

TV Technology

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Klystrode to Cut Costs

NAB Invades Dallas Center

Washington DC ... UHF TV transmitter efficiency, digital recording, improved NTSC, high definition production and the rapid proliferation of TV multichannel sound (MTS) promise to be the main attractions in both sessions and on the exhibit floor at the annual NAB Convention and Broadcast Engineering Conference.

"Tuning In America" is the theme of the event, the largest broadcasting convention in the world, which will be held 12-16 April at the Dallas Convention Center.

The convention, which will also examine the latest SNG gear, the RF radiation controversy, spectrum efficiency and new FCC policies, will center on a rather atmospheric theme—"broadcasters' unique relationship with their local communities," according to NAB.

There will be 305,000 square feet of exhibit space in the two-level Dallas Convention Center, down slightly from the 315,000 square feet at last year's convention, held in Las Vegas.

The reason for the decrease, according to NAB Exhibits Director Ed Gayou, is that the Dallas convention complex does not have as much floor space as the combined Las Vegas Convention Center/Hilton Hotel set-up used last year.

Unlike the 1985 show, there will be no separate TV and radio halls, Gayou added. Both floors will feature a mix of radio and TV exhibits.

As usual, there will be several new
(continued on page 15)

by David Hughes

Philadelphia PA ... Heralded as a "major jump" in UHF TV transmitter efficiency, new klystrode equipment will be unveiled at the NAB's April convention, with plans to have it available to broadcasters by fall.

Comark Communications said it will display a 60 kW "KS" series klystrode amplifier that it claims can deliver significant gains in UHF TV transmitter efficiency, well above the pulsed klystron "S" series technology it exhibited at last year's NAB convention.

Varian Associates' EIMAC Division said it will also exhibit a klystrode, the X-2252.

NAB VP/Science and Technology Tom Keller said the klystrode developments are "fantastic, a very big UHF improvement."

"The world (of UHF TV transmission) is about to change—dramatically," said Comark President Nat Ostroff. "Broadcasters will have to develop a new philosophy of UHF."

Higher efficiency

The klystrode reaches an efficiency level 50% better than the best of today's existing klystrons, according to Ostroff. "The klystrode has one-half the power drain of a klystron and the most modern equipment."

A typical station could see a savings of between 40% and 50%, he said.

Last year's pulsed klystron delivered a 77% "efficiency" rating—which is the peak RF output power compared to the average DC input. Ostroff said "efficiency" should actually be referred to as the "figure of merit," since technically an efficiency level of 100% cannot be exceeded.

On the same scale, the klystrode delivers a 100% or better figure of merit, according to Ostroff, and that is without

a pulser and its control gear.

"It's a far simpler, more reliable situation," he said.

UHF expenses

Ostroff explained that increased efficiency will reduce power costs at UHF stations, which run significantly higher power levels to get the same coverage as a VHF station.

In order to cover the same general area of a 50 kW to 300 kW VHF operation, a UHFer must run at power levels in the thousands-of-kilowatts, with an allowable maximum of 5 MW. Both the physical size and capital costs of a UHF transmitter are greater than VHF units.

With the new development, UHFers
(continued on page 7)



64th Annual Convention

Special Preview Coverage
pp. 15-34

CBS Commences TV Stereo Transmission

by Edward Wytkind

New York NY ... CBS Television Network was scheduled to inaugurate stereo broadcasting with the Grammy Awards telecast on 25 February, according to an announcement in January by Network President Tony Malara.

This decision marks a reversal by CBS, which late last summer said it was not convinced that stereo would enhance TV programming. At that time, the network maintained that stereo is best utilized with music-oriented programming and that regular network programming is not necessarily dominated by music.

However, CBS Broadcast Communications Director Pamela Haslam said the network has been "evaluating" stereo "all along." This decision, she said, follows

CBS's position that stereo enhances music programming.

"What better way to try out our stereo facility than with the upcoming Grammy Awards," Haslam said.

While CBS said it will go ahead with stereo broadcasting, it has not announced when it will commence in-house stereo origination. For now, network officials emphasized that CBS will only "pass through" stereo programs that are "produced for or delivered to CBS in stereo."

Haslam said that the first quarter of 1987 will be the "earliest" that all CBS-owned stations will be able to broadcast in stereo.

Malara said, "Plans for the eventual upgrade of CBS Television Network origination and production facilities for stereo will be developed at a pace consistent with the growth of home television stereo sets and of the pass-through capability of CBS affiliate stations."

Currently, CBS owned-and-operated WCAU, Philadelphia, is the only CBS TV station broadcasting stereo. Approximately 10% of the CBS affiliates are converted for stereo.

NBC and PBS already broadcast in stereo, while ABC announced last year that it could originate stereo broadcasts on a "special event basis," and that a complete stereo conversion would be complete before the summer of 1986.

In addition to the Grammy Awards, The Twilight Zone (beginning 28 February), a 16-18 March mini-series entitled, "If Tomorrow Comes," and a number of theatrical programs will be passed in stereo, Haslam said. CBS is also planning to produce the 1987 Super Bowl and other major sports events in stereo.

"There is no question that down the line, everything will be in stereo," Haslam added.

THIS MONTH IN TVT

• IN THE NEWS:

Quarterly union section, SBE convention plans, guest editorial from NCTA, NBC announces SNG system, and SMPTE reaches agreement on a component practice.

• MULTICHANNEL SOUND, p. 8:

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• COMPONENT VIDEO, p. 9:

Pam Peterson and Bob Paulson kickoff new feature section, and Microtime reviews T-220 FIT TBC.

• ENGINEERING, pp. 10-12:

Philips reviews VITS/ITS product, Roy Trumbull concludes his series on dBase II, and Bill Ellis discusses electrical shock.

• PRODUCTION, p. 13:

Jay Ankeney examines the Montage editing system.

• NEWS OPERATIONS, p. 14:

John Premack packs his bags for an assignment abroad.

• TELECINE & FILM BUYERS GUIDE, pp. 37-43:

User reports on Rank, Bosch, Abekas, Ampex, Arri and Piclear equipment, and a look at color correction by CCCI.

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(NABET) and the International Alliance of Theatrical Stage Employees and Moving Picture Machine Operators of the United States and Canada (IATSE).

The following is an update of major broadcast union activities. To have your concerns included in this quarterly section, call or write Edward Wytkind at TVT.

NABET/WKRN dispute continues

At press time, Knight-Ridder's WKRN, Nashville, TN, was still involved in a bargaining dispute with NABET, which represents about 60 station employees, including technicians, photographers and newsroom personnel.

According to WKRN President Art Elliot, January's negotiations produced the "first sign of progress" with the adop-

tion of an anti-strike measure and other new provisions.

The central issue in this 10-month dispute is NABET's insistence that the station renew the old contract (signed by the previous station owner, General Electric). Elliot said the old contract, which expired 1 July 1985, "is one of the worst in the TV industry."

Among other things, Elliot said the contract limits management's ability to

hire and fire without going through "strenuous routines."

Elliot also criticized the union's insistence on revised nighttime pay differentials.

"They want a 1 PM differential . . . Since when is 1 PM nighttime?" he asked.

NABET said management's last offer, which included a 12% across-the-board annual raise, was insufficient because it would strip employees of certain rights involving "premium pay" for talent fees, holidays, overtime and night shifts, and threaten job security.

NABET, led by International Representative Bill Davis, has instigated a viewer and advertiser boycott campaign. The Tennessee AFL-CIO delegation recently offered assistance by passing resolutions in support of the boycott.

Elliot said reaching a settlement is de-

pendent upon union negotiators. "We're ready to settle. I believe the union is stalling due to our firm stance."

NABET/ABC

After their seventh round of negotiations, NABET and ABC are still divided on most key issues, including salary and other economics, equipment and duty jurisdiction, video tape staffing, discharge and suspension, policies for live and taped shows produced outside the studio, and the use of non-NABET maintenance personnel.

At press time, talks were scheduled to resume on 4 March. The previous contract expired 31 March 1985.

Throughout negotiations for the more than 3,200 ABC employees, bargaining teams have, for the most part, resorted to off-the-record talks in an effort to end the log jam over key contractual issues.

At present, there is no indication of a time table for ratifying a new agreement.

Tech strike settled

NABET and Post Newsweek-owned WDIV TV, Detroit, settled a 33-day strike of 72 full time and 14 temporary technicians in late December when a new three-year contract was signed.

A 19 November walkout was spurred by a jurisdictional dispute over certain electronic equipment including graphics gear, and disagreements surrounding economic matters, according to NABET.

However, after returning to the bargaining table, the two sides were able to reach a common ground on issues central to the dispute, the union said.

New wage levels will provide a 5.4% increase the first year, 5% the second year and 1.2% the final year.

NABET/WJLA dispute

Another dispute brewing involves Albritton Communications-owned WJLA TV, Washington DC, and NABET over whether the union is certified to represent a newly organized unit of station producers and news personnel.

According to NABET, the station crew unanimously certified the union in November 1984 by a vote of 14-0. However, WJLA said the union should not have been certified because some of the voting employees are considered management.

NABET negotiator Bill Davis said the National Labor Relations Board (NLRB) denied Albritton's challenge to the certification.

Davis added that WJLA is appealing the NLRB ruling. Meanwhile, the labor board has asked the US District Court of Appeals to enforce its ruling so that negotiations can commence.

Despite NABET's claims of a labor disagreement, WJLA VP Joe Rose said there was no dispute, and chose not to comment on the recent NLRB decision.

At present, the union said WJLA "continues to refuse to bargain with NABET for an initial unit contract." WJLA would not comment on the matter.

New NABET contracts

NABET and Capital Cities Communications-owned WKBW TV, Buffalo, reached a three-year agreement for 71 employees represented by Local 25. Those affected include engineers, production crews, photographers and reporters.

WKBW was sold to Queen City Broadcasting last November as part of Capital Cities' station spin-off after its takeover of ABC. According to NABET, the new owners will assume the contract.

(continued on next page)

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(continued from previous page)

The agreement provides 10% raises for employees at the "bottom third" of the pay scale, 7.5% for those at the middle and 5% for workers at the top.

Other provisions include increased meal pay, seniority rights for temporary employees, vacation after six months, increased hazardous duty pay, less obligations to work overtime and limits on news stringer assignments.

NABET also announced a three-year agreement for 48 engineering, news and production workers at Wilson Communications-owned WWTW TV, Cadillac MI, represented by Local 410.

The station agreed to pay all pension premiums, which amounts to a net 7% increase in take-home pay, in addition to a 2.5% first year wage increase, NABET reported.

The agreement also calls for dental and prescription coverage, improved medical coverage, and a 4% second year raise and 5% third year increase. Employees will also receive time-and-half wages for hours worked over a 45 per week limit.

Barely averting an authorized strike, NABET and Meredith Corporation-owned WTVH TV, Syracuse NY, ratified a new 30-month agreement for the station's 31-member engineering and production crew.

Negotiated salary increases, which are retroactive to 1 September 1985, provide 6% raises the first year ending 1 March

Union Quarterly

1986, and a 3% pay raise each of the next two years. New top weekly third-year scales will range from \$598 to \$677.

In addition, employees will receive a savings and investment plan, as well as improved vacation, medical coverage and grievance and arbitration rights.

For more information, write NABET at 7101 Wisconsin Ave., Suite 800, Bethesda MD 20814; or call 301-657-8420.

WLNE/IBEW dispute lingers

Still arguing over an "open shop" policy, WLNE TV (Channel 6), New Bedford, MA, and IBEW appear no closer to settling an almost three-year-old labor dispute. At press time, a tentative bargaining session was scheduled for late February.

An open shop policy would allow the station to hire both union and non-union employees.

The station said it only wants to give employees the "right to work" without joining a union. But IBEW said WLNE is attempting to weaken the union's collective bargaining power.

According to labor consultant Paul McCarthy, the two sides are "still slug-

ging it out." He said the union has achieved strong support from various labor and community organizations.

WLNE management was not available for comment.

So far, IBEW has distributed about 5,000 bumper stickers urging viewers and advertisers to "Switch-off 6." However, no conclusive effects from boycott efforts have been reported.

In other matters, IBEW's Reginald Gilliam, director of the union's broadcast department, said there were no national-scale negotiations currently taking place. The CBS national agreement for more than 1,800 employees, ratified in December 1984, expires in 1987.

For more information write IBEW at 1125 15th Street, N.W., Washington DC 20005; or call 202-833-7000.

UHF Tests

by David Hughes

Washington DC ... UHF TV broadcasters and land mobile radio representatives have agreed to hold a series of tests to evaluate land mobile interference to broadcast picture quality.

At a 27 January meeting, the UHF TV/Land Mobile Radio Technical Advisory Committee, which is studying the issue of UHF TV spectrum sharing and will report to the FCC, voted to conduct the interference tests.

However, UHF TV and land mobile representatives still had some areas of disagreement regarding the test parameters. As of early February they were still working to develop a "final plan" for the tests, according to Advisory Committee Chairman William Torak, of the FCC's Spectrum Management Division.

The interference tests, which will seek to determine how much land mobile interference a UHF broadcast signal can accommodate without viewer perception, are scheduled to be held at the CBS Technology Center in Stamford, Connecticut in mid-February, with the results analyzed in March.

Those results will be contained in a report the advisory committee will present to the FCC, which is scheduled to vote this summer on a plan to increase land mobile sharing of the UHF TV band.

In order to conduct the tests, the advisory committee needs a 60-day extension of its 7 March deadline. While it had not received word as of press time, Torak said he did not expect any problem getting the extension.

Association of Maximum Service Telecasters VP Greg DePriest, who attend the 27 January meeting, said the tests results would be "well worth the wait."

For more information on the advisory committee contact William Torak of the FCC at 202-632-7025.

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SBE Announces Show Details

by Edward Wytkind

St. Louis MO ... Following a 20 January meeting held to firm up details involving its first national convention, the Society of Broadcast Engineers (SBE) announced prices, technical sessions and other details about the event, which will take place 14-16 October in St. Louis.

The convention exhibit area will be coordinated by the SBE's St. Louis chapter, while the engineering conference will be run by *Broadcast Engineering* (BE) magazine technical consultant John Battison, the former head of the now defunct Ohio State University technical conference

(WOSU).

This BE/SBE joint venture was first announced last year at the St. Louis SBE convention. According to SBE President Richard Rudman, the society was "tired of living in the shadow of NAB."

Attendees will be able to enter the exhibit floor free of charge, but must bring some sort of identification to prove their connection with the industry.

At press time, SBE reported that more than 100 10x10 booths have been sold to more than 47 manufacturers at a \$525 per booth price.

The technical seminar will cost \$25 per attendee, according to Rudman. All

funds for the exhibit area and seminar will be channeled through the St. Louis SBE chapter, and BE will invoice the SBE to cover its costs in producing the engineering sessions.

The session schedule includes a look at new technological developments, an FCC panel, a "nuts and bolts" discussion and "New Frontiers for Audio and Video."

In a related matter, at a 16 January Executive Committee meeting held in Washington, DC, the SBE modified an alleged product endorsement it gave to BE in return for promotional support and editorial space in the magazine.

The original endorsement was made at a 26 September 1985 SBE Board of Directors meeting in Syracuse, NY, where BE Editor and SBE *Signal* Editor Jerry Whitaker presented the board with a "proposal for cooperation" between SBE and BE.

"In return for a statement from SBE about the value of BE, the magazine will provide free advertising and other types of publicity for the Society," the proposal said, according to the minutes of the meeting.

The SBE board then unanimously approved a motion made by SBE Treasurer Wally Dudash: "The Board of Directors recognizes *Broadcast Engineering* magazine as the preeminent technical publication serving the broadcast industry."

The language of this endorsement was later approved by SBE attorney Chris Imlay, according to Rudman.

However, at the January Executive Committee meeting in Washington DC, Stevan Dana, SBE member and publisher of both *TV Technology* and *Radio World* newspapers, voiced concerns over the legitimacy of the endorsement and the ambiguity of the financial relationship between SBE and BE.

Dana said the Dudash statement amounted to a product endorsement, and it was improper for SBE to engage in such activity.

Later that day, Rudman announced the society would officially change the endorsement to "a preeminent monthly technical publication," as opposed to "... the preeminent ..."

However, Rudman maintained that the SBE board had enough industry evidence to issue both the original and revised statement.

"This (revised statement) should not be misconstrued as anything other than a clarification," SBE VP Jack McKain explained.

A Federal Trade Commission (FTC) spokesperson told *TV Technology* that a "material claim" (endorsement) with potential for "legal significance" must be "substantiated" with proof. Such a claim cannot even be made unless the organization involved in the endorsement has gathered substantial facts that support the action.

However, the spokesperson said an investigation into the particular matter would be necessary to determine if any impropriety occurred.



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TV Dishes

Washington DC ... At a meeting 14 January, the FCC voted to adopt "limited preemption" of state and local regulations "which differentiate between satellite receive-only antennas and other types of antenna facilities."

State and local regulations that do not fall under the FCC's preemption ability include restrictions that "have a reasonable and clearly defined health, safety or aesthetic objective."

The Commission said it will seek to preempt local rules that impose "unreasonable limitations on, or prevent reception of," satellite delivered signals on receive-only antennas, or impose "excessive" costs on the users of earth stations.

"This action ensures that state and local regulations will not interfere unreasonably with the federal right to construct and use antennas to receive satellite-delivered signals," the FCC said.

For more information call Rosalee Gorman of the FCC at 202-634-1781.

Cable Won't Accept Second Class Status

Editor's note: The FCC is currently considering a proposal to allow cable operators access to the 2 and 7 GHz broadcast auxiliary bands (Docket GEN 82-334). The following is the National Cable Television Association's VP of Science and Technology Wendell Bailey's views on the proposal.

by Wendell H. Bailey

Washington DC ... Last year, when the FCC offered to allow the cable industry to share the frequencies used by broadcasters for aural transmissions, the groups representing broadcasting put up a strenuous opposition. This year, it looks as if the Commission is going to do virtually the same thing but with the video ENG bands.

A look back at the NCTA filings on this matter will show at least half a dozen pleadings encouraging the FCC to stop treating the radio spectrum as if the corporate identity of the licensee made a difference.

Cable news teams

With the growth of cable television in the urban marketplace, the need for locally-originated news and public event programming has begun to expand. Local cable operators have started to put together the news teams and their associ-

Call the author at 202-775-3637.

ated technical crews to perform the job that the community demands of them.

It is true that the amount of demand for this type of service is still small to date, but it is growing and we expect it to increase as the efforts of cable operators to serve their communities increase.

The most common concern of broadcasters seems to be that the bands in question are already severely congested, and that the addition of a group such as cable will lead to chaos. I respectfully disagree.

Guest Editorial

We are talking here about the exact same use of the bands by technicians and engineers as that which is currently the practice. How does the current crop of users cope with too few frequencies and too many crews? How do the incumbents deal with new licensees in the broadcast service who have a "legitimate" right of access to this service? The answer is coordination.

In case there is any doubt about the cable industry's plans, let me state for the record that it is our intention to be fully and completely involved in the local coordination activities directed towards these bands.

Wherever these groups exist, we will seek to be first-class members of the appropriate committees, and whenever there is work to be done to make the fullest use of the bands possible, we will be prepared to shoulder our share of the load.

No favoritism

For those who say that it will never work to let an "untrained" group of users into so sensitive a situation, let me state that this sort of elitism is the only thing that will cause unresolved animosity between the various groups who will be co-users in the future.

The plain and simple truth is that no one has a right to a favored treatment at the expense of others. The cable industry will not tolerate being treated as a second-class citizen any more than a broadcaster would.

If we all keep this in mind, then the natural interests of the people involved will resolve any day-to-day conflicts that may arise, and the public which both groups seek to serve will be the beneficiary.

Component Video Technology

Washington DC ... To coordinate our coverage of the growth and development of component video technology, this month TVT introduces a new regular section, *Component Video*. See page 9 for kick-off articles by Pam Peterson, Bob Paulson and Microtime.

Should an organization such as the SBE engage in product endorsements? Is it appropriate for the editor of *BE* magazine—an SBE member who is also the editor of SBE's newsletter, *The Signal*—to suggest that the SBE endorse *BE* in return for advertising space? Does this type of activity constitute a product endorsement?

While the answers to these questions seem obvious to us, it appears that they weren't obvious to the SBE Board of Directors last September 26th.

Certainly most would agree that the society is an important organization in the industry, and that anything it can do to strengthen itself is wise. But, if the SBE feels it can benefit from an alignment with an industry publication, it must do so in a manner which does not demean the society.

SBE/BE: To Whose Benefit?

It should have been obvious to the members of the SBE board that the publication endorsement they were asked to give would be used, or misused (see sales letter below), in a competitive selling environment.

Fortunately, during the recent SBE Executive Committee meeting, the wording of the publication endorsement was changed slightly so that it no longer has much meaning. But this action neither undoes damage already done nor relieves the board from the responsibility of defining its relationship with *BE* in detail. Who is benefiting, how and to what extent?

This incident outlines a longstanding SBE shortcoming—poor communication between the leadership and the membership. At the minimum, chapter chairmen should have been advised of the *BE* endorsement, if not asked for an opinion *before* a vote was taken by the board.

As with the name change incident a few years back, the board would be better off postponing voting on matters of great importance to the society until it solicits the opinions of members. This can save the board from taking the wrong steps.

In this case, the SBE President and Board of Directors need to be much more businesslike in their current and future arrangements with *BE*. The appearance of improper action must be avoided at all costs in order to maintain credibility, a quality that is crucial for any professional society.

Lest we be accused of "sour grapes," it should be noted that neither *TV Technology* nor its sister publication *Radio World* is interested in aligning itself editorially with any trade organization or special interest group. As news publications, we cherish our editorial independence.

—TVT

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Microwave Band Plan Opposed

by David Hughes

Washington DC ... Broadcasters and other users of the 2 and 7 GHz microwave bands have filed comments critical of a FCC plan to impose minimum path lengths.

In its continuing effort to increase spectrum efficiency, the FCC released a second Notice of Proposed Rulemaking (NPRM) to relax eligibility restrictions on microwave spectrum used by broadcasters.

The FCC proposed imposing "minimum path-length criteria" on fixed links to "promote the use of high frequencies for short paths and low frequencies for long paths."

The proposed minimum length limits include 17 km in the 1850 MHz to 2110 MHz range, along with the 6425 MHz to 7125 MHz range, and a 5 km minimum length in the 12.2 GHz to 13.25 GHz range.

The FCC said existing systems would be grandfathered. It would also allow slightly longer links in uncongested areas "so long as their operation would not preclude additional links operating in accordance with the criteria."

Plan criticized

The Duluth-Superior Area Educational Television Corporation (DSAETC), which owns WDSE TV, said that if the FCC were to impose minimum path length requirements, two of its present fixed stations would be required to vacate what already is an under-utilized band in the area.

The corporation said it operates 10 mi-

crowave stations that would be affected by the proposed rules.

"The Commission must maintain flexibility in its 2 GHz microwave licensing procedures to adequately secure the spectrum efficiency requirements from major market conditions to smaller market conditions," DSAETC said.

It asked the FCC to grandfather present fixed 2 GHz operations and allow future fixed use of the 2 GHz band in market areas like Duluth-Superior where the band is under-utilized.

It also asked the Commission to adopt antenna gain and transmitter power requirements for fixed 2 GHz users, and the minimum power necessary for mobile ENG users.

Harte-Hanks Communications TV Group VP/Engineering Ray McMillian said minimum path lengths for fixed 2 and 7 GHz will present problems.

One of Harte-Hanks' stations operates a five mile path on 7 GHz. Moving to a higher frequency would not be advisable, McMillian said, because the path is located over water.

"Establishment of minimum path

length criteria will increase complexity and cost of new multi-hop installations," according to comments filed by the Arizona Department of Public Safety.

Noting that all equipment manufactured for higher frequency bands involves "digital" tuning, the Arizona group said "licensees operating analog systems may not find equipment available for short paths at 18 or 23 GHz."

Minimum path length standards "will not relieve current congestion problems because of grandfathering, and will have very limited effect upon future use patterns," the group added.

Idaho's Bureau of Communications, which operates an extensive microwave system, said the minimum path length standards would "seriously affect" the state's operation of its communication system and its future expansion.

Band sharing

Also contained in the same docket is a plan to permit cable networks, individual cable systems and broadcast networks access to the 2 GHz (1990-2110 MHz) and 7 GHz (6875-7125 MHz)

broadcast auxiliary bands, which broadcasters use for STLs and ICRs.

However, the proposal would also give broadcasters increased access to the 6.4 GHz common carrier/broadcast auxiliary band (6425-6525 MHz). In addition, eligibility requirements for the 6.5 GHz private band would be relaxed.

In opposing the plan, Harte-Hanks' McMillian said allowing non-broadcasters' access to the bands "can only create additional problems and potential interference to broadcasters."

"Most broadcasters use 2 and 7 GHz for their STL and this is their lifeline," he said. "Broadcasters understand this; however, we are not so sure that others would be as dedicated to protecting this lifeline."

The Arizona Department of Public Safety, which operates an extensive microwave system, said it does not object to sharing the 1.8 GHz and 6.5 GHz private microwave bands "with other users having similar requirements for 24-hour per day, immediate urgency, two way communications."

The NPRM was released in November 1985. Action is expected this spring. FCC docket number is GEN 82-334. Contact Donald Campbell of the FCC at 202-653-8171.

NBC Announces SNG System

by Edward Wytkind

New York ... NBC News has announced it will start a nationwide affiliate satellite news gathering (SNG) system, dubbed Skycom, at a total cost of \$100 million spread over the next 10 years. According to NBC News President Law-

rence Grossman, the system should be fully operational before the end of 1986.

Under the plan, the network will pay half the cost, up to \$150,000, of SNG trucks purchased by affiliates. It will also pay for a communications system, estimated at \$30,000, for each truck.

Arthur Kent, VP of NBC News, said affiliates will be free to purchase any SNG unit they want. NBC will send truck specifications to all manufacturers, and does not plan to sign any sort of exclusive deal with one or several vendors.

Complete SNG system

The launching of Skycom, along with the PUPS uplink/downlink system currently being installed at 50 or more affiliates, is part of NBC's effort to create a complete national news gathering exchange that will link affiliates and enhance NBC's news product, network officials said.

The complete Skycom system will provide affiliates with the use of 48 hours (two transponders) of transponder space daily (at an undisclosed cost), two master earth stations, eight other permanent transmit locations, 50 PUPS and 175 downlinks, NBC said.

Skycom will be coordinated by four regional NBC affiliate news desks and a central 24-hour Skycom desk in New York. The regional desks, one in each time zone, will assist stations in maintaining "editorial contacts," and help complete news feeds in the best possible way, including the utilization of an available PUP, Kent added.

Kent said the decision to launch Skycom was an extension of the network's decision last year to implement a national affiliate/network SNG system.

Grossman said Skycom will provide "the most timely, up-to-date news service available today."

The system is "mutually beneficial, increasing our (NBC's) joint network/affiliate coverage opportunities many-fold," Grossman added.

Late last year, ABC announced a similar mobile news gathering plan called

ABSAT, which it will initiate with affiliates in about 50 major markets.

Like the NBC plan, ABC will also pay half the cost of an SNG truck (or up to \$180,000).

CBS rumors

Meanwhile, it has been rumored that CBS News is also examining methods for launching a national affiliate news gathering system. At press time, according to CBS News VP Robert Horner, the network was scheduled to make a "formal announcement" around mid-February involving future SNG plans.

LPAS Gear Studied

Washington DC ... The FCC has proposed allowing the use of low power auxiliary station (LPAS) devices, such as wireless microphones, on all TV broadcast frequencies on a secondary, non-interfering basis.

If adopted, the Commission said the plan would permit greater flexibility for licensees.

"The goal of this proceeding is to alleviate the frequency congestion currently experienced in many major cities without increasing the potential for interference, and to deregulate technical requirements that may not be necessary to prevent interference," the FCC said in its Notice Of Proposed Rulemaking (NPRM) released 24 January.

Use of LPAS devices were authorized on VHF Channels 7-13 in 1977. The Commission said it is "not aware" of complaints regarding LPAS interference on these high-band VHF channels.

Besides wireless microphones, LPAS devices include program production transmission equipment involved in cuing and other control activities.

"Absence of interference"

"The absence of interference is largely attributable to the fact that LPAS receivers are much more susceptible to interference from broadcast TV signals than vice versa," the FCC said.

"LPAS users must select frequencies removed from operating broadcast TV channels and must also maintain a certain minimum operating distance from existing co-channel TV stations."

The plan would also allow the authorized power of LPAS devices used in the UHF band to be increased from 50 mW to 250 mW. The VHF limit of 50 mW would not be changed.

The lower LPAS power level for VHF frequencies is required because of the "technical characteristics of these frequencies," the Commission said.

However, because of the "technical differences and increased difficulties" with UHF signal propagation, the FCC said it believes a 250 mW UHF limit is necessary.

"Stacking" proposed

The FCC plan would also allow LPAS users to utilize 25 kHz channels in the available TV bands, and would permit up to eight of these bands to be stacked adjacently, for a total bandwidth of 200 kHz. The Commission said this would allow LPAS users to provide a "high fidelity" service.

The FCC also proposed removing the current restrictions on adjacent channel operations in regard to LPAS devices.

The rationale, the Commission said, is that LPAS operations "have a small probability of causing interference."

However, it added that its co-channel distance preclusions, which prohibit LPAS devices from operating within the Grade B contour of a co-channel station, are "appropriate."

Deadlines are 3 March for comments and 18 March for replies. FCC docket number is MM 86-12. Call John Wong of the FCC at 202-632-9660.

ETS Venture

Salt Lake City UT ... West Germany's Robert Bosch Corporation and the Netherlands' N.V. Philips have entered into a "joint venture" to develop and market their TV broadcast systems, Bosch announced 30 January.

The two companies will create Euro Television Systems (ETS), a West Germany-based group responsible for the merged lines of "outside broadcast vans, cameras, switchers and professional video recorders," according to Bosch. ETS will also handle "studio projects."

Initially, Bosch and Philips will each have a 50% stake in ETS, with Bosch eventually acquiring a majority of the new firm's shares. Bosch said it will also be responsible for "industrial leadership" within ETS.

Bosch VP/Finance Don McCauley said details regarding how the companies will merge their product lines are still being "firmed."

ETS was formed to strengthen both firms' "international competitiveness" and "market position," Bosch said.

"One main advantage is that the two firms will be able to combine their technical and marketing experience," McCauley added.

For more information call Bosch at 801-972-8000.

SMPTE Sets Component Plan

by David Hughes

Scarsdale NY ... To aid the development of component capabilities in existing NTSC systems, SMPTE has announced a preliminary agreement on practices to be used in mixed NTSC/component facilities.

The recommended practice involves the elimination of "setup" at the points of interconnection between NTSC signals and component signals. Where NTSC is utilized by itself, setup will remain unchanged.

Setup, which refers to picture brightness, is defined as the ratio between the reference black and reference white levels measured from the blanking level.

The SMPTE Joint Ad-Hoc Group to Study Component Studio Implementation reported the agreement in early Jan-

uary to its two parent working groups—Component Analog Video Standards, chaired by Merrill Weiss, and Digital Video Standards, chaired by Stan Baron.

In reaching the agreement, the ad-hoc group rejected a plan calling for the complete removal of NTSC setup.

Document prepared

The ad-hoc group "prepared a document which calls for the preparation of a recommended practice and describes the principles upon which that recommended practice should be based," according to SMPTE.

The two SMPTE working groups, in accepting the ad-hoc group's recommendation, asked the ad-hoc group to prepare a draft recommended practice.

Setup, according to Baron, was recognized as being important in both digital

and analog component systems when used in conjunction with NTSC systems.

The elimination of setup in NTSC systems working in combined component/composite facilities has been under investigation by the two working groups since the summer of 1985.

According to SMPTE, the component systems being standardized by the two groups do not utilize setup.

"Transfer of material between NTSC and component forms is complicated by the need both to add or delete setup accurately and to decrease or increase the level accurately when encoding or decoding," according to SMPTE.

"Decoding is the more difficult problem," it added.

The use of setup in NTSC systems interfaced to component systems, based on the component standard contained in

CCIR Recommendation 601, is difficult, according to Baron.

"The removal or addition of setup will be a significant source of error wherever the translation between the NTSC environment and the component environment takes place," Baron said.

Text of recommendation

The text of the recommended practice says that "since the mixed component/NTSC system must deal with the translation between NTSC signals with setup and component signals without setup, while preserving maximum picture quality ... setup shall be removed in the process of decoding NTSC to component signals and shall be added in the process of encoding component signals to NTSC."

NTSC operates with a nominal setup of 7.5%, with an allowable range of $\pm 2.5\%$. However, live studio cameras and telecines have provided RGB component outputs with 0% setup.

According to the text, SMPTE standards for sets of parallel and serial analog component signals based upon Y, B-Y and R-Y have 0% setup, as do HDTV standards based on the same format.

The recommendations include the "preservation of the NTSC signal as it exists today," and the "operation with component signals having zero setup at the points of interconnection."

They also advise "tight tolerances" around the 7.5% value, and suggest no restrictions on how a manufacturer handles a signal within equipment.

Weiss' CAV Working Group has approved a parallel interface standard for use up to 100 meters in places like editing suites, and a single channel or series interface (S-MAC) for long distance applications like routing systems.

The group has also been working on a final agreement for a camera-recorder interface.

For more information call Merrill Weiss of NBC at 212-664-5802.

Comark/Varian Develop Klystrode

(continued from page 1)

will be able to operate at the maximum power level with less cost penalty, Ostroff said.

Comark and Varian's EIMAC got together after the 1985 NAB Convention, according to Ostroff, "to build a transmitter around that (klystrode) tube."

The klystrode, Ostroff said, was introduced by EIMAC seven years ago primarily as an aural device. But major gains in video transmissions can be made with klystrode technology, he said.

Klystrode development

According to a paper delivered by George Badger of Varian EIMAC at the 1985 NAB show, the klystrode was developed to "bring UHF transmitter efficiency up to a level approaching the operating economy of VHF transmitters."

"Because most of the energy consumed by a television transmitter is used by the final power amplifier tube, this is clearly where creative engineering will pay the greatest dividends," Badger said.

In quest for efficiency, the klystron was developed, and is now used by 90% of current UHFers, he added.

The klystrode is a hybrid between a klystron and a tetrode, he said. It incorporates the "high reliability and power handling capability of the klystron," with the "grid-cathode components of a tetrode."

While the klystrode can be used in the UHF's aural power amplifier, its biggest advantage is in the visual service, where it makes "its greatest contribution to operating cost reduction," Badger said.

Reliability questioned

While Ostroff maintained that the klystrode is at least as reliable as the klystron, he said some people have argued

that since it contains a grid inside the tube, the klystrode is less reliable.

However, because of the physics of the klystrode grid, it accepts less stress than a typical tetrode grid, he said.

Ostroff said he hopes that a klystron versus klystrode battle will not take place in the industry. He added that the same Comark cabinet can accommodate either a klystron or a klystrode for stations that might want to switch. "Only time will tell," he said.

Ostroff said he will discuss the latest developments in a paper presentation at the 1986 NAB Convention. His paper is entitled, "Utilizing Klystrode Tubes to Create a New Generation of High Efficiency UHF TV Transmitters."

The Comark NAB exhibit, which will feature a klystrode visual amplifier, should also feature a "real live transmitter," not something that exists only on the drawing board, Ostroff said. Price and more specific delivery information will be available then.

Apart from the klystrode developments, work continues on a separate UHF efficiency project—the Multistage Depressed Collector (MDC) Program.

The \$1 million program funded by Varian, NAB, PBS, RCA, Harris, Townsend and NASA, is studying the development of more efficient UHF transmitters that can decrease utility power costs by up to \$100,000 a year per station.

A preliminary tube design was achieved in 1985. Equipment testing is scheduled to get underway in April, with an overall performance demonstration scheduled for late 1986 and early 1987.

Ostroff said Comark was not involved in the MDC study because the company could get its products, which he said were as good, on the market faster. The MDC klystron is "still a gleam in someone's eyes," he said.

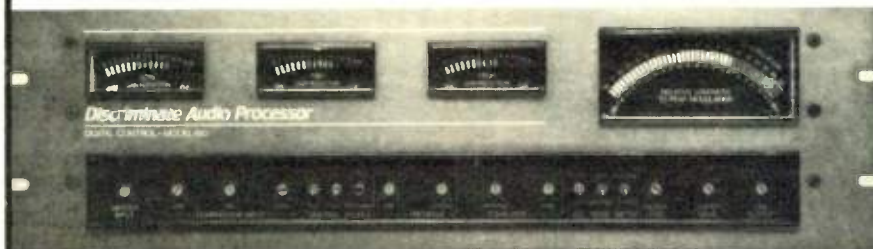
For more information contact Nat Ostroff of Comark at 215-822-0777, or Cynthia Bohland of Varian at 415-424-6285.

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Multichannel Sound

Follow Basic Rules For Stereo Miking

by Randy Hoffner

New York NY ... Stereo TV broadcasting requires stereo production, which requires a knowledge of stereo microphone techniques. To convey the spatial aspects of a sporting event, a studio program or a musical performance, at least two microphones and some knowledge of stereo microphone placement are necessary.

Focus on MTS

Microphone placement is a highly subjective art, but there are some basic ground rules that should assist the individual in miking for stereo.

Although the variations are legion, there are two fundamental stereo placement techniques: spaced and coincident.

Spaced placement, as the name implies, means that the stereo microphones are spaced apart from each other, anywhere from a few inches to many feet.

Spaced microphones provide a sound field of exaggerated width which, when carried to an extreme, will cause the elements of the sound field to appear to cluster near the speakers upon reproduction, leaving a sonic "hole" in the middle of the sound field.

This hole may be counteracted by a third microphone placed between the left and right pair, with its output fed equally into left and right channels.

Spaced microphone pairs produce outputs with differences in both amplitude

and phase because the physical distance between them permits sound from the same source to arrive at each microphone at a different time.

Both amplitude and phase differences produce the stereophonic effect. However, in television broadcasting, there is a definite down-side to spaced pairs: the phase differences they produce can cause serious mono compatibility problems.

Consider the hypothetical setup in Figure 1(a), in which microphones are spaced so that a sound source is one meter (D_1) from the left microphone, and two meters (D_2) from the right microphone.

The difference in path length from the source to the two microphones will result in a time delay such that a sound leaving the source will arrive at the right-hand microphone ($(D_2 - D_1)/c$ seconds later than it arrives at the left-hand microphone, where c is the speed of sound in air (344 m/sec). Plugging in the values yields $1/344$ or about 3 milliseconds arrival time difference.

At certain frequencies, this delay will result in microphone outputs which are totally in-phase and thereby reinforce each other. At other frequencies, the microphone outputs will be out-of-phase, and thereby cancel each other.

The lowest frequency at which cancellation will occur is that frequency at which $D_2 - D_1$ equals one-half wavelength:

$$f = 0.5c (D_2 - D_1) = 172 \text{ Hz.}$$

Signal reinforcements will take place at integral multiples: $2f$, $3f$, $4f$, etc.; while cancellations will take place at:

$$\frac{f}{2}, \frac{3f}{2}, \frac{5f}{2}, \text{ etc.}$$

The frequency interval between successive peaks and dips is a constant 172

Figure 1a. Spaced Pair with Path Length Difference

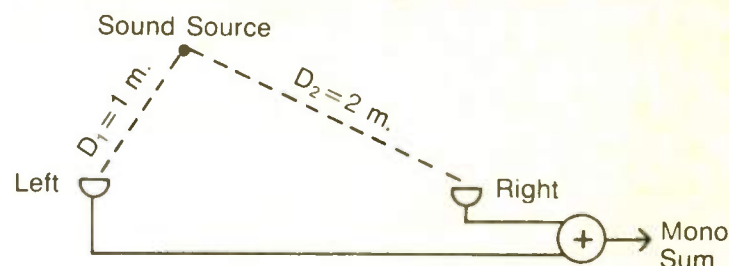
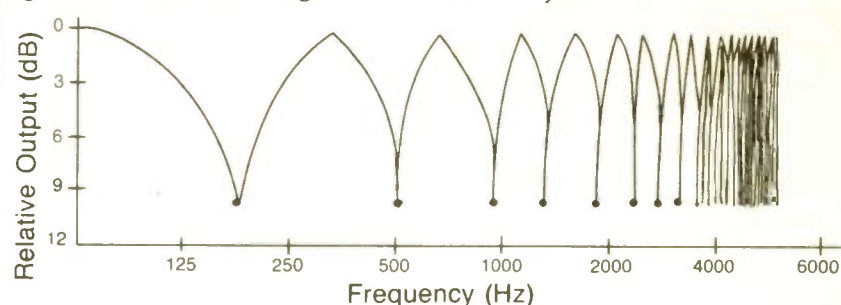


Figure 1b. Comb-Filtering Effect Produced by 1a



Component Video

Component Offers Advantage

by Pamela W. Peterson

Pittsfield MA ... The advent of Sony's Betacam and Panasonic's M-Format cameras and recorders proves that component video has enough operating advantages to merit backing by major manufacturers. What exactly is meant by the term "component video," and what are the implications of its arrival on the professional broadcast scene?

Simply put, component video equipment is that in which the luminance and chrominance information is not encoded into a single signal (called composite video), but rather is carried separately throughout the various pieces of gear.

Further, the chrominance information is carried in two or more color difference subchannels, rather than being combined into one signal.

Of course, eventually these signals will

Pam Peterson is the engineering VP of WVUW TV in Pittsfield, Massachusetts, expected to go on the air sometime in 1986. She is also president of ZPPR Productions, Inc., a New York City radio production group. Formerly, she was Manager of Long-Term Technical Facilities Planning for the CBS Broadcast Center in New York.

have to be made into composite video—at least before they are transmitted as broadcast television signals. But for now, let's consider the advantages and disadvantages of retaining them in their component state.

Both the Betacam and the M-Format systems record a Y signal (luminance) and two color difference signals (Sony uses the R-Y and B-Y signals, Panasonic uses the I and Q signals). For the precise mathematics of how these portions of the composite video signal are generated and interrelated, see Shintaro Asano's article "Explaining Component Video" which appeared in the March 1985 issue of this publication, or chapter 2 of *Television Broadcasting: Equipment, Systems and Operating Fundamentals*, by Harold Ennes, 1971, Howard W. Sams & Co. (Better still, find someone who has spent about 12 years doing video setup on cranky old film chains and get him to explain it to you!)

Obviously, if we are not going to transmit a single signal through our system, but rather three signals, we will have some immediately apparent disadvantages.

For one thing, we will need to run three times as much cable for every complete signal transfer between pieces of

equipment. And inside these various pieces of equipment, we will need three times as many amplifying or processing circuits as we currently have.

Worse still, these circuits must operate on some fairly strict tolerances. It simply won't do to have unity gain on the Y signal and the first color difference signal, and a 1.1 times amplification on the second color difference signal. That's going to produce some strange pictures!

The experience of testing groups is that a variation of over 1% in gain between these three sets of circuits will produce visible color problems. It should be remembered that this is true for the discerning eyes of professionals—your Aunt Matilda may not notice a thing.

The principle applies no matter what level of amplification difference is judged to be tolerable.

Another disadvantage is that in order to make various pieces of equipment which handle video in component form compatible with the vast universe of equipment which handles it in composite form, some interfacing circuitry is going to be required.

The manufacturers are tending to build this right into each piece of gear, so that the operator can decide, depending on the requirements of the situation,

whether he or she wants to take composite or component video out of it.

Intermediate monitoring, at least for the present, will require NTSC composite video outputs on component video equipment.

While problems do exist, engineering solutions are possible for most of them.

(continued on page 13)

TBC Insures Future Needs

by Robert K. Wickland

Bloomfield CT ... In 1985, Microtime introduced the T-220 FIT, today's TBC user insurance against future tape format changes and obsolescence.

How can the T-220 be so versatile? The answer is digital component architecture. The unit will accept as an input: composite; YIQ; Y, R-Y, B-Y (if specified at the time of order); and dub.

The input signal is demodulated or matrix converted to Y, R-Y, B-Y analog components, converted to digital format, time base corrected, and stored in a field memory. Each signal is retrieved from the memory and reconverted into the Y, R-Y, B-Y analog components.

At this stage, the analog components can be provided as direct output of Y, R-Y, B-Y, or YIQ, reencoded into a composite signal, or re-modulated into a dub signal.

The T-220 can operate with any signal system in 3/4" or 1/2" formats. In addition, it can handle the dynamic tracking function of the BVU-820 in either composite or dub playback modes.

The component architecture of the system using 13.5 MHz SMPTE/EBU sampling standards yields clean, transparent pictures. The Y, R-Y, B-Y output interfaces directly with Microtime's Genesis 1 ACT 1 for digital video effects in component format.

The result is cleaner pictures with fewer NTSC artifacts in the final output.

Other features include full proc-amp controls with preset; continuously variable chroma-luminance delay compensation for each input mode; full shuttle capability to 40x; DOC with full AGC selectable RF or TTL; and RS-170 or RS-170A selectable sync generator.

The unit also has freeze field capability with full interpolation to provide frozen pictures with no resolution loss.

Since the system is a field store with hysteresis, it can be used as a synchronizer for out-of-house feeds.

The unit is modular in design. All cards plug in, including power supply.

Robert Wickland is a product manager at Microtime. For more information call Norman Pinette at 203-242-4242.

Understanding is Incomplete

by Bob Paulson

Westborough MA ... In the past two years, the topic of "component video" has had miles of column inches in coverage in technical trade publications. The trickle of manufacturers who began promoting component video products at the 1984 NAB Convention grew to a rushing rivulet in 1985, and will reach flood proportions in 1986. Unfortunately, however, the miles of words and torrent of products haven't benefited the television industry much at all.

In fact, today, "component video" is synonymous with a loose cannon on a rolling deck! Even well-informed engineers who understand the technical benefits of component don't really have a clear understanding of how they can integrate those benefits into their facilities.

The number of non-technical people in the industry who could benefit from a move into component video and who can also perceive it when displayed on a monitor, is somewhere between zero and a handful.

This article therefore attempts to present those benefits in non-technical applications language with systems needs and examples.

Terms tutorial

Everybody thinks they know what "video" means, but because of the accelerating proliferation of proposed new transmission standards, that's not really true. However, presenting all the

facts is not crucial to reaching the intended objective of this column.

Component has two categories of definitions, each of which has a growing number of subcategories (See Figure 1). Until a little over 10 years ago, Anasite was the only game in town, in the air, in coax cables, on VTR tapes, in time base correctors, in production and post-production switchers.

The move into today's confusion began in 1973, with CVS's introduction of a digital composite (Digisite) TBC which converted the NTSC Anasite input signal to Digisite by sampling it at three times the actual frequency of the incoming reference 3.58 MHz subcarrier.

Later, as engineers began to appreciate what could be done in video signal processing in the Digisite form (because creative people showed them what they wanted to do), the sampling frequency of the A/D converter was raised to four times subcarrier.

Then, in some of these "digital black boxes," the Digisite signal was trans-coded internally into various proprietary Diginent forms.

Since SMPTE declared at its 1980 Toronto Television Conference that the 1980s were "The Digital Decade," there has been a growing belief among the technically informed (call it a dream wish) that both analog and digital composite signal forms and the equipment which use them will disappear before the end of the decade. That's utter nonsense! NTSC will be with us as a broadcast transmission standard until early in the 21st century.

And digital composite, which has been growing in utility since 1973, is not going to disappear just because digital component video "is here."

	ANALOG	DIGITAL
Composite	(Anasite) NTSC (RS-170) NTSC (RS-170A) "NTSC Type" (Color Under) HDTV BNTSC	(Digisite) 8 bit/7 bit/9 bit 3X f _{sc} 4X f _{sc} Ampex next?
Component	(Anasite) RGB YIQ CAV (Y-R-Y, B-Y) S-MAC Y/C 688 (kHz) Y/C 3.58 (MHz)	(Diginent) "Per CCIR Recommendation 601" 4:2:2 4:4:4 4:1:1 2:1:1

Figure 1. All four of the signal forms created by the Analog/Digital and Composite/Component options are proliferating out of control!

If you disagree, ask Ampex about their Digisite station break automation system. Ask the horde of TBC manufacturers now on the scene when they plan to abandon Digisite.

Component Analog Video (CAV) is really here! At the 1986 NAB you will have your choice of dozens of products which variously take in, internally process, and/or put out CAV.

Great, but which CAV? And if you understand why you want one of them, do you understand how to exploit its benefits in your existing facility?

Can any vendor talk to you about systems available for purchase, which yield you those benefits, yet maintain compatibility with your NTSC equipment and distribution system?

Or alternatively, are you one of the believers that digital component (Diginent) equipment and systems will become commercially available at the 1986 NAB show? Are you planning your move away from NTSC to get a big jump into an all-digital facility?

If you are in the latter component camp, you may not want to read any

(continued on page 14)

Bob Paulson is managing partner of AVP Communications. Write him at P.O. Box 454, Westborough, MA 01581; or call 617-366-4694.

Engineering

Philips Focuses on VITS/ITS

by Preben Hejberg

Copenhagen Denmark . . . More than a decade ago, the vertical blanking interval (VBI) lost its untouchable status as broadcasters began using "empty lines" to transmit test signals via equipment offered by Philips and other manufacturers. The VBI now provides the vehicle for vertical insertion test signals (ITS/VITS), insertion data signals (IDS), vertical interval reference signals (VIRS) and even income-producing transmissions such as news services and software delivery.

The previously "empty" VBI is consequently so full, and so far from "blank," that the term "vertical blanking interval" begins to appear anachronistic in the context of current transmission practices.

Because VITS/ITS applications can now be performed during actual transmissions, universal VITS/ITS use has cut the duration of pre-transmission tests and supported the development of greatly improved automatic evaluation equipment.

The latest technology enables users to save money by reducing maintenance costs and lowering maintenance time outside normal working hours. Picture quality is also improved.

The new technology applied by Philips has increased the accuracy, stability and reliability of its VITS/ITS generator/insertion, the PM 5651 Studio VITS Generator.

This new instrument is significantly smaller than similar equipment, is lower in weight and consumes less power. It can be supplied with optional source code ID and equipped for externally in-

serted data (the PM 5652 Studio VITS Generator).

Any VITS/ITS generator basically consists of a generator and an inserter/deleter, for which the CCIR has specified four principal test signals.

For the US market, Philips now produces the PM 5651 Studio VITS Generator which generates two CCIR signals plus the American standard VIRS, described and illustrated here for test lines labelled A, B and C.

Test line A (See Figure 1) contains the NTC-7 Composite test signal (bar, 2T pulse, 12.5 pulse and modulated staircase).

Test line B (See Figure 2) contains the NTC-7 Combination signal (flag, multi-burst and chroma staircase).

Test line C (See Figure 3) contains the VIRS (Vertical Interval Reference Signal) as well as chroma and luminance references).

Small, light and low-cost, the VITS Studio Generator is designed for use in any TV facility.

With insertions and deletions programmable in the instrument, the unit normally loops an incoming program signal through its inserter/deleter circuit where VITS, SID (source identification code) and data are inserted and where other lines can be deleted.

The inserter/deleter circuit functions as a 3-pole switch to select one of three signals: the program signal (after dc re-

storage); Internal VITS generation/insertion; and Neutral (deletion).

This approach guarantees that any VITS line content is removed before VITS insertion. The precise programming for insertion/deletion is performed with small jumpers in the internal matrix field.

A by-pass protection circuit (by-pass relay) loops the program signal directly to the output connector in the event of malfunction.

A special protection circuit in the sync separator prevents insertion in the active field in case of a problem with irregular sync, (for example, VTR tracking errors).

Essentially, the sync separator is a sync generator (SPG) that genlocks to the program signal.

The protection circuit compares the incoming program sync with the internal sync and, if they fail to coincide, will inhibit insertion/deletion.

With the PM 5651 Studio VITS Generator, the shape and timing of all VITS are stored in electronic memories called PROMs (programmable read-only memories). A D/A (digital-to-analog) conversion of the PROM data produces the analog luminance waveform.

The D/A converter and subsequent low-pass filter guarantee high VITS stability and accuracy.

A separate set of PROMs and D/A converters generates the chrominance part of the test signals and adds this to

Figure 1. Test Line A

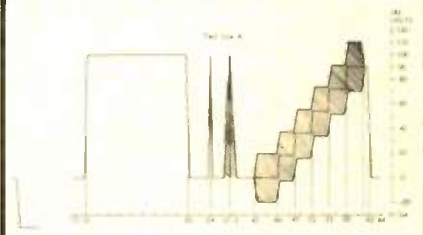


Figure 2. Test Line B

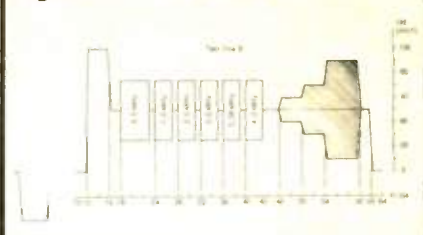
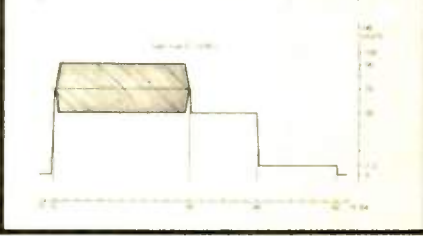


Figure 3. Test Line C (VIRS)



the luminance signal.

Protection circuits and stable digital circuitry increase reliability.

Program signal distortion is so insignificant with the PM 5651 that many units can be cascaded without any noticeable impairment.

Consequently, the unit is well suited for use right down to machine level in any large studio system.

Follow Fundamental Miking Rules

(continued from page 8)

The Blumlein pair produces no interference or comb-filtering effects when the outputs of the two mikes are combined since there is no phase difference between sounds arriving at each microphone. As such, their sum

represents an accurate mono signal.

Variations on the X-Y pair include replacing figure-8 microphones with cardioid mikes to minimize rear pickup, and varying the angular relationship between microphones.

Stereo microphones on the market feature the capability to adjust the polar response of the elements as well as the angular relationship between them, to suit a particular situation or taste.

A major variation of coincident microphones is the M-S or middle-side technique illustrated in Figure 3. This consists of a cardioid microphone (M) pointed at the center of the sound field, and a figure-8 mike (S) oriented at right angles to the M mike's lobe direction.

The M microphone provides the mono signal, and the S mike provides difference information which is added to and subtracted from the M signal to yield left and right channels.

This is actually a sum-and-difference technique that produces perfect mono compatibility because the mono signal comes only from the M microphone.

The net effect of 1:1 dematrixing of the M-S signal is the effect that would be achieved by two super-cardioids crossed at 90°.

If a more sophisticated dematrixing device is used, varying the amplitude of S output will provide a stereo width adjustment, while varying left and right output amplitudes provides a position adjustment.

M-S microphone pairs may be realized using separate cardioid and figure-8 microphones, or M-S microphones may be purchased.

The chief virtues of any coincident miking technique are complete mono compatibility of the summed left and right signals, and absolute integrity of the planning or positioning functions which it provides (spatial accuracy).

Finally, there are some quasi-coincident microphone techniques that involve closely spacing microphones. An example is the French National Broadcasting Corporation (ORTF) pair (see Figure 4).

This is called quasi-coincident because at low frequencies, the microphones occupy effectively the same location. Above 500 Hz, this array responds to time delays due to the spacing of the pair.

The Dutch Broadcasting Organization (NOS) uses a similar scheme, spacing the microphones 30 centimeters apart at a 90° angle. Another quasi-coincident technique is called the Madsen technique, which employs two ribbon mikes separated by a baffle. This modifies their response so that their patterns become more directional at higher frequencies.

Obviously, the disadvantages of spaced pairs apply to quasi-coincident pairs as well.

In summary, stereo microphone techniques fall into the broad categories of spaced microphones and coincident microphones.

While spaced microphones can offer a widened stereo field, they suffer from the disadvantage of phase cancellations and comb-filtering effects.

Coincident techniques provide broadcasters with the decided advantage of spatial accuracy and the all-important mono sum compatibility.

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Files Widen Options

by Roy Trumbull

San Francisco CA ... Last month, we got started in dBase II and took a look at creating a database. This month, we'll cover the different types of dBase files.

A report form is created by entering REPORT FORM (name of form). The program knows that form does not exist and it prompts the creation.

Otherwise, giving the command REPORT FORM will cause dBase to display the report on the CRT. Entering REPORT FORM XYZ TO PRINT prints it.

When creating a report form, prompts appear regarding page format, whether the report is to be double spaced, and whether totals will be required. dBase then asks for the width and name of each field, and the name to be used for the column heading in the report.

Finally, after everything is entered and a carriage return signals a blank entry, the report runs on the screen.

To illustrate what an FRM file looks like, let's use the example of an inventory program for spare parts supplied by the XYZ company but made by a variety of vendors (see Table 1).

Comments have been added to help explain the function of each field. dBase doesn't support comment fields.

The dBase dialog to create a report form making use of some of these fields is shown in Table 2, with dBase prompts in lower case and response in upper case.

When nothing is entered for 007, the report runs after the next carriage return. Since there is no way to alter a FRM within dBase, let's look at what an FRM file looks like when called up by a word processor. (see Table 3.)

This file contains the responses to the dBase dialog shown in Table 2, and it can be easily altered using insert and delete commands as long as the modified file follows the same sequence as the original: field length, field name, and column heading for the report.

An NDX file is the index for a DBF file. An index is very powerful.

For example, let's create a mail list database called MAIL.DBF with the following structure:

```
FNAME,C,10
LNAME,C,20
ADDRESS,C,15
CITY,C,15
STATE,C,2
ZIP,N,5
```

(FNAME is first name; LNAME is last name).

In this file we have 300 entries, and names are being added and deleted and addresses changed all the time.

We want to use the file in alphabetical order for record keeping, but want to print it out in ascending ZIP CODE when mailings are done.

An index keeps track of the order of one field but avoids the task of actually placing the records in that order.

It knows that the 20th record LNAME begins with an A, and the 116th record LNAME begins with a B, etc.

When an index is in use it will display the records in index order, and any appending, edits or deletions done to the

file will update the index.

The command INDEX ON LNAME TO NAME creates the file NAME.NDX which keeps track of MAIL.DBF in alphabetical order based upon the field LNAME.

The command INDEX ON ZIP TO ZIPN creates the file ZIPN.NDX which is an index by zip code.

The command USE MAIL INDEX NAME makes the file appear to be in alphabetical order, whereas USE MAIL INDEX ZIPN puts it in ascending order.

Files for the storage of variables have the attribute MEM. If the DBF in use has fields for AMOUNT and TAX, then STORE AMOUNT + TAX TO TOTAL would total the current record's values for amount and tax, and store the value in the variable TOTAL.

The command RELEASE TOTAL would clear the current value of TOTAL. RELEASE followed by several variable names separated by commas will clear those variables. RELEASE ALL clears all variables that have been STORED.

The command DISPLAY MEMORY prints all the STORED variables and their current values. SAVE STUFF would save all STORED variables for the file STUFF.MEM. RESTORE FROM STUFF puts the variables and their values back into memory.

The next file type is the CMD file which is also known as a DO file. A DO file allows a database to be menu driven, and thus, easier to use.

dBase provides an editor for command files using WORDSTAR cursor control keys. CTL-N will insert a new line and CTL-T will delete a line. CTL-W updates the command file and CTL-Q aborts the changes that have been made.

Whether the DO file exists or not, the editor is invoked with the command MODIFY COMMAND FILENAME where filename is the name of the CMD file.

The construction of CMD files is the main meat of dBase. Essentially, DO files can be used to DO one task or to permit the selection of one of several DO files from a menu.

For illustration, let's make a report form for MAIL.DBF which will be used by our DO file (see Table 4). As before, the dBase prompts will be in lower case and the responses in upper case.

Our two DO files will be just as profound as the report form in Table 4, but I think you will get the idea.

MODIFY COMMAND followed by the command name will get you into edit mode whether the command exists or not. We will create a command to print the mail list by name, and another to print it by zip code (see Table 5).

There are a number of dBase functions that can be turned off and on with the SET command. TALK is the helpful chatter that the program uses to communicate with you. ERASE clears the screen. If you only want to print to the CRT, then omit the phrase TO PRINT.

While in dBase, using the commands DO NAME or DO ZIP will cause dBase to proceed with the sequence of commands stored in these CMD files. But there is a more user friendly way to make use of multiple command files.

The example shown in Table 6 uses a

Table 1.

USE XYZPARTS					
DISPLAY STRUCTURE					
STRUCTURE FOR FILE: A:XYZPARTS					
NUMBER OF RECORDS: 00804					
DATE OF LAST UPDATE: 02/01/85					
PRIMARY USE DATABASE					
FID	NAME	TYPE	WIDTH	DEC	COMMENTS
001	PARINUM	C	007		XYZ PART NUMBER
002	LOC	C	010		STORAGE LOCATION (DRAWER/SHELF)
003	USEIN	C	010		WHAT IS IT USED IN?
004	STOCKQ	C	003		NORMAL STOCK
005	ACTUALQ	C	003		STOCK ON HAND
006	GENTYPE	C	008		GENERIC PART TYPE
007	GENDESC	C	020		GENERIC DESCRIPTION
008	MAKER	C	010		WHO REALLY MADE IT?
009	ORDERED	C	008		ARE SOME ON ORDER?
**	TOTAL	**	00804		

Table 2.

```
REPORT FORM XYZ
no database file in use, filename:
XYZPARTS
l=lines/page, w=page width
enter options, m=left margin,
M=10,L=60,W=80
page heading? (y/n) Y
enter page heading: XYZ PARTS
double space report? (y/n) N
are totals required? (y/n) N
col width,contents
001 7,PARINUM
enter heading: XYZ#
002 10,LOC
enter heading: LOCATION
003 4,ACTUALQ
enter heading: QUAN
004 10,MAKER
enter heading: MANUFACT.
005 20,GENDESC
enter heading: DESCRIPTION
006 8,GENTYPE
enter heading: GENERIC
007
```

Table 3.

```
M=10,L=60,W=80
Y
XYZ PARTS
N
7,PARINUM
XYZ#
10,LOC
LOCATION
4,ACTUALQ
QUAN
10,MAKER
MANUFACT.
20,GENDESC
DESCRIPTION
8,GENTYPE
GENERIC
```

Table 4.

```
REPORT FORM MAIL
no database file in use,
filename: MAIL.DBF
enter options, m=left margin,
l=lines/page, w=page width
M=10,L=60,W=80
page heading? (y/n) Y
enter page heading: Mail List
double space report? (y/n) N
are totals required? (y/n) N
col width,contents
001 20,LNAME
enter heading: NAME
002 5,ZIP
enter heading: ZIP
003
use a carriage return to complete
```

Table 5.

```
MODIFY COMMAND NAME
SET TALK OFF
ERASE
USE MAIL INDEX NAME
REPORT FORM MAIL TO PRINT
[ A UNTIL-W COMPLETES THE PRO-
CESS AND SAVES THE COMMAND
AS NAME.CMD ]
MODIFY COMMAND ZIP
SET TALK OFF
ERASE
USE MAIL INDEX ZIPN
REPORT FORM MAIL TO PRINT
[ AGAIN USE UNTIL-W TO COMPLETE
AND SAVE AS ZIP.CMD ]
```

Table 6.

```
SET TALK OFF
DO WHILE T
ERASE
? "-----"
? "MAIL LIST MENU"
? "
? "1. PRINT THE MAIL LIST BY LAST NAME"
? "
? "2. PRINT THE MAIL LIST BY ZIP CODE"
? "
? "3. RETURN TO DBASE"
? "-----"
ACCEPT " PLEASE MAKE A SELECTION" TO NEXT
DO CASE
CASE NEXT = "1"
DO NAME
CASE NEXT = "2"
DO ZIPN
CASE NEXT = "3"
CANCEL
ENDCASE
ENDDO
```

menu to call up DO files, and once the DO file is done, the menu returns, permitting another selection.

Text that appears on the screen is placed there by using ? and quotes just as you would in a BASIC program.

This type of construction will look familiar to you if you've worked with PASCAL. DO WHILE T sets up a loop that always returns you to the menu after the execution of a CASE. The T stands for true and the only case that can break the loop is case 3 which cancels.

dBase makes a distinction between numbers, strings and logical expressions input from the console. INPUT can handle all three, but ACCEPT always returns a string.

The CASE construction is like a sequence of IF-THENS in BASIC. ENDCASE and ENDDO may be thought of like NEXT commands in BASIC in that

they loop the program until a condition occurs which permits the program to fall through the loop.

The last file type is the format file which has the attribute FMT. Formats describe screens that will retrieve or store file data.

These files can be used in conjunction with DO files to make a micro look like a mainframe. All of the ugly bits of programming business become hidden from the user who responds only to menus and data screens.

A format file can position prompts using screen coordinates and cause highlighting of portions of the screen if the terminal in use supports changes in intensity.

Setting up formats can be a bit nasty unless the utility ZIP is used. ZIP is a screen creation program that greatly simplifies the task.

Roy Trumbull is ACE at KRON TV. Call him at 415-441-4444.

Engineering

Avoid "Shocking" Experiences

by William Ellis

Springfield MO . . . "How did I get talked into this?" That is what Max, our fictitious chief engineer thought as he and the CE of an AM station neared the AM transmitter site.

The announcer was signing the station off at midnight as Joe, the AM's CE, brought the car to a halt. "OK Max, we walk from here."

As Joe opened the trunk of the car and handed Max a pair of waist high waders, Max tried to imagine what he was getting into. After all, it was a simple remote control problem and Max had a system just like Joe's.

He did remember once telling Joe, "If you ever have a problem that I can help with, call me." Joe called.

"Don't worry," Joe said, holding a flashlight, "I'll lead the way. The water is only two feet deep."

"How do you keep the water out of the transmitter?" Max asked.

"No problem," Joe said, "we have it and the rack equipment up on cement blocks."

Joe unlocked the door to the transmitter building and the gravity of the situation hit Max. They were going to be working on electronic equipment while standing in two feet of water, at a transmitter site with no telephone and only two-way communications with the studio. Unfortunately, the announcer had already gone home.

"By the way Max," Joe said, "if you see a water moccasin swim by, don't bother him and he probably won't bother you!"

Max and Joe were moving into a danger zone, the least of their worries were water moccasins. Electrical shock or

death were more likely.

Minimizing these possibilities is what this article is all about.

Generally speaking, there are three types of electrical accidents:

(1) Freak accidents—No one could foresee or prevent;

(2) Carelessness—Action taken or not taken ignorant that, at a later date, an accident can happen;

(3) Caused accidents—Action taken with knowledge that either an immediate or later accident can or will happen.

Focus on Policy

Years ago, I had a field engineer working for me who was installing a UHF transmitter in the basement of a building. Suddenly, the breaker box mounted on the wall blew up while he was standing in front of it. He was not touching it, nor had he touched it.

Later investigation determined water had leaked down the wall behind the box, causing it to blow up at a most inopportune time. My man recovered from his injuries, having just been in the wrong place at the wrong time.

Only recently, we had a breaker box blow up at KOZK. In talking to some old-time electricians, they told me this is not an uncommon occurrence.

It appears that over a period of time, with the extreme temperature variations normally found at a transmitter site, expansion and contraction loosen clamps on the heavy wires on both the primary and secondary circuits, causing carbon to form between clamp and wire. This pattern can continue until the whole thing blows up. They recommend tightening the clamps once a year.

While on the subject of breaker boxes, I would be remiss not to point out how

important it is to familiarize yourself with the location of the breaker box and how it operates at your transmitter site. In an emergency, when seconds count, the primary breaker must be pulled. Turning the transmitter off is not the first priority.

Fear of electrical shock is probably your greatest ally in making sure you and your people take precautions and work safely.

Years ago, I knew a broadcaster who insisted that body resistance varied to the extent that persons with high body resistance were less likely to be electrocuted than those with low body resistance.

He proved his point many times in my presence by looking for 117 VAC on barrier strips by wetting his two fingers in his mouth and then applying them between each two terminals on the terminal strip until he felt a tingle in his fingers.

As far as I know, he is still alive and well. Regardless of his stunt, the absence of fear can be lethal.

In the military, fear of electrical shock was instilled in us early. The instructor placed a moth between two high voltage points in a BC-610 transmitter and turned on the high voltage. The moth disintegrated.

Later, I tried the same experiment on the same transmitter, only this time on the RF output while the transmitter was on. I still have the scar on my thumb where the RF arced to the bone.

We listened to the instructor and adopted the habit of putting one hand in our pocket when we touched any piece of electronic equipment. Two hands can complete a high voltage circuit through the heart.

Some years ago, while in the employ of an equipment manufacturer, I was sent to the southwest to investigate a fatal accident on a piece of our equipment.

The transmitter power supply was in-

stalled in a metal cabinet external to the transmitter. The power transformer and HV rectifier stacks were housed in the stand-alone cabinet assembly.

Apparently, the victim was outside the transmitter building washing his car and came inside wet and barefooted. He casually placed a hand on the power supply cabinet, and was dead in an instant.

Previous problems had been experienced with power supply rectifiers shorting out. In addition, the power supply cabinet had not been grounded when it was installed.

When the man placed his hand on the cabinets and the HV stack arced, it found a low resistance path through a wet body to ground.

Is all of your gear well grounded, or do you have a high voltage looking for a low resistance path to the ground? What you don't know will hurt you.

At this point, a word about safety precautions at the transmitter site is in order.

Engineers working on transmitters should have training in mouth-to-mouth resuscitation and cardiac arrest procedures. (In the tragedy I investigated, both were tried with unsuccessful results.)

A telephone at the transmitter site is a must. Post emergency numbers in large, easy to read letters near the phone. In an emergency, there is no time to look up numbers in the telephone book or through an operator.

Completely stocked first-aid kits should be located at both the transmitter and the studio. They may never be needed, but don't play the odds.

On another fatality investigation, I was dispatched to the southeast. Word came to us from a consulting engineer that we had built and sold a transmitter with no interlock on the back door.

The CE removed the back door to replace a resistor in the final amplifier, thinking the interlock would remove the high voltage. He was killed instantly.

Upon removing the back door, I discovered the consultant was right; there was no interlock to be found. As a matter of fact, there were no wires going out of the wiring harness to the interlock.

After removing the tie wrap from the harness, I found the two wires that were supposed to go to the interlock carefully taped and tucked back into the harness. A station employee then found a broken interlock in the shop.

When the CE installed the transmitter two years earlier, he had broken the interlock. In his haste to get the new transmitter on the air, he had taped up the wires, pushed them back into the wiring harness and forgot about it.

Does this qualify as unintentional suicide? In this case, the answer is a sad yes.

If you defeat an interlock, you are flirting with danger. If there is any other way to accomplish your task, do not defeat the interlock.

I can hear you say, "Well, some interlocks have built-in defeat mechanisms." That is true, but they have automatic reset so you can't forget to reset them.

Short cuts in defeat of interlocks can get you in trouble, serious trouble.

What happened to Max and Joe at the transmitter site? Well, they fixed the remote control, but Max never again offered to help Joe with his transmitter.

After all, Max works in television, what does he know about radio?

William Ellis is director of engineering at KOZK TV. Call him at 417-865-2100.



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Production

Montage Geared to Real Life

by Jay Ankeney

Los Angeles CA . . . If you want to see a modern pioneer in action, visit the back of the Twentieth Century Fox lot in Los Angeles. There, in a low wooden editing bungalow as unassuming as a Conastoga wagon, George Potter has spent the last few months working on a Montage editing system amid whirring tape decks and black box computer banks.

Focus on Editing

A film editor for over 20 years, George volunteered for training on the new Montage system while editing episodes of this season's *The Fall Guy* for Glen Larson Productions, and is now finishing some segments of *The Paper Chase* destined for Showtime cable TV.

Having edited episodes of the same series using both conventional film cutting procedures and the new Montage system, George said the experience was well worth the effort because he is now riding the crest of one of the new waves of alternative editing technologies.

Montage system

Perhaps because it extensively utilizes existing videotape hardware and interfaces, the Montage system has more readily found application in real life production situations over other new alternative editing systems (such as Edit-Droid, examined last month). However, the shell has barely been cracked by any of these fledgling editing innovations.

George said he is especially impressed by Montage because, as a veteran film editor with no more knowledge of computers than a home PC, he was able to maintain his cutting schedule after only one weekend of training and a few evenings of coaching.

This, he feels, is because of the way Montage allows film editors (or their videotape cousins) to directly relate to their creative medium.

"It's really a word processor designed to handle pictures for single camera editing," said George. Montage's internal electronic structure is based on the simple idea of arranging, and later rearranging, informational inputs.

At first glance, Montage looks like no other editing system. You are faced with seven pairs of small, 3.7" black and white monitors arranged in vertical twins, looking oddly like the portholes on a double-decked passenger liner.

Above these are the main color picture monitor and a few ancillary viewing screens.

Below, on the left and right of the work table, are two large round knobs that flank an electronic sketch pad (for making notes), and a few simple buttons that let you address either picture or sound (video or audio), and prompt you to indicate what kind of cut, trim or insert you want.

Basically, that is the working face of

Montage. There is a computer keyboard and terminal on the side for starting up the system, initializing its functions, and conforming the whole procedure to your own individualized style of work. But this is rarely used during the actual editing process.

To get the session going, all the raw footage is fed into the system. This is done from a 3/4" videocassette prepared by your dailies shop (for film) or your mastering house (for video), and the shots are logged by an assistant with either SMPTE time code or, more common in film, by scene and take number.

If the project was shot on video, or if it was filmed to be released on video, the time code of each shot will be automatically correlated to the identifying slate for later on-line assembly.

Although the assistant will discard any extraneous camera trims, for all practical purposes every relevant take will subsequently be available for the editor's use.

Now the real magic begins. As the raw shots are input, the Montage's "Motorola 6800" computer brain records them in two ways. A real time copy is made on up to 17 (yes, 17!) Betamax 1/2" VCRs, and at the same time, up to 2500 sample "snapshots" (such as the head and tail frames of each shot) are stored on an 80-megabyte Winchester hard disc.

It is these digitized black and white snapshots that the editor sees on the seven pairs of small monitors. They are usually arranged so the first frame of each shot is on the top monitor, and the tail frame is on the bottom.

This represents a visual "loop" that lets the editor see the beginning and end of each shot next to the other shots in vertical monitor pairs.

Once a shot has been selected via these still-frame representations, the Montage software can be asked to search for the real-time, color video equivalent on

whichever of the 17 Betamax decks is closest to that shot, and display it on the program monitor. This is the key to the system's rapid random access to any of the clips that have been fed into it.

Having selected a shot, the editor then addresses the Montage's stratified memory drive system. He or she is allowed to access seven "work bins" (memories) that are very similar in concept to a film editor's trim bin.

A desired shot can be called up from the "Source Bin" (which holds the raw dailies) to work bin#1 and then displayed visually adjacent to any other desired shot on the paired "loops" of black and white monitors.

Although only seven shots can be seen at one time, the shots contained in the whole work bin can be scrolled sequentially across the monitors.

Once a desired pair of shots has been selected, the editor merely pushes the left-hand rotary knob (used to manipulate the "from" shot) and the right-hand knob (which has controlled the "to" shot), and the edit is ready for display on the screen.

Of course, the editor can select audio or video edits, and can create simple wipes, dissolves and "soft cuts" through the computer keyboard.

A copy of this edit can be left in work bin#1, and a second version can be cut in work bin#2's memory drive. Additional shots can be "fetched" from the Source Bin to any of the four active work bins, or rejected into a Discard Bin, and the process continues.

In the Montage's logic, single takes can be "split" (separated) into various parts to be used individually as shots. Discarded frames can be "trimmed" onto or off of previously used clips.

A "maintain sync" function even lets the editor take frames off the "from" shot while adding corresponding frames to the "to" shot in the same order.

After the final version of the project has been created by combining the contents of various work bins, and after all the cooks in the production kitchen have seen an "off-line" copy of that version which was output onto the 3/4" VCR, the editor asks the Montage to spit out either an EDL on a CMX-compatible floppy disc (for video), or a "cut list" (for film) for a negative cutter.

If properly equipped, the Montage's special printer will even give you a hard copy of the list formatted in such a way that a dot matrix pictorial representation of the first and last frames of each cut accompanies the event information.

At the end of the day, George or his assistant will store the whole computer memory on a 10-megabyte cassette disc. When fed back into the system, this storage convenience allows him to start up just where he left off. Other editors can also use the system without disrupting his project status.

The real benefit

George and other editors maintain that Montage does not save significant time in putting together the first rough assembly of shots. After all, film editors have long developed a lot of speed in their cut-and-splice dexterity.

But when it comes to fine tuning scenes, or creating different versions for viewing, the Montage system can save a considerable portion of the post production budget.

And perhaps even more significant for editors, George Potter has found that learning the modern technology of Montage has let him look forward anew to the challenge of each day's editing. Less drudgery and more creativity are a side benefit of the new alternative editing systems, like Montage. And that is one reason why pioneers seek to challenge new horizons in the first place.

Component Refines Video Quality

(continued from page 9)

The cost of component video switchers is not three times the cost of composite video switchers, but more on the order of twice. Economies of scale help hold the costs down; the design cost for three identical amplifying circuits is not appreciably higher than for one.

Cable manufacturers working with the SMPTE subcommittee on component video are developing cables with three coaxial leads whose bulk and weight is comparable to Belden 8281.

This is true because three-coaxial-cables-carrying-one-signal do not have to pass frequencies up to 4 MHz. Therefore, they can be physically smaller without causing the distributed capacitance degradation to the signal which you would expect if you were putting composite video through them.

Now the good news. Component video offers significant advantages over composite video. This is amply demonstrated by the excellent video quality obtainable from 1/2" videotape.

Any side-by-side comparison of either of the two commercially available 1/2" video systems and the very best 3/4" systems will show that 1/2" makes better

pictures.

A move towards all-component video in some post production suites and graphics rooms is mute testimony to the video quality obtained.

In the field, the weight advantage of the recorder-in-camera allows greater mobility for a reporter or technician.

It is my opinion that juggling extra batteries, tape and lights while needing to concentrate fully on either the story or the engineering will preclude the condensation of reporter and technician into one person for some time further. (Well, at least in the larger markets.)

But as anyone who has ever tried to keep up with a fast-moving Congressman while carrying a camera, a field recorder, and an accessory bag knows . . . lighter is better.

Component video offers advantages in the studio as well.

Color keying in composite video has inherent problems that lead to "color fringing." The stability and precision required for circuits which produce key signals by comparing the phase of 3.58 MHz signals is somewhat greater than that of those which are simply looking for a level difference on which to trigger.

Or to put it another way, the advantage of keying in a component switcher is that the edge obtained is as clean as that obtained with a simple luminance key.

Remember the hours spent trimming video cable to length or installing delay boxes in video lines in order to color time your equipment? Component video offers the inherent advantage of being sloppier in timing. The requirement is to maintain a tolerance about equal to that for good H timing.

Roughly, this is about an order of magnitude sloppier than the old standard, a considerable advantage to people building and timing new facilities.

Next month, we will look more closely at the two component video systems currently available on the market, as well as the M2 format promised by Panasonic, with an eye to comparing the rationales behind each set of engineering choices.

Down the road, expect a discussion of component video switchers and all-component video suites, as well as some words about the proposed SMPTE standards for component video signal transmission.

News Operations

Plan Early for Foreign Travel

by John Premack
Part II of VI

Boston MA . . . Preparing for an assignment that will take you out of the country requires imagination and creativity. The basic technique is to imagine everything that could go wrong, and then be prepared to deal with it. This applies to your personal well being as well as the operation of your equipment.

A passport is the first requirement. Those currently being issued are good for 10 years. Get one now, before you need

it. You won't leave home without it!

You could take two of every piece of technical apparatus and still have trouble covering a story if your body goes on strike. Thus, the list of what to pack begins with items serving human needs and creature comforts.

Since bodies are as likely to break down as equipment, it's only prudent to pack a medical repair kit. Take plenty of aspirin, anti-diarrhea medication (Lomotil is a personal favorite), spare eyeglasses or contact lenses, and any other personal medication you may require.

Focus on Remotes

You'll also want a pocket calculator to do currency conversions and expense accounts, and a dependable alarm clock since your body will soon be totally confused about when to wake up. Hotel operators cannot always be counted on for a wake-up call, and the tiny beeper in your watch may not penetrate a jet-lag induced level of unconsciousness.

Add to these necessities an immersion heater, a sturdy cup and a jar of instant coffee. The opportunity to jump start your heart with steaming caffeine is a familiar way to start the day in a strange environment.

Even if you don't drink coffee, these simple preparations will allow you to silence your travelling companions' incessant complaints about the lousy coffee served in foreign countries.

Electricity is expensive and many hotels provide little more than enough illumination to keep you from tripping over the furniture. Savvy travelers, especially those who plan to work or read in their hotel room, pack a 100 watt lamp in a safe corner of their suitcase.

Before detailing the technical equipment you will need, a short digression on the subject of packing and carrying cases is in order.

International travel differs from domestic in one significant way: luggage limits are usually based on the total weight of your checked baggage, and not the number of pieces.

In the interests of economy, equipment should be selected and shipping cases chosen with weight as a primary consideration. Charges for excess baggage often exceed the cost of your ticket. Fees of over \$1000 between Europe and the US are not uncommon.

You should also carry an internationally accepted credit card or you may find your supply of travelers checks exhausted before the first flight departs.

In the interests of saving your back and easing equipment access as well as transportation, it is wise to use several small cases instead of a few big ones.

That giant foam-filled case that came with your camera should be left at home or turned into a sandbox for your kids. Smaller cases are easier to lift, easier to pack into a car trunk, and easier to organize by contents.

You can always recognize the crews

John Premack is chief cameraman at Boston's WCVB. Call him at 617-449-0400.

that travel full time by the large number of small cases they cart around.

Hand carry your camera. Provided you are not travelling alone, you will also want to hand carry the tape recorder. It is safer and cheaper. Your equipment will arrive when you do, and you won't be saddled with two empty cases for the rest of the trip.

With a set of fully charged batteries and an extra cassette in the recorder case, you will also be prepared for the unexpected.

If you are travelling with an edit pack, it is wise to have the cases fitted with removable casters. Invest in a sturdy folding dolly. Vacationers and flight crews use them to save the necessity of relying on porters. News crews use them to save their backs when porters can't be found.

Aside from a camera and deck, what else will you need? A tripod of course, packed in a shipping tube. A spare recorder is also a good idea.

Crews using the Sony BVU-50 as their primary recorder should consider making the back-up deck a machine capable of playback. While it will be heavier if pressed into service in the field, a BVU-110 or similar recorder will allow tapes to be screened in your hotel room.

Working as a one man band, my personal preference is two BVU-50s. I am not willing to lug a heavier deck under any circumstances.

Whatever you choose, be certain that both the primary and back-up recorders use the same batteries.

If you are going to screen tapes, you will need some sort of monitor. A small, battery operated color monitor is best. Have your maintenance shop install a jack to allow the monitor to be powered by a BP-90 battery.

An easy way to let a reporter screen tape and select sound bites is to use a Sony Watchman with an earpiece connected to the recorder. Surprisingly, this tiny black and white TV accepts a video signal directly from a camera or deck.

You have not finished packing until you have put together a small tool kit. Along with the usual hand tools and jewelers screwdrivers, take a volt/ohm meter for testing circuits and checking local electricity.

Another handy item is a battery powered soldering iron for minor surgery on cables and connectors.

While not exactly a tool, a registration chart is valuable if you are on an extended trip. Lacking one, you can usually improvise by drawing a couple of intersecting lines on the back of a sheet of paper.

This will allow you to make emergency centering adjustments through the viewfinder.

Don't forget to assemble a set of spare batteries to replace those installed in microphones and other small electrical devices. Cover exposed terminals with a piece of tape to prevent them from shorting out.

Failure to exercise this minor precaution can result in no batteries when you need them, or worse, a tiny fire inside your case.

According to Murphy's 32nd axiom, anything you have a replacement for won't break. While a spare camera would be sweet insurance against failure, it is obviously impractical.

The best hedge against camera problems is to pack "the book," the maintenance manual that comes with every camera.

If you have the rare luck to experience a failure, you will need to bring both the camera and circuit diagrams to the first available maintenance engineer.

Do not forget the circuit board extender card either. Many camera tests and adjustments require this "horseshoe nail."

Gaffers tape and a camera raincover are two other critical items that should not be overlooked. Of course, you will also need batteries, chargers, lights, electrical converters and plug adapters.

Next month, we will illuminate the entire topic of electricity.

Paulson Predicts Future

(continued from page 9)

more of this column. Perhaps I'll see you at NAB, and I invite you to visit my post-NAB wrapup column for some observations about planning for Diginet.

Paulson predictions

(1) None of you, unless you have unlimited, uncommitted funds and a drive to be first, will find yourself working in or managing an all-digital plant until at least 1995.

(2) None of you will buy digital VTRs off the floor at the 1986 NAB.

(3) Very few of you will have digital VTRs working in your plant as additional digital black box islands in your NTSC analog river before 1990.

(4) You will begin to convert your plant from all-NTSC signal processing and distribution to color-difference CAV in the next year . . . maybe!

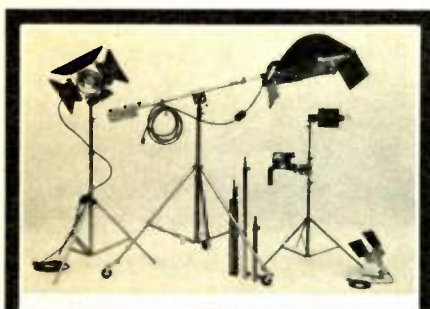
Your understanding of the benefits of CAV production and post-production operations requires two modus operandi changes from the flood of component analog video product manufacturers:

(1) Preparation and distribution of tutorial material which explains visually the benefits of operating in CAV;

(2) Processing product interfaces, and switching, distribution and display equipment which make it as easy to assemble a CAV system from off-the-shelf hardware as it is to assemble NTSC systems.

You will see neither of these MO changes at the 1986 NAB Convention. However, if the technically informed among you begin mailing copies of this column to product planners at your favorite vendors, as attachments to vigorously phrased systems needs descriptions, both changes will be in evidence at the 1987 NAB show, and possibly as early as the 1986 SMPTE exhibit.

For my part, I will continue to write non-technically of the benefits of component analog video signal processing in production and post-production. Write or call me if you have ideas on how to accelerate the elimination of this profusion and resulting confusion about the benefits and the applications of CAV.



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64th Convention Preview

Dallas, TX

12-16 April 1986

NAB Spotlights Technology

(continued from page 1)

products unveiled at the convention. A highlight, according to NAB Science and Technology VP Tom Keller, will be a clustered exhibit of high definition TV production gear based on the almost finalized HDTV production standard.

Attendees may also be able to view a joint NAB/Association of Maximum Service Telecasters (MST) advanced TV demonstration, according to NAB Engineer/Technical Editor Ben Crutchfield. This exhibit is tentatively slated to be part of a "high tech demo room" that will also feature other state-of-the-art gear.

Convention-goers will also get a chance to view other hot, sometimes controversial products, including Ampex's ACR 225 digital cart machine, which reportedly does not conform to the recently developed digital recording standards.

At press time, there was no official count on the number of people expected to attend the five-day convention, but Keller said he has high hopes for a record turnout.

"Since the convention is being held in Dallas, which is closer (than Las Vegas is) to where most people live, I think we'll get a lot of drive-in engineers," Keller said.

Exhibit floor space was allocated this year according to the number of years companies have participated in past conventions, with radio and TV exhibitors "side by side," Gayou said.

While there will be no clustering of

booths per se, Gayou said there will be a "natural" form of grouping whereby large companies like Ampex and Sony will be in the same general area.

There will be no RCA Broadcast booth this year, since the company folded its broadcast equipment division.

The large RCA space will be filled by Grass Valley Group and Panasonic, a decision that upset some exhibitors because the space was not divided up among many companies.

"We agonized over what to do with the RCA space," said Gayou. Rather than divide the space up by lottery among the many companies that had been convention participants for 10, 15 or 20 years, Gayou, with NAB's consent, said he decided to give it to two exhibitors.

One regular exhibitor, Yamaha, pulled out of the convention. Gayou said that several small companies have also pulled out, but that is not unusual.

According to a Yamaha spokesperson, the company was not satisfied with its allocated floor space and location.

However, Gayou said that Yamaha "did not have the number of years" of convention participation necessary to receive better positioning.

The exhibit floor will be open from 9 AM to 6 PM Sunday through Tuesday, and 9 AM to 2 PM Wednesday, according to Gayou.

There had been some talk last year of opening the floor a day early since many convention-goers attend the Saturday

engineering sessions. However, this idea was dismissed.

"The problem is that if we opened the floor on Saturday, it would not give the exhibitors enough time to set-up their exhibits," according to Keller.

Gayou added, "Lots of exhibitors didn't want to open on Saturday. They need the time to set-up their booths."

Seven engineering sessions specifically for television will be held this year, up from six last year.

There will also be four general engineering sessions for both TV and radio, the annual engineering luncheon, the often lively FCC question-and-answer session, and a series of evening workshops.

NAB Engineer Ed Williams is coordinating the events, which do not appear to differ significantly from last year's sessions. At press time, however, many of the details regarding the sessions had not been finalized, according to both Williams and Keller.

Keller said NAB is striving to create a "normal schedule" for all conventions so that engineers can get used to the events.

For example, the engineering sessions on Saturday, the Tuesday evening workshops and the question-and-answer session with FCC officials Wednesday morning are similar to last year's schedule.

"We try and keep a similar pattern, while at the same time, we're looking for new interests," Keller said.

Like last year, Keller said he expects the "very popular" electronic graphics and multichannel sound sessions to be the biggest draw.

The Dallas Convention Center meeting rooms, which are larger than those at the Las Vegas site, will be more "centrally located" to the floor, Keller said.

All sessions will take place in the same general area, as opposed to last year's convention in which sessions were held at two separate places.

"It will be easier to hop between radio and TV sessions," he said.

However, many of the evening events will not be held at the convention center, where they have a tendency to "roll up the sidewalks after dark," Keller said.

Evening workshops and events will instead be held at nearby hotels, he added.

Upwards of 50 hotels in Dallas have been targeted as convention hotels, with about 10 clustered in the immediate vicinity of the Dallas Convention Center. Another dozen hotels are clustered to the northwest at the Dallas Market Center.

Other NAB hotels are located further from the convention center, throughout the sprawling Dallas area. Bus service from the hotels to the convention center will be provided.

TV hospitality suites are expected to be concentrated in three hotels near the convention center—the Adolphus, the Fairmont and the Hyatt Regency (where some evening workshops are planned). Additional TV events will be held at the Plaza of the Americas and the Sheraton

Towers Dallas.

At press time, plans were still being finalized for many of the other events that will take place at the convention.

At the opening ceremony, NAB President Eddie Fritts will speak on "what we have accomplished and where we are headed in the future." Like last year, FCC Chairman Mark Fowler will address the closing ceremony the following Wednesday.

"Top name" entertainment is planned at both the opening and closing sessions, including country music star Willie Nelson.

Advanced TV Demo Likely

Washington DC ... Attendees of the NAB's April convention in Dallas may get a preview of an advanced TV demonstration that is planned for summer.

The Association of Maximum Service Telecasters (MST) and the NAB are planning to sponsor a series of advanced TV system demonstrations. According to MST VP Greg DePriest, the organizations will hold the demonstrations in July or August, probably in Washington DC.

However, NAB Science and Technology VP Tom Keller said there will be some sort of advanced TV demo set up at the convention.

While still in the planning stages, Keller said that at the very least, convention-goers will get information about the demos and maybe a look at some hardware.

According to NAB Engineer/Technical Editor Ben Crutchfield, the NAB is developing plans to have a "high-tech demo room" at the convention. A variety of product manufacturers will be invited to show their special equipment.

If the demo room is given the go-ahead, there will most likely be a preview of the NAB/MST advanced TV demonstration, Crutchfield added.

The two groups said the summer tests will be set up to allow the broadcast community to examine and choose definite systems before the terrestrial spectrum is given to other services.

The full demo will include an improved NTSC system, which includes compatible changes in the standard 525-line service, an enhanced 525-line scanning system, which would require modifications to transmission equipment and receivers, and high definition television (HDTV), which is completely incompatible with the 525-line system now in use.

Call Ben Crutchfield at 202-429-5346.

Saturday Sessions Will Start Show Off

by David Hughes

Washington DC ... Sessions on RF radiation, UHF transmission efficiency, advanced TV systems, multichannel sound (MTS), satellite technologies and several other topics are planned for the five day Broadcast Engineering Conference to be held at the NAB Convention in Dallas 12-16 April.

Like last year, the engineering sessions will start on Saturday, a day before the convention officially opens.

"The Saturday sessions are a permanent part of the convention," NAB Science and Technology VP Tom Keller said.

Also like last year, there will be Tuesday evening workshops and a Wednesday morning FCC question-and-answer session.

At press time, Keller said the session schedule was still being formed, and that changes in the times and dates were possible. Because of this, a rundown of presenters and paper titles was not available.

NAB will use four rooms for engineering sessions at the Dallas Con-

vention Center, down two from the six rooms used at last year's convention in Las Vegas.

However, Keller said the Dallas rooms are larger and located in one convenient place, offering "more flexibility" than last year.

Last year's engineering sessions were split among two not-very-close meeting room sites in the sprawling Las Vegas Convention Center.

Saturday

The Saturday broadcast engineering sessions will feature TV multichannel sound (MTS) including SAP channel requirements, production/post production, monitoring/recording and control room acoustics.

Last year, according to Keller, two MTS sessions were held. Even though only one has been slated this year, he said he does not see any diminishing interest in the topic.

"It hasn't leveled off," he said. "It's still going real strong."

Also planned for Saturday morning is

(continued on page 26)

1986 NAB Convention

MTS Equipment Field Expands

by David Hughes

Washington DC ... Stereo TV and improved audio continue to be major topics in 1986, as evidenced by some of the new products planned for display at this year's NAB Convention in Dallas.

More than 200 stations now broadcast with multichannel sound (MTS), and that number is growing. NBC and PBS have fully immersed themselves in MTS, while ABC and CBS continue to dip their

toes in the stereo waters.

The increasing demand for stereo TV sets, which feature higher fidelity than older sets with more "tinny" sound, has also forced many TV broadcasters to look hard at improving their overall audio.

Hot MTS and TV audio products scheduled to be unveiled at the NAB show include new stereo aural modulation and stereo reference decoders, TV stereo generators, an automatic stereo

synthesizer, TV broadcast demodulator, a number of stereo consoles, microphone systems, test gear, acoustic equipment, recorders and mixers.

Monitors, decoders and more

Hot new MTS products include Tektronix's single unit aural modulation monitor/decoder that provides measurements of the BTSC encoded signal (booth 3214). The 751 monitor displays up to 10 parameters at once on an electronic

bar graph display.

Tektronix will also show its new 760 stereo audio monitor that prevents out of phase stereo and aids stereo audio mixing, and other new products including the AVC-20 audio vector converter, the WFM-300 component analog video waveform monitor, and the SPG-170A NTSC sync generator.

Another new product is Modulation Sciences SRD-1 Stereo Reference Decoder (booth 2811). For use with the Tektronix 1450-1, or a similar demodulator, the SRD-1 provides monitoring test and measurement of a BTSC stereo signal from any stereo generator.

The unit can decode the stereo signal into left and right or sum and difference in either the BTSC encoded mode or the equivalent (1:1) test mode.

Inovonics will show the final, "in production" model of the new 710 TV stereo generator in booth 2434. The prototype was shown at the 1985 NAB exhibition.

Orban Associates will show the "missing link for the TV stereo broadcaster," its 275A automatic stereo synthesizer in booth 3444.

The 275A features stereo inputs and outputs, two types of automatic mono/stereo recognition and switching, smooth cross fades, audio-controlled switching between true and synthesized stereo, two remote-selectable stereo synthesis modes, full mono capability, and noise reduction on synthesized material. A remote control panel is also available.

The new 3713-A1 TV broadcast demodulator, with wideband audio capability and quadrature output for incidental phase measurement, will be displayed by Telemet in booth 3396.

HEDCO, booth 2751, will show its new HD-12 12 x 12 stereo audio and video routing switcher with RS-232 and RS-422 control cards.

Amek Consoles, booth 2558, will show for the first time its new APC 1000 audio console that features up to 88 inputs, buss options from 8 mono and 4 stereo to 48 mono and 6 stereo, and the Amek 4 Bank parametric equalizer.

The console is based on the "building block" principle. It can be configured in a basic simple format or with varying degrees of automation and additional features.

ATI-Audio Technologies, booth 2508, will show its new Vanguard series which includes the BC8DSR and the BC8DSL, featuring eight mixers, 12 balanced inputs and dual stereo program outputs.

Microphones, accessories

AKG Acoustics, booth 2521, will show several lines of new mic systems including the C-460 condenser system featuring the CK-1X, CK-2X and the new CK-3X capsules.

The firm will also show its new CK-61 and CK-62 ULS series cardioid and omni capsules for use with the C-460B, along with Q-34 headset/boom combinations for broadcast use and the K-240DF flat response studio monitor headphones.

Audio-Technica, booth 2407, will also show a line of new microphone products including the ATM5R miniature vocal microphone, the ATM33R instrument microphone, the ATH-M7 PRO studio phones, microphone stands, and a new Shotgun microphone accessory line.

In booth 2823, Beyer Dynamic will
(continued on page 27)

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1986 NAB Convention

Digital Cart Attracts Interest

by Edward Wytkind

Washington DC ... NAB convention attendees can expect to see at least one digital cart machine and a slew of other new products including VTRs, test equipment, cameras, switchers, character generators, signal processing gear, monitors, lighting equipment and other studio gear, according to early exhibit plans revealed by several manufacturers.

Generating perhaps the most pre-convention interest this year is Ampex Corporation which announced in January that it will introduce a non-standard digital cart spot player at the Dallas show. Meanwhile, Sony Broadcast said it plans to exhibit a new low-cost line of 1" VTRs.

Ampex digital cart

The Ampex unit, dubbed ACR-225, is a non-standard digital composite cart spot player with 256 cassette on-line storage capacity and a library data base providing identification and a history of more than 10,000 cassettes.

The unit's format has attracted a great deal of attention from various standard-setting participants (both US and international) because it does not comply with the standard for digital component videotape recorders. However, according to industry comments, many will wait to see the product before they pass judgment on it.

Ampex said the ACR-225 digital signal system "ensures higher reliability than conventional systems, reducing lost spots and protecting station profits." Moreover, it allows play list entry and "last-minute" modification. The unit also features a new tape threading mechanism that handles a tape with minimal stretching, according to Ampex.

New Sony VTRs

Sony Broadcast has revealed plans to exhibit a line of new low-cost 1" VTRs, dubbed the BVH-2000/10 and BVH-2000/12, in booth 3100. Sony will also display its new SP U-matic product line, which includes the BVU-850 and 870 studio recorder/player and the BVU-150 portable recorder/player.

These new VTRs are intended for duplication, production, post-production and on-air use. Sony will also display the new SU-L200 compact console unit designed to complement the full BVH line of VTRs.

Sony said the SP U-matic, when used in conjunction with the new SP tape, offers "third generation picture performance which compares to that of first generation conventional U-matics."

In booth 3214, Tektronix will introduce the 1730 Waveform Monitor and 1720 Vectorscope, designed to fit side-by-side on a rack. New features include a bright line selector with on screen read out of the line and field, four automatic front panel recalls, simultaneous two-channel operation on screen and X-Y inputs for stereo audio display.

The Tektronix booth will also include the WFM-300 component analog video waveform monitor, the TSG-300 component analog test signal generator and the SPG-170A NTSC test signal generator.

Character generators

In booth 3072, Chyron Corporation will showcase the SCRIBE high resolution text generator with "point-quality" resolution, and the CHAMELEON paint system, which employs an icon-oriented human interface and can be operated by a free-hand tablet.

The new CG-7000P character generator by ICM Video will be shown in booth 2711. The unit offers a large number of colors and background, preview and program outputs, 20-page memory, fonts via a plug-in module, crawling and scrolling, auto sequencing, two character sizes and character flash.

In booth 2490, Mycro-Tek will show the new production font it has added to the Mycro-Vision Ernie character generator as a standard feature. The new font features characters in upper and lower case capital letters, ranging in size from 32 (upper) to 24 (lower) scan lines. Characters are available in a wide range of graphic modes, including single height/width, single height/double width and other mode pairs.

Knox Video Products, booth 2611, said it will unveil the K40 Microfont, a one-piece (keyboard and generator) "full-featured" character generator with a wide range of colors, variable speeds, scroll and crawl, genlock capability and high resolution.

Switching gear

Shintron Company, booth 3036, said it will exhibit the EC2000 EMPRESS component switcher with a downstream keyer/chromakeyer. It will also display the DK3/CK3 downstream shadow keyer/RGB chromakeyer, the 392 EMPRESS DUBBYC component post-production switcher and the 12x-C4 12-input, 4-output component video routing switcher.

HEDCO, in Booth 2751, said it will display the HD-12 stereo audio and video routing switcher with RS-232 and RS-422 control cards, the VAC-300 video activated switcher, the SSG-321 audio test generator, the GSC-101 microprocessor-based switching controller and the HD-50 50x50 video and audio routing switcher.

Dynair Electronics, booth 3409, will unveil new video switching gear for HDTV. The Series 1600 features "ultra-wideband" switching for graphics and HDTV, with high crosstalk isolation. Dynair will also show the SYSTEM 23 machine control system with SMPTE/EBU "ESbus" controls and components.

The new Vital 3000 video production switcher will be shown by Vital Industries in booth 3191. The unit features five keys per M/E unit, permitting up to 16 self-filled keys. It also has dual handlebars and two auto-transition units, and offers multiple-key entry capabilities.

In booth 3567, Di-Tech will exhibit the new 9001 color CRT master XY controller with lockout capability, the 937 alphanumeric XY control panel with breakaway, the 948 40 LED pushbutton panel with triple breakaway, and the 7006 dual meter/speaker monitor and amplifier.



ACR-225 Digital Cart Spot Player

VTRs, studio support gear

Faroudja Laboratories, booth 3408, said it plans to introduce the Flesh Tone Corrector automatic color corrector which corrects flesh tones within a +15° or +30° window and alleviates color balance problems.

Other new Faroudja products include the NTSC to RGB, YIQ decoder with both horizontal and vertical dot suppression and cross color elimination, and the NTSC encoder which delivers NTSC free of "cross-color and cross-luminance artifacts," according to the company.

Booth 3086 will feature four new low-cost time base correctors by Microtime. Three of those models were built for NTSC applications, while the other is for PAL B or PAL M. All units feature freeze and digital comb filters, viewable high speed pictures, synchronizer capability, dynamic tracking, vertical interpolated field freeze, genlock and various other functions.

HM Electronics (HME) will exhibit their new RL742 two-channel, rack-mounted loudspeaker intercom station in booth 2619. The RL742 features simultaneous talk/listen with a headset or handset. HME will also display the new

single-channel BH720 and dual-channel BH721 belt pacs.

Lyon Lamb Video Animation Systems, booth 2932, said it plans to show the new ENC VI Color Encoder/Sync Generator. The firm will also display new interfaces for Hitachi, Sony and Panasonic VTRs.

Lake Systems, featured at booth 112, will show the LA-KART multi-channel video cart system that addresses up to 28 VTRs with complete "random access."

FOR-A Corporation, booth 3599, said it will introduce eight new products ranging from a frame synchronizer to a new time code generator.

The company will display the FA-800 frame synchronizer with automatic level control, the DEC-110 NTSC color to RGB decoder with processing amplifier, a new component color corrector system and the CT-500 component transcoder with RGB, YIQ or Y/R- Y/B-Y inputs and output interfaces with full matrix transcoding capability.

Channelmatic's booth 2548 will feature the Broadcaster I videocassette "changer mechanism" which automatically accesses up to 15 3/4" videocassettes. The Broadcaster I, utilizing a computerized stepper motor drive mechanism, can automatically select, insert and playback cassettes. Microprocessor control allows 7-day programming with up to 100 events per day.

Prompters, monitors and CRTs

Telescript's new equipment display in booth 3351 will highlight the C-64 networking prompting program with built-in word processing, underline, edit/insert and script order features.

The Model 6545 color monitor and 6550 Micromatch Photometer will be shown by Conrac in booth 3124. Available in 13" and 19" screens, this monitor system features automatic setup, soft-

(continued on page 24)

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1986 NAB Convention

Growth in Effects to Continue

by David Hughes

Washington DC ... One of the highlights of last year's NAB Convention was the dazzling array of video graphics systems, according to many convention attendees. Exhibit plans revealed by several manufacturers this year indicate that the 1986 convention will continue that trend.

Several new effects and editing products will be unveiled at NAB, displayed alongside established products shown at previous exhibitions.

Some of the new gear is compatible with component systems. For example, Grass Valley Group (GVG), booth 3112, will show its new Kaleidoscope DPM-1 digital effects system. According to the firm, it features up to five channels of effects.

The system is configured to allow the assignment of channels among as many as four channel control positions. The DPM-1 accepts composite video and analog component signals along with the SMPTE/EBU parallel digital component signal.

GVG will also show its new "EZ-Link" series 85 fiber optic systems, in addition to a variety of established production switchers, editors, master control/automation systems, timing, processing and distribution equipment and fiber optics gear.

Graphics, effects

The new PPM-1 polar video picture mover, an analog device for full range picture location, will be displayed by Apollo Video in booth 3468. The unit allows for a range of picture locations when used with any gen-lockable source. A full-sized picture may be positioned anywhere on or off screen.

The firm will also show other new products including the PVM-1 polar video production switcher, the SAG polar

video safe area generator, the PAF-1 polar video auto fade unit, the 605N Acron NTSC encoder and the 512N Acron pulse generator, in addition to its line of established products.

Abekas Video Systems, booth 3527, in addition to new products that at press time it had not announced, will show a range of products including its A42 digital still store which offers storage of up to 1050 frames or 2100 fields. According to the firm, sequences of stills can be quickly created and edited for on-air playback with dissolves, cuts or vertical wipes.

The firm will also show its A52 digital special effects system, the A52 digital effects combiner, and the A62 digital disc recorder.

Logitek, booth 2807, will exhibit several new products at the NAB show, including "Crossfire" an automatic audio crossfade amplifier designed for A/B roll edit systems.

The firm will also show the new "Stereorack," a stereo version of Logiek's Audiorack rack-mountable 6-input audio console.

The new Soundmaster Audio Editing System will be shown by Amtel Systems in booth 2820. The system features a complete turnkey audio-for-video editor with its own synchronizer modules, 2500 event edit, decision list and list management functions.

Digital Services Corporation (DSC), booth 3304, will show its new non-real time graphics animation system which is able to flip, spin, rotate and perform metamorphosis from one shape to another.

Echolab, booth 2827, will show its new DV5 digital video effects unit which uses computer adjusted controls. The unit can be upgraded to a component version.

Electronic graphics and editing depend not only on the hardware, but also on

the software programs that drive the hardware.

Comprehensive Video Supply (CVS), booths 25 and 26, will display its new computer aided video software products, including its recently expanded "Computer Aided Video" product line.

The firm will show its new line of videotape logging software called "LOG-IT" which replaces scribbled shooting logs with a computerized record of time codes and notes. LOG-IT reads the SMPTE time code from an address track or audio channel.

CVS will also show a variety of new software products that allow an Apple computer to be used as a teleprompter, data to be transferred among a variety of edit controllers, computerized tracking of cable for TV stations and production houses, and video scriptwriting for CP/M computers.

Animation software

Computer Graphics Laboratories, booth 2929, will show its new "Animate!," an animation software package for the "Images II+" electronic design system. The unit creates animations with a variety of effects and operates VTRs for hands-off animation recording.

The firm will also display other new products including "InstaMation," which combines the AGILE-2000 real-time display hardware with a software package designed for quick animation project turnaround.

The model 2600CC compact controller will be shown by Adams-Smith in booth 2488. The unit is an audio-for-video tape synchronizing system that combines integrated multi-transport controls with sophisticated audio editing capability.

The firm will also feature its new model 2600 A/V double-system audio/video editor that provides simultaneous off-line video editing and on-line audio mastering.

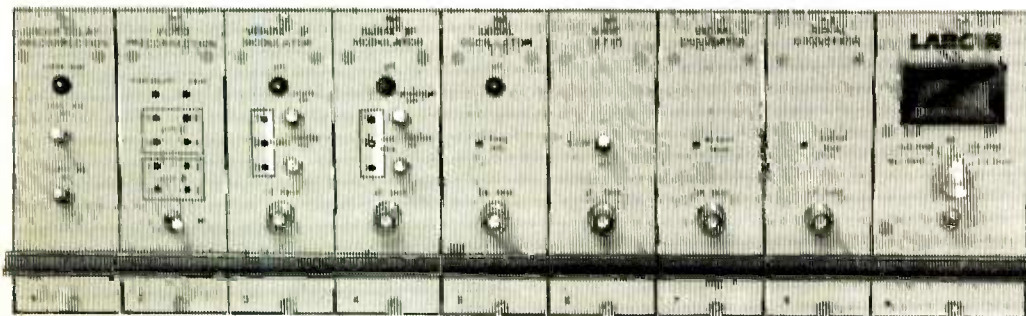
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WGBH	Boston
WVJW	Boston
WRC	Washington, D.C.
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KPRC	Houston
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WTVF	Nashville
WUSA	Minneapolis
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WVIZ	Cleveland
WCET	Cincinnati
WCMH	Columbus
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WNIN	Evansville
WRBT	Baton Rouge
WFSB	Hartford
WTIC	Hartford
KSL	Salt Lake City
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KPHO	Phoenix
WHAS	Louisville
WLEX	Lexington
WPRI	Providence
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(partial users list as of Feb. 1, 1986)

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"Don't be ridiculous", you say. "We're talking about a television station here — you know, comedy, drama, news, sports, music, movies — TELEVISION! Not some maximum-music-more-often-less-talk-all-hits FM rocker."

"Just what are you really trying to say, here?"

Just this: With one major exception, most audio processors available for use with MTS stereo generators were originally designed for the rough and tumble loudness wars of FM radio. And these rehashed FM designs often use techniques, such as multiband compression and composite clipping, which may be OK for some radio stations (the "to hell with dynamic range, just make us LOUD" kind) but are simply not appropriate for the wide range of programming on your TV station.

"So who's the major exception?", you say. Thanks for asking. It's Modulation Sciences. Our Television Stereo Generator's audio processor was designed from the ground up for TV and TV only. Designed to make you the best sounding station in town, not just the loudest. And designed to preserve wide dynamic range and all the audio production values in your whole range of programming. In other words, designed to truly optimize your audio, not overprocess it to death.

"You wouldn't try to hype me, would you?", you retort. No, we wouldn't. And neither would Steve Davis, CE of WPRI, Providence. Here's what Steve has to say about the Modulation Sciences TSG which he installed at WPRI last summer:

"The audio processing improved the quality of our sound significantly. This was a plus for viewers with monophonic receivers as well as those with stereo sets. As a result of the excellent audio processing in the TSG, we've been able to eliminate most of the audio processing in the program line at the studio, with the exception of very light peak limiting to protect the STL."

Thanks, Steve. And here are some more good reasons to choose Modulation Sciences' high quality approach to TV Stereo audio: Consumer TV set audio is getting better and better, and viewers can now hear the difference between clean, wide dynamic range TV audio and overcompressed sound. Compact discs, Hi-Fi VCR's and the like are helping educate viewers to expect better sound. And overprocessing can lead to viewer/listener fatigue. And we haven't even mentioned the certified superior performance specs of our stereo generator itself. We could go on and on...

"Please don't. You've made your point."

OK. But just one more thing. Our major competitor forces you to use his audio processor with his stereo generator. You have no choice. And if it turns out later that you don't like the sound of his kind of processing, you're out of luck.

But Modulation Sciences doesn't force a "shotgun wedding" between our audio processor and our generator. So we can make you this "can't lose" offer: Order your TSG with its companion audio processor card, and use it on the air for 30 days. Check with everyone you respect, and ask about the audio quality of your station. If you're not sold on the sound, we'll take back our audio processor card and you can mate your TSG with any other audio processor you choose.

"Fair enough", you say. **"You've got a deal... on one condition. Just don't send the guy in the photo to deliver your TSG to the station".**

"No problem", we reply. **"He can't hear a word we say, anyway."**

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1986 NAB Convention

SNG Developments Exhibited

by Edward Wytkind

Washington DC ... The burgeoning satellite news gathering (SNG) industry is expected to steal much of the attention at this year's NAB show.

Most of the major players, as well as one new market entrant, announced plans to reserve both indoor and outdoor booth space to exhibit their SNG and ENG equipment, including new transportable uplinks, fly-away units, satellite

communications packages and ENG units and related gear.

BAF plans "surprises"

Massachusetts and Washington DC based BAF Communications has several "surprises" planned for booth 2544 and the outside NAB exhibit area, including a new fly-away package, according to BAF VP and GM Jim Vautrot.

The company plans to display a complete BAF 340-T (turbo) transportable

uplink, built by Wolf Coach, featuring a Will-Burt mast with remote "rotational" control, a Scientific Atlanta exciter, a 2° compliant 2.3 meter antenna, an RF spectrum analyzer and other components as standard features.

Conus Communications said it will feature its Washington (DC) Direct system, which provides live and taped satellite coverage of events on Capitol Hill. While Conus' SNG network is a shared newsfeed reserved exclusively for mem-

bers, the Washington Direct system is available to any TV or radio station.

Conus will also focus on its SNG network, which now reaches about 30% of US households.

HUBCOM

SNG hardware builder Hubbard Communications (HUBCOM), which builds the Conus NewStar unit, will unveil second generation SNG equipment, with emphasis on new electronics and smaller, lighter, more easily deployable units, according to VP Alan Jester.

HUBCOM will also view a new fly-away transportable uplink truck that can be transported via jet. In addition, the company will introduce the baggage checkable HC-5 audio and video flight pack for audio/video uplinking. The HCD-500 video time delay machine will also be shown.

"We plan to bring a whole new bag of tricks," Jester said.

New transportables

Featured in booth 3210 will be Midwest Communications new S-25 SNG unit with on-board editing and microwave communications capabilities and other new design features. The company said it will also show various other configurations of fixed and transportable SNG and ENG gear.

Built on an IVECO chassis, the S-25 sports a 2.4 meter antenna with a "storage system" that protects against snow and ice accumulation. The unit also features a 300 W or 600 W single-phased combined or redundant amplifier network and the new SCR-25 satellite communications package that, according to Midwest, can talk to "any" satellite system.

Dalsat, which designed and manufactured the SNG-25 transportable uplink featured in the Florida News Network, will unveil the new SNV-6 (six foot) transportable uplink van configured with editing and production capabilities.

The company also said it plans to hold a live teleconferencing demonstration, but would not divulge details.

Microdyne Corporation, booth 3520, will exhibit a new version of its Quick-Link Ku-band unit, which was introduced last year as a towable unit. This year's model is a fully integrated truck that features "auto acquisition" to the satellite.

According to Microdyne Marketing VP/Satellite Communications Dave Alvarez, auto acquisition is an important feature because as the SNG industry expands, double illumination may become a problem.

However, the acquisition feature also makes the unit dependent upon central transponder control by an operator or middle-man, Alvarez added.

Microdyne will also show the new MAT terminal, a computer-controlled C and Ku-band receive terminal that can store up to 99 programs or events that can be recalled automatically from memory.

New firm and fly-away

Vincent Walisko, former director of technical operations for defunct GEC McMichael, will bring his recently formed company, Spectra Communications, to the NAB show to exhibit a new Ku-band fly-away package.

(continued on page 27)

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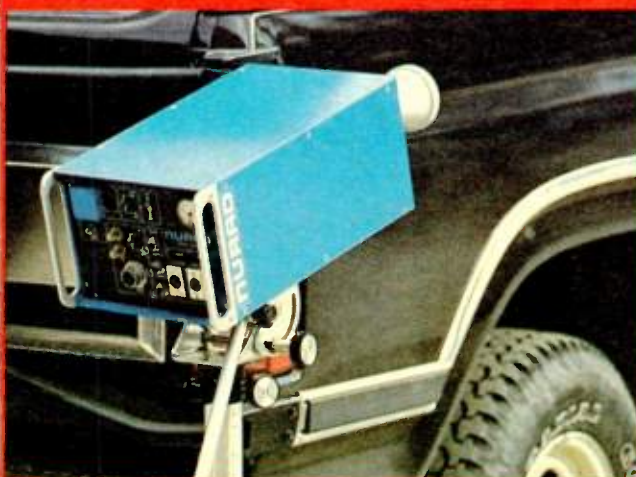
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WRH

1986 NAB Convention

Computers Among New Gear

by Edward Wytkind

Washington DC ... The newsroom computer race, which heated up at last summer's RTNDA convention, should grab at least part of the NAB show spotlight this year as more stations prepare to automate their typewriter-powered newsrooms.

The exhibit floor will also feature new weather graphics systems, a VBI transmission unit, VTR automation gear and

other products. A two part broadcast facility planning workshop should also attract attention.

Basys, which announced an agreement with ABC News last year, will introduce a new archive system designed for long term storage of scripts, stories and system "help" files.

The company will also display its newsroom system, which is used by about 50 stations in the US, Europe and Australia. Major customers include NBC

and ABC TV and radio, BBC radio and ITN News, and the Cable News Network.

Booth 3144 will feature products by ColorGraphics Systems, which will unveil an add-on database system for its NewStar newsroom computer. The company will also display the Artstar III-D, a three dimensional graphics and digital paint unit in one 24 bit-per-pixel system.

Data Communications, booth 3204, which last year unveiled the BIAS news-

room, said it will showcase the new BIAS PC cable (IBM-based) system for sales, traffic and billing. The system has multi-channel capability for all size cable systems.

In addition, the firm said it will exhibit the BUYLINE electronic contract and invoicing system, which links a station to sales representatives or invoicing agencies.

At press time, the other major newsroom computer companies including Columbine, Media Computing and Terminal Systems Corporation had not announced their convention plans.

The Model 6000 CD Front-End weather work station with color display and the "Clutter Free" radar will be featured in Environmental Satellite Data's (ESD) booth 2786.

The company said the Front-End ingests data via satellite at a rate of up to 9,600 baud. The Clutter Free radar is a dial-up system designed to eliminate ground clutter problems associated with other systems.

In addition to its newsroom computer systems, ColorGraphics will exhibit the new WeatherLine 256 and LiveLine IVA weather graphics systems. Both systems offer automatic map drawing of any country, state or county, and can link to most weather transmission and dial-up services.

WSI Corporation, booth 2642, will display the ASTRO-WX weather package, which includes the new ASTROgraphics and ASTROdata systems, and 24-hour ASTROfax facsimile map print-out (unveiled last year).

Offering both weather graphics and composite satellite/radar images, ASTROgraphics features SUPERSat satellite images that are available in the standard Lambert Conformal US national projection or curved "GOES East and West" projections, and CLOUDplus—a nationwide image of clouds in 32 tints of gray.

ASTROdata utilizes WSI's worldwide database, which gathers information from the National Weather Service, the Federal Aviation Administration and the World Meteorological Organization.

Advanced Designs Corporation will display the DOPRAD II doppler weather radar system featuring 8-plane graphics capability and color display of 256 colors chosen from a palette of 16.8 million. The DOPRAD also offers 768 x 480 resolution and RHI (range height indicator), which provides vertical storm-cross analysis, and 64 different ranges.

New lightning data display systems, which allow TV stations to place lightning maps on the air, will be shown by R-SCAN Corporation. The company said lightning can be displayed on Scientific Atlanta's Video Information System, the Kavouras TRITON-X unit and the IBM-based Color Connection by ESD.

Colorado Video, booth 3447, will introduce the 496/497 video multiplexer/demultiplexer which time multiplexes as many as four synchronized video sources.

The 496 transmits two, three or four video signals over a single channel by time-sharing on a frame or field basis. At the receive end, the 497 incorporates two to four solid state video memories which offer continuous display of all demultiplexed video signals.

In addition, Colorado Video will display
(continued on page 25)

While They've Been Fighting About TV Stereo...

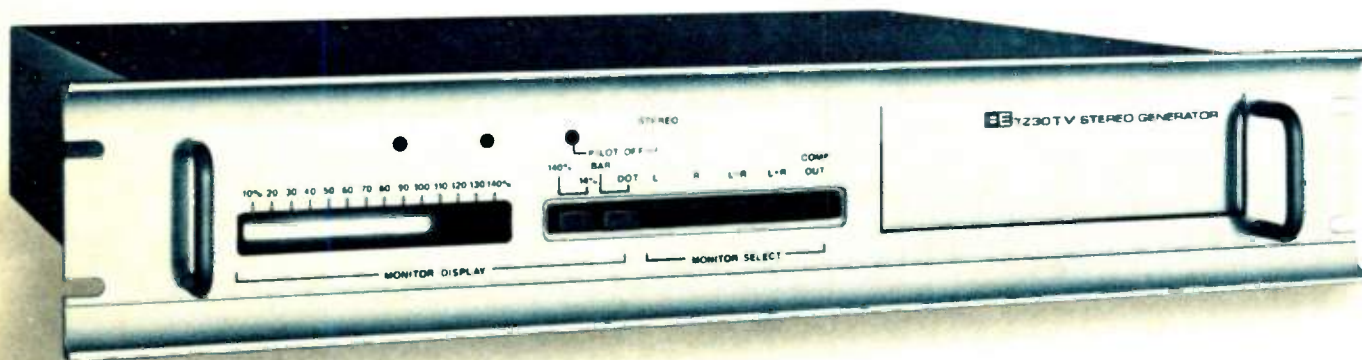
We've Been Working!

While two of our competitors have been busy slinging mud at each other, we've been quietly installing our TZ-30 TV stereo systems in television stations across the country.

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Our SP2016 Effects Processor/Reverb, on the left, is the most versatile audio effects production tool in the world. Like a digital video effects unit, the SP2016 is completely software controlled: Just when you think you've seen (or heard) every effect possible, the software magicians do it again!

There are over two dozen effects currently available for the SP2016. Everything from a 20 band vocoder, to multitap, chorus, loop edit sampling and much more. The SP2016 also gives you the widest variety of reverberation programs in the business. Subtle enhancements to deafening roars. Small rooms to huge cathedrals. Even trick reverbs that go backwards, or go on forever. Most SP2016 programs are full stereo in and out.

On the right is the H969, part of Eventide's world famous Harmonizer® line. Eventide Harmonizers are very versatile too, with effects such as flanging, delay, echo, reverse and repeat. The Harmonizer's

special talent is pitch change. It can raise and lower the pitch of voices, music and sound effects, to add depth and presence, create comic voices, or impart urgency. You can even change a man's voice into a woman's. Or vice-versa.

Eventide Harmonizers have another amazing plus: Time compression, at a cost far lower than stand-alone devices. You can Timesqueeze™ or expand audio programs easily, and do the same for video with 1" VTR's (and our PTC-960 accessory).

Everything that digital video effects bring to TV pictures, Eventide digital audio effects bring to TV sound. Of course, there is *one* big difference between video and Eventide audio effects: The price.

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1986 NAB Convention

Studio Products Will Abound

(continued from page 17)

touch user controls, American Standard Phosphors, auto-sensing of NTSC and PAL B signals and selectable RGB or decoder inputs.

The CPC-1000 computerized teleprompter (IBM or compatible PC-based) will be displayed in booth 132 by Computer Prompting Corporation. The unit features variable speed "smooth scroll" and operates at all requisite teleprompting speeds.

New York-based Q-TV will unveil a new IBM-compatible computer prompter system, but would not divulge any details before the convention.

Lighting gear

BW Lighting Systems, booth 2922, announced it will exhibit a new 12K Soft-light studio system with 12,000 W maximum output. The system weighs 67 lbs including tubular yoke.

A 12,000 W electrical distribution center will be introduced by Union Connector Co. in booth 2923. The system features a 100 amp single phase input with six 20 amp (and one 60 amp) receptacles for output.

Union Connector will also show the Stage Pro software system that provides memory for multiscene presetting, chasing and lighting effect programs in the Commodore-64 computer.

In booth 3024, Strand Lighting said it will exhibit the remote control Show-Changer for video production, concert lighting and other applications. The company will also view the Automated Par-Lite which utilizes an incandescent PAR 64 lamp for spot or flood beam "spreads."

Mole-Richardson, booth 3368, will exhibit six new lighting products, including the M-R Type 6451 1,200 W HMI Soft-light, the 6191 250 W HMI, the 6295 ballast for the 220 V 12,000 W HMI, a theatrical par lamp and a 6,000 W DC Molelectronic dimmer.

LTM Corporation, booth 2537, said it will introduce four new lights in its MARK III line of HMI lighting. Among these will be new daylight/interior lights, including the smaller LUXARC 575 W and 1200 W lights, as well as new exterior lines.

Booth 3598 will feature microprocessor-based studio lighting control systems by Colortran. New products include the Magic Sheet, which duplicates several console keyboard functions with the use of a high resolution graphics table, a six-color polycarbonate overlay and an optional color monitor.

Camera equipment

Ikegami Electronics, booth 3150, said it will view the HK-323 3/4" and 1" fully

automatic cameras with microprocessors, as well as a wide range of other models. The company will also show the HDTV Telecine and Projection system and a new low-cost black and white monitor.

The new Video 20 studio and O.B. pedestal for ENG cameras will be introduced by Sachtler Corporation in booth 3419. Featuring a pneumatic supported center column, the pedestal can accommodate Video 20 or 25 fluid heads.

A new line of heavy duty camera support systems featuring a new metal tripod with internal adjustable spread will be unveiled by O'Connor Engineering Labs in booth 3364. The new tripod, dubbed 155M-B, is designed to support the company's heavy duty fluid heads for larger format video cameras.

Schneider Corporation's exhibit in booth 3343 will highlight the new TV 80 wide angle zoom lens for 3/4" tube cameras. The TV 80 features a built-in test pattern diascope and a 2X range extender. The lens has high resolution optics and a digital feedback servo system.

Total Spectrum Manufacturing (TSM) said it will exhibit a new camera mount and controller. The Preview Controller will allow the company's HS-100P pan tilt system to be operated with tandem control.

TSM's FCS-20 font composer/title stand features a 9X12 "triple movement" art stage for X, Y and rotational positioning, a stage that moves along steel shafts on bronze bushings and other new design features.

A new camera lifter system providing up/down camera movement and a new video slide image system designed to magnify 35mm slides or two 1/4" transparencies to a 4.5" image will be shown in booth 2771 by Interactive Motion Control.

Other equipment

Clear-Com Intercom Systems announced it plans to show the new IFB program interrupt system in booth 3352. The system is comprised of a talent access station, a program interrupt controller, up to four talent receivers and interconnect cabling and power supply.

Booth 3566 will feature the 848 Matrix intercom system by RTS Systems. The 848 is a 24X24 distributed summing bus system that does not require a central matrix. Signals are routed to stations via a 50-conductor cable.

ADC Telecommunications, booth 2819, will introduce the Patch Kit—a do-it-yourself patchbay offering the same features as ADC's prewired patchbays.

In booth 2428, Gray Engineering Laboratories will feature the new TCA-143 time code analyzer, the DT-213 data transmitter (time code generator) with jam sync and the FC-142 film counter/character generator.

PATENTS APPLIED FOR

scene TO scene
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1986 NAB Convention

Automation Systems Viewed

(continued from page 22)

play its yet-to-be-named freeze frame VBI (vertical blanking interval) transmission and receive system, which utilizes one line of the VBI to transmit NTSC "video snapshots" in eight seconds. A company spokesperson said the system is ideal for two-way interactive audio conferencing in remote teaching applications.

The Canadian firm H.A. Solutec Ltd. will exhibit the SOL-6800/UIS (upgradable intelligent system) in booth 2530. This new system can control up to eight VTRs with a 12-input switcher.

National Television Systems will exhibit the new CAPS (computerized automatic programming system) in booth 2472. CAPS is a multi-task computer system that interfaces several types of broadcast equipment, including tape machines, switchers, satellite antennas and receivers. The company said it will demonstrate the CAPS-408 video tape playback programming system using SMPTE time code information.

Several new products will be shown by Leitch Video of America in booth 3559, including the DAC 5000 series of digital analog clocks and the CSD5300 master clock drivers.

Leitch said it will also display the SCH7000 monitor—a device that measures the subcarrier to horizontal fade relationship of a composite video signal and horizontal timing.

Other Leitch products scheduled for display include a new master clock auto-changeover, a digital time display and the TTG1120 and TTG1130 transmission and transmitter test sets.

In booth 3342, Television Equipment Associates (TEA), will exhibit new Matthey low-loss and zero-loss video relays. Featuring reduced insertion loss, the low-loss version will make amplification easier for large amounts of delay, the company said.

Referring to the zero loss delay, TEA said Matthey has eliminated the need to amplify signals from delay lines. The zero loss "ZL" series is compatible with Grass Valley Group "R" rack mounted distribution amplifiers.

Tentel will display a new broadcast audio cartridge tape tension gauge, dubbed the T2-H7-AC, in booth 3326. Among its features, this new gauge has "offset probes" that can be inserted inside a cartridge to measure inherent tape tension and determine quality performance.

Listec Television Equipment Corporation, booth 3579, will display the new Vinten MicroSwift Remote Servo camera control system, which controls pan, tilt,

zoom, focus, iris and pedestal height by remote control.

In booth 2728, Hipotronics will exhibit the PESCHEL Automatic Voltage Regulator (PAVR). Optional features include individual phase control, a bypass switch and transient suppression.

Kinometrics/TrueTime, booth 2513, will show the Universal Clock Driver (UCD), which it unveiled at last year's NAB convention. Any of the company's synchronized clocks, in conjunction with

the UCD, can simultaneously drive up to seven remote clocks and displays.

In booth 2500, Rees Associates will demonstrate its computerized programming and planning process, which provides analysis for present and future broadcast facility space requirements.

Rees said it will also conduct a two part facility planning, design and construction workshop on 14 April as part of the NAB's official convention program.

Part one of the workshop, titled "Planning For Your Broadcast Facility's Future," will address key issues involved in facility planning. Part two will cover "Efficient Design and Construction of Your Broadcast Facility" from an owner's perspective.

The workshop panel will consist of New York Times Broadcasting Company President Frank Roberts, NBC VP of Operations/Engineering Duffy Sasser and KVUE TV VP and GM Joe Jerkins.

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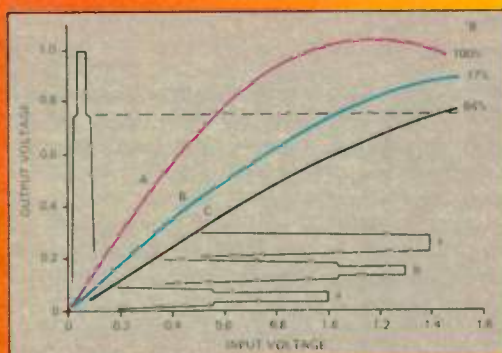
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(Klystron output voltage versus input voltage (relative values))

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LABEL

1986 NAB Convention

Tech Sessions Start Show Off

(continued from page 15)

a session on TV graphics that will examine quality improvements, post production and system configurations.

Last year's graphics sessions were "very popular," Keller said, and he does not expect this year's session to let anyone down either.

A Saturday session on "TV recording and tape" is also scheduled. Topics to be covered include small format user requirements, digital VTR user re-

quirements, digital standards and high performance tape.

Sunday

Sunday TV sessions, which will be held in the morning before the afternoon opening ceremonies, are slated to include "TV system maintenance," which will deal with ENG battery systems, quality control, video cart maintenance and tower maintenance and deicing. A panel discussion will also be fea-

tured.

The rest of the day is left free for the opening ceremonies, scheduled to take place at 2 PM, and the exhibit floor.

Monday

Monday sessions will highlight TV "new technology" including component and digital video, auto spot recording, fiber optics, studio lighting and improving NTSC.

Another Monday session will be devoted to satellite systems. Topics will include satellite news gathering, Ku-band technologies and interference control.

Keller said there will be a joint demonstration of advanced TV systems with the Association of Maximum Service Telecasters (MST) during the convention.

Subject to last minute changes, Monday will also include general technical sessions on UHF TV transmission systems featuring the latest developments in the battle for klystron efficiency. Updates are scheduled on the Multistage Depressed Collector program and the new generation of klystron transmitters.

An "engineering special" on broadcast auxiliary has also been scheduled. New ENG antennas, conserving STL spectrum, 23 GHz systems and frequency coordination will be examined.

Keller said this topic has generated much concern among broadcasters with the FCC's plans to increase spectrum efficiency of the broadcast auxiliary band by permitting non-broadcast sharing.

Tuesday

An "advanced TV systems" session will feature high definition (HDTV) production and transmission. Progress reports will be presented on ATSC and CCIR activities, the MUSE HDTV transmission system and audio for HDTV. Spectrum conservation and standards development will also be discussed.

The problems of non-ionizing radiation and compliance with new FCC guidelines and local standards will be discussed at a Tuesday technical session. Richard Tell of the EPA will review techniques for measuring RF radiation levels.

The RF issue has generated a lot of controversy in the past year, and Keller said he predicts a large turnout for this year's session.

The annual Engineering Luncheon will be held Tuesday at noon. The Engineering Achievement Award will be presented to George Brown, who holds a large number of patents in both TV and radio development.

"Shirt sleeve" engineering workshops on Tuesday evening will cover a variety of topics including acoustics and TV transmitter measurements. They probably will be held in the nearby Hyatt Hotel, rather than at the convention center, Keller said.

Admitting that in the past, the workshops have not produced large turnouts, Keller said this is expected considering their "very specialized nature." He said he believes they are still worthy events, however.

Wednesday

An FCC engineers forum will conclude the engineering sessions Wednesday morning. Engineers from the Commission's Mass Media Bureau, Field Operations Bureau, Office of Science and Technology, and Plans and Policy department will field questions.

"Even though last year's FCC session started at 8 AM, we had a hell of a good turnout," Keller said. "It's a good way to clean up after the sessions."

Keller added that the give-and-take also gives FCC officials a better idea about what broadcasters' concerns are.



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Model 8150A is designed to work with OPTIMOD-FM Models 8000A, 8100A, 8100A/1 and other audio processors, and is compatible with our 8100A/XT Six-Band Limiter. When coupled to Model 8100A/1, the Model 8150A also improves conventional stereo performance and loudness capability.

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1986 NAB Convention

SNG Hardware Choices Expand

(continued from page 20)

Spectra spokesperson Bill Brobst said the company hopes to hold a live demonstration of the unit in Washington DC and New York prior to the convention. At press time, a timetable had not been set.

The Spectra fly-away unit will be "similar" to the McMichael (now Marconi) NEWSHAWK, but will incorporate several different design approaches and RF components, Walisko said.

Broadcast Microwave Services (BMS), booth 3578, will display a computerized Ku-band transportable uplink. According to the company, the unit's key design feature is the BMS TAA-400 uplink controller, a software-based unit that utilizes on-board navigational equipment that automatically seeks and locks on to any "user-defined" satellite.

The system also features a video receiver/exciter that can be configured to any Ku-band transponder (both full or half). And as an option, BMS can equip the unit with the BMA-3000 autotracking antenna system which is mounted on a 30' air-driven mast.

Other design features include a 500 W HPA, a 3.7 meter folding antenna, an SCPC telephone system and dual video receivers.

Harris Corporation Broadcast Group, booth 3136, will show several new products in the SNG/ENG area, including the SNG PUP (portable uplink package) system, a 4.5 meter Ku-band satellite antenna and a 2.0/2.5 GHz ENG central microwave receiver.

COMSAT, booth 2482, said it plans to show the SkyBridge transportable uplink unit and satellite transponder co-

ordination and communications service that it unveiled last year. The company will also conduct a live satellite demonstration at its outside booth.

Despite an announcement late last year that it was planning to build a new fly-away unit, a COMSAT spokesperson said a fly-away version will not be shown at this year's show.

ENG units and gear

MZB & Associates will display new ENG and production vehicles, including a new ENG 4x4 Blazer equipped with a 42' mast, stabilizers for mast use, 19' equipment racks and other standard features. The company will also exhibit the MZB-14 mobile production system.

A new compact ENG/SNG Ku-band transportable van will be shown in booth 3308 by E-N-G Corporation. The van has a roof-mounted remote controlled antenna system and a separate power system for electronics and utilities. As options, E-N-G offers a production and editing package, an ENG transmit or receive system on 2.7 or 13 GHz broadcast frequencies, a 30' or 42' pneumatic mast, two-way communications, an SNG redundancy package and electronic equipment installed to customer preference.

Shook Electronics Enterprises, booth 3222, will show the 14-22/D 22' mobile TV production system. This unit is equipped with dual generators, nine equipment racks, air conditioning and other features. The firm will also exhibit the 48-63 48' trailer built by John Crowe Productions, which features components from Philips, Grass Valley Group, Abe-

kas, Chyron, Sony, Leitch and other manufacturers.

In booth 3400, Television Engineering Corporation will highlight a 14', four camera production unit with on-board power and production facilities including a video switcher, audio mixer, character generator and other equipment.

Lowel-Light will show an assortment of new ENG lighting kits in booth 2610. The company will feature the Maxa-mount, which turns large, lightweight foamcore and other types of panels into light reflectors for video, film and still photography (both in the studio and at a remote location). The device has pan, tilt and rotational adjustability.

Lighting Methods, booth 2673, will exhibit SD portable single dimmer packs for remote use. The packs range in size from 10 to 100 amps. Dimmers operate on 120 V, 50 and 60 Hz.

Anton/Bauer, booth 2729, will feature the Powerstrap, a 12 V NiCad battery strap designed for use with all portable video recorders, cameras and low voltage portable lighting equipment.

PAG America, booth 2459, will exhibit various battery systems, including the PAG Mastercharger, a 4-channel microprocessor controlled universal fast/slow NiCad battery charger and power supply, the Speedcharge 6000 battery charging system and other fast and slow charge systems designed for various ENG applications.

Kangaroo Video Products, booth 2676, said it will unveil several new ENG products, including the Kangaroo Nagra Pack, Raincover/Kangaroo Kote for broadcast and industrial cameras, a stereo mixer pocket, a top-loading camera case and a variety of other remote equipment carriage and protective gear.

TV Stereo Field Matures

(continued from page 16)

show its new microphone equipment lines. The new long and short shotgun mics for ENG, the high SPL version of the MCE5 (MCE6) and a cardioid version of the MCE 5 (MCE 10) will be displayed.

Other new products Beyer Dynamic is slated to exhibit include the black version of the DT108 and DT109 broadcast communication headsets along with the new MC 740 multi-polar pattern studio condenser microphone.

The new RE98 miniature, omnidirectional electret lavalier microphone will be unveiled by Electro-Voice in booth 3430.

The RE98, which is suited for broadcast studio, ENG, EFR, EJ and SNG applications, features a dynamic range 10 dB greater in sensitivity than similar microphones powered by low voltage batteries. The unit may be phantom powered or operated by a 9 V battery inside the "belt pac" electronics housing.

RPG Diffusor Systems, booth 2463, will show its lines of reflection phase grating (RPG) acoustical diffusors that improve listening and performing environments.

The firm will also show its new low-cost diffusor, the QRD-734 which can be mounted in a standard suspended T-bar ceiling grid on a wall. RPG will also show a new Designer Diffusor series than can match a wide variety of decors.

Broadcast Systems, booth 2418, will show several new products including the SDA-8 stereo audio distribution system, DC-8/EP automatic program system and DC-80 automatic cart machine.

Eventide, booth 2830, will show its new broadcast delay units, in addition to the BD955 with delay catch-up feature, and the BD931/932 that provides "cost-effective" fixed delay up to 6.4 seconds at full bandwidth.

Studer-Revox, booth 3048, said it will show a wide variety of new products at the NAB exhibit. The A812 analog broadcast recorder features a package of microprocessor-based electronics for operating flexibility.

The A810-2-TC/FM/NEO is a special version of the A810 audio recorder offering record and repro capabilities for stereo audio plus SMPTE time code, FM pi-

lottone and Neopilotone.

The firm will also show the new SC 4008/SC 4016 system controllers, the B203 controller, the A820-TC analog recorder (which includes a center track time code system for stereo audio), and the A725 QC compact disc player.

Cetec Vega, booth 281, will introduce its models 66B and 67B Pro Plus portable wireless receivers. Each operates on four internal 9 V alkaline batteries.

Merlin Engineering (booth 3408) will show its new "Visa" Vertical Interval Stereo Audio system that allows stereo audio to be inserted into the vertical interval of the TV signal.

Merlin will also show "Q-Driver," a 100-machine automation control system that allows both automatic and manual control simultaneously.

Booth 3328 will feature a new line of Sound Technology audio test gear including the 3000 series which outputs sinewaves, squarewaves, IMD, toneburst and sine/step waveforms. The unit measures level, signal-to-noise, quantization noise, THD, IMD, phase error and cross talk.

Sound Technology will also show new menu-driven software modules with full graphics capabilities for the firm's products or the IBM/Compaq and HP80 series computers, and a line of bus-controlled switching systems for automated testing of multichannel equipment.

The new FP32 and FP42 stereo audio mixers will be shown by Shure in booth 3320. The FP32 is the stereo version of the FP31 ENG mixer. The FP42 is an updated and stereo version of the M267.

Solid State Logic, booth 3560, will show its new SSL stereo submixer. This stand alone unit accommodates the "escalating need" for more audio inputs and stereo outputs in broadcast facilities.

The unit holds one SL 554 master cassette and up to 8 SL 504 input/output cassettes. The submixer can be manually operated or linked with the SSL "Instant Reset" computer on any SL 5000 series console.

Kintek, booth 2455, will show the KT-960 Monoguard which is designed to correct reversed polarity feeds, mono or stereo, to prevent loss of centrally located dialogue in the mono track.

New Xtmrs Promised

by Edward Wytkind

Washington DC ... This year's RF equipment exhibits at the NAB Convention should be dominated by new low and high band transmitters, as well as products broadcasters can use to determine compliance with new radio frequency radiation standards, according to early indications from several manufacturers.

The following is a run-down of some of the gear scheduled to be displayed.

Comark Communications, booth 3561, will display new high power UHF TV transmitters that utilize klystron amplifiers, and a 60 kW klystron amplifier (see front page story).

A new line of high-powered, externally diplexed VHF (low and high band) TV transmitters will be shown by Acrodyne Industries in booth 3521. Highlighted will be the TRH 30KA-VHF high band TV transmitter that features built-in diagnostics, a stereo ready exciter, precorrection, fault recycling and remote control.

Larcen Communications, booth 3314, said it will exhibit the new TTC-50LH 50 kW high band transmitter that uses one visual and one aural tube. The company will also show the TTC-1200LH 1.2 kW high band/low band self-contained, solid state VHF transmitter. A 60 kW UHF transmitter, capable of paralleling for 120 kW UHF, will also be displayed.

ITFS repeaters and MMDS and ITFS

automatic transmitters built by Communication Microwave Corporation will be featured in booth 139.

ITC said it plans to display new TV transmitter exciters and MTS kits, but at press time, would not divulge details.

Tennaplex Systems, booth 2812, will feature a multi-station combiner that can handle up to one megawatt of power. The company said it also plans to show several TV and FM broadcast antennas.

A new half-wave spaced broadcast antenna designed to reduce downward radiation will be shown in booth 2709 by Shively Labs. This antenna is built to address the problems that some stations will have complying with the American National Standards Institute (ANSI) radio frequency radiation standard, which was adopted last year by the FCC.

Narda Microwave, booth 2552, will display the new 8682 ANSI standard radiation monitoring probe designed to verify compliance with federal, state or local radio frequency radiation standards. Narda will also exhibit the PSM-46 ultra-broadband RF radiation monitor, which covers 300 kHz to 40 GHz with one probe.

Booth 3472 will feature new 15 and 25 kW "forced-air cooled, dry load" resistors by Bird Electronics Corporation. Bird will also display new STL test equipment, FM broadcast filters and filter/couplers, and field strength plug-ins for Thruline wattmeters.

MOSELEY

Remote Controls
STLs—Data Links

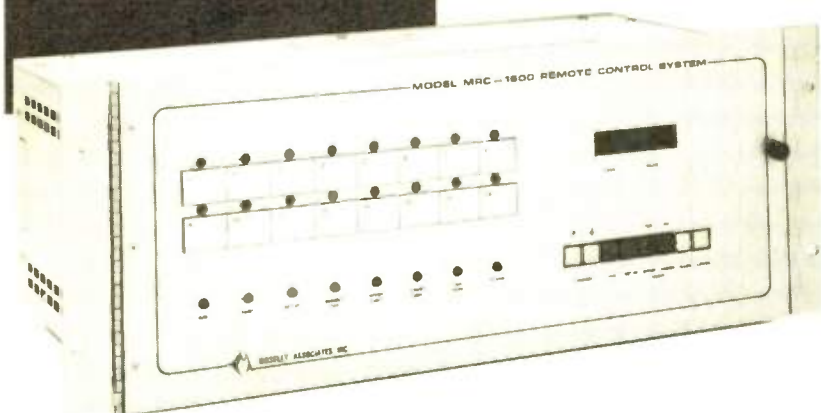
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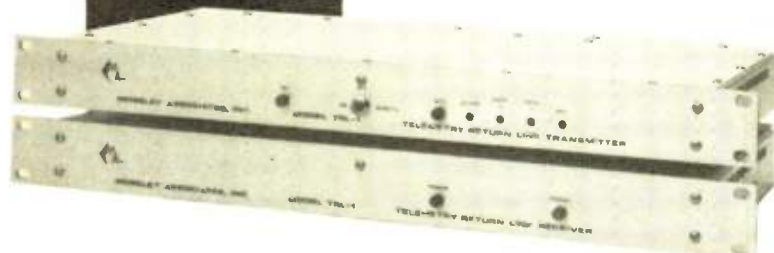
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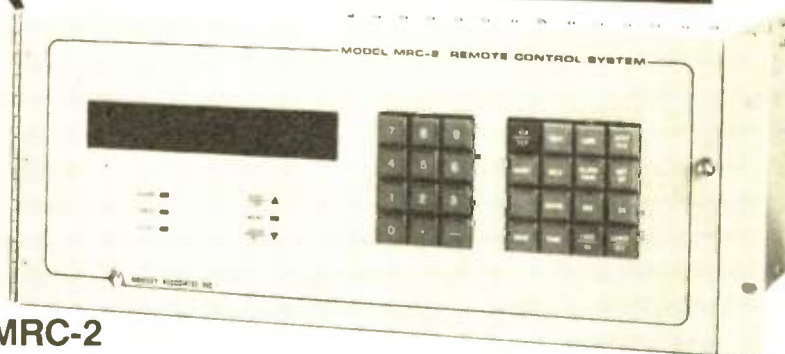
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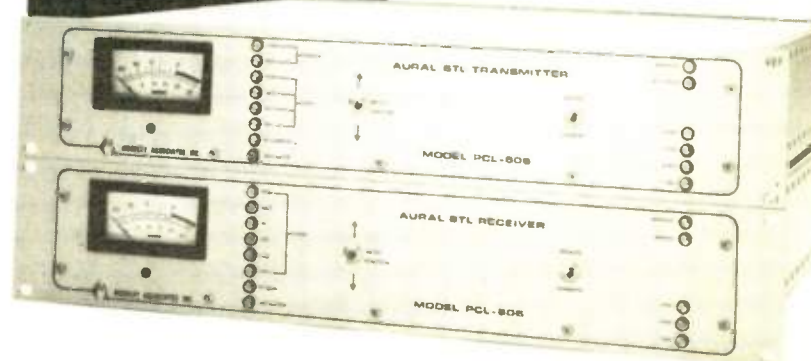
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PCL-606/C

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MRC-1



MRC-1

- Multiple Remote Sites • Up to 64 commands—32 status—32 telemetry • CRT/Logger Options • Multiple Direct Command

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NAB Exhibitors Directory

NAB Directory

The 1986 NAB Exhibitors Directory is a listing of information provided by exhibitors who responded to a NAB TV questionnaire. Past and potential NAB exhibitors were asked about new and established video products scheduled to be shown at NAB this year.

Questionnaires returned by deadline are included here and late returns will be printed in the April TVT. N/A for booth number means booth assignment not made yet.

A

Abbott & Co. 2479
Abekas Video Systems, Inc. 3527
 On Display: A42 Digital Still Store w/library; A52 Digital Special Effects System; A52 Digital Effects Combiner; A62 Digital Disk Recorder.
Accu-Weather Inc. 2529
 Intro: New satellite delivery system.
Acrian Inc. 2458
Acrodyne Industries 3521
 Intro: A new line of high powered externally duplexed VHF (low & high band) TV xmtrs.

Adams-Smith 2488
 Intro: Model 2600CC Compact Controller, new audio-for-video tape synchronizing system controller; Model 2600 A/V Double-System Audio/Video editor, simultaneous off-line video editing & on-line audio mastering permits more creative editing & higher audio quality.
 Contact: Harry Adams
 34 Tower Street
 Hudson MA 01749
 617-562-3801.

ADC Telecomm 2819
 Intro: Patch Kit; S.A.I.L.S. Kit.
 Also: ProPatch audio patchbays; ProPatch video patchbays; V.A.M.P.; S.A.I.L.S.; B/JF series audio patchbays; Coax patching products; full line of patching accessories.
ADM Technology, Inc. 3402
 Intro: Computer controlled interface; new line of stereo dist amps.
Advanced Designs Corp. 2419
 Intro: Doprad II doppler weather radar system.
A.F. Associates Inc. 3141
 Intro: Pegasus Systems Commercial Presentation System; Marconi B3410 Line Array Telecine.
Agfa-Gevaert Inc 2815
 Intro: 1/2" VHS studio performance; PE 616/816 bulk audio cassette tape.
AKG Acoustics 2521
 Intro: C-460 Condenser Mic Systems; CK-61 & CK-62 ULS Series Cardioid & Omni Capsules; also featuring Q-34 headset/boom combos for bdct use and the K-240DF flat response std mon headphones.
Alamar Electronics 2582
 Intro: MC-500 low end cart system; TL-2500 tape library control system; SC-3000 automated machine controller w/ SMPTE time code.
Alden Electronics, Inc. 2759
 On Display: Full line of color weather display systems; single picture color weather radar display system mdl C2000M.
Alexander Mfg Co. 2924
Allen Avionics Inc. 2724

Allied Bdct Equip. 3414
 Contact: Gene Schultz
 635 South E Street
 Richmond IN 47375
 317-962-8596.

Alpha Audio 102
 On Display: Sonex anechoic wedge foam for sound control; Soundtex acoustical wall fabric; Acoustilead sheet lead noise barrier material.
Alpha Automation 203
 On Display: The BOSS 8400 Series automated audio editor system.
Alpha Video & Electr. 2524
AMCO Entineering 3426

Amek Consoles Inc. 2558
 Contact: Bob Owsinski
 10815 Burbank Blvd
 North Hollywood CA 91601
 818-508-9788.

Amherst Electr Instr. 107
Amperex Electronic Corp. 2600
 Intro: NXA1010/20/30/40 High Resolution pixel Solid State frame transfer CCD image sensor's; the XQ4187; XQ3457; XQ3467; XQ1430; the XQ1433 & 35; XQ3410/15/30; XQ1520/23 & 25.
 Contact: Thomas Perry
 Providence Pike
 Slatersville RI 02876
 401-762-3800.

AMP Products Corp. 2764
Ampex Corp./A/V Systems Div. 3108
 Intro: The ACR-225 digital cart spot player.
 Also: Will display its entire family of integrated professional video products & systems.
Ampex Corp./Mag Tape Div. 3108
 Intro: 467 Digital Audio Cassette.
 Also: 196 prof bdct video tape; 197 prof bdct video cassette; 456 Grandmaster™ prof studio mastering tape; 467 prof digital mastering tape; 406 prof mastering tape.
Amtel Systems Inc. 2820
 Intro: Soundmaster audio editing system.
Anchor Audio, Inc. 2426
 Intro: AN-1000 powered speaker system; AN-1400, same specs as AN-1000 but fits into half rack space of Tektronics or Leider rack kits.
Angenieux Inc. 3020
 Intro: 14x7 7-79mm f/1.6 super wide angle ENG; 14x8 8-112mm f/1.6 non-rotating front focusing element; 40x9.5 9.5-380mm f/1.3 outside bdct.
 Also: 14x9 9-136mm f/1.6 ENG; 18x12.5 12.5-225mm high quality studio.
Anton-Bauer 2729
 Intro: Powerstrap™ a multi-purpose 12v, 4 AH NiCad battery strap; Ultralight™ bulb for 2 hrs.
ANT Telecomm/Solway 2745
 Intro: Telcom c4 E, a single channel NR card for mobile applications, line transmission, ATRs & VTRs.
Anvil Cases Inc. 2706
Aperi-Herzog 2931

Apollo Video Enterprises 3468
 Intro: PVM-1 Polar Video Production Switcher; PPM-1 Polar Video Picture Mover; SAG Polar Video Safe Area Gen; PAF-1 Polar Video Auto Fade Unit; 605N Acron NTSC encoder; 512N Acron pulse generator.
 Also: A-2100 Scriptwriter Electronic Prompting System; A-2019W-19" CRT on-camera prompter; A-2015-15" CRT on-camera prompter; A-2215 short script table w/AC or DC input; A-2500 Simplicity II advanced digital prompter; A-4000 portable studio/field prompters w/ cassette system.
 Contact: Jack Littler
 PO Box 126
 Plainview NY 11803
 516-454-9447.

Arriflex Corp. 3553
 Intro: Lightflex, a new video/film on-camera accessory that overlays a controlled amount of light on the scene photographed at the time of exposure.
Artel Communications Corp. 2920
 Intro: Artel will introduce several new capabilities of its SL3000 fiber optic video/audio/data communication system; the new TR134 fiber optic system.
Asaca/Shibasoku Corp. 3278

ATI, Inc. 2508
 Intro: Vanguard Series™ Bdct Consoles, 8 mixer, dual stereo outputs.
 Also: Match-Maker™, Disc-Patcher™ IHF to PRO interface units; Emph'aSizer™ audio processor; Encore Series™ phone preamps & dist amps; Micro-Amp Series™ mike, line, phono, monitor & dist amps.
 Contact: Ed Mullin
 328 W Maple Ave
 Horsham PA 19044
 215-443-0330.

AT & T Comm 3401
AT & T Info Systems 3212
Auburn Instruments 2836
Audico, Inc. 2720
 Intro: Video cassette cyler on rewriter; 8mm cassette tape loader & VHS Spine labels on pressure-sensitive sheets.

Audio + Design Calrec 2708
Audio Engineering Assoc. 2769
 Intro: New MS stereo technology will be introduced.
Audio Kinetics 2506
 Intro: Eclipse editor & pager.
 Also: Mastermix, Q.Lock & Timelink.
Audio Precision 2560
Audio-Technica US, Inc. 2407
 Intro: The ATM5R miniature vocal microphone; ATM33R instrument mic; ATH-M7 PRO studiophones; microphone stands; shotgun mic accessory line.
Auditronics, Inc. 3310
Aurora Systems 104
 Intro: Aurora/220 videographics system.
 Also: Aurora/75 videographics system.

B

B&B Systems Inc. 2665
BAF Comm Corp. 2544
Bardwell & McAlister Inc. 2746
 Intro: Modulight convertible softlights & new line of compact lighting kits.
Basys Inc. 2913
 Intro: An archive system designed for long term storage of scripts, stories, & system help files.
Beaveronics Inc. 2703
 Intro: FM bdct xmtrs from Energy-Onix ranging from 40 watts to 30 kW.
Belar Electronics Lab 3347
Belden Communications 2926
 Intro: Seven new color filters; new fluorescent filters and #229 new quarter tough spun.
Bencher Inc. 2568
Beyer Dynamic Inc 2823
 Intro: New long & short shotgun mics; new battery operated 48v pwr supply; new black version of our DT108 & DT109 bdct comm headsets; MC740 multi-polar pattern studio condenser mic.
BGW Systems Inc. 2825
Bird Electronic Corp 3472
 Intro: New 15kW & 25kW forced-air cooled, dry load resistors; new STL RF test equipment; FM bdct filters & filter/couplers; relative field-strength plug-ins for THRULINE® wattmeters.
 Also: Quality instruments & components for RF pwr measurement; RF directional THRULINE® wattmeters; 2W-80kW air-cooled & self-contained heat exchanger loads; economical series of field-replaceable water-cooled loads & air-cooled line terminations; digital calorimeters; RF Power Analyst® wattmeters and more.
BIW Cable Systems 3493
 On Display: Camera cables & connectors, multi-core, triax & fiber optic.
Bogen Photo Corp 2405
 Intro: Folding auto dolly; 8' light stand in black anodized finish; 13' light stand in black anodized finish; 3140 tripod in black anodized finish.

Bogner Bdct Equip. 3406
 Intro: High gain directional & omnidirectional base station antennas for mobile radio/cellular/paging 450 & 800/900 MHz w/constant beam tilt & heavy null fill.
 Also: UHF & VHF low, medium & high pwr TV bdct antennas.
 Contact: Steve Weinstein
 401 Railroad Ave.
 Westbury NY 11590
 516-997-7800.

Bosch Corp/Video Equip Div. 3170
 Intro: 3D Illustrator paint system; signal processing equipment; KCM-125 camera; graphic off-line modeling system; switcher control panels; X-Y zoom for film-to-tape transfer.
 Also: Film-to-tape transfer products; graphics; cameras; switcher; production switchers; video tape recorders; video monitors.
Bowen Bdct Svcs Co. 2522
 On Display: RCA-TCR-100 LED switch modifications.
Bridal Fair Inc. 2562

Broadcast Electronics 3226
 Intro: Model FM-35A, 35kW, Model FM-10A, 10kW FM xmtrs; Model AS-10 AM stereo mod mon; 6kHz response solid state digital recorder DV-2.
 Also: BE will be displaying its wide variety of audio products.
 Contact: Curtis Kring
 4100 N 24th Street
 Quincy IL 62305
 217-224-9600.

Broadcast Microwave Svcs 3578
 Intro: The BMS transportable uplink, a self-contained ku-band terminal.
 Also: Specialization in portable ENG microwave equipment for live news.
Broadcast Systems Inc. 2418
 Intro: DC-8/EP, automatic aprogram system; DC-80 automatic cart machine; SDA-8 stereo audio dist system.
 Also: MC Series interface panels; MC Series remote controls; Pro Pak equip cabinets; Pro Pak 80 equip consoles; BJ 240A prewired jack panel system; BJ 200 prewired jack panel system; DC-8 video cart machine.
Broadcast Video Systems 2730
 Intro: BVS component downstream keyer w/fade to black; BVS color corrector scene store; BVS component color bar gen; BAL miniature video filters; COX RGB/component converters; EV waveform monitor w/line selector.

Team Players

MARCOM Model 730
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NAB Exhibitors Directory

Bryston Vermont Ltd

2406

BSM Broadcast Systems

2668

Intro: Most recent application of Modula System technology in routing switchers; the miniModula; a new line of twenty 1986 Modula System remote control units; and recently redesigned versions of self-contained audio dist amps.

Contact: R.H. Myers
PO Box 19007
Spokane WA 99219
509-838-0110

BW Lighting Systems

2922

Intro: Model 20.170 12K softlight; Model 20.180 1K softlight 'baby'.

C

Cablewave Systems Inc.

3489

Calvert Electronics Inc.

2503

Calzone Case Co.

2502

Cambridge Prod Corp

2731

Camera Mart Inc.

3040

Canare Cable Co Ltd.

2523

Canon USA Inc.

3300

Cat Systems Inc.

3333

Intro: New model 9000 multisite cable monitoring & control system; new Version 4 software.

Also: Computerized remote control systems for broadcast, earth station & cable facilities.
Contact: Joseph Soll
401 E 74th St.
New York NY 10021
212-988-0290.

Catel Telecommunications

2585

Cavendish, Dwight Co.

2662

Custom Business Systems Inc.

2517

Ceco Communications

3383

On Display: Camera & transmitting tubes, weather radar magnetrons, TV linear devices, RF transistors, T.W.T.'s, CRT's.

Central Dynamics

3080

Century Precision Optics

2422

Intro: Super wide low angle prism for use w/motion picture & video cameras.

Centro Corp.

3181

Cercone Vincent Assoc.

2584

Cetec Antennas

3587

Intro: The new circularly polarized spiral dipole panel antenna.

Cetec Vega

3394

Intro: Models 66B & 67B Pro Plus portable wireless receivers.

Channelmatic Inc.

2548

On Display: Broadcaster I automatic videocassette changer; AVS-10AS patchmaster 10X1 video/stereo audio switcher; Spotmatic random access 32 VCR PC-controlled commercial cart system; VCR-3005A-5 automatic commercial break/program sequencer system.

Christie Electric Corp.

3324

Chyron Corp.

3072

Intro: Chyron Scribe ultra high resolution text gen, point quality resolution, 1500 font library, unrestricted positioning of characters, unlimited sizes of characters, 1.7 million colors. The video typographers Dream Machine. Chameleon Paint System, high resolution, low cost, 10 megabyte hard disk, 256 colors on screen at once, cut & paste curve drawing etc.

Also: Chyron TV Model 4100 EXB; Chyron RGU-2 27 nanosecond high resolution c/generator & graphic system; large font library; Chyron VP-1 & VP-2 character generators, high resolution, low cost character generators.

Contact: D Buckler

265 Spagnoli Rd.

Nelville NY 11747

516-249-3296.

Cinema Products Corp.

140

Intro: New Mini-Worrall continuous pan cable drive geared head; Mini-Worrall Super; CP-35E; Steadigate film gate conversion; Steadigate TC; new Insight Vision Systems; Series 75 B&W bdc camera; Image Intensifier & zoom lens.

Cinemills Corp.

2777

Cine 60 Inc.

3428

Intro: New on-board battery.

Also: Improved battery belts, chargers, BP-90, NP-1 batteries, Sun-Guns, Sun-Gun kits, battery packs, dememorizer.

Contact: Don Civitillo

630 9th Ave.

New York NY 10036

212-586-8782.

Cipher Digital

2605

Circuit Research Labs

2538

Clear-Com Intercoms

3352

Intro: Clear Com's new stand alone IFM system is a dedicated program interrupt system designed for all bdc applications.

CMC Technology Corp.

3340

On Display: Complete line of replacement video heads; Videomax TD-800 bulk tape demagnetizer; quad video, audio heads & VTR access.

CMX Corp.

3232

Coaxial Dynamics Inc.

2766

Intro: Peak & CW reading portable RF wattmeter.

Coherent Comm.

2675

Colorado Video Inc.

3447

Intro 496/497 video multiplexer/demultiplexer; freeze-frame vertical blanking interval transmission/receiving system.

ColorGraphics Systems Inc.

3144

Intro: ArtStar III-D—full 3-D graphics & digital "Paint" in one 24 bit-per-pixel system; WeatherLine 256 color weather display/animation system; LiveLine IVA full weather animation system; Newstar newsroom computers.

Contact: Charles Sholdt

5725 Tokay Blvd

Madison WI 53719

608-274-5786.

Colortran Inc.

3598

Intro: Prestige Series 1000, 2000 & 3000 plus Magic Sheet Control equip; new TV fresnels 100-500 Series; Dimming equip.

Columbine Systems Inc.

3405

Comark Comm. Inc.

3561

Intro: Comark is in the process of developing high pwr UHF TV xmtrs utilizing klystron amps.

Also: UHF, VHF, FM & AM xmtrs & RF systems fro 1kW through 240kW (NTSC, PAL & SECAM); RF transmission line & components; turnkey RF installations worldwide.

Contact: Mark Duclos

PO Box 229

Southwick MA 01077

215-822-0777.

CCI/Commercial Comm

2484

Communication Graphics

2423

Communication Microwave

2485

Intro: ITFS repeaters; MMDS & ITFS automatic xmtrs.

Comprehensive Video Supply

3593

On Display: Instant mini studio lighting system; new computer aided video software products; videotape logging system; portable videotape time code reader & logging system; the low cost, high powered edit list connection.

Compucon Inc.

2633

Computer Concepts Corp.

2801

Computer Graphics Lab

2929

Intro: InstaMation, combines CGL Inc's proprietary AGILE-2000 real-time display hardware w/software package designed for quick animation turnaround; Animate, animation software for the Images II+ electronic design system.

Compu-Prompt

2768

Computer Prompting Corp.

132

Intro: The CPC-1000, computerized teleprompter, operates on IBM PC or compatibles.

Comrex Corp.

3460

On Display: ENG, SNG RF cue systems; TV pocket aural monitors; specialized bdc telephone couplers; freq extender.

Comsat Genrl & Intl

2482

Com Tek Comm Tech Inc.

2653

Comtronix Systems

2487

On Display: 4KV mod anode klystron pulser; klystron gas tester; RF pwr amps, solid state; ABC-BCD klystron pulser; standby TV exciter; custom built pulsing systems & RF amps.

Connectronics

2403

Conrac Division

3124

Intro: Mdls 6545 color monitor & 6550 Micromatch™ photometer.

Control Concepts Corp.

2652

On Display: The Islatron® power line filters.

Conus Comm.

3385

Intro: Conus Washington Direct, live & tape coverage of important Washington events sent unedited via K-2 satellite.

Convergence Corp.

3252

Cool Light Co. Inc.

2800

Corp Comm Consult.

2753

Contact: Armand Sarabia

64 Clinton Rd.

Fairfield NJ 07006

516-737-0903.

Countryman Assoc. Inc.

2425

Crosspoint Latch Corp.

3533

Crown Intl

2927

Cubicomp Corp.

2692

Intro: An enhanced version of Cubicomp's PictureMaker™ 3D film & video animation system.

D

Data Communications Corp.

3204

Intro: Bias PC Cable; Buylane Electr Contract; Buylane Electr Invoicing.

Datatek

3547

On Display: D-2000/2200/2300/4300 Series; audio DAs; video DAs; D-701 xmtr input system.

Datum

2408

On Display: The Model 5300 ITP microcomputer-based time processor.

dbx

2740

Intro: 163X, 263X, 463X; 900 new modules.

Desisti Lighting/Desmar Corp

2796

Intro: New 4000-6000-12000 HMI fresnels; new 10,000 W Quartz-Halogen fresnels; new Venture lighting stage & studio lamps.

DeWolfe Music Library

2712

On Display: New compact disc series.

Dielectric Comm

3436

On Display: Rigid transmission line & components, rectangular waveguide & components; circularly polarized antennas, switches, filters, directional couplers, combiners, diplexers, loads, air dryers, UHF & VHF television antennas.

Di-Tech Inc.

3567

Intro: Model 9001 color CRT master XY controller w/lockout capability; Model 937 alphanumeric X4 control panel w/breakaway; Model 948 40 LED pushbutton panel w/triple breakaway; Model 7006 dual meter, dual speaker monitor/amp.

Also: 5850 & 5900 series AFV routing switchers; audio, pulse & video dist amps; touchtone control systems.

Contact: Dan Mazur

48 Jefryn Blvd

Deer Park NY 11729

516-667-6300.

Dorrough Electronics

2602

On Display: Discriminate Audio Processor Model 610 for AM, FM AM stereo, & TV stereo; Dorrough loudness meter model 40-A, 10-A, 12-A, 20-A & 21-A.

Contact: Kay Dorrough

5221 Collier Pl

Woodland Hills CA 91364

818-999-1132.

The Droid Works

2588

On Display: EditDroid & SoundDroid.

Digital Services Corp

3304

Intro: Graphics animation system, a non-real time graphics system.

The TSM advantage.

■ A price and performance breakthrough
... the HS-100P is the latest micro-processor controlled high speed preset Pan/Tilt System.

■ TSM's exclusive Zoom/Focus preset servo drive for ENG bayonet mount lenses.

This combination of cost and unique features is creating new applications for the HS-100P every day ... including teleconferencing, automated news sets, Music TV, remote sports pickups, training, medical documentation, and ideal for any pickup where a camera cannot or should not be locally controlled.

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NAB Exhibitors Directory

Dynair Electronics 3409
Intro: Series 1600 ultra-wideband switching for graphics & HDTV; System 23 SMPTE/EBU "ESbus" controls & components.
Dynascan 2464
On Display: Video test instruments.

E

Eastman Kodak Co. 3208
On Display: Complete line of professional videocassettes & videotape; professional 8mm videocassettes, bulk pack; Kodak 8mm video duplicator system; Datakode magnetic control surface.
ECD Industries Inc. 2773
Echolab Inc. 2827
Econco Bdct Srvs 2578
On Display: Rebuilt power tubes for xmtrs.
ECCO Inc. 3540
EEG Enterprises Inc. 2802
Intro: EDAC-2 information processor for captioning.
EEV Inc. 2626
Intro: P8498/99 1" diode gun Leddicon® camera tube.
Electronic Research Inc. 2576
Electronic Systems Lab 2640
Electro Controls Inc. 2710
Electro-Voice Inc. 3430
Intro: The new RE98 miniature, omnidirectional electret lavalier mic.
Also: Sentry 100 & 500 series of studio monitor speaker systems; professional mic for studio applications in TV, recording, film, on location EFP, E, SNG, AFP, ENG.
Elicon 2784
EMCEE 3032
Emcor Products 2402
E-N-G Corp. 3308
Intro: Ku Band SNG compact vehicle.

Environmental Satellite Data 2786
Intro: Front-End Model 6000 CD, a weather work station w/color display. Data ingest is via satellite delivery by WINX or Zephyr, clutter free radar, smoothed radar & custom mapped hi-res satellite imagery.
Also: Color Connection Model 9000, a full state-of-the-art weather graphics system; economy radar & weather systems for radio.
Contact: Terry Hambrick
5200 Auth Rd, 1st FL
Suitland MD 20746
301-423-2113.

ESE 3470
On Display: Solid State digital clocks timers, hybrid telephone interface, master clock systems, programmable clocks, SMPTE time code readers, generators & comparators, audio level indicators, video DA's.
ESS/Spectratek 2469
Intro: Holographic diffusion filters.

Eventide Inc. 2830
Intro: New bdct delay units. Also the new Channel Vocoder & Automatic Panner audio effects programs for the SP2016 effects processor/reverb.
Also: The SP2016 effects processor/reverb; the H949 & H969 Harmonizer® pitch-change and effects units.
Contact: Suzanne Langle
One Alsan Way
Little Ferry NJ 07643
201-641-1200.

Excalibur Industries 2637
Intro: 19" rackmount cases w/shock isolation & interlock; custom production cases; travel karts for trouping equip.

F

Faroudja Labs Inc. 3408
Intro: "Flesh Tone Corrector", automatic color corrector; NTSC to RGB, YIO decoder; NTSC encoder.
Ferno-Washington Inc. 2782
Intro: The new Ferno-Freelancer, a cart which will hold up to 300 lbs.
Fidelipac Corp. 3092
Intro: New Dynamax CTR10 Series of tape cartridge machines; Also new is the CTR30 Series of 3 deck cartridge machines; the ESD10 eraser/splice detector will be introduced.
Film House Inc. 2781
Film/Video Equip Serv 2803

Flash Technology 3454
Intro: Medium intensity lighting to mark tower from 200'-500' tall in accordance w/new FAA spec AC 70/7460-1G.
John Fluke Mfg. Co. 100

Focal Press 2541
Intro: A new edition of The Technique of Television Production, 11th Ed by Gerald Millerson; and a new book called Electronic Media Management by William E McCavitt & Peter K Pringle.
Contact: Kevin Kopp
80 Montvale Ave.
Stoneham MA 02180
617-438-8464.

Fortel Inc. 3044
Intro: A new family of products called Turbo, the first in a line of products in the Turbo name.
Ft Worth Tower Co. Inc. 3360
On Display: Towers, both guyed & self support, designed per customer specs, tubular or solid construction, welded sections or knock down avail; buildings, prefabricated equip buildings.
For-A Corp. 3572
Intro: FA-800 frame synchronizer; DEC-110 NTSC color to RGB decoder; CCS-4400 component color corrector system; CT-500 component transcoder; Component color bar generator; TKY-2000 title & down-stream keyer; TGR-3300 time code gen; LG-100 logo gen..
Frezolini Electronics 2716
Intro: A complete line of new Frezzi™ super-no-memory-high capacity-rechargeable nickel-cadmium battery packs; a new AC adaptor, mdl RPS-4; a new lightweight location lighting kit.
Fujinon Inc. 3410
Fuji Photo Film USA 3240
Intro: H621E 1" videotape; H421M 1/2" professional videocassettes for M-format; H321B 1/2" professional videocassettes for Betacam.

G

G&M Power Products 2790
On Display: Battery belts & packs; Camera belts & chargers.
Garner Industries 2601
Intro: A continuous duty degausser to erase high volumes of video cassettes, floppy discs, computer cartidges, and other magnetic media.
General Electric 2717
Gerstenslager Co. 2510
Global Systems Corp. 2788
Gold Nugget 2772
Alan Gordon Enterprises 3435
Gotham Audio Corp. 3354
Intro: EMT 448 digital spot recorder/reproducer for storing digital sound; EMT 277 DX limiting amp.
Graham-Patten Systems 2528
Intro: The Model 608 edit suite audio mixer.
Grass Valley Group 3112
Intro: EZ-Link Series 85 fiber optic systems; Kaleidoscope™ DPM-1 digital effects system.
Gray Comm Consult. 3402
Gray Engineering Labs 2428
Intro: Model DT-213, Data xmtr (time code gen) w/jam sinc; Model FC-142 film counter/character gen; Model TCA-143 time code analyzer.
Great American Market 2714
Intro: RDS/USA lighting products; MicroBrute; Fog Power; ColorQ.
Grumman Corp 2481
James Grunder & Assoc. 2429
GTE Spacenet Corp. 2573
On Display: A multi-satellite system; full, partial & occasional use transponder services.
GTE Sylvania 3393
Intro: FF Series 1000 wt par 64 lamp w/800 hr life; ruggedized roughneck construction cyx 2000 wt lamp.
Also: Tungsten Halogen, fluorescent & metal halide lamps.

H

Harris Corp, Bdct Group 3136
Intro: Portable uplink package; 2.0/2.5 GHz ENG central microwave rcvr; Model 640 synchronizer; Sentinel 48 remote control system; ESP II still store; Model 634 synchronizer; 4.5 meter Ku-band satellite antenna; Model 560 TBC; Model VW-3 synchronizer; Model AC 20 dual channel TBC.
Also: TVE-60S UHF xmtr; Challenger 6 W wideband microwave xmtr; TV-30H & TV-30L VHF xmtrs; Iris C still store; TV RF switching; TV antennas and much much more.

H.A. Solutec Ltd. 2530
Intro: SOL-6800/UIS, 8 VTR control w/12 inputs switcher, new low cost commercial inserts system; SOL-8200/10-20 adaptive co-channel filter; SOL-NET, new software allowing up to 100 SOL-6800/micro to operate in a network situation.
Also: SOL-6800 automated bdct system for commercial inserts; SOL-6800/mini automated bdct system; SOL-6800/micro automated bdct system; SOL AD.ID/Q generator for log printout; SOL component switcher.
Contact: Mr. Gilles Fortin
4360 D'Iberville St
Montreal, Quebec, Canada H2H 2L8
514-524-6893.

Hedco 2751
Intro: GSC-101 microprocessor based switching controller; HD-12, 12X12 stereo audio & video routing switcher w/RS-232 & RS-422 control cards; VAC-300 video activated switch; SSG-321 audio test gen; HD-50 50X50 video & audio routing switcher.
Also: DA's in 4, 8 & 10 unit rack mount frames, stand alone; audio & video DA's & audio & video 4X1 switchers; small routing switchers & control panels, intermediate routing switcher & control panels.
Karl Heitz Inc. 2900
Intro: Gitzo 100 percent fluid & counterbalanced head; Gitzo Mini Tele Studex w/levelling balls 4 & 6; Gitzo compact microphone fishpole.
Hiptronics Inc. 2728
On Display: The PESCHEL Automatic Voltage Regulator.
Hitachi Denshi America 3160
HM Electronics Inc. 2619
Intro: BH720 & BH721 belt pacs; RL742 2 chan rack-mounted loudspeaker intercom system.
Also: Will exhibit several products from our complete line of wireless mics, wireless intercoms & cable intercoms.
Hoffend & Sons Inc. 2641
Intro: Micro Commander II, computerized control system for motorized studio rigging; Omni, compact motorized scenery/lighting hoists; Lighting hoists, point hoists for individual lighting fixtures.
Horizon Intl 2491
Hotronics Inc. 2531
Intro: A small size, full feature TBC/frame synchronizer w/freeze frame/field.
Also: TBC; digital SMPTE color bar; Digital Pixel by Pixel drop out compensator.
Hubbard Communications 3286
Intro: New generation SNG vehicle; HCD-500 video time delay machine; HC-5 audio flight pack; video flight pack; LWA-1 antenna mounted 275 watt ku-band TWT.
Hungerford & Co. 2534

ICM 2711
Intro: CG-7000P character generator.
Also: Video enhancer/processors; video & stereo audio dist amps; satellite rcvrs; downconverters & access, all products avail in NTSC version, many also avail in PAL.

Ikegami

Ikegami Electronics Inc. 3150
Intro: HDTV Telecine System; HDTV Projection System; HK-323, 2/3" studio camera; HK-323, 1" studio camera; PM 9-5, low-cost black & white monitor.
Also: HL-95 ENG/EFP bdct quality color TV camera; HL-79E ENG/EFP bdct quality TV camera; ITC-730A/AP ENG/EFP prof quality TV camera; SC-500 economical studio & field color camera; TKC-990 high performance telecine system w/computer control.
Image Video Ltd. 2636
On Display: 8000 Series stereo master control switchers; 6000 Series routing switchers; 9000 Series high density routing switchers.
Information Transmission Systems 2535
Intro: ITS-10 VHF TV exciter; ITS-70 ICPM corrector; ITS-231 UHF back-up system, exciter 1kW xmtr; ITS-1610B 10W MMDS/ITFS xmtr; ITS-29 aural IF modulator for multichannel snd.
Innovative TV Equip. 3258
Inovion Corp. 2445
Inovonics 2434
Intro: Model 710 TV stereo generator; Model 390 Mag-Film electronics, a high performance record/repro electr for insert recording in film productions.
Also: Audio magnetic record & reproduce electronics for OEM & system upgrade; audio signal processing equip for production & AM/FM/TV mono & stereo bdct; TVU audio level display keyer.
Integrated Media Systems 2476

Integrated Technologies 2758
Intro: AIM 3D animation system, 3D animation incl: antialiasing, chrome, glow, texture, zoom, perspective, user friendly Paint type interface; and the Weatherwand.
Also: Whirlwind AT, weather graphics system, still store, paint system, animation system, all in one IBM desk top computer.
Contact: Anthony Watts
3716 Alliance Dr.
Greensboro NC 27407
919-294-0077.

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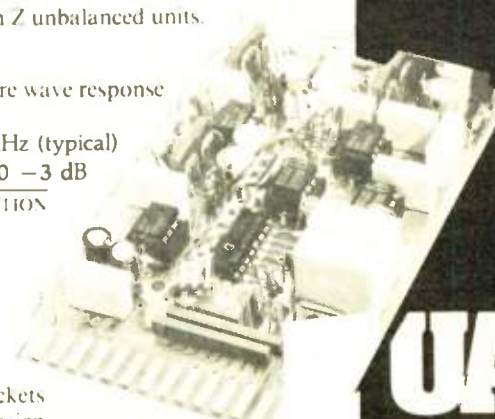
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2611 WILSON BLVD.
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(703) 522-7780
(800) 368-2081

NAB Exhibitors Directory

Interactive Motion Control 2771
Intro: The IMC camera lifter system; the IMC video slide image system.
Interand Corp. 3429
Intergroup Video Systems 3312
Intro: TBA
Itelco USA 2765

J

J&R Film Co. 3450
Jefferson-Pilot Data Systems 3440
Intro: Sally the TV sales assistant; JPS 1000 sales traffic & accounting system for radio; JPS Call Out Research package for radio.
Jensen Tools Inc. 2721
Intro: New state-of-the-art electronic enclosures.
J-Lab Co. 2828
JVC Co of America 3180

K

K&H Products-Porta Brace 2532
Intro: A new nylon recorder case; a new & improved non skid shoulder strap; new audio prod case for eng/efp/reng work.
Kangaroo Video Products 2676
Intro: KVP-150, designed for the Sony BVU-150 recorder; Kangaroo Nagra Pack, Rain-cover/Klangaroo Kote; SQN-4 stereo mixer pocket; pocket for the Shure FP-32 stereo mixer; pocket for BVG-100 time-code generator; Super-Tough II; KVP-25 for the Sony BVW-25 recorder (prototype).
Kavouras Inc. 2657
Intro: Weather Link Vista; Weatherling Met-pac; Radac 2020.
Kay Industries 2511
Keylite PSI Group 2432
Intro: The QuartzColor Ianiro range of "Arturo" HMI & incandescent softlights & the Super-Crank heavy duty stand from Matthews.
Also: The QuartzColor Ianiro family of lightweight bambino incandescents & examples of the 5 products of Matthews studio equip.
Kinematics/TrueTime 2513
On Display: Natl Bureau of Standards synchronized clocks; global positioning system synchronized clocks; WWVB rcvr-freq comparators; WWV rcvrs; universal clock drivers.
Kings Electronics 3464
On Display: RF coaxial & triaxial connectors; video patch panels & patch cords.

Kintek 2455
Intro: The KT-960 MONOGARD, a system designed to correct reversed polarity feeds, mono or stereo to prevent loss of centrally located dialogue in the mono rack, also containing a correlation factor display & can be used to measure phase shifts.
Also: The KT-903 Stereo Converter.
Contact: John Bubbers
224 Calvary St.
Waltham MA 02154
617-894-6111.

Kintronic Labs 2780
Intro: Variable arc gaps for lightning protection of whip antennas.
Also: AM directional antenna phasing; power dividing & matching equip.
Kliegl Bros. Lighting 3581
Intro: New computerized memory lighting console; 8" lens "wedge" fresnel.
Also: Lighting fixtures & lighting control equip.
Knox Video Products 2611
Intro: K40 very low cost color character gen.
Also: K100 chromafont character gen; K50 titler; color box; K700 video connector; K701 color corrector.
Kobold Lighting 2834

L

Laird Telemedia Inc. 3474

Lake Systems 112
Intro: La-Kart multi-channel video cart system, able to address up to 28 VTR's with complete random access.
Also: La-Kart video cart system for commercial insertion & TV station automation, systems feature SMPTE time code accurate switching & random access.
Contact: Phil Sills
55 Chapel St
Newton MA 02160
617-244-6881.

Landy Associates 2609
On Display: Ikegami HL-95 camera.
Contact: James Landy
1890 E Marlton Pike
Cherry Hill NJ 08003
609-424-4660.

Lang Video Comm 2533
Intro: SNG852 satellite news up. switcher, mixer, waveform mon, color mon, audio mon; SK8000 audio processor, 8 in 8 out switchable mic-line.

Larcan Comm Equip Inc. 3314
Intro: A 50 kW VHF high band xmtr, TTC-50LH using only 2 tubes, a visual & a aural, self contained in 4 racks; a 1.2 kW VHF high band/low band xmtr, TTC-1200LH completely solid state, self-contained in one rack; a 60 kW UHF xmtr; a contactless switcher for paralleling 2 VHF xmtrs without using coaxial switches.
Also: Larcan's VHF exciter TEC-1V, a stereo compatible exciter.
Contact: Lewis Page
14440 Cherry Ln Ct, Ste 201
Laurel MD 20707
301-490-6800.

Leader Instruments 2763
Lea Dynatech Inc. 3332
Leitch Video 3559
Intro: DAC 5000 series digital analog clocks; CSD5300N master clock driver; CDA5500 master clock auto changeover; DTG5200 digital time display; SCH7000N sch monitor; TTG1120 xmtr test set; TTG1130 xmtr test set; DTG1100 series digital test sets.

Lemo USA Inc. 2805
Intro: New audio connector series.
Also: Self-latching quick connect/disconnect cylindrical connectors for audio-video applications including TV Triax, Coax, mixed coax, multi-contact & straight multi-contact configurations avail in standard or environmentally sealed outershells.

Lenco Inc. 3056
Intro: TBC-450 time base corrector.
Also: PVS-435 videoscope; PCD-473 chroma decoder; 600 series A/V dist amps; and the standard product line.

Lexicon Inc. 2909
Lighting Methods Inc. 2673
Intro: SD portable single dimmer packs for remote use when control at the fixture is desired.
Listec TV Equip. 3579
Intro: Vinten MicroSwift remote servo camera control system; new Vinten Vision Series lightweight line of heads & tripods from ENG through EFP.

Logitek 2807
Intro: Crossfire, automatic audio crossfade amp; Stereorack, stereo version of our Audiorack rack-mountable 6-input audio console.
Also: Perfectionist consoles; custom audio series consoles; audio dist amps; audio pwr amps; balanced-input phono preamps; timers; speakers; audio interfaces; bright VU LED audio displays

Lowel-Light Mfg Inc. 2610
Intro: CM-90 surmountable kit; CM-10 maxa-mount; CM-20 scissor mount; CM-25 cable keeper; CM-50 safety cable; T1-19 total-light protective screen; O1-19 omni protective screen; D2-19 DP protective screen.
Also: Professional location lighting equipment for film, video & still photography.
Contact: Toni Pearl
475 Tenth Ave
New York NY 10018
212-947-0950.

LTM Corp of America 2537
Intro: Four new lights, part of its Mark III line of HMI lighting; also new is the smaller & lighter weight ballasts for the Luxarc 2500 & 4K.
Also: The world's largest selection of HMI's; studio incandescent fresnel lighting fixtures.
Contact: G. Galerne/H Breitling
1160 N Las Palmas
Hollywood CA 90038
213-460-6166.

Lyon Lamb Vas Inc. 2932
Intro: ENC VI color encoder/synch generator.
L-W Intl 3427

M

M/A-Com Mac Inc. 3280

MAGNI

Magni Systems Inc. 128
Intro: 1527 combination waveform monitor, vectorscope, test signal gen; new software release for the 201S PC based test signal gen; 1510 digital test signal gen.
Contact: Chuck Barrows
One Lincoln Ctr, Ste 135
Portland OR 97223
503-626-8400.

Magnum Towers Inc. 2901
On Display: Towers, guyed & self-supporting; installation services for towers & TV; bdcg antennas.

Marcom 2435
Contact: Ted Tripp
PO Box 66507
Scotts Valley CA 95066
408-438-4273.

Marconi Instruments 2436
On Display: Model 2923; Model 2914A; Model 1192.

Mark Electronics Inc 2417
Marti Electronics 3496

Matco 2687
Intro: Audio follow video routing switchers; MBC-24 tape duplication system, an integrated dist, control & verification system for virtually any size duplication facility.
Also: ASTC-2 comm insertion w/ one button simplicity; MST-100 comm insertion & programming plus total tactile control for individual machines or groups, event & sequence modes, controls up to 54 VTRs & up to 6 switchers.
Contact: Rita Harbert
427 Perrymont Ave
San Jose CA 95125
408-998-1655.

Matthews Std Equipment 2701
Intro: Unit 85 dolly; Litt briefcase dolly; super crank; new boom arms; new auto mount access; new gift line to include Matthews T-shirts, hats & jackets.

Maxell Corp 3551
On Display: Blank audio & video recording tape for the bdc industry.

McCurdy Radio 3028
Media California 2688
Merlin Engineering 3408

Intro: Q-Driver Station Automation, a 100 machine automation control system; Visa a vertical interval stereo audio.

Micro Communications Inc. 3438
On Display: Circular & rectangular waveguide transmission line; RF components; RF systems; MTS diplexers; UHF antennas; circular polarized antennas; VHF antennas; FM antennas; MDS/ITFS diplexers; MDS/ITFS multichannel combiners; MDS/ITFS antennas.
Microdyne Corp. 3520

Micron Audio Products 2685
Intro: Micron CTR-501 mobile wireless mic system.
Also: Complete line of Micron wireless mic systems for ENG, TGV film & theatre applications.
Contact: Paul Tepper
210 Westlake Dr
Valhalla NY 10595
914-761-6520.

Micro Controls Inc. 2623
Microsonics Inc. 2543
Intro: Video filters for stereo TV; 20MHz equalized delay lines for HDTV; Micro filter, miniature DIL video filter.

Microtime 3086
Intro: Four new lost cost models of TBC's, three models for NTSC applications & one for either PAL B or PAL M applications.
Contact: Norman Pinette
1280 Blue Hills Ave
Bloomfield CT 06002
203-242-4242.

Midwest Comm Corp. 3210
Intro: S-25, S-18, S-1 SNG systems.

Minolta Corp. 2810
On Display: TV color analyzer; luminance meters; illuminance meters; color temperature meters.

Mitsubishi Pro Audio Group 3530

Modulation Sciences 2811
Intro: SRD-1 stereo reference decoder for use w/ Tektronix 1450-1 or similar demodulator for monitoring test & measurement of BTSC stereo signal from any stereo generator.
Contact: Alan Perkins
115 Myrtle Ave.
Brooklyn NY 11201
718-625-7333.

Module/Bardwell & McAlister 2746
Mole-Richardson Co. 3368

Intro: The M-R Type 6451, 1200 watt HMI softlite; the M-R Type 6191, 250 watt HMI; M-R Type 6295 ballast for the 220 volt, 12,000 watt HMI Fresnel Mole Solar-Arc Solarspot; M-R Type 3711 theatrical par lamp; M-R Type 5331, 6000 watt DC Molelectronic dimmer; M-R Line of 3-pin studio plugs.

Montage Computer Corp 3260
MPO Videonics 2549

Multi-Track Magnetics 2515
Musco Mobile Lighting 2448

On Display: Musco light location lighting system.

Mycro-Tek 2490
Intro: A new network communications package; a new production font; a new on-line tape storage device; Dissolve, Mycro-Tek's latest enhancement to the Mycro-Vision Ernie character generator.

MZB & Assoc. 2495
On Display: The MZB/ENG-4x4 mobile production system; The MZB-14 mobile production system.

3M Magnetic A/V Prod Div. 3120

N

Nady Systems Inc. 2902
Intro: Nady "Quadpak" coupler for four wireless systems.

Nagra Magnetic Recorders 3453
Nalpak Video Sales 2792

Intro: Scrim-Pak; Tripak; Accu-chart.

Narda Microwave Corp 2551
Intro: The new Model 8682 ANSI standard radiation monitoring probe; a multipath simulator for microwave radio (dbct) migs to verify system operation; Model PSM-46 ultra-broadband RF radiation monitor.

Natl Television Systems 2472
On Display: The CAPS Computerized Automatic Programming System.

Nec America/Bdct Equip 3161
On Display: DVE* System 10 digital video effects; SP-3A CCD camera; TVL-800 series microwave system; PCN-1400 series VHF high power TV xmtr; PCU-900 series UHF high power TV xmtrs; FS-19 frame synchronizer.

L E Nelson Sales Corp. 2437
Nortronics Co. Inc. 3384

Intro: Matrax* retrofit tape heads for all cartridge machines, both record & playback; new playback tape head w/ improved low freq response & Noise rejection shield, avail in both mono & stereo; Maxtrax* registered trademark of Pacific Recorders & Engineering.

Nova 2778
On Display: Nova 501 & 511 digital time base corrector; Nova 620 full frame digital time base corrector.

Nurad Inc. 3573
Contact: Lisa Czirkaj
2165 Druid Park Drive
Baltimore MD 21211
301-462-1700.

Nytone Electronics Corp. 123

NAB Exhibitors Directory

O

Olesen 3550
Omicron Video 2661
 Intro: 501/10-1 PT preset/take video 10x1 switcher; 501-10/3 PT component video preset/take video switcher; 415 sync gen, SMPTE color bar tone gen.
 Also: 230 A/V dist amp; 200 video DA, up graded, AC/DC coupled cable EQ/delay line sub-module; 410 sync gen RS170A.
Omnimount Systems 2507
 On Display: Newly developed Universal Mounting Assemblies: Series 25, 300 & 500.

Orban 3444
 Intro: Orban 275A automatic stereo synthesizer designed expressly for stereo TV.
 Also: Orban 8182A Optimod-TV audio processor; Orban 8182A/SG TV stereo generator; Orban 8182A/SAP second audio program generator; Orban ACC-20 Pro channel generator.
 Contact: 645 Bryant St
 San Francisco CA 94107
 415-957-1063.

Otari Corp. 3246

O'Connor Engineering Lab 3364
 Intro: New line of heavy duty camera support systems including the mdl 155M-B super claw ball metal tripod w/internal adjustable spread.
 Also: A complete line of professional camera support systems.
 Contact: Bruce Frenzingier
 100 Kalmus Drive
 Costa Mesa CA 92626
 714-979-3993.

P

Paco Electronics USA 2447
 Intro: Paco DP-11 battery pack 13.2V 1.7AH.
 Also: Paco KD-220 battery pack quick charger; Paco Ni-cad battery pack DP-1240 12 V 4.4AH; Paco KD-120 Ni-cad battery pack dememorizer.
Pag America Ltd 2459
 Intro: Pag-lok, a new battery to camera mounting system; Pag-lok charger a small single channel microprocessor controlled fast/slow charger; Master 90 a new PP90 type battery w/screws to easily open for servicing; Nitecam a new ENG camera.

Also: Pag Mastercharger a 4 channel microprocessor controlled universal fast/slow NiCad battery charger & pwr supply; Pag Speed-charge 6000; Pag 10/90 multicharger; Pag ENG batteries, belts, lights & lighting kits.

Paltex Inc. 3592
Panasonic Industrial 3116
Patch Bay Designation 2409

On Display PatchPrints®, quality easy-to-read custom labeling for all brands of A/V patch bays, control panels, racks, mixing boards & all other field designation areas; film inserts for all brands of rear-illuminated button switches.

Peerless Sales Co. 2412
 Intro: New video projector ceiling mounts.
 Also: TV/AV/VCR/CCTV accessory products including security hardware, stands, mounts, carts & brackets for the desk, wall & ceiling.

Penny & Giles Inc 2774
 Intro: Motorized fader; new T Bar controller.
Pep Inc 3387

Perrott Engineering Labs 2733
 On Display: Nickel Cadmium, Silver Zinc & Lead Acid battery packs for ENG/EFP in clip-on or belt styles, single or multiple style fast, medium fast or overnight Minicharger® for Ni-Cad & Silver Zinc packs. Silver Zinc & Ni-Cad battery & charger combo clip-on packs. Unique Silver Zinc BP-90 pack for VTR/camera. Lighting Systems & accessories.
 Contact: Virginia P. Tygesen
 7201 Lee Highway
 Falls Church VA 22046
 703-532-0700.

Pesa Electronica S.A. 3417
 Intro: SR-91785A Ku-Band satellite rcvr; ASC-4652B SWAT sync analyzer; BM-4309UN 9" color monitor; EEFM-1A FM xmtr; 1 kW solid state xmtr.
Philips TV Systems 3128

Pinzone Communications 2411
 Contact: Basil Pinzone, Jr.
 14850 Cross Creek Park
 Newbury OH 44065
 304-296-4493.

Porta-Pattern Inc. 3538
 Intro: RCA P-200 & P-300 test patterns will be shown in both the Porta-Pattern chart size compatible w/all test chart systems; a new line of film/video interface test media; new items for use in the field of medical television & imaging.
P.P.S. Electronics Corp. 2465
Prismagraphics Inc. 2791
 On Display: Presentation folders/media kits, wide variety of styles & sizes.

Q

QSI Systems 2722
 Intro: CB-1601 SMPTE color bar gen; BG Series, economical split-field colorbar gen; Star Series, video source identifiers; AF-1000B, an improved 3 chan autophasing blackburst gen.

Quality Video Supply 2461
 On Display: Telecomp 2000 system.

Quanta Corp. 3145
Q-TV 3469

Intro: IBM based ComputerPrompTer System.
 Also: VPS-500 II ComputerPrompTer System; VPS-100 & VPS-300 transport VideoPrompTer Systems; Mini O II on-location prompter; MVP-705 mini videorompter.

Quantel 3171
 On Display: The all digital family: Harry, digital cel recorder; paintbox, the complete electronic graphics studio; Mirage, 3-D images manipulated in 3-D space; Encore, 2-D images manipulated in 3-D space; Cypher, 3-D caption generation & manipulation plus cameos.
Quickset Inc. 3380

R

Ram Bdct Systems 3028
 On Display: Phasescope model P.S. 1000.
 Contact: Ron Mitchell
 346 W. Colfax St.
 Palatine IL 60067
 312-358-3330.

Rank Cintel Ltd. 3066
 Intro: Revised Amigo software & control accessory.
 Also: MK3C flying spot telecine; ADS-1 CCD telecine; Amigo programming computer; slide & art file.
 Contact: Neil Kempt
 13340 Saticoy St, Unit F
 North Hollywood CA 91605
 818-765-7265.

RCA Americom Div. 3298
RCA Solid State Div. 3292
Rees Assoc. Inc. 2500

Intro: A demo of our computerized programming & planning process. Also we will conduct a workshop on facility planning & design which is scheduled for 4/14/86 at 11 AM.

RE Instruments Corp. 108
Real World Tech Group 2433
Recortec Inc. 3327

On Display: Recortec will demonstrate their 1" magnetic tape cleaners & evaluators, mdls VTE-102 & VTE-103; the new VCE-750 for cleaning & evaluating 3/4" cassettes also.

Research Tech Intl 3386
Richardson Electronics/Calvert Div 2503

On Display: Camera & transmitting tubes; weather radar magnetrons; RF transistors; TV linear devices; TST's, CRT's.

Intro: Our line of RF transistors & TV linear devices.

Rockwell Intl 3484
ROH Corp. 2647
Rohde & Schwarz 3098
Rosco Labs Inc. 3443

On Display: A new lightweight, flexible metal foil.

Roscor Corp. 3404

Intro: Computer audio designs & capabilities, new videotape presentations on systems & remote trucks as well as field engr srvs & rental facilities.

Also: Roscor Elite Fleet Series-TV remote truck.
Ross Video Ltd 2616

RPG Diffusor Systems 2463
 Intro: The New low-cost diffusor, QRD-734; also a new Designer Diffusor series.
 Also: We will display our complete line of reflection phase orating acoustical diffusors.
 Contact: Dr. Peter D'Antonio
 12003 Wimbleton St.
 Largo MD 20772
 301-249-5647.

Rupert Neve Inc. 3318
R/Scan Corp. 2794
 On Display: Video Information System; the Triton-X and Color Connection IBM PC/XT.
RTS Systems Inc 3566
 Intro: 848 Matrix Intercom System; HST 17 low cost light weight headsets.

S

Sachtler Corp. 3419
 Intro: Sachtler Hot Pod; Sachtler Semi-Dolly; Sachtler Video 20 studio & O.B. Pedestal.

Saki Magnetics Inc. C06
 On Display: Our full line of long life 2 trk 1/4" ferrite heads for Ampex ATR102, 2'300-350, 440 B, C.; MCI; Mincom; Otari MX 5050B; Revox A-77; Scully 280 & 280B; Studer A80; Technics RS 1500.

Schneider Corp. 3343
 Intro: TV 80 wide angle zoom lens for TV cameras; TV 64/65/66 wide angle studio zoom lens.

Schwem Technology 2553
Scientific-Atlanta 3272
Selco/Sifam 2450
Sennheiser Electric 2914
Sharp Electronics/Bdct Div. 3305

Intro: XM-1900 19" high resolution rackmount color monitor; new line of professional series VHS VCRs w/dbl azimuth 4-head video systems & new HQ picture enhancement.

Douglas I Sheer & Assoc. 2561
Shintron Co. Inc. 3036
 Intro: EC2000 Empress component switcher w/downstream keyer/chromakeyer; DK3/CK3 component downstream shadow keyer/RGB chromakeyer; 392 Empress DUBYC component post prod switcher; 12x-C4 12-input, 4-output component video routing switcher.

Shively Labs 2709
 Intro: 1/2 wave spaced bdct antennas designed to significantly reduce downward radiation.
 Also: Sira TV bdct antennas, panel antennas, FM bdct antennas, rigid coaxial transmission line & coax components, combiners, patch panels, isocouplers, AM/FM & AM/LPTV, hybrid pwr combiners, harmonic filters, pressurization equip, VSWR monitoring display & prod systems, pattern studies.
 Contact: Charles Peabody
 71 Harrison Rd.
 Bridgeton ME 04009
 207-647-3327.

Shook Electronics 3222
 Intro: Model 14-22/D, 22' mobile TV prod system; Model 48-63 48' network trailer custom built for John Crowe Productions.

Shure Brothers 3320
 Intro: The newest adds to the Shure field production (FP) circuitry line will be features.

Sigma Electronics 2905
Skotel Corp. 2738

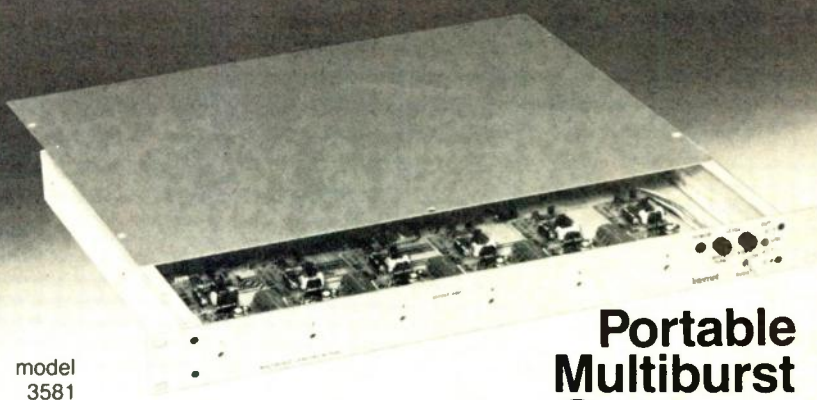
Intro: Two new LTC readers, housed in a new half rack unit.

Solid State Logic 3560
 Intro: The SSL stereo submixer.

Solway Inc. 2745
Sony Bdct 3100

Intro: The new SP U-matic® product line; Two new 1" Type C VTR's will also be introduced to the popular BVH series.

Think Telemet for Test & Measurement Equipment



Portable Multiburst Generator

And, we mean **PORTABLE!**
 This rugged, solid state Multiburst Generator is designed to go where you go. It's a self contained test package which allows you to check your frequency response—anywhere!

It has 75Ω unbalanced output and 124Ω balanced. The frequency bursts are from 0.5 to 4.2 MHz. Internal sync, blanking and white bar are sine-square filtered to avoid overshoots.

It even has its own rough, tough carrying case for added protection.

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 Eastern Area Office—(914) 279-3231

NAB Exhibitors Directory

Sound Ideas 2444
On Display: Sound Ideas sound effects library, 3000 sound effects on compact disc.

Sound Technology 3328
Intro: The 3000 Series, a 2 channel, inexpensive audio test system.

Soundtrack/Aircraft 2554

Stage Lighting 2446
Intro: SP1500 smoke processor, high density fog & smoke machine; 12X24 12 circuit dimmer pack, 12 2400 watt dimmers; Servo pan tilt and color changing device for stage & studio fixtures controlled by an 0-10 volt lighting board; Q4Z 4.5" zoom ellipsoidal 250-750 watts.

Stantron Unit of Zero Corp 2911

Star Case 2555

Steenbeck Inc. 2749
On Display: ST 201V video reporter; ST1401 four plate 35mm editing table w/video camera & ST 1901 six plate 16mm editing table w/video camera.

Storeel Corp. 3322
Intro: High-density room stretcher for VHS cassette storage.

Straight Wire Audio 2518
Contact: Karen Filler
2611 Wilson Blvd
Arlington VA 22201
703-522-7780.

Strand Lighting 3024
On Display: Will exhibit a full range of dimming, control and lighting fixtures including Quartzcolor laniro studio & location lighting equip.

Studer Revox 3048
Intro: A812 analog bdct recorder; SC 4008/SC 4016 system controllers; B203 controller; A820-TC analog recorder; A725 QC special version of the Studer A725 compact disc player; A810-2-TC/FM/NEO, special version of the A810 audio recorder.

Studio Technologies 2769

Swintek Enterprises 2918
Intro: Mark QDC/2 video camera wireless mic rcvr & Mark 200D wireless intercom for wireless IFM in studio applications.

Switchcraft Inc. 2684

SWR Inc. 3350

Symtec/One Pass Video 228

T

Taber Mfg & Eng Co. 3385
On Display: Taberasers Mdl 409 & 1500H; Taber audio magnetic heads & services; Lumena video graphics software & Cadvance drafting software.

Tamron Industries 120

Tandberg 2748

Tascam 3416

Teatronics Inc. 2756
Intro: T.D. manual 2 scene control console; Producer 148H 48 channel control console w/soft-patch to 252 dimmers.

Tektronix Inc. 3214
Intro: 751 BTSC ural modulation monitor/decoder; 760 stereo audio monitor; AVC-20 audio vector converter; WFM-300 component analog video waveform monitor; SPG-170A, new compact Tektronix generator.
Also: TSG-300 component analog test signal generator; TSG-170A NTSC sync & test signal generator; 1710B waveform monitor.
Contact: Carol Hilden
PO Box 500
Beaverton OR 97077
503-627-1844.

Teletet 3396
Intro: Model 3713-A1 TV bdct demodulator, complete w/wideband audio capability & quadrature output for incidental phase measurement.
Also: Bdct demodulators w/stereo audio, fiber optics systems, isolation amps, thermal EQs, sideband analyzers, spectrum/sideband analyzers, clamping amps, repeaters, video cable terminals, test signal generators, modulators, chroma levers, chroma keyer decoders, group delay measuring systems, routing switchers.
Contact: Robert Griffiths
185 Dixon Ave
Amityville NY 11701
516-842-2300.

Telemetrics Inc. 2569
Intro: Camera remote-control system, controls via standard co-ax cable.

Telepak San Diego 2566
Intro: New T-Mini GAF half size gaffer pak; T-68 Sony VO6800; T-GRA-NAGRA recorder pak.
Also: T-Scope-Tektronix 1740/50 waveform/vector pak; T-20 Sony BVM-20; T GAF Grip & Gaffer Pak.
Contact: Linda Stepp
4783 Ruffner St
San Diego CA 92111
619-268-8559.

Telescript Inc. 3351
Intro: C-64 networking prompting program; 8088-8086 PC prompting program; new 1150 line resolution monitor/prompter w/separate enhancements & inverted video switches for composite & digital inputs.
Contact: Bob Swanson
445 Livingston St
Norwood NJ 07648
201-767-6733.

Television Engineering 3400
Intro: A 14' 4 camera production unit w/on board power.

Television Equip Assoc. Inc. 3340
Intro: Matthey low loss video delays; zero loss video delays; micro video filters; wideband products for HDTV; the Elcon 1" tape cleaner/profiler EA 1254; the 3/4" cassette cleaner/profiler.

Television Systems 2472
Contact: Cary Fitch
2419 Rutland
Austin TX 78758
512-837-1769.

Television Tech Corp. 3593
On Display: XL100; XL10FM; Model X; FM-20000; Scully 8300; Ampro CT-3500; Scully 280B; Ampro AC-8; Ampro Micro-touch audio console; Scully 250.

Tennaplex Systems 2812
Intro: Multi-station combiner; bdct antennas (FM/TV) w/ideal vertical patterns.

Tentel 3326
Intro: Bdctr Audio cartridge tape tension gauge; the T2-H7-AC tape tension gauge.
Also: Tentelometer® tape tension gauges; TSH line of spindle height gauges; new head protrusion & eccentricity gauge.
Contact: Wayne Graham
1506 Dell Ave
Campbell CA 95008
408-379-1881.

Texscan MSI/COMPUVID 2473

TFT Inc. 3420

Theatre Service & Supply 2917

The Performance Group 2584
On Display: TV production facilities consultation, turnkey studio packages & prod services.

Thermodyne Intl 2824

Thomson-CSF Bdct 3190
Intro: TTV-1530 studio/outside bdct color TV camera; TTV-2710 CCD color slide scanner.
Also: Cameras including TTV-1525C; TTV-1623; TTV-1624; Digital/Video equip including 5700 NTSC; TTV-4400; TV-5305; TTV-7550/7660; Transmitters including 1 & 2.5 kW FM; 20 kW VHF & UHF; 1 & 100 W UHF; 100 W FM xmtr/translator; TVRO; Graphic Systems including Vidifont & Viditext II.
Contact: Stanley Basara
37 Brownhouse Rd.
Stamford CT 06902
203-965-7000.

Thomson-CSF Components Corp 3422
Intro: Short wave tetrode, TH-558 for 500 kW; 50 kW tetrode, TH-563; Ku-band TWT for 85 watts, TH-3689A; Ku Band TWT for 160 watts, TH-3722A; Ku Band TWT for 500 watts, TH-3591.

3M 3120
Intro: 3M Series H hybrid switching systems product line.

Tiffen Mfg Co. 2736
Intro: Tiffen special effects viewing filter kit.

Timeline Inc. 2686

Toshiba America 3302

Total Spectrum 3534
Contact: Robert R. Gonnelli
20 Virginia Ave
West Nyack, NY 10994
914-358-8820

Townsend Assoc. 3418

Transmission Structures 2621

Trompeter Electronics 3346
On Display: Coax connectors, patch panels, patch cords, cable assemblies & access; new T15 catalog.

TVI 2752
Intro: LTM pappers, Lycian follow spots.

Ultimate Support Systems 2783

Ultimate Corp. 3552
On Display: Ultimatte-5 component analog compositing device; Newsmatte-2 video compositing device for bdct & ltd prod.

Unicol Products Inc 2475

Union Connector Co. 2923
Intro: A 12,000 watt electrical dist center; Stage Pro software for the Unilol Lighting system.

United Media Inc. 3526
Intro: The Comm-ette an A/B roll videotape editor with unique automatic editing capability.

United Ropeworks USA 2420
On Display: Phillystran HPTG, electrically transparent, maintenance free tower guys & specially designed systems for high power applications.

Uni-Set Corp. 2806

Ursa Major Inc. 131

V

Valentino Inc. 3465
Intro: Both production music & sound effects libraries on the new compact disc format w/preliminary volumes avail.
Also: The Valentino production music & sound effects libraries; a full service production music library.

Varian Assoc. 3206
On Display: UHF TV klystrons; Power grid tubes; Klystrode.

Videomagnetics Inc. 2725
Intro: Random access video cassette changer.

Videomedia 3558
On Display: Eagle XR; Eagle I; Eagle II; Eagle III; Magnum; VMC-200; UMC-202; Q-Star; US-5.

Videotek Inc. 3316
Intro: VSM-60 bdct vectorscope; HR-190 19" high resolution bdct master color mon; AVM-12s 13" color mon w/audio; APM-8RS 8 input audio program mon w/4 stereo inputs.
Also: Professional color monitors; color rcvr/monitors; waveform mon; vectorscope; routing switchers; Sync gen; dist amps; audio program mon; demodulators.
Contact: Eric Wahlberg
243 Shoemaker Rd.
Pottstown PA 19464
215-327-2292.

Video Assoc. Labs 3330

Video Intl 2754
Intro: DTC2500, 2 field; DTC4500, 4 field; and the DTC3500; TBC 3000 time base corrector.
Also: Digital TV standards converters & time base correctors.
Contact: Peter Kaminsky
1280 Sunrise Hwy.
Copiague NY 11726
516-842-1815.

Viking Cases 2757
On Display: Shipping & carrying cases for TV & radio bdct equip.

Vital Industries 3191
Intro: Vital 3000 video prod switcher.
Also: VIX-115B series on-air master control audio follow video switchers; SAM, station automation mgr.

W

Ward-Beck Systems 3060

Wegener Comm. 2760
Intro: Digital audio terminals.

Wheelit Inc. 2478

Whirlwind 2643

Will-Burt Co. 2587
Intro: Light duty telescoping masts w/extended heights of 27' & 34'.

Winsted Corp. 3424
Intro: Mini console for 1/2" & 3/4" editing; modular editing console for 1/2" betacam format.

Wireworks Corp. 2401

Wold Communications 2606
Intro: Station Connection, a direct conduit to TV stations.

Wolf Coach Inc. 3541

World Tower Co. 2814

WSI Corp. 2642
On Display: The ASTROfax; ASTROgraphics & ASTROdata.

Y,Z

Yamaha Intl 3530

Zellan Optics Ltd. 2477
On Display: Camrail, portable tracking system; Portamount stabilizer (camera); Optiflex fiber optics viewing system.

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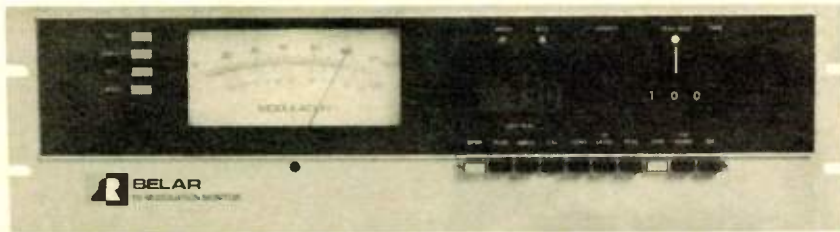
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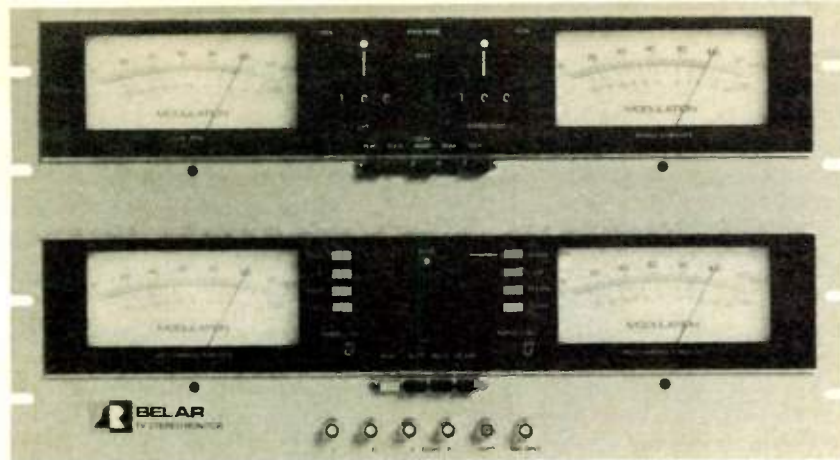
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BELAR TV STEREO MONITORS

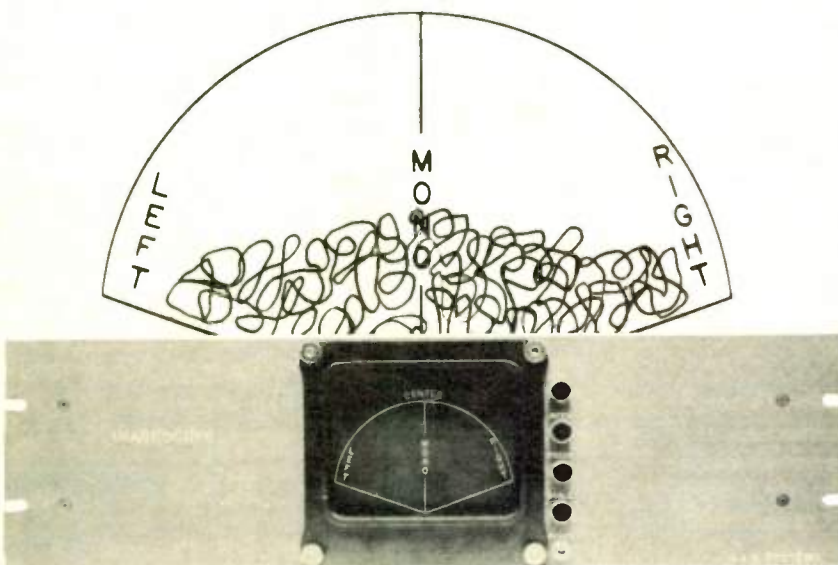


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New Products

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Call Elaine Walker at 512-836-6011.

TV Stars has announced the availability of a color monitor holder attachment for the Betacam stand-alone recorder,

—TV— Marketplace

wants and numerous other items of interest to TV station engineers and technicians. In each issue of TVT we'll try to bring you the best of that ever-growing stack. Send materials to TV Marketplace, PO Box 1214, Falls Church VA 22041.

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For more information call Fred Powers at 619-560-1578.

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AV Specialist, 6 yrs video exper in industrial training, start to finish productions w/excel track record, seeking employer needing high-quality work. Write AV Specialist, 7537 NW 116, Oklahoma City OK 73132.

ALEXANDER MANUFACTURING is offering a new catalog that describes its line of rechargeable NiCad batteries for video cameras and recorders (Robert Williams, 515-423-8955).

TV Technology's "Broadcast Equipment Exchange" provides a listing service for the industry. Send in your "Want to Sell" or "Want to Buy" requirements and we will list them for you. The system is simple—just fill in your listing on a separate sheet of paper and

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TV Stars Inc, 485 Fifth Ave #1042, NY NY 10017, 212-490-2110, announce a precision machined NA hub wt for Sony 1" Type C VTR's, relieves excessive stretch & tension when using small plastic reels. US made from high quality aluminum, improves playback & dubbing economies while allowing machine servos to act within normal range. A version for the Hitachi Type C is planned for late 1/86. delivery for Sony Type C is ex stock at \$159 delivered. 30 day money back guarantee.

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Buyers Guide

Telecine & Film

WNOL Ranks with the Best

by James Gonsey, CE
WNOL TV

New Orleans LA ... At WNOL TV (an independent station), 86% of the programming is locally originated. The on-air system is highly automated, using 16 Sony Betacam players. The successful use of this system requires that all program material (as well as commercials) be transferred to 1/2" tape.

User Report

In September 1984, the station received Rank-Cintel's ADS-1. This CCD-equipped telecine quickly became the workhorse of the dubbing operation.

The ADS-1 was chosen for its ability to deliver superior quality 35mm and 16mm film transfers, its exceptional film-handling capability and quiet operation, its ability to handle anamorphic (cinemascope) prints, its precision mechanical construction, and its ability to operate in variable speed mode.

The changeover from 16mm to 35mm is simply a turn of a lever on the transport. After a short automatic alignment, the system is ready.

All aperture correction settings use separate controls for each format to allow optimization in each mode.

The picture quality delivered by the ADS-1 is equal or superior to a conventional tube-type film chain. The unit is able to deliver this quality with virtually no day-to-day setup or alignment. No registration is required due to the stabil-

ity of the CCD pickup devices.

Automatic color correction circuitry handles the majority of film transferred, and a manual "paint" system is able to correct the rest.

Film handling is very smooth in all phases of operation. Scanning is done electronically, line-by-line, and the final picture is produced by electronically reconstructing the contents of frame-store memories.

All film motion is servo-controlled so minimum strain is placed on film stock.

It is the frame-storage ability of the unit that allows superior operation at variable speeds and the handling of anamorphic prints.

WNOL routinely alters the projection rate of films to allow the program material to fit a given broadcast format. The film may, for example, be sped up 8% to allow odd length features to fit in a two-hour time period. The audio is restored to normal by using a Lexicon 1200C audio pitch corrector.

Anamorphic prints are handled by



WNOL employees operate Rank-Cintel ADS-1.

electronically changing the film's aspect ratio.

The ADS-1 system feeds a semi-dedicated Sony BVW-40 Betacam recorder which receives the output of the film system in component form. A Grass Valley Group transcoder is used to convert the RGB output of the Rank telecine to the

modified Y, R-Y, B-Y signals used in the Sony equipment.

Audio for the recorder is processed by a Lexicon audio pitch corrector for ease of operation and control. The rank telecine's speed is automatically signalled to the Lexicon unit so the proper pitch cor-

(continued on page 40)

KBHK Picks Bosch CCD Unit

by Edward C. Hippe, Eng Mgr
KBHK TV

San Francisco CA ... United Television purchased KBHK TV in 1983 and adopted a policy to emphasize prime time movies. The film library was old and many prints had faded. Our telecine chains were vidicon types which were not modifiable to any current technol-

ogy. We decided to purchase a Bosch CCD telecine to enhance our look.

We are pleased with the results, but the decision was difficult because this was a radical change for a broadcast station.

Tube telecine chains have many shortcomings. The light source is difficult to adjust for a single camera, and it is almost impossible to get a flat field for multiple sources through the multiplexer.

We were not able to upgrade to plumbicons or saticons so lag was objectionable. We rejected the idea of an in-house modification to lead oxide tubes because we could not obtain low noise preamps necessary to effect the change.

The lead oxide tubes have unity gamma versus the square root gamma of vidicons. A preamplifier therefore has to have high black gain accentuating any noise in that region.

In order for us to electronically correct for the deficiencies of the film, we needed to have adequate black stretch, which is impossible without extremely low noise preamps. A wide range of color correction is also impossible without very clean RGB signals.

Our film manager was rejecting film right and left in an effort to obtain films without any deficiencies. He was not always successful and we also had a large film library of prints which had aged over the years. It would not be economically feasible to replace all those prints.

Even though we knew that much of the new programming would be available to us on 1", the existing product needed to be broadcast. The cost of replacing the library was greatly in excess of a new film island, so we decided to look at new equipment.

I had experience with a CCD telecine

chain in a production environment, and was impressed by its performance. I knew this type of equipment was designed for the direct broadcast of films in the European market, and therefore it would be very stable operationally.

We looked at the market for CCD telecines. I had prior experience with the Bosch unit, and was impressed by how clean the video looked.

User Report

Color correction of severely faded prints was a large concern to us. Flatness of field, low noise and high resolution were necessary for color correction to be feasible without major degradation to the picture. The Bosch telecine fit the bill.

We had originally planned to video tape most of our features and edit them on tape. However, after we installed the new CCD unit, we decided to air more features on the device directly because we liked the look of the video on air and did not have time to edit all the features. We currently air as much live film as we can.

During the May book, we wanted to have all prime time and weekend combo movies edited on tape to take advantage of electronic editing. We transferred all those movies to tape.

The ratings were exceptional due mainly to some great titles. But we do not want to tamper with success, so all movies in major books are now dubbed to tape.

The machine has worked with very few problems. In fact, the day we installed it, the field service technician left by

(continued on page 41)

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Buyers Guide

Ampex Units Set WHAS Apart

by Steve Steinberg, VP and
Cathy Galvin, Art Dr
WHAS TV

Louisville KY ... Technology that cuts work time by up to two-thirds, creates a better on-air look, and frees expensive production crews and equipment for other tasks is frequently promised but rarely delivered by a product in the real world of television broadcasting.

But that has been our experience at WHAS TV, the CBS affiliate in Louisville that covers Kentucky and much of Indiana, since we installed an Ampex ESS-3 still store system a year ago.

User Report

Out went the files of Kodalith slides stored in our film room, slides that did the job but limited the creativity of our four-person art staff. In their place went the latest still store technology, broadening our capabilities and improving our efficiency.

Recently, WHAS took the process even further, installing an Ampex AVA-3 video art system to give our artists unlimited creative potential.

Compositing capability

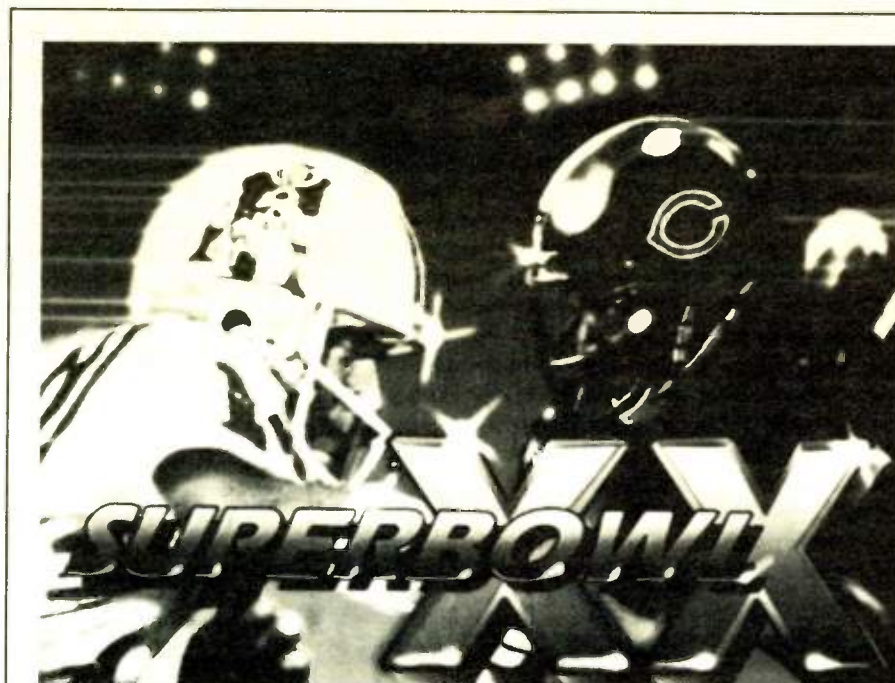
After surveying the available products on the market, we felt the ESS-3 offered the best range of capabilities at a competitive price. Particularly appealing was the system's internal compositing capability, enabling pieces of video to be assembled or "composed" in the digital domain without traditional multi-generation degradation.

When it came time to buy a graphics system, the Ampex AVA-3 video art system was a natural choice because of its compatibility with the ESS-3.

Both systems were installed and operational within 24 hours of delivery—even smoother than we had hoped. Initially, we experienced a few chip failures and minor software bugs, but these problems were corrected by Ampex within 24 to 48 hours.

Since then, both systems have performed well, especially since we solved some non-regulated voltage problems in the station's wiring.

Our ESS-3 system is configured with three disk drives: a CDC-9710 removable drive that stores up to 100 stills and can be swapped with the AVA-3 disk packs, and two Ampex 825 fixed media drives



WHAS graphic created using Ampex ESS-3/AVA-3

that each store up to 1000 stills.

The system has four frame stores and, thanks to its networking capability, our art department, newsroom, control room and editing suite can all recall stills simultaneously from a common library.

Our art department is always signed onto the ESS-3, where they keep it working from 8 AM to midnight. Cathy Galvin, the art director at WHAS said her staff now spends an average of 10 minutes creating a still, instead of the 15 to 30 minutes needed to create slides before the ESS-3 arrived.

Basically, the ESS-3 digitizes freeze frames as component coded signals: Y, R-Y and B-Y, and is based on 13.5 MHz, 4:2:2 component digital coding. Because the unit operates in the digital domain, our artists don't have to be concerned with degradation from generations of the slide as they create their work.

Creative flexibility

The art department particularly likes the creative flexibility of the system, allowing a greater freedom in design and composition.

Graphic art production is done on the Composition Access Station (CAS), with a full keyboard that includes eight menu-based soft keys and a monitor that displays functions to be selected and prompts the user with single letter or symbol commands.

Graphic parameters (slide, position, border width, etc.) are given numerical values so artwork procedures can be pre-

cisely repeated every time.

Staff artists can create almost any color through independent control of hue, saturation and luminance. Frequently used colors can be stored and recalled quickly from an on-screen palette.

Composite graphics, which are frequently used in our news programs, are created by "cutting" a video image from one frame and "pasting" or keying it on another. ESS-3's scissors mode is ideal for

*The ESS-3 and
AVA-3 have enabled
WHAS to achieve a
unique look.*

cutting out irregular shapes using a backlit camera stand as a key source.

The system's speed and flexibility make it possible for the production staff to make late changes in news broadcasts and still maintain the professional look WHAS strives for.

We always maintain 400 stills on-line for various projects, and the newsroom uses the browsing feature to review them 12 at a time when preparing broadcasts. If we want a still of President Reagan, we can perform a string search to see everything that is available.

As stills are chosen for on-air use, the production department compiles a management list that can be revised as necessary in either text or video mode. The control room uses the RAS keyboard to preview the list for correctness and proper sequence, and can change the line-up quickly during the broadcast if necessary.

AVA-3

To make our news graphics truly unique, WHAS recently installed an AVA-3 video art system configured with a CDC-9710 removable disk pack that stores up to 50 images.

The AVA-3 will soon be networked with the ESS-3. At the moment, we are swapping disk packs between them while

we wait for the necessary software to arrive.

Our artists have found the layout mode feature of the system particularly useful because of the custom shapes they can create.

In this mode, the artist defines picture elements as distinct, individual objects, then manipulates them in terms of size, position, color, drop shadow, border size and opacity.

Once the extremes are set, AVA-3 will automatically distribute these values over that range for any group of objects.

AVA-3 can also automatically match the size, position or degree of rotation of objects, or rearrange their background-to-foreground priority within a composition.

The system will then redraw the entire composition on command, without the artist having to start over manually.

This capability has been a tremendous time saver for the art department, and in many cases has eliminated the need to recreate portions or elements of a particular graphic.

Without redrawing, we can recall particular graphic elements and create a completely new graphic in about five minutes—just by altering size, color, position and perspective.

A perfect example is our treatment of frequently used logos. Instead of scanning in the logo every time its size or position is to change, we simply scan it in once and then recall it, size it, and position it as necessary.

The same applies to our creation of news graphics which are all different yet share common complex elements which would otherwise be nearly impossible to recreate with any degree of precision.

All the functions of AVA-3's character generator are also available in layout mode. Resident fonts can be manipulated to create a unique look, or the artist can scan-in and store his or her own special fonts, logos and symbols.

Electronic storyboards

The ESS-3 and AVA-3 are also popular with Louisville Productions, a WHAS, Inc. subsidiary located in our same facility. Specializing in commercial production and regional/national business communications, Louisville Productions has found a variety of uses for the systems including designing "electronic storyboards" for some production projects.

Creating each frame electronically saves time and gives a more professional look to presentations. Once a frame is complete, a Polaroid picture is taken and attached to the storyboard.

Despite the sophisticated capabilities of both systems, all of our artists took to them quickly. The combination of the ESS-3 and AVA-3 have enabled WHAS to achieve a unique, sophisticated on-air look that sets us apart in a highly competitive market.

While our art staff deserves the credit, the right tools have made their creative efforts and their lives a lot easier.

Editor's note: The opinions expressed above are the author's alone. For more information call Al Fisher at 415-367-4161.

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Buyers Guide

Color Correction is a Science

by Armand Sarabia, Pres
Corporate Communications Consultants

Fairfield NJ ... As early as the mid-1960s, people around the world came to the realization that overall electronic color correction was not, and never could be, satisfactory for a long segment of film. With this realization, scene-to-scene correction was born.

In the late '60s, Teletronics International of New York put the Chromaloc color correction system into operation. This system featured color balance and, for the first time, scene-to-scene luminance correction.

With all its shortcomings, the Chromaloc rapidly became a great commercial success and the "state-of-the-art" in scene-to-scene color compensation.

In the middle '70s, Teletronics International once again led the way with a new technique known as "The Palette." A "Rainbow" patent was granted to its inventors.

This technique became a great success, and was widely used in the US and abroad.

Later on, luminance correction was introduced to color vectors on a fully variable scene-to-scene basis. A new patent known as the "Luminance" patent was granted. This was also widely used.

In 1984, the Academy of Television Arts and Sciences awarded Corporate Communications Consultants the Outstanding Achievement in Engineering Award. This is described as "An award to an individual, a company or an organization for developments in engineering which are either so extensive an improvement on existing methods or so innovative in nature that they materially affect the transmission, recording or reception of television."

The six vector technique remains today the most powerful and reliable vectorial color correction method. It compensates for all known color distortions across the color spectrum, without introducing objectionable "keying" or "digitizing" aliases.

The red, green and blue, magenta, cyan and yellow vectors take care of all the colorimetric errors in the video signal. Cyan, magenta and yellow compensate for colorimetric errors present in the negative film, and together with red, green and blue, they compensate totally for colorimetric errors in positive film.

With the success of the XL, a larger degree of selectivity may yet be desirable, and further enhancement of the six vector technique may be necessary.

The idea of a larger number of vectors was advanced by other companies in order to meet the additionally desirable selectivity. But this type of approach creates more operational problems than those it supposedly solves.

More vectors means there is no relationship to colors easily recognizable by name. In addition, convoluted digital techniques are required that further slow down the process.

It is true that the more vectors the greater the selectivity. But it is also true that up to now, more vectors means narrow vectors, and to color correct an object often times requires the combined action of two or even more of these vectors, further slowing down the process

and many times producing unnatural color transitions where there were none.

In addition, depending on the technique, frequency by-products may accompany the process.

The Sunburst is an entirely new color correction system and process from CCCI that represents the upcoming "state-of-the-art" (a retrofit is available for older CCCI color correctors). The system features a revolutionary module that processes the color information in a totally novel and highly powerful manner.

The Sunburst process divides the entire

color spectrum into a virtually infinite number of vectors. Any color of the color spectrum can be selected, and any vector selected has a Bandwidth Control.

In this way, we can encompass all the hues that make an object. With Bandwidth Control, it is possible to adjust the width of the spectrum for the selected vector. This provides the operator with the means of encompassing all the hues contained in the object.

For example, a red apple often contains a variety of hues that may depart 20° or more from pure red. With the Sunburst,

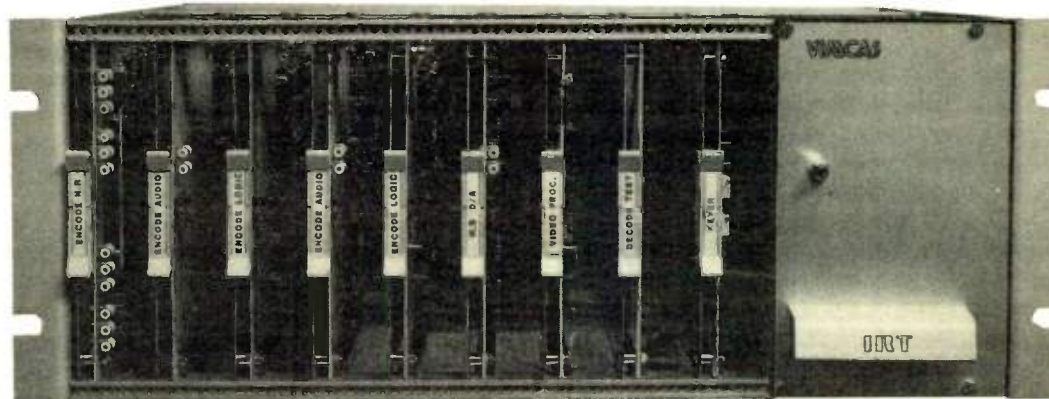
it is possible to center the selected vector by using the Sunburst Control at the center of the apple's red, and then, by using the Bandwidth Control, extend the width of the vector to include all the hues contained on the apple—but no more than the hues of the apple.

Additionally, by using the Clip Control, it is possible to differentiate between similar vectors of higher or lower saturation.

All this is shown on the master monitor in tones of gray (no chroma) for the
(continued on page 42)

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Buyers Guide

A-62 Stars in Hollywood House

by David Tosh, DE
Action Video

Hollywood CA ... Abekas Video Systems' remarkable A-62 digital disk recorder has proved to Action Video that it is really more than just a digital video tape recorder. The unit provides us with the benefits of digital real time recording while adding video processing features that I don't expect to get on real DVTRs when they are available.

User Report

We discovered the A-62 during the 1984 fall SMPTE Conference, and it was hard to wait for receipt of our unit which was delivered in September of the following year. This was the first A-62 delivered on the west coast.

We ordered the 100 second version which allows real time recording of NTSC composite video to a digital disk. It is also capable of playing material from the disk in real time, at the same time.

Imagine a digital still store that has storage capacity of 6,000 fields (3,000 frames), and could fill it at the rate of 60 fields per second!

Add to this the capability of playing pre-recorded background material from one part of the disk, using a key signal to internally combine input video by a digital matte process, and then recording the composite. Remarkable!

We have used the A-62 to create multi-layers of effects that extend past 30 generations. The "background" video never leaves the digital domain, and new video can be keyed in with a switcher.

This is like a digital player feeding a digital video switcher's mix-effects buss, with another digital video recorder recording the output (digital) video.

The simultaneous record/play function is a feature of the 100 second version of the A-62. The 50 second standard version can still playback or record in real time, but not at the same time.

There are two separate video frame stores on the output of both versions and by loading alternate frame stores, non-real time composites are possible.

Another application we have found is the use of the digital disk recorder with our Quantel Paintbox to create effects. Mattes from the Paintbox are used to overlay pictures created by the artist over scenes stored in the A-62. The limits of this combination are still being explored.

The A-62 also excels in single frame recording and real time playback, making it a natural for animation. No more video tape pre-rolls! The rate of frame-by-frame recording is now much faster than the artist can create or recall pictures.

The unit is going to be used to collect the frame-by-frame output of our Rank telecines equipped with a pin-registered stepping gate. We feel that this should allow us to exceed current step transfer speeds.

The A-62 electronics are contained in

three rack-mounted chassis that take up 13 rack units of space and use less power than our single channel Ampex ADO. The control panel is sized for rack mounting, but we carry it around to six different locations.

The control link is two twisted pairs of RS-422, 38.4K baud serial communication in the cable. The DC power for the control panel is also through this cable, so IR loss of the raw voltage is the only practical limit to the length of cable run.

While the protocol for the control panel is not compatible with the proposed SMPTE digital control system, two RP-113/RS-422 ports are dedicated to supporting the system and currently emulate two separate Ampex VPR-3s.

Editors with direct communication capability to a VPR-3 plug in here to treat the A-62 as both player and a recorder under system control. Also included is another port which responds to CMX I-squared communication.

Opto-isolated switch inputs and outputs allow the simple interface of relay type closures to control the most powerful feature of the system: Macros.

The A-62 allows the operator to define sequences of control panel key strokes as a macro command. Currently, 10 macro definitions may be present at a time, and any of the macros may be triggered by one of the four contact closure inputs.

This has allowed sophisticated, accurate interfaces to color corrector computers in our telecine suites; early edit system interface via the Grass Valley editor's programmed relay closures; and interface to simple four-pushbutton operator keypads and some experimental special controllers.

Still more exciting to us is the parallel, high speed interface that not only allows the same command capability as the control panel port, but also reading and writing of video pixels in the frame store.

A computer interface to this port can directly manipulate the digital picture information and control requirements using this port.

It is hard to imagine how we got along without the capabilities we now have. We are in the process of ordering another A-62 to increase our use of this new technology.

Editor's note: The opinions expressed above are the author's alone. For more information call Junaid Sheikh at 415-571-1711.

Dubbing Operation Centers on Rank

(continued from page 37)
rection may be made.

An Asaca 20" picture monitor allows the signal being dubbed to be monitored, either in component or composite form. The composite input of the recorder is still available for other dubbing requirements.

System interconnection requirements are modest in that only AC-power and station sync must be supplied.

The ADS-1 is designed for ease of maintenance. When its boards are extended, all components are easily accessi-

ble. No exotic parts have been used.

Factory support has been very good, with problems addressed quickly. The only problems we've had in the past 15 months have been related to the film gate and the audio exciter lamp.

The film gate material is Delrin-type plastic, allowing very smooth film motion. It does, however, wear relatively quickly, requiring the optical focus to be checked about once per week during heavy use.

Should the gate be allowed to wear down too far, any dirt on the film will

collect below the projection area and may scratch the film. This scratch will not show up until the film is used again, resulting in potential problems with the film distributor.

Rank said that a new gate made of longer wearing material may be made available in 1986.

An audio exciter lamp problem surfaced after the unit was in operation for six months. After searching repeatedly for the cause of lowered audio output, it was determined that the lamps of one particular manufacturer were allowing tungsten to plate out on the side of the bulb, thus lowering audio output slowly.

A change in the brand of lamps used seems to have cured the problem.

Parts have been readily available and visits from Rank service personnel occur whenever an update is sent out.

As of this writing, the long-awaited dirt-concealment circuitry had not arrived, but was promised for installation immediately after Superbowl XX.

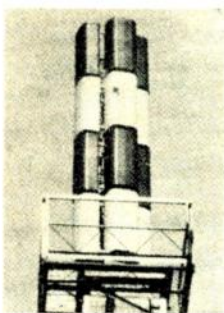
This system utilizes an infra-red CCD pickup to spot dirt on color prints. Film dyes, transparent to infra-red light, allow dirt and some scratches to be detected and electronically replaced (similar to tape drop-out replacement).

WNOL is using the ADS-1 not only in its dubbing operation, but also as a source of revenue for the station. We are currently dubbing material for other stations, and the 35mm capability means that users of this format can be accommodated easily.

The system has been beneficial in improved air quality, ease of operation and increased productivity. WNOL is looking forward to years of trouble-free operation for the station and its customers.

Editor's note: The opinions expressed above are the author's alone. For more information, call Richard Mathys at 609-953-1331.

SHIVELY-SIRA TV ANTENNAS



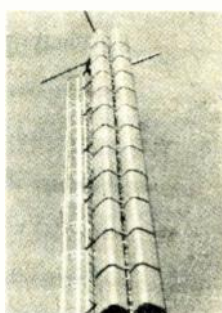
UTV-01/12
4 BAYS OF 3 PANELS



UTV-01 PANEL
INDIVIDUAL PANEL
WITH RADOME



UTV-01 PANEL
CUTAWAY VIEW
SHOWING DIPOLES



UTV-01/24
12 BAYS OF 2 PANELS

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Bandwidth—Shively-SIRA uses a broadband design concept so that its antennas can broadcast over the entire UHF band. For example, the UTV-01 will transmit on any UHF channel. This allows duplexing of two or more stations or frequency changes without changing the antenna.

Gain—Shively-SIRA antennas are high gain, offering over 24.5 db gain for a 24 bay single panel array at Channel 69. Because of the high gain, fewer elements are necessary to meet your requirements.

VSWR—Shively-SIRA antennas have a VSWR of 1.1:1 across the UHF band with a VSWR of 1.05:1 on one or more specific channels on a multichannel array. VHF antennas have similar characteristics.

Materials—Shively-SIRA panel antennas have a stainless steel backplate and all internal parts are plated copper. VHF radiating elements are constructed of AISI 316 stainless steel. Other components are of copper, silver plated brass, galvanized steel and Teflon. The radomes are fiberglass designed for years of trouble free protection.

Mounting—Shively-SIRA antennas are available for top or side mounting with mounts designed specifically for your tower. Steel mounts are used throughout. All designs are to EIA windload standards.

Services—Shively-SIRA offers complete antennas with optimized patterns or directional patterns with a complete report showing the custom azimuth pattern and elevation patterns. Beam tilt and null fill are available for all models.



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Buyers Guide

Piclear Spruces Up KDVR Look

by Mardie Womeldorf, Film Dr
KDVR TV

Denver CO . . . KDVR TV has been using the Piclear Film Enhancement System since we went on the air in August 1983.

User Report

We use this system in order to have our films look as good as possible, given the quality of the print sent to us by the distributor. We have modified the system to fit our needs.

Piclear is designed to make films appear as close to new as possible. A scratch on the film, either on the base or emulsion side, creates an imperfect optical surface. Light passing through the film causes the scratch to look black.

Piclear temporarily fills in the scratch to make the film appear optically perfect, and it cleans out the dirt that accumulates in the scratch. The system cannot replace missing dye from the emulsion side of the film, but it will make the emulsion defects optically perfect and the scratch will show up white instead of bright green or black.

When we first installed the Piclear system, we used a reservoir on top of the projector as the fluid container.

Later, to eliminate the human error factor of someone forgetting to fill the reservoir and therefore badly scratching a film by running it through dry pads, we modified the system.

We put in a five gallon pressurized drum and a nonreactive plastic tubing system. The pressurized drum operates in soda fountain style to get the Piclear to the projectors through the tubing.

Once the fluid gets to the projector, it goes through two metering valves. The by-pass control drips at a very slow rate, keeping the Piclear pads damp. The main feed control is only activated when the

projector is in operation, and this control drips faster to keep the applicator continually wet.

The applicator pads are located before the cue tab detector, in a device that creates a seal on both sides of the film. Any excess Piclear will evaporate before the film reaches the take-up reel. Any excess fluid in the system is carried by tubing to a glass in the bottom of the projector.

KDVR operates RCA projectors which have some plastic parts. Piclear reacts

with some forms of plastic, causing the plastic to dissolve. We have had to replace the parts that are in the direct path of Piclear about twice a year. This is the system's only major disadvantage.

KDVR, a concerned employer, recently asked Colorado State University to give our Piclear system an emissions test. We asked for a worst case scenario.

University officials placed meters directly next to the valves at the top of the projector. The test results showed

that there were negligible emissions at this point, well within legal guidelines.

The manufacturers of Piclear have been helpful to us, and we have had no problems with supplies or service.

It is very important to KDVR to have the best and cleanest air in Denver. We believe that through the ability of the Piclear system to clean and make optically perfect the surface of film, and through the quality of our staff, we achieve our goal.

Editor's note: The opinions expressed above are the author's alone. Call Richard Sassenberg at 914-698-0258.

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Rank Cintel is the world's only specialized manufacturer of telecine equipment. Backed by more than four decades of experience, you'll be glad to have ADS-1 on your side. For more information just call Rank Precision Industries at (914) 353-1914; (215) 886-9817; (609) 953-1331; or (818) 765-7265.

 Rank
Precision Industries, Inc.

Bosch CCD

(continued from page 37)

mid day, and we aired a prime time movie on the machine that night.

We had two minor technical failures with the telecine in the year it has been in operation. Support was superb.

We put a station on the air in Phoenix, AZ this year, so we purchased another Bosch unit. All of that station's film product is dubbed to tape for air. Since the telecine is used mainly in a production mode and not for direct broadcast, we outfitted it with a wet gate option.

The wet gate immerses the film in solution that has the same index of refraction as the base of film. Scratches are thereby covered.

It is a clean scratch remover, but it also slows up the cutting of film, so we do not use it on-air at KBHK.

We are pleased with the performance and reliability of the Bosch CCD Telecine, and credit some of our achievements in ratings to its operation.

Editor's note: The opinions expressed above are the author's alone. Call Al Jensen at 801-972-8000.

RC-786

See Us at NAB Booth 3414

Circle 41 On Reader Service Card

WRH

Buyers Guide

CCCI Introduces New System

(continued from page 39)

selected vector. While the Sunburst module is in set up mode, the vector in our example will appear in gray, and as we open the Bandwidth Control, the gray will include more and more of the apple and, perhaps, other similar hues in the picture which also show as gray areas.

We can further differentiate our apple from other elements of the picture by using the Clip Control.

This control differentiates the highly

saturated apple from other less saturated elements or vice versa.

Consequently, we can select any object on the picture by its hue with the Sunburst Control; we can include all the surrounding hues of the object of interest with the Bandwidth Control; and we can differentiate between objects or vectors of equal hues but different saturations with the Clip Control.

Once we have selected and delimited the object as described above, we can

proceed to change its hue, saturation and luminance with the appropriate controls, all in a proportional ratio and without creating artificial color edges as often occurs with other methods.

The Sunburst line of color correctors also includes the traditional six vectors with luminance. The six vectors technique still remains the most accurate, flexible and time saving of all available choices. It can be used for most color corrections that do not require any further manipulation.

If further manipulation is required, the answer is certainly Sunburst scene-to-scene color correction.

The Sunburst also contains all the features of the award winning System 60XLB2. These include the aforementioned six fixed vectors color correction with correction of luminance, hue and saturation, luminance transfer characteristics, automatic scene detection, and an impressive array of peripherals.

The Sunburst vector selector is optionally equipped with an Electronic Traveling Matte input and control that can generate (frame by frame) or accept an external matte that delimits the action of the Sunburst Control, and/or the action of the six vectors color correction. This enhances the Sunburst object selectivity.

Sunburst Color Correctors are also optionally equipped with another first: Recalling of Previous Corrections by the Picture.

This advanced digital technique consists of the storage of one or multiple pages of 12 pictures each, that represent key frames of the scene.

Previous systems relied entirely on the memory of the operator. Unfortunately, as events were inserted or deleted, the location of those key scenes moved.

The System XL used buffers that were assigned to store those key elements. As the demand grew for more buffers, remembering which color correction was associated with which picture once again became a problem.

This problem was addressed by attaching a name tag to the correction. This was an improvement but record keeping was further complicated.

This approach required a fully alphanumeric keyboard and a typist to effectively operate it. There were also additional problems caused by the illumination necessary for the task.

To worsen the situation, the operator had to focus his eyes onto the menu CRT, causing detrimental effects on the continuity of his visual memory and his appreciation for color.

After much testing and research, we concluded that the Call-A-Picture technique with one page of memory was more than sufficient.

With this option, the operator can use a touch screen to select the color picture out of an array of 12, which includes the key elements.

If the color monitor displaying the 12-picture array is located out of the arm reach of the operator, a 12-button keypad resembling the array on the monitor is provided.

This technique also allows for "Next To" comparisons, making it possible to place the frame to be displayed next to the sample frame for color matching purposes. It is also possible to do the comparison conversely in the master monitor.

All along, the approach of Corporate Communications Consultants has been to create color correction systems that are the most flexible, powerful, time efficient and simplest to operate with great consideration for human engineering and psycho-physiological factors. The hardware maintains the integrity and quality of video images without limiting resolution or creating aliases or degradation.

For more information call the author at 201-226-5938.

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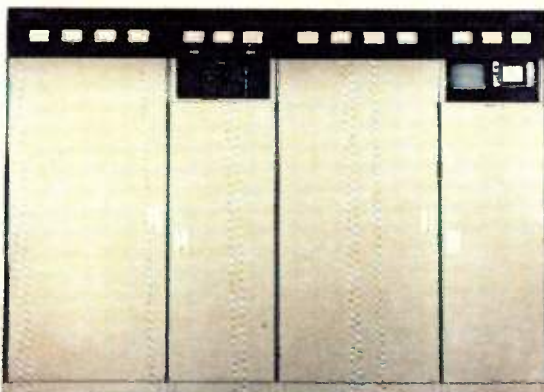
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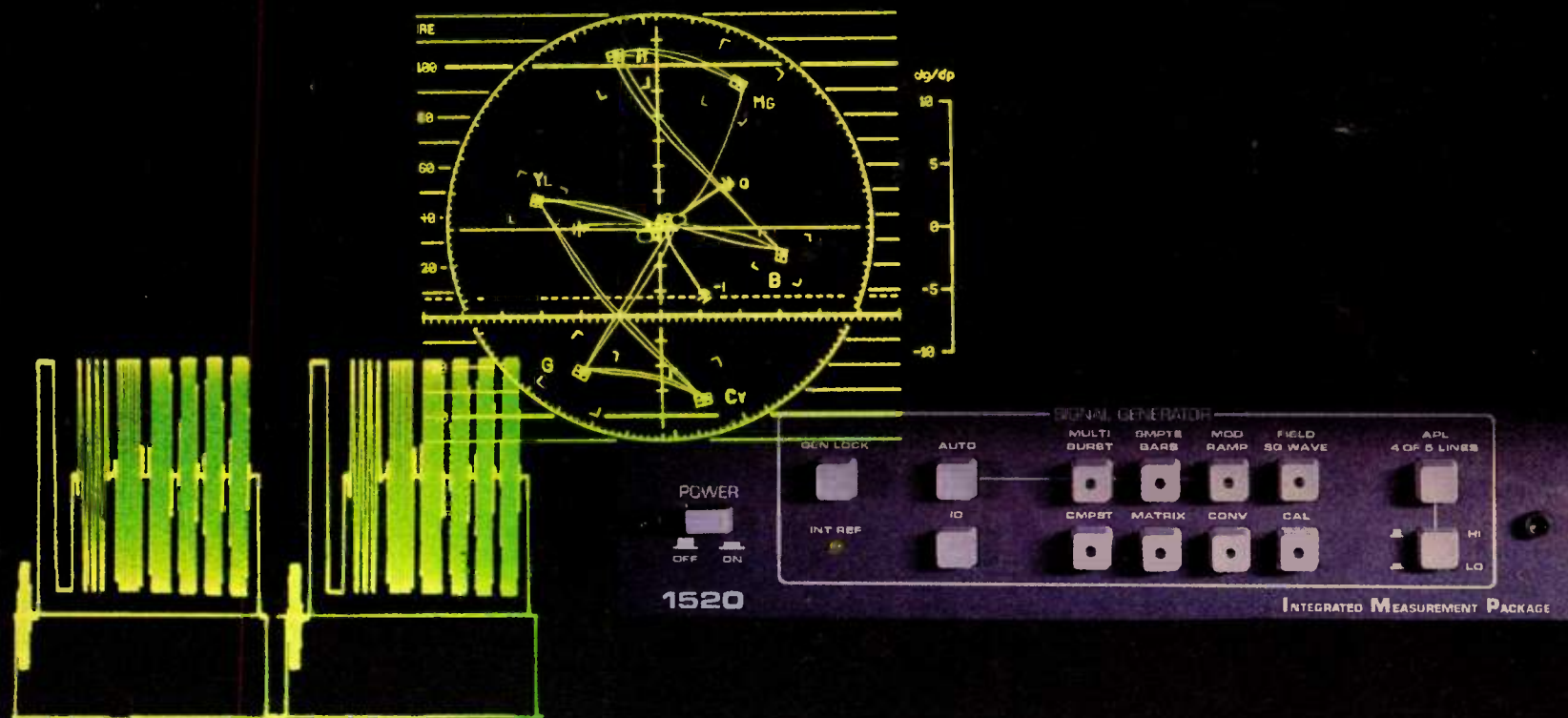
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