



IN THIS ISSUE



**Ending the Threat of Radiation**

by Donald T. Doty

8



**Mixed Media Relies on Matrox**

Buyers Guide

24



**Pre Post Upgrades to Avid**

Buyers Guide

28

# East Europe Strives for News

*Pool Service Tries to Remain in Operation Amid Changing Times*

by Charles Recknagel

**PRAGUE**

As Eastern Europe strives to make economic headway in the free-market world of the West, its fledgling regional news pool is struggling to get back on its feet.

The service, known as TransNews and funded by the U.S. non-profit media group InterNews, was designed to increase the amount of news shared between Eastern European stations beyond what is available through the European Broadcasting Union (EBU).

The service, which operated out of the switching center of the former Organisation International de Radio et Television (OIRT) here in Prague, interrupted its program in March after little more than a year of service using the Intersputnik satellite system. This left

broadcasters in Eastern Europe with access to EBU feeds, but no way to deliver their own feeds to the rest of the world on a regular basis.

**RUSSIAN SOURCES**

"To date, the principal source for news on the exchange has been the two Russian state television channels," said Zdenek Stepánek, TransNews' director, "but in the Spring, it appeared they no longer would be able to afford to uplink to the satellite."

A reorganization within the Russian government threatened to put the different ele-

ments of the once monolithic Russian television structure onto its own financial footings, so that the stations would have to pay for the use of telecommunications lines.

"Now, we are suspending operations while we wait for the situation to stabilize and also to conclude new agreements with the stations," Stepánek said.

News from Russia was the most frequently demanded item on the exchange, which shared information between television stations in Bulgaria, the Czech Republic, Russia, Poland, Romania and Cuba, as well as with the U.S. service

Cable News Network (CNN).

The interruption of the news exchange is the latest bump on an already rocky journey for TransNews to preserve the former OIRT switching center, which it has kept open since the OIRT ceased to function in late 1992.

**NEW LIFE**

During the communist era, the OIRT coordinated exchanges of news, sports and entertainment programs via Intersputnik between all the socialist nations and, later, during Perestroika, with the West through the EBU. But shortly after the collapse of Soviet Union in 1989, the Czech government, like others in the region, lost interest in the network and its capabilities. The switching center links with the Intersputnik

(continued on page 9)

**BroadcastAsia '94  
Wrap-up  
on Page 6**



**SSSSsuper Animation:**

This image from South Africa's Video Lab Group was created using the Quantel Henry, Harry and Paintbox.

For a review, see page 30.



**1 3/4 inches  
you can be proud of**

Snell & Wilcox engineering and performance - in affordable single rack units.

- TBC Synchronisers
- Standards Converter
- Test Image Generators
- Noise Reducer
- Decoders/Encoders
- Colour Correctors

For full details call Snell & Wilcox Ltd.  
Tel: +44 (0) 730 821188 Fax: +44 (0) 730 821199

# Shoot Long, Low and Fast

## The JVC X2

THE WORLD'S FIRST FULL CASSETTE  
PROFESSIONAL S-VHS  
LOLUX 3 CCD CAMCORDER



S VHS  
625

PROFESSIONAL S



**Long Time** 3 Hour S-VHS tapes. **Low Light** 1/2" Lens On Chip CCD's for true colour images in 3 lux with 100% exposure. **Quick Record Button** as fast as 0.6 seconds including Full Time Auto White and Variable Shutter/Gain/Iris Video Level Control.

**Light Weight, Compact** 7.7 kg with standard lens, viewfinder and battery. **Long Battery Time** typically 40 minutes for NP-1 or NB-G1 batteries. **Fast Set-Up** easy to use Menu and Controls. **High Resolution** 650 lines camera. **High S/N** 56dB camera, Hi-Fi Stereo audio. **Low Tape Jitter** standard 62mm large video head drum. **Long Rugged Life** Diecast Aluminium body and tape transport. **Fast Editing** insert shots with edit point search. **High Performance; Low Cost** VITC/LTC Timecode option, Variable Scan Shutter.

**The JVC X2.**

For further information, please contact:

VICTOR COMPANY OF JAPAN, LIMITED: International Professional Products Marketing Division  
2969-2 Ishikawa-cho, Hachioji-shi, Tokyo 192, Japan FAX: 0426-60-7569

JVC PROFESSIONAL PRODUCTS (U.K.) LTD. Alperton House, Bridgewater Road, Wembley, Middx HA0 1EG, England TEL: 081-902-8812

JVC PROFESSIONAL PRODUCTS GMBH Grüner Weg 10, D-61169 Friedberg/Hessen, Germany TEL: 0-60-31/6-05-0

JVC PROFESSIONAL PRODUCTS ITALIA S.p.A. Via Mario Pannunzio 4, 20156 Milano, Italy TEL: 02-33402704

JVC VIDEO FRANCE S.A. 102, Boulevard Héloïse, 95104 Argenteuil, CEDEX, France TEL: (01) 39-96-33-33

JVC SVENSKA AB Veddestavägen 15 S-175 62 Järfälla-Stockholm, Sweden TEL: 46-8-795-04-00

JVC DANMARK A/S Helgeshøj Allé 30 DK-2630 Tåstrup, Denmark TEL: 42-998811

JVC NORGE A/S Postboks 1202, Postterminalen 3103, Tønsberg, Norway TEL: 0333-65200

JVC BELGIUM S.A./N.V. Rue de la Petite Ile 3, Klein-Eilandstraat, Bruxelles 1070 Brussel, Belgium TEL: 02-524-0090

JVC ESPAÑA S.A. Avda Graells 35, 08190 Sant Cugat del Valles, Barcelona, Spain TEL: 03-6749061

JVC PROFESSIONAL PRODUCTS COMPANY 41 Slater Drive, Elmwood Park, New Jersey 07407, U.S.A. TEL: 201-794-3900

JVC CANADA INC. 21 Finchdene Square, Scarborough, Ontario M1X 1A7, Canada TEL: 416-293-1311

JVC SHANGHAI SYSTEM DEVELOPMENT ENGINEERING CO. LTD. No. 68 D-Wel Road, Waigaoqiao Free Trade Zone, Pudon New Area, Shanghai, China TEL: 021-258-1300

Circle 31 On Reader Service Card

# JVC

PROFESSIONAL



SATELLITES

## NEW KU-BAND SERVICE EYED

VERNON TOWNSHIP, N.J.

Another satellite service is in the works aimed at providing U.S. programmers access to the European market.

Orion Atlantic, an international satellite partnership, has teamed up with Micronet Inc. to launch a compressed digital video satellite service across the Atlantic.

Under the agreement, the service would begin with the launch later this year of an Orion 1 satellite at 37.5 degrees W. The service will provide Ku-band feeds between North America and Europe.

The service will be geared mainly to organizations delivering programming to Europe. Orion will provide entrance links, turnaround services, 4:1 digital compression, standards conversion, uplink operations, transponder space and downlinking throughout Europe. Part-time service will also be available.

Micronet will provide equipment to Orion's Glenwood earth station in New Jersey, as well as terrestrial connections to Washington, D.C., Philadelphia and New York.

Founded by Orion Satellite Corp., Orion Atlantic is a private partnership consisting of the U.K.'s British Aerospace and Kingston Communications, Canada's COM DEV, the U.S.'s Martin Marietta, France's Matra, the Nissho Iwai Corp. of Japan, and Italy's STET.

TRADE SHOWS

## BRAZIL HOSTS BROADCAST SHOW

SÃO PAULO, BRAZIL

Amid a growing cable television, satellite, and terrestrial broadcast market, the Fifth Video Expo-Set/South American Broadcast Equipment Show is set to take place from August 14 to 17 at the Anhembi Convention Center.

The show will offer Brazilian and international manufacturers the chance to tout their latest developments to the South American market. Among the products lines on display will be audio systems — including amplifiers, mixers, recorders and monitors — camera and support gear, digital effects equipment, editing systems, switching products, automation systems, test and measurement gear and transmission products for cable, satellite, terrestrial and microwave systems.

The show will run concurrently with the South American Multimedia Show-94 and the IV Brazilian Congress of Television Engineering.

Video Expo-Set is being sponsored by the Sociedade Brasileira de Engenharia de Televisão (SET). For further information,

contact Certame Eventos Promocionais Ltda.: Rua México, 11 slj.01 - CEP 20031-144, Ria de Janeiro - RJ - Brasil: telephone: +5521-220-3386; FAX: +5521-240-8195.

NETWORKS

## JAPAN FURTHERS NETWORK PLANS

TOKYO

Nippon Telegraph and Telephone Co. has ordered video servers and other multimedia devices from Silicon Graphics to be used in Japan's interactive video tests planned for the end of 1995.

Silicon Graphics is providing similar equipment to an advanced network in Orlando, Fla., being constructed by Time Warner. However, that project has been delayed from its original launch date of this past April to the end of the year.

In Japan, NTT hopes to begin testing a system in 1995, with a full-scale launch in 1998. Unlike the Time Warner project, which is designed to provide consumer programming, the NTT system will concentrate on providing digital services to corporations.

CONFERENCES

## MONTREUX ALIGNS WITH SMPTE

MONTREUX

The Montreux International Television Symposium (ITS) and the German section of the Society of Motion Picture and Television Engineers (SMPTE) have agreed to mutually support the 1996 European SMPTE Conference.

To be held in Cologne September 22-24, 1996, the event will be titled "The 1996 European SMPTE Conference — Organized by the European Sections of the SMPTE and the Montreux International Television Symposium." The event will take place within the Photokina Professional Media Fair.

In addition, the SMPTE will participate in the Montreux show in 1995.

The partnership comes at a time when Montreux is waging a battle with the International Broadcasting Convention, which has announced it will become a yearly show beginning in 1995. Traditionally, the two shows were held in alternate years.

NEW TECHNOLOGY

## SBC AIRS SPOTS FROM DISK

SINGAPORE

The Singapore Broadcasting Corp. has taken a step toward airing material from disk with the recent purchase of two Odetics CacheMachines.

The CacheMachine, a disk-based spot playback unit, will allow SBC to eliminate the need to compile all spots to a single reel for playback.

Each unit is configured with a Digital Betacam TCS90 cart machine, an LEM90 expansion module and two Tektronix Profile disk recorders.

Each system has a capacity of 10,000 spots, and will be used to automate the commercial presentation on Channels 5 and 8.

In other news, The Discovery Channel Asia, launched earlier this year on the Palapa B2P satellite, has acquired an Odetics TCS90 cart machine.

REGULATION

## DVB PROBES PIRACY ISSUE

FRANKFURT

Citing increased opportunities for signal theft in the digital future, the European Digital Video Broadcasting Project (DVB) has called on the European Union to beef up its anti-piracy laws.

The group is calling for the Council of Europe's Recommendation (91) 14 on the protection of encrypted services to be adopted, along with other measures.

In addition, the DVB has asked the EU to "examine the appropriateness" of harmonizing measures to protect encoded signals. The group is also asking that anti-piracy measures be included in the Europe Agreements and Association Agreements and be brought up for discussion at the Prague Ministerial Conference on Mass Communication in December.

COMPUTER VIDEO

## COMMODORE ENTERS REORGANIZATION

NASSAU, Bahamas

Rumors and speculation continued to swirl around Commodore International Ltd. in June, following the company's announcement that it had entered voluntary liquidation.

The company is reported to have racked up more than \$300 million in debt in the United States and is said to be in high-level negotiations with a number of companies interested in a buyout.

Among the names of potential buyers being circulated as of press time were Sony, Hewlett-Packard and Philips.

However, two other companies — CEI of Miami and Samsung — have emerged as central players in the negotiations, according to sources. CEI (Creative Equipment International) is the lesser known of the two, but it has a long history with Commodore as a major distributor, especially in South and Central America.

According to one source, it appeared that CEI would end up as a minor shareholder to Samsung's majority interest in the buyout, though this assertion could not be verified. Samsung officials involved in the negotiations could not be reached for comment.

## CONTENTS

NEWS

East Europe strives for news	1
Opinion	5
Show Listings	5
BroadcastAsia surges forward	6
Satellite, audio gear in demand	6
Ending the threat of radiation	8

FEATURES

Video Watch	10
John Watkinson	
Production Manager	12
Craig Johnston	
Masked Engineer	13
Mario Orazio	
RF Technology	14
Doug Lung	

COMPUTER VIDEO

Desktop Video	18
Terence Dyke & Paul Smolen	
Computer Graphics	21
John Spofford	


EQUIPMENT

Marketplace	19
Product Showcase	20
Equipment Exchange	22-23
Ad Index	30

BUYERS GUIDE

User Reports	24
Matrox, Grass Valley Group, BTS, CMX, Avid, Panasonic, Quantel,	

Next Issue:  
IBC & Amsterdam  
Editorial Features



**TV TECHNOLOGY**

Vol 12, No 9  
AUGUST 1994

**Editorial Director:** Marlene Lane  
**International Editor:** Arthur Cole  
**U.S. Editor:** Richard Farrell  
**European Editor:** Chris Dickinson  
Phone/Fax: +44(71)249-5890  
**South American Editor:** Lucia Cobo  
**Associate Editor:** Mary Ann Dorsie  
**Technical Consultant:** Lyn Heiges  
**News Correspondents:** New York: Frank Beacham, Mary Gruszka, Andrew Morris; Los Angeles: Bruce Goren; Jakarta: Mark Timpany


**Publisher:** Stevan B. Dana  
**Associate Publisher:** Carmel King  
**U.S. Sales Manager:** Mike Dahle  
**Marketing Assistant:** Annette Deutscher  
**Marketing Consultant:** Al Leon

**Production Director:** Klm Lowe  
**Production Manager:** Lisa Mamo  
**Publications Manager:** Lisa Lyons  
**Desktop Manager:** Julianne Stone  
**Ad Production Coordinator:** Kathy Jackson  
**Classified/Showcase Production Coordinator:** Vicky Baron

**Ad Coordinator:** Caroline Behan  
**Circulation Director:** Rebecca Seaborg  
**Circulation Manager:** Tiana Hickman

TV Technology (ISSN: 0887-1701) is published monthly, except for April and November which have 2 issues, 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 address changes to TV Technology, P.O. Box 1214, Falls Church VA 22041. Copyright 1994 by Industrial Marketing Advisory Services, Inc. All rights reserved. For reprints contact the author and TV Technology.

Free subscriptions are available to professional broadcasting and audio-visual equipment users. For address changes, send your current and new address to TV Technology a month in advance at the above address. Unsolicited manuscripts are welcome for review; send to the attention of the appropriate editor.

Member, Business Publications Audit of Circulation 



**Digital cameras.  
Sony announces  
a new movement in  
video acquisition.**

The time has come.

Sony announces the DVW-700P and BVW-D600P digital cameras – two camcorders that signal a new era in documentary and drama acquisition.

Arm yourself with the DVW-700P for Digital Betacam recording, or the BVW-D600P when you're using Betacam SP. You'll find that both camcorders offer acoustic noise, weight, and size no greater than their analogue equivalents.

Advanced Digital Signal Processing circuitry, featuring our Hyper HAD 1000 CCD chip, means better picture quality than any other camcorder. New lithium-ion batteries give longer recording times. The DVW-700P even allows colour playback in the field without an external adapter, and is also available as a switchable widescreen version.

You get a wide range of setup parameters, plus a user-configurable viewfinder menu which makes light work of the setup procedure.

And all settings can be stored on a removable Setup Card. It means rapid camera readjustment, as well as the ability to configure more than one camera in the same way.

Join the movement for component digital acquisition. And shoot with the confidence provided by true digital quality.



DVW-700P



BVW-D600P

**SONY**



## READERS FORUM

### Anti-fiber?

#### Dear TV Technology:

It is understandable that Mario Orazio is a pseudonym, allowing the author to protect himself from the consequences of his writing (Fiber in My Plant? I Think I'll Stay With Copper; June 1994). The author points out some real-world problems in using optical fiber where power must be delivered along with the signal. However, he is a little over-zealous in his criticism of fiber, and I am certain I will be only one of several to comment.

Optical fiber is not suited to all communications applications. The relative cost of

the total installation, with E/O conversion, may cost more than copper, and there are other considerations that may favor copper. Power transmission presently is solved only by hybrid cable. Connectorization, splicing and testing have become so simple and reliable, they are not worthy of major concern. The author does allude to the advantages of fiber, but he gives them less credit than they deserve. Immunity from EMI — including lightning and ground loops — light weight and high bandwidth are tremendous advantages, and the cost of fiber installation, sometimes even including the E/O interfaces, can be less than that of copper.

More specifically:

- Concerning triax, fiber optic rotary joints, the optical equivalent of a slip ring, have been available for 15 years from several manufacturers to serve the remote applications. Hybrid cable does make sense.

- No one in his right mind is going to lay fiber optic cable without strength members across a golf course. And yes, there is fiber optic cable in production across which you can run a main battle tank and tie knots without damage.

- If POTS is all you want to transmit on fiber, then many would agree that it is not cost effective nor acceptable to the user to

provide battery power to run fiber to the home. Fiber to the curb will do. However, if integrated services, including HDTV, are delivered along with POTS, fiber will be necessary. Hybrid cable again is increasingly becoming a popular option. To think that these services are a long time coming would be a very risky position for service providers.

- Yes, all fiber optic communications operate in the near infrared range, most of it at 850 nm or 1,300 nm. You can see 850 nm (Mario cannot see electrons), and there are inexpensive equivalents of a logic probe to detect signals and discriminate among wavelengths. Also, many applications, especially those that require retransmission distances of less than 2 km, utilize LED light sources, not laser diodes, and eye safety is not a problem. Even with laser diodes, FDA regulations must be met, and manufacturers' warnings are explicit about direct coaxial viewing.

- Has Mario ever used a fault locator? They DO work just as well as he says they do.

- Serial digital already is providing video on fiber at high transmission rates, and can be used where uncompressed video is unattractive and more than the 500-foot limitation on coax is necessary. A SMPTE stan-

dard for serial digital is under review, and should be released late in 1994.

To answer his question, Mario is probably not unreasonable, just a tad biased.

Wendell Hensley  
Force Inc.  
Christianburg, Virginia

P.S.: Hensley is not a pseudonym.

#### Mario replies:

*Gee, it has been a long time since anyone called me a tad. Thanks! And thanks, too, for being someone in the fiber optic business who recognizes that it is not ideal for everything.*

Your pal,  
Mario

#### No government strings

#### Dear TV Technology:

In the April issue (Vol. 12, No. 4) of TV Technology, I was quite surprised to find an article regarding the progress of television in our small republic. The article entitled "Czech Republic Gets First Private Network" is proof of world recognition of the Czech republic's capabilities as a fast-growing economy.

However, there is one inaccuracy in your article and it has to do with the so-called "state-run" Czech television. The fact is that the Czech government has absolutely nothing to do with television. After the revolution of 1989, Czech TV cut itself off from government funding in order to stay immune from any manipulation. Now, the station is run as a public broadcasting station funded mainly by viewer subscriptions.

As a high quality and highly respected magazine, I would expect better information gathering and better editing to be done when reporting the news. Especially when this news is not that new.

Thomas Mucha  
Czech Television  
Prague

## SHOW LISTINGS

### 12-16 SEPTEMBER — EUROGRAPHICS '94

Oslo, Norway. The European Association for Computer Graphics sponsors the 15th annual show for computer graphics professionals. For information, contact the EACG at Boks 124, N-0314 Oslo, Norway, telephone: +47-2206-7654; FAX: +47-2206-7350.

### 16-20 SEPTEMBER — IBC '94

Amsterdam, The Netherlands. The 1994 International Broadcasting Convention will be in the RAI Exhibition and Congress Centre. For information contact the IBC Convention Office, Savoy Place, London WC2R 0BL, U.K.; telephone: +44-71-240-3839; FAX: +44-71-497-3633.

### 22-27 SEPTEMBER — PHOTOKINA PROFESSIONAL MEDIA '94

Cologne, France. This year's show will feature new ways to transmit data over the air, as well as numerous corporate video topics. For information, contact organizers at telephone: +221-821-2494; FAX: +221-821-2105.

### 24-26 SEPTEMBER — SHOWBIZ EXPO EUROPE

Munich. Advanstar Expositions brings its show from the U.S. to Europe this year, occupying the M.O.C. Exhibition Center. For information, contact Leanne Lambert or Liz Crawford, 201 East Sandpoint Ave., Suite 600, Santa Ana, Calif., 92707; telephone: +1-714-513-8400; FAX: +1-714-513-8481.

### 27-30 SEPTEMBER — TAIPEI BROADCAST '94

Taipei. To be held in conjunction with Taipei Telecom '94 and the second Taipei International Telecommunications show, Taipei Broadcast is billed as an international cable, satellite, sound, film and video show. For information, contact Rupert Owen, 11 Manchester Square, London, W1M 5AB, U.K., telephone: +44-71-486-1951; FAX: +44-71-413-8230.

### AUTUMN 1994 — CIRT '94

Mexico City. The 1994 CIRT radio and television conference will be held in Mexico City. Official dates have not been announced. For information, contact Jaime Robledo at the CIRT: telephone: +52-5-726-9909; FAX: +52-5-250-2896.

### 4-6 OCTOBER — CES MEXICO '94

Mexico City. Anticipating new markets in Mexico following approval of the NAFTA treaty, the U.S. Electronic Industries

Association is bringing its Consumer Electronics Show south of the border. For information, contact Cynthia Upson at: telephone: +1-202-457-8728, or write to her at 2001 Pennsylvania Ave., NW, Washington, D.C., 20006-1813, U.S.A..

### 12-15 OCTOBER — WORLD MEDIA EXPO '94

Los Angeles, California. The National Association of Broadcasters (NAB) joins forces with SMPTE (Society of Motion Picture and Television Engineers), SBE (Society of Broadcast Engineers) and RTNDA (Radio-Television News Directors Association) to produce a new fall radio and television exhibition. For information, write the NAB, 1771 N Street, N.W., Washington, D.C., 20036-2891 U.S.A.: telephone: +1-202-429-5409; FAX: +1-202-429-5343.

### 21-23 OCTOBER — BROADCAST INDIA '94

Bombay. The fourth annual Broadcast India will take place at the World Trade Centre. The event will be coordinated with Broadcast Sri Lanka '94. For information, contact Saicom Trade Fairs and Exhibitions, 184, Admiralty House, Bombay, 400 005, India; telephone: +91-22-215-1396; FAX: +91-22-215-1269.

### 25-28 OCTOBER — BROADCAST CABLE & SATELLITE INDIA '94 AND COMMUNICATIONS INDIA '94

New Delhi. Exhibitions India will present these concurrent events at the Pragati Maidan. For information, contact Prem Behl at E-6, Defence Colony, New Delhi-110024, India, telephone: +91-11-4622710, 4622711; FAX: +91-11-4633506.

### 29-31 OCTOBER — BROADCAST SRI LANKA '94

Colombo, Sri Lanka. The event is being coordinated with Broadcast India '94. For information, contact Saicom Trade Fairs and Exhibitions, 184, Admiralty House, Bombay, 400 005, India; telephone: +91-22-215-1396; FAX: +91-22-215-1269.

### NOVEMBER 1994 — INTERBEE '94

Tokyo. The Electronic Industries Association of Japan (EIAJ) hosts the 1994 International Broadcast Equipment Exhibition for professional audio and television broadcasting. For information contact the Japan Electronics Association: The Tokyo Chamber of Commerce & Industry Building, 3-2-2, Marunouchi, Chiyoda-ku, Tokyo 100, Japan; FAX: +81-3-284-0165. Official dates have not been announced.

## LETTERS TO THE EDITOR



### Questions...? Comments...?

Have something to say  
about TV Technology  
International?

Send your letters to:

Readers Forum,  
TV Technology,  
P.O. Box 1214,  
Falls Church, VA  
22041 USA

or fax +1-703-998-2966

# BroadcastAsia Surges Forward

by Maggie Dugan

## SINGAPORE

The theme of the BroadcastAsia '94 exhibition and conference in Singapore in June was the question: "Where do we go from here?" But most of the discussion at the conference seemed to be centered on "How do we go from here?" as broadcasters and manufacturers played tug of war over incredible advances in available technologies and the explosion of the Asian broadcast market.

Broadcasters in Asia are hungry for equipment, technology and programming, but there is concern, at least from the state-run operations, about how quickly the Asian market can adapt to the fast-changing menus of services being offered by the West.

"There is a need for a set of guidelines for region-wide programming and technical standards," said Hugh Leonard, secretary general of the Asia Pacific Broadcast Union (ABU) in his opening address to the conference.

## CULTURAL INVASION

Leonard warned of the cultural invasion of non-terrestrial broadcasters.

"These intruders will not go away," he said. "We will just have to learn to live with them."

Teo Chee Hean, Singapore's minister of state for finance and communications, who was guest of honor at the opening cere-

monies, said the issue of programming control is not only a question of standards.

"It makes business sense that services must provide (what is) relative to the culture and the language of the different Asian audiences," he said.

Although the show boasted 17,000 visitors, most exhibitors at this, the third BroadcastAsia show, agreed that they had less traffic by their booths during the four-day conference than at previous shows. However, the visitors who did come by seemed ready to talk seriously about their broadcast equipment and service needs.

"The show's been a little slow, it is so close to the NAB in Las Vegas," said Alex DeLay of transmitter manufacturer Larcant-TTC.

The buzz at the conference was the explosive growth of the radio market in Asia, especially compared to the more depressed American and European markets.

"This region is very exciting," said Randy Ng, manager of Sony's Hong Kong sales efforts. "New satellites are being launched, transponders have been reserved, a lot of people want to know how to operate cable, there are new television joint ventures, and they can all buy the latest technology. Things are really happening."

Harris-Allied has been doing business in the region for at least 50 years and supplied products to virtually every country in Asia. Still, Jack O'Dear, director of international sales for Harris-Allied, said that does not

make it easy.

"There is lots of competition here. Nobody is making a lot of money," he said. "It is booming, sure, but it is very competitive."

But the word is out that Asia's broadcasting industry is growing, and this year's BroadcastAsia is evidence that western product suppliers want to take advantage of the boom. At least 430 exhibitors from 30 different countries attended this year's conference, 20 percent more than the last conference two years ago.

## NEW FACES

In 1992, the show was dominated by American and British manufacturers. Noticeable on the exhibit floor this year was the increase in smaller European suppliers. The exhibit roster was filled with Italian, German, French and other European suppliers, many of them making their debut in Asia.

"It is really important to be here at the beginning," said Astrid Carver, product manager for French manufacturer Dalet Digital Media Systems. "Our main purpose here is to train our new distributors (Daxco), but it is helpful to be here to see new people. They are very aware and asking focused questions."

Huw Gwilym, product specialist at audio

and video manufacturer AMS/Neve, noticed how open the Asian broadcasters are to technology.

"They immediately understand what the technology can do for them, unlike in more mature markets like the U.S. and the U.K. where people are more reluctant to change."

But while companies doing business here find broadcasters more flexible and interested in the newest technology and equipment, the ABU is sending a strong message to Western program and equipment suppliers: slow down.

"Everyone concedes that the long-term future resides in advanced technologies, but the future is not tomorrow," said ABU Technical Director Om Khushu. "Asian broadcasters would not want to jump into quality at the expense of existing audiences. We will use the same technology that allows quality, but use it instead to make improvements in quality over the current technology we are using."

Some manufacturers are sympathetic to Khushu's point. Gabriel Saimovici, managing director for the French computer design company SoftImage, said the company demonstrated new equipment at NAB, but withheld it from Singapore.

"We are concerned about demonstrating a product, only to be too overwhelming," he said. "To localize does not just mean translation, it means interpretation and promoting products that this market is ready for." ■

## Satellite and Audio Gear Are In High Demand

by Mark Timpany

### SINGAPORE

Audio and satellite gear drew the major share of attention on the exhibit floor of BroadcastAsia '94 in June.

A few of the more well-known manufacturers' names have changed since the last BroadcastAsia in 1992, mostly as the result of mergers. Comark exhibited under the Thomcast banner, which now also includes ABB Infocom and, most recently, service parts for RCA broadcast transmitters.

Sales of the company's IOT transmitters have been very strong in Indonesia, where they provide the efficiency required for high power UHF facilities for several rapidly expanding commercial networks.

### ON THE FLOOR

TTC was again an exhibitor, this time as part of Larcant. Crow Broadcast Systems of Singapore became IPK-Crow since the last show. In addition to the U.K. alliance, Crow also represents Continental Electronics transmitter products here.

Audio was not neglected at this year's exhibit. Show organizers created a special "Professional Audio Technology" section to group together some of the leading manufacturers of audio equipment.

Equipment on display at the Harris-Allied booth was predominantly radio, including the "Digit" digital FM exciter. The unit incorporates AES/EBU inputs and maintains the audio signal in the digital domain through the stereo generator.

BroadcastAsia is not usually the showcase for new products. But this year there was at least one. Tektronix displayed its AM700 audio measurement set, the audio equivalent of the VM700.

The AM700 incorporates the functions of an audio generator/analyzer/oscilloscope/

FFT analyzer with a digital signal generator and interface tester. It is capable of being programmed for automated testing and can be interfaced by IEEE-488 (GPIB).

All the satellite manufacturers were busy demonstrating their hardware implementations of the MPEG 2 compression standard. This is seen as a means of generating more program carriage capacity while allowing flexible use of standard transponder space.

### MOBILE SNG

Multipoint Communications was promoting its C-band flyaway SNG systems at the show. Use of video compression reduces the antenna size required for uplinking from temporary sites.

Although there is a shortage of Ku-band transponders currently serving Asia, most of the satellites scheduled for launch in the next few years have Ku-band capabilities. But for the moment, the use of digital compression techniques is needed to allow coverage of events removed from permanent uplink sites.

The universality of the international MPEG standard has already generated enough production volume so that hardware implementations of MPEG will soon be comparably priced to proprietary schemes of compression, encryption and audio/data multiplexing. The next year is expected to see several vendors finalize their LSI implementations of MPEG 2 and be able to handle large-scale production of chip sets and boards.

Judging from this year's show, it is certainly clear that BroadcastAsia has grown dramatically in size and scope since its inception in 1990. And it is likely that manufacturer support for BroadcastAsia '96 guarantees that it will remain a permanent fixture in the Asian broadcast market. ■

WORDS  
AND  
IMAGES  
ON-LINE



Logo Generator **LEG 16**



Character Generator **CG 180**



Video & Audio  
multi level matrix **SR 16**

*We have been producing and marketing broadcast quality audio and video signal handling equipment and on-line character and image generation hardware since 1978. A complete range of equipment to satisfy the most varied application requirements:*

- Character Generators
- Logo Generators
- Video Time Generators
- Teletext Systems
- Switchers
- Cross Point Switchers
- Distributors

*We are now looking for distributors in areas not yet covered.*



**ELCA**  
PROFESSIONAL  
AUDIO-VIDEO  
EQUIPMENTS

ELCA s.r.l. • via E. Jenner, 4 • 24047 Treviglio (BG) ITALY  
Tel. 39-363-303885 / 44763 • Fax 39-363-301951

# SONY AND ANTON/BAUER ARE MAKING HISTORY...

**Unpredictable shooting interruptions that occur with primitive "low battery" indicators are now history.** Through a special InterActive™ circuit in Sony camcorders, such as the new BVW-D600 Betacam SP DSP camcorder, actual remaining battery capacity is transmitted to the viewfinder from the Anton/Bauer Digital battery's fuel computer. During operation, this highly accurate fuel gauge is displayed in the viewfinder and constantly updates remaining battery capacity to the cameraman.

**Short runtimes, cumbersome battery belts and battery change disruptions are history.** The Anton/Bauer InterActive battery and charger system deliver the high level of performance, reliability, and versatility demanded by the Sony Digital 1000 camcorders. A single high capacity Digital Propac® battery perfectly balances the camera on the shoulder and powers camera, recorder and Ultralight for 2 hours.

**High wattage on-camera lights, wasted battery power and "interrogation room" interviews are history.** The advanced low light sensitivity of the BVW-D600 is enhanced dramatically by the Studio Quality Ultralight 2. Automatique™, an exclusive control circuit standard on all new Sony camcorders equipped with an Anton/Bauer Gold Mount™, synchronizes the on/off function of the Anton/Bauer Ultralight™ with the VTR stop/start button. The Ultralight's photometric design matches ambient light to transform a shadow filled scene to a studio image.

**These history making advances are possible only with the Anton/Bauer InterActive system, part of the innovative technology and creative solutions in the BVW-D600.**

**antonbauer**

The worldwide standard



The BVW-D600 Betacam SP DSP camcorder, and the DVW-700 the world's first Digital Betacam camcorder, feature InterActive™ viewfinder, Ultralight Automatique and Sony's exclusive Hyper-HAD™ sensor with OCL (On-Chip-Lens) technology.

For your FREE "Video Battery Handbook"  
call (in U.S. only) 1-800-422-3473 or fax (203) 929-9935

Betacam, Betacam SP and Hyper-HAD are trademarks of Sony.  
InterActive, Ultralight, Gold Mount and Automatique are trademarks of Anton/Bauer

InterActive viewfinder and Ultralight Automatique are also standard features on Sony BVW 400A and UVW-100 camcorders.  
Your Sony representative can provide you with details on Anton/Bauer InterActive Systems for all Sony products.

# Ending the Threat of Radiation

*Naptex Fabric from German Manufacturer Protects Workers Despite Tower That is Loaded with Antennas Operating at Full-Power*

by Donald T. Doty

President

Doty-Moore Tower Services

After just settling down for a good night's sleep last November, the phone rang and it was my old friend and colleague, Dallas-based consultant, William J. B. Smith. Bill informed me that KDAF, Channel 33, in Dallas had just suffered a massive failure of its transmission system and that it was off the air. Thus, with one phone call, one of the most interesting and challenging antenna repair projects we have ever experienced had begun.

A couple of phone calls later, a crew was assembled which immediately reported to the tower site. Smith and the Doty-Moore crew concluded that the failure was definitely in the antenna. Further investigation determined that the antenna was beyond field repair and could not be serviced locally. Changing the antenna was the only alternative.

## BACK-UP UNIT

We ordered a standby antenna from Andrew Corp., which was due to arrive the next day, and immediately began an evaluation of the tower, a 1,500-foot guyed structure with a candelabra-style top section. The tower held three UHF antennas on top, including the Channel 33 antenna which suffered the failure. Directly below the top platform were two eight-bay panel

radiation levels well above the safety limits prescribed by both the American National Standards Institute (ANSI) and the U.S. Federal Communications Commissions (FCC).

We examined three options as to how the work should proceed. We could arrange backup antennas for all stations that would be affected; a very expensive proposition. Our second option was to comprise a schedule where all of the work would be done at night so that the affected stations could reduce power or go off the air. However, this option would have dramatically increased the work time required, not to mention being a major inconvenience to all of the broadcasters.

Our third option was to take exhaustive measurements of the tower and the work area and determine how the work could be accomplished using RF protective clothing. In this way, all of the stations could remain at full power and work could proceed with a minimum of inconvenience.

We decided to pursue the third option using protective clothing made of Naptex, which is manufactured by NSP of Germany. We have been using this product for over two years, but had never faced a challenge as great as the Channel 33 antenna replacement with all stations on the tower running at full power.

**Tower workers install a new antenna using Naptex jumpsuits.**



FM antennas with radiators on all three surfaces. Below the second FM panel was a side mounted Channel 58 UHF antenna broadcasting at 500 kW. Next was an eight-bay VHF Channel 2 antenna with radiators on all three surfaces. Finally, there was a twenty foot wrap-around platform crammed with two-way communication equipment. To say that the tower was loaded was an understatement.

Another complication was that most of the stations do not have any standby facilities. An RF mapping of the tower indicated that it would be impossible to do any work near the top due to the number of antennas and the resultant high RF fields producing

There have been several kinds of RF protective clothing introduced over the last 20 years. Each one has had some drawback regarding its use. Some were too heavy and could not be used in even cool weather, others had a low flash point and did not offer even moderate fire retardant capabilities. Still others did not provide a wide enough range of RF protection or would break down after exposure to higher RF fields.

Naptex is made with a double-patented process in which a micro fiber of stainless steel is wrapped in a pure cotton overlay, which in turn is rewrapped in a cotton/polyester yarn. The fiber is then woven into a fabric that has about the same

look and feel as broadcloth.

The material works by reflecting RF radiation resulting in a negligible thermal effect. Coveralls used in conjunction with gloves and socks (or overshoes) made of the same material reduces the specific absorption rate (SAR) value to well within the limits specified by ANSI and the U.S. Occupational Safety and Health Administration (OSHA).

Clothing made from Naptex can be

**The material has a wide range of shielding ability from below 10 kHz to above 20 GHz.**

repeatedly laundered without any discernable loss of shielding ability. The fabric is breathable and can be worn all day in complete comfort. If you can work in regular coveralls, you can work in Naptex.

The material has a wide range of shielding ability from below 10 kHz to above 20 GHz. It can be subjected to continuous fields as high as 125 mW/cm<sup>2</sup> (milliwatts per square centimeter). The shielding ability ranges from 40 db below 1 MHz to 20 db above 20 GHz.

The RF mapping of the tower indicated that the electric field levels ranged from about 13 mW/cm<sup>2</sup> to almost 60 mW/cm<sup>2</sup> in the work area near the other antennas. Some areas of the tower were within acceptable levels. The power levels in the upper portion of the tower are well in excess of the FCC mandated maximum levels. However, the measured levels inside the Naptex suits were well below 1 mW/cm<sup>2</sup>; only a fraction of the acceptable values as dictated by the FCC/ANSI standards.

The emergency standby antenna was flown in from Andrew and was installed on the top platform directly opposite the failed Channel 33 antenna. This was done to keep the radiating elements as far away from the work area as possible. The standby antenna was connected to the transmission line and broadcast operations began at one half power, as this was the maximum power the standby antenna could handle.

## UP AND RUNNING

With the station back on the air, we started to plan strategy as to how to proceed. During the entire project it would be necessary to work in RF levels well above the allowable maximum. Personal RF protection would be required at all times. Measurements were taken before and during work periods to assure that proper safety values were observed.

The project began with a complete layout of procedures so that all stress values on the tower could be evaluated. There was a need to install 75 feet of falsework, temporary steel scaffolding to allow erection of hoisting booms and other erection apparatus. It was decided to replace the old antenna with an exact replacement so that no additional structural evaluation would be required.

During most of December 1993, the tower was being prepared for the antenna replacement. Lines, hoisting lines, tag

lines, jib booms, gin poles and many other erection features were installed as the tower was prepared for the lowering of the failed unit and erection of the new antenna. Special consideration had to be given to some of the steel lines to guard against arcing and resonances from the high power antennas nearby. Special grounding procedures were developed to help in this endeavor.

During the entire period, the crew was working in the high RF fields without any sign of overexposure. Readings of RF levels were taken daily to make sure that all of the working areas were not exceeding the measured maximum allowable level within the protective suits.

Certain changes in the hoisting gear had to be made on top in order to have the new antenna lifted on the proper face of the

tower and attached at the proper orientation. The interference with our two-way radio system, caused by all of the high RF fields, was a major problem during lifting, but we worked out other methods of communication.

After the new antenna was bolted into place, the temporary falsework had to be removed and other temporary erection features taken down. A wattmeter and spectrum analyzer were used to make a final in-place check of the antenna, and rigid hangers and other supports for the reinstallation of the transmission line were attached.

## BUMPS IN THE ROAD

The actual transition to the new antenna went very smoothly, but after about ten minutes of operation, the station suddenly went off the air. We went back up the tower to check for possible problems, and we found a defective bullet in one of the elbows. It was replaced and the station went back on the air.

This time it worked for about 40 minutes, then went off and stayed off. We decided to transfer back to the standby antenna while we rechecked the new antenna. Since it was working properly, we concentrated on the transmission line, checking section by section using a shorting stub and taking measurements.

Testing continued into the following night when the standby system failed as well. This time no amount of coaxing could get it back on the air. Work continued and true to Murphy's Law the last thing checked was the problem: the gas barrier. A temporary repair was made to the barrier and the station returned to the air at full power on the new antenna.

A few days later a new gas barrier was received and installed. The crew held their breath while more tests were conducted and everything checked out OK. The station returned to normal operation. The project was a success, thanks in large part to the protection afforded by Naptex. ■

*Donald T. Doty is president of Doty-Moore Tower Services Inc., a San Francisco consulting firm.*

*For further information on Naptex, contact Gunter Bruckner at NSP (telephone: +49-8273-1031; FAX: +49-8273-2823; in South America, contact James May (telephone: +1-214-733-1040; FAX: +1-214-733-1420), or circle Reader Service 65.*



CONTINUED FROM PAGE 1

## News Pool Struggles to Survive

satellite system and has access via microwave and hardwire links to 41 television stations, mostly in ex-Soviet and once allied countries in Asia and the Middle East.

### UP FOR GRABS

Before TransNews became interested in the facility, the Czech Telecommunications Company intended to dismantle it. In late 1992, the headquarters buildings of the OIRT, where 120 people once worked, were put up for rent and the equipment in the switching center was auctioned.

"Fortunately, we were able to get almost everything in the auction that we needed to operate the facility, except for adding some transcoders," said Robert Horvitz, a board member of TransNews. "Most of what we

EBU but refused by the EBU because of lack of space or member interest.

"The EBU aired an average of one or two stories a day, but that is just not enough," Horvitz said. He added that the rapidly changing societies of Eastern Europe and the former Soviet Union need information about each country's activities in order to overcome long histories of national and ethnic rivalry, as well as current political conflicts over trade and migration.

Today, TransNews is trying to find new uses for the ex-OIRT network to help support reviving its service. In June, while the world witnessed a nuclear stand-off between North Korea and the West, the center was used to feed programming to the EBU from North Korean state television. North Korea is isolated from the EBU because it is not a member and only has ground stations with C-band capabilities for communicating with the Intersputnik system. The EBU is accessible only

through Ku-band stations to the Eutel satellites.

### KOREAN ACCESS

"I thought we had a unique capability for getting North Korean news, so I contacted the North Korean state television station via telex," Stepánek said. Prior to TransNews, Stepánek worked at OIRT for 24 years, and he said he was surprised to find that after two years, all of the contact people in North Korea still remained.

"As far as I know, we are the only people North Korea has agreed to pass footage to," he said.

The EBU has verbally agreed to accept the footage on a case-by-case basis, depending on member interest.

Stepánek said he believes the switching center can also provide unique access to countries such as Cuba and South Yemen, which are isolated because their ground stations tie only to Intersputnik.

"We have the possibility of getting footage from their state television systems very inexpensively," he said. "Someone like CNN would have to go in with a portable ground station, and they might find the cost too prohibitive." ■

**"The EBU aired an average of one or two stories a day, but that is just not enough . . ."**

**Robert Horvitz**  
**TransNews**  
**Board Member**

needed, such as the video matrix switchers and the audio coordination circuitry, was not useful to the ex-OIRT television stations, which had first bidding rights."

After start-up costs of less than US\$100,000, the non-profit group originally planned to pass along the approximately US\$15,000 per month operating costs to new private television stations expected to emerge in the region. However, only a few private stations have started, and most are beset by financial difficulties. Instead, TransNews, which received and offered news to state television stations free of charge, continued to fund all costs of the exchange itself.

"We were afraid that if we waited for the private stations to arrive before we began, it would mean losing the chance to use the ex-OIRT centers," Stepánek said. "So we had to begin immediately without them."

Until suspending the service in March, TransNews exchanged a daily 30-minute program of four to eight items through the switching center. Often, the news was footage offered by state television stations for exchange via the

Your satellite receiver is the most important link in your reception chain. And the one thing you can always count on - the signal never gets better than it is at the receiver. It creates the most important link to video and audio technical performance and initial S/N ratio.

Which is a very good reason to specify Standard Communications Corp.'s new rebroadcast *Intercontinental* satellite TV receiver - but it's not the only reason.

It has all the features professional operators need most: total flexibility in both C/Ku-band operation, rebroadcast quality

certified video on NTSC, PAL and SECAM signals, and a universal power supply built for the rigorous demands of 24-hour-a-day operation.

Never before has one receiver worked so well from INTELSAT to all DOMSAT formats in C, Ku and S-band frequencies. The 800 MHz or optional 1 GHz input will work with all known LNBs on all worldwide ITU regions. And our synthesized PLL tuning circuit provides direct frequency selection with crystal tolerance - 100 KHz accuracy in a continuous, self-monitoring control loop. The new digital AFC circuit improves performance in low threshold, severe interference, and multiple carrier per transponder operation.

A unique 70 MHz I.F. spectrum inversion circuit allows Ku-band to C-band or vice versa I.F. uplink or downlink turnarounds.

The *Intercontinental* is built for knowledgeable and discriminating engineers and offers proof of performance RS250C and CCIR567 certification. It features six I.F. bandpass filters, from 36 MHz to 16 MHz, five audio filter selections from 880 to 75 KHz, and six audio de-emphasis circuits.

There is much more you should know about the *Intercontinental* - and Standard Communications - than we can tell you in a single ad. Call us or fax us. We'll send you more information showing you how to get the best performance and peace of mind. Link up with our new *Intercontinental*.

 **Standard Communications**

**SATELLITE  
REBROADCAST**

P. O. Box 92151

Los Angeles, CA 90009-2151

Phone (310) 532-5300 ext. 217

Toll-Free (800) 745-2445

Fax (800) 722-2329 (Toll-Free)

(310) 532-0397 (CA & Int'l Only)



Circle 37 On Reader Service Card

# Checking for Errors Bit by Bit

by John Watkinson

## VIDEO WATCH

The serial digital interface is steadily taking over as the video interface standard for the digital age, but the original standard had no provisions for data integrity checking. Error Detection and Handling (EDH) is an option for serial digital which goes a long way to rectifying the problem.

Once video and audio are converted to the digital domain, they become data, or numbers, and if those numbers can be delivered to the other end of a digital interface unchanged, then the interface has not caused any loss of quality. This is one of the strengths of digital technology. In the absence of data reduction techniques, the quality is determined in the conversion

process and can then be maintained in transmission and recording.

### ANALOG LOSS

In contrast, analog signals are subject to generation loss in every recording and to noise and distortion in every transmission. This analog heritage has led to a philosophy where the analog waveform is monitored at every stage so that some adjustment can be made to minimize the quality loss. The waveform monitor and vectoroscope mind-set is so strongly imprinted that in the transition to the radically different digital technology few people thought to question monitoring methods.

Put simply, analog testing techniques reveal nothing about a digital interface or recorder. Consider the system of Figure 1, which could be composite or component. An analog-to-digital converter (ADC) converts the input waveform to data which is transmitted by the interface. A digital-to-analog converter (DAC) converts the received data to analog video once more.

If a waveform monitor and vectorscope are connected to the DAC, what do they tell us about the interface? Assume first that the interface is not suffering bit errors. In this case our monitoring tells us how good the ADC and DAC are, but it tells us nothing about the performance of the interface. The interface could be working with 20dB of noise immunity, or it could be within a whisker of failure.

Suppose the system is marginal and one bit fails per minute. You will not see that on an analog monitoring system in the presence of program material. You will be very lucky to see it on color bars. If your problem is due to a phase locked loop drifting in a serial digital interface (SDI) receiver or damp penetration in a cable, it is going to get worse. And if you are not aware of it, the result will be a sudden failure.

What is needed is a system that measures data integrity. A data integrity system does not care what the video waveform is, or indeed that it is a video waveform at all. A data integrity system considers the digital TV field as a block of binary data and simply checks whether that data was received with bit accuracy or not. The message is to forget the pictures and worry about the data.

### DATA CHECKING

Data integrity checking uses many of the techniques of error correction systems, but it is not itself a form of error correction. Although error correction can be used with digital broadcasting to the home receiver, it cannot be used for production purposes because it causes delay. In order to use

... analog testing

techniques reveal nothing

about a digital interface

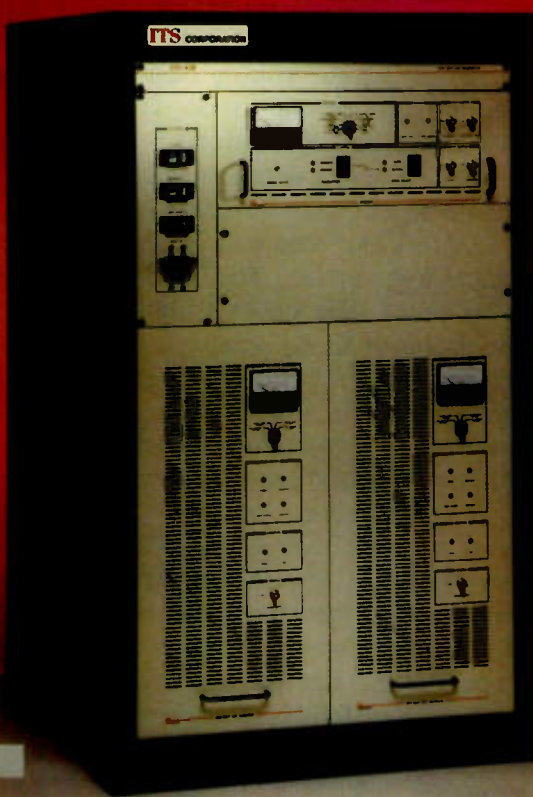
or recorder.

error correction, data must be interleaved and coded on transmission and then de-interleaved on reception. The data must be held up until a whole block is received and checked before it can be corrected and released.

These delays are unacceptable in a production system, and so professional digital audio and video interfaces run without error correction. They are designed instead to transmit data transparently so that error correction is unnecessary. Data integrity checking is essential to ensure that this condition is met.

One of the strengths of the digital approach is that data integrity checking is completely automatic and needs no human supervision. The drive toward greater cost effectiveness in all aspects of facility and broadcast work will ensure that automated digital systems will displace manual analog systems on running cost alone. The fact that digital techniques permit better quality is definitely a secondary consideration in today's economics.

## A New Generation Of Transmitter Technology



Presenting  
The ITS-830 1kW  
UHF Solid State  
Transmitter

ITS Corporation has combined our traditional high quality design with today's most advanced semiconductor technology. The result is a transmitter that offers great performance, reliability and value in a very compact unit.

- Internally diplexed for simplicity and reliability
- High gain parallel amplifiers—no single driver stage
- Broadband amplifiers simplify channel changes
- $\pm 1$ kHz frequency stability standard
- Full remote control interface
- Output circulator protection
- 500W and 2kW versions available - all in one cabinet! Translator versions also available

Find Out Why More And More Broadcasters Are Turning To ITS For "Visibly Better Technology."

**ITS** information  
transmission  
systems  
**CORPORATION**

375 Valley Brook Road  
McMurray, PA 15317 USA  
(412) 941-1500 FAX (412) 941-4603

Figure 2 shows an EDH-equipped SDI transmission system. At the first transmitter, the data from one field is transmitted and simultaneously fed to a Cyclic Redundancy Check (CRC) generator. The CRC calculation is effectively a kind of mathematical division and the result is a form of remainder. The remainder is transmitted in a special ancillary data packet that is sent early during the vertical interval, before any switching takes place in a router.

The first receiver has an identical CRC generator that performs a calculation on the received field. The ancillary data extractor identifies the EDH packet and demultiplexes it from the main data stream. The remainder from the ancillary packet is then compared with the locally calculated remainder. If the transmission is error-free, the two values will be identical. In this case no further action results. However, if as little as one bit is in error in the data, the remainders will not match.

**DIGITAL WORDS**

The remainder is a 16-bit digital "word" that guarantees to detect up to 16 bits in error anywhere in the field. Greater numbers of errors are not guaranteed to be detected, but this is of little consequence as enough fields in error will be detected to indicate that there is a problem.

Should a CRC mismatch indicate an error in this way, two things happen. Firstly an optically isolated output connector on the receiving equipment will present a low impedance for a period of 1 to 2 milliseconds. This will result in a pulse in an externally powered circuit to indicate that a field contained an error. An external error monitoring system wired to this connector can note the occurrence in a log or sound an alarm or whatever it is programmed to do.

As the data is incorrectly received, the fact must also be conveyed to subsequent equipment. It is not permissible to pass on a mismatched remainder. The center unit in Figure 2 must pass on the data as received, complete with errors, but it must calculate a new CRC which matches the erroneous data. When received by the third unit in Figure 2, there will then only be a CRC mismatch if the transmission between the second and third devices is in error.

This is correct as the job of the CRC is only to locate faulty hardware, and clearly if the second link is not faulty the CRC comparison should not fail. However, the third device still needs to know that there is a problem with the data, and this is the job of the error flags which also reside in the EDH packet.

One of these flags is called EDH (error detected here) and this will be asserted by the center device in Figure 2. The right hand device in Figure 2 will receive EDH and transmit EDP (error detected previously). There are also flags to handle hardware failures (e.g. over temperature or diagnostic failure). The IDH (internal error detected here) and IDP (internal error detected previously) handle this function. Locally detected hardware errors constantly drive the error output socket to a low impedance state to distinguish from the pulsing of a CRC mismatch.

A slight extra complexity is that error checking can be performed in two separate ways. One CRC is calculated for the active picture only, and another is calculated for the full field. Both are included in the EDH

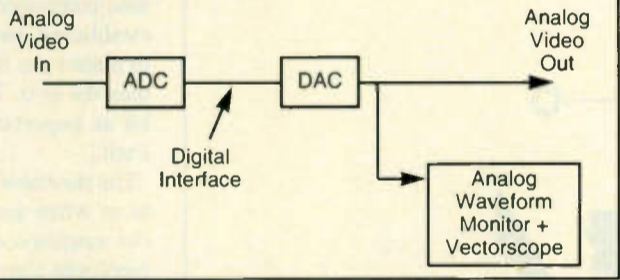
packet. The advantage of this arrangement is that while regular program material is being passed in active picture, test patterns can be sent in vertical blanking, which can be monitored separately. Thus if active picture is received without error but full field gives an error, the error must be outside the picture. It is then possible to send, for example, pathological test patterns during the vertical interval that stress the transmission system more than regular data to check the performance margin of the system. This can be done alongside the picture information without causing any problems.

**AUTOMATIC ERROR LOCATION**

In a large system, if every SDI link is equipped with EDH, it is possible for automatic error location to be performed. Each EDH-equipped receiver is connected to a monitoring system that can graphically display on a map of the system the location of any transmission errors. If a suitable logging system is used, it is not necessary for the display to be in the same place as the equipment.

In the event of an error condition, the logging system can communicate with the display by dial-up modem or dedicated line over any distance. Logging allows infrequent errors to be counted. Any increase in

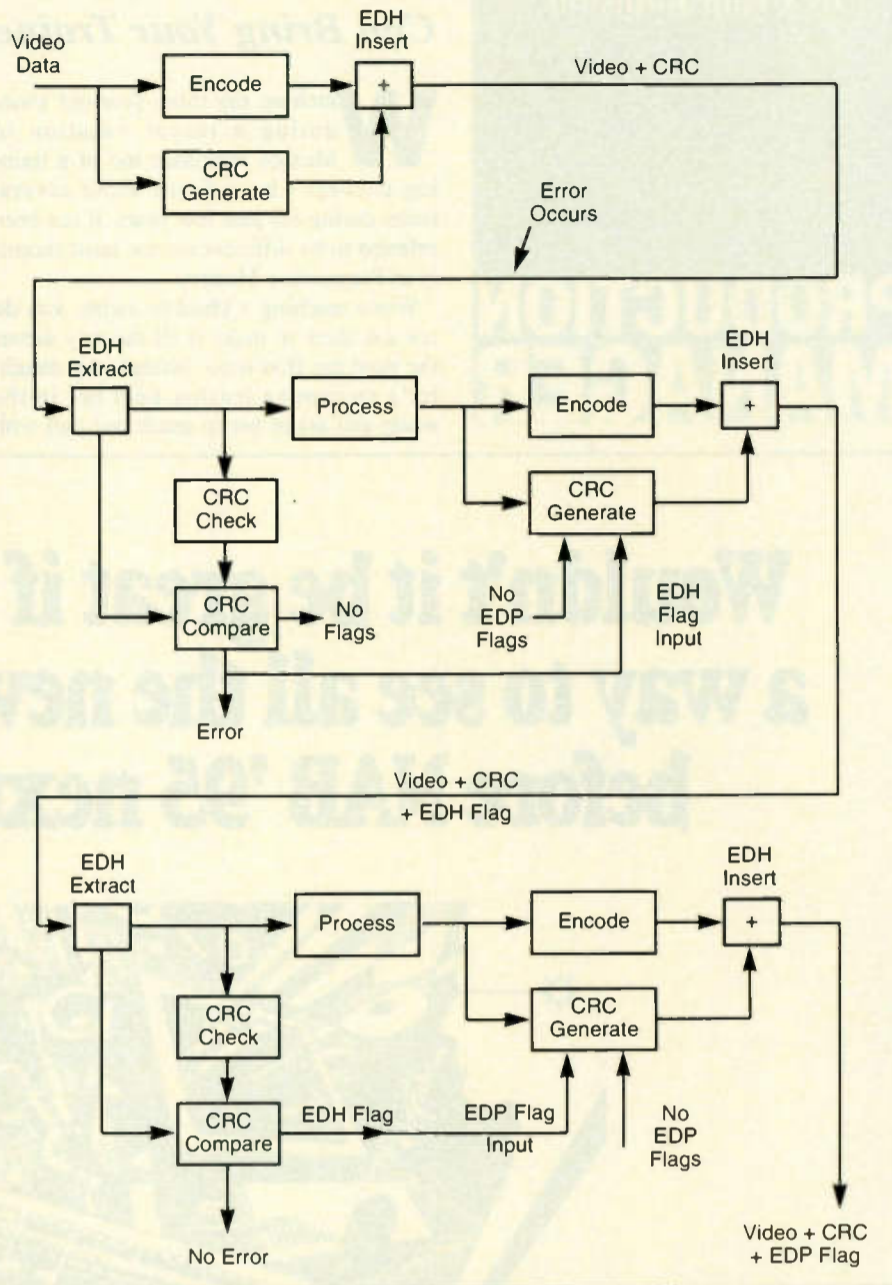
**Figure 1. — This arrangement reveals nothing about the quality of the interface. It simply tests the converters.**



error rate indicates a potential failure, which can be rectified before it becomes serious. ■

*John Watkinson is an independent consultant in digital audio, video and data technology and is the author of seven books on the subject, including The Art of Digital Audio and The Art of Digital Video; acclaimed as*

**Figure 2. — The EDH packet in the vertical interval contains CRC and flags. A receiver detecting a CRC error raises a local error signal and produces an EDH (error detected here) flag. The next receiver converts the EDH to EDP (error detected previously).**



*definitive works. He is a Fellow of the Audio Engineering Society and is listed in Who's Who in the World. He regularly presents papers at conventions of learned societies*

*and has presented training courses for studios, broadcasters and facilities around the world. He is currently writing a book on video and audio data reduction.*

11 FEATURES

**Audio DA's for a BROAD RANGE of applications**

- For every requirement and every budget.
- Single rack units to 4 in by 16 out.
- Modular mix and match to 10 in by 60 out.
- Multiple mic and line amplifiers, 4 to 8 channels.
- Transformer and active balanced outputs to +30dBm

**ATI AUDIO TECHNOLOGIES INCORPORATED**

**CALL OR WRITE NOW FOR FREE DETAILED BROCHURE.**  
328 Maple Ave. Horsham, PA 19044, USA (215) 443-0330 FAX: (215) 443-0394

# Developing the Art of Teaching

by Craig Johnston

**PRODUCTION  
MANAGER**

## *A Technique Known as Progressive Mastery Can Bring Your Trainees Up to Speed*

**W**atching my three-year-old swim during a recent vacation to Mexico reminded me of a training concept I have heard about several times during the past few years. It has been referred to by different names, most recently as Progressive Mastery.

When teaching a child to swim, you do not ask them to make it all the way across the pool the first time. Instead, my daughter's swimming teacher held her in the water and asked her to reach and pull with

her arms, and to hang onto the side of the pool and kick. Then it was a couple of strokes on her own. Then several more. All of this takes a lot of time; every ounce of progress is rewarded with applause and encouragement.

### **SINK OR SWIM**

The Progressive Mastery concept has you do the same thing with new employees or existing employees moving to a new job. Break the job down to learnable compo-

nents. Teach them in a logical order. Reward every bit of progress with applause and encouragement.

Those learnable components should be written down. I would not suggest singularly sitting down and writing out these lists. It is a good idea to gather several employees who have achieved competency at a given job to share in writing the list of job components.

The first reason you do not want to write the list alone is that, chances are, you do not know everything about the job. If you ever did the job in the first place, you most likely have not done it regularly for a while. And even old pros will benefit from input about the job components and the order in which they should be taught.

The second reason to ask for help with the writing is buy-in. You are going to rely on these accomplished crew members for much of the training. If they have helped develop the training program, they are a lot more likely to deliver the training in the prescribed manner.

You may find an additional dividend in these group discussions about the components of a particular job. In looking at the individual components of a task, the group may discover there are better ways to do the job.

### **LEARNING COMPONENTS**

Once the job is broken down into learnable components, a rough timetable can be established, such as how long should it take to master the first component, the next, and then the next. To me, this timetable is every bit as important as the job component list itself.

The timetable informs you, the supervisor, as to when you should formally ask about the employee's performance. Has the employee learned the appropriate job components based on the amount of time spent in training?

Reward every bit of progress with applause and encouragement. What if the employee is falling behind the timetable? There may be reasons for that failure beyond the employee himself.

Your training program may have problems. Those doing the training may be not paying much attention to the training, while actually making the new employee learn on his own. They may be pushing the individual to learn too many steps at once, or learn the steps out of order.

It may be that your timetable is unreasonable. The schedule may need some fine tuning in the beginning.

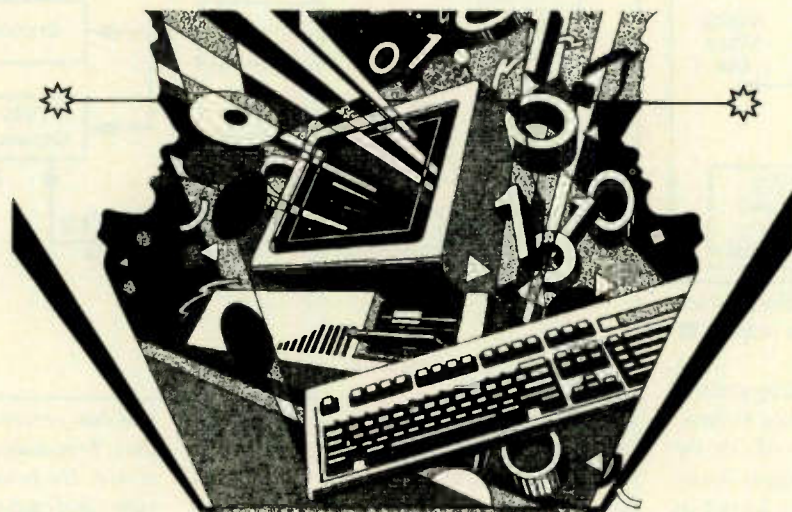
And then it could be the employee. If you have shared the job component list and timetable with the employee from the start, the fact that progress is running behind schedule should not be news to that individual.

Working with an employee who is not making adequate progress toward learning the job is a delicate process. You are trying to encourage, not discourage. At the same time, you have to be realistic. You are probably well served to remember the rule: "Focus on the problem, not the person."

And in the end, you may have to determine whether the employee is suited to the job. By monitoring the employee's progress at regular points along the timetable, you have had the opportunity to do everything you can to help them catch up. ■

*Craig Johnston is the production manager at KDRV-TV in Medford, Ore. Write him care of TV Technology.*

**Wouldn't it be great if there was  
a way to see all the new products  
before NAB '95 next April?**



**There is. It's called  
WORLD MEDIA EXPO.**

World Media Expo — 13-15 October in Los Angeles, California — combines four important exhibitions from NAB, SMPTE, RTNDA and SBE to form the industry's most electrifying new Fall trade show!

And, while you're saving time and money attending one Fall show instead of four, you'll also benefit from an incredibly focused line-up of new products, equipment and services for broadcasting, multimedia, film, post-production and corporate communications.

Plus, during World Media Expo, each of the four organizers will conduct information-packed educational conferences aimed at giving you valuable skills to excel.

### **Register Today!**

Call +1 301 662 9400 (extension 1) or send a fax to +1 301 694 5124. To speak with an NAB representative, call +1 202 775 4972. Or, contact your supplier for a WME exhibits guest pass.

For information about exhibiting, call Eric Udler at +1 202 429 5336.

**WORLD  
MEDIA  
EXPO**

October  
13-15, 1994  
Los Angeles  
Convention  
Center

# Ten Into Eight Does Not Compute

by Mario Orazio



## If You Are Throwing Away Data to Convert Back to An 8-bit Signal, Be Prepared to See Some Distortion

**S**OMEWHERE OUT THERE You might not have noticed that the good stuff can kill you. No, I am not talking about imbibing 200-proof distilled spirits. I am talking about 10-bit digital video equipment.

But do not misunderstand me — 10 bits is definitely better than eight — 12.0412 dB better, if the batteries in my calculator are still good. That reminds me of something else I have always wanted to expose to the light of day. I promise to return to the problem of 10 bits in about a paragraph or three.

### A BIT OF LOGGING

That six-digit number in the last paragraph looks funny only because I took it to more accuracy than is usually used. A bit offers a factor of two increase. So two bits is a factor of four. Signal-to-noise ratio (SNR) is 20 log noise voltage ratio.  $20 \log 4 = 20 \times 0.6020599 = 12.0412$ . Mantissas do not lie, which is more than I can say for spec sheets.

As it is more commonly construed, a bit is 6 dB, which is close enough for television. So 16 bits, the number used in CDs, is 96 dB. So how come 16-bit digital audio equipment gets rated at 98 dB?

It is even worse in video. Look up an 8-bit video product's specs. See something like 54 dB? Take away eight bits, and what's left? 6 dB. That means that a zero-bit system has a signal-to-noise of 6 dB. If you use nine of those systems are you back up to 54 dB without using a single bit?

This is not exactly a mathematical parlor trick where someone proves that all numbers are zero, but it is probably worth mulling over in your mind next time you are sure you know everything — or that anyone else does. The point of all this ranting so far is just to indicate that bits and signal-to-noise ratios are directly related. If you are not happy with your SNR, you need more bits.

### ON A RAMP-AGE

The funny thing is, some people pretend that bits do more for you than signal-to-noise. Incorrectly used, that is true enough. For instance, there is a classic demonstration of supposedly Why-8-Bits-Are-Not-Enough, the ramp dissolve. Take a picture that ramps vertically from white to black. Take another that ramps from black to white. Dissolve from one to the other

In an analog system or a properly

designed digital system, the blacks and whites fade toward grey. The picture then becomes completely grey for an instant in mid-dissolve, and then it ends up with black and white reversed. It is so simple, even I can do it.

The trouble is, in an improperly designed system, instead of that nice all-grey moment, there are horizontal bands that appear and disappear. What is happening is quantization distortion. When you dissolve between two 8-bit signals in the digital domain, you generate a 16-bit signal. If you come back to eight by chopping off

idea to diddle with the Queen's English when you want her to visit your plant.

Anyhow, so much for the bad stuff. Probably the best thing Quantel ever did for this business is one whole heck of a lot more important than effects and paint systems and on-line non-linear editing and all of that other great stuff they keep shoving out the door, only it has not yet dawned on most of us. The best thing Quantel ever did for this business is Dynamic Rounding. That is what I saw around 10 years ago.

### MULTIPLYING LIKE FAB BITS

The problem, as I laid it out a few paragraphs back, is that multiplication of digital numbers (what happens every time you do just about anything to a digital video signal) makes bigger numbers. Going from 16 bits to eight causes problems. Going from 16 to 10 also causes problems: it is just that the problems are smaller.

Here is a radical thought: How about getting rid of the problems instead of making them smaller? If I recall the words of my old friend Stanley Lipshitz correctly (which I would doubt, if I were you), the ideal way to eliminate the problem is through convolution with digital dither. Translation: use a special kind of digital processing to restore the uncertainty about quantization level to the least significant bit. Second attempt at translation: Make

... using the 10-bit equipment actually makes the 8-bit result look worse than if we used only 8-bit equipment in the first place.

the least significant bits, you are left with distortion caused by insufficient quantizing levels to cover every shade of grey. The result is bad pictures, mainly alias lines where there should not be any.

Sony likes to show this as one way that Digital Betacam might be better than D-1. Eight bits: lines; 10 bits: no lines. I had people coming up to me last year after they had seen the Digital Betacam demonstration as though they had just seen the most lucid explanation possible of the difference between 8-bit and 10-bit video.

I am not 100 percent sure, but I think the first time I saw that demonstration was around 10 years ago, and it was not Sony doing it; it was Quantel. It also was not 10-bit video that saved the day because Quantel still uses eight.

I have been accused of being a Quantel-lover lately, so I guess it behooves me to say a few rotten things about them before proceeding (sorry, dearies):

1. They seem to have a thing about competition.
2. They seem to have a thing about general-purpose computers.
3. They seem to have a thing about pricing some equipment in the mortgage-your-firstborn range.
4. The old DPE-5000 was a — well, I will just point out that the use of the word "quantel" as a noun or verb relating to digital video effects is no longer prevalent, which is probably just as well because it is not a good

sure your output signal is noisy enough. If it is (and it is the right noise), the noise eliminates the distortion.

Quantel has a slightly different idea about how to eliminate the problem, mainly because dither convolution is not the easiest thing in the world for a circuit to do and noise is not necessarily something you would like to keep introducing in a post-production situation where you might be going down a thousand generations or so. They call it Dynamic Rounding, and it is simple enough for even a pea-brain like me to understand, but, since Quantel seems to get jollies from suing people, I think maybe I will just let them do the explanations of proprietary techniques this once.

As far as I am concerned, Dynamic Rounding works. There are other people who think so, too, which is why you might see the technique in the products of other manufacturers, like, for instance, Panasonic. Quantel, you may recall, has 8-bit products. Some of those other companies have 10-bit products.

This is not necessarily silly. I already told you that every additional bit adds 6 dB to the signal-to-noise ratio. If you would like to spend your money on a 100 dB SNR, please do not let me stand in your way. It is your prerogative. Eight bits works. Ten bits works, too, but 12 dB cleaner.

The problem comes in when you inter-

mix them. Actually, going from eight bits to 10 bits is not too much of a problem. Most devices will just add a couple of zeros to the end of the eight-bit word.

The trick is getting back from 10 to eight. If anything happened to the signal while it was in 10-bit-land — a level adjustment, a dissolve, an effect — those extra two bits are not extra anymore. Chop them off, and you are back to distortion.

That is where I see just a little bit of trouble down the road. At NAB, I found 10-bit products that do the right thing in the 10-bit domain just waiting to be connected to 8-bit products. I inquired as to whether anything was done to the least significant bits. "Yeah," I was told in a Welcome-To-The-World tone of voice. "We chop them off."

### MORE-BIT THOUGHTS

Now, help me along here, to help make sure I do not get any of this wrong. We use 10-bit video equipment because we want better quality. But, if the 10-bit equipment chops off the last two bits before feeding 8-bit equipment, it is going to introduce distortion. So using the 10-bit equipment actually makes the 8-bit result look worse than if we used only 8-bit equipment in the first place. Is it just me, or did you get the same result (no fair peeking at my answer sheet).

It seems to me that there is a fairly easy solution. Treat going from 10 bits to eight the same way you would treat going from 16 to 8: Dynamically Round them, or do whatever other mathematical dance you prefer to use to keep distortion out of the signal.

I have only one question: Why isn't it being done? ■

*Mario Orazio is the pseudonym of a well-known television engineer who wishes to remain anonymous. Send your questions or comments to him c/o TV Technology. Or drop him a note on e-mail 581-6729@MCIMail.com.*

**MOST AFFORDABLE WAY TO AUTOMATE ANY ANIMATION SEQUENCE**

**VAC-100 SERIES ANIMATION CONTROLLER**

- VAC-110 compatible with Amiga/UMI editors \$499
- VAC-120 compatible with Amiga platform \$795
- VAC-130 compatible with both PC and Amiga platforms \$895
- Interfaces to major software programs including Autodesk 3D Studio, Video Toaster Lightware 3D, TOPAS, RIO, and many more
- Single Frame Animation using RS-422 direct machine control

Desktop PC Video Editors also available  
Dealer Inquiries Welcome

**United Media**

(714) 777-4510 • FAX (714) 777-2434  
4771 E. HUNTER, ANAHEIM, CA 92807

Trademarks are the property of their respective owners

Circle 120 On Reader Service Card

# Checking The Temperature

by Doug Lung

## RF TECHNOLOGY

A few months ago I described a simple but extremely competent remote control system based on the Blue Earth Micro miniature computer. (TV Technology, January 1994) One parameter that is often difficult to measure by remote control is temperature. I have found a chip that will easily interface with any remote control or volt meter that accurately measures temperature without requiring calibration. You will not have to haul out the ice cubes and boiling water to set this sensor.

As temperatures start to drop outside, do you worry that your heat exchanger or water coolant might freeze? If you have a remote control transmitter in the desert, would you like to know how well the transmitter room's cooling system is working? If so, there are a couple ways to measure temperatures remotely.

Remote control manufacturers usually offer temperature probes, at a price. Here is a direct reading temperature sensor that costs as little as three dollars U.S., works with anywhere from five to thirty volts of DC, and reads temperature on a linear scale - no calibration required. I am referring to the National Semiconductor LM34 (Fahrenheit) and LM35 (Centigrade) precision temperature sensors. These three-pin devices which look like transistors have one degree accuracy with no adjustments.

### POSITIVE SENSOR

Figure 1 shows a circuit for a simple temperature sensor. This circuit only works for positive temperatures. I have used this circuit with an LM34 at a station in Odessa, Texas, where the sensor not only monitors temperature but also controls the room's air conditioner via the Gentner remote control. Although I experienced no trouble with this circuit, National Semiconductor advises decoupling the device from capacitive loads such as shielded cable.

Figure 2 shows a circuit with bypassing for RF as well as decoupling. There are two ways to measure negative temperatures. R1 in Figure 2 is optional. It goes to a negative supply -Vs. Choose R1 so that it equals -Vs divided by 0.0005. This will allow the LM34 to work down to -50 degrees F and the LM35 to work down to -55 degrees C. Maximum temperatures are +300 degrees F for the LM34 and +150 degrees C for the LM35.

Less expensive versions of the sensors

ture and hence the reading.

To improve response time and accuracy, use thermally conductive epoxy to glue the case and leads to a small piece of brass or PC board. They claim the metal case version can be soldered directly to a pipe for fluid temperature measurements. In any event, do not forget to insulate the leads (in some cases the ground one will not have to be insulated).

No calibration is required or even possible for these sensors. You can check them with an accurate digital multimeter. At 70 degrees F, the output voltage should be 0.70 volts on the LM34. If you use the centigrade sensor, look for an output of 0.20 volts at 20 degrees centigrade. Every ten millivolts equals one degree of temperature, with reference to zero degrees. One warning about using liquid baths for calibration checks — insulate the leads! Also, if the connections will be exposed to warm moist air or left outdoors, protect the solder connections with shrink tubing or epoxy. Use thin wire to connect to the LM34/35 to minimize the affect of the wire on the die inside.

If you discover a unique application for these devices at your transmitter site, let me know and I will share it with others.

### 8-BIT QUALITY

Some of you who read my column on the "Cheap Remote" might comment that the A/D converter it used had only 8 bits of resolution. Is that enough?

You may also be wondering why your new digital remote control changes readings in big steps. One reading might show 100.1 percent power and then the next reading shows it as 98.3 percent power. You never see a 99.0 percent reading. How does this happen, and how much does the accuracy of the A/D converter affect it? Eight bits of resolution (255 steps) might not be enough for laboratory analysis, but it is enough resolution to duplicate the accuracy of an analog meter scale if you properly scale the input voltage.

The Micro's 8-bit A/D, with its five volt maximum limit, cannot resolve voltage differences less than 5.0 volts divided by 2 to the 8th power, or 256:

$$5.00 \text{ volts} / 256 = .0195 \text{ volts resolution}$$

If our input has a maximum reading of 1.00 volts and this A/D converter is used, a 2 percent error is .02 volts. Although a two percent error is marginal in many applications, is there any way it can be reduced? Most importantly, beware of using full scale input voltages far below the A/D converter's maximum voltage in any remote telemetry system. Even with 10-bit A/D converters, very low voltages may not be measured accurately. Many of the new PC based remote controls do calibration in software, so you can take a half volt 100 percent power reading and make it read 100.00 percent on the meter.

But do not expect to see the readings change in .01 percent steps. Note that when you are reading power from a voltage sample off of an RF probe, you have to square the voltage reading to get a power reading. Remember Ohm's Law? E squared over R equals power.



If you have been reading these columns regularly, you have probably noticed that I have included an "Internet" address at the end of the

column — it is 70255.460@compuserve.com. For those who are unfamiliar with it, Internet is a massive computer network that not only includes computers in the U.S. (including the CompuServe commercial network where I spend much time and money) but also computers in universities and scientific agencies around the world.

I just dropped out of "Word for Windows" which I was using to write this column and logged onto an Internet gateway in Atlanta, Georgia. Using a program on the Internet called "Gopher" I did a quick survey of the sites available on the network. Africa was not too well represented. There were several computers in South Africa I could connect to, but Durban (at the University of Natal) was the only other one represented.

Asia did much better. I found several sites in Thailand, Hong Kong, Korea, Taiwan, Japan, Malaysia, and Singapore. I also found a

Figure 3. — Negative temperatures with a single supply

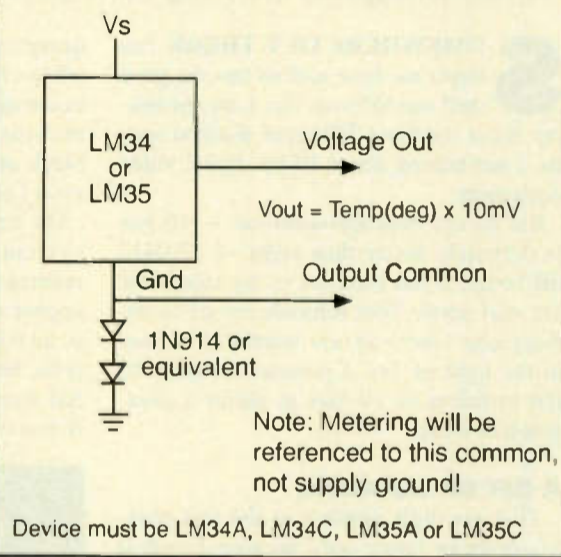
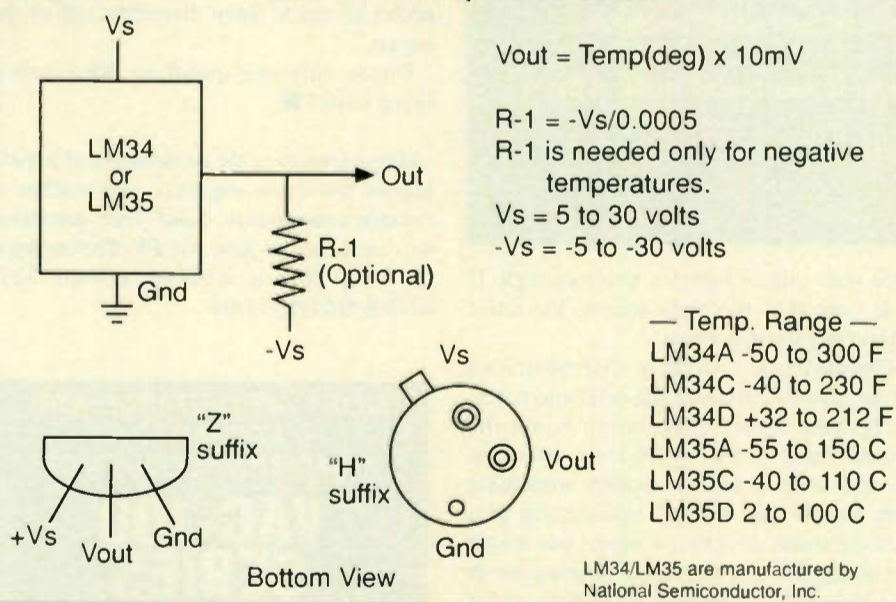
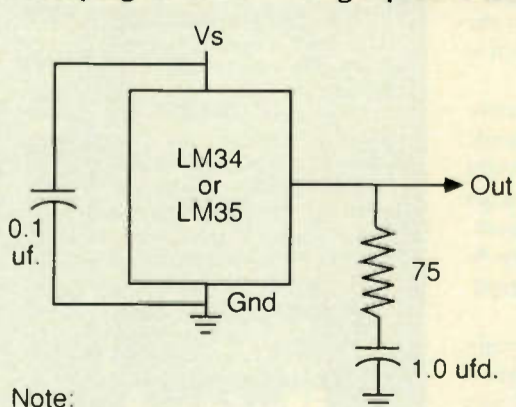


Figure 1. — Basic Circuit Temperature Sensor



LM34/LM35 are manufactured by National Semiconductor, Inc.

Figure 2. — Decoupling sensor for driving capacitive loads



Note: This circuit may be used with R-1 as shown in figure 1 or diodes as shown in figure 3 for measuring negative temperature values.

have less range — see figure 1. If an isolated single supply is available, two 1N914 diodes can be used to raise the ground on the sensor above the supply ground to allow negative temperatures to be measured. Figure 3 shows the circuit without decoupling. Note that the metering MUST be referenced to the sensor's ground, not the power supply ground.

One warning when using these IC's. I found that using too much heat while soldering to the IC leads permanently changes the calibration — in my case the IC read a couple degrees high after soldering. To avoid this, use a heat sink. National Semiconductor advises that lead temperature will directly effect the die tempera-

"Chulalongkorn University" (I did not log on to find out where it is) and a system in Bombay, India. Also in the Pacific, there were several sites in Australia and New Zealand, as well as one site noted as Antarctic Research Center and another in Tasmania.

Latin America was well represented with several sites in Mexico and others in Argentina, Brazil, Ecuador, Venezuela, Chile and Peru. Russia had its own heading, but I did not investigate what cities were connected.

### GETTING CONNECTED

If you have a friend at a nearby university computer center, he or she may be able to get you access to their computer connected to the Internet. Once you have that access, you can connect with any of the other computers and exchange mail, read messages and collect information from them. For example, you can send me a message at 70255.460@compuserve.com.us and let me know you need a reprint of the original Cheap Remote article along with the program for the Blue Earth Micro.

I can give you an idea of some of the institutions using Internet in your area if you want to contact me via more conventional means. Here's how you can find me. First and foremost — e-mail via CompuServe network to 70255.460 or via an Internet connection to 70255.460@compuserve.com.us. U.S. Mail will work too, eventually, if you send correspondence to me at 2265 Westwood Blvd., Suite 553, Los Angeles, CA 90064, U.S.A.. If you want to try a long distance call, use +1-305-884-9664 between 10 p.m. and 11 p.m. GMT or fax notes to me at +1-305-884-9664 anytime. As always, your comments, ideas and tips to share with other engineers or questions are welcome. ■

# Light!

The fastest ignition in the world.  
A new generation of electronics.

You can't miss us!

**IBC**  
Amsterdam, Sept. 16-20, 1994  
Hall 8, Stand # 8341

**Photokina**  
Cologne, September 22-27, 1994  
Hall 14.2, Stand C 8 (Eucam booth)

**Showbiz**  
Munich, September 24-26, 1994  
Stand # 302



**1** Sachtler's new solid state ignitors work quickly and quietly now in all Sachtler daylight systems.

**2** Reporter 200 DI - introducing the latest reporter daylight from Sachtler: more light output from 200 watts than ever.

**3** New electronic ballasts for Sachtler's reporter daylights: **Batronic 1** for 125 W and 200 W, **Batronic 2** for 125 W, 200 W and 270 W. The Batronics automatically sense which one of these fixtures is connected and will power it

accordingly. Four LEDs indicate how much running time remains. A switch allows selecting the proper dimmer range for HMI and MSR bulbs.

**4** Sachtler Belt Pack, the well proven NiCad battery powers the whole range of Sachtler reporter daylights. Available in two sizes for 30 and 45 minutes of full light output from a Reporter 200 DI. Shaped to fit the human body and forming a compact unit with the Batronic.

**5** The Speedcharger, controlled by its micro-processor, senses the state of the battery and charges it speedily and safely.

**6** Netronic 2: The all new mains powered

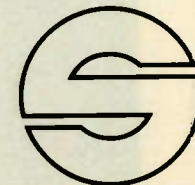
electronic ballast for continuous operation of all Sachtler Reporter fixtures.

アミック ザハトラー株式会社  
Japan  
Amic Sachtler Corp.  
東京都世田谷区三軒茶屋  
1-2-21 〒154  
電話 (03)3413-1212  
Fax (03)3413-0888

Eastern Europe:  
Sachtler  
Vertriebsgesellschaft m.b.H.  
Germany  
Segelfliegerdamm 67  
12487 Berlin  
Telephone (0 30) 6 36 43 11  
Telefax (0 30) 6 36 34 66

U.S.A.:  
sachtler®  
corporation of America  
New York office:  
55, North Main Street  
Freeport, N.Y. 11520  
Phone (516) 8 67-49 00  
Fax (516) 6 23-68 44

Headquarters:  
Sachtler AG  
Germany, Gutenbergstraße 5  
85716 Unterschleißheim  
bei München  
Telephone (0 89) 32 158 200  
Telefax (0 89) 32 158 227  
Telex 5 215 340 sac d



**sachtler**  
Support & Lighting

The most sophisticated reporter daylight system on the market today. By Sachtler.

# All current BTS are now switchable.



## Even yours.



**Australasia** Tel: +61 2 88 88 222 Fax: +61 2 88 80 440  
**Austria** Tel: +43 1 601 01 0 Fax: +43 1 601 01 1599  
**Benelux** Tel: +31 40 78 22 57 Fax: +31 40 78 45 43  
**China** Tel: +852 481 87 79 Fax: +852 481 86 70  
**Eastern Europe** Tel: +49 6151 808 734 Fax: +49 6151 826 37

**English Africa** Tel: +44 7 34 30 31 23 Fax: +44 7 34 30 28 34  
**France** Tel: +33 1 4728 54 20 Fax: +33 1 4728 54 50  
**France Africa** Tel: +33 1 4728 54 20 Fax: +33 1 4728 54 50  
**Germany** Tel: +49 6151 808-0 Fax: +49 6151 89 44 63  
**Hong Kong** Tel: +852 481 87 79 Fax: +852 481 86 70

**Indonesia** Tel: +62 21 721 0599 Fax: +62 21 721 0599  
**Italy** Tel: +39 6 51 92 260 Fax: +39 6 51 92 263  
**Greece** Tel: +39 6 51 92 260 Fax: +39 6 51 92 263  
**Japan** Tel: +81 337 40 50 36 Fax: +81 354 79 37 14  
**Latin & Sth. America** Tel: +1 805 854 4700 Fax: +1 805 854 4710

**Middle East** Tel: +44 7 34 30 31 23 Fax: +44 7 34 30 28 34  
**Polska** Tel: +48 2 628 60 70 Fax: +48 22 218 983  
**Portugal** Tel: +34 1 404 4200 Fax: +34 1 326 6527  
**Singapore** Tel: +65 258 99 73 Fax: +65 258 67 18  
**South Africa** Tel: +27 11 470 54 55 Fax: +27 11 470 53 33



# cameras

## WIDESCREEN

Tomorrow's television's going widescreen. And if you want to go with it, you'll have to be able to switch. SDTV to EDTV and back again. Easily and economically.

Now you can. And you can also do it instantly. Thanks to the new switchable BTS 1/2" and 2/3" Frame Transfer sensors.

Just choose the camera to meet your needs from the current BTS range.

The LDK 9W studio camera, for a top performance that's matched by its portable companion the LDK 9PW. Or if you need a multi-role solution, the LDK 93W. All featuring a new BTS 1/2" widescreen sensor.

If you're already operating an LDK 9, LDK 9P or an LDK 93 switching's easy and cost-effective too. It can simply be a question of replacing the existing 1/2" sensor block with one of the new widescreen variety. As easy as that.

And if that choice is still not big enough, then take a look at the remarkable new LDK 10 camera and the portable LDK 10P, with their unique 2/3" DPM (Dynamic Pixel Management) sensors.

Naturally, with all switchable BTS sensors there's no need for changing optical blocks or costly electronic conversion. And Frame Transfer techniques of course, mean no smear and no lag. Just top performance through high dynamic resolution, a high dynamic range and outstanding sensitivity across the full range of f-stops.

So if you want to switch, the choice is yours... BTS. Ask for your brochures today.



# BTS

BTS Broadcast Television Systems BV,  
P.O. Box 90159, 4800 RP Breda, The Netherlands  
Tel.: +31 (0)76 797498 Fax: +31 (0)76 797415

A PHILIPS COMPANY

Spain Tel: +34 1 404 4200 Fax: +34 1 326 6527  
Switzerland Tel: +41 1 488 23 51 Fax: +41 1 488 32 43  
United Kingdom Tel: +44 7 34 30 3123 Fax: +44 7 34 30 28 34  
USA/Canada Tel: +1 805 854 4700 Fax: +1 805 854 4710

*Creative Television Technology from BTS*

# Cutting Down Rendering Time

**H**ere on the bleeding edge of video technology, there is still plenty of opportunity to experience the heady satisfaction of being a pioneer. There are new things to learn about, new fields to roam.

Ultimately, though, the main thing is to put together a system that meets your particular needs, and that usually means a lot of digging for relevant information. You read the magazines (like right now), you collect the product literature, and you talk to people who have been there.

Often, it is this last resource that reveals what is "between the lines" in all the literature — what makes a product work well (or

not) when you have to live with it day-to-day. The trick is in finding the right people to talk to, which can be pretty difficult when the subject is specialized (after all, "desktop video" is not quite a household word yet).

You can join a professional organization, go to user groups, or, as more and more people have started doing, you can go on-line. For years, computer users have swapped technical tips and information on computer bulletin-board systems (BBS), and these often address areas of interest beyond computing, as such. Now that the Internet is in wider use, there also is a wealth of BBS information col-

lectively known as Usenet, a common feature of net life. Also called "newsgroups," these special-interest on-line "discussion" groups are carried by most Internet access providers. Interests range from particle physics to gardening to rock bands.

There are so many of these groups that they are arranged in a series of hierarchies. The "rec" series, for instance, is for recreational interests. "Rec.video" is a general group for video enthusiasts; under that, there are more specialized ones such as "rec.video.production" and "rec.video.cable-tv." Don't let the "recreation" label mislead you — whether ama-

by Terence Dyke & Paul Smolen

## DESKTOP VIDEO

teurs or pros, the participants are engaged in getting actual products to do actual work.

Mostly, the equipment discussed in rec.video.production has been mid-range and high-end gear, and it is not limited just to editing equipment. However, a couple of months ago a new newsgroup was formed called "rec.video.desktop." According to its charter, this newsgroup covers computer-based editing systems in the under-US\$15,000 range, including hardware, software, peripherals and resources.

One contributor, for example, said he just bought a PowerMac and asked the group how well it will work with a particular capture board; another replied that the board does not yet work with PowerMacs, but the company is working on a fix.



Recently, at the NAB show, on our first morning out, we got into a conversation with a fellow on the bus going to the convention center. As the topic turned to desktop video systems, he became very emphatic.

"You know," he said, "there was quite a rush, a lot of enthusiasm at first, and a lot of people went out and bought these devices because of how much easier they make editing — especially with the non-linear systems, you can keep your train of thought without having to shuffle tapes back and forth. You can sit with your client, trying different things to see if he likes it."

"The thing is," he went on, "they did not stop to find out until it was too late that with a lot of these systems, they do not do the effects and the transitions in real time. You are putting your scene together, and then you have to sit and wait five minutes while it renders the transition. On top of that, your client, who is probably behind schedule, wants you to finish it yesterday. And now you are making him wait for the effects to render."

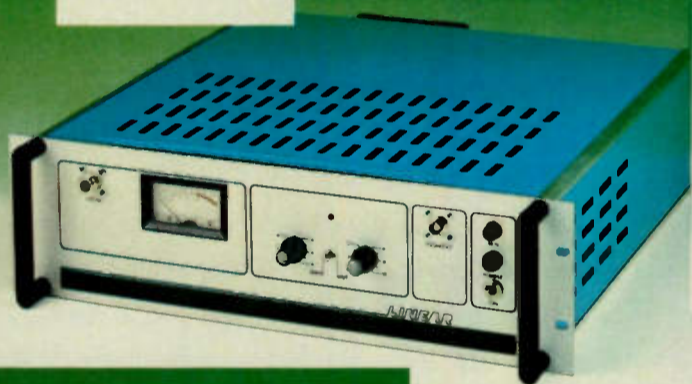
Oddly enough, this chance encounter/polemic could well be taken as a good sign. For one thing, it shows that the industry may have matured at least to the "honeymoon-is-over" stage, when users have had the chance to learn what it is like to live with their systems for a while on a day-to-day basis. Quirks that may seem minor on the drawing board sometimes accumulate over time into major complaints. People are starting to think about their next system, and they know exactly what they want from it, as well as how much they are willing to pay.

This particular complaint — effects rendering-time — seems to have been heard by more than a few manufacturers, because it was a recurring theme at the NAB this year. Sony and Panasonic both introduced high-dollar non-linear editing systems (Sony's was a "non-linear upgrade" to its existing DES-510 Destiny edit worksta-

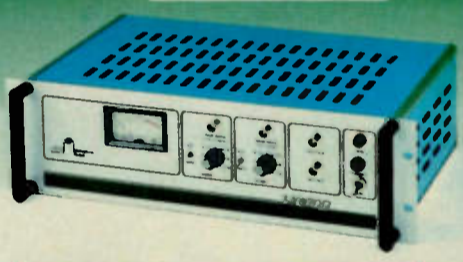
(continued on page 20)

# LINEAR

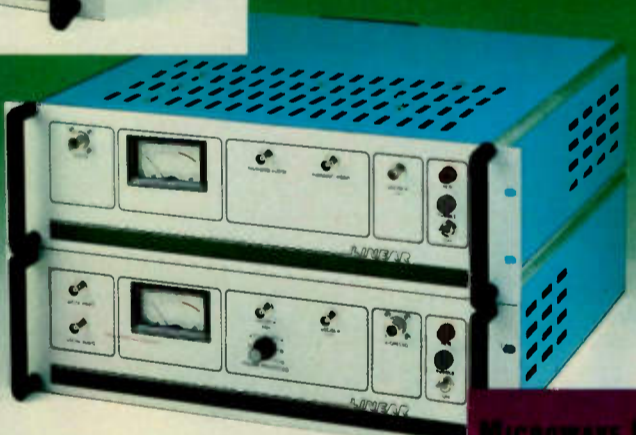
TV REPEATER  
RPT-T



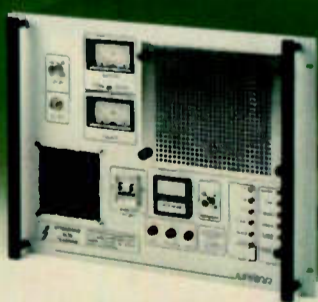
TV MODULATOR  
MD-AM



TV AMPLIFIER  
100 W  
AMV

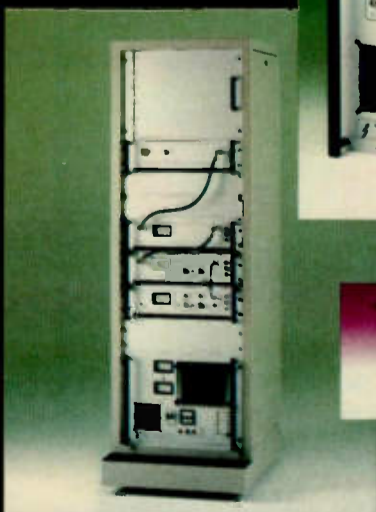


MICROWAVE LINK  
TX  
MICROWAVE LINK  
RX



TV AMPLIFIER  
200 W  
AMV

TV AMPLIFIER  
1500 W  
AMV



PARABOLIC  
ANTENNA .7-1.5 mt.  
TV PANEL UHF



LINEAR - F.LLI VESCOVI s.n.c. - Via del Lavoro Artigiano, 13/15 - 25032 CHIARI (BS) Italy - Tel. 030/711643 - Fax 030/7000634

Distributor for Latin America: Continental Electronics WSH Corp., 1620 West 32nd Place, Hialeah, FL 33012, USA, Tel. +1-305-822-1421, FAX: +1-305-362-8717



# MARKETPLACE

HIGHLIGHTING THE LATEST PRODUCTS AVAILABLE TO PROFESSIONALS IN THE VIDEO INDUSTRY.

## MULTIMEDIA PCS

NEC Technologies (NECT) has introduced the Ready series of multimedia PCs for small office and home office users. Ready systems feature video cache RAM technology and 1MB of video RAM, which is expandable to 2MB. The systems also include NECT MultiSpin CD-ROM 3Xi readers.

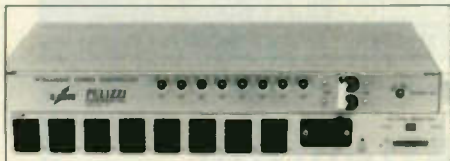
Ready systems are available in either desktop or minitower styles. The minitower style was developed in response to customer requests for a compact, footprint system that fits neatly on the floor beside the desk or on the desktop.

For more information, contact the company in Japan at +81-3-3798-6364, or circle Reader Service 61.

## REMOTE AC CONTROLLER

The Intelligent AC Power Controller (IPC) from Pulizzi Engineering enables the user to control power at an unattended remote location from anywhere via modem.

The Controller's RS-232 port links the unit to any compatible terminal, and the user can initiate or change control sequences from a remote or local terminal.



The Controller is voltage selectable and can handle either 95/130 V or 180/270 V at up to 20 amps.

For more details, contact the company in the U.S. at +1-714-540-4229; FAX: +1-714-641-9062, or circle Reader Service 66.

## METERING SYSTEM

Housed in a 2RU space, the new MSM-2 is part of Wohler Technologies' series of multiple source metering systems.

Two different types of metering modules are available.



The LV-2 module provides indication across a 76 dB range, while the lower-priced LV-2B module provides indication

across a 50 dB range.

The MSM-2 may be ordered with up to 20 channels of metering, with modules arranged in ten "windows" provided on the front faceplate.

For more information, contact the company in the U.S. at +1-415-589-5676; FAX: 1-415-589-1355, or circle Reader Service 124.

## GRAPHICS MONITORS

Barco has introduced the CVM 3000 series of graphics monitors, a series that includes both control room and viewing monitors, in either 19- or 14-inch models.

These monitors feature a memory that stores settings for screen format, screen size, picture tube parameters and light output. An auto set-up probe allows monitor output signals to be consistently calibrated within three minutes.

Control options include a back-lit control panel, tractable touch pads and an infrared remote control.

For more information, contact Earlene Bentley in the U.S. at +1-404-590-7900; FAX: +1-404-590-8836, or circle Reader Service 132.

## TALK SHOW SYSTEM

Telos Systems has created the ONE-x-Six, a talk show system that combines the Telos ONE and a six-line broadcast phone system.

This system was designed for talk show



and call-in programming on radio and television, as well as teleconferencing and distance learning applications.

The ONE-x-Six features Telos' Direct Interface Module and its desktop Switch Console for system control.

For more information, contact the company in the U.S. at +1-216-241-7225; FAX: +1-216-241-4103, or circle Reader Service 121.

## PAN TILT HEAD

The PTU-46-17.5 pan tilt from Directed Perception moves at 300 degrees/second with 3.086 arc minute resolution.

This pan tilt measures 3x5.11x4.25 inch-

es, with a load capacity of four pounds. Designed for battery-powered operation, the PTU-46-17.5 features power management commands and flexible input power requirements.

It also offers self-calibration upon reset to



ensure reliable positioning.

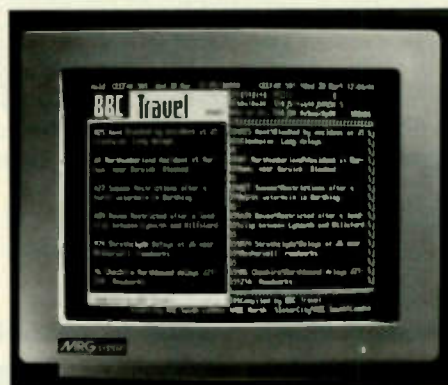
For more details, contact Philip Kahn in the U.S. at +1-415-342-9399; FAX: +1-415-342-9199, or circle Reader Service 26.

## TELETEXT ANALYZER

The TXAI Teletext Analyzer by MRG Systems comes with a PC-based card and software. It provides comprehensive analysis of activity on the TV lines used for teletext and data transmission, graphically displaying any known teletext packet on the PC screen in real time.

The TXAI features an on-board VHF/UHF automatic tuner and a PAL video input.

For further information, contact the company in the U.K. at +44-453-751-871; FAX: +44-453-753-289, or circle Reader Service 135.



## I/O CONSOLE

The standard Ninety I/O module by Trident is a 40-way console that provides the user with up to 120 input paths to the main stereo bus, each of which has EQ, auxiliary sends, multitrack routing and automated cut available to it.

Eighty of these inputs also have fully automated faders, which may be arranged as 80 VCAs or as 40 VCAs and 40 moving faders.

For further information, contact the company in the U.K. at +44-932-224665; FAX: +44-932-226721, or circle Reader Service 88.

## MACRO LENSES

Fujinon's MAF/MSF series of fixed focus length macro lenses features over 1000 lines of resolution and low distortion.

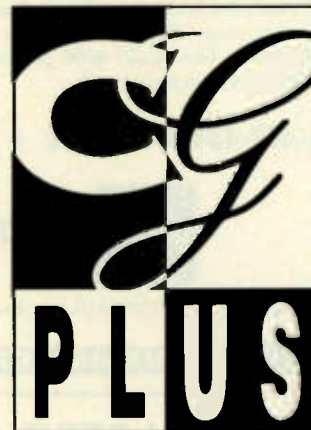


These lenses were designed for applications that require high resolution and high image contrast, like graphics, measurement and other industrial uses.

Remote control of zoom, focus and iris are provided with the use of Fujinon's standard INS controllers.

For more information, contact the company in Japan at +81-48-668-2152; FAX: +81-48-651-8517, or circle Reader Service 101.

## GRAPHICS WORKSTATION



Pesa's CG Plus graphics workstation combines a real-time character generator, full paint and draw, still store and a linear keyer to do composites of text, graphic images and live video.

The CG Plus also includes a comprehensive template system and a database manager for handling large amounts of graphics and text for instant recall during live events.

For further information, contact Vish Vasudeva in the U.K. at +44-223-242642; FAX: +44-223-410007, or circle Reader Service 90.

Send new product press releases along with black and white photographs to: Marketplace Editor, P.O. Box 1214, Falls Church, VA 22041

CONTINUED FROM PAGE 18

# Cut Rendering Time

tion), and "real-time effects" placed high on their lists of features. These systems go for about US\$70,000 and US\$35,000, respectively. After all, this is a capability usually associated with high-end systems from companies like Avid and Lightworks; the money goes for the extra processing hardware needed to shift the burden away from the computer's CPU.

A little further down the price scale, at about US\$30,000, the newly-announced Editing Machines Corp. PrimeTime non-linear editor also features real-time effects and transitions.

The lowest-priced system we came across with real-time effects and transitions is the Professional Non-linear Studio, from Fast

Electronic. This lists for US\$14,295, but it is not complete; add a PC and a large disk, and figure that the system comes in at about US\$20,000.

Other systems in the mid-range are starting to address the problem to one degree or another, but the result is sometimes kind of "hedged": "real-time fades and fast dissolves," claims one manufacturer. Well, sure, but a fade is not nearly as computer-intensive as a page-turn.

Another popular short cut is to allow you to store several of your favorite transitions you have already rendered out to files on the disk, so they are ready to go when you need them. Actually, this may be entirely satisfactory for your needs; but, like our

friend on the bus, the main thing is to know what you are willing to pay for.



Another symptom of a maturing industry is the seemingly inevitable shakeout phase, and we may be seeing the first stages of that already.

At the NAB, CoSA announced its "new" non-linear system, Hitchcock; it is a product that was actually developed by Digital F/X, but the company folded and was acquired by CoSA, which kept Hitchcock. The company reportedly is looking to sell the rest of Digital F/X's line to another concern because they are "not in the hardware business." CoSA was acquired last year by Aldus, of PageMaker fame.

More recently, Commodore, makers of the Amiga computer, announced that it has put itself into voluntary liquidation. (See related story, in Newswatch). This is a real milestone, in a solemn sort of way, because the Amiga is the platform for NewTek's Video Toaster, which pretty

much started all of this desktop video business.

NewTek is doing just fine, of course, although there is no word as yet on how it is planning to deal with the situation. Apparently, large stockpiles of Amigas exist here and there. Sources at RGB Computer & Video, makers of the Amiga-based AmiLink controller, say the company has "a guaranteed supply" of Amigas warehoused in Florida that will last them "well into 1995."

Meanwhile, groups of developers, investors and others close to Commodore are scurrying around to see if there is some way that rights to the Amiga's design might be picked up by another manufacturer. Stay tuned. ■

*Terence Dyke and Paul Smolen are the principals of Media Methods, a communications design and production firm in Austin, Texas. They may be reached at telephone: +1-512-476-0422.*

# PRODUCTS & SERVICES SHOWCASE

For more information on the products shown below, circle the appropriate Reader Service No.(s) on the enclosed Subscription/Reader Service card or contact the advertiser directly.

Garner Degaussers leave the users of MII, Betacam SP, 8MM, D2 and D3 **SPEECHLESS.**



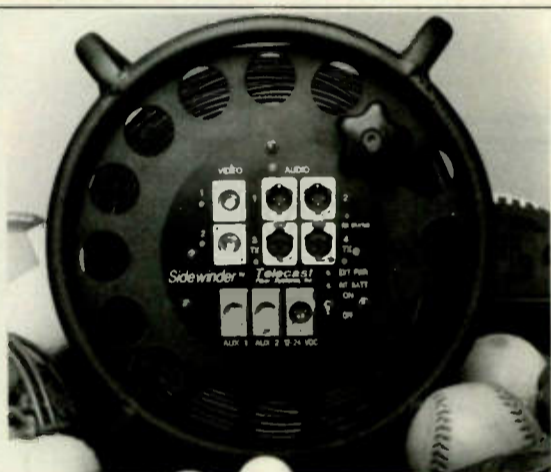
To completely eliminate low-end audio, including the hard to erase voice tracks, nothing can beat a Garner degausser. The Model 4000 completely erases metal particle tape in just seconds.

+1-402-434-9100 FAX: +1-402-434-9133



4200 North 48th Street/Lincoln, NE 68504 USA

READER SERVICE NO. 54



## Fiber Optic ENG/EFP

**Sidewinder™ Video/Audio Snake**

Speeds set up and improves performance — to 30,000 ft. 2-way Video, Audio & Data in one cable, 12 lbs/1,000 ft.

FAX today for FREE Cable Sample



102 Grove Street  
Worcester, MA 01605  
Tel: (508)754-4858  
FAX: (508)752-1520

READER SERVICE NO. 128

## REPAIR VCR's FASTER, EASIER, BETTER

### Service Instruments:

- TENLOMETER® -Tape Tension Gauges
- TQ Series-Motor Dial Torque Gauges
- TSH Series-Multifunction Reference Plane, Reel Table Height Gauges
- HPG Series-Universal Head Tip Protrusion / Eccentricity Gauges
- TT Series-Training Tapes

**ALL VIDEO Formats**

If you knew how GREAT these gauges are, you'd already have them!

### TENEL® CORP.

4475 Golden Foothill Pkwy.  
El Dorado Hills, CA 95762  
(916) 939-4005 / FAX 939-4114

READER SERVICE NO. 122

## GPS MASTER CLOCK/TIME CODE GENERATOR WORLDWIDE TIME

Locked to the Atomic Clock in the Global Positioning Satellite System, you can have time, date and time code within nanoseconds of UTC, anywhere in the world!!

ES-185

\$2495.00



### STANDARD FEATURES INCLUDE:

- SMPTE/EBU, ESE, IRIG-B & ASCII Time Code Outputs • 1PPS Output • 6 Satellite Tracking • Battery Back-up • GPS Locked Indicator • Automatic Daylight Savings Time Correction • Time Zone Offset • Antenna • AND MORE!!

### OPTIONAL FEATURES INCLUDE:

- Parallel BCD Output • 1 KPPS • 10 MHz Output • 220 VAC • 12 VDC • Video Inserter • Video Sync-Generator



**3 YEAR WARRANTY**

142 Sierra St., El Segundo, CA 90245 • (310) 322-2136 FAX: (310) 322-8127

READER SERVICE NO. 17

## Attention Advertisers!

Reach 18,000+ buyers & users of professional video products worldwide. TV Technology International's Product Showcase provides a perfect medium for test marketing your products and services. It's an efficient, effective and affordable advertising option. For more information, including rates and deadlines, fax Caroline at

**1-703-998-2966**  
or call  
**+1-703-998-7600**

20 COMPUTER VIDEO

# IBM Gains in Graphics Ability

by John Spofford

## COMPUTER GRAPHICS

After more than 12 years as a "business machine," the IBM compatible has finally become an effective low-cost graphics computer. Today, 24-bit (16.7 million color) capability is a common — in fact, ordinary — component of the lowly VGA display card.

Also, due to the sheer size of the IBM clone market, many developers of graphics software for other platforms are porting their products to the IBM and, in most cases, Microsoft Windows. One notable example is Adobe's Photoshop, which originated on the Macintosh and has become an industry standard. My guess is that with the recent liquidation of Commodore International, many Amiga developers will begin porting their products to Windows. (See related story, in Newswatch.)

### TOP OF THE LINE

Computer graphics displays intended for professional use have been available since TrueVision introduced its Targa card in 1985. These special-purpose cards were developed with professional graphics production in mind. They also carry a professional price tag.

In recent years, as Windows has increased in popularity, many companies — including TrueVision, Matrox, ATI and Orchid — have developed display devices designed specifically for Windows applications that include hardware acceleration for fast rewriting the screen. Two years ago, these cards cost as much as US\$4,000. Today, the same capability can be acquired for as little as US\$200.

By adopting the Windows platform and using a high-performance VGA card, it seems like it would be possible to choose many of the best software titles from the IBM, Macintosh or Amiga platforms. In a perfect world, it would be that simple. Unfortunately, there is a drawback to this approach: Display adapters can be troublesome on the IBM clone.

To understand why this is true requires a bit of history.

Back in prehistoric times, IBM introduced its PC. The original IBM PC did not display graphics. (Computer graphics was a pretty radical concept in 1981.) The IBM PC was instead a character-based computer, and its hardware was designed to display information as a simple ASCII character set — usually as green letters on a monochromatic tube.

The first attempt to get color graphics out of the IBM PC was a plug-in adapter simply named the Color Graphics Adapter (CGA). This add-on card (the ancestor of many to follow) gave an IBM PC the ability to show color graphics when software called for them. The CGA screen was 320x200 pixels and was considered very

low resolution. Four colors could be displayed on-screen at a time, from a hardware palette of 16 hues. CGA also offered a crude high-resolution mode 640x200 pixels with two colors on-screen. As you might guess, CGA had little to offer the serious graphics producer.

### GRAPHICS SUPPLEMENT

CGA was later supplemented by the Enhanced Graphics Adapter (EGA). EGA produced a resolution of 640x350 pixels and could display up to 16 colors on-screen from a hardware fixed palette of 64 colors. Ten years later, most MS-DOS and Windows applications (including the Windows interface itself) are still tied to a 16-color palette.

IBM introduced VGA, or the Video Graphics Array in 1987. The original specification offered a resolution of up to 640x480 pixels and the ability to display 16 colors from a palette of 256 colors. The VGA standard was compatible with the previous CGA and EGA standards.

Two years later, IBM introduced the 8514/A high-resolution extension to the VGA, which provided a resolution of 1024x768 pixels and the ability to display 256 colors out of a color palette of 262,000 total colors.

Unfortunately, the 8514/A standard was incompatible with CGA, EGA, and VGA, and it required a computer using IBM's Micro Channel Architecture. You might occasionally see a 8514/A Windows driver, but the standard has otherwise been forgotten.

IBM tried again in 1991 with an Extended Graphics Array (XGA) display. XGA was a clear step forward, and, unlike the 8514/A, it was VGA-register compatible. Unfortunately, it was difficult to upgrade to XGA unless you were using IBM hardware. Although many industry pundits predicted a natural progression from VGA to XGA, manufacturers of IBM compatibles had drifted far from the influence of IBM and had already created what they called "Super VGA."

The development of Super VGA (800x600 pixels) as well as higher resolutions (1076x768 and 1280x1024 pixels) has been haphazard at best. Display cards are typically incompatible with each other. Every manufacturer of a Super VGA graphics display is required to write a number of custom display drivers for applications such as Windows, AutoCAD, 3D Studio, AutoShade, OS2, GEM, Lotus, and dozens of other popular DOS applications. Using a high-performance, or even a cheap VGA card means loading and living with the proper display driver for your particular application. A dozen DOS applications might require using a dozen specialized display drivers.

### VESA EXTENSION

There has been an attempt at standardization with VESA (Video Electronic Standards Association) standards. The VESA Super VGA BIOS Extension is an attempt at giving DOS applications a way to determine what type of display they are loading onto and what to do about it. Of course, as one frustrated DOS developer has pointed out to me, VESA would be more effective if its standards were not "optional." Still, a VESA driver can be a good ploy to get a stubborn DOS application to run on your new high-tech display adapter.

Incompatible display drivers (as well as memory address and hardware interrupt conflicts) are enough to encourage me to keep dusting off my Amigas. Fortunately, the situation is far from hopeless. Display drivers

are perhaps one of the best excuses for the existence of Microsoft Windows. A single Windows display driver runs every Windows application; you do not have to worry whether your Super VGA display will crash your application. With the large number of graphics applications presently being developed for or ported to Windows, a Windows-capable display adapter is a good way to approach PC computer graphics.

Of course, Windows is always slower than straight DOS, and for graphics applications an accelerated display card capable of millions of colors is a necessity. There are dozens of excellent cards, many of which are now quite affordable. While I will not recommend any one in particular, it is useful to discuss the ATI Graphics Ultra Pro I purchased about six months ago. I bought this card to make my 386 PC act more like one of my Amigas, and I am happy to report that it has worked.

The ATI card costs less than US\$400 and provides screen resolutions of 640x480 up to 1280x1024 pixels. At both the 640x480 and 800x600 resolutions, the card can display its full 16.7-million-color palette — perfect for image processors, paint programs and animation programs.

### MEMORY PROBLEMS

I should mention that the card proved difficult to set up, at least initially. It seemed to work fine, but I found I had a problem with random computer crashes and strange behavior within Windows applications.

A call to ATI solved the problem: I had a

memory conflict. The ATI Windows acceleration routines require that a fairly large block of upper memory be reserved for the card. This memory block is directly above the 640K address and it must be reserved with an exclude statement in the CONFIG.SYS start-up file. During the course of debugging this card, I learned more than I ever wanted to about upper memory blocks, linear memory addressing, and hexadecimal memory addresses. (This is the hazard of IBM-compatible hardware and of course provides adventurous fodder for future columns.)

Once I added a single exclusion statement to my CONFIG.SYS, I used Microsoft's MEMMAKER command to optimize my upper memory. Since then, the ATI card is 100 percent reliable and a joy to use.

I am not claiming these 24-bit Windows accelerated cards are a perfect replacement for high-end video production display cards, such as TrueVision's Targa, NuVista's products, or the Matrox Illuminator series, but they are a good low-cost way to run many Windows-based graphics programs. Matrox, for one, realizes this and competes in both markets, offering its Matrox MGA 64-bit high-performance VGA card.

The bottom line is that these cards make the Windows platform a viable low-cost graphics computer. If you are considering computer graphics on the Windows platform, using the cards is a good approach. ■

*John Spofford is the owner of SPOFFORD MULTIMEDIA, a computer animation and video production studio located in Exeter, New Hampshire. He can be reached at telephone: +1-603-772-0624.*

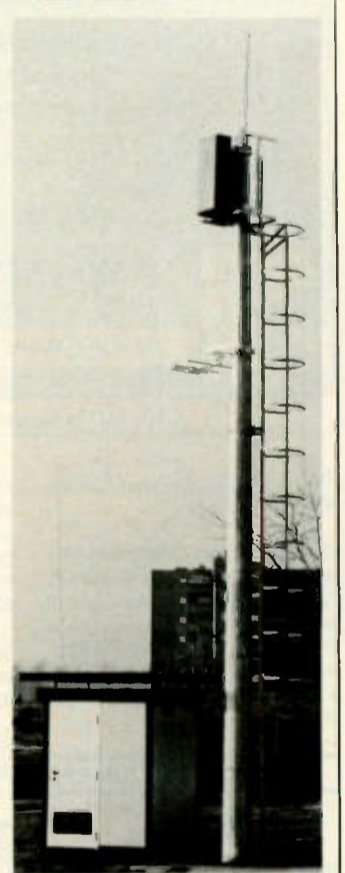


## EXPERIENCE and RELIABILITY for

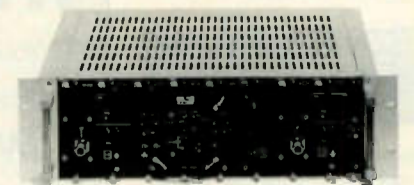
TV-FM TRANSMITTERS  
TV-FM TRANSPOSERS  
MICROWAVE LINKS  
ENG LINKS  
OPTICAL FIBER LINKS  
COMPLEMENTS



ENG microwave link



Fully pre-assembled box and standard pole for telecommunication systems



V-UHF TV transmitter/transposer 2-200W

For more information:

**TEKO TELECOM SRL**  
Via dell'Industria, 5 - C.P. 175  
40068 S.LAZZARO DI SAVENA (BOLOGNA) ITALY  
Tel. +39 51 625 61 48 Fax. +39 51 625 76 70

# EQUIPMENT EXCHANGE

TV Technology's Equipment Exchange provides a FREE listing service for all broadcast and pro-video end users. Brokers, dealers, manufacturers and other organizations who sell used equipment on an occasional basis can participate in the Equipment Exchange on a PAID basis. All free listings run at the discretion of the publisher. Call 1-703-998-7600 for details. Submit your free listings on your letterhead and state the make, model number, a brief description, sale price and complete contact information and mail it to: TV Technology, PO Box 1214, Falls Church VA 22041

## ANTENNAS, TOWERS & CABLES

Want to Sell

3 1/8" transmission line L's, etc, BO. N Davis, 904-892-4038.

## CAMERAS

Want to Sell

Sony DXC 1640 w/AC chgr, \$950. J Balter, Maine Reel, 67 Green St, Augusta ME 04330.

Sony DXC-3000A w/12X Fujinon lens, \$3500. Kelly, 318-234-1422.

Hitachi FP-10 with Fujinon 10X lens, carrying case, tripod adaptor, AC power pack, DP-10 battery & trickle charger, including ITE tripod, no manuals, \$1250. G Gould, JBK Productions, Rt 1 Box 400, Amarillo TX 79106. 806-354-4987.

BTS BCB-50 port Betacam SP, \$15600; Sony BVM 300 Betacam camera with PortaBrace case Nikon 15.1 lens with 2X extender, \$22000; JVC TK 870U copystand camera with zoom lens, \$850; Sony Hi8 Pal camera, \$1650; Sony BVW-75, \$28000. G Underwood, 214-406-9297.

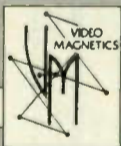
### Video Head Refurbishing

High Quality  
Compatible Performance

All 1" C-Format • 2" Quad • COST EFFECTIVE

(719) 591-5757

FAX: (719) 591-0027



VIDEOMAGNETICS, INC.

Circle (5) On Reader Service Card

JVC BRS622U, 20 hrs. J Phillips, 419-782-8591.

Sony 325 3-chip camera with EVV 9000 back; Sony EVO 9700 Hi8 editor with acc; Amiga 4000, lots of software; S-VHS Panasonic AG-7400 port deck; lots of other production stuff, call for list & prices. Cape Fear Teleproductions, 910-762-8028.

## CAMERA ACCESSORIES

Want to Sell

Sony AC-500 power supply, \$550; CSI TD 20 tripod with spreader, like new, \$2500; Sachtler 18 II tripod with sticks & spreader, \$2600. G Underwood, 214-406-9297.

**TEMMER VIDEO SPECIALS**  
CANON J18X8.5 25X LENS W/2X EXTENDER  
CANON J25X11.5 25X LENS W/2X EXTENDER  
USA TEL: 212-206-1475 FAX: 212-929-9082

Anton Bauer Lifesaver LSQ4 charger for BP90s or brick type batteries, \$400; Anton Bauer mobile fast charger, chgr brick type or BP90 with a cable adaptor batteries in vehicle, \$250; both in excellent condition & including manuals. Dale, 505-898-1544.

Quick Set studio tripod, head model 4-720L1-6, \$150. J Balter, Maine Reel, 67 Green St, Augusta ME 04330.

## DIGITAL EFFECTS

Want to Sell

Grass Valley DPM-100CV525A component/analog DVE including component Input selector & recursive memory options, all manuals, extender cards & custom Viking cases, \$12500. D Bell, Show Solutions, 5201-0 Brook Hollow Pkwy, Norcross GA 30071. 404-242-3600.

**TEMMER VIDEO SPECIALS**  
MICROTIME ACT I, JAZZ ENSEMBLE, AMPLEX ADO  
VIDEOTEK PRODIGY & GRASS VALLEY SWITCHERS  
USA TEL: 212-206-1475 FAX: 212-929-9082

## EDITING EQUIPMENT

Want to Sell

Sony BVU-820 with Sony BVT 810, \$6K; Sony BVU 800, \$3K; Sony VO 5850, \$2K; Sony VP5030 PAL/SECAM/NTSC, \$1K, all equipment low miles, excellent condition, 90-day warranty. Max, MGA Communications, 703-522-1140.

## Temmer Video Specials Used Equipment List

1 West 19 Street, New York, NY 10011  
Tel (212) 206-1475 Fax (212) 929-9082

As of 4/19/93 All Prices Subject to Change & Availability without Notice  
LIMITED WARRANTIES ON SOME EQUIPMENT

**3/4" VTRS**  
BVU-800 w/T.C.  
BVU-900 w/T.C., TBC & Remote  
BVU-950 w/T.C., TBC & Remote  
**PAL HI-BAND SP 3/4" PACK DEMO**  
SONY VO-9800P w/ T.C. BK-704  
SONY VO-9850P w/T.C. BK-705  
SONY RM-450 Controller w/Cables

**TBCS**  
Fortel Y688 TBC  
Fortel Turbo 2

**CHIP CAMERA-BETACAM RECORDER**  
NEC SP3A/Fujinon Zoom,  
SONY BVV-1-A

**BETACAMS**  
BVW-25  
BVW-35  
BVW-10 Good condition  
BVW-40 w/new spare head  
BVW-15 w/new spare head  
BVW-65

**Rank Cintel Mark 3 Film to Tape**  
MOST EQUIPMENT NTSC/PAL  
SWITCHABLE

w/Digiscan Amigo Color Correction system  
almost new CRT & PEC pick up tubes  
Tek Waveform & Vector  
Interlocked 35 16mm Dubber  
Lipsner Film Cleaner

**A/B Roll Room COMPLETE w/o VTRS**  
MOST EQUIPMENT NTSC/PAL  
SWITCHABLE

With all rack, cables, patch bays  
**Take It Apart Yourself**  
**SEE IT IN NYC**

SONY BVE-910 Edit Controller  
SONY MXP-290 Audio Mixer  
Grass 100 Switcher  
TEK 1720 waveform  
TEK 1730 vectorscope  
Color monitor, 4 9" Black & Whites  
Grass Valley Sync gen., Video distribution  
CALL OR FAX FOR COMPLETE LIST  
**NEED SONY TYPE S, 7 or 9 3/4" VTRS & SONY M7 CAMERAS**

## MISCELLANEOUS

World famous psychic to stars and celebrities, 30 years experience, can help you to obtain love, health, wealth and luck. Will do free interviews. Call David Guardino anytime, 703-978-1754 or 615-539-0434.

## MOVIE PRODUCTION EQUIPMENT

Want to Sell

Arriflex S 16mm camera 16, 25, 50, 200mm Primes, 17-85 zoom, 3-400 mags, VS & CS motor, matte box & case, \$1900. R Perrine, The Imagination Industry, 2475 State Rd Ste 22, Cuyahoga Falls OH 44223. 216-929-3712.

## PEDESTALS

Want to Sell

**TEMMER VIDEO SPECIALS**  
VINTEN TERN PEDESTALS & MARK 7 & 3 HEADS  
SACHTLER & VINTEN & ITE TRIPODS  
USA TEL: 212-206-1475 FAX: 212-929-9082

## SIGNAL PROCESSING

Want to Sell

Harris 630 TBC/sync with remote operations panel, 1/4 screen compressor/positioner with memory & switchable noise reduction, good condition with extender board & manual, \$3500. M Rainer, On Location Video, Box 35657, Houston TX 77235. 713-728-1020.

Video Intl 1600 4-field standards converter, \$6500; Feral A 4.2.2 TBC with digital comb filter, \$1800; Feral C-100 TBC, \$1900; Panasonic AG W1 standards converter, \$1850; Merlin 808 standards converter, \$10000. G Underwood, 214-406-9297.

## SWITCHERS

Want to Sell

Panasonic MX-10 less than 100 hours, like new, \$850. Mike, 203-437-1990.

Echolab SE/2 SEG, bar generator, 5 input, gen lock, fair condition, \$750/BO. L Davenport, 208-377-2695.

JVC KM-2500U prod switcher, immac, with manuals, \$2000; Sony VO-6800 port 3/4", 100 hours, \$900. 303-750-2700.

Panasonic WJ-MX12, new in box, \$1195. 614-946-6611.

## TAPES/CARTS/REELS

Want to Sell

### GET USED TO IT.

For video duplication, demos, audition reels, work tapes, our recycled tapes are technically up to any task and downright bargains. All formats, and fully guaranteed. Order today.



PH: +1-011-301-694-3500  
FAX: +1-011-301-694-9510  
se habla español

## TRANSMITTERS

Want to Sell

RCA TTU-1B early 60s, TV transmitter, 1 kW (6) must sell, \$1200/each, must be package; parts from RCA TTU1B 1 kW transmitter doubler, IPA & final cavities, 4CX150 sockets & 803s. N Davis, 904-892-4038.

60 kW UHF TV transmitter, well maintained, still on air. 702-386-2844.

TV transmitters RCA TT 30 FL, dual plus OPTO switch & GE TT-10/TT-40, filters & duplexers + spare parts, both operating on channel 5+, must sell this year, Best Offer. KING-TV, 206-448-3831.

Transmitters, TV/AM/FM, new and used, low prices. Espanlo, Portugues. Miami, 305-757-9207.

Want to Buy

Want to buy used Harris TV AM/FM xmtr in gd use and working. SKY-SAT, Carlos Schliemann, Pinto 3536, 1429 Buenos Aires. ARGENTINA. FAX: 011-54-1-542-6653.

## TV FILM EQUIPMENT

Want to Sell

Eiki 16 mm CL optical sound projector, \$400. J Balter, Maine Reel, 67 Green St, Augusta ME 04330.

16mm telecine projector, \$975; dual 8mm telecine projector, \$850. G Underwood, 214-406-9297.

**RF Transmission Systems**  
(304) 757-9623  
FAX: (304) 757-9624

TV Band I, III, & FM 1Kw Amp. & Power Supply  
\$12,500.00 F.O.B. factory.  
1Kw UHF Tube Transmitter  
\$31,500.00  
Call for delivery and other equipment needs

Circle (117) On Reader Service Card

# IT PAYS TO ADVERTISE!

⇒ Your ad will reach more than 18,000 prospects in **TV TECHNOLOGY INTERNATIONAL**

⇒ Call **+1-703-998-7600** or fax **+1-703-998-2966** for more information!



**5827 Columbia Pike  
3rd Floor  
Falls Church, VA 22041**

Call **Caroline Behan**, Classified Ad Manager, to reserve space in the next issue. Use your credit card to pay, we now accept VISA and MASTERCARD.



**PHONE: 703-998-7600  
FAX: 703-998-2966**

Ad deadlines are the first Friday of each month for the following month's issue

### Select from these categories for best ad positioning:

Help Wanted	Miscellaneous	Test Equip.
Positions Wanted	Monitors	Transmitters
Antennas & Towers & Cables	Movie Production Equip.	Tubes
Audio Production	Pedestals	TV Film Equip.
Cameras	Receivers & Transceivers	Video Production Equip.
Digital Effects	Remote & Microwave Equip.	Video Tape Recorders
Microphones	Switchers (Video)	

### Classified Advertising Rates Effective January 1, 1994

	1x	3x	6x	12x
1-19 col inch (per inch)	\$80	77	74	68
Professional Card	95	90	86	84
Classified Line Ad		\$1.75 per word		
Blind Box Ad		\$10 additional		

▶ To compute ad costs: Multiply the number of ad inches (columns x inches) by the desired rate schedule for your per unit cost. Example: a 3" ad at the 1x rate is \$240, at the 3x rate \$231, at the 6x rate \$222 at the 12x rate \$204, etc.

**TV FILM EQUIPMENT...WTS**

Kleig 1000 W broad lites, 18' with charger, \$75/ea; Mole 2000 W focusing fresnels, with clamps, bulbs avail, \$150/ea. Ugly George, 212-969-0240.

**USED EQUIPMENT**

Want to Sell

**BCS Sizzling Summer '94 VIDEO SPECIALS**

**Sony BVP-7 3-CCD Camera-10,000**  
**Sony DVR-2000 D-1 Record-60,000**  
**Abekas A-57 Digital Effects-51,000**  
**Grass Valley 200-2 Switcher-54,000**  
**JVC BRS-525U S-VHS w/DT-3,800**  
**Barco Vision 600 Projector- 3,000**

**BUY CONSIGN SELL SERVICE & TRADE**

**BCS-LA:818-551-5858 BCS-NY-212-268-8800**

**VIDEO PRODUCTION EQUIPMENT**

Want to Sell

Quanta Microgen character generator good condition, \$500/BO; Edutron CCD 2h-1 TBC with service manual, \$300/BO. L Davenport, 208-377-2695.

Paltex Abner A/B roll editor, connections for Sony VO-5800 plyrs & Sony BVU-850 rcdr, B & W data monitor & manuals, \$3574; Microtime T-300 TBC (2), manuals, \$2116/ea; Sony VO-5800 (2), \$2282/ea; Sony BVU-850, with manuals, \$5435. G Gould, JBK Productions, Rt 1 Box 400, Amarillo TX 79106. 806-354-4987.

BTS-50 port recorder, 1 year old, \$11500. 609-848-3770.

Sony MVR-5500/RM-E5500 Pro-Mavica recorder/player & edit controller, 40' cable, several disks with manuals in cartons, excellent condition, \$1200. M Rainer, On Location Video, Box 35657, Houston TX 77235. 713-728-1020.

**VCR/VTRS/RECORDING MEDIA**

Want to Sell

Panasonic AG-1960 editors, \$795; Sony EVS-3000, \$950; both like new in boxes. 614-946-6611.

JVC CR850U U-matic edit deck, vgc, \$2950; JVC CR 600 U-matic deck, vgc, \$2250; Convergence ECS90 w/JVC interface cards, time-code reader/gen, \$750. 804-225-2971.

**TEMMER VIDEO SPECIALS**  
 SONY BETACAM & 1" & 3/4" & 1/2" & S-VHS & NTSC & PAL  
 SONY-PANASONIC-CONVERGENCE EDIT SYS  
 USA TEL: 212-206-1475 FAX: 212-929-9082

Panasonic AGDP800 Supercam, 3 CCDs, 700 lines, 60 dB, 2-lux, only 13 lbs, 1 yr warr, BO; Panasonic AGDS850 S-VHS edit VCR, digital slo-motion, TBC, timecode reader/gen, 1 yr warr, BO. Ralph, AVS Prod, RD #2 Roots Ln, Owego NY 13827. 607-687-0545.

Panasonic AU-300B, 1200 hrs, TBC, excl cond, manual, extender brd, \$1800; Panasonic AU-500B, 1w hrs, excl cond, manual, \$6500; Hitachi HR-300 1", 3 hr capable in console w/TBC, HST, manuals, extender brd, \$15000; Sony VP-2000 3/4" plyr, \$450. M Rainer, On Location Video, Box 35657, Houston TX 77235. 713-728-1020.

IVC 1" port VCR, \$350; NEC 3/4" VCR time lapse rcds up to 72 hrs, \$350. J Balter, Maine Reel, 67 Green St, Augusta ME 04330.

Sony SLO-340 Beta 1, port vcr, \$600; Sony SLO-383 Beta 1, vcr, \$700; no manuals for both. G Gould, JBK Productions, Rt1 Box 400, Amarillo TX 79106. 806-354-4987.

JVC 4900U 3/4" port w/AC batt chgr, \$1000. Kelly, 318-234-1422.

Sony BVU-50 w/TC, PortaBrace case, \$350/BO. 818-968-1237.

Sony BVU 65, 1w hrs, new, \$22000; Sharp XA-400 pro VHS duplicator, \$400; Sony VO 5630 3/4" PAL,, \$1800; Sony EVS 900 Hi 8mm VCR, \$1200; Sony VO 9800 3/4" SP w/TBC, \$5500. G Underwood, 214-406-9292.

Hitachi HR-310 1" studio full editing VTR (2), air compressors, jog/shuttle, time code, vgc, with or without controller, dynamic tracking, \$12000/both. Ugly George, 212-969-0240.

**EMPLOYMENT**

**POSITIONS WANTED**

Writer & Director can provide to creation and realization of telefilms series, serials, sit-com, etc, as freelance. Federico Veltri, 25 Via Colonia, 00040 Torvaianica (Rome) ITALY.

**ADVERTISE!**  
 in **BROADCAST EQUIPMENT EXCHANGE**  
 For more information, including rates and deadlines, call **Caroline**  
**+1-703-998-7600**

**ACTION-GRAM**

**Equipment Listings**

Please print and include all information:

Contact Name \_\_\_\_\_  
 Title \_\_\_\_\_  
 Company/Station \_\_\_\_\_  
 Address \_\_\_\_\_  
 City \_\_\_\_\_ Postal Code \_\_\_\_\_  
 Country \_\_\_\_\_

I would like to receive or continue receiving TV Technology FREE each month.  Yes  No  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

Please Circle only one entry for each category:

**I. Type of Firm**

- A. VHF-TV station
- B. UHF-TV station
- D. Prod/post-prod studio
- E. CATV company
- G. Network/group owner
- J. Broadcast consultant, mfg, dist, or dealer
- L. Corporate TV facility
- M. Medical TV facility
- N. Government TV facility
- P. Educational TV facility
- Q. Recording studio
- K. Other (specify): \_\_\_\_\_

**II. Job Function**

- A. Corporate mgt
- B. Engineering/tech mgt
- C. Engineering/tech staff
- F. Other (specify): \_\_\_\_\_
- D. Prod/oper mgt or staff
- E. News mgt or staff
- G. Training

Brokers, dealers, manufacturers and other organizations who are not legitimate end users can participate in the TVT Equipment Exchange on a paid basis. Listings are available on a \$1.75/word basis. Call 1-703-998-7600 for details and complete display rates.

WTS:  Category: \_\_\_\_\_  
 Make: \_\_\_\_\_ Model: \_\_\_\_\_  
 Brief Description: \_\_\_\_\_  
 Price: \_\_\_\_\_

WTS:  Category: \_\_\_\_\_  
 Make: \_\_\_\_\_ Model: \_\_\_\_\_  
 Brief Description: \_\_\_\_\_  
 Price: \_\_\_\_\_

WTS:  Category: \_\_\_\_\_  
 Make: \_\_\_\_\_ Model: \_\_\_\_\_  
 Brief Description: \_\_\_\_\_  
 Price: \_\_\_\_\_

WTS:  Category: \_\_\_\_\_  
 Make: \_\_\_\_\_ Model: \_\_\_\_\_  
 Brief Description: \_\_\_\_\_  
 Price: \_\_\_\_\_

WTS:  Category: \_\_\_\_\_  
 Make: \_\_\_\_\_ Model: \_\_\_\_\_  
 Brief Description: \_\_\_\_\_  
 Price: \_\_\_\_\_

**USE THIS FORM IF THE SUBSCRIPTION/READER SERVICE CARDS INCLUDED IN THIS ISSUE ARE MISSING**



**FREE Subscription International Edition**

I would like to receive or continue receiving TV Technology FREE each month via surface mail  Yes  No

Signature \_\_\_\_\_ Date \_\_\_\_\_  
 Please print and include all information:  
 Name \_\_\_\_\_ Title \_\_\_\_\_  
 Company/Station \_\_\_\_\_  
 Address \_\_\_\_\_  
 City/Province \_\_\_\_\_  
 Postal Code \_\_\_\_\_ Country \_\_\_\_\_

**1 Type of Firm (check one)**

- A. VHF-TV station
- B. UHF-TV station
- D. Prod/post-prod studio
- E. Cable TV
- G. Network/group owner
- J. Broadcast consultant mfg, dist, or dealer
- L. Corporate TV facility
- M. Medical TV facility
- N. Government TV facility
- P. Educational TV facility
- Q. Recording studio
- K. Other (specify): \_\_\_\_\_

**2 Job Function (check one)**

- A. Corporate mgt
- B. Engineering/tech mgt
- C. Engineering/tech staff
- F. Other (specify): \_\_\_\_\_
- D. Prod/oper mgt or staff
- E. News mgt or staff
- G. Training

**Reader Service**

August 1994 Issue Use Until January 1995

Use this section to receive free information about products or services advertised in this issue. First fill out the contact information to the left. Then find the Reader Service number printed at the bottom of each advertisement you are interested in, and circle that same number below.

**Purchasing Authority (check one)**  
 1. Recommend  2. Specify  3. Approve

001	016	031	046	061	076	091	106	121
002	017	032	047	062	077	092	107	122
003	018	033	048	063	078	093	108	123
004	019	034	049	064	079	094	109	124
005	020	035	050	065	080	095	110	125
006	021	036	051	066	081	096	111	126
007	022	037	052	067	082	097	112	127
008	023	038	053	068	083	098	113	128
009	024	039	054	069	084	099	114	129
010	025	040	055	070	085	100	115	130
011	026	041	056	071	086	101	116	131
012	027	042	057	072	087	102	117	132
013	028	043	058	073	088	103	118	133
014	029	044	059	074	089	104	119	134
015	030	045	060	075	090	105	120	135

Telephone \_\_\_\_\_  
 FAX \_\_\_\_\_  
 Send to: TV Technology, PO Box 1214  
 Falls Church, VA 22041 USA  
 or FAX: +1-703-998-2966

**COPY & MAIL TO TV TECHNOLOGY, PO BOX 1214, FALLS CHURCH, VA 22041-0214 USA, OR FAX: +1-703-998-2966**

**ADVERTISERS INDEX**

While every care is taken to ensure that these listings are accurate and complete, TV Technology does not accept responsibility for omissions or errors.

PAGE	ADVERTISER	READER SERVICE	PAGE	ADVERTISER	READER SERVICE
11	ATI	85	27	Modulation Sciences	125
7	Anton Bauer	111	12	NAB	—
16,17	BTS Breda BV	77	*29	Panasonic	7
22	DBK, Inc.	117	15	Sachtler AG	50
25	Dwight Cavendish	60	1	Snell & Wilcox	15
6	Elca SRL	25	*4	Sony	102
20	ESE	17	*4	Sony Broadcast Export	43
20	Garner Industries	54	9	Standard Communications	37
26	Hamlet Video	81	21	Teko Telecom SRL	23
32	Harris Allied	133	20	Telecast Fiber Systems	128
10	ITS Corporation	99	20	Tentel	122
2	JVC International	31	13	United Media	120
31	Leitch	44	22	Videomagnetics, Inc.	5
18	Linear S.r.L.	109			

\*These ads appear only in one demographic edition

**Advertising Sales Representatives**

**U.S. West Coast:**  
 Jack Ducart  
 +1-916-988-8558  
 FAX: +1-916-988-4052

**U.S. East Coast:**  
 Mike Dahle  
 +1-914-762-3572  
 FAX: +1-914-762-3107

**Europe:**  
 Dario Calabrese  
 +39-2-7530274  
 FAX: +39-2-7532697

**U.S. East Coast:**  
 Eric Trabb  
 +1-908-591-0906  
 FAX: +1-908-591-1170

**Japan:**  
 Eiji Yoshikawa  
 +81-3-3327-2688  
 FAX: +81-3-3327-3010

**U.S. Midwest:**  
 Gene Kinsella  
 +1-312-327-3192  
 FAX: +1-312-327-3193

**Classified Advertising:**  
 Caroline Behan  
 +1-703-998-7600  
 FAX: +1-703-998-2966

**TV Technology Equipment Exchange**

PO Box 1214, Falls Church, VA USA 22041  
 Phone: +1-703-998-7600 FAX: +1-703-998-2966



# BUYERS GUIDE

## EDITING

## EQUIPMENT

## BUYERS GUIDE calendar

### SEPTEMBER

Standards Conversion

### OCTOBER

ENG/EFP Cameras, Lighting &  
Support Equipment

### NOVEMBER

Audio Equipment

### DECEMBER

Graphics & Animation Equipment

## USER REPORT

# Mixed Media Relies on Matrox

by Jean Menard

Owner/Producer  
Mixed Media Production

### TORONTO

The Matrox Studio is a PC-based video post-production platform. It controls multiple VTR machines for editing, performs traditional switcher transitions, has three channels of 2-D DVE, manipulates graphics and audio files such as .TGA and .WAV, includes a character generator (Inscriber CG) and offers optional hardware for 3-D DVE manipulations and so on. In fact this box will provide service equivalent to a traditional post-production facility.

Beginning in Spring of 1993, Mixed Media Production began operating in Toronto using the Matrox Studio configured with four Sony PVW Betacam SP decks. A second PC workstation provided graphics and animation using Time Arts Lumena and Crystal Topas.

### EASY START-UP

The list of equipment may seem pretty basic, but it is really all you need with the Studio. Plug in the decks, answer a few questions in the Windows configuration dialog box, hook up an inexpensive sync generator and several monitors and you are in business. Technical operations, such as timing and time base correction, are done on the boards.

The actual editing is done via a relatively simple graphical interface on the VGA screen. Using the standard principles of creating collections or bins of selected material, the production is then assembled on a multilayered time line where clips are assembled, overlapped and modified with transitions and special effects.

The reasons for selecting this platform were quite simple. Mixed Media's market niche was going to be broadcast programming, and we needed equipment that would deliver a broadcast quality product. We wanted to provide on-line editing services since our clients would want to do final program packaging with us: create openings, do some keys, add titles, add transitions.

The system also needed to be tape-based. Clients would walk in with Betacam tapes in the morning, and would walk out with a finished master at the end of the day. Non-linear editing was not an option in this scenario. The effects needed to be real-time, the titling software efficient and the keyers up to Grass Valley standards. The Matrox Studio seemed to fit the bill.

### CLOSE TO THE ACTION

Mixed Media is located in the heart of Toronto's film and television district, next to the Canadian Broadcasting Centre, an ultra modern, all-digital facility and home to the Canadian Broadcasting Corporation. We knew that overflow work from the CBC would be a significant part of our business. Over the last year we used the Studio to edit two network documentaries, package dozens of weekly shows, produce countless special effects sequences and create openings for the CBC, as well as other broadcasters and corporate clients. There is no question that the Matrox Studio was up to the job, and our track record is there to prove it.

However, there were a few bumps along

the way. Targeting a high-end market with a desktop system that was barely ready for market at the time was risky. First, we had to deal with the predictable problems of the early software, and then our clients had to adapt to working in a desktop suite. Some of them loved it, not only for the novelty but because they appreciated the additional power offered by a completely computerized system. Others felt that the conventional push-button analog suites were faster and easier to use.

Overall the majority of our clients appreciated the cost/benefit ratio that Matrox Studio provided. Ironically, two of our corporate clients were so pleased with the Studio that they purchased their own Matrox suites.

The main advantage of the system is cost. We knew that even broadcasters like the CBC were operating on shrinking budgets.

*Ironically, two of our corporate clients were so pleased with the Studio that they purchased their own Matrox suites.*

For example, one of our broadcast clients brought us weekly chroma key segments to composite, preferring the key from the Studio to that of other systems.

### COMPUTER BENEFITS

In fact a number of clients adopted the Matrox Studio because it is a computer. Desktop systems offer a number of advantages because they are computers. For example, the EDLs are generally more complete on a desktop system: all key levels, audio levels, crossfades, graphic inserts and so on are stored in memory, which means that changes can be made or sections of the program reprinted to tape without readjusting any of the variable parameters. It is a time-saving feature which still cannot be found in conventional editing suites.

Exploiting the advantages of the computer greatly increases productivity, and the clients are smart enough to realize that. The ability to cut and paste settings, variables and sections of EDLs is essential to formula packaging where repetitiveness is a time saver. Other basic computer functions, such as the use of SAVE AS and RENAME files, boost the productivity of the editing process.

Aside from productivity, the issue of speed



The Matrox Studio System as configured at Mixed Media Productions

They still wanted high-end work and a high production value but could not afford to pay \$400 per hour to achieve them. This is where the Matrox Studio shined. Because of its low acquisition cost, we were able to offer equivalent value-added services for a fraction of the cost of a full-service suite. Competitive pricing allowed richer clients to do more post-production and provided the poorer clients with at least the possibility of doing DVE moves, titling and other operations. A real market niche was born from the marriage of competitive pricing and the output of broadcast quality Beta SP tape.

The Matrox Studio is not a Quantel Harry. It does not perform DVE moves like a Kaleidoscope, or any of the high-end devices that sit in a different price range. Matrox is a modest post-production environment, which provides the essential utilities of a post suite. We made an effort over the last year to ensure that our clients understood clearly that they should not expect a four-quadrant page peel from the Matrox. It was important to educate the client about the limitations and the advantages of Studio.

of operation is an interesting one. Because post production is an expensive process, speed of operation has always been an issue with clients. They like to work with fast editors, in facilities that have been optimized for speed. Whatever platform you adopt, speed will be the criterion upon which you will be judged, no matter what advantages you might be able to offer.

Since most desktop systems operate from a graphical interface and a mouse, there is a lot of clicking, scrolling, opening of dialog boxes, etc., in order to edit and perform effects. I find this process to be generally slower than that of a conventional post production suite, where a fast editor can literally fly on a GVG edit controller, a cascading switcher, an ADO or all of the above.

Full suites typically are outfitted with 20 years of matured technology, tuned and refined to maximize speed. In spite of constant improvement, I do not believe desktop systems, including the Studio, can yet match the operational speed of classic edit suites. But what they lack in speed they make up in other areas of productivity.

(continued on page 28)



## USER REPORT

**Germany's VCC Chooses Grass**

by Heike Eberle

Post Production Supervisor  
VCC**HAMBURG, Germany**

When we originally purchased the VPE from Grass Valley Group, it was primarily because of its compatibility with the Grass Valley Vision mixers. Storing full mixer setups in the EDL is invaluable when you could be making versions of the program for months to come.

Although linear editing has become increasingly threatened by new technologies, we have found the transition to random access disk systems to be far from clean-cut. We feel that traditional editing has retained its relevance not only in its standard form but by adaption to newer formats. An intelligent edit controller is one that always gives you the flexibility for changes during on-line and in the working environment in general.

The VPE series uses a familiar layout, like many edit controllers, aided by color-coded buttons. Most functions are accessible directly from the keyboard or with shift and alt keys. Apart from this, a set of INIT pages provides access to basic functions like preroll, assembly mode, etc., and also to such functions as delays for GPU and mixer triggers and even edit timing. This allows the VPE to be customized at a glance, although it is rather surprising that the display is not configurable.

In normal operational terms, the unit offers a variety of possibilities in many sit-

uations. For instance, there are seven match functions, plus the ability to run several groups of slaved machines simultaneously. The A and B decks could be one group, C and D a second group, and so on. Slaves also control multirecorders for which it is possible to select different record tracks and which need not have identical timecodes. This information is all stored in the EDL according to its reel number.

**Predefined effects . . . or  
pages from a character  
generator . . . can be recalled  
and triggered accurately.**

Control of any external device (GPIs, video and audio mixers, DVEs, character generators, TBC remote and router control) is available from PEGS. Grass Valley's multi-event registers that are stored in the EDL for assembly or adjustment. PEGS allows 16 different triggers per event. The operator can see all this information on the same menu. Complete mixer and TBC setups are stored automatically in the EDL. Predefined effects on a Grass Valley DVE or pages from a character generator (Aston 4 is supported, as well as Grass Valley CGs) can be recalled and triggered accurately. All these functions are effective in auto-assemble.

Slow motion edits are also triggered by PEGS. The system informs the operator if he or she has requested a speed that the deck will not achieve and will then provide the closest alternative. Although the VPE prerolls the machine at the correct speed,

we have found that certain VTR types have some problems locking up. Grass Valley assures us that these problems have a high priority and are sometimes due to a VTR's software being changed before the editor manufacturers are told.

On the VPE-251 models, certain extra functions are included. SWAP allows operators to exchange the record deck with any source, which is obviously very useful when doing multilayering work with D-I or disks. With the VPE linked to a routing switcher, it will change the input to the monitoring and preview switcher as recorders are

swapped. Up to eight different edit lists can be on-line at the same time.

In these days of non-linear editing, list adaptability has become very relevant. EDLs from Avid and Lightworks can be incorporated via the MS-DOS utility or, in the case of Avid, directly from an RT-11 disk made on the Avid. Additional utility programs such as 409 not only offer the possibility of optimizing an EDL but also generating a C-mode list for auto-assembly.

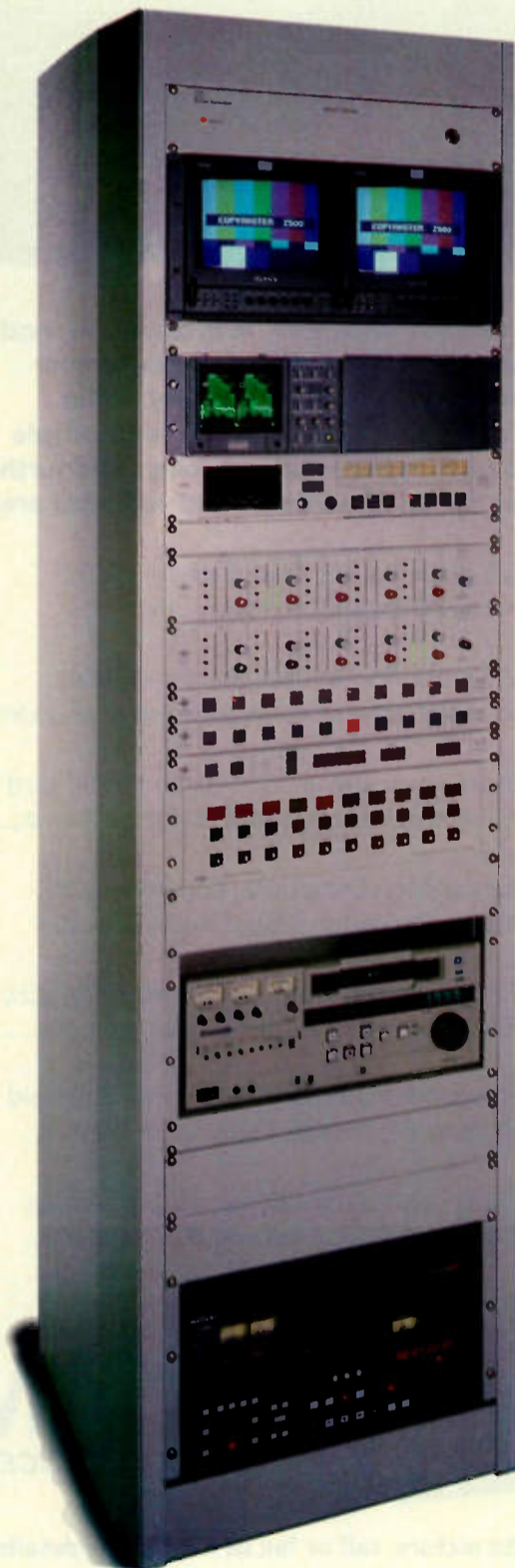
Other useful tools include a conversion program for EDLs created by other edit controllers and engineers tools like diagnostics.

**With Cavendish components, the arrangements are flexible.**

**Arrangement 1:**  
Video cassette  
duplicator with  
on-line QC  
monitoring &  
remote control.

**Arrangement 2:**  
QC and remote  
control up-grade  
for existing  
duplication  
systems.

**Arrangement 3:**  
Stand-alone QC  
station.



Take, for example, the arrangement of components pictured here and acclaimed worldwide as the Cavendish COPYMASTER 2500 Video Cassette Duplicator. With built-in QC monitoring and the flexibility to accommodate virtually any source format, any remote control, and any VCR, in modular slave groups of 10 to 2,500, copying from up to 20 source masters simultaneously — accomplished with ease via simple, front panel push-button controls — the COPYMASTER 2500 allows for incredibly flexible system expansion with no equipment redundancy.

But that's only 1/3 of the story.

By utilizing many of the same Cavendish components found in the 2500, equally flexible re-arrangements can be made for stand-alone QC stations and for QC monitoring and remote control up-upgrades for existing dub-only systems. With compatible Cavendish components, present and future customers always have the flexibility to upgrade easily and to add modular slaves as you need them.

We're Dwight Cavendish. Let's talk about your video cassette duplication needs today. Give us a call at 708-673-0937 and we'll make all the flexible arrangements.

**Dwight Cavendish**

8242 McCormick Blvd.  
Skokie, IL 60076-2921  
Phone: 708-673-0937  
Fax: 708-673-1389

USER REPORT

# BTS RIO Impresses Brase

by Jim Brawner

Owner  
Brase Communications Group

CAMPBELL, California

For the last 15 years, I have been an independent video producer. In other words, every month I am working on a different project for a different client.

Even though my clients range from ABC News, Apple and AT&T to DHL, HBO and CBS, industry experts often try to tell me that

being a free-lance producer is not possible.

They are right. There never seems to be enough profit margin after the project staff has been paid. So, how do I avoid starving? I pay myself as the writer, camera operator, lighting technician, director and editor. And then sometimes there is enough left over for the producer.

### QUALITY EQUIPMENT

But how difficult is it to operate a Betacam SP on a Sachtler? After a few years of light-

ing mistakes, it is not hard to learn that the quality and variety of the equipment you choose can make you look pretty good.

The only area in which I was still spending too much of my budget was in post. There are a lot of post houses between California and New York, and they all seem to be set up differently. Most insist that you use their personnel.

Unfortunately, I have never found an editor with the same vision of a project as my own. Time is money and lack of either can

stifle creativity.

Some post houses let you do your own editing, but the learning curve in familiarizing yourself with their setup and edit controller has proven to be too time-intensive in most instances. In a perfect world, I would be able to walk into a facility, sit down at either an off-line or on-line system, and begin editing in five minutes.

That is where the new BTS Rio Bravo desktop edit controller has made my life easier. Actually, I have noticed three features about the Rio Bravo that seem to impress every producer.

The most obvious is the way the screen is set up. It makes sense. From the first minute I sat down, I was doing A/B/C roll DVE effects with programmed audio cross-fades. The screen is so self-explanatory, an apprentice could be up and running in a few minutes. Rio Bravo works in the Microsoft Windows graphics environment, with on-screen graphic modules that emulate virtually every major VTR control panel from D-1 to Hi8.

### LIBRARY OPTIONS GALORE

Another feature that seems too good to be true is the Rio Bravo's ability to control any transport device. In other words, my recorder could be a Sony BVH 2300, source A could be a JVC 3/4-inch, source B could be an Hitachi Hi8 camcorder, and source C could be a Panasonic D-3.

All machines will preroll and perform with such accuracy, you would think they shared the same protocol. As a matter of fact, with 239 choices, including both real and virtual devices, the Rio Bravo has a large library of interface options.

But this interface capability does not mean that I am getting up and rewiring every time I want to change from an S-VHS source to a laser disc. Selecting a new device is as simple as pulling down a huge menu and clicking on the machine I want. Within five seconds, I have resumed my edit session, now with a new source.

A third feature of the Rio Bravo is its ability to interact between non-linear and linear almost instantly. This makes capturing the video scenes I want to store on disc very easy, but it also allows me to off-line and on-line at the same time, or at least check my off-line as I am doing my on-line.

But the reality of the post production world in 1994 is that you need both linear and non-linear capabilities. Rio Bravo's non-linear editing extension is easy to use and understand, in addition to being very sophisticated. For example, it offers an internal switcher with a full MJB bank, 15 various autotag options, DMC triggers, split edits, ripple record and auto-cleaning of EDLs.

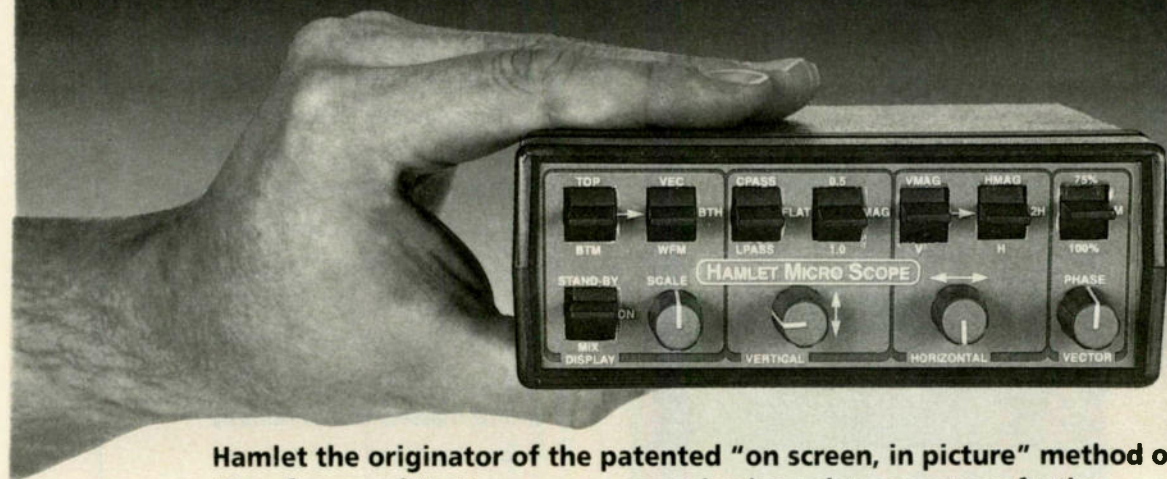
But with current storage cost problems and quality irregularities of non-linear, I still rely on videotape to provide the best quality and storage.

After trying every edit-controller on the market for 15 years, I have liked some, learned to tolerate others and hated quite a few. The BTS Rio Bravo was the first editor I liked right away. It has helped me to achieve a world in which an independent producer can truly be independent without sacrificing time or creativity — and avoid starving. ■

*Editor's note: As a writer/director, Jim Brawner has received numerous national awards and is currently producing a pilot for television called "The Sporting Chef." He is also the chief editor at a Rio Bravo beta site in San Jose.*

*The opinions expressed above are the author's alone. For further information, contact your nearest BTS representative, or circle Reader Service 12.*

## HAMLET MICRO SCOPE EVERY TOOLBOX SHOULD HAVE ONE



Hamlet the originator of the patented "on screen, in picture" method of Waveform and Vector measurement is pleased to announce further advanced proprietary designs making signal measurement easier. Hands free timing™, HFT™ provides a new timing facility for multiple sources and our coloured stereo (dual mono) audio displays add further to our devices which are suitable for all operational and technical areas.

### Hamlet Pico Scope

Ideal for ENG/EFP/PSC

425 gram, Pocket sized, Battery-12VDC powered Waveform display unit

### Hamlet Micro Scope

Ideal for ENG/EFP/PSC

650 gram, Pocket sized, Battery-12VDC powered Waveform/Vectorscope display Unit

### Hamlet PC Scope

Ideal for Computer Systems

Board-Level IBM and Amiga Computer card Waveform/Vectorscope with Stereo Audio.....

### Hamlet Video Scope 301

Ideal for All operational areas

Full function Composite, Component, YC Waveform/Vector, Colour Audio plus SCH

### Hamlet Video Scope 303

Ideal for technical areas

Composite Waveform/Vector, Absolute SCH, Full field Line Select, 5 Function memory.....

### Hamlet Video Scope 304

Ideal for technical areas

Component/Composite WF/Vector Full Field L/S, Bow tie, Parade, Coloured displays.....

RS232 control from Windows, Dos, Amiga, Procion, AVS Graphics and DTV™ systems.



# HAMLET

EXCELLENCE IN VISION

For new prices and the complete picture, call or fax us for further details:

Hamlet Video International Ltd., Oak House, Chartridge Lane, Chesham, Bucks., HP5 2SG TEL: +44 (0)494 775850 FAX: +44 (0)494 791283



## USER REPORT

# Pre Post Upgrades to Avid

by Danton Wieneke  
Vice President, Marketing  
Pre Post

**MANILA, Philippines**

Pre Post was the first company to introduce non-linear editing to the Philippines using the Avid Media Composer.

We began operations in December of 1992 with one Avid Media Composer. Initially, we set out to service the advertising industry by editing TV commercials off-line, and have cut more than 200 commercials since then.

We are currently moving into a bigger office, which will accommodate two Media Composer suites, a film cutting room equipped with an Osc/r and keycode reader, an interlock room hooked up to both Avid suites, plus support facilities.

Our efforts in research and testing for edit decision lists (EDLs), cutlists, edgecode, timecode relationships, etc., both internally and with the on-line post houses and film labs here and around the region, plus the expertise of our personnel, have now attracted people in the feature film industry looking to explore non-linear editing. We have edited two full-length feature films (*Xung Saan Xa Man Naroon* and *Kung Mawalwa Ka Pa*, both by Reynafilms) and are currently editing *Separada* by Star Cinema and a television movie entitled *Ang Magdedapo* by ROC Productions.

The speed and flexibility of the Avid



Avid's Media Composer

Media Composer really changed the way shows are cut and practically blew the minds of our clients. We have looked at other systems and found the Avid to be the best system currently available.

Although the speed of the system is one of its greatest advantages, it can be a drawback as well. Converting one-light EDLs to graded EDLs using Media Match did not fully maximize the Composer suites. Now, EDLs as well as cutlists are created in the film room, allowing the Media Composers to be fully utilized for editing.

And since our facility can translate video timecodes into negative edgecodes, no workprints are required to cut negatives, providing our clients additional savings in their post production budgets. Plus, negative cutting now becomes a shorter and

more accurate procedure and we avoid the errors that can lead to damage, such as scratches on the negative. In this way, feature film producers keep their negatives in the same condition they were in when they left the processing lab.

Working with feature films and various television commercials at the same time required the need for large memory capabilities. Pre Post has more than 45 GB of hard disk space. However, we have developed an efficient system of file management because memory never seems to be enough.

We digitize at a minimum of AVR5e video resolution because we do not want to compromise on quality. We have a dedicated team that specializes in mastering this technology, adapting to new developments and devising procedures that will keep the technology transparent to our clients. In this way, our clients get the most for their money and creativity. Pre Post has the personnel that will fully utilize these tools for the benefit of its clients. ■

*Editor's note: Danton Wieneke is a practicing cinematographer and a former broadcast producer of radio and television commercials.*

*The opinions expressed above are the author's alone. For further information on the Media Composer, contact Avid Technology (telephone: +1-508-640-6789; FAX: +1-508-640-1366), or circle Reader Service 48.*

## USER REPORT

# Panasonic Is The Key At Antietam Cable TV

by Cindy Garland  
Production Manager  
Antietam Cable Television

**HAGERSTOWN, Maryland**

Antietam Cable Television serves more than 30,000 subscribers. As befits a station named for a major Civil War battle, Antietam specializes in local documentaries and public interest programming.

Yet our biggest growth area is our advertising division, the Regional Cable Network, which produces television commercials for local advertisers and other local cable companies in nearby areas. Antietam was one of the first cable stations in the nation to undertake commercial advertising assignments.

Early in 1993, the station upgraded to Panasonic M-II acquisition and production. Previously, our 3/4" gear was under the control of a Paltex Convergence editor. Since the Convergence system did not talk to our new M-II equipment, we invested in Panasonic's AU-A950 production edit controller.

The AU-A950 orchestrates an A/B/C-roll configuration comprised of the AU-65H M-II Enhanced Series studio recorder (our master deck), AU-62H/63H Enhanced studio players and a 3/4-inch player as the three source decks, plus a Pinnacle DVE unit.

We also use a Grass Valley switcher and a Panasonic WV-F700 digital signal processing camera docked to an AU-410 M-II recorder/player for acquisition. All this equipment is used interchangeably for the station's programming and for our commercial spot production work.

With the ability to connect to seven VTRs, the AU-A950 delivers direct control of up to five VTRs, as well as a switcher, mixer, and 2000-event EDL. Other key features include its frame-accurate slow-motion control and powerful list management. Variable speed events can be "learned" in rehearsal and automatically triggered during editing. In

addition, the keyboard of the AU-A950 is designed for fast, two-handed operation.

Serial switcher and mixer interfaces (RS-422) are standard. These industry standard ports can be used to control a variety of production equipment from various manufacturers. Auto assembly with the AU-A950 can recall special effects from switchers and mixers with effects memories.

Ten GPI outputs can be used to trigger character generators, digital video processors, audio tape recorders, and other devices. All GPIs are stored in the list for later recall.

CMX- and CMX-3600 compatible lists can be stored and recalled via industry-standard 3.5-inch disks. System configurations can be dumped to disk for later recall, allowing each operator to configure the system easily for each application's requirements.

The edit controller has dramatically sped up our overall editing. For instance, when I edit, automatically configures the out-point as the new in point.

We have used the AU-A950's variable speed capabilities to produce some really impressive effects. Central control is a big plus. In addition, our staff has found the system to be user-friendly and intuitive. Even the station's college interns are amazed at how quickly they can use the controller.

The AU-A950 is a powerful system with a multitude of options that we have not even begun to explore. ■

*Editor's note: Cindy Garland joined Antietam Cable more than 12 years ago, and directed the station's successful entry into the commercial world. A graduate of Hagerstown Community College and Frostburg State University, she is currently working on an M.B.A. degree.*

*The opinions expressed above are the author's alone. For further information, contact your nearest Panasonic representative, or circle Reader Service 19.*

CONTINUED FROM PAGE 24

# Matrox Enters the Mix

As for maintenance, the Studio deserves full marks for being completely hassle-free. Not a single hardware maintenance call was required over a full year of operation. That is a very strong contrast to the traditional suite, which requires regular maintenance attention or technical expertise from the editor to resolve minor problems. Imagine a year where not a single minute of downtime can be attributed to a switcher timing error, time base correction problem or other such electronic glitch. The only maintenance necessary in one year has been mechanical, and had to do with the Betacam decks.

Most importantly though, Studio is easy to use and accessible to anyone who has a video production background. The learning curve is relatively short — two weeks on average. Then, all that is required is a little practice.

I am not an editor by trade. I have had no formal technical training. I spent the last 15 years of my life as a producer/director, working in news and current affairs, directing live programming, etc. I knew what I wanted to do. All I needed was the enabling technology giving me the means to control a greater part of my programs, especially in the crucial post production phase of my projects.

Because Matrox Studio's interface runs under Windows, the prospect of doing my own post production work did not seem so daunting. Now, some of our clients are given a crash course on the interface. They come to our facility to select their material and perform rough cut edits on their own. Our editors step

in for the final phase of the process to add the post production effects, mix the audio and so on. The clients feel more involved in the editing process, and save some money along the way.

The Matrox Studio gave us a lot of bang for our buck. A US\$20,000 hardware and software package can put you in the major league of editing. Post production adds value to programming, therefore, this platform guarantees a generous return on your original investment.

Because it resides in the PC realm, the Studio is a very "organic" product, constantly changing with software upgrades and third party developer add-ons. It is now starting to ship with a non-linear option, making it, in my opinion, the most integrated and the most flexible platform for on-line or off-line. It is an open-ended system where all Windows applications can be used in conjunction with it. Matrox works. It does the job, and is now ready for prime time. ■

*Editor's note: Jean Menard is a video producer living in Toronto, and owner of Mixed Media Production, a Toronto post production facility serving broadcast and corporate clients. Mixed Media was one of the first commercial houses in Canada to use desktop video for network broadcast production.*

*The opinions expressed above are the author's alone. For further information on the Matrox Studio, contact Marc Nadeau at Matrox (telephone: +1-514-685-2630; FAX: +1-514-685-2853), or circle Reader Service 64.*

## USER REPORT

## Raycol Speeds Up with Fast

by Paul A. Collins  
Director  
Raycol VideoArt

## LANCASHIRE, U.K.

Raycol VideoArt was established in October 1989 and at that time specialized in high quality wedding videos using a two-camera shoot.

Very quickly this progressed into the corporate promotion and training video market for which we acquired new equipment. During this early period we used both Hi8 and U-Matic SP for acquisition, and in the case of Hi8, edited onto S-VHS.

## FLEXIBLE SEARCH

During the winter of 1993 we began the evaluation of edit controllers and vision mixers with the requirement for flexibility being a priority. Our productions (and therefore our requirements) were diverse, ranging from two-hour wedding epics (A/B rolled) to tightly controlled five minute promotion videos.

After several demonstrations of traditional equipment, we realized that we could not satisfy all our needs within our budget using a mixture of edit controller, vision mixer and title generator. This prompted us to look at the fledgling desktop video market; more specifically, the Video Machine from Fast Electronic.

After one brief presentation, our technical director, Peter Raymond, and I realized this was the way forward for us. Not only did it offer total flexibility in terms of machine control, it was also well within our budget, allowing the upgrade of our VCRs to JVC 22 Series.

Video Machine included the following features which were particularly relevant to our situation: full A/B rolling; simulated A/B roll using A/X roll; multiple VCR control ranging from consumer products to broadcast equipment; graphics capabilities for grabbing and subsequent manipulation within Windows; extensive titling using popular Windows word processors or desktop publishers; VITC reading capability from consumer VCRs; timeline editing allowing quick and simple changes to be made; and wide bandwidth to handle a mixture of formats.

Obviously the above is not a complete list of features but ones which were highest in our priorities.

The system's flexibility left us little choice but to purchase Video Machine. As a user of software release 1.0, it soon became apparent that desktop video was still in its infancy because we had found a number of minor bugs which had previously gone undetected. We also had to become self-taught as training in Video Machine editing was effectively unavailable. Neither of these issues caused us great concern because the power and benefits of desktop video continued to shine through.

## READY FOR BUSINESS

Twelve months and two software releases later, we now have a stable and fully live DTV edit suite comprised of a JVC 622 player with timecode, a Panasonic FS200 edit/recorder, a JVC 822 deck with timecode, a 486 DX2-66 PC with 16MB of RAM, 500MB hard disk space and a 17-inch monitor, and the Video Machine Ver. 1.2 with Studio Control box and a jog/shuttle option.

We still produce high quality weddings,

which are now more accurately edited in half the time of manual editing. But most importantly, we can offer corporate customers cost effective, fast and efficient service utilizing the full potential of Video Machine.

This is especially true in the area of updates to existing productions. We are able to load the relevant clips onto the timeline, remove and replace the out dated section and re-record the master in a fraction of the time it took previously.

As with any new technology, there will be growing pains and frustrations, but as the market matures, these issues will lessen. In

my opinion, by adopting desktop video you can keep ahead of the competition so long as you have an open mind and accept that occasionally you will have to make compromises. It is also worth noting that due to the flexibility of desktop video, the learning curve is twice as long as that required for traditional equipment. But on the whole the benefits are enormous.

Within the next few months we will upgrade our edit suite to include a digital player/recorder for on-line, non-linear editing in order to further increase productivity. This facility will allow us to offer computer-gener-

ated animations using a combination of 3D Studio from Autodesk and Video Machine. ■

*Editor's note: Paul Collins has been involved in the computer industry for over 14 years with positions ranging from IT manager at a regional brewery to an account manager for a software house. Most recently he has concentrated in specialized service management software running under Windows. As a member of Raycol VideoArt, Paul has performed most of the tasks required in a production from cameraman to off-line editing.*

*The opinions expressed above are the author's alone. For further information on the Video Machine, contact Fast Electronics (telephone: ++49-89-502060; FAX: +49-89-50206-199), or circle Reader Service 112.*

## Ediflex Brings Power to the PC

by Andrew Cohen  
Free-lance Editor

## CULVER CITY, Calif.

It was good news when Director Paul Schneider called me to edit "Honor Thy Father and Mother: The Story Of The Menendez Murders." The bad news was that we had six days from the last day of shooting to deliver the final cut to the Fox network. But my concern at that time proved to be an easy feat, thanks to the Ediflex Digital by Ediflex Digital Systems Inc.

Having begun my editing career in film, I segued into electronic editing in 1986. It was "goodbye film...hello videotape" with the Ediflex tape system. I remained quite happy in the non-linear world until January 1994.

I did not think the efficiency of picture editing could get any better until I utilized the Ediflex Digital. Now it's "goodbye videotape... hello digital hard drive."

## STORAGE POWER

The Ediflex Digital system is comprised of a 486DX2/66 with 32MB RAM, 240MB system drive, NTSC encoder, digital audio/video board, 19-inch super VGA monitor, 20-inch Sony video monitor, VITC/LTC reader, keyboard, mouse and custom controller.

The system provides 23 hours of storage on 11 4GB hard drives and one 1GB hard drive. The small drive and one of the large drives are used exclusively for audio. The environment is Windows.

There are currently several "digital" editing systems on the market, and they all serve their users in very similar fashion — immediate access of material, quick manipulations of the material, immediate viewing of a cut, etc. All of these systems are basically computers, with their success dependent on the emergence of well-designed software that allows the editor to accomplish goals in the most efficient way possible.

The Ediflex offers features that set it apart from other systems on the market. First, the script page is displayed on the computer screen along with all the function icons. Eliminating the constant refocusing of your eyes — looking down to a script page then up at your computer screen — makes for less fatigue at the end of a 10-hour day.

Secondly, and probably the most valuable of all, is the "scan across" feature. You can, with a click of the mouse, highlight any line of dialogue or action, and play that particular line of dialogue or action as it is performed in every take printed — in immediate succession.

With the Menendez project, the director printed no less than two to three takes of every setup. The courtroom footage was endless. The performances were fantastic, and it was not always apparent which take was considerably better than the next.

However, when you can instantaneously watch a scripted line of dialogue performed 13 times in five different angles, it becomes clear which performances should stay in the film and which stay in the trim boxes.

The standard features for making a picture cut or track overlaps are extremely easy. For editors who have never worked in the world of electronic editing, the Ediflex system makes for an easy crossover.

The most difficult aspect of leaving "film" editing for elec-

tronic editing is the departure of a physical environment. That is to say, you cannot see, touch or physically manipulate your film in a synchronizer, moviola or flat bed. The Ediflex provides a simple visual display of your cuts in the form of a time line. Making changes to your cuts has a very comparable film look on the computer screen.

## DEADLINE MAGIC

Because this was my first experience in a digital editing format, I had my share of difficulties getting acclimated. In fact, knowing our tight schedule, I will admit I had moments of panic right before we started shooting, wondering whether I made the right decision in jumping into an unfamiliar editing system.

The Menendez picture was a 20-day shoot. We were getting in about 50 minutes of dailies per day. The first week was extremely difficult, as the post house was delivering dailies that were not in perfect sync, in addition to other technical flaws.

By the end of the first week, we were already four days behind, waiting for acceptable dailies to be input into the system. Once the telecine department got its act together, we kicked into high gear. After three days, I reached a very acceptable level of expertise. After a week, there was no holding me back. This system was "lightning in a bottle."

The last day's dailies were delivered on Saturday; first cut on Sunday; director's cut on Wednesday; screen for the network on Thursday. The new technology allowed me to maintain a high standard in the face of a "no time" deadline.

The Fox executives responded to our film with concerns that the murder sequence was too violent. Succumbing to pressures from Washington and the anti-violence coalition, everybody was in a tailspin as to what to do.

Fox executives wanted to censure themselves and cut the murder sequence entirely, which sent the director and producers reeling. Everybody came into the editing room where, in a matter of a few hours, we succeeded in yielding no less than 20 versions of the murder sequence, each one less violent than the previous. Saving cuts and different versions, combining versions, and resequencing lifts were all a snap. I was able to provide something for everyone.

Lastly, the Ediflex Digital offers an indispensable feature that has no button or icon to click on — the service and technical support of Ediflex Digital Systems. Any problem or "how to do" was only a phone call away. Even when I pressed the wrong buttons and could not find my way, Ediflex tech support came to the editing room at midnight to get me out of my troubles.

Since my initial experience with the system, Ediflex Digital Systems has made countless improvements in the software, based upon suggestions from myself and other users. All in all, I am most happy with my investment in the system. ■

*Editor's note: Andrew Cohen, A.C.E., has been a free-lance film and television editor for 10 years. He is a member of the Motion Picture & Videotape Editors' Guild, as well as the American Cinema Editors.*

*The opinions expressed above are the author's alone. For further information, contact Tony Schmitz at Ediflex (telephone: +1-818-502-9100; FAX: +1-818-502-0052), or circle Reader Service 30.*

## USER REPORT

# Quantel Shines at Video Lab

## South African Facility Installs Edit Box To Complement a Long List of Quantil Gear

by Mike Smit  
Chief Executive  
Video Lab Group

### JOHANNESBURG, South Africa

The Video Lab Group has provided a broad range of production and post production facilities to the television industry in South Africa for the past 12 years.

We have traditionally used analog one-inch Betacam SP and more recently D-3. When the trend moved toward linear digital post production, we delayed upgrading as these first-generation component digital editing systems offered little extra besides the improved technical quality, specifically multigeneration capabilities.

### COMPOSITE FUTURE

We already had a Flash Harry, a Sony D-1 machine and a Rank 4:2:2 telecine achieving excellent results and productivity. The existing edit suites — equipped with Grass Valley 200s, ADOs and D-3 machines — were efficient and reliable, giving us little reason to take the major step of upgrading to a component digital suite.

When we heard about the introduction of

the Henry, we sent two of our staff to London for the launch. They came back very impressed, although the system seemed to have a few flaws when comparing it with linear digital suites. Still, the potential was there. What appealed to us was the "total solution in a box."

This image from Video Lab shows Henry's titling and grading ability



### POST IN A BOX

The Henry was purchased because we get a complete edit suite and painting and compositing facility in a box. Another deciding factor was the minimal amount

of engineering and maintenance skills required, as this was a small facility and we did not want to employ the same level of expertise that we had in our Johannesburg office.

The system was installed, and although the first software version was not the greatest, it improved with every release. The service we provided quickly became very acceptable to our customers.

Paul Merrington, our senior Henry operator in Cape Town, reports that the Henry is

**The Henry was purchased because we got a complete edit suite and painting and compositing facility in a box.**

the finest machine he has every operated.

"Its capabilities of auto-conforming EDLs, editing, color correction, texturing, keying, DVE facilities and vary speeding are the cleanest and most versatile I have ever encountered," he said. "The Paintbox in the edit process adds another dimension to multilayer editing and special effects, allowing matting and painting to be achieved simply and accurately.

"The new software package due to be released at the end of July will not only speed up post production but will enable clients to play a more constructive role in the process of post production. For once, the service from a manufacturer has been excellent and all problems have been dealt with efficiently and professionally. One criticism I have is the reliability of the software, although it is improving all the time."

## KTVL Goes On-Line with Immix

by Kingsley Kelley  
Program Dir./Operations Mgr.  
KTVL-TV

### MEDFORD, Oregon

As a commercial television station in a small market, KTVL competes not only for advertiser dollars, but for production revenue as well. The dilemma we faced was finding more editing time for our advertisers without investing in a second edit suite. Our answer was the ImMIX VideoCube.

KTVL's decision to purchase the VideoCube was based on the broadcast quality of its output video — it was clearly superior to anything else on the market for the price.

### IN THE MIX

Our intention was to use the VideoCube exclusively to produce commercials for local advertisers. We could get a client's ImMIX spot on the air for less money, and with a quicker turnaround time. To our surprise, we discovered that the low hourly rate has made the VideoCube ideal for production of short form industrial and institutional programs.

The basic ImMIX VideoCube system has a fixed storage capacity of one-hour of information (a purchase option can add up to four hours of additional hard storage). But through use of a Cipher Tape Drive, we can archive up to one hour of audio/video information on individual client tape.

This adds infinite storage capacity, but the real-time information transfer rate is rather tedious and the user interface is clumsy, so pre-planning is essential.

In daily operation, the use of the VideoCube exploded after KTVL acquired Alan Balzer. Apple Macintosh user and video pro. He is also the station's producer/director and primary ImMIX producer/editor.

Balzer says that if users understand editing basics and the "ins" and "outs" of Macintosh operation, then they can run this system. In just five months, Balzer has become proficient using the ImMIX in practically any situation.

Balzer works directly with clients on the Cube. They are initially in awe of the novelty, but then they begin to realize just how functional

it can be. The effects are not "pre-programmed-looking," and most of the time they allow you to input your own creative personality.

This system also works well with other software, including drawing programs and even word processors. We can create our own artwork or take telephone poles out of a shot. Our clients also bring in their own artwork on disks.

### ENHANCED MOVES

The software upgrades from ImMIX have been good at addressing our problems and enhancing our capabilities. Balzer says. The latest upgrade, for example, added the ability to combine multiple elements into one, allowing for digitally clean, complex layering of images or effects. It also added title rolls and a slo-mo, fast-mo reverse-motion function.

We look forward to ImMIX making the titling system more like a traditional character generator, because right now the applications are limited.

If ImMIX continues to respond so well to user suggestions and continues its excellent support when we call with a problem, the company is going to be hard to beat.

After struggling through some early bugs in the system and spending some time suggesting improvements to the manufacturer, the ImMIX VideoCube has become an essential part of the KTVL Creative Services operation.

In the not too distant future, I suspect there will be something very much like an ImMIX workstation at each producer's desk, and probably hooked up to every advertiser's home video camera as well. ■

*Editor's note: Kingsley Kelley is KTVL-TV's program director/operations manager. Alan Balzer is producer/director. Together, they have worked in broadcast production in the Medford market for a total of 20 years in a variety of positions and facilities. KTVL Creative Services creates and produces commercials and programs for local and regional clients, as well as special broadcast programming.*

*The opinions expressed are the author's alone. For further information, contact Helen Shortal (telephone: +1-410-783-0600; FAX: +1-410-783-0606), or circle Reader Service 36.*

### WAIT AND SEE

After experiencing the potential of the Quantel Henry at our new Cape Town facility, we postponed our decision to install a linear digital editing system in Johannesburg. The only reason to consider such a system in the first place was the fact that it seemed more cost-effective because much of the infrastructure existed, like an edit controller, D-1 machines and monitors.

Quantel has now launched the Edit Box, which suits us because we are already familiar with Henry. The great advantage of the Edit Box is that it can be purchased as a basic digital editing system, and then options can be added as required.

In January of this year, we installed an Edit Box fully optioned with paint, texturing, max and a third layer that has proven hugely successful. The only reason we would consider a linear tape-based digital edit suite is for long form work, but we will await the release of the new software package for the Edit Box before taking this route.

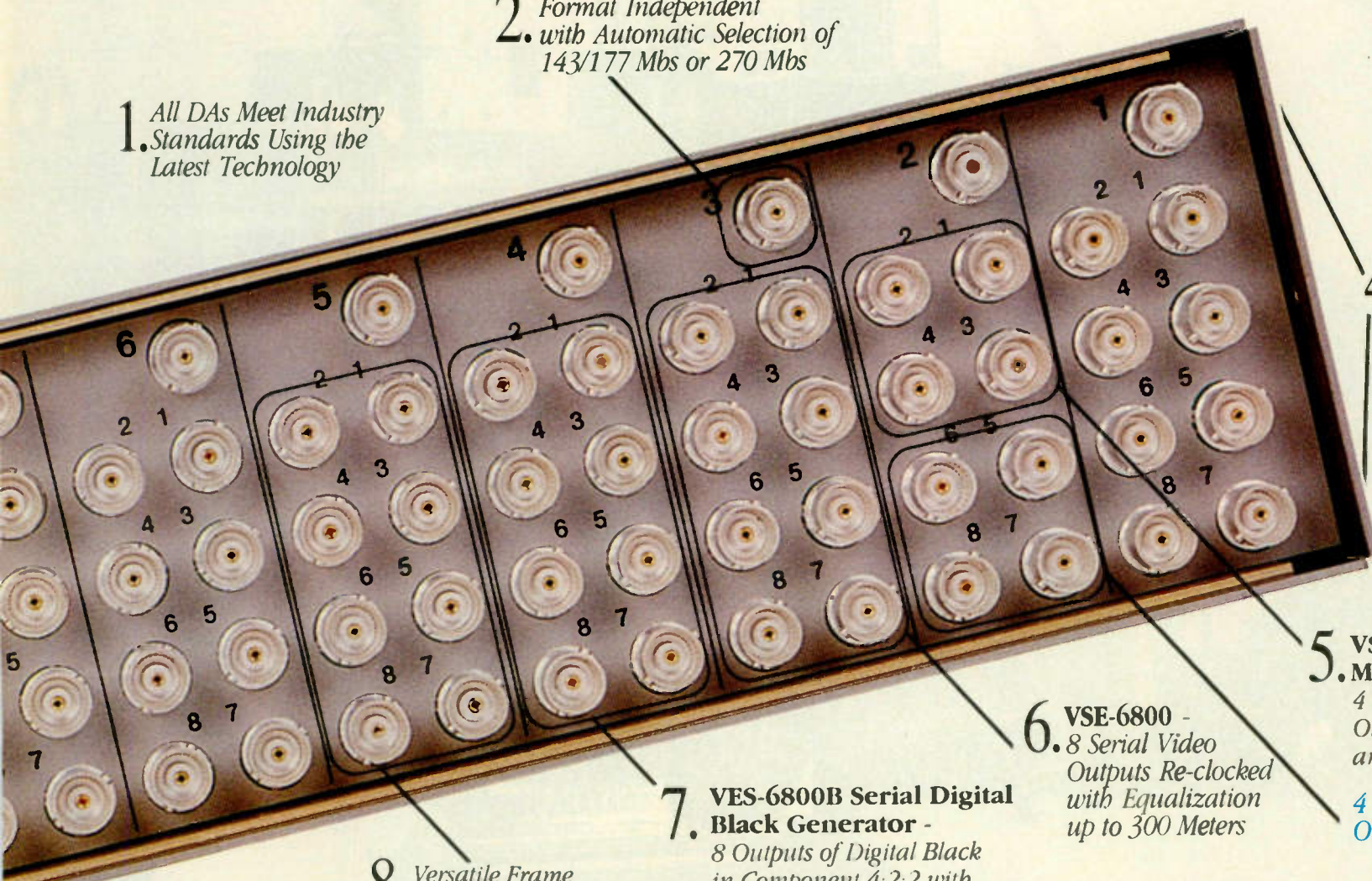
However, for most other types of jobs, our only question about the viability of replacing a conventional edit suite with an Edit Box has been answered. It works. We now watch the development of this line of products with great anticipation. ■

*Editor's note: As chief executive of Video Lab Group, Mike Smit is responsible for all facility operations and is instrumental in the selection of new equipment.*

*For further information on the Henry or the Edit Box, contact Quantel (telephone: +44-635-48222; FAX: +44-635-46361), or circle Reader Service 27.*

See us at I.B.C. '94  
Amsterdam, Sept 16-20

# Why Have We Sold Thousands Of Our Serial DAs?



1. All DAs Meet Industry Standards Using the Latest Technology

2. Format Independent with Automatic Selection of 143/177 Mbs or 270 Mbs

3. Frame Designed for Over 360 Mbs

4. 10 Modules in a 2 RU Frame (4 Modules in a 1 RU Frame)

5. VSM-6801 Monitoring DA - 4 Serial Video Outputs Re-clocked and Equalized  
4 Monitoring Video Outputs of PAL/NTSC

6. VSE-6800 - 8 Serial Video Outputs Re-clocked with Equalization up to 300 Meters

7. VES-6800B Serial Digital Black Generator - 8 Outputs of Digital Black in Component 4:2:2 with +3 to -5 Lines of Phasing with an Analog Black Reference

8. Versatile Frame Accepts Other Modules such as VES-6800 Serial Digital Logo Generator

9. EMI Tested to Comply with FCC Part 15

10. VSR-6841 Serial Digital Video Router  
Digital Component or Composite Video. Two re-clocked serial outputs Local and/or remote operation

## (And The Price Helped!)



The Digital Glue For Your Digital Systems.

Leitch Video International Inc., 220 Duncan Mill Rd. #301, North York, ON, Canada M3B 3J5 Tel: (800) 387-0233 or (416) 445-9640 Fax: (416) 445-0595  
Leitch Europe Limited, 24 Campell Ct., Bramley, Basingstoke, Hants., U.K. RG26 5EG Tel: +44 (0) 256 880088 Fax: +44 (0) 256 880428  
Leitch Incorporated, 920 Corporate Lane, Chesapeake, VA 23320 Tel: (800) 231-9673 or (804) 548-2300 Fax: (804) 548-4088

# SATELLITE SOLUTIONS



## THEY COME IN ALL SHAPES AND SIZES

And who's the creator of all these shapes and sizes for the last 15 years, worldwide? Harris Allied.

From news gathering and network programming to teleconferencing and business, government and emergency communications, we have your solution.

We offer you the high performance of KU or C-Band systems in analog or digital. And we can design this solution in the shape of a simple flyaway uplink to the size of a redundant network quality uplink.

To make a 15 year old story short, just remember Harris Allied... Satellite Solutions.

 **HARRIS  
ALLIED**  
SYSTEMS  
Television and Satellite Systems: (606) 572-6880