.

"All will need time code cards," Srole advises. "The Panasonic S-VHS decks come with built-in TBCs but the U-matic VCRs and JVC machines will need outboard video stabilization."

There are four companies Srole mentions that make TBCs on cards that plug into a PC: DPS (Digital Processing Systems), I.DEN, Nova and Prime Image. He is also keeping his eye on ASC's inexpensive Virtual Recorder disk drives for off-line work.

"Interfaces for tape decks and switchers are built into our Ensemble system," continues Srole. "Inexpensive audio mixers are available from several companies. However, if you would like automated mixing, Jack Calaway's Software Systems/Sierra Madre makes the 422 MIDI controller, which listens in on the switcher port, providing inexpensive audio-follow-video capability. Combined with cost-efficient MIDI boxes, offered by companies such as Niche and J. L. Cooper, this will even provide automated audio mixing.

"For a video switcher," Srole concludes, "The Ensemble Pro 3 will talk to anything that uses the RS-422 serial interface, like the Grass Valley Group Model 110, although the EchoLab PC-3, DV7, Panasonic MX-50 or Videotek Prodigy would also serve well. Our system comes with an on-line logging database called SceneManager that can be stored to disk, and we offer a private computer bulletin board service for downloading software updates."

Editing Technologies Corp. has over 250 systems in the field. For more information, write: Editing Technologies Corp., 11992 Challenger Court, Moorpark, CA, 93021, U.S.A. Telephone: +1-805-529-7074, FAX +1-805-529-6744, or circle **Reader Service 39.**

Multiple machine interface

Rush Beesley, president of Sundance Technology Group, tells us his PC-based entry is the company's Macintosh-based Sundance System with "Q-Cut A/B-roll" video editing software, running on a Mac Classic II platform.

"Our MMI multiple machine interface, which is included," Beesley explains, "will provide RS-422 serial control for up to 15 sources and eight GPIs. For source decks you have basically three manufacturer choices: JVC's 622/822 S-VHS, Panasonic's 7750/7650 S-VHS or Sony's EVO 9850 Hi8 editing recorder, although the smaller format will be more reliable when tape formulations are perfected.

"I would say that NewTek's Video Toaster card in a Commodore Amiga 2000 computer would be a good choice for video effects. With the Sundance System Version 2.0, we even let you determine transition speeds by frame rate on the Toaster directly from the Mac keyboard.

"Another comparably priced recommendation would be Panasonic's WJ MX-50 video switcher. It handles both NTSC composite and Y-C component inputs with chrominance and luminance keyers and audio-follow-video functions. And it conveniently comes with two frame synchronizers for source inputs.

The Sundance Technology Group has over 100 systems in the field. For more information, write the company at: 6309 N. O'Connor Rd., Suite 111, LB 128, Irving, TX, 75039, U.S.A. Telephone: +1-214-869-1002; FAX: +1-214-869-1026, or circle **Reader Service 109.**

The United way

Bob Ricci, President of United Media, Inc., tells us: "We have just come out with a new line of PC-based editors to complement our established UMI series of dedicated computer editors. Our least expensive A/B-roll system would be the PC 200 Series software and interconnect box, designed for IBM AT platforms with a hard drive."

What tape decks would Ricci put up for consideration? "Earlier versions of Hi8 decks were not frame accurate," he says, "but the new EVO 9850 should overcome that. And there are some S-VHS decks that have dynamic tracking, so some real special effects are available.

"But the choice of VTRs depends on the expectation of what tape formats the clients are using," says Ricci. "Our PC EDIT Series of editors can handle any RS-422 serial-controlled deck, and with a simple change of connections, the software will recognize a new machine ID and control it just fine."

And for TBCs? "You can get independent TBCs, of course," Ricci explains, "but another option would be a two-channel TBC such as the one from Dynatech that has effects built in. Some dual-channel TBCs even have digital effects, push-on and push-off. Another approach is a switcher that sits right on a PC bus. One example would be the PC-3 from EchoLab.

. . . the total system should be suitable for both industrial-level, on-line work and/or broadcast-level off-line service. . .

"United Media also has an OEM switcher card from EchoLab we sell under the name the PC 30. Since you can also buy TBCs on a card, this gives you everything for video stability and mixing resident inside the PC. Then again, if you use outboard units, they are more accessible for other use, so it all depends on what your uses will be. Or you can often get a TBC board in the VTR that will connect to a switcher card in your PC," says Ricci.

United Media's PC EDIT Series is fairly new, but the company has hundreds of dedicated computer systems in the field. Write: United Media, 4771 E. Hunter, Anaheim, CA 92807, U.S.A. Telephone: +1-714-777-4510, FAX +1-714-777-2434, or circle **Reader Service 101.**

Switch hitter

Frank Taylor, editing systems product manager for CV Technologies, a division of Comprehensive Video Supply Corp., tells us the company's editing software can go both ways. CV Technologies now has the Edit Master (Version 4.0), for IBM AT systems, and an Edit Master Mac (Version 4.2) for Mac Plus units running system 6.05 or later.

Software and a CVNET master network controller card are needed for either the IBM or the Macintosh version. You will also need machine interfaces. An A/B-roll system will cost about U.S.$6,000.

"Our Edit Master editing software is platform-independent," says Taylor. "But since we improve the Mac and IBM software alternately every other year, at this time the Edit Master Version 4.0 for the IBM side has the most recent software upgrades.

"When it comes to tape transports and TBCs," Taylor continues, "just recently we've been testing the JVC BR-S822U S-VHS, with a built-in TBC and LTC/VITC time code cards. There are also lots of new TBC boards which are all both externally controllable via an RS-232 port and bus controllable.

"We at Comprehensive Video will soon be making bus-control modifications to our character generator PC2, and we're looking forward to the advent of PC-based audio boards. Once you have that, you'll have most post production tools right inside a PC.

"So in addition to the mix of equipment," Taylor advises, "editing entrepre-

(continued on page 12)

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Storage Formats Facilitate Use of Sound

Sound effects can play a vital role in a video production. The proper sound effect can augment a scene's action and enhance the story.

This month I'll discuss what formats sound effects are physically stored on in a library in order to be efficiently accessed.

A variety of formats should be considered. Sound effects may be stored on many mediums, each having certain advantages and fulfilling particular requirements of sound effects. What an effect is and how it will be supplied to the sound edit or mix session can determine the best storage and delivery format.

As discussed previously, most sound effects can be categorized as either background (atmosphere) or spot (hard) effects. Background effects are most useful when they are as long as possible (generally, at least two minutes is desirable).

Some formats accommodate background or relatively long effects better than others. Background effects may need to be looped (edited sequentially) in order to make them even longer. This is a particular requirement that only certain formats address.

On the other hand, "room tone" is a type of effect that needs to be looped in order to make it longer, but may originate as only seconds or even frames in length. This stipulation may define a completely different format.

CRITERIA	FORMAT						
	1/4" (15IPS) Leadered or Slated	1/4" (15IPS) time coded	L.P./disc (33 RPM)	CD	Cart	R-DAT	Sampling
Access time between reels	poor	poor	average	excellent	good	good	good
Access time within a reel	average	average	good	excellent	N/A	good	excellent
Automated search	N/A*	N/A	N/A	excellent	N/A	N/A	N/A
Compatibility—based on # units in use	excellent	average	excellent	good	average	good	poor
Recordable	excellent	excellent	N/A	Limited avail.	average	excellent	good
Accurate repeatable start up	good	excellent	poor	poor	poor	Limited avail.	excellent
Editability	good	good	N/A	N/A	N/A	Limited avail.	excellent
Loop capability	average	N/A	N/A	N/A	excellent	N/A	excellent
Vari-speed	excellent	excellent	excellent	Limited avail.	Limited avail.	Limited avail.	excellent
Overall frequency response/ dynamic range	good	good	average	excellent	poor	excellent	good
Overall noise, wow, flutter & distortion	good	good	average	excellent	poor	excellent	excellent
Vulnerability to physical damage	average	average	poor	excellent	average	average	good
Approximate available record time per "reel"	30:00	30:00	17:00	76:00	10:00	120:00	3:00
Backtime capability	poor	excellent	average	average	N/A	Limited avail.	poor
Time codeable	Yes	Yes	No	No	No	Yes	No
Commercially available effects libraries	excellent	poor	excellent	excellent	N/A	Limited avail.	Limited avail.
Special features or applications	Universally compatible format	Time code synchronized editing	Random access playback	Digital random access playback	Loops of tones, backgrounds or atmospheres	Recordable digital audio	Manipulation of short effects

* Not applicable to this format

Other relatively long effects might actually be a sequence of events that are treated as a single effect. Examples would be "steam train idle and exit from station," "marching band pass-by," "fireworks display," "church bells tolling," "jet airplane approach and land" and "large audience applause."

In practice, only a piece of or edited sections of these effects will be used in the final audio track. However, the ability to edit these sequential effects is a common request and may indicate the use of yet another format.

Which format do you use?

Numerous attempts have been made to manage these varied and complex demands placed upon audio formats. The formats most commonly used by professional sound personnel endure because they fulfill the essential requirements.

In an attempt to most completely consider the various attributes of each of these popular formats, I have compiled a chart (Figure 1), that lists 17 features applicable to the requirements of sound effects. A busy, modern library will probably store effects on most, if not all of these formats, because no one format suits all types of effects equally.

Some information about which formats appear on the list is in order. The 1/4", 15 ips reel-to-reel is probably the most common format. It is virtually universally compatible and has a long tradition of use. If the tape is time coded instead of providing leaders or slates in between the various effects on a reel, then other capabilities are acquired. These include search, cue, synchronization and frame accurate editing of time-coded material.

The preferred method

Compact discs are now the preferred release format of most libraries. A multi-disc CD "jukebox," when interfaced with a computerized data base, offers a highly automated sound effects search-and-retrieval system.

The cart continues to serve the audio community. Due to its continuous loop capabilities it has survived threats by more technically advanced formats. Individual effects also can be put on cart,

Build a PC Edit System

(continued from page 11)

neurs should be aware of the flexibility and potential available to them both in terms of internal boards and the traditional external equipment. We think our edit system is very close to what you used to have to pay US$40,000 to US$50,000 for in a dedicated computer edit controller."

There are over 1,000 Edit Master systems out, and about 100 in the Macintosh flavor. For more information, write: Comprehensive Video Supply Corp., 148 Veterans Dr., Northvale, NJ, 07647, U.S.A. Telephone: +1-201-767-7990; FAX +1-201-767-7377, or circle **Reader Service 103.**

The Wizard of OZ

Over at Videomedia Inc., Bill Stickney, V.P. Engineering, tells us: "Our system, the OZ, is a Windows-based editor that provides composite video within a scaled window right on the data monitor. We were using the Bravado VGA board by Truevision at the 1992 NAB show in Las Vegas, although other boards are now available.

"In addition to OZ software for an AT-compatible IBM computer," Stickney explains, "what we supply is a V-LAN transmitter and two receivers on a plug-in board for cuts-only machine control. With another receiver for A/B-roll, the total cost for a three-machine system is around U.S.$2,595. Since OZ interfaces to all other equipment on a V-LAN network, we can control up to 31 devices per serial port of the computer.

"The lowest cost playback deck we have found suitable for editing purposes is the new JVC BR-S605 S-VHS deck. A real price breaker at under U.S.$2,000. And it is especially appropriate for our OZ system since it can only be made frame accurate with a U.S.$500 plug-in V-LAN card. The JVC BR-S811 recorder (also V-LAN compatible), will complement a budget-minded system very nicely. For switchers, probably the best deal out there is JVC's KMD-600 because it is a selectable component/composite switcher and digital effects box with two built-in TBCs. That saves the cost of discrete TBCs for those BR-S605 decks.

Videomedia's OZ editor is a new desktop video solution. Write the company at: 175 Lewis Road, #23, San Jose, CA 95111, U.S.A. or call: +1-408-227-9977; FAX +1-408 227-6707, or circle **Reader Service 28.**

Linking up

Scott M. Sprunger, AmiLink product manager for RGB Computer & Video tells us: "Our A/B-roll software sells for U.S.$5,300 and runs on either a Commodore Amiga or an IBM compatible computer. But for the most value we think editors will like the Amiga version (AmiLink/VT), because it can run NewTek's Video Toaster on the same computer platform.

"In tape decks, we are interested in the low cost of the JVC BR-S605 and 525 playback decks with internal V-LAN control available. We are also looking toward the new Hi8 decks if they prove to be truly frame accurate. It may be that the Panasonic 7650/7750 S-VHS decks, both V-LAN controllable, will provide the best overall mix of players and recorders, since they have built-in TBCs and optional plug-in time code cards," says Sprunger.

"If you want an inboard TBC, the DPS cards have performed relatively well for us and are excellent for the price range. Of course, DPS also makes waveform monitor and vectorscope cards, called Personal V-Scope, for either the Amiga or the IBM, which offer display on a regular video monitor.

"Since we can talk to the Video Toaster and a production switcher at the same time," Sprunger points out, "they can work concurrently. If our IBM version editor is used, we do have the capability of talking directly with an Amiga/Toaster combination. But we feel that the complete integration of the Video Toaster with our software on the same Amiga platform gives unique editing flexibility with a significant cost savings."

For further information, write RGB Computer & Video at: 4152 Blue Heron Blvd. West., Ste. 118, Riviera Beach, FL, 33202, U.S.A. Telephone: +1-407-844-3348, FAX +1-407-844-3699, or circle **Reader Service 7.**

My thanks to all who gave so graciously of their time. Let us hope this overview of PC-based editors can encourage many of you out there to start considering cutting it on your own.

Jay Ankeney is staff videotape editor at KTTV in Los Angeles, California.

Effects Collections

by Ken Hahn

AUDIO FOR VIDEO

but frame accurate repeatable start-up is not possible. It remains a format that services a variety of types of productions including radio, live performance and post production.

Recordable DAT is becoming the preferred format for field recording of effects. The recorder's light weight, portable size and digital audio capabilities are distinct advantages over other systems.

The DAT format can store up to 120 minutes of digital audio on a single, small tape cartridge. The tape is enclosed in a protective shell and eliminates handling or threading by the operator. The machines and tape are relatively inexpensive. Access time from beginning to end is only one minute for a 120:00 tape. It has an absolute speed reference and can be time coded.

Floppy samples

The last format included is actually a group of formats that I refer to in general as "samples." These are usually relatively short pieces of audio (under a few seconds) stored on floppy disk or other removable or permanent memory.

These samples, when loaded into their compatible systems, can be manipulated in a variety of ways. Extensive pitch, speed, dynamics, filtering and editing features are the strengths of these systems.

The problem lies in compatibility between systems. A sample from one system may be irretrievable on another, even though it may be physically stored on the same format. The situation is being addressed and solutions are available, but it is certainly a drawback when compared to more widely accepted formats.

Included are as many criteria for judging the formats as I determined to be relevant to sound effects storage. The comments listed are accurate by present day standards, but advancements continue to call for updates.

For my purposes, a "reel" is defined as all audio that is accessible on a single unit without requiring a unit to be turned over, exchanged or removed. In reference to the rating method used: Each format is compared to the other: "." means a poor performance, "O" means average, "+" means good. "A *" means excellent, and "#" indicates this is a new technology or it may have limited availability. "N/A" indicates that a criteria is not applicable to a format. (For instance, for the NAB cart in the criteria of "access time per reel," only one effect is put on a single cart so there is no accessing other effects on that unit.) Please take some time to refer to the chart.

I am not judging the quality of the effects provided on various formats. Commercially available effects range from outstanding to poor, as do the effects found in a personal or facility library. Many companies offer sample or demonstration disks of their libraries.

Sounding off

Just because an effect may have been miked in stereo, digitally recorded and edited, and delivered on a CD, does not guarantee that the sound effect will be a "good" effect. I recommend that you obtain samples to judge the quality of the recordings yourself.

Some distributors have taken up some questionable practices. A CD can hold about 76 minutes of stereo audio, yet disturbingly, most sound effects CD releases do not contain anywhere near that many track minutes. Some "new" releases are actually re-releases of older effects that were previously available on LP. The quality of several of these are not satisfactory by today's standards.

Also disturbing is that some distributors seem to randomly put any effect on any disk. Automobile sounds, human sounds, warfare and telephones may all be compiled on a single disk. Another disk by the same distributor may contain still other automobile sounds.

Background effects are most useful when they are as long as possible. . .

This practice delays search time, which in turn deters use and eventually causes rejection by the end users and purchasers.

Lastly, there is a practice of adding synthesized "effects" such as tones, beeps, whooshes and "sci-fi" effects that are nothing more than filler. It is difficult to believe there are users of these libraries that actually requested these "effects."

In a previous article I discussed what qualifies an effect as "good." There are additional qualifications that deserve mentioning. An effect is only "good" if it is properly named and all relevant information about the effect is provided.

It is the responsibility of the suppliers of the commercially available libraries to provide this information. If an effect cannot be located because of improper labeling or misinformation, the effect immediately loses its value.

Complete logs, properly notated, are as important to sound effects recording as good microphone techniques. Without specific information regarding the recording, the effects become less useful. While it is true that relevant information can be supplied in the form of a verbal slate at the beginning of the sound effects recording, this material is usually cut and removed from the reel and may not be passed on with the other recorded material.

Getting what you need

What information is needed when an original effect is recorded? Professionals who record location sound and effects have printed logs that assist in supplying the necessary information. Tape speed or sampling rate, recorder and microphone(s), processors or accessories used are listed. Also noted should be whether the recording was done in mono, stereo, M-S or by some other method. The format, number of tracks and channel assignments should be recorded as well.

As with any recording, applicable alignment and level set tone are needed. If noise reduction has been employed, this should also be reflected in the slate, tones and labeling. How the tape is stored (with the head or tail out) should be noted. If sync pulse or time code are recorded, the rate and reference should be given. Time code or index numbers are also useful information. Verbal and written slates as well as descriptions of any particulars regarding the effects should be supplied.

What and where the effect is often is not entirely obvious when the material is later reviewed to be put into the sound effects library. That, of course, is part of the beauty of sound effects. What an effect is used for may not be related in any manner with the actual event that it was originally associated with.

Ken Hahn is co-founder of Sync Sound in New York and has received numerous awards for his work. He may be reached by writing to **TV Technology.**

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Barry Flannaghan, designer of the one rack unit CVR45, compares it with the 120 rack unit ACE.

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Circle 76 On Reader Service Card

Work Easily With DPaint on Amiga

by Stephen Datkowitz
Editor/Designer
DAK Productions

NEW BRUNSWICK, New Jersey We heard there was a computer that could do everything we wanted to do and more for less than a few thousand dollars. We were skeptical, of course, but that is how we got interested in the Amiga computer in 1985. We were shown two programs, Pro Video CGI and DeluxePaint. Pro Video was good, but the demo images from DeluxePaint sold us.

Today, DeluxePaint III/IV by Electronic Arts is the standard for paint programs on the Amiga and with good reason. No, it is not 24-bit—it isn't even 8-bit—but it is fast. Having tried nearly every paint program available for the Amiga, I would have to say it is the one

USER REPORT

program that comes closest to a word processor for images. At DAK Productions we use it for title page composition, logo treatments, illustration, storyboarding and animation.

Most painting programs on the Amiga are bit-map based–that is, not structured or object-oriented. While this method is sometimes limiting it has tremendous advantages over object-oriented programs when used for video output. Chief among them is speed. Because pixel placement is less computer intensive than calculating point plots, animations are rendered in nearly real time.

Text page composition

Many anti-aliased typefaces are available for the Amiga and are easily imported into the program. DPaint also supports color fonts that give the letters the appearance of metal, stone, neon, and the like. The 2.04 Amiga operating system has scalable fonts which can be resized and used as bit-mapped fonts.

Text may either be typed directly onto a painted page or blocks of text may be precomposed in a titling program. For simple lettering jobs, we use Broadcast Titler by Innovision Technology. It is used to compose the text and to apply attributes such as size, spacing, outline and drop shadow. Once a "sheet" of text is completed it is saved as an IFF page.

One of the best features of working on the Amiga is that almost all programs write files in the standard IFF format. Images, frame grabs and lines of text can be imported and exported directly into and out of all programs without the need to convert from one file format to another.

The saved file, with all the text, is loaded into the spare page of DPaint and used the same way a sheet of type is used in page layout. Each line or block of text is then saved as a brush to be called up as needed.

Background images are constructed with a variety of tools. Page fills can be made of gradient spreads or color ramps in various directions with different levels of dithering (blending of colors).

Digitized video frames can be used as backgrounds but, because of the limited pixel and color resolution, you should not expect still store quality. When a true video frame is required for a background, we key the DPaint image over our still store or a Toaster frame.

Compositing and animation

We usually work backwards, designing the final page first using the individually saved elements. From there, dynamics or embellishments can be tried several ways to see which work best.

Placement of an element is aided by several powerful tools. Transparency can be controlled by level of opaqueness and range of colors to be affected. Shading, smoothing, tinting, softening and several other tools allow for many pleasing effects. All these tools are further enhanced by a unique stencil tool.

Unlike many stencils systems that require objects to be carefully painted around to build a mask, DPaint uses a chromakey-like method. Colors are selected to be masked, and areas outside the selected range of colors are unaffected by operations performed afterward. When used with the animation tools, this feature allows for easy "layering" of elements.

Most of the animation done in DPaint is achieved by using "move" tools. These move tools are fast and direct. After a frame rate is selected, a brush is loaded and placed into a final position on the last frame. A "to" button is set along with the coordinates from which the image will move. A near real time preview shows the motion you selected with a box that represents the brush.

Adjustments can be made and previewed until all attributes are correct. DPaint then draws each frame in reverse order to the final frame. Sometimes this is done on a zero or black background to reduce drawing time and also allow the moving object to be picked up as an animbrush.

Even if you only bought the Amiga to make Toast, DeluxePaint is a program you should own.

An animbrush is the set of frames that make up an animation that is no longer oriented to a specific background. Treating the frames in this way allows you to paint the movement on different backgrounds at different locations.

For example

Let us say you wanted to create a 16-frame animation of a man walking across a road. Four frames of a man walking on a zero background could be picked up and saved as an animbrush. A background of a road could then be loaded and a frame rate of 16 frames set. Cycling the animbrush over the length of the screen would produce an animation of a man walking across the screen without manually drawing all 16 frames.

Although we have not had an occasion to use a "morphing" animbrush so far, I would be remiss not mention it. The morph tool allows a brush, such as a title—"D O G"—to be transformed into another brush, an image of a dog. The first brush is loaded into a buffer, a frame rate is set, the second brush is then picked up and the "'tween frames" are generated within DPaint. The resulting animbrush is then placed on the background as described earlier.

Even if you only bought the Amiga to make Toast, DeluxePaint is a program you should own. The speed at which ideas can be turned into images and ease of use make it, at the very least, a necessity for visualization.

The majority of our projects require only titling and some 2-D illustration. DeluxePaint has given us the tools to create attractive title pages and animations quickly and easily.

Stephen Datkowitz has been a videotape editor for more than 10 years and pioneered the use of Amiga computers for video production since 1986.

The opinions expressed above are the author's alone. For more information on DeluxePaint, contact Electronic Arts at +1-415-571-7171, FAX +1-415-349-7417, or circle **Reader Service 9.** *For more information on Broadcast Titler, contact Innovision Technology at +1-510-638-0800, FAX +1-510-638-6453, or circle* **Reader Service 81.**

Octree Provides 3-D Perspective for Artist

by Carl Anderson
Graphic Artist
Girard Video

WASHINGTON, D.C. Octree Software, Inc.'s Caligari Broadcast is a 3-D modeling and animation program for the Amiga computer that allows for a very intuitive interface between artist and computer. Its object design and scene composition processes are carried out on an Amiga 2000.

My system is modified with a Great Valley Products 68030 accelerator board and 8MB of RAM. The frames are rendered and displayed in full 32-bit color on a Vista board from Truevision.

The 3-D designing space that Octree Software has developed is Caligari's most impressive feature. In addition to the front, top and side views, the artist can choose Perspective, which has the effect of providing a movable point of view within the 3-D work space.

The mouse is used to move your eye or selected objects around this three-dimensional environment, giving a "virtual reality" feel to the design process: The motion of the operator's hand on the mouse, moving and sizing objects, corresponds closely to the motion of one's own hand in the real world.

Because objects can be drawn, copied, scaled, glued and manipulated all by eye, the artist is freed from a lot of keyboard entries.

Caligari has a collection of basic 3-D primitives such as cube, sphere, cone and cylinder. Objects can be assembled from these primitives, extruded or lathed from flat polygons or converted from paint programs using a pixel-to-vector conver-

USER REPORT

sion utility called Pixel 3-D.

A single-point editing function allows faces to be sliced and more complex objects to be formed by sweeping or mirroring a polygon. After a complex object has been assembled, you still can go back and access its individual parts. This allows you to alter their shape and size and to define their various surface properties.

Once objects have been assembled, they are ported to the Scene Design module, where lighting is set, surface attributes are assigned and the complete picture is composed by rotating and moving the eye to frame the scene.

By moving the eye around a scene, lights can be set by assigning them the same coordinates as the eye. Caligari is not a ray tracer; however, it very effectively mimics surface properties such as specular highlights and shadows, and achieves rendering times that are much faster than ray tracing programs.

With this system, animation control takes on a casual interactive quality akin to arranging objects on a table top. The eye and objects to be animated are guided through a sequence of key frames using the mouse. Intermediate linear- or spline-based frames are then calculated and inserted.

Photorealistic frames are rendered on a Truevision Targa or Vista board in 16.7 million colors and with resolutions of up to 8,000 x 8,000 pixels for slide output. However, because Vista is a native IBM PC graphics board, an AT bridgeboard for the Amiga is required in order to provide the PC slots for Vista. Running this hybrid system, while certainly possible, is somewhat inefficient and presents the only drawback to Caligari at this time.

Version 2.1 does away with the necessity for the AT bridgeboard and even the Vista board by providing for an interface with the new 32-bit Harlequin frame buffer developed for the Amiga by Amiga Centre Scotland.

If you are a graphic artist daunted by the usual complexities in 3-D design that slow down the creative process, Caligari offers the simplicity and flexibility to allow your concepts to flow relatively unhindered.

Editor's note: Carl Anderson produces graphics on his Amiga at home in the mountains of western Maryland and at Girard Video in Washington, D.C. His background includes traditional cel and table top animation, film and videotape editing.

For more information on Caligari, contact Art Prince at +1-415-390-9600, FAX +1-415-390-9755, or circle **Reader Service 49.**

LA ESTABILIDAD ES ASUNTO CRÍTICO

Videocraft examina los elementos básicos de la producción de video, suministrando informacion en materias que van de la duración de una batería, a grabación de sonido en el exterior, hasta la duración de cintas, mencionadas en el presente.

Los fabricantes de cintas no quieren hablar de eso, y pocos fabricantes de video se toman la molestia de preguntar: ¿Cuánto tiempo dura un cassette de video? Casi todos operamos bajo la presunción de que las cintas que grabamos hoy van a poder leerse en un futuro lejano. Pero ¿cuánto tiempo podemos esperar con certeza de que la cinta almacene y lea nuestros programas?

La respuesta no se encuentra en los anuncios para cinta video. La triste realidad es que las cintas de video no duran una eternidad. A distinción de las películas cinematográficas, que pueden durar décadas, la cinta video es un medio mucho más frágil.

Ningún medio de grabación magnético es permanente. Estas cintas de óxido férrico de cobalto o partículas metálicas dentro del revestimiento plástico de un videocassette, representan una tecnología muy nueva. Los profesionales únicamente han contado con 20 años de experiencia con cintas tradicionales de óxido, y las nuevas cintas metálicas, introducidas con el formato de Video 8 en 1985, aún se encuentran en su infancia.

Abiertas a estudio

Entonces, ¿cuánto dura un videocassette? Tradicionalmente, los fabricantes de cintas no han contestado directamente a esta pregunta. Los usuarios reciben algunos consejos generales sobre almacenaje y seguridades de que ésta no es materia que debe preocuparlos mucho. Pero hoy en día, gracias a un nuevo estudio interno realizado por Sony en el Japón, un fabricante de cintas ha dado a conocer un estimado específico sobre la duración de sus productos de cinta video, que puede desbaratar cualquiera ilusión de que un video va a durar para siempre.

Metal energético

La nueva cinta de metal, que tiene una superficie exterior protectiva que abraza y protege las partículas de metal, ofrece mejoras en el rendimiento comparado con la cinta de óxido en tres aspectos: energiá magnética, una menor pérdida en el espaciado, y menos ruido de modulación.

La energía magnética de la cinta de metal es cuatro veces mayor que la de la cinta de óxido. La superficie del acabado reflector (mirror finished) reduce la perdida en el espaciado (un vacío entre la cabeza y la cinta), produciendo así una salida más alta en frecuencias altas. Una cinta metálica tiene una relación de portador-a ruido (C/N) mayor, la relación entre el nivel de salida y el nivel de ruido con el cual se graba y se reproduce una frecuencia. Un C/N más alto generalmente significa menos ruido y una mejor imágen.

La durabilidad tanto de las nuevas cintas metálicas de alto rendimiento, así como de las cintas tradicionales de óxido fueron analizadas extensamente por Sony en sus cámaras am-bientales a distintos niveles de temperatura y de humedad.

La prueba

A fin de ver como afecta el desgaste la salida de RF de una cinta, Sony pasó los cassettes por 500 ciclos de lectura (playback) y rebobinado (rewind) a una velocidad baja de 1/30 en un VCR de Betacam.

El resultado, según el estudio de Sony, es que tanto las cintas de metal como las de óxido,

por Frank Beacham

VideoCraft

cuando se almacenan bajo condiciones ambientales de 25 grados C y al 50 por ciento de humedad relativa "son muy estables y no indican cambios en el rendimiento electromagnético del video". Aun bajo condiciones de 16 semanas a temperaturas altas y humedad alta /45 grados C, 80 por ciento de humedad relativa/ la degradación del rendimiento electromagnético del video era menos de 0.6 dB en el peor de los casos.

"Este valor no afectaría la calidad de la imágen durante la lectura", dice Sony. Sin embargo, a tal alta temperatura, el nivel de imperfección de la cinta rapidamente se duplica en un período de 16 semanas.

Bajo las pruebas de durabilidad del rebobinado, Sony determinó que las cintas de metal tenían menos degradación de salida de RF que las de óxzido. Después de 500 ciclos, la degradación de óxido dera de 2.3 dB y de metal de 0.6 dB. Sony notó que no era sorprendente porque los materiales en la cinta de metal eran superiores al óxido en cuanto a pérdidas termales y de esfuerzo mecánico.

EL informe Sony llegó a la conclusión de que la esperanza de vida de cualquier cinta—ya sea metal u óxido, depende de la descomposició de sus componentes quíimicos, tales como la película plástica de base, los polímeros aglutinantes, los materiales de revestimiento dorsal, lubricantes y agentes de dispersion. El calor y la humedad aceleran la degradación de estos materiales orgánicos tanto en las formulaciones de cintas de óxido como de metal, según el informe.

Asuntos ambientales

¿Cuál es, entonces, el resultado final? ¿Hasta cuándo nos indica Sony que podemos esperar que dure un videocassette? Ya que las condiciones ambientales son la clave para la estabilidad química de la cinta, la respuesta de Sony se basa en las condiciones de almacenaje. Si el usuario guarda las cintas a una temperatura constante entre 15 y 25 grados C, y a un nivel de humedad relativa de 40 al 60 por ciento, Sony predice que tanto las formulaciones de cinta de metal como las de óxido durarán 15 años sin una degradación significativa.

Es importante notar la palabra "constante" al hablar de las condiciones ambientales en las que se almacenan las cintas. A fin de evitar la expansión y contracción de la pelicula base, Sony recomienda que haya poca fluctuación en la temperatura o en la humedad.

Debido a que la mayoría de nosotros no vivimos en ambientes ideales de control de temperatura y humedad, la cifra de 15 años no parece muy realista para el usuario promedio.

Para cintas importantes, irremplazables, el gerente de productos de cintas Sony, Les Burger, recomienda que los videógrafos hagan copias de proteccion—preferentemente de formato digital—de la cinta maestra cada tres a cinco años. Estas copias, aunque de una generación más baja, asegurarán por lo menos contra cualquier deterioro o falla en la cinta original maestra. Burger también recomienda el rebobinar las cintas importantes por lo menos una vez al año.

No tenga la ilusión de que un video es eterno. La única manera de preservar su produccion para el futuro es ser inteligente, cuidadoso y hacer copias a intervalos regulares.

Frank Beacham es un escritor, director y productor con sede en Nueva York. Puede ponerse en contacto con el en: 163 Amsterdam Ave., No. 361, New York, N.Y. 10023

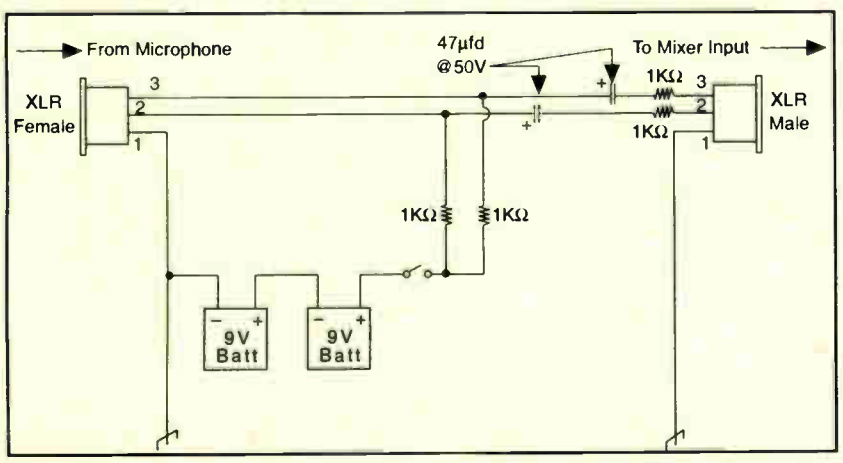
Mic Phantom Power

TECH TIP

by Mike Sokol

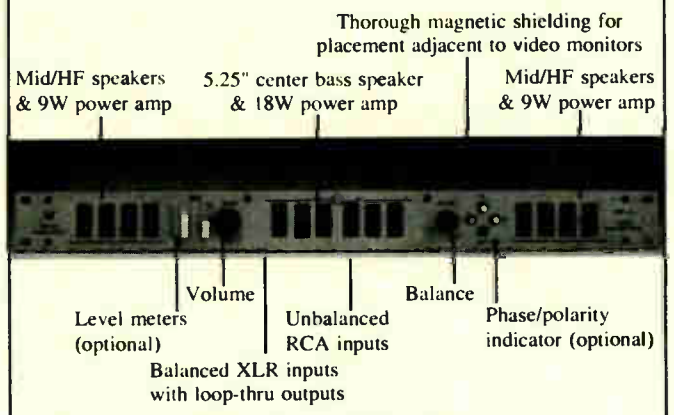
Here's an inexpensive way to supply phantom power to microphones in the field. These parts can be salvaged from your box of spare parts, or picked up at your local electronics store.

This setup has worked very well with Countryman Associates and Crown microphones. The output will feed a balanced or unbalanced microphone input without any problems. I have used it on a Marantz PMD430 cassette deck and a Sony 6800 VTR with great success.



Mike Sokol is director of JMS Productions in Hagerstown, Maryland. He is also a computer consultant. You can write him at 121 E. Baltimore St., Hagerstown, MD 21740, U.S.A., or call him at +1-301-791-2568, or FAX +1-301-791-8146. Submit your Tech Tips to TV Technology, P.O. Box 1214, Falls Church, VA 22041 U.S.A.

Never before has one rack space sounded this good.



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MARKETPLACE

. . . highlighting the latest products available to professionals in the television industry.

Internal focus lens

Canon's new J20a x 8B IRS/IAS ENG/EFP internal focusing lens allows the user to squeeze in wide shots from 8mm/6mm and still go all the way out to 320mm/240mm with its built-in extender.

By intensifying anti-reflection paints in the lens barrel and multilayer coated elements, Canon has reduced ghosts and flares.

For more information, contact Canon at +1-201-816-2900; FAX +1-201-816-9702, or circle **Reader Service 131.**

Universal sync generator

NVision's NV5000 Series Universal Sync Generators function as a common timing reference for simultaneously locking NTSC video, PAL video, AES/EBU digital audio and SDIF-2 digital audio to a common reference.

The NV5000 may be locked to a 5 MHz external atomic master timing reference or serve as the reference in "free run" mode.

The AES/EBU and SDIF-2 word clock outputs are simultaneously available in three sample rates: 48 kHz, 44.1 kHz, and 44.056 kHz. AES/EBU alignment tones for each sampling frequency are user-selectable from the front panel.

For more information, contact NVision at +1-916-265-1000; FAX +1-916-265-1010, or circle **Reader Service 55.**

Low light CCD camera

JVC's new KY-27U is a 2/3", three-CCD camera able to produce quality pictures in light as low as 2 lux with 100 percent video level. It achieves a total of 30 dB gain without the usual noise and degradation by combining 24 dB of electrical gain with an additional 6 dB achieved by JVC's CCD pixel readout technology.

For more information, contact JVC at +81-3-3245-0810; FAX +81-3-3245-1402, or circle **Reader Service 67.**

Digital edit suite

Graham-Patten's D/ESAM 400 is an assignable digital edit suite audio mixer. It provides flexible edit system control of audio mixing in a manner similar to conventional video switchers.

A combination of modular input architecture and digital signal processing provides full integration of digital/analog ATRs and VTRs in a single editing suite.

D/ESAM 400 accommodates up to 32 analog and digital inputs, routing via a microprocessor controlled Virtual Matrix to four analog Program, four digital Program and four Monitor outputs.

For more information, contact Graham-Patten at +1-916-273-8412; FAX +1-916-273-7358, or circle **Reader Service 115.**

Remote control unit

FOR.A's recently introduced a remote control unit for its UDP-1000P universal digital processor, designed to provide noise reduction and image enhancement to virtually every video picture.

The unit gives fingertip control of all the UDP-1000P's system, noise reduction and image enhancement controls. It has a built-in event memory that allows instant recall of preset or user-defined settings. This, coupled with remote GPI control of the event memory, allows for great flexibility.

For more information, contact (in Europe) Per Sjofors: +44-81-788-7664; FAX: +44-81-788-7435, or circle Reader Service XX. Or, contact FOR.A at +81-3-3446-3936; FAX +81-3-3446-4452, or circle **Reader Service 77.**

Portable CCD camera

Hitachi's SK-F38 600,000-pixel FIT CCD camera is designed for ENG/EFP use and features 850 TV lines of horizontal resolution; high sensitivity FIT CCD with micro lenses; low power consumption; multi-core, triaxial cable; high quality FM transmission RGB triaxial and auto setup functions.

It is dockable with a Betacam VTR.

For more information, contact Hitachi at +81-3-3255-8411; FAX +81-3-3257-1433, or circle **Reader Service 133.**

Dual sync generator

YEM's Rubidium dual sync generator (RB-1701C NTSC; RB-1701C PAL) is a dual sync generator equipped with a very stable rubidium oscillator. It consists of two sets of genlock sync generator boards and an interface board, including auto changeover function, subcarrier synthesizer and alarm circuit. The rubidium atomic resonant oscillator is built-in.

The generator conforms fully to the RS-170A and EBU standards. It provides dual outputs each of 4 fsc, fsc and 10 MHz, and features an adjustment-free design.

For more information, contact YEM at +81-462-28-8692; FAX +81-462-29-1944, or circle **Reader Service 125.**

Las matrices de conmutación

La Serie X-plus de Matrices de Conmutación de HEDCO incluyen conmutadores digitales de tanto video en serie como audio AES/EBU. Con tamaños desde 16 x 1 a 8 x 8, la Serie X-plus acepta cualquier combinación de tarjetas en cuadros de 1 o 2 unidades e incluso permite la integración de conmutadores analogicos y digitales.

El conmutador de video serie conmuta entre 143 a 360 Mb/s lo cual lo hace ideal en todos los formatos digitales de instalación desde D-1 a D-5.

Para más información, contactar Sr. Fernando Paulino: +1-416-445-9640; FAX +1-416-445-0595, o marque el **No. 6 del Reader Service.**

UHF transmitter

GEC-Marconi Communications' new B7600 Series 1 to 20 kW UHF transmitters use liquid cooling to preserve the performance and advantages associated with solid state.

A 5 kW transmitter occupies one 19-inch rack cabinet.

All modules are identical. Sound and vision modules are interchangeable and each has its own liquid cooling circuit to which all the heat-generating components are attached.

For more information, contact John Rolfe at +44-245-353221; FAX +44-245-287125, or circle **Reader Service 135.**

VTR/bin targeting system

Odetics' TCS90 is an automatic VTR and bin targeting system. Rather than physically aligning the bins and VTRs with the robotics, the TCS90 robotics learn the bin and VTR locations and store this information in memory.

This is achieved by way of two procedures called targeting and indexing, both of which are software-based and require minimal operator involvement.

During targeting, the TCS90 self-adjusts its pick-up point for any bin or VTR location in the library. Targeting provides exact bin and VTR position data, and indexing orients the robotics components using the position sensors built into the system.

For more information, contact Odetics at +1-714-774-5000; FAX +1-714-774-9432, or circle **Reader Service 100.**

PostScript title generator

Digital F/X's TitleMan PostScript title generator brings the power of 10,000 PostScript fonts to video production. It is the first video output solution to bridge the gap between Macintosh computer graphics and the online edit suite, according to the company.

It is the only title generator that includes the Adobe PostScript interpreter, customized by Digital F/X for converting desktop publishing type fonts and graphics into a high quality video signal.

Typography and graphics can be imported and rendered, then fed directly into the switcher without having to be cleaned up in the graphics room.

For more information, contact Digital F/X at +1-415-961-2800; FAX +1-415-961-6990, or circle **Reader Service 3.**

Digital audio editing

Avid Technology's AudioVision is a cost-effective multitrack digital audio editing system to sync-lock digital picture with audio for precise editing. It is fully compatible with the Avid Media Composer.

For more information, contact Avid Technology at +1-508-640-6789; FAX +1-508-640-1366, or circle **Reader Service 110.**

BUYERS GUIDE

Mobile, Remote & Satellite

Microwave Helps Station Compete

by Mike Sheffer
Staff Engineer
WAAY-TV

HUNTSVILLE, Alabama In the high-tech centers of the nation, Huntsville is renowned in aerospace and computer technology.

It is home to NASA's Marshall Space Flight Center, Strategic Defense Initiative research, the U.S. Army Missile Defense Command, and worldwide computer firms such as Intergraph and SCI.

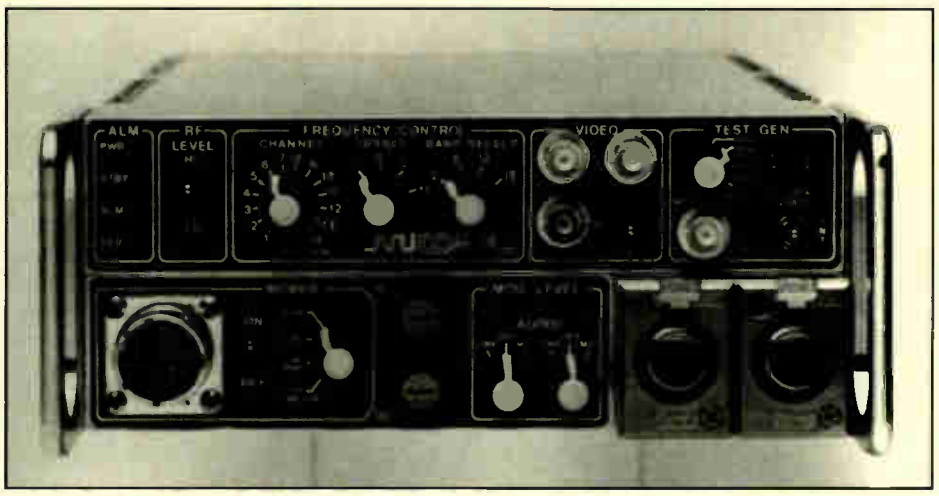
WAAY-TV has leapt light years ahead of the local competition with the addition of a new mobile production vehicle.

Fully loaded

The 16-foot Ford E-350 High Cube vehicle carries on board six video cameras, 20-channel stereo audio, a character generator, and Beta and 3/4-inch VCRs. Designed and constructed by WAAY-TV staff engineers, the truck has been a real asset in a very competitive market.

With such an investment in quality remote facilities, it was vital that we choose a microwave transmitter capable of flawless performance, for hours at a time, in the harshest of environments.

After exhaustive research and side-by-side comparisons, the NUCOMM PT-3 dual subcarrier microwave transmitter emerged as the obvious complement for the new vehicle, as well as WAAY-TV's news department.



NUCOMM PT-3 dual subcarrier microwave transmitter

Due to the mountainous terrain of the Tennessee Valley, the only practical way to broadcast long distances from the field is to hop one microwave signal to a remote receiver, and then retransmit that signal around any obstructions using a second transmitter. In this configuration, the PT-3 works beautifully via its baseband input and front panel subcarrier controls.

By giving the user a variety of functions via the front panel controls, the NUCOMM PT-3 offers a previously unavailable level of flexibility.

It is high-tech in design, and yet it doesn't require a rocket scientist to operate.

The real beauty of the PT-3's design shows up when you open the unit. By removing only six screws, the unit opens up like a book, revealing all user adjustments for audio, video, and subcarrier as well as a guide for programming the agile subcarriers.

Sealed with a neoprene gasket, the unit is fully weatherproof. In our own tests, we set up a PT-3 outside during a heavy thunderstorm. All through the downpour the unit never glitched and the interior remained bone dry.

Last May, WAAY-TV broadcast the local portion of the Children's Miracle Network Telethon from the U.S. Space and Rocket Center to Tennessee Valley viewers. For more than 22 hours, we depended totally upon the reliability of the PT-3 as our only means of signal delivery.

USER REPORT

Newsworthy

When not assigned to the live production truck, the PT-3 is used by the WAAY-TV news department.

In this capacity, NUCOMM's PT-3 has proven to be a solid, "bulletproof" device that can easily survive the worst abuse.

We have found that the unit's easy operation and user friendliness allow even a novice to set up and successfully operate the PT-3 with a minimum amount of training.

For our purposes, the NUCOMM PT-3 was the only WAAY to go.

Editor's note: Mike Sheffer graduated from the Cleveland Institute of Electronics and is a seven-year veteran of television. He specializes in remote broadcasts.

The opinions expressed above are the author's alone. For further information on the PT-3, contact John Payne at NUCOMM: (Telephone: +1-908-852-3700; FAX: +1-908-813-0399) or circle **Reader Service 123.**

BAF Caters to Client

by Marvin Born
Vice President, Engineering
WBNS-TV

COLUMBUS, Ohio When the odometer turns over 100,000, maybe it is time to start thinking about it. You know the feeling—it is just like the itch you get when you look at your own car.

With 134,000 miles showing on our ENG truck, the itch to buy a new one was very strong, and the budget allowed us to scratch our itch this year.

NAB and old friends

After walking the NAB floor, followed by a few trips around the country and some conversations with old friends, we decided on BAF to build an extended Ford 350 van for our next ENG truck.

BAF took great pride in getting everything just right for us. The salesman visited our station, camera in hand, and photographed all of our present equipment—inside, outside, front, and back.

He talked to the drivers, looking for their requirements in a new truck. He also talked to the news department, asking similar questions, and then he sought engineering management's input.

The truck BAF built has a list of standard features that includes many things, from airbags on the rear axle to the oak wood trim on the consoles. The AC outlet in the front dash can be used for a laptop computer or for a curling iron for last-minute touch-ups by reporters. (The lighted vanity mirror is also well received by the night shift.)

USER REPORT

BAF also includes a digital clock that can be seen day or night, from anywhere in the truck.

Instant office

On a more functional level, the front seats rotate 180 degrees to face a built-in work space, with desktops that flip up from the doors on the passenger side. Microphone and telephone connections are built into the door jam.

These items make the truck attractive and useful to the reporter, as well as the engineer or photographer.

The cell phone has two handsets, one up front on a drink tray, which is convenient for both the driver and passenger, and another built into the equipment area.

The cell phone also provides a "cell jack" and line audio for IFB. The cell jack is extremely useful; a standard touch-tone telephone plugs into an

(continued on page 20)

Circle 15 On Reader Service Card

BAF Truck Built With Precision

(continued from page 19)

RJ11 jack and will operate the cell phone.

The real use for this device is to place a telephone at the end of 1,000 feet of camera/audio cable, another reporter favorite. (We use a spare audio pair in the cable.)

BAF will build a truck to individual specifications and layout.

Tight construction

BAF also maintains top-notch construction quality. For example, the bunkers that house the compressor and batteries have welded seams, not rivets and caulking compound. The connection panel has a support strut, rubber covered hinges, and is lighted. The engraving is white against black for easy viewing at night.

The two BAF trucks received 97 percent and 99 percent satisfaction ratings.

All storage bay doors, battery bunkers, and generator housings have flush handles and rubber covered hinges as well.

The truck can be ordered with the antenna mast in the center front or in the rear. While there is considerable debate as to which is safer, BAF will build it at any location they consider it safe.

Our truck has a rear center mast, which we consider safer. Either way, the truck is balanced, with the generator offsetting the batteries, allowing the truck to handle quite nicely at highway speeds.

The truck is equipped with air bags and heavy rear suspension, which contributes to the good handling.

The truck arrived weighing about 1,300 pounds below the 9,000-pound Gross Vehicle Weight limit set by Ford. A fully operational and fueled unit, with crew, weighs close to the maximum limit.

Grand design

All the bodies are engineered by professionals who use CAD systems for the design work. The exterior roof rail is constructed from 6061-T6 aircraft aluminum for strength and light weight, as are the generator and battery bunkers.

The floor is constructed with a two-foot by two-foot aluminum substructure that is attached to aluminum I-beams connected to the truck chassis. Inside is a layer of 3/4-inch marine plywood covered by tight loop carpeting.

While the truck certainly had numerous advantages, there were some problems as well. For instance, the mast air discharge would freeze and not allow the mast to come down in very cold weather. BAF now heats the compressor bunker.

Also, occasionally there was noise in the video from the truck. Maintenance could never find the problem until someone noticed it only occurred in the dark.

The problem was an SCR dimmer used for the workspace lights, which glitched the video. BAF now uses a wirewound pot to dim the lights.

Despite these inconveniences, BAF built a quality truck for a reasonable price. The sales staff is easy to work with and the final product was delivered on time.

We were also welcome to make check-up visits during the construction of the truck, and the company conducted a live shot to a broadcast station near the factory before delivery.

The two BAF trucks in our fleet received 97 percent and 99 percent satisfaction ratings.

And the really nice thing was that BAF also was the lowest bidder.

Editor's note: Marvin Born has been in broadcasting for 28 years, the last three and a half at WBNS. He holds an MBA from Texas A&M.

The opinions expressed above are the author's alone. For further information on BAF ENG trucks, contact Bob King at BAF: (Telephone: +1-813-949-7497; FAX: +1-813-949-7498) or circle **Reader Service 127.**

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Circle 4 On Reader Service Card

021 Television Selects Pesa Matrix

by John Fisher
Technical Manager
021 Television

BIRMINGHAM, U.K. In the summer of 1989, I was given the job of building a major Outside Broadcast Production truck for 021 Television.

It was to have up to 15 cameras, 10 VTRs, stereo audio and above all, a flexible communications system. This implied a reconfigurable system with at least 64 x 64 ports and 22 talkback operating stations.

Decisions, decisions

We considered numerous types of systems. Custom built configurations were considered too inflexible for the "American" way of working with IDBs and PLs. And pin patch systems require every setup to be individually pin-patched, but then the setup cannot be readily remembered and restored on another occasion.

USER REPORT

We finally decided that a programmable matrix system was the best approach. This would allow configurations for various types of programs to be stored on floppy disk and then reloaded into the system as required.

There were two principle programmable matrix types to choose from in England, one of which, Pesa's TB-8000, was at that time relatively unknown. However, I was drawn to the Pesa system by its overall simplicity, coupled with a powerful programming system. Through programming, as many PLs and IFBs could be created as were required.

Unfortunately, there were disadvantages inherent in matrix systems, and some of these had to be overcome before such a system could be accepted.

The two main problems for outside broadcast use were reconfiguration downtime and control of audio levels. But unlike some other systems, the TB-8000 does not have a reconfiguration downtime, meaning "live" reprogramming can be accomplished safely. New configurations can be downloaded into the main processor and then "triggered" with a single keypress.

Audio solution

The problem with audio levels was that programmable matrix systems of the day were highly flexible, intelligent "routers" of audio, with no gain control over individual routes. This required audio levels into the router to be closely controlled, and it was not possible to have individual gain control for the PLs at each operating station.

To address this problem, Pesa designed special gain control cards and a monitoring station so that all inputs to the matrix could be set to a standard level.

Pesa also supplied line panels for each talkback station. These are two-channel mixers that can be used to provide individual gain control for "difficult" circuits and can be patched in as required.

With this mix of equipment, we have been able to cope with all the problems that have been presented to us.

We have been using the Pesa system for two and a half years, and it has proved to be very satisfactory. During this time we have learned how powerful the programming system is and have discovered some very clever tricks that can be worked with the large variety of available crosspoint control types.

I was drawn to the Pesa system by its overall simplicity, coupled with a powerful programming system.

In particular, there is an eight-layer priority system that allows prioritized switching on or off of up to 256 crosspoints by any key on any panel. This allows batch switching where cameras may be shared by one or more trucks. One key operation can then turn off one director's talkback, turn on the other, and divert the cameraman's reply as appropriate. In fact, any key can be programmed to turn on or off any crosspoint in the system.

On many occasions, the TB-8000 has been interfaced with our RTS system to provide a hybrid system using 802s and beltpacks. This gives us the best of both systems and has been very useful when working with American production teams, which were generally more familiar with RTS equipment.

Reliability

Reliability with any computer-controlled matrix system is a major concern because so much depends on its correct operation. But the number of problems we have encountered with the TB-8000 can be counted on one hand, and the system has never suffered a catastrophic failure. There are only four different types of circuit boards in the main matrix unit and spares can always be installed in seconds.

We are now installing a fourth system in our new 12-camera eight-VTR truck. We selected a Pesa 64 x 64 system with the latest 6-channel supplementary mixers and latest software.

Five of these mixers will be used in conjunction with our main talkback station and will be fed from ports on the matrix. This will provide much greater programming flexibility for the director, producer, TD and graphics operator.

Pesa's new software will be much more powerful than previous versions and give greater flexibility of key types, such as lock/non-lock, etc.

By adding past experience and the latest hardware and software, I am confident that we will achieve even better communications.

Editor's note: As technical manager of 021 Television, John Fisher is responsible for the design, construction, and day-to-day technical operations of the company's fleet of trucks.

The opinions expressed above are the author's alone. For further information on the TB-8000, contact Tom Curtis at Pesa International (Telephone: +44-223-242-642; FAX: +44-223-410-007) or circle **Reader Service 37.**

First Team Travels With Harris

by Phillip Rumore, Owner
First Team Productions

BIRMINGHAM, Alabama In August of 1991, First Team Productions began operations with one goal in mind: to offer satellite uplink and video services with state-of-the-art equipment and unequaled customer support, at competitive prices.

Although we were a young group, we had up to 11 years of experience in the industry and we knew what we wanted when it came to building a satellite truck. With plans to provide video teleconferencing, electronic newsgathering, live sports, media events, and corporate video presentations, we wanted facilities well above industry standards.

We went with the S-23 satellite communications vehicle from Midwest's Systems Division (which became Harris Allied Systems 1 October 1991). We had worked with the former Systems Division on other projects and its people went out of the way trying to treat customers the way we try to treat ours.

Due to prior experience, we were determined to use top quality components and to provide a highly redundant facility. In fact, the only thing not redundant on this truck is the generator.

High quality gear

Beyond uplink equipment (a Vertex 2.6 meter, four-port antenna; MCL phase-combined 300 Watt TWTs; Scientific Atlanta redundant 7555 exciters, with

USER REPORT

protection switching, and Scientific Atlanta receivers; and a Tektronix 1705 spectrum monitor) we put our money into extra production, communications, and back-up equipment.

For production, the truck includes a Sony BVS-3100 production switcher; Sony BVW-70 and PVW-2800 Beta SP editing VTRs; a Sony VO-9650 U-Matic SP editing VTR; a Sony RM-450 edit controller; a Pesa CG-4711 character generator; and an ADM audio console.

We also have Tektronix and Magni waveform monitors and vectorscopes. Our communications gear includes a Clear-Com intercom system.

The only thing I wish we had more of in the S-23 is engine; we could use one that can consistently go up hills at 65 miles per hour. Our unit was built on an Iveco chassis, and Harris Allied Systems has since converted to the Ford CF Series, which has higher horsepower.

Keeping cool

We may also want to add a third air conditioner. The southern U.S. gets hot in the summer, and when the truck was at a prison riot last August in 100-plus degree heat, we would have had the third unit running. We want to keep our customers comfortable. In fact, Harris Allied Systems has put an optional third unit on several S-23s.

First Team Productions services its equipment regularly. Uplink vehicles are not like washing machines. They are complex systems, and as such, the caliber and attitude of the supplier is very important. We have probably called Harris Allied Systems at every hour of

(continued on page 23

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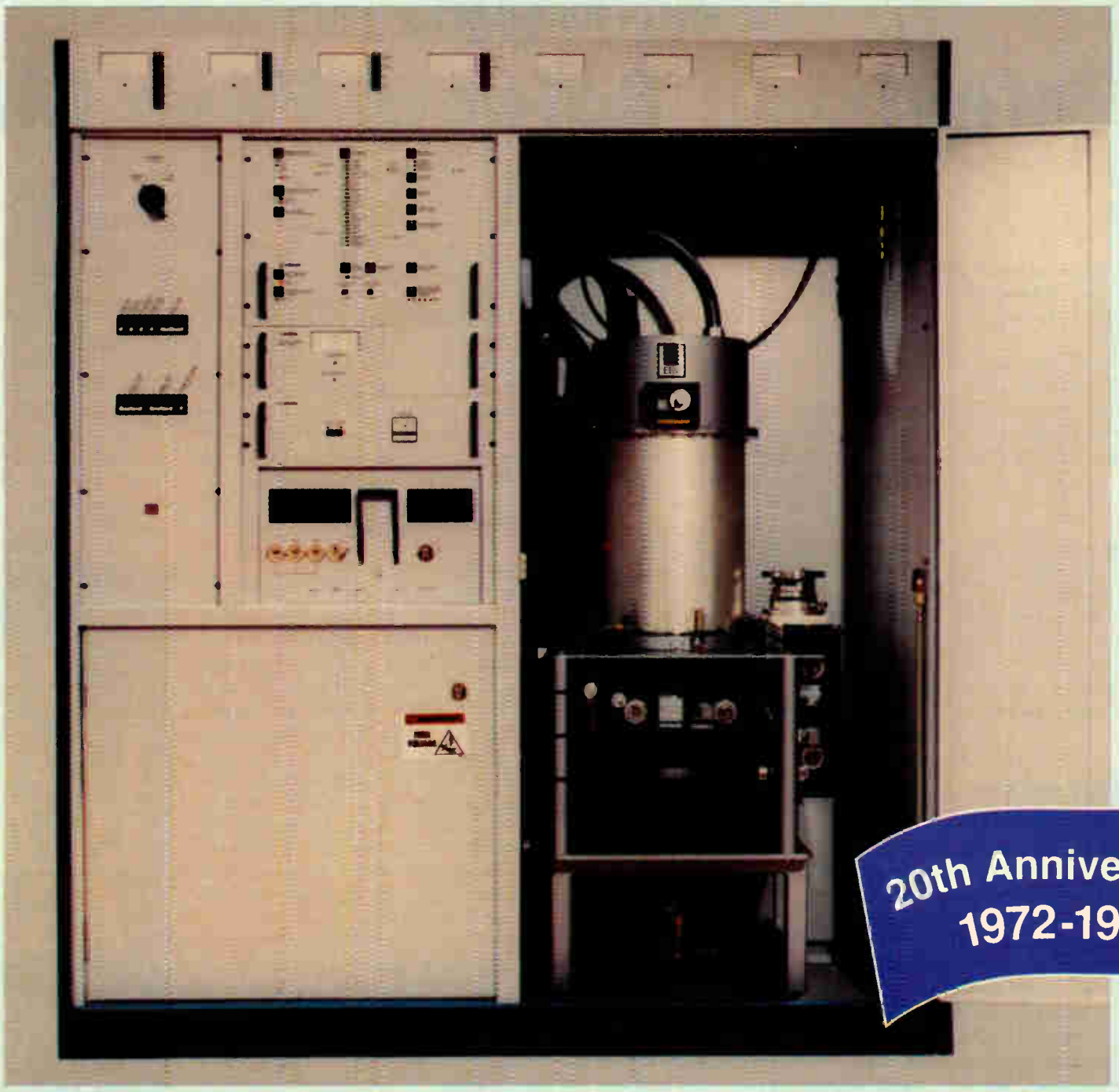
Circle 64 On Reader Service Card



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CONVIRTIENDO DISEÑOS EN REALIDAD

por Terry Culture

PITTSBURGH, Pennsylvania Al construir unidades móviles con los últimos adelantos tecnológicos para la empresa Unitel Mobile Video Inc., deben considerarse muchos factores, tomando en cuenta tambien,las necesidades de nuestra clientela.

Uno de los factores principales es la selección de una empresa que fabrique estas unidades según las necesidades particulares del usuario, conviertiendo nuestros conceptos de diseño en una realidad.

En Unitel, hemos estado tratando con la empresa Wolf Coach Inc. desde 1983. Wolf ha construido dos remolques (trailers) de paredes expandibles de 48 pies, y uno sencillo de 45 pies.

USER REPORT

Azul, Rojo y Negro

El remolque de 45 pies, nuestra unidad Azul, fue construido en 1983 y se diseñó sobre un marco doble de viga de doble-T. En cuanto a los dos "expandos", el primero, la unidad Roja, fue completada en abril de 1989, mientras que el más reciente, la unidad Negra, se completó en diciembre de 1991.

Los dos remolques de paredes expandibles fueron construidos totalmente por Wolf, utilizando un chassis de armadura tridimensional (space frame) diseñados por ellos.

Después de decidir los sistemas audio/video que se van a diseñar e instalar, se calculan las necesidades del alambrado y de equipo.

El proceso que usamos para el diseño de un nuevo camion es relativamente sencillo. Antes de comenzar el dialogo con Wolf, definimos el equipo que se va a usar y como colocarlo en el vehículo.

Despues de decidir los sistemas audio/video que se van a diseñar e instalar, se calculan las necesidades del alambrado y de equipo.

Luego, se usa una hoja de trabajo en la cual se registra el espacio respectivo del bastidor y sus dimensiones, asi como los requisitos de watios y peso para cada equipo que se colocará en el bastidor. Tambien se calculan las necesidades del peso total de soporte para artículos tales como los estuches para el equipo, cables, monitores, iluminación, etc.

Etapa de planificación

Contando con esta información, se hace un plano, con un calibrado exacto de los números, a fin de determinar como aprovechar de la mejor manera todo el espacio disponible.

Es en este momento que comienza el proceso de diseño de Wolf Coach. Wolf asigna a uno de sus ingenieros, Kevin Lavin, para trabajar en nuestro proyecto, y se celebran reuniones a fin de revisar los diseños preliminares. Juntos, estudiamos y discutimos todos los detalles del diseño y de la construccion del vehículo, desde los remaches hasta el alfombrado, los enchufes en las paredes, hasta los pegamentos y adhesivos.

El proceso involucra una negociación constante. El concepto básico de estos remolques es el de meter diez libras en una bolsa de cinco libras, y siempre tenemos que aceptar ciertos compromisos. Sin embargo, el objetivo es que éstos se mantengan a un mínimo.

Wolf cuenta con la experiencia de su personal de ingeniería para analizar las cifras de peso y balance, así como el análisis de esfuerzo requerido para las partes estructurales del chassis. Todos estos detalles aseguraran que el producto final estará en condiciones de durar cientos de miles de millas.

Contando ya con esta información general, se calcula el costo de construcción del remolque. Despues de revisar y negociar los aspectos financieros, se generan y se aprueban los diseños preliminares.

Es entonces Wolf comienza a hacer los pedidos de materiales para el chassis y comienza la construcción.

Diseño preliminar

Habiéndose comenzado ya la construcción del chassis, continúa el diseño detallado de los aspectos internos, incluyendo las paredes del monitor, los sistemas de energía AC, sistemas HVAC y los tubos, consolas, colocación de cables, iluminación y conductos y el acabado interior. Todos los diseños se generan en un sistema CAD, con una verificación constante de relaciones para asegurar que cada pieza de equipo quepa apropiadamente.

Este proceso generalmente involucra centenares de dibujos detallados. Muchos de éstos llegan a nuestra sede en Pittsburgh para su aprobación o modificación adicional antes de fabricarse.

De la multitud de detalles a considerarse, el aspecto más complicado es el de las paredes de expansion. Aquí deben considerarse muchos factores de interferencia y de dimensiones y de altura. La unidad Roja fue la primera de su clase en utilizar tornillos esféricos en cadena regulados a precisión como el método de expansión, a distinción del sistema anterior de cremallera y piñón.

El concepto de expansión con tornillos esféricos fue una innovación del finado Paul Wolf, fundador de Wolf Coach, quien era un genio en mecánica. A él le gustaba resolver problemas mecánicos difíciles y su creatividad y atención a los menores detalles se refleja en todos los productos de Wolf Coach.

Casi el único componente que no fue construido enteramente por Wolf, fue la suspensión neumática posterior y la transmisión, así como algunos de los componentes del sistema eléctrico.

Trabajo preparatorio

Durante el ciclo de diseño de los dos camiones en la empresa Wolf, nosotros a la vez preparabamos el alambrado previo del bastidor de interconexión por cordones, los sistemas de comunicacion, y ensamblajes especiales de paneles conectores y de cable que debían formar parte de los sistemas integrales de las unidades. Esta construcción previa, nos permite reducir el tiempo requerido para la instalacion del sistema audio y video, una vez que eleque el remolque. Como promedio, el trabajo de instalación y alambrado demora aproximadamente tres meses.

Después de que se completó la instalación del equipo, los camiones volvían a la fábrica de Wolf en Worcester, Massachusetts, para las correcciones finales. Asi, el personal de Wolf podía ver directamente como se armaba todo, para entender mejor por que se hacían ciertas cosas de cierta manera. (Estas cosas no siempre son aparentes durante el proceso de construcción).

El tiempo total requerido para la unidad Roja, en la fábrica Wolf, de principio a fin, fue de unos nueve meses. La unidad Negra, por ser similar a la Roja, requirió unos seis meses, con algunos cambios.

La unidad Roja tiene un chassis de armadura tridimensional soldado, mientras que las mejoras del chassis en la unidad Negra y el diseño expandido incluía una armadura con remaches en vez de soldadura. El concepto del chassis con remaches permite un control dimensional más estrecho, ya que el soldado puede cambiar la cuadratura y las dimensiones.

Es difícil expresar cuanta coordinación se requiere para construir una de estas unidades. Los miles de pequeños detalles que requieren una atención esmerada tal vez no sean aparentes a nadie que no esté inolucrado en el diseño mismo. La atención a los detalles es el componente singular que puede destacar una unidad.

Confiamos que en el futuro tendremos otros proyectos con Wolf, porque es una empresa muy diversificada. Tienen la capacidad de diseñar y fabricar un vehículo segun las especificaciones del comprador, hasta en el ultimo detalle de pintura y graficos. Despues de tres unidades y miles de detalles, hemos formado una relacion de trabajo excelente con Wolf Coach.

WOLF es una empresa diversificada que satisface nuestros requerimiemientos.

Wolf, según mi opinión, ciertamente debe encabezar la lista de cualquier persona que requiera la fabricación especial de un vehículo.

Nota del Editor: Terry L. Culture ha trabajado en diseño de unidades móviles desde 1978 y ha coadyuvado en el diseño de las Unidades Moviles Verde, Azul, Roja y Negra de Unitel.

Las opiniones expresadas en este artículo son unicamente las del autor. Para mayor información, póngase en contacto con Mark Leonard en Wolf Coach: (Teléfono +1-508-791-1950; FAX: +1-508-799-2384) o coloque un circulo en **Servicio para el Lector 60.**

BUYERS BRIEFS

Microwave Radio Corp.'s FLR series radios are directly modulated at 2 to 15 GHz for STL/TSL multihop and multichannel broadcast video systems.

The units can be configured in simplex or duplex operation and have protection options such as hot-standby and space and frequency diversity.

For further information, circle **Reader Service 117.**

Standard Communications' Agile Omni satellite receiver captures virtually any C/Ku band through either a manual or remote preset that automatically sets the satellite RF center frequency.

Remote control options enable an entire network of receivers to be controlled by a central computer, while analog-to-digital converters allow signal strengths and receiver performance to be monitored remotely.

An international version offers an 800 MHz-wide input for operation with FSS, DBS and Broadcast ITU frequencies. The receiver operates in PAL, SECAM, NTSC and all MAC video formats, as well as 50.75 µsec or J-17 audio de-emphasis.

For further information, circle **Reader Service 42.**

Harris Builds Satellite Unit

(continued from page 21)

the day and night, and the company has always been there for us.

Some on our staff have had problems with other suppliers' attitudes, namely unenthusiastic responses like: "Yeah. We can solve the problem. Tomorrow."

Well, tomorrow can turn into 10 days or two weeks, and equipment delays of that magnitude are a mobile crew's nightmare.

But with Harris Allied Systems, the support is great. Even at 1 a.m. or 2 a.m., the problem gets solved, and the Harris Allied attitude is: "Do whatever it takes to get the job done and worry about the fine-print later."

Eventually, we will be looking to add another vehicle. When we do, we will call Harris Allied Systems.

Editor's note: Phillip Rumore first became involved with satellite broadcasting as director of communications for a local supermarket chain. He has worked with satellite gear for the past five years.

The opinions expressed above are the author's alone. For further information on the S-23, contact Jay Adrick at Harris: (Telephone: +1-606-572-6880; FAX: +1-606-781-3987) or circle **Reader Service 134.**

Comtech Favors Fiberglass Route

by A.J. Miceli, President
RF Scientific Inc.

ORLANDO, Florida At RF Scientific, a growing service company for the satellite industry, we have always preferred fiberglass antennas over aluminum ones.

For that reason, we have worked well with Comtech Antenna Corp., which has apparently found its niche in fiberglass antenna systems.

While aluminum antennas usually offer a little extra gain, that advantage is offset by the high cost of higher power, aluminum antennas, some of which can easily run over US$100,000.

USER REPORT

High performance, low cost

Comtech, however, offers both C- and Ku-band fiberglass models that provide high performance at a much lower cost and can be delivered quickly almost anywhere in the world.

The biggest argument against fiberglass antennas is that most operators believe the effects of the sun in hotter climates cause the fiberglass to eventually lose its shape and, therefore, its gain. I have had customers who maintain with an almost religious fervor that fiberglass turns to powder after a few years in the sun.

Although this might be the case with lower-quality, injection molded, plastic home-type dishes, it is certainly not the case with any of the Comtech transportable antennas. These transportable antennas are made of 3/8-inch, hand-laid fiberglass with a romoglas aluminized cloth embedded 0.30 inches below the surface. The tensile strength of the fiberglass is far greater than that of aluminum.

Another misconception about fiberglass is that it does not survive the vibration caused by road travel. In reality, fiberglass is far more resilient than aluminum, which is why it is so widely used in the marine industry.

Spun aluminum antennas start out as a flat sheet that is spun to the final shape. Thus, the aluminum still has a "memory" of being flat.

Born in shape

Comtech's fiberglass antennas are born in the shape that is desired, so they have a tendency to spring back to that proper shape even when badly damaged. Far more aluminum antennas have been damaged by the effects of road vibration than fiberglass because the aluminum tends to crack at the welds and in the grooves of the spin, whereas fiberglass will give under stress.

Comtech's most popular domestic C-band transportable antenna system, the OFFSAT antenna, is a one-piece offset fed antenna specifically designed to meet U.S. FCC specifications for two-degree spacing, and was manufactured with transportability uppermost in mind.

The antenna system is mounted on a tandem-axle trailer that can be towed behind a truck or a one-ton van using a 5,000-pound hitch. The antenna boasts sufficient gain (45.9 dB) to illuminate most domestic, linearly polarized satellites from anywhere in the U.S. The transportable OFFSAT antenna system (with a two-port feed) is available for under $25,000.

The OFFSAT antenna is supplied with a linear feed only, and cannot be used with Intelsat. Comtech, however, improved on its older five-meter tri-fold fiberglass transportable antenna system so that it can now be used on satellites with circular polarization.

The five-meter, tri-fold antenna is available with a 1.06 axial ratio feed that boasts 47.9 dB transmit gain. (It is not two-degree compliant and is not intended for transmission in the U.S. domestic arc.)

Comtech transportable dishes are made of 3/8-inch fiberglass

Intelsat only

The primary function of this particular antenna system is to provide an excellent small aperture antenna for use on Intelsat, meeting all the requirements for Intelsat F-1. The Comtech five-meter tri-fold antenna system costs about the same as the OFFSAT.

A transportable 3.8 meter tri-fold antenna is also available and meets all Intelsat Standard Z requirements.

Comtech also uses the same basic trailer design for its transportable Ku-band antenna system. The antenna consists of a 3.5-meter fiberglass reflector that has been cut into panels and locked into an aluminum frame.

Because the antenna does not fold up for transport, the overall height is 13 feet, which is a cause for some concern when the trailer must be towed around town. However, this inconvenience is offset by the 52.1 dB transmit gain and 50.7 dB receive gain.

Circular and linear feed systems are available in two-port and three-port versions, which makes the antenna an excellent all-around choice for voice, video, or data applications on any Ku-band satellite, especially in inclement weather.

All things considered, Comtech Antenna Corp. has fought an uphill battle over the fiberglass issue, but it has developed range-proven antennas that are efficient and economical.

Editor's note: A.J. Miceli is a graduate of Louisiana State University and has been with RF Scientific for eight years.

The opinions expressed above are the author's alone. For further information on the OFFSAT antenna, contact Tom Christy at Comtech: (Telephone: +1-407-892-6111; FAX: +1-407-957-3402) or circle **Reader Service 26.**

Clear-Com Handles NEP Needs

by George Wensel, Vice President
NEP Supershooters Inc.

PITTSBURGH, Pennsylvania In looking at remote production over the last few years, there are many areas where technology has made road life a little easier.

But one area that continues to get more complicated is communications. NEP currently runs eight production trucks based around the RTS channel (PL) type communications system.

We also own a Clear-Com matrix system. Although a variety of matrix-based systems is available now, Clear-Com had some interesting features that we felt would meet our present and future needs.

USER REPORT

The benefits of a matrix system controlled by microprocessors are tremendous. What used to take a 50 pair cable now requires one pair or two pair, depending on the mode chosen.

Recycled pairs

We have recycled our 25 pairs to make one run handling six stations comfortably. When utilizing common telephone modular connector technology, the whole setup takes a quarter of the time it used to.

The LCD screen is what really sold us on the Clear-Com system. The alphanumerics that can be programmed are quite useful in getting production acclimated to the unit.

While the base matrix is four-wire, using four-wire boxes in the field is cumbersome. For this reason, we opted for RTS TW-type beltpacks in the field, giving us the best of both worlds.

The NEP matrix system lives in two short road racks complete with a 50 x 50 matrix, interface cards to 14 master stations, and 12 channels of RTS-powered two-wire PL channels interfaced to an RTS source assign panel. There are interfaces for up to 12 cameras with video iso capability and interface cards for phone, two-way radio and squawk operations.

These features, along with any DOS-based laptop, makes the Clear-Com matrix system one powerful tool. Power can swing to any needed standard, although we normally carry our own isolation and power regulation distribution systems.

The Clear-Com two-wire interface uses an interesting nulling system that generates a tone when a test headset is plugged in. "Nulling" the tone is a simple adjustment of three pots, and, short of a full digital unit, it works quite effectively.

Flying high

Even though NEP is primarily known as a mobile unit company, we do a vast number of shows with our flight pack system. Our clients are accustomed to all the details and subtleties of our trucks, and they also expect our flight pack to be full-featured.

Most of the events we cover are live to

(continued on page 26)

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Telos 'Link' Made for Call-In Shows

by Jim May, Engineer
E! Entertainment Television

LOS ANGELES, California The Link, from Telos Systems, is a phone interface that has taken the headache out of live remotes and "call-in" talk shows.

Life before the "Link interface" held two problems for me, a television engineer whose livelihood depends on making things work. First, it was hard to match signal levels between the phone line and the interface, and second, when I got the telephone line, it was often too noisy to use.

The Link has solved both of those problems quite handily.

Perfect match

The Link's microprocessor has the ability to dynamically match the incoming phone line impedance to the audio system in use, taking the worry out of modern long-haul switching. With its dynamic capabilities,

USER REPORT

The Link also simplifies the automatic gain control and generally cleans up the signal for the user's audio system.

The clean signal downstream of this interface makes it a pleasure to use on the private line (PL) and the interrupted foldback (IFB).

Another fine feature of The Link is speed. The unit grabs the telephone line in approximately half a second, which tends to eliminate wait time that is evident in some other units.

The combination of speed and a clean signal make the unit extremely easy to use and very versatile. I have used it in standalone mode and as an integral part of several live shoot systems.

In 1990, before I joined E! Entertainment, I was part of a remote crew shooting an Academy Awards preshow entitled "The Star's Arriving." We were on a shoestring budget, and to save money I used a Link at the studio end and simply called the studio to establish the interface.

At the studio, we had The Link coupled with an RTS PS8 power supply and an RTS system in daisy-chain fashion. The Link worked very well and was inexpensive.

Back to basics

More traditional usages are seen at E! Entertainment television. Thus far in 1992, we have covered the Ace Awards, the Academy Awards, and the Emmy Awards. All of these remote live shoots featured Link-to-Link systems that connected studio, remote crew PLs, and the talent's IFB.

In addition, dedicated phone lines between the studio and the remote site will be set up with Links.

Technically speaking, the PL Links will be set to auto, which will enable The Links to talk with each other transparently. Power supplies will feed both Links, enabling as many user stations as needed.

The talent IFB will have The Link and power supply feeding the intercom output of the IFB, and the talent will be using the lightweight and easy-to-hide RTS BP 4020 belt packs.

(A special note: It is probably not wise to daisy-chain talent IFB units because too much information in their ear pieces tends to distract them.)

The unit grabs the telephone line in approximately half a second. . .

The simple Link-to-Link setup described here has never failed and is remarkably easy to hook up and run.

Wet channel

The Link also has a wet channel, powered, and a balanced Channel 1 and Channel 2. I have not used the wet channel yet, but I keep it in mind as an emergency back-up for the PL.

For mix-minus applications on the studio side, I made a special 15-pin-to-XLR Y cable. We use this cable mainly on talk shows where we need separate control of the incoming calls and the program.

The Link interfaces with nearly everything, although we use it predominantly with RTS and Clear-Com. I have not found an application yet that has caused much of an interface problem.

The Link is a solidly built, versatile unit that can take a lot of abuse when necessary. The board is well engineered and simple enough that component repair in the field is possible, should a failure occur.

In a very real sense, the Telos Link is the backbone of our studio remote live applications. It is dependable, transparent, and it works.

Editor's note: Jim May came to E! with a heavy background in multitrack recording and live sound reinforcement. He currently coordinates most of the engineering functions for E!'s live shoots.

The opinions expressed above are the author's alone. For further information on The Telos Link, contact Neil Glassman at Telos Systems: (Telephone: +1-216-241-7225; FAX: +1-216-241-4103) or circle **Reader Service 34.**

Clear-Com Benefits Remote TV

(continued from page 24)

the United States, so comfort for the production staff, along with reliability and redundancy, are of primary importance.

During the 1991 Super Bowl, the matrix and two-wire saved much time and gave added features normally not expected. HBO and Showtime have both used it overseas.

When Showtime did a live boxing event from a bullring in Mexico recently, NEP certainly needed to compromise on the video complement, but there was no compromise at all with the communications. Quite happily, with this system there was no need to.

The Clear-Com system also was the core for the Yachting World Championships and the America's Cup '92 in San Diego. At both events, it pulled both the host and unilateral production needs together. In the end, we married 12 different RF walkie talkie channels to communicate to the operations on the water, in the choppers, in the air, and on the various RF receive points.

Know your limits

The flexibility of the system and features always gain us compliments with our clients. Of course, there are some limitations to be aware of when planning a matrix system.

We are firm believers in keeping the IFB system separate from the communications panels. The function of this is so deeply routed with the audio person, we tend to stick with the RTS power IFB systems. This system provides two channels to each belt pack, each with adjustable volume and available as a complete system.

With many matrix systems, these extras are peripherals that end up being "kluged" together. The RTS system has self-powered belt packs. But to us, the most important feature is the separate familiar control panel that the producers and directors can label and keep their fingers on. Single panels doing multiple functions during a live show can be trouble, particularly if someone hits a wrong programming function.

The other aspect of a matrix system is that, by definition, all the audio levels hitting the matrix must be the same level. So the ability to adjust individual channel listen levels is lost.

In practice, we have overcome this in most of the applications. But in crucial places, such as a coordinating producer position, we will add submixers to his or her aux listen input to give him some additional level trims. However, in most situations, the basic features suffice.

Computers come through

We were also initially skeptical as to whether we wanted crucial communications controlled by computers. But after nearly three years, we have not had a software or micro hardware failure. Some backplane reconstruction was done after the rack was hit by a wayward shipper, but the construction of the Clear-Com electronics has taken a beating.

Also, the staff at Clear-Com listens to our concerns and has developed new software based on a lot of "wouldn't it be nice if..." inquiries. The company is very supportive and understands that the only reason we purchased the gear was to do television shows, something that many manufacturers seem to forget.

Clear-Com had some interesting features that we felt would meet our present and future needs.

As we begin to build our next truck, we are evaluating the benefits of using a matrix system as the core of the communications. Since most of our large units end up being tied to additional mobile units, trailers, and edit rooms, the matrix is appealing.

Editor's note: Besides his work with NEP, George Wensel also was a partner in Creative Broadcast Techniques, a consulting group for NBC's Olympic team and EuroDisney.

The opinions expressed above are the author's alone. For further information on Clear-Com matrix equipment, contact Peter Giddings at Clear-Com Systems: (Telephone: +1-510-932-8134; FAX: +1-510-932-2171) or circle **Reader Service 66.**

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SK-F2S	400,000-pixel IT CCD(NTSC) 480,000-pixel IT CCD(PAL)
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- Sensitivity: 2,000ℓx, F8.0.

SK-F200S	400,000-pixel IT CCD(NTSC) 480,000-pixel IT CCD(PAL)
SK-F300S	High-sensitivity 400,000-pixel FIT CCD(NTSC) High-sensitivity 480,000-pixel FIT CCD(PAL)
SK-F350	450,000-pixel FIT CCD(NTSC)
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Singapore Office No 6, Aljunied Ave 3, Singapore 1438, Republic of Singapore
Telephone (65)747-2009, Fax (65)747-2456
Beijing Office Beijing Fortune Building 5, Dong San Huan Bei-lu, Chao Yang Distict, Beijing, China
Telephone 501-4322/4323, Fax 501-4324

Hitachi Denshi America. Ltd.

Head Office 150 Crossways Park Drive, Woodbury, New York 11797, U.S.A
Telephone (516)921-7200, Fax (516)496-3718, Telex (510)221-1899
Chicago Office Telephone (708)250-8050, Fax (708)250-8054
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Hitachi Denshi, Ltd. (Canada)

Head Office 65 Melford Drive, Scarborough, Ontario M1B 2G6, Canada
Telephone (416)299-5900, Fax (416)299-0450 Telex 652-5324
Eastern Office Telephone (514)332-6687, Fax (514)335-1664, Telex 582-4768
Western Office Telephone (604)435-2954, Fax (604)433-7911
Ottawa Office Telephone (613)727-3930, Fax (613)727-3955, Telex 053-4533

Hitachi Denshi (Europa) GmbH

Head Office Weiskircher Straße 88, D-6054 Rodgau 1 (Jugesheim), F.R. Germany
Telephone 06106-6992-0, Fax 06106-16906, Telex 417-849

Hitachi Denshi (U.K.) Ltd.

Head Office 13 14 Garrick Industrial Centre, Irving Way, Hendon, London, NW9 6AQ
United Kingdom
Telephone (81)202-4311, Fax (81)202-2451, Telex 27449
Leeds Office Telephone 0532-430294, Fax 0532-459263

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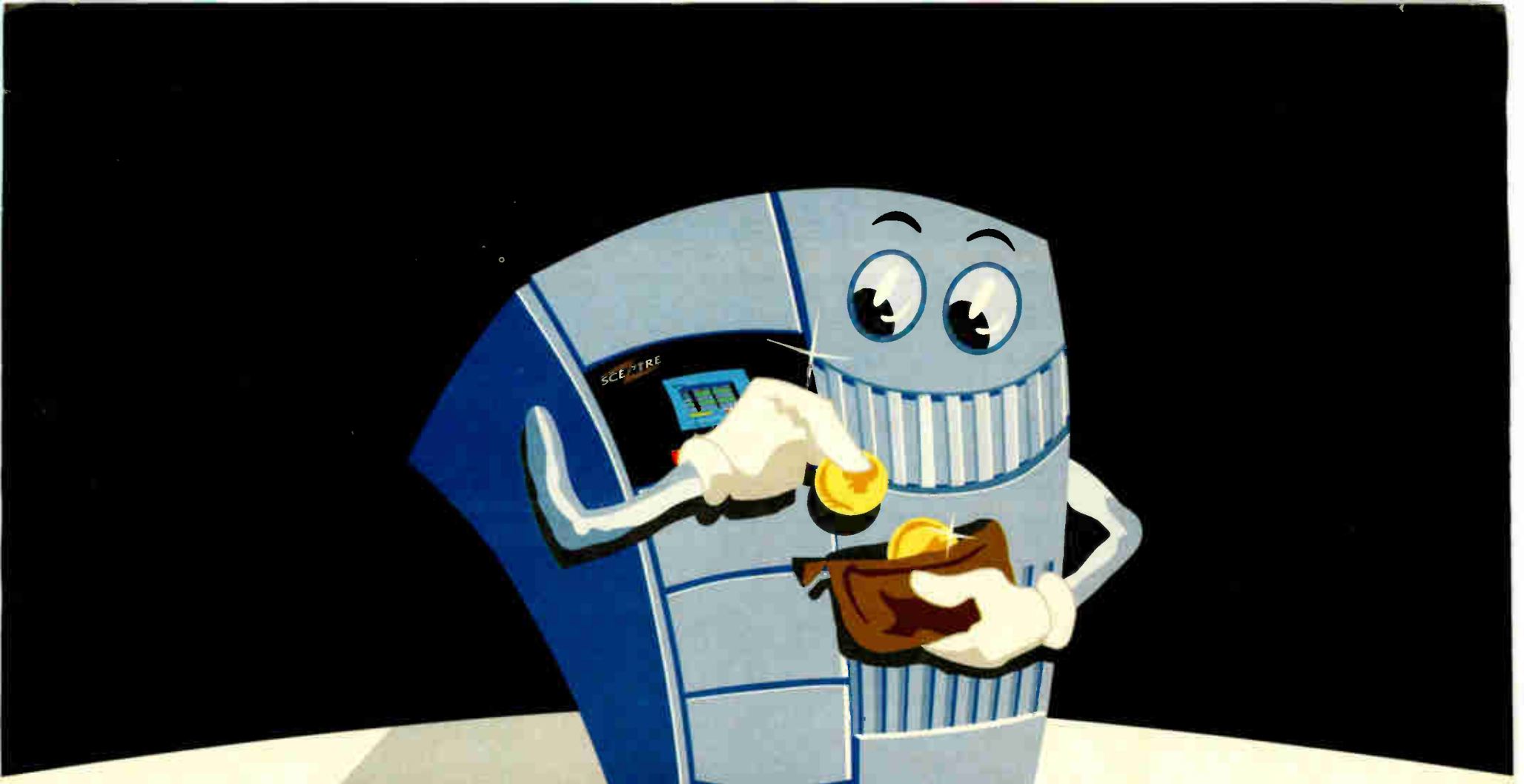

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USA
3200 Wismann Lane,
Quincy, Illinois 62305.
Tel: 217-222-8290
Fax: 217-224-2764