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# Association of College & University Telecommunication Administrators

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## TELEPHONE MANAGEMENT SYSTEMS

.....Ruth A. Michalecki

One of the more interesting sessions at the Boston Conference was the session on Telecommunications Management, or automated accounting systems. I doubt anyone in our profession would seriously suggest a well-thought out, planned and designed automated billing system would rank anywhere lower than first or second place in importance.

In a two-part series in **Telephone Angles** author Joyce P. Daza (communications consultant for Alltel New York, Inc.), says "The question, "Can you account for your telephone costs?" should be asked, "Can you afford **not** to account for your telephone costs?"

What do we mean when we talk about automated billing systems? To give you my definition, I would have to refer to our department's mission, which is: To provide total telecommunications management to the University of Nebraska-Lincoln, including evaluation of new services, procurement, consulting services, training, maintaining excellent service levels and cost containment through monitoring and controlling both equipment and usage.

Before you can even start to monitor, control and reduce your telecommunications expenses, you **must** first know what they are. Identification of all expenses, summarized in a meaningful manner that provides the telecommunications manager information about the system in a timely fashion and readable format is what automated billing systems are all about. I have discovered over the years that the quality of information is one heck of a lot better than the quantity and yet it still amazes me when looking at automated billing system reports, the massive volumes of paper shown to me when all I really wanted or needed was simple summary reports that identified several key factors. The volumes might be very impressive and even necessary in some cases to my accounting staff, but I'm mostly interested in knowing how costs compare to income; what the cash-flow looks like; do we have any unusual variances in either dollars or work-order volumes; is our long distance network usage within our normal range, and other reports that provide a tool for me to manage our specific operation.

Deans of the Colleges and the various Directors or Budget Managers really need a brief summary of telecommunications expenses by each of the departments under their leadership. They are mostly interested in the expenditure by department and how it compares to the other departments, i.e., the Dean of Arts Science College is interested in knowing if two departments of comparable size and mission, have comparable telecommunications expenses, and if not, why? Maybe one department makes a lot of moves and changes during the course of a month; or maybe one department feels it is important to spend their operating budget on more

expensive telephone equipment than the other; or maybe looking at the summary, the Dean can detect where the functions of the department could improve productivity by spending a little more for a more effective and efficient system. We also provide in a simple one-liner summary, the long distance network charges and the amount of calls that were placed using credit cards or accepted collect. If these become extensive, in our opinion, we find it very easy to bring it to the attention of the Dean. Again, I feel if you provide the necessary information in a timely manner and in a short, easy-to-read summary, it will be a useful and **used tool**, otherwise when provided in massive and impressive volumes, it most often finds it's way into a wastebasket or piled in a file drawer, never to see the light of day.

The actual usage (recording of the long distance calls by date, time, area code, minutes used, and destination by city and state) need to be formatted for easy review by the users, with a check and balance given to the office manager by way of a summary of the calls. The person needing to verify the accuracy of the calls is the person making the call and the call detail must be provided in a timely fashion, using plain, simple English words, not a bunch of codes and or abbreviations no one can explain. If the charge on the bill is for local directory assistance, then the bill should say so! Just think how many calls you could avoid everyday if you didn't have to stop and explain all the items on the bill.

We have a very large and sophisticated long distance network. We have 166 intrastate facilities and 49 interstate facilities, ranging from telpak, FX, tie lines and WATS. In addition we have both intrastate and interstate 800 service with 25 facilities. Our monthly usage on the outgoing network averages slightly more than one million minutes per month and the 800 service averages 125,000 to 160,000 minutes per month, with most of the business carried over a nine-hour business day. A separate 800 service is used as an information resource for students and their counselors or parents from anywhere in the state to ask questions about enrollment, scholarships, financial aids or any other information required by the student to help them in making a decision to attend the university.

With all of the above facilities, I don't need to tell you how very important it is to know exactly the traffic carried on each facility group, and what happened to the traffic in queue---where did it actually complete. I need to know if any of the facilities were out of service for any period of time, and that information must be by date and time. If my automated billing system couldn't provide this information quickly and accurately, the information wouldn't be of much value to me. Using this data, I can request and be given credit by the telephone company for outages that I would have never known about

## TELEPHONE MANAGEMENT SYSTEMS, CONTINUED:

before we automated our system. By massaging the data correctly (and I believe that happens because you are either smart enough to know what to ask the data analyst for, or you are smart enough to hire a person in the data field with the smarts you lack in this area) you can keep current with traffic usage and can more accurately predict your facility needs, keeping your network efficient and effective, both in grade of service and costs. With the costs of doing business rising daily, it is critical to pay close attention to the costs you can control or impact.

With our system, I can quickly glance at the reports and see where I might consider adding FX services or make other changes and the information I am using is current information. By putting my summary reports in a notebook, and by charting the monthly traffic on a chart, I can readily follow a history of our traffic patterns and predict the future with a reasonable degree of accuracy. Once again, the reports are vital to me as a management tool, but the reason I use mine is because they are easy to review and they are summarized to fit my specific needs.

My Accounting Supervisor likes the equipment records, inventory records, and the other charges credits section (OCC) best of all. The accounts can be called up by account number, telephone number, location of telephone, department name, and by what we call list-bill number. When our customer makes an inquiry about their bills, they usually know at least one of the items mentioned. Since we are an auxiliary service, we charge back to the departments all costs associated with providing telephone service. This includes an overhead charge to cover the costs of all common equipment. Our overhead is a percentage of all equipment and local service charges. Our long distance network charges are on a per-minute basis with a set amount for interstate and one for intrastate. We do not bill out based on the facility the call actually completed on, since the customer has no choice in the selection of facilities. We, for the most part, restrict overflow to DDD on the administrative side, and for the few stations that can overflow, we bill them at the applicable DDD rate for the call.

Since we apply our percentage for overhead on equipment and local service, we felt it was best to establish our own tariff. By working with the data analyst, we were able to build a file that shows our tariff (code and costs), describes the item in plain simple English terms for our customers and then for our own use only, displays the local telco tariff (costs and code) for the same item. This method allows us easy access and easy comparisons to our bill. Our billing system reviews the telco tariff monthly, and if a new item is discovered that we haven't established a code and tariff for, it brings the item up as an exception on the billing/tariff file so our staff can get the item entered in our data base. When the Nebraska PSC holds



...Randy Manuel, President of Telecommunications Software, Inc. checking on-line application with University of Nebraska billing staff....

a hearing on rate increases, we apply the percentage increase requested by the telco to our file and can quickly determine the impact of the proposed rate action. That helps us in deciding if we should intervene or not. It has been fairly easy to prepare budget projections for telecommunications for the various departments. Since we have a history of the past activity, and can apply percentage increases to our data base, we can make projections with a good degree of accuracy. This has been a real winner for us.

An article in the April 4, 1984 issue of **Wall Street Journal** entitled "Personal Use of Company Phones is Target of Cost-Cutting Efforts," estimated that employee abuse can represent as much as 40% of a company's phone bill. While that percentage might be a little high (it was taken from telephone accounting companies), we are all aware of the big problem telephone abuse causes for each of us as administrators of large systems. Although not an instant cure-all, employee awareness that indeed call accounting is going on and department managers will be able to detect the repeated calls to sister Sue or Uncle Joe in another city will almost always result in elimination of such calls or at least in a reduction. Quoting again from the excellent article in **TELEPHONE ANGLES**, "people will think twice before dialing pornography recordings from their stations; and extensive calls to the hair stylist, stockbroker, bookie, girl/boyfriend, etc. will cease. After a recent installation of a call-accounting system in a publishing company with about 300 employees, management discovered that one of its employees had made seven calls to his home within a four-hour period. Each call averaged sixteen minutes. That's almost two hours of non-productive time! The employee was notified that calls from his station were being tracked. The result? No more unnecessary calls home." Although this seems extreme, I know for a fact these things happen (because we had a very similar situation and once it was called to the employees' attention, it ceased).

Our telephone management system allows us to monitor costs, identify both local and network abuses, and allocate precise costs to various cost centers, departments, and accounts. Every month, a mag-tape is generated from our billing system that interfaces with the university's general ledger system. With this feature, we have been able to avoid costly and mistake-prone manual ledger entries. Best of all, by automating our entire operation, we are able to effectively manage our area with an absolute minimum staff.

The latest addition to our telephone management system is automated order entry. Our local telephone company assigned a dedicated block of order numbers to us (the standard I+R numbers). They actually print out a list of numbers and send them to us. When we issue an order, we assign the IR numbers from this office instead of the telco assigning the numbers. This was important to us because we wanted a common number to hang our identity hook on, permitting us to follow the order from start to finish. We enter our work order on the CRT, using our tariff codes. The system automatically puts that station and/or account on a 'pending-order' status, and the accounting staff can bring up the order anytime on the screen. The order is transmitted electronically to our local telco and we can print out a paper copy for ourselves if desired. When the telco bill is processed at the end of the month, our system verifies all of the OCC's, checks for our orders and if everything agrees, automatically makes the associated changes and charges to the account. However, if there is a discrepancy, it flags the account as an exception and the accounting staff has to make a decision on the discrepancy. As orders are completed, our inventory data-base is automatically updated, and our directory assistance operation is automatically updated or flagged for attention by the data entry supervisor. If we owned our own telephone

TELEPHONE MANAGEMENT SYSTEMS, CONTINUED:

system and cable plant, the system would update cable and wiring data bases and would update or change equipment inventory data-bases. We can maintain up-to-date and accurate files on entry cable per building and on inside-wiring per building, even though we do not assume any costs or responsibility for either at this time. We can access our on-line system and verify how many working stations (or pairs) we have in a specific building. This has proven very helpful many times, such as when we are considering removing a key system and changing a department over to individual CENTREX stations, using maybe 20 or more pairs where we were using 4 with a key system. It has saved our face many times.

The Student Long-Distance Resale operation has been fairly easy to manage and collections have been good---and I have to believe a large part of the success is due to our planning steps in the billing area, all prior to implementation of resale. We involved our data analyst in our first planning sessions. We both wanted and needed his input right from the start. Since we knew we would not be allowed to add more than one additional person in the billing area, we decided to balance our work load by splitting the student bills into three groups and billing them in three cycles per month. One group gets their monthly bill on the 10th, the second group on the 20th and the last group on the 30th. Our telco strips the student usage from our call detail records and mails the tape to our data processing bureau. They produce the bills and send them to us for distribution through the campus mail operation. Our data-base has all the pertinent information on the student and our current rates or cost-per-minute. If the student overflows to DDD, they are billed at the DDD rate, and our service bureau, (Telecommunications Software, Inc.) uses that rate and figures the costs based on the applicable VH coordinates. At anytime our accounting supervisor can make changes in the cost-per-minute rate.

Student payments are all entered on our cash register. It is a National Cash Register # 2950, with some smarts. To the host computer, it looks like a 3275 terminal. This function was important, because it allows our data processing firm to poll the cash register activity every night and make the adjustments to the student accounts. We get a copy of the cash-register activity every morning generated by the host computer and printed out on our printer. We give the students 15 days from the date of their statement to make payment. If the account shows no activity in that time-frame, our processing firm automatically generates a notice of past-due account, prepares a delinquent statement and sends it to us for distribution. Since we automatically permit overflow to DDD, it was vital to match the amounts being charged the student with the amount we were being charged by the telco. Prior to running the bills, the accounting supervisor gets a short summary comparing the dollars being charged with the dollars we are charging. This seemingly insignificant step has proved very valuable. It goes without saying how important the summary records showing tax collections, DDD traffic, and network usage are in managing this large operation. To help me in keeping the system cost-effective, I receive summary reports showing where the traffic is going, both by NPA and NXX, as well as time of day, day of week stats. We get another report that is important---it shows the payment history of a student and we can access it by name, social security number, telephone number and/or room and hall. When a student applies for long-distance service, our staff can tell in a moment if we have had a prior bad experience with him/her. If we didn't have this information, we could repeat the experience very easily.

Our automated billing system took us a long time to develop and refine so it fits our needs. Until we could understand exactly what we wanted and how it was all going to work, we agreed to install a so-called package program provided by the company we selected to design our system. This also proved to be a wise move (I would like to take full credit for this intelligent decision, I must admit, it was a suggestion by our data analyst). In the first place, we really didn't know exactly what we wanted to do; some earlier thoughts have proven worthless and we have altered some of our reports to fit our needs in today's environment. The system we purchased allows us that flexibility. If we would decide at some future time to purchase and operate our own switch, the billing system could be adapted to fit our new requirements without making us buy a new or different package. This feature was important to us in our early stages of implementation and is even more valuable today.

Before selecting **Telecommunications Software, Inc.**, as our vendor, we worked extensively with our in-house data processing staff. Our problems were many and we were on a slow train to nowhere. First of all, since we really didn't understand what we wanted, it was impossible to explain to someone with absolutely no understanding of telephony (either terms or usage) what we wanted. That made design of the system impossible. We couldn't define what files they would have to design and how they would need to interface to produce the billing system we thought we wanted. When we tried to explain all the source files they would need and the format of those files, we were really in a mess. When our problems appeared to be more than we could solve, I met the President of **Telecommunications Software, Inc.**, Randall Manuel, at an ACUTA Conference. I listened to his presentation and very quickly cornered him to take a look at our problem. What a blessing; he could talk telephony better than I could, and he was able to show me what reports might be of more help to us than some others. What really was icing on the cake, was the fact he could get us operational in a relatively short time-frame by using programs already designed and then customizing the program to suit our specific needs at a later date in time. To make a long story short, his price was attractive to us, his design and flexibility appealed to us, and his proposed plan of action was what we wanted. The decision has been a good one, and I wonder how we ever managed with our manual billing system. Since our original plan was to implement his program on the university's computer, we had to make some minor changes when we elected to use his company for on-line entry, access and for total processing. At the time our system came on-line, the university's computer couldn't accept another on-line operation and we had to look for another source. Our on-line system and processing costs are very attractive and we haven't had any bad experiences with processing our bills on time, so at this time, we are still using **Telecommunications Software, Inc.**, as our service bureau. However, the flexibility of the program would allow us to have it installed on our own computer if we wanted to.

Once again, to quote from the article in **TELEPHONE ANGLES**: "call accounting systems...the newest toys in corporate communications? Maybe a couple of years ago call accounting systems were considered a luxury, but today they are becoming a necessity in managing evergrowing telecommunication costs. The question, "Can you account for your telephone costs?" should be asked, "Can you afford **not** to account for your telephone costs?"

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# WASHINGTON

## PERSPECTIVE



Victor J. Toth

### FX Services — On Course to Obsolescence

Over the past two years this column has occasionally speculated about the future of various ATT interstate special services as a result of divestiture and the MFJ. For example, readers were alerted to drastic changes in private line services, including substantial usage sensitive rate increases on the open end of conventional foreign exchange (FX) and off network access lines (ONALS), \$25 surcharges on the closed ends of these same services, and universal toll free LATA wide termination on interstate FX calls. But few telecommunications managers made the necessary changes.

But one the FCC's access scheme was finally put into place and the local exchange carriers' (LECs) access tariffs were allowed to take effect on May 25, 1984, the new FX services began to function as previously described. For example, to get the benefit of LATA wide termination you had to know to insert the digit "1" ahead of the desired seven or ten digit called number to reach beyond the standard local calling area at the far end. You also needed to know to check your first post-access tariff bill to verify that you were getting what you were paying for. At about the same time, you should have also noticed that local flat rated business line charges no longer appeared on your bill for service at the open end. Instead, usage sensitive charges of about \$0.0367 to \$0.041 per minute applied. By the time this column appears the \$25 monthly surcharges will be assessed on each FX closed end terminating at your network switch. It is bad enough that these rate changes have gone into place with very little warning or understanding of their impact among the ordinary FX customers. It makes it even harder to accept if you have been paying these charges but were unaware of the free expanded calling capacity.

No sooner did these new features come to pass than ATTCOM and the LECs moved again, to either curtail availability or to secure still further changes in the rates and scope of coverage area on the open end of FX services. These changes have been strategically timed to occur before the FX and large network user communities have had a chance to evaluate what has been happening. It is thus clear that conventional FX and ONAL services are being forced into obsolescence. If you find it hard to believe, consider the following.

Within weeks after the court ordered divestiture, resellers, large corporate network customers, and other large users of FX and ONALS were already experiencing unacceptable delays in new special service circuit orders being placed through ATTCOM. Although the circuit provisioning problem extended to all forms of special services including INWATS, OUTWATS, and ordinary private lines, there exists convincing evidence that interstate private line circuits for basic FX services constituted the bulk of the special service orders which ATTCOM was, and continues to be, least able (or willing) to deliver. By March, 1984 the problem had reached such intolerable proportions that the FCC had to intervene. As a result, ATTCOM was required to submit monthly reports on its plans for coping with what was already regarded as an unacceptable level of service. As of that time ATTCOM

had a backlog of 12,000 special services circuits and promised to assign 800 new employees to the order handling process. Notwithstanding this commitment, by August, its special services backlog had grown 400 percent worse, to nearly 48,000 unfilled circuits, with apparently no relief in sight. Thus, just as the newly discovered functional utility of FX circuits promised relief from some of the other rate impacts of divestiture and the FCC's access scheme, ATTCOM effectively put the brakes on all new service requests.

If ATTCOM had wanted to drive its customers off of lower cost FX circuits and force them onto WATS and MTS services, delay on circuit orders would be an effective strategy. But for ATTCOM, there would always be the risk that the FCC might step in and insist that ATTCOM provide the requested circuits or face damage awards through complaint actions. Thus, it is more likely that ATTCOM was simply letting the backlog problem and attendant delays wear down the marginal FX customer. ATTCOM recognized something that most customers had not yet seen—in the near future FX service is likely to be unaffordable. Then when the special services crisis reaches the breaking point, ATTCOM can throw up its hands, admit that the problem is hopelessly incorrigible, and use the occasion to introduce new substitute services—virtual WATS and virtual FX.

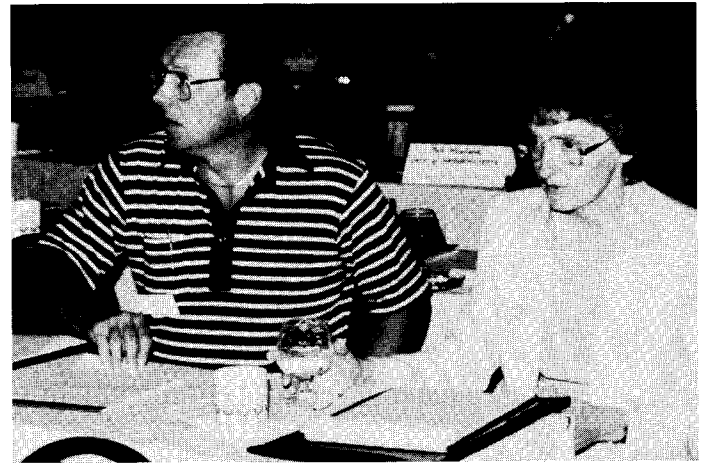
Unfortunately many of ATTCOM's resale competitors will irreparably suffer in the process, being choked off for lack of facilities necessary to accommodate their forecasted growth. Had the future of FX services been more widely understood and appreciated by the vast number of marginal FX customers, it is conceivable that a very high proportion would never have placed the orders that have created this backlog. And those larger users and resellers who stood most to gain by effectively utilizing the new FX features might have been serviced on time.

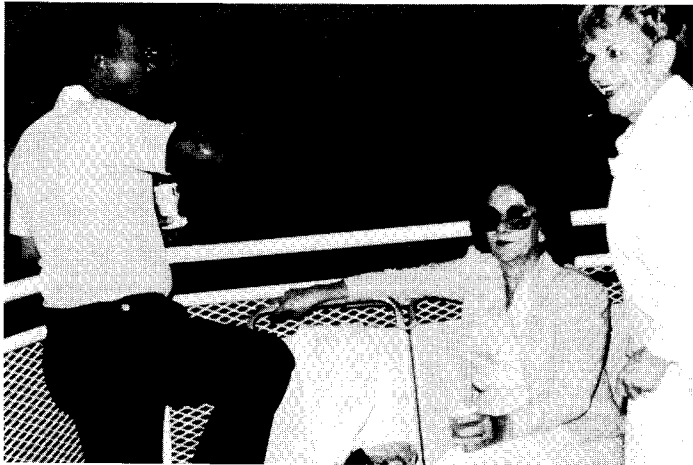
#### Further FX Rate Increases

As suggested above, for some marginal users ATTCOM's failure to timely deliver FX circuits might have been a blessing in disguise. As a result of the FCC's access scheme and the National Exchange Carrier Association's (NECA) interstate access tariffs which implemented it, the cost of the local service open end component of the typical interstate FX circuit increased. In most instances, the increase was several hundred percent—from the average flat rate charge of about \$45/month to a usage sensitive charge of about \$0.367/minute or at least \$177/month where usage is estimated. This alone is significant. But by early fall at the latest there will be three other charges adding to the cost of FX services. There will be the \$25/line monthly surcharge on the closed end of each FX termination at the customer's switch. There is also likely to be a substantial increase in the mileage component of the same closed end termination, or "special service access line" as it will be called. And finally, under ATTCOM's restructured private line tariffs there is likely to be an increase in the mileage charges on most long haul FX components of under 900 miles.

Moreover, unappreciated by many FX users is the fact that for purposes of picking up a share of the so-called carrier common line charges (much of which was to have been borne by residential end users until Congress intervened on their behalf and prevailed on the FCC to postpone them), the FCC's access scheme treats FX customers like interexchange carriers—i.e. they are expected to pay full freight for terminating access. As long as equal access is not in place, resellers, OCC carriers, and FX customers will receive a 55 percent discount on their terminating access service (i.e., Feature Group A, or FG-A). But according to the FCC's February Access Order, this discount is to be eliminated as end offices are converted to equal access and Feature Group D service is made available. The FCC reasoned that by making the elimination of the discount mandatory, interexchange carriers and customers would have an incentive to move

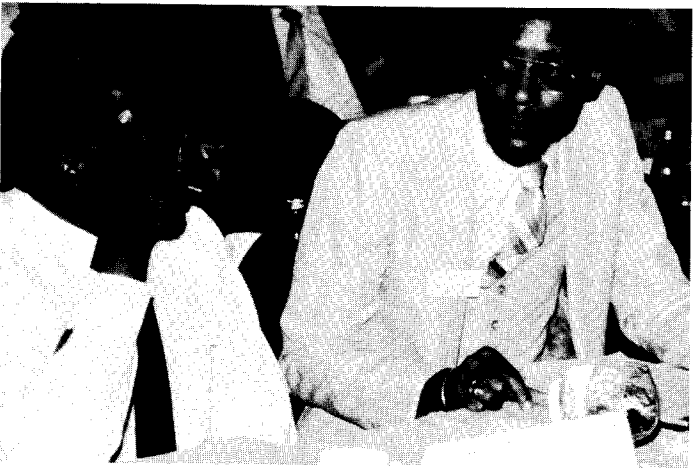
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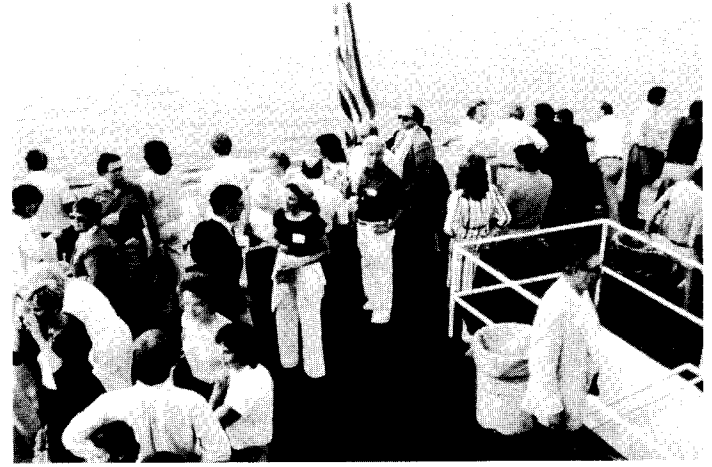
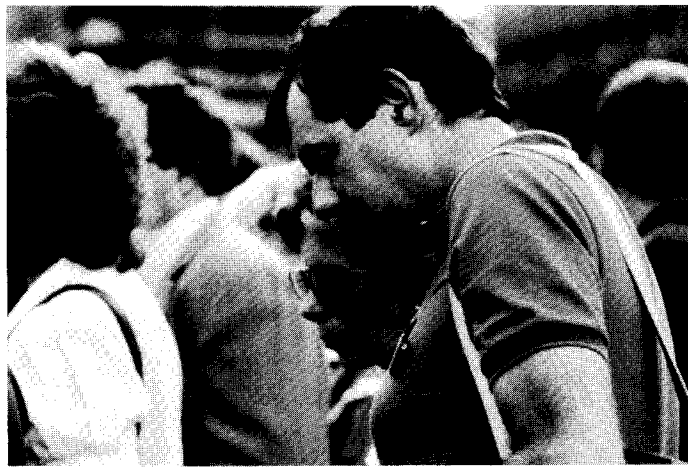


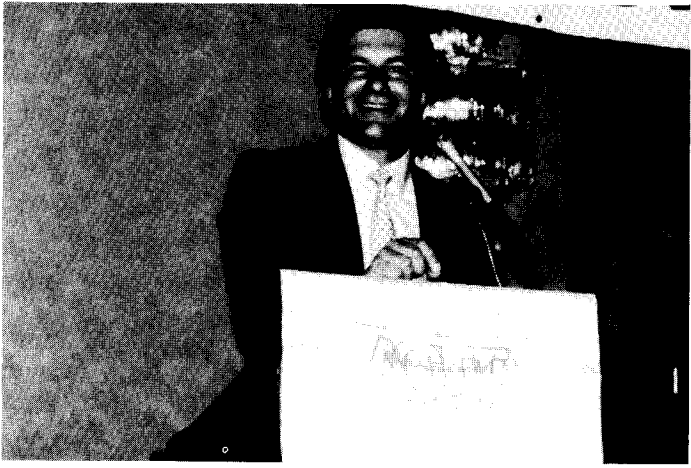


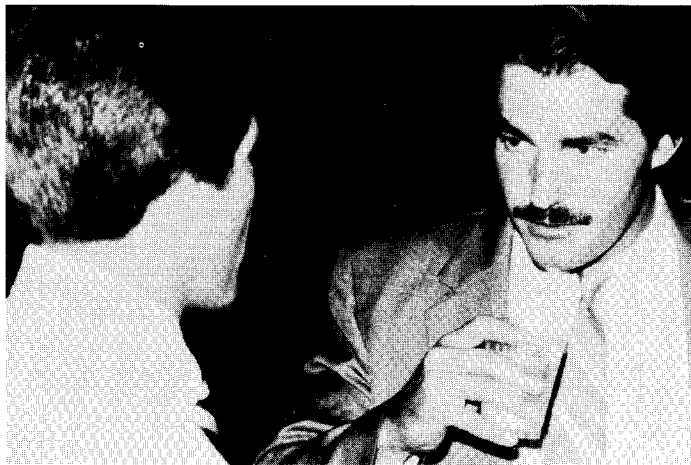














## FX SERVICES, CONTINUED:

toward the superior FG-D service and thereby help pay for its cost. And, since they would receive the same quality of interconnection as ATTCOM there would be no justification for the discount.

What the FCC failed to recognize (or if it did, refused to accommodate) is that ordinary FX customers, in contrast to the interexchange carriers, simply have no use for or, more accurately, their equipment is simply incompatible with the only beneficial feature offered by an equal access connection at the terminating end—answer supervision. This feature provides the ability to exactly detect when the called party picks up in response to a call and timing commences. At the present time, there is virtually no end user equipment on the market capable of making any practical use of this terminating feature. Yet the FCC feels that FX customers should pay for it whether they can use it or not. This concern has been recently placed before the FCC in hopes of bringing about a change in position, but the outcome will not be known until early fall.

Assuming the access scheme is not changed again, the LEC's plan to begin eliminating the 55 percent discount of FG-A terminations at converted end offices beginning about October 1, 1984 or sooner. This will mean that the usage sensitive charge at the FX open end could increase from the current discounted rate of \$0.0367 per minute to between \$0.075-\$0.085 per minute or more, depending on the distance of the called party from the terminating end office. While the chances of any particular FX circuit terminating in a newly converted equal access equipped end office will be small at first, end office conversions are taking place rapidly and most of the major market areas are commonly served by FX connections will be covered within twelve to fifteen months. For FX circuits not yet in place it is doubtful whether the customer will be permitted to specify termination in an end office scheduled for late conversion. The LECs have attempted to reserve the right to terminate FXs in those end offices equipped for metering in their NECA tariffs. As a practical matter, this means an office which is, or soon will be, converted.

But the new charges are likely to be applied on a portion of the FX customer's outgoing or terminating traffic even if the circuit terminates at a nonconverted office. According to a tariff proposal filed in early August, the LECs plan to assess the nondiscounted or premium usage sensitive rates on all FX traffic terminating at any called number associated with a converted end office in the same local calling area as the office at which the circuit is actually terminated. In other words, some of the FX calls would be charged at \$0.0367 per minute while others are billed at \$0.075 per minute or more, depending on the call's final destination. Of interest, only one party—a reseller—challenged the absurdity of this scheme before the FCC.

Meanwhile, assuming that the FCC goes along with one proposal or another to phase out the 55 percent discount on FG-A terminations effective immediately, it should be apparent that the cost of interstate FX service will, within a few short months, become prohibitive for many, if not most, FX customer applications. This fact, coupled with the inability to even obtain the service in any reliable time frame, is an omen of something to come—and we do not have to be brilliant to figure it out.

### **Elimination of Universal LATA Wide Termination**

The LECs also have something in store for those exceptional customers with the traffic volumes to overcome the high open end costs and who were able to achieve those volumes by relying on the expanded calling scope at the open end. The NECA carriers have

petitioned the FCC for permission to eliminate the universal LATA wide termination feature recently introduced under FG-A access service. The LECs claim that LATA wide termination of FX and ONAL traffic at a flat \$0.367 per minute undermines their local toll rate structure and threatens to diminish demand for intrastate WATS and similar switched services. In other words they do not like losing toll revenues. The FCC has their petition under consideration.

The reasons for the introduction of the LATA wide termination feature with FG-A access used to terminate FX services are complicated. The feature and the obligation to offer it arose out of the MFJ proceedings. While it could be argued that because the MFJ applied to the BOCs, the obligation to provide LATA wide terminations did not extend to the independents. But to the extent the latter subsequently chose to be included within the LATAs, any LATA related obligations thereafter applied to them as well.

The NECA access tariffs, as originally filed, fully contemplated the introduction of the LATA wide termination feature and included an adequate distance sensitive rate structure designed to ensure that the service was compensatory. As originally proposed, the usage sensitive FG-A charge had a mileage component which varied with the distance to any called party within the LATA from the end office at which the FX circuit terminated. Calls terminating within a mile or less of the FX office, for example, incurred a mileage charge of about \$0.0054 per minute, while calls terminated within the same LATA but over 100 miles away incurred a mileage charge of about \$0.045 per minute. Thus, again depending upon the intralATA distance, an interstate terminating FX call would have cost between \$0.0367 and \$0.082 per minute had the FCC not effectively eliminated the distance sensitive component in its February 1984 Access Order.

Without the distance component it is understandable why the LECs have asked to discontinue the feature and return to the practice of terminating FX calls only within the standard local calling area and charging local intrastate toll rates for calls going outside the calling area. Unfortunately, NECA has proposed the wrong solution. The correct remedy is to restore the distance sensitive rate element on terminating FG-A calls, not to eliminate the LATA wide termination feature. Too many users and interexchange carriers have planned their networks in reliance on this feature—a feature that was touted and dangled before them for nearly two full years—to have it discontinued just three months after being put into place. There are only so many surprises that users can be reasonably expected to absorb and this should not be one of them. Particularly since there is another solution (one that the LECs introduced themselves) distance sensitive rates.

Hopefully the FCC will respond and preserve the universal terminating feature for FX service, albeit, at slightly higher cost to the FX customer. But if this potentially saving feature of FX service is lost, the cumulative impact makes it difficult to imagine how even the largest FX customers will be able to benefit from an interstate FX service. Perhaps we have all been naive not to recognize that this may be just what ATTCOM, the LECs, and our interstate regulators want to achieve.

### **Conclusion**

It is apparent that the future utility and affordability of FX and ONAL services for most network customers is in real jeopardy. Clearly, ATTCOM has a grander scheme in mind, probably involving the introduction of new services such as its virtual FX and virtual WATS. In the past, we have always had to wait and follow the ATT timetable. This time, maybe we should not wait. Let's introduce the FCC to a virtual

FX SERVICES, CONTINUED:

FX service of our own design and ask that it be prescribed on ATTCOM as a mandatory service offering to make up for what it has been unable or unwilling to do for its special service customers since divestiture began last January.

**Note from your editor:** Victor Toth is a communications attorney in Reston, Virginia. This article appeared in **BUSINESS COMMUNICATIONS REVIEW**, the September/October, 1984 issue. ACUTA wishes to thank both BCR and Mr. Toth for granting us permission to reprint this article in ACUTA News.

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## Bits & Pieces

.....Ruth A. Michalecki

Let's catch up on a few bits and pieces. In ACUTA News a few issues back I talked about CP Telco's use of 976 numbers for their audiotex service and I received a very interesting letter on the subject of 976 numbers in general from Ben Moskowitz at The Community College of Allegheny County in Pittsburgh, Pa. Let me quote from Ben's letter: ".....(they [976 numbers] loop from one class 5 office in a city to another to avoid jamming up trunkage to a particular exchange) In addition to whatever CP is putting on a 976 number, they also carry Dial-A-Porn messages.

Living as you do in the pristine environment of Nebraska, where the most scandalous thing ever produced is probably Johnny Carson, you may get a laugh out of what happened in Pittsburgh about a year ago. It seems thousands of calls to Dial-A-Porn in New York went out over government telephone systems---the Pittsburgh Police Department, the Allegheny County D.A.'s office, even the Mayor's office. Pittsburgh's mayor found a note on his desk to return a call to Mayor Koch in New York at 212-976-xxxx. He called the number, but it was not quite the mayor's voice he heard. New York has it; L.A. has it also; possibly other cities. We are blocking out all NPA-976 codes on two new switches we are putting in, as well as 900 dial-it service, after I found some repeat calls to MTV scheduling, available on 900 dial-it services.

Also available is a dial-a-sport number, and we had one clerk with an unrestricted telephone call it in Philadelphia for over \$30 in just one month. On our Centrex system at one Campus we still lose a few to Dial-A-Porn from some numbers; it is very difficult to pin down the caller.

The magazines (porno stuff) that contracts with NY Bell and Pacific Bell for the porno messages make far more from their split of the call charge than they do from the sale of their magazines. That's how popular it is. Aren't you glad you live in Nebraska?"

In answer to Bob's question, yes I am glad I live in Nebraska. However, we are not quite as pure as driven snow and we have experienced our share of this problem. We were able to block the 900 and other speciality NXX from our Centrex Switch. This created a special problem for us because of the various Meet-Me-Conferences using this type of numbering plans. We solved that by permitting only the switchboard consoles access to the 900 series of NXX numbers. Thanks Bob for sharing some humor with us.....

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I ran across a short article the other day, and since it was copied, I am sorry that I don't know the source. It sort of agrees with my perception of what is important in the art of decision making on university campuses and it is discussing the decision to become

your own telephone company. The article is entitled **Politics and Phone Systems:**

"Costs and logistics are not the only important considerations for a college or university that is considering the installation of its own phone system, says **Peter Roll**, special assistant to the vice-president for academic affairs at the University of Minnesota.

Mr. Roll, who has just overseen the decision to start what will be, in effect, a phone company at the university, outlined the process at the 15th annual Seminar for Academic Computing Services, held this month in Snowmass, Colorado.

Politics, he said, is one of the most important decisions. Before a university gets too deeply into the decision-making process, it should answer the following questions:

-----How big a customer of the local telephone company are you? If you are not a major customer, you may be able to forge ahead without answering the next questions. Minnesota, Mr. Roll said, accounted for a hefty part of the local phone company's billings, and its decision had a great impact on the company.

-----How nasty is the local telephone company?

-----Who is on your governing board, and what relation do your governors bear to the telephone industry or the local telephone company? In other words, who might bring pressure on you?

-----What is the state of your labor relations? The Communications Workers of America (A.F.L.-C.I.O.), the union of ATT workers, has become more feisty, now that ATT is no longer in a position to guarantee jobs. Opposing them is the International Brotherhood of Electrical Workers (A.F.L.-C.I.O.). Its members, who earn higher wages than members of the C.W.A., install non-ATT phone systems.

-----What are the state and local issues? Beware the "little old lady" issue, M. Roll said. Because the pull-out of a big customer causes rates to go up for everyone else, public-interest groups or a public-utility commission might protest that poor and elderly people would have to pay more---with the university looking like the heavy.

All institutions will have to replace their phone systems, he said, because computer communications are not efficient on older systems."

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Temple University recently awarded a major contract to Bell Atlantic Systems, as part of a multimillion dollar telecommunications and computer project. They are beginning to work on the first phase of the project---a \$12 million system linking all Temple campuses with fiber optics, microwave dishes, towers and electronic digital switching systems. This will give the university its own private network. The comprehensive system will have significant impact on every student, faculty member and staff person at Temple. It will provide for complete automation of University Operations, the total computerization of the library system, and the use by faculty, students and staff of micro and mini-computers. The network, scheduled to be in operation by January 1, 1986, will electronically connect 104 buildings on Temple's five campuses.

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South Central Bell Directory Assistance operators in Alabama are offering complete mailing address information, including Zip Codes. Customers who know a telephone number but need a name and address to go with it may get that information through this enhanced service. A 40 cent charge will be levied for each DA call, and the allowance that gave each telephone customer five free DA calls per month has been eliminated. Alabama is the first state in South Central Bell territory to offer this service.

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**Business Week** had an interesting item in their Phone Watch column concerning the high-tech loophole in the wiretap laws. Congress is concerned that as increasing numbers of the nation's phone systems switch to digital transmission technology, the existing wire-tap laws may not protect the privacy of phone users. The 1968 law makes it a federal crime to eavesdrop on private conversations, but fails to address digitized voice transmission or computer-to-computer communications. "Under the 1968 wiretap law, the privacy of Americans may turn on technical questions----whether the communication is carried by wire [or] whether it is in analog or digital form", warned Senator Charles Mathias, (R-Md). One of their concerns is that because of the loophole, the potential for privacy violations by federal, state, and local law enforcement agencies is increased since they would not have to obtain court permission to intercept digital communications, as they must to listen in on ordinary phone conversations. Interesting world!

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Would you believe that since the famous break-up of AT-T, more than 50% of American homes now own their own phones. Owned phones now outnumber rented phones by 76 million to 70 million. Just two short years ago, according to a survey done by the Yankee Group, Inc., only 10% to 12% of the U.S. home phones were owned.

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In a recent article in **TELEPHONE Engineer & Management** (July 15, 1984), entitled "Small telcos can do a big marketing job", a statement was made that really helps explain the advantages of being in that environment as a customer. The statement was "small independent telephone companies and their managers are naturally attuned to their markets. They respond directly to their customers. They eat at the same restaurants, go to the same churches and attend the same clubs. They often receive a firsthand look at their customer's telecommunications needs and are oriented toward directing their company resources to effectively meet these needs. Rather than referring the customer to this or that functional department, the smaller company manager responds directly to the customer's problems. It is not too surprising to note that the Independent telephone industry has a proud history of marketplace response, often very innovative."

As a long-time customer of just such a company, I would agree with that statement. **Lincoln Telephone** has been very responsive and innovative in meeting the telecommunications needs of the University of Nebraska-Lincoln. They have made a point of knowing their customer, of maintaining contact at all levels, of continuing one-stop shopping, of providing our routine daily needs and helping us solve our special needs. We communicate very well. I believe other telcos could take a page from their book--it might help both the telco and their customer.

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I have had several requests for definitions of technical words used by persons at the various seminars and workshops sponsored by ACUTA. As most of us well know, this business is one of acronyms and technical terms that can be almost like listening to a foreign language, and everyone expects you to understand all the words. There are many excellent books on the market that provides a dictionary of telephony terminology and I would certainly recommend anyone involved in the business to invest in one of them. I have the latest issue of CCMI's (Center for Communications Management, Inc.) Telecommunications Dictionary and Fact Book. It is very good. Data Pro's two-volume book entitled "Data Pro Reports on Telecommunications" and the volumes from Auerbach Publishers called "Telephone Equipment Selection Guide" both have excellent glossaries of telecommunications terms, including abbreviations and acronyms. For the benefit of those wanting some definitions, I will run a few each month in the ACUTA News. Hope it helps.....

**Access Charge:** cost assessed to communications users for access to the interexchange, interstate message toll network to send and receive interstate toll calls, as well as access to the customer's LATA.

**LATA:** geographic regions within the U.S. that define areas within which the Bell Operating Companies (BOCs) can offer exchange and exchange access services (local calling, private lines, etc). Intra-LATA which is also intrastate must be provided by an interexchange carrier as BOCs are prohibited from offering inter-LATA service. Inter-LATA service that is also interstate must be provided by an interexchange carrier. LATA stands for Local Access and Transport Area.

**Access Service:** a channel furnished by a local exchange company between the customer premises and a serving office.

**Channel:** an electrical transmission path for communications between two points.

**LATA Distribution Channel:** a circuit component priced between the rate centers of a serving office and a premises when the serving office and the premises are located in different rate center areas.

**Inter Office Channel:** a circuit component priced between the rate centers of two serving offices, points of connection or a combination thereof which are located in different rate center areas.

**Logical Channel:** a logical association as described in CCITT Recommendation X.25 and a conceptual grouping of individual data packets which is recognized by both the data terminal equipment and the BPSI switching arrangement. A logical channel is not a physical transmission path.

**CCITT:** roughly translated means "Consultative Committee for International Telephony and Telegraphy", which is a committee assigned the tasks of developing international standards for telecommunications both manufacturing and operating standards.

**Office Classification:** numbers assigned to offices according to their hierarchical function in the U.S. DDD Network. The following class numbers are used:

- Class 1: Regional Center (RC).
- Class 2: Sectional Center (SC).
- Class 3: Primary Center (PC).
- Class 4: Toll Center (TC) if operators present, otherwise toll point (TP)

—Class 5: End Office (EO).  
Anyone office handles the traffic from one to two or more centers lower in the hierarchy.

**OCC:** (Other Common Carrier); specialized common carriers (SCC), domestic and international record carriers, and domestic satellite carriers engaged in providing services authorized by the Federal Communications Commission (FCC).



## "EQUAL ACCESS"

...John Sleasman, Case Western Uni.

One of the issues that generated significant discussion at the ACUTA Conference in Boston was equal access to long distance services. I suggest that the telecommunications manager must think beyond the immediate issue and define some strategy for the campus.

First, a brief review of what equal access is and what it does. Equal access basically allows a telephone user to reach a choice of long distance carriers (such as ATT, MCI, Sprint, etc.), by dialing "1". This is a major change from the old system, where the only carrier that could be reached this way was ATT. Not all telephone exchange areas will receive equal access in the immediate future, but most individuals will be able to make this selection by fall 1986. The choice of which carriers arrange their services for equal access is up to the carriers; not all long distance services will choose to serve all areas of the country; some resellers may choose to market in quite limited areas. In addition to the ability to dial "1" for a chosen carrier, other long distance carriers will be accessed by dialing "1", "0", and a three-digit code, thus allowing for a default ("1"+) carrier or manual override of the default selection.

For the institutional telecommunications manager, there are several decisions to be made. This starts with a basic question: How important is long distance cost control to your campus. If you are not actively controlling long distance costs now - and if your institution does not view this as a priority - the provision of equal access with an anarchistic approach to control - letting the station user decide which carrier to use based upon his own cost vs. service tradeoffs - may yield significant cost benefits over your current system. The price will be paid in administrative chaos and long range strategic planning, but the correction of that problem involves a change in the decision making process.

Most institutions are already using some form of cost control on long distance calls. If you are using a manual access or a variety of dialing codes for your users to access services such as WATS, you may need to re-examine your network. The cost of foreign exchange lines, WATS services, etc. has and will continue to change, in some cases dramatically. For example, if you are placing calls over Band 5 WATS lines to locations only a few hundred miles away, dial access over another carrier may well save you money. While this will mean significant station user training in new dialing techniques, in an environment where various dialing codes are currently in use, continued training is already a necessity.

More significant problems accrue to managers who are actively controlling their networks through routing switches or automatic route selection techniques. These systems are designed to preserve user transparency. Several problems must be faced. First, how will you handle default selection of carriers? If you toll deny calls based upon "1"+ over outgoing trunks, this should handle the problem. If you allow "1"+ for overflow, or have ARS overflow to toll service, you must decide what carrier to use. With any switch or ARS, you must decide how to reconfigure dedicated lines vs. dial-up of alternate carriers; what is the capacity of your routing switch or ARS for additional routing patterns and tables, insertion/deletion of digits dialed, etc? You may well want to provide for additional six-digit screening of area and office codes over what you are doing today (depending upon your default carrier, you may have to do so); is there sufficient processor and/or memory

capacity in your switch for this? How will you handle a specific station user's selection of a carrier; if someone dials "1-0222", will you route the call over MCI, or reroute it over your default carrier, or another alternate?

You can't answer these questions without making some assumptions about rates and the competitive situation in your location. But the strategy issues, particularly for large systems (including politics, external and internal), are such that decisions should not wait for the ninety days notice that you normally receive from the telephone company. You may find the marginal cost of management of a complex but optimized network outweighs the marginal increase in benefits against a less complex system. But the time to find that out is not when your long distance bill goes up by 15% because you didn't make a choice, or when the President of a local business tells your President that his communications manager reduced the cost of telephone calls by 20%! Start discussing the alternatives now. #####

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## BITS & PIECES, CONTINUED:

**NPA:** a geographic subdivision of the area covered by national or integrated numbering plan; identified by a three-digit distinctive area code.

**NXX:** central office code consisting of three digits that designates a particular central office or a given 10,000 line unit of subscriber numbers; "N" is any number from 2 to 9 and "X" is any number from 0 to 9.

All I have room for this time around—more next month.

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Let me share with you some of the more unusual definitions (you won't find these in any of the dictionaries I listed earlier). They were in a recent issue of a small newsletter I receive called **Telephonotes**, published by Bruce K. Minor (Telsys Consultant Group of Leawood, Kansas).

Access---a large painful boil on the chips from too much computing.  
Automatic Route Selection (ARS)---computerized map.  
Batch---a minor gripe.  
Byte---a wound inflicted from a mad dog or frustrated programmer.  
Bit---past tense of Byte.  
Cursor---usually a product of batching.  
Digital Transmission---stick shift.  
Disk Drive---a swank district of Santa Clara.  
Down---what computers are made of, as in that computer is down".  
Frequency---a disease often contracted by video terminal users.  
Gigahertz---a big pain in the giga, leads to much batching.  
Hands-free answer back---argue without hitting.  
Industry Standards---The assurance that nothing will work together.  
Keypad---an apartment with a lock.  
Ohm---where the heart is.  
Music on hold---being serenaded while in a clinch.  
Paging Access---a painful boil received from leafing through manuals.  
RAM---a place where most of the bugs live.  
ROM---if the bugs don't like RAM, they'll live here.  
Software---a garment worn under your hardware.  
Terminal Intelligence---to be so smart that it kills you

I would remind you our daffynitions are not for use by the experts, don't use them in a report for your boss... Thanks to Bruce Minor for his contribution to the funnier side of this business....

All for this issue---see you next month!

The ACUTA database is finally a reality! As of mid-August, over 150 institutional members had returned their questionnaires. The Board of Directors set up some basic guidelines for use of the information in the database during their meeting in Boston, which include:

1. All requests for information must be made in writing, giving specific details as to request, and a statement of non-disclosure (sample below). Requests should be sent to John Sleasman, Case Western Reserve University, Administrative Services, Cleveland, Ohio 44106.
2. Requests will only be honored from paid members whose institutions have submitted current information into the database.
3. Information will be made available for internal institutional use only. Distribution for any commercial purpose is strictly prohibited.
4. To insure (3), requests will be strictly controlled. Anyone requesting information must indicate why the information is desired and what use of it will be made.
5. No distribution of information will be made to industrial members.
6. Requests for information will be without charge; however, frivolous requests will be denied.
7. Please contact John Sleasman at 216-368-4396 with questions or comments.

STATEMENT OF NON-DISCLOSURE  
REQUIRED AS PART OF REQUEST FOR  
DATABASE INFORMATION

<Institution Name> and <Name of ACUTA member requesting information> understand that information contained in the ACUTA Database is furnished for internal purposes of the requesting institution and is not to be disclosed or used for any commercial purpose. We also understand that information is based upon information received from the participating institutions and that ACUTA does not guarantee accuracy of the information, nor the accuracy of comments received from direct contact with other institutions.