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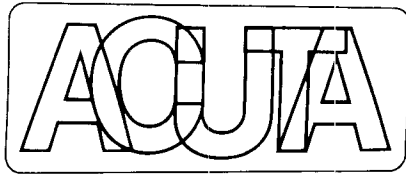
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NEWS

Association of College & University Telecommunication Administrators

THE VOICE OF TELECOMMUNICATIONS IN HIGHER EDUCATION

VOLUME 13, NUMBER 4

MAY, 1984

RUTH A. MICHAELCKI, EDITOR

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President's Message

It is again a pleasure to report on the success of yet another ACUTA seminar. To say the Orlando Spring Seminar was a smashing success is an understatement. As expected, Joe Massey did a superb job objectively relating his personal experiences with large switch installations to a very attentive audience. The response to this meeting, dealing with switch comparison and fundamental concepts, was overwhelming to say the least. Registration for this meeting was 120 people; a very encouraging number when one remembers past annual conferences with much smaller attendances.

The large early registration and high attendance at this meeting is again proof of what a volatile situation we are in and the incredible thirst for telecommunications knowledge required by our members who will be making major switch decisions in the very near future.

Although the need for the information is there, these meetings just don't happen by themselves. Behind the scenes and long before the first brochure goes in the mail, many hours of preparation, planning and coordinating have already gone into the meeting. Enough cannot be said about the fantastic job, our host, Bill Morris, of the University of Central Florida, did in making the arrangements and this meeting a reality.

On behalf of the entire Association, I would like to extend our gratitude to Bill Morris for hosting our best attended and our most professionally organized seminar to date. These meetings are really only successful because of the hard work and dedication of people like Bill, and for this ACUTA is most grateful.

Mal Reader, our Program Chairman from the University of Calgary, is also to be congratulated for his valuable contribution to this seminar. Mal, in addition to making all the program arrangements for our other two seminars this year, was again responsible for the Orlando topic and the speaker arrangements for this very thought provoking seminar. Thanks Mal, we appreciate all your efforts!

The Board of Directors convened two days prior to the Orlando seminar to discuss numerous business issues and projects that have been pending for the last six months. The biggest item discussed at length was the Association data base project. Progress is being made and at this point we have working models on both the Ohio State and Case Western Reserve University main frames. Yet to be worked out is the process in which
(Continued on page 2)

Party Line

...by Ruth Michalecki

The ACUTA Seminar on **Comparative Value of Switches** conducted by Joe Massey was certainly a big success. Over 135 persons attended the sessions and our vendor support was outstanding. Participants were treated to a session on United-Vista Telephone Company and the opportunities they had in providing telephone service to Disneyworld and associated areas. One afternoon was spent touring EPCOT Center and one afternoon at the Kennedy Space Center.

Listening to Joe Massey discuss how various features of switches vary from one another certainly raised a person's level of understanding how important switch selection is. Living with today's technology, we think we understand simple every-day things like call forwarding, transfer, etc., and when we discuss these features, we feel they are all about the same..Well, we learned they can vary a great deal in actual operation and we need to know about the differences. I taped the seminar and as soon as we get it transcribed and cleared with Joe Massey, we will provide copies to our readers.

It was interesting to talk to our fellow members and see what is happening in their area regarding **CALC** charges for **Centrex**. Believe me, it is really varied, ranging from a total wash to zero rebate or reduction in rates. In addition, the long range plans for telecommunications at the various universities are just as varied. We intend to start our interviews again with our members to see where they are right now and where they are headed. I would appreciate any suggestions for specific universities to interview.

In the February 84 issue of **BELL LABS RECORD**, is an interesting article on **Time-Compression Multiplexing**: squeezing digits through loops. This technology allows use of existing wire-pair cables for high-speed data transmission on local loops. It will enable computer users, for the first time, to transmit and receive high-speed data over the public switched network, utilizing the same two-wire loops normally employed for conventional services. Switching between voice & high-speed data can be done at will at the customer location, using a simple modified speakerphone switch which sits on a housing containing the time-compression multiplexing circuitry. This technique is a key element of the **Circuit Switched Digital Capability (CSDC)** service announced by AT&T in 1983. CSDC is the world's first system capable of sending and switching digital data signals at 56 kilobits per second over the public switched network (about six times faster than the maximum speed
(Continued on page 2)

President's Message (Continued):

the gathered information will be distributed to the membership. Access is a very complicated issue we hope to have resolved by the summer Board meeting. In the meantime, be on the lookout for the survey forms that should be in the mail to all members within the next 30 days.

Another project on the horizon for next year will hopefully, be the offering of five mini-workshops that will deal strictly with basic telecommunications material and cater to the new people in telecommunications. These mini-workshops would be in addition to the regularly scheduled spring and fall seminars. The intent is to offer the basic course in each of the five regions to give all interested new members a chance to attend. We will attempt to keep the cost to the attendee as reasonable as possible, by utilizing the facilities of selected university conference centers instead of commercial hotels. We are open to suggestions and looking for eager volunteers to offer the services of their universities and act as coordinators for each meeting. Any interested members should contact either Ruth Michalecki (402) 472-2000 or myself at (608) 262-0521 as soon as possible.

Along this same line, the Board of Directors has established a site selection committee whose assignment will be to make arrangements for future conference and seminar meetings. A number of cities are being considered for seminars in 1985-86 and conference sites in 1986 and 1987 so these can be presented to the membership at the Boston conference business meeting this summer. Anyone who is interested in hosting a meeting should get in touch with me without delay so we can begin studying the location.

Just a reminder about the upcoming Boston conference. The initial flyers should be in the mail around the first of May, followed by the brochures and registration material before June 1st. Don't forget the dates: August 5-9, 1984. I urge everyone to register early; the program agenda again indicates this is going to be another good one! ☎

Michael A. Toner
President



(Above) Participants at the ACUTA Spring Seminar in Orlando, Florida.



"I'M ENTITLED TO ONE PHONE CALL? GUESS I'D BETTER CALL MOM AND TELL HER THE BANK JOB FELL THRU?"

Party Line (Continued):

presently attainable). The first application of this new technique began late in 1983 at the New Jersey Bell switching center in Murray Hill. More on this in a later issue....

A new service announcement by the **Chesapeake & Potomac Telco's of Washington, D.C., Maryland & Virginia** might have some promise in the university environment. The service is called **AUDIOTEX**...It provides a pre-recorded announcement for a sponsor or customer---the public calls a "976" phone number which connects them to the recorded announcement. The telco bills the caller for the service. The announcement can be no longer than 6 minutes and the average cost per call will probably be in the range of 25 cents. One use in our environment would be providing public information on subjects ranging from medical notes to gardening, etc.

In Des Moines, Iowa, **Northwestern Bell** has plans to initiate a pilot project in about 2,000 homes on a volunteer basis, in cooperation with the Des Moines Waterworks. The project is to read the water meter by telephone. A meter can be read every five seconds, if desired, over the phone. It will cost about \$75.00 per meter for the interface required, but the Des Moines Waterworks says they will soon pay for themselves---currently they employ five full time persons to read meters.

William E. Darden III, of Storage Technology Corp., in an article entitled "So You Want To Buy A New Telephone System?" (BCR-Jan./Febr. 1984) says:"define your problems before your vendors do it for you. I have found they are most helpful in telling your boss and/or users about problems you or they have long before you knew you had them. Assuming you have a problem, you might want to determine what your real requirements are. But reserve the right to be capricious and arbitrary because saving money and people infatuated with technology don't mix...."

Speaking of BCR, the Jan./Febr. issue updates some of the regulatory issues before the FCC. Worth your time to read this....

Our **Store & Forward Voice Message System** is now completely installed and we are starting to bring our first customers on line. What an exciting event! So far, we are experiencing very good reception by our faculty/staff. I do believe it will require continual on-going training and will take time for our users to become comfortable using it. We elected to implement only some basic services at first--letting everyone become comfortable before introducing the more sophisticated features and services. ☎

BOCs Revamp Centrex Service To Vie With PBXs

But With Bell Cos. Pursuing Both Markets, PBX Makers See New Push As Minor Threat

...by Karen Lynch

After years of being treated like an unwanted stepchild by Ma Bell, Centrex is being marketed with renewed vigor by the divested Bell operating companies. But vendors of rival PBX systems, which require fewer lines to offer more features, system control and ownership benefits, say they don't view the new Centrex push as much of a threat.

The recent flurry of activity around Centrex has included a slew of new product enhancements for the service, attempts by the BOCs before various state commissions to keep Centrex rates stable and competitive, and efforts at broadening the service's appeal by targeting new markets that the phone companies had previously ignored.

How far these initiatives will go toward stemming the flow of business from Centrex--a regulated service requiring a separate line between each telephone belonging to a customer and the central office--is now under scrutiny.

Studies by Bell Communications Research Inc. (BCR), the central research and support organization owned by the seven regional Bell holding companies, show that the number of Centrex lines in use hit a new high last December, following an 18-to 20-month decline. Centrex use is on the rise in spite of uncertainty over the impact access charges will have on the service, said Thomas Lamb, a Centrex System Service district manager for BCR.

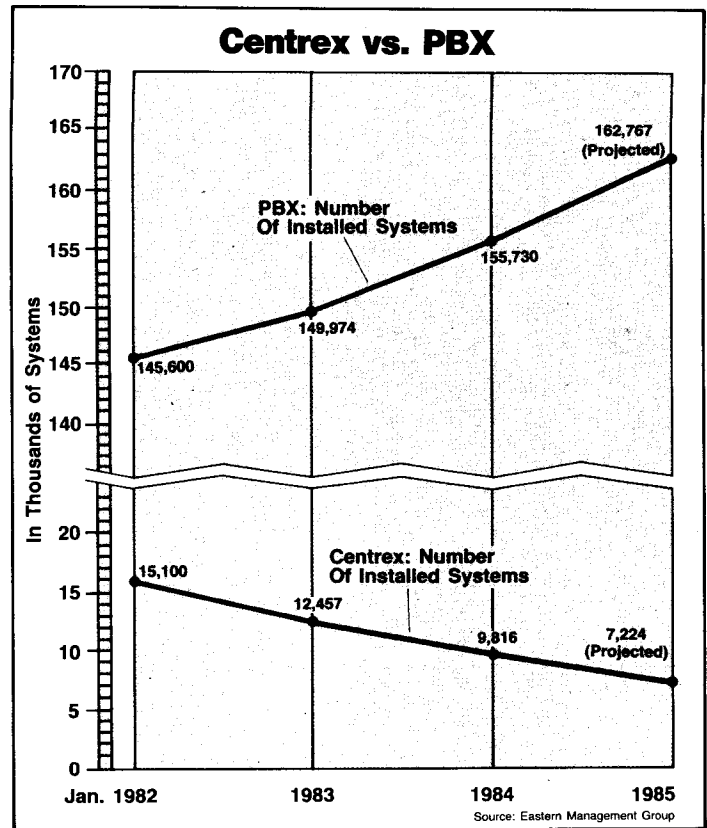
But the uncertainty over the federally proposed charges of \$2 to \$6 per line on a service that requires far more lines than competing PBXs is keeping industry insiders from projecting just how much ground Centrex can regain. And it's driving the BOCs to their state regulators to try to offset the charges, which are scheduled to go into effect in June.

The upsurge in Centrex sales that BCR has recorded primarily stems from a sales push begun by the BOCs in 1982, Lamb said, and from the lowering of the 100-line minimum a Centrex customer previously had to meet.

Most of the new Centrex business is coming from smaller customers that weren't offered the service before, Lamb said. When many telephone companies began in 1982 and 1983 to lower and even eliminate the minimum line requirement, "the market response was overwhelming," primarily from businesses using 35 to 40 lines, he said.

While some BOCs have designed very attractive Centrex packages for small businesses, "there's a lot of unrest as far as large companies are concerned," said Alan Fross, vice president of the Eastern Management Group, Morris Plains, N.J.

Sixty percent of the Fortune 250 companies now use Centrex, Fross said. "Everybody's after that market," which the BOCs are fighting to hold, he said. PBX vendors have been steadily eroding that base, according to Neil Weber, director of product marketing for Harris Corp.'s Digital Telephone Systems Division in Novato, California. **(Continued)**



THE BATTLE BETWEEN CENTREX AND PBXs: The above chart compares the continued decline of the number of installed Centrex systems since 1982 with the increase in installations of competitive PBX systems over the same period. Figures for 1985 are projections.

The mid-sized businesses are the customers that have most consistently been lured away from Centrex, Lamb said. PBXs are "very appealing, very effective" to businesses using from 100 to 800 telephone sets, said Dominic Morea, district manager of line of business management of Nynex Service Co., New York.

The BOCs are trying to hold onto their customer bases in all three markets--and some observers question their ultimate intentions. Robert Bennis, manager of communications systems for Westinghouse Electric Corp., described Centrex as "a short-term capability that telephone companies will want to try to hold onto until they can get into the business of providing telephone systems themselves." Fross agreed that the renewed marketing of Centrex is a short-term strategy. The BOCs, which are just getting into the telephone equipment market following the breakup of AT&T, are trying to hold onto their customers until their new equipment businesses are firmly in place, he said. Then they will try to switch those customers over to PBXs, he predicted.

The theory gains strength with an observation of how the unrestricted non-Bell telephone companies are handling sales to businesses. GTE Telephone Operations is pushing PBXs "because it is a better deal for the customer price-wise," according to Alan Galletly, director of public affairs for GTE Telephone Operations, part of GTE Service Corp., Stamford, Conn. GTE, the largest non-Bell telephone company, is also selling Centrex--but not aggressively, Galletly said. Many of the other independents are working under a similar principle, he said. **(Continued on page 4)**

BOCs REVAMP CENTREX (Continued):

And while most regional Bell holding companies are stressing continued allegiance to Centrex, at least one concedes that its emphasis may lie elsewhere. "It's almost a natural phenomenon" that business customers are switching to PBXs, said Claude West, assistant vice president for strategic planning with Southwestern Bell Corp., Saint Louis, Mo. "We had a hard time cost-justifying Centrex" for customers with more than 100 lines, he admitted.

The migration of customers to PBXs is not a new tactic. AT&T adopted the policy in the late 1970s and early 1980s, Fross said. "For a long time, AT&T had told the BOCs to try to dead-end Centrex," Fross explained. Prices went up and potential enhancements were ignored, he said.

After years of neglect, can Centrex now catch up?

Centrex is being touted as a service that offers its customers the high reliability of a central office machine and the freedom from responsibility for maintaining the system, according to Gary Handler, assistant vice president of new services planning and implementation for BCR. Centrex also offers an almost unlimited capacity for growth and dynamic swings in volume, he said.

Features like conference calling, direct-inward dialing, automatically identified outward dialing, intercom, call transfer, three-way calling and others can be accommodated.

Centrex's inability to handle data well has proved to be a big drawback, industry observers said. But now BCR and AT&T Technologies Inc. are both working toward this end.

AT&T Technologies plans to provide the technology for simultaneous voice and 9.6 kilobits-per-second data capability by next year's first quarter. Data transmission of 56 kbps is also being developed.

Fross said several manufacturers are developing products intended to enhance Centrex. These would provide such features as customer management, voice storage, and dial-up access to X.25 packet-switching networks.

The new positioning of Centrex could have a depressive effect on PBX sales, according to Edwin B. Spievack, president of the North American Telecommunications Association. NATA, a trade association representing the manufacturers and distributors of PBXs and other telephone equipment, is now measuring how much the new Centrex push is affecting previously anticipated growth in PBX sales. "I don't think it's had any current effect," said Jack W. Blumenstein, vice president of Rolm Corp., Santa Clara, California. The Centrex market will continue to diminish, West said.

User reaction is even stronger. "I definitely would not put Centrex in," Westinghouse's Bennis said. In fact, Bennis is leaning toward switching to a PBX system for one of the Pittsburgh-based company's plants that is using about 8,500 Centrex lines, he said.

"Frankly, my direction is to move out of Centrex," said a member of the Ad Hoc Telecommunications Users Committee, which represents large users of communications systems. The communications manager, who did not want to be quoted by name, said that he has switched all of his company's facilities except two to a PBX system and may turn to PBX use for the remainder.

(Continued)

Yet despite claims to the contrary, underscored by the BOCs' growing involvement in the PBX market itself, most of the Bell companies said their aggressive new tactics in marketing Centrex, restructuring rates, and enhancing their products are part of a long-term commitment.

Mountain Bell, Denver, has developed a family of products, dubbed Centron, for customers with needs ranging down to six lines. "All of them are selling above last year's forecasts," a spokeswoman said. The telco's parent, U S West Inc., has an equipment subsidiary. "We're competing with them, with Centron, just like we're competing with companies like Rolm," the Mountain Bell spokeswoman said.

Mountain Bell has not decided whether to enter the PBX business through a separate subsidiary, although it has applied to the FCC to keep that option open. "We are emphasizing Centron and are not selling PBXs," the spokeswoman said, adding that that could change within a year.

Nynex's approach is markedly different from Mountain Bell's. The holding company is selling both Centrex and PBXs through the same sales force and is seeking permission to continue the arrangement beyond the July deadline for separating the two activities. Still, the company expects to hook up 20,000 to 25,000 new Centrex lines this year, according to Nynex's Morea.

Much of the Centrex growth anticipated for this year will be in sales to new and smaller business customers, Morea said. Nynex has 3,000 Centrex customers using fewer than 100 telephone lines each, Morea said.

Nynex is also offering featuring packages, verification of line use, and station rearrangement with minimum lag time, Morea said. Data capabilities of 9.6 kbps should be available by this year's third quarter, he said. Future plans include both Centrex and PBX, Morea said.

Illinois Bell also believes that both products can remain viable and said that it has a long-term commitment to Centrex. The Chicago-based BOC has filed with the Illinois Commerce Commission to deaverage its Centrex rates and restructure rates in other ways to offset anticipated access charge increases.

Standing out in contrast to most other BOCs, Southwestern Bell is anything but bullish on Centrex. The holding company's equipment subsidiary is selling PBXs, and West said the majority of the region's business customers are better served by this equipment.

"Centrex is not state of the art," West said, particularly because it cannot handle highspeed data. Fortune 250 companies surveyed by the Eastern Management Group said that in order to achieve state-of-the-art performance this year, their Centrex systems would need to provide realtime station-message detail recording, the ability to automatically reconfigure networks, and interconnection with electronic telephone sets. Next year they would have to provide digital switching capability of 9.6 kbps, and in 1986 they would need the ability to transmit data at 56 kbps and to interface with T-1 circuits. These are all capabilities PBXs already provide, Fross said.

Centrex can catch up, Fross notes, but it will take a good marketing job on the part of the operating companies. They will have to show concrete features, delivery dates, and pricing schedules, he said. Many

(Continued on page 5)

Communications Gear Showcased For L.A. Olympics

LOS ANGELES—The Olympic Organizing Committee recently showcased some of the state-of-the-art communications and office automation gear that will provide the communications nerve center of the summer Games here in July.

A broad range of products and services from such suppliers as AT&T, IBM, Motorola, Inc., Xerox Corp., MCI International Inc. and Pacific Bell are now being tested at communications centers, Olympic villages and various Olympic sites throughout the Los Angeles metropolitan area.

City and Olympic officials are braced for the more than 700,000 athletes, spectators, media and support personnel who will converge on the city for two weeks. Both voice and data communications are major concerns in the planning process.

The equipment and services to be used at the Los Angeles Games will provide telecommunications, data processing and transmission, voice and text messaging, and paging to users who will be spread out over 4,500 square miles in the Los Angeles metropolitan area.

Some of the latest in cellular and mobile technology and optical-fiber transmission will be used. About \$50 million worth of equipment will be donated to the games by the suppliers, some of which are official sponsors.

AT&T plans to supply 7,000 telephones, 1,700 terminals developed by its AT&T Teletype Corp. subsidiary, 20 switchboards and 300 printers. In addition, AT&T will offer an electronic message service provided by a network of 14 3B minicomputers developed by AT&T Technologies Inc. The AT&T message system will be used for electronic mail, personal messages and event results, the organizing committee said.

IBM will supply three mainframe computers, 200 Personal Computers, 190 Displaywriter word processors, and a telephone message system with instructions in 10 languages.

Cellular radio equipment, including about 500 car radiotelephones and 60 antenna stations, will be supplied by Motorola. Motorola will also contribute 3,000 pagers and more than 2,000 two-way, portable radios.

The mobile communications equipment will operate over the cellular system developed for Los Angeles by Pactel Mobile Access, a subsidiary of Pacific Telesis Group. This system will enable access by thousands of vehicles to telephone facilities and to Olympic message centers located throughout the five counties hosting events.

Pacific Bell, the local telephone company, will provide a 343-mile fiber-optic network for intercity communications and after the Olympics will turn the network over to regular customer use.

The company said construction of the \$100,000 system, which will carry voice and data at up to 536 megabits per second, was moved up so it would be completed in time for the Olympics.

The fiber cables will also be used to provide local data networks for some of the communications and computer equipment supplied by other vendors, according to the Olympic Organizing Committee. **(Continued)**

In addition to fiber-optic technology, Pacific Bell is supplying 1,000 pay telephones, 4,000 telephone sets and tractor-trailor rigs that will carry equipment for voice, data, and television signal transmission.

Xerox will contribute 300 telecopiers, 370 high-speed copiers and 55 electronic printers. MCI International, a subsidiary of MCI Communications Corp., will contribute 250 telex machines.

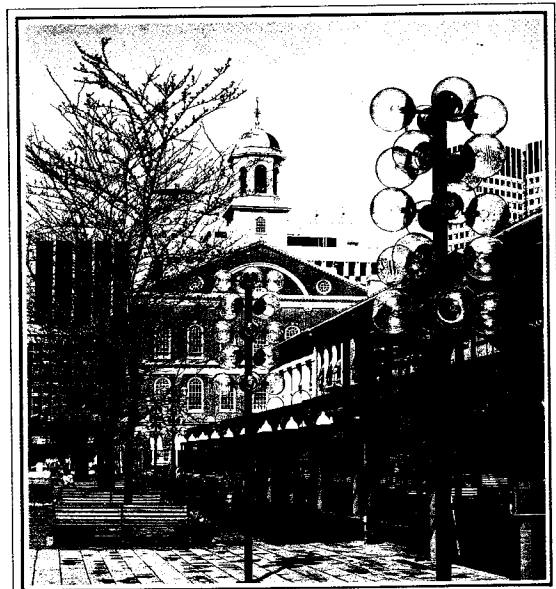
A spokesman for the organizing committee said most of the equipment will be returned to the vendors following the Olympic Games. ☎

BOCs REVAMP CENTREX (Continued):

potential customers just do not believe that the operating companies will fulfill all their promises, he said.

Furthermore, a BOC selling both Centrex and PBX equipment could end up competing against itself, Fross observed. Each of its separate sales forces would pitch its own product and disparage the others, he said, ultimately hurting overall sales efforts.

("BOCs Revamp Centrex Service To Vie With PBXs," was reprinted from the April 9, 1984 issue of COMMUNICATIONS WEEK." ☎



Quincy Market

BOSTON

REMEMBER: ACUTA'S ANNUAL CONFERENCE, AUGUST 5-9, 1984, BOSTON, MA. FLYERS ON THE CONFERENCE SHOULD BE OUT SOON.

AT&T: A Period of Adjustment

...by Kevin Anderson
USA Today

It was a crystalline moment of candor. Charles L. Brown, chairman of AT&T and reluctant executor of its breakup, was asked during a speech last June what was in store for his "new" company.

"Let's face it--we're really in for a couple of rough years."

No kidding. Though AT&T is far from being in serious trouble--and while its stock still shows promise as a long-term investment--the sledding is rougher than many expected.

Three months into AT&T's new life as a competitor:

- The tide of the access-fee debate has turned against it. AT&T had hoped that access fees on itself, competitors and consumers would reduce what it pays for local connections--two-thirds of AT&T's long-distance operating expenses.

But in January, the proposed fees were revamped in competitors' favor and fees on residential customers were postponed until 1985. In March, all the remaining fees were postponed until June.

- AT&T's share of the \$44 billion long-distance market is slipping at an alarming pace--more than 5,000 prime customers a day, it claims, AT&T knew its 94% share in 1983 would erode with the breakup, but hoped to fight that with a rate cut. That evaporated with the access-fee delays.

- AT&T says prospects for 1984 earnings have dimmed considerably, given those two factors. AT&T delivered on its promise to pay an initial May dividend of 30 cents a share.

But in announcing it, Brown set a new standard for gloominess: "We do not expect to earn at this dividend level in the first quarter...The fact is, our earnings will be less than 5% (annual rate of return) if we alone are compelled to carry the load of subsidies."

Stock prices, which had hovered near \$17 since the breakup, immediately dipped below \$16 and stayed there. If Brown is right, they should dip again April 18 when AT&T makes its first-quarter financial report.

- AT&T is watching millions of dollars in unrealized revenue grow mold as it struggles with service bottlenecks.

- AT&T faces some high hurdles as it enters the computer business. The 3B series of minicomputers it introduced last month is the year's top project for AT&T Technologies Inc., its equipment arm.

James E. Olsen, chairman of AT&T Technologies, boasted that AT&T would turn a profit on its computer business this year. But "that is in itself a bad sign," says Kenneth Bosomworth, president of the research firm International Resources Development Inc.

"It means that they can't build enough computers to support a major investment in marketing. No one expects to turn a first-year profit when they make a major commitment to a new computer line." (Continued)

AT&T's short-term prospects hang largely on the outcome of the access-fee wrangling, which should come to a head in May.

It is considered unlikely that the FCC will equalize access fees among AT&T and its competitors, but AT&T could get some relief through higher WATS rates and approval for 50-cent, long-distance directory assistance fees.

If AT&T's 3B computers get a good reception at this week's COMDEX computer show in Los Angeles, it could help dispel the thinking that although AT&T knows how to make a good computer, it doesn't know how to sell one.

With that many "ifs," analysts' opinions run the gamut. Although their forecast is slightly about AT&T's, Edward Greenberg and Steven Chrust of Sanford C. Bernstein & Co. see "an unexciting outlook for the company."

Prudential-Bache Securities Inc. sticks with its \$1.75 a share 1984 earnings estimate, but "we know it's going to be nowhere near that. We're just not to the point where we can pin down a lower number yet," says analyst Marianne Bye.

But Gruntal & Co. thinks if the "ifs" go right, AT&T could finish the year trading in the \$24 to \$26 range.



Upcoming Seminars:

EDUCOM will be presenting these upcoming seminars:

Electronic Mail Systems & Intercampus Computer Networks--a series of seminars scheduled for Washington--May 23, Chicago--June 6, San Francisco--June 13, and Cambridge--June 26, 1984.

Local Area Networks for Colleges & Universities--seminar is scheduled for Washington--May 21, Chicago--June 5, and Cambridge--June 25.

Faculty Computer Literacy: Program Development and Implementation--seminar is scheduled in Washington--May 24, Chicago--June 7, and Princeton--June 18 and 19.

For additional information on these seminars, call Kathy Schaible at EDUCOM, Box 364, Princeton, NJ 08540; (609) 734-1549 or (609) 734-1915.

Lincoln Tel Tackles First Lightguide Job

...by Pat Pike

The fiber optic cable installed by Lincoln Telephone and Telegraph (LT&T) between the new switching office at 49th and Walker and 15th and "M" was the first use of lightwave communications in Nebraska. For LT&T construction crews, installing the cable meant developing new installation and testing procedures.

"This is such a rapidly developing field that most of the items and techniques used were not even available a year and a half ago," commented Don Williams, construction manager.

For example, a special alteration was made to the truck to limit pulling power, which could not exceed 450 pounds of tensile pull strength on fiber optic cable. A special rope capable of pulling 4000 pounds of cable and a new type of lubricant for the fiber optic cable were also used.

In spite of the caution required in handling fiber optic cable, installation went faster than usual and placement time was reduced, Williams said. This was primarily due to the smaller size of the cable which allowed longer pulls and fewer splices. They were able to pull through eight manholes with the longest pull 4900 feet. Because they were able to pull five times as much cable, only five manhole splices were needed between 49th & Walker and 15th & "M", a distance of nearly six miles.

The subduct required to house fiber optic cable was also smaller. As a result, longer subduct pulls (usually about 2200 feet) were possible. Subducts were often pulled through as many as four or five manholes without a splice.

The installation involved two separate rate pulls: one for the subduct and a second when the fiber optics cable was placed in the subduct.

"Additional time was required for placing the subduct," Williams said, "but this was more than made up by the faster installation of the cable."

In order to reduce splices in fiber optic cable, subducts were cut in each manhole, the cable passed through the subduct, and a sleeve splice was used to rejoin the subduct.

Another problem unique to fiber optic cable installation is the need for a straight line pull.

"The glass fiber has a certain amount of flexibility but, unlike copper wire, you can't put pressure on a bend or it may snap," Williams explained. This also meant that the normal bend radius in each manhole had to be eliminated so the cable could run through the manhole in a straight line while being installed.

At each manhole splice location, 20 feet of slack was built in as insurance for the future. According to Williams, this will eliminate the need for new splices if repairs ever have to be made.

Splicing fiber optic is a much more complicated procedure than splicing ordinary copper wire cable. In order for the light wave to pass through with no loss

(Continued)

of signal, the ends of each glass strand must be cleaved (cut absolutely square) and butted together in perfect alignment.

An organizing tray, containing specialized equipment for making the splice, was set up in each manhole where a splice was to be made. The procedure consisted of stripping off the outer plastic tube, chemically removing the protective plastic coating from each glass strand, and using a special cleaving tool to cut the ends off square. An alignment tool brings the cut ends together, then the signal is tested. When the signal is correct, the fibers are glued together inside an elastomeric sleeve and laid inside an organizing tray developed specifically for fiber optics.

The completed splice is placed inside a splice case similar to the splice housing used for copper wire splices.

Although fusion splicing also has been used by the industry, Williams said that the elastomeric splice was the method of choice by LT&T because it is more adaptable for field use, requires a shorter training period for making a splice within allowable dB loss requirements, and can be completed within 3 minutes. In addition to the advantage of being able to make the splice right in the manhole, this method was more cost effective.

Williams said that even though the procedures were new to LT&T personnel, General Cable engineers who followed the installation and splicing procedures were impressed.

(Pat Pike is publications coordinator of Lincoln Telephone & Telegraph and editor of LT&T Magazine. This article was reprinted from LT&T, September/October 1983 issue.) ☎

Court: Cops Can Tape Cordless Talk

TOPEKA, KAN.--The Kansas Supreme Court has ruled that police may legally monitor and record conversations conducted via cordless telephones and use those recordings as evidence in trials.

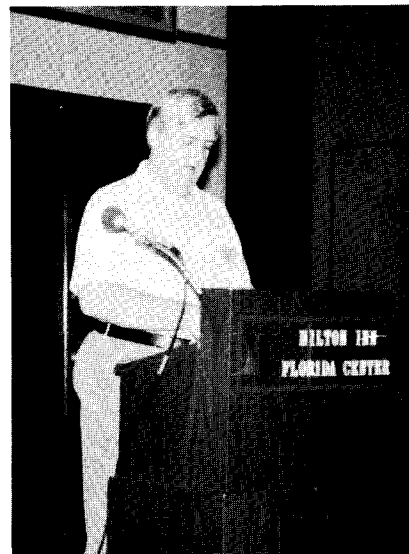
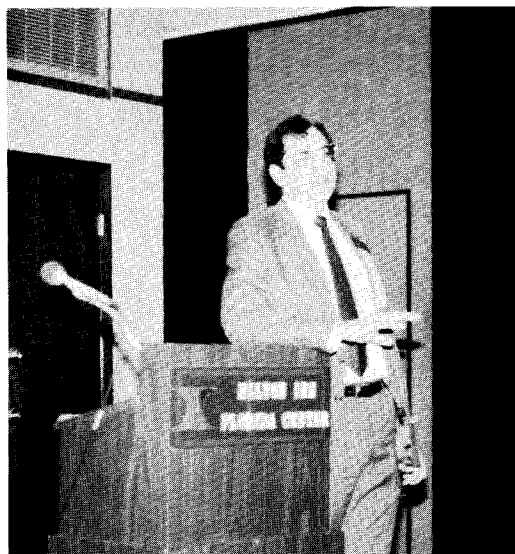
The court said that the conversations, heard over an ordinary FM radio, were the equivalent of oral communications and were not subject to the wiretap laws. The decision overturned a lower court ruling in a drug case that the recordings were inadmissible as evidence.

The tape recordings in question were made in 1982 after a neighbor of the defendants overheard conversations on his radio and informed police. The Kansas Bureau of Investigation asked the neighbor to record the conversations and later used the tapes to press charges of possession of cocaine and conspiracy to sell marijuana against the two defendants.

A Reno county district judge refused to admit the tapes as evidence in the trial because he said police did not follow established procedures under laws governing the use of wiretaps. The Supreme Court, however, rejected that argument and sent the case back to the lower court for a new trial. ☎



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