COMMUNICATIONS
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WHAT IS THE FUTURE FOR VSAT'S--
IS IT BYPASS OR MORE?

October 22, 1987

Seminar Notes

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William P. Osborne
COMSAT Technology Products

Bob Dunlap
TEI, SkyNetworks

Terrence P. McGarty
Applied Research, NYNEX

Gail Kosloff
Rapporteur
MIT

The focus of this seminar was the commercial use of VSATs with a critical look at the present and the future. All four speakers at this forum agree that VSATs make sense today from an economic and end-user needs perspective. They concur that there are potential cost savings for many corporate users of VSATs, either in shared user or dedicated configurations, due to the distance insensitivity of satellite transmission costs. (Exhibits A & B illustrate the difference between a shared user and a dedicated VSAT configuration).

However, one point of contention among the speakers concerns what is "driving" the usage of VSATs by corporations today. William Osborne believes there are several reasons, in terms of applications and features, for the growth and acceptance of VSATs for private networks, including:

- o   video services;
- o   high-speed data requirements;
- o   reliability;
- o   quick installation;
- o   transportability; and
- o   cost control over the longterm.

Dr. Osborne believes that there is no such thing as "VSAT technology," rather "VSATs are a natural evolution of satellite communication technology." Osborne believes that VSATs are not primarily a "bypass" technology. In his opinion VSATs would have come to the market even if divestiture had not occured. He believes the technology has become more appealing to corporate users particularly because of decreased ground segment costs, especially the cost of the earth station. (Refer to Exhibit C for his overview of Ku-band VSAT Price Trends 1987-1990). In his opinion, VSATs are "the next natural step in moving satellite communications closer to the user."

Osborne cited the different motivations for a company opting to implement a private network versus becoming part of a regional shared network. Although, according to Osborne, a typical corporate private network will show payback in three years and achieve 20-30% cost savings over terrestrial service, he believes most corporations do not want to take the responsibility of owning and operating a network even for this type of gain. He believes the major advantages of using a regional shared network for the corporate end-user include:

- o   option to lease/buy OPT (on premises terminals);
- o   payment of monthly fee for Hub and space segment (thus avoid capital risk);
- o   avoid operational risk and cost;

o   option to convert all or part of network; and
o   ability to add services and pay accordingly.

In the future, Osborne envisions VSAT operators unifying
their networks to allow for VSAT-to-VSAT data and video
communications. Perhaps a trade association or some other
national organization would coordinate the interconnection of
multiple systems to provide its membership with services like
electronic mail.

TEI SkyNetworks believes the growth of the VSAT market is
largely being driven by the needs of major corporations in
second-tier markets which are looking to achieve communication
cost savings over terrestrial solutions, more predictable and
controllable rates, and better economies of scale over
terrestrial networks. TEI touts the advantages to be achieved by
major corporations in using a regional shared hub configuration.
In particular, corporations are able to access the following
simultaneous VSAT services using TEI's VSAT facilities:

o   data (high-speed, interactive);
o   video (one-way, full-motion, analog--production
     services);
o   voice (16 KBPS, Digital); and
o   background music (various formats, dedicated
     networks).

This arrangement allows corporations to avoid making major
capital expenditures and worrying about network management.
TEI explained that even though the network is called "shared"
each user really has a "partitioned" hub (data is not mixed
between users) so security is not an issue. Another advantage
of using TEI's service is its speed in making additions and
changes to the user's network: it takes TEI 2-3 days to do what
the local telco needs 2-3 months to accomplish.

Some of TEI's current clients using its turnkey VSAT
services include:

o   Burlington Industries
o   Coca-Cola Consolidated
o   Cummins Engine
o   Network Computing Corporation
o   First Data Resources (American Express)
o   Transportation Information Management Services (TIMS)
o   Lowe's Corporation

For TEI, these "anchor" customers play an important role in
seeking additional shared users of the systems.

Like the other speakers, Terrence McGarty would not argue about the quickness and ease of installation characteristic of VSAT systems. McGarty traced the history of VSAT development and how VSATs have benefited from advances in Ku-band technology, namely that it allowed users to employ smaller antennas and to co-locate them. He cited technical problems inherent in the public switched system, e.g. while 99.5% of voice calls placed do go through, only 90% of data transmissions go over the network without running into some trouble. In his opinion, VSAT technology is an effective way for today's companies to obtain more reliable data transmission services.

Reflecting on the success that the VSAT industry has experienced, McGarty believes VSAT vendors actually "stumbled" into the network management business. (Refer to Exhibit D for a schematic of what is involved in "network management" according to McGarty.) Furthermore, he would argue that for the VSAT vendors to continue to be successful they should tout "performance, performance, performance" and not place so much emphasis on the issue of potential cost savings for the end-user. VSAT pricing is very dependent on the number of terminals on a hub; Cylix has a shared hub system which has achieved $450/month per drop. (Refer to Exhibit E for an overview of VSAT cost per drop per month compared to terrestrial transmission).

McGarty cited his experience in fixing-up operations at ailing Cylix Corporation as an example of the value of listening to client needs. In his experience most Cylix customers, including Purolator Courier, Campbell Soup and Ferris Browning, at the time were willing to bear substantial cost increases for using Cylix transmission facilities because they perceived the primary value of the service as the network management component. This was also at a time when divestiture had left these mid-tier corporations (with regional, multi-drop locations) uncertain about how to deal with AT&T and the Bell Operating Companies for their network needs.

According to McGarty the key VSAT competitors in today's market are:

	Shared		Dedicated
o	AT&T	o	Comsat
o	GTE	o	Hughes
o	Contel	o	NEC
o	Tymnet	o	Tridom
o	Vitalink	o	Vitalink

Looking to the future, McGarty cited real opportunities for companies to address the needs of corporations which are located in areas of the country still served by the independent phone

companies (approximately 80% of the U.S. land mass). In these areas telephone service is of poor quality and ISDN services will likely be slow to arrive. He mentioned the development work of the regional operating companies in the area of network management and control products to address their regional markets; these companies are still constrained in what services they can provide per the MFJ (Modified Final Judgement).

Furthermore, McGarty discussed the growing complexity of the corporate network and the predominance of the IBM network architecture (SNA). In his opinion, the real issue becomes who will be responsible for end-to-end management of the network as it becomes more a matter of managing computer communications, not data communications. He sees IBM's strategy of launching "Netview" as a strategy to maintain its control over the customer network.

Lastly, according to McGarty, the characteristics of the public switched network can be expected to improve slowly over the coming decade. He believes these developments will alter the environment for VSATs.
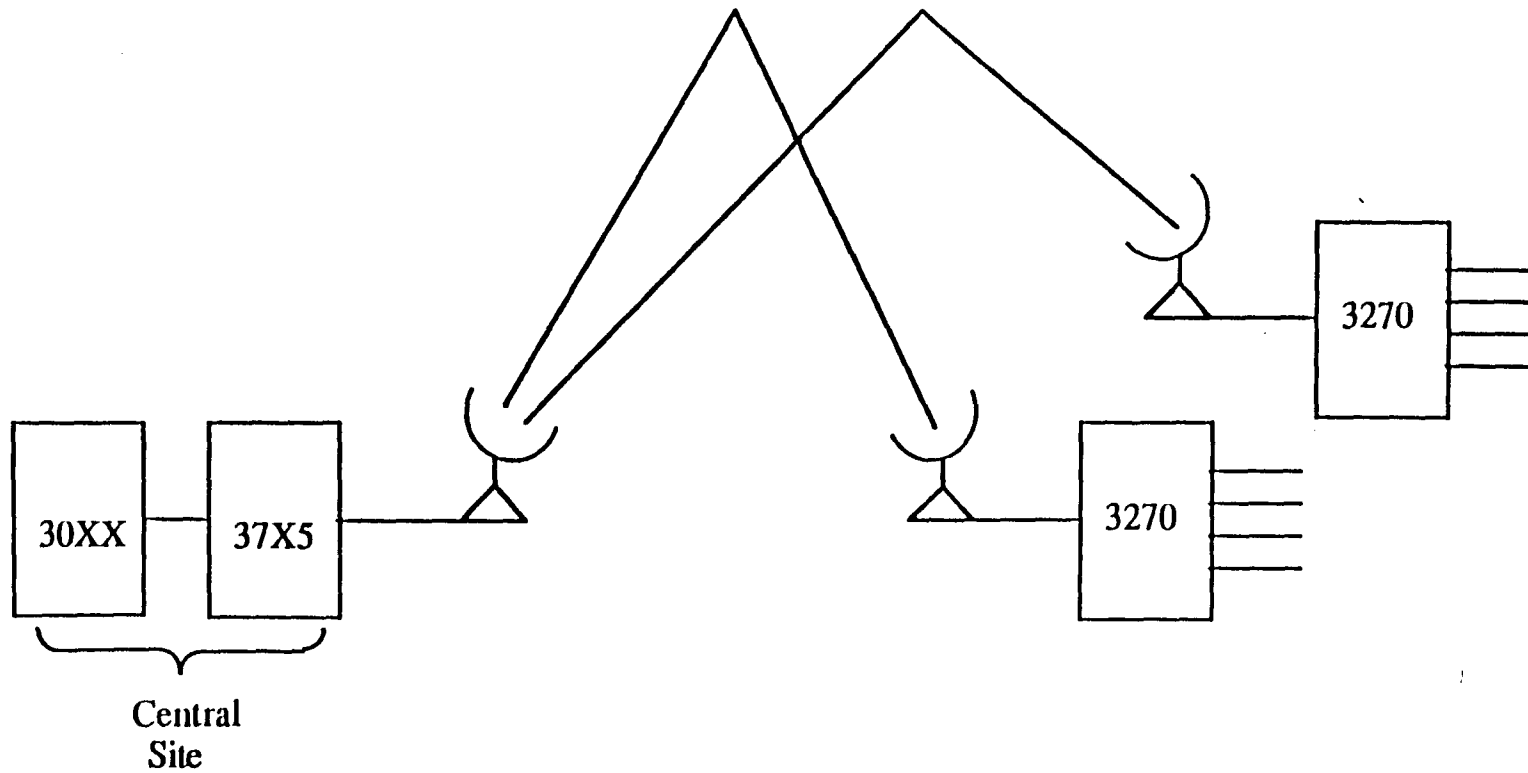
VSAT (Dedicated)

30XX — 37X5

Central
Site

3270

3270

VSAT (Shared)

1	

3725   **3725**

3725

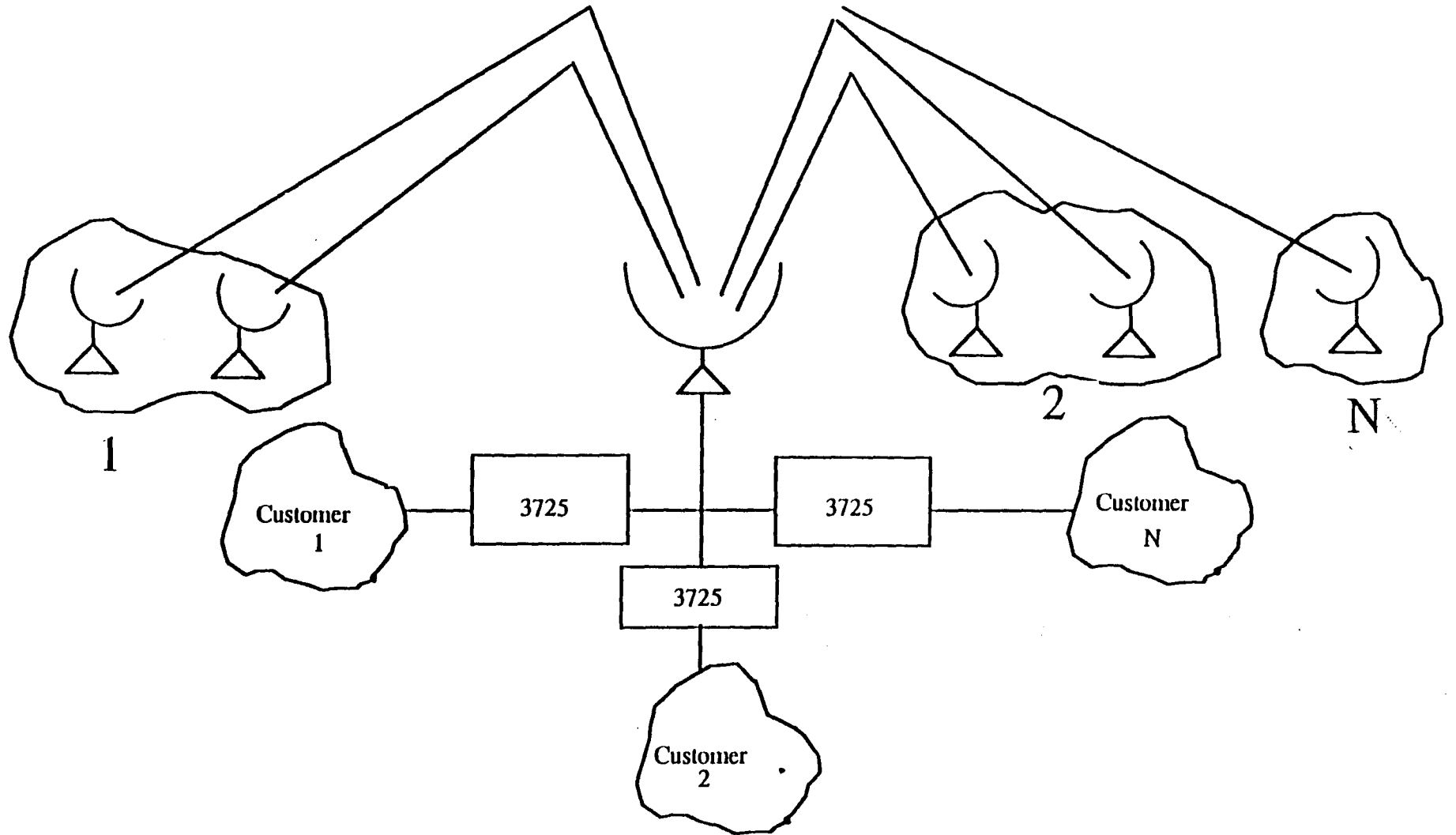Customer 1   Customer N

Customer 2

2   N

Ku-Band VSAT Price Trends 1987-1990

1986: $16,000 typical (100 units)
1987: $12,500
1988: $ 9,500
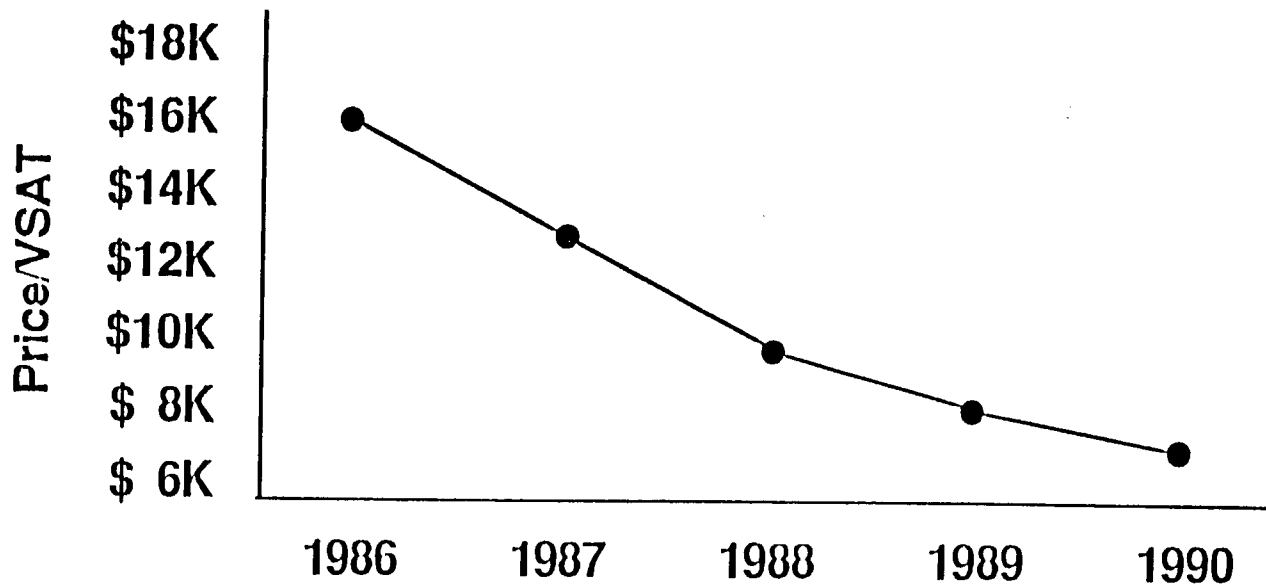1989-1990: 10-15% reduction per year
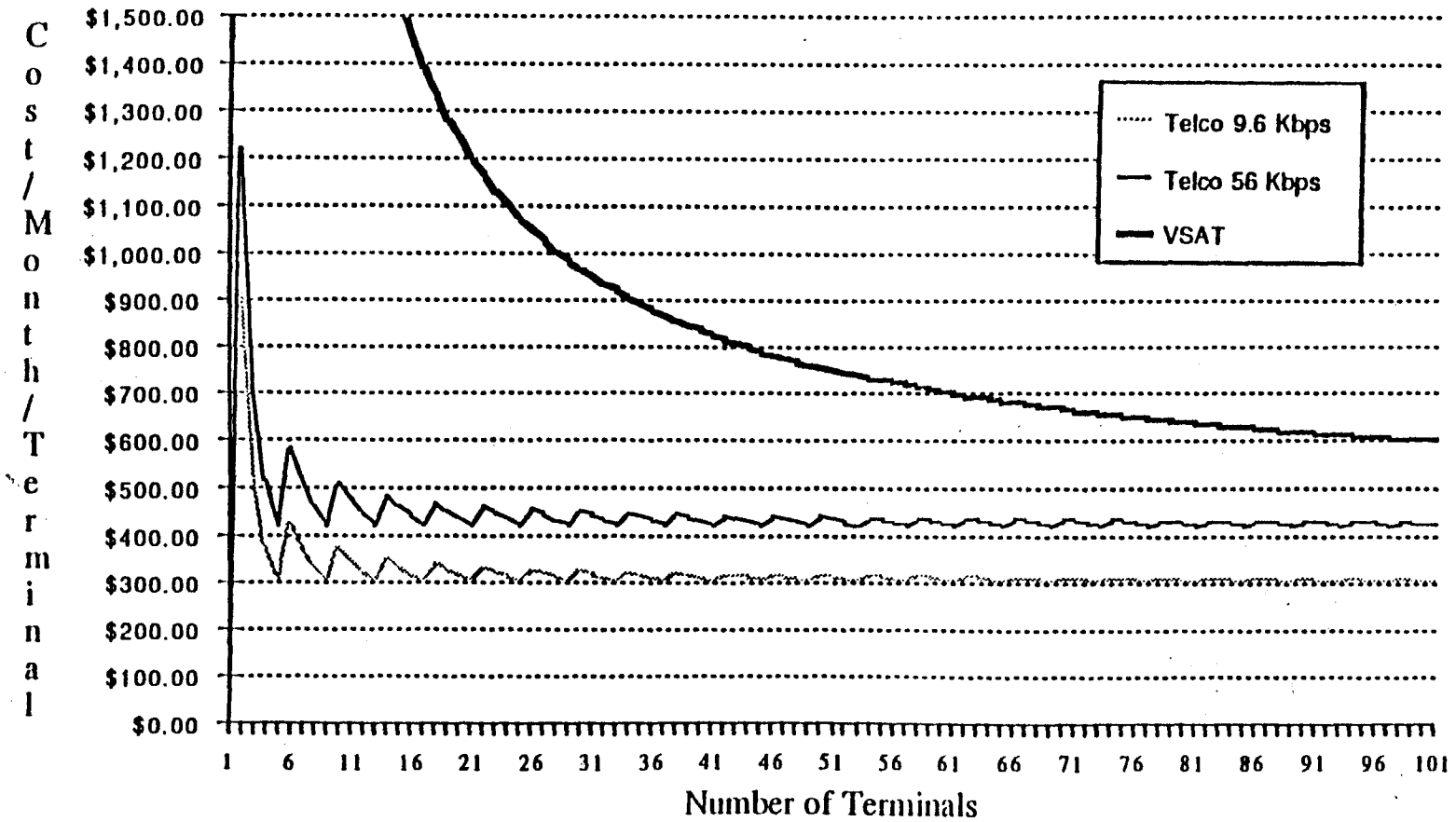

EXHIBIT C

Network Management

Pricing

Chart showing Cost/Month/Terminal (y-axis, $0.00 to $1,500.00) versus Number of Terminals (x-axis, 1 to 101), with three lines: Telco 9.6 Kbps, Telco 56 Kbps, and VSAT.

Number of Terminals

EXHIBIT E