

Quality of Service for the Local
Operating Companies Aggregated
to the Holding Company Level

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By Jonathan M. Kraushaar

Common Carrier Bureau -- Industry Analysis Division

Federal Communications Commission

Introduction and Overview

This report presents quality of service data filed by local telephone companies. It presents an overview of the quality of service information available. The complete data is available on an electronic bulletin board system operated by the Industry Analysis Division.

The electronic bulletin board can be reached by dialing (202) 632-1361. It is available 24 hours daily, except between 9:30 and 10:30 A.M. and between 1:00 and 1:30 P.M. The data is also available from ITS, Inc. at (202) 857-3800. Selected paper filings are available in the Industry Analysis Division public reference room.

The bulletin board files are posted in compressed format to group files and to conserve space but can be easily decompressed on a personal computer by using a program posted on the board. A second posted file can be used to view the raw quality of service data as a spreadsheet table with appropriate titles and annotations added.

Data Presented in This Report

At the end of 1983, in conjunction with AT&T's divestiture of its local operating companies, the Commission directed the Common Carrier Bureau to establish a monitoring program which would provide a basis for detecting any adverse trends in service quality. During 1985, the quality of service submission requirements were modified to reduce unnecessary paperwork and to ensure that the information needed by the Commission would be provided, where possible, in a more uniform format. The data was received semiannually, typically in March and August, and was the basis for FCC summary reports in June 1990 and July 1991.

With the implementation of price caps for local exchange carriers, several major changes were made beginning with reports filed in 1991. First, while quality of service reports had been received only from Bell operating companies, other companies subject to price caps were also required to submit reports on service quality. Thus the operating companies owned by GTE, Contel, and United began to file reports. Second, quality of service reports were included as part of the Commission's Automated Reporting and Management Information System (ARMIS). Third, there was a considerable change in the data reported -- with some items being deleted and new items added.

Tables 1-4 summarize data received since 1985. Data on dial tone response filed since 1985 now appears in the ARMIS 43-06 filing. Paper copies of the customer perception survey data are still filed but this data is not contained in the mechanized ARMIS reporting formats.

The impact of new technology is reducing the significance of some of the measurements filed since 1985. For example, the dial tone delay measurement is becoming less useful with the increasing number of digital switches, in which service is unlikely to be affected by slowed dial tone response.

The all company composites shown in Tables 1 through 4 are calculated in a manner consistent with earlier reports as the unweighted average of the available data compiled for the individual Bell Holding Companies. One should note that data for 1991 and 1992 may differ from the earlier part of the series. Such discontinuity is due to changes in reporting procedures. Bell Atlantic has reported changes to its customer perception surveys which are being reflected in post 1990 data and may have resulted in data discontinuities. Other companies have indicated that they are planning or contemplating similar changes.

Tables 1-3 cover customer satisfaction surveys performed by the companies. Table 4 shows the percentage of offices providing less than a three second dial tone delay. While we are continuing to monitor transmission quality, this data has not been included in this report, as it does not cover transmission quality on the increasing number of digital transmission facilities which presently comprise over 95 percent of the interoffice facility mileage as reported to the Commission by the companies. Further, this data exhibited a larger data discontinuity from the earlier data series, than the data shown in Tables 1-3. This appears to have resulted from changes in reporting procedures and data formats. Data on blocking and on time installations have been modified considerably and are not comparable to the prior data series.

Most quality of service data now being reported to the Commission appears in the ARMIS 43-05 report, which is filed quarterly. The

data contained in these filings is summarized in Tables 5 to 14 of this report. These tables highlight some of the data now received in the ARMIS 43-05 report. Tables are shown for each major holding company (the seven Regional Bell holding companies; GTE; Contel; and the United Companies). The data summarized for each holding company reflects weighted averages of data contained in individual states or study areas and may be useful in assessing overall trends. Given the newness of the reporting system and the sheer magnitude of the reports, some of the data filed appears to contain errors, particularly in the earlier quarters. As a result, industry composites have not been calculated. We invite queries and suggestions for improving the data and correcting errors.

The items summarized in Tables 5 to 14 reflect the current emphasis on data that is closer to the measurement source. For example, rather than simply collecting data on percent of installations made by a commitment date, the current report also reflects the number of days the company missed its commitment. This data has been derived from individual study area data submitted by the companies by adding the numerical quantities and appropriately weighting the percentage figures. For example, the percent of commitments met is weighted by the corresponding number of orders provided in the filed data. The full range of quality of service data received in the ARMIS 43-05 reports is summarized in Appendix A. The items contained in Tables 5 to 14 are summarized below.

1. Percent of installation commitments met:

This data item provides the percent of installations which were met by the date promised by the company to the customer. It is shown separately for residential and business customers' local service and separately for access services provided to carriers.

2. Average missed installation in days:

This is the average number of days beyond the commitment date that the missed installations were late. It is shown separately for access services provided to carriers and for residential and business customers' local service.

3. Average repair Interval:

This data item is the average time (in hours) for the company to repair access lines and includes subcategories for switched access, high speed special access, and all special access. Only data for switched and special access services provided to carriers is shown.

4. Trouble reports per thousand access lines:

This data item is calculated as 1,000 times the total count of trouble reports divided by the number of access lines. This item is subcategorized by MSA, Non

MSA, Residence, and Business.

5. Troubles found per thousand access lines:

This data item is calculated as described in item 4 above and represents the number of trouble reports in which the company identified a problem.

6. Repeat trouble as a percent of trouble reports:

This data item is calculated as the number of repeat trouble reports divided by the total number of trouble reports. It provides a measure of the effectiveness of the company in resolving troubles at the outset. This item is subcategorized by MSA, Non MSA, Residence, and Business.

7. Complaints per million access lines:

These data items provide the number of residential and business customer complaints per million access lines conveyed to state or federal regulatory bodies during the reporting period.

8. Number of access lines, trunk groups and switches:

These data items provide the underlying counts of access lines in thousands, trunk groups, and switches.

9. Switches with downtime:

This data item provides the number of switches experiencing downtime and the percentage of the total number of network switches experiencing downtime.

10. Average switch downtime in seconds per switch:

Total switch downtime divided by the total number of company switches indicates the average switch downtime in seconds per switch. It is shown for all occurrences and for occurrences greater than 2 minutes.

11. Unscheduled downtime over 2 minutes per occurrence:

These data items provide the number of occurrences of more than 2 minutes duration that were unscheduled, the number of occurrences per million access lines, the average number of minutes per occurrence, the average number of lines affected per occurrence, the average number of line-minutes per occurrence in thousands, and the outage line-minutes per access line. For each outage, the number of lines affected was multiplied by the duration of the outage to provide the "line-minutes" of outage. The resulting sum of these represents the total outage line-minutes. This number was divided by the total number of access lines to provide the "line-minutes per access line" and by the number of occurrences to provide the "line-minutes" per occurrence. This categorizes the normalized magnitude of the outage in two

ways and provides a more realistic means to compare the impact of such outages between companies. A separate table is provided for each company showing the number of outages and outage line-minutes by cause.

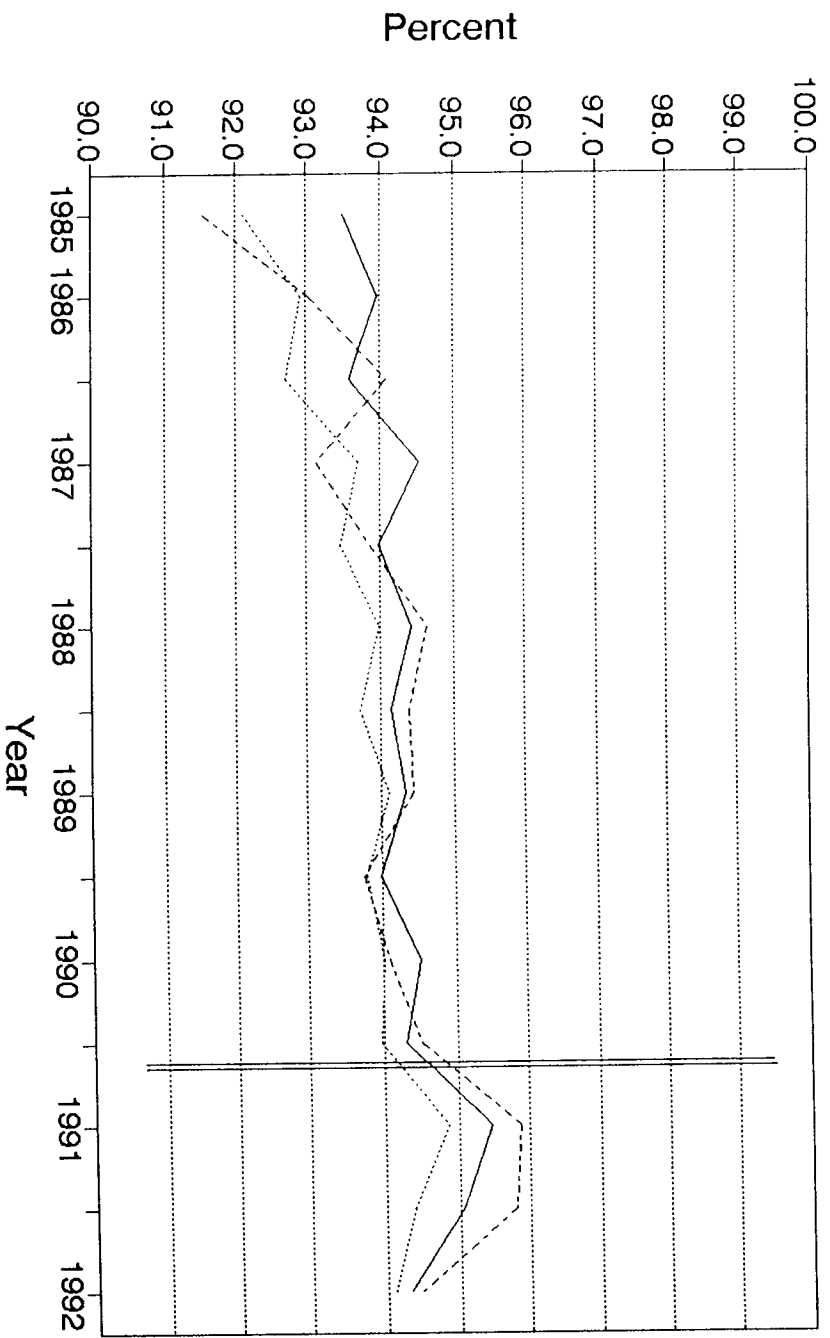
12. Scheduled downtime over 2 minutes per occurrence:
This data is identical to item 11 above, except it consists of scheduled occurrences rather than unscheduled occurrences.

13. Trunk groups with blocking over 3-month objective as a percent of total trunk groups:
This data item provides the percentage of trunk groups exceeding the objective for blocking for 3 consecutive months.

This report is available in the public reference room of the FCC's Industry Analysis Division, 1250 23rd Street, N. W., Plaza Level, Washington, D. C. 20554. For more information, Jonathan Kraushaar may be contacted at (202) 632-1368 or (202) 632-0745.

Customer Perception Surveys

Percent of Customers Satisfied



..... Small Business - - - - Large Business — Residential

Dial Tone Response

Percent of Offices Meeting Standards

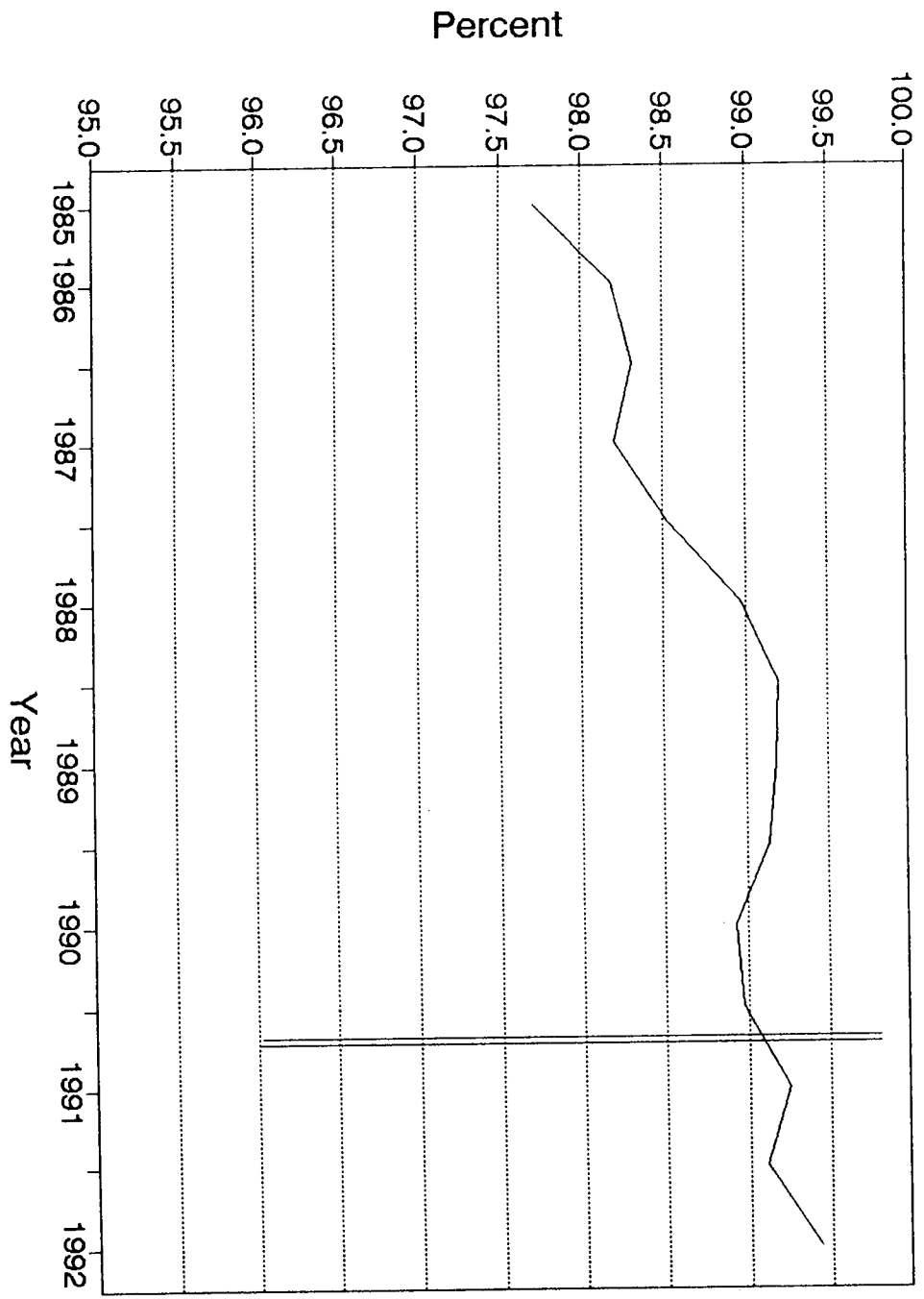


Table 1: Percent of Customers Satisfied -- Residential

Company/Year	1985	1986		1987		1988		1989		1990		1991		1992 1 H
		1 H	2 H	1 H	2 H	1 H	2 H	1 H	2 H	1 H	2 H	1 H	2 H	
AMERITECH	92.8	94.8	94.0	94.7	94.1	95.0	94.2	94.8	93.6	94.4	94.3	95.3	94.9	95.4
BELL ATLANTIC	92.4	93.4	93.0	94.4	90.2	92.3	92.1	91.8	93.3	94.6	93.9	95.6	95.7	94.9
BELLSOUTH	92.0	92.8	92.8	94.2	94.0	93.9	93.6	94.1	93.2	94.9	94.9	95.5	NA	92.7
NYNEX	93.7	93.5	92.9	93.6	93.6	94.5	94.0	94.2	94.1	92.8	93.7	94.7	93.6	92.6
PACIFIC TELESIS	94.1	93.0	94.4	95.6	96.1	95.8	95.7	96.9	96.0	96.5	95.5	96.7	96.7	95.5
SOUTHWESTERN	97.6	97.6	95.5	96.1	95.8	96.3	96.3	96.5	96.4	96.8	96.6	96.8	96.5	96.6
U S WEST	91.9	92.7	92.4	93.3	94.1	93.3	93.3	92.1	91.4	91.8	91.2	93.6	93.1	92.4
COMPOSITE	93.5	94.0	93.6	94.5	94.0	94.4	94.2	94.3	94.0	94.5	94.3	95.5	95.1	94.3

Holding company data in this table is derived as an unweighted average of available operating company results.

Composites are unweighted averages of holding companies.

Please refer to text for accompanying notes and data qualifications.

Table 2: Percent of Customers Satisfied -- Small Business

Company/Year	1985	1986		1987		1988		1989		1990		1991		1992 1 H
		1 H	2 H	1 H	2 H	1 H	2 H	1 H	2 H	1 H	2 H	1 H	2 H	
AMERITECH	90.6	93.8	93.8	94.4	94.4	94.6	93.9	94.6	94.0	94.6	94.9	95.7	95.4	95.8
BELL ATLANTIC	89.9	91.9	91.7	93.3	90.7	92.3	92.0	NA	NA	NA	NA	94.9	95.1	93.8
BELLSOUTH	92.0	93.3	93.3	94.5	94.5	95.0	94.8	94.7	94.7	95.2	95.7	94.9	NA	94.5
NYNEX	91.6	91.6	91.2	92.3	92.2	93.9	93.4	93.7	93.5	91.9	92.7	93.9	92.9	92.2
PACIFIC TELESIS	94.2	91.7	93.4	94.5	94.0	93.9	94.1	95.6	95.3	95.9	94.9	96.1	96.1	94.0
SOUTHWESTERN	97.1	97.0	94.6	95.0	95.0	95.8	95.6	95.8	95.5	95.9	95.7	96.4	96.2	96.4
U S WEST	89.4	91.1	91.1	92.1	93.5	92.6	92.4	90.4	89.8	90.7	89.8	92.1	90.7	92.2
COMPOSITE	92.1	92.9	92.7	93.7	93.5	94.0	93.7	94.1	93.8	94.0	94.0	94.9	94.4	94.1

Holding company data in this table is derived as an unweighted average of available operating company results.

Composites are unweighted averages of holding companies.

Please refer to text for accompanying notes and data qualifications.

Table 3: Percent of Customers Satisfied -- Large Business

Company/Year	1985	1986		1987		1988		1989		1990		1991		1992
		1 H	2 H	1 H	2 H	1 H	2 H	1 H	2 H	1 H	2 H	1 H	2 H	1 H
AMERITECH	89.1	90.7	90.2	90.0	91.4	95.1	93.6	93.9	94.7	94.7	95.1	95.9	96.2	96.2
BELL ATLANTIC	93.1	93.3	94.0	94.0	95.0	96.0	95.7	98.0	96.0	97.3	97.0	97.6	97.1	98.2
BELLSOUTH	89.9	94.2	94.2	95.0	94.9	95.4	93.9	93.9	94.1	94.6	94.6	95.8	NA	94.8
NYNEX	94.8	96.5	97.0	91.5	91.6	93.3	92.0	94.0	93.5	93.5	93.2	94.2	94.1	90.9
PACIFIC TELESIS	90.4	92.0	95.9	94.3	93.3	92.7	94.7	95.0	95.0	93.0	94.0	94.3	94.3	90.0
SOUTHWESTERN	91.3	91.4	92.3	93.9	94.4	95.4	95.4	94.3	94.0	94.6	95.3	97.4	97.3	96.6
U S WEST	92.2	NA	95.1	NA	96.3	NA	95.5	92.1	89.0	91.1	92.4	NA	NA	NA
COMPOSITE	91.5	93.0	94.1	93.1	93.8	94.6	94.4	94.5	93.8	94.1	94.5	95.9	95.8	94.5

Holding company data in this table is derived as an unweighted average of available operating company results.

Composites are unweighted averages of holding companies.

Please refer to text for accompanying notes and data qualifications.

Table 4: Percent of Offices Providing Dial Tone in Less Than Three Seconds

Company/Year	1985	1986		1987		1988		1989		1990		1991		1992
		1 H	2 H	1 H	2 H	1 H	2 H	1 H	2 H	1 H	2 H	1 H	2 H	1 H
AMERITECH	98.2	98.3	98.6	98.6	99.1	99.0	99.6	99.4	99.0	98.3	98.2	99.4	98.8	99.5
BELL ATLANTIC	97.8	98.2	98.6	97.8	98.8	99.0	99.3	99.3	99.1	98.4	99.2	99.5	99.6	99.8
BELLSOUTH	96.8	96.3	96.3	95.0	96.0	97.4	97.6	97.8	98.2	98.4	98.0	99.2	99.2	99.3
NYNEX	96.6	98.5	99.7	99.8	99.6	99.7	99.7	99.8	99.8	99.5	99.7	100.0	99.6	99.8
PACIFIC TELESIS	100.0	99.9	100.0	99.7	99.7	99.7	99.7	99.7	99.1	99.7	99.6	99.7	99.7	100.0
SOUTHWESTERN	97.9	98.3	97.9	98.4	98.1	99.3	99.4	99.3	99.4	99.2	99.3	97.8	97.7	98.1
U S WEST	96.7	97.8	97.2	98.2	98.4	98.8	99.1	98.9	99.4	99.0	98.9	99.3	99.2	99.6
COMPOSITE	97.7	98.2	98.3	98.2	98.5	99.0	99.2	99.2	99.1	98.9	99.0	99.3	99.1	99.4

Holding company data in this table is derived as an unweighted average of available operating company results.

Composites are unweighted averages of holding companies.

Please refer to text for accompanying notes and data qualifications.

Table 5 (a): Ameritech -- Installation, Maintenance, & Customer Complaints

Reporting Period:	1Q'91	2Q'91	3Q'91	4Q'91	1Q'92	2Q'92	3Q'92
ACCESS SERVICES PROVIDED TO CARRIERS -- SWITCHED ACCESS							
Percent Installation Commitments Met	99.5%	99.9%	100.0%	99.5%	99.3%	98.6%	99.5%
Average Missed Installation (days)	NA	0.7	0.4	0.8	3.3	1.9	4.2
Average Repair Interval (hours)	2.3	2.6	2.5	1.8	1.6	1.5	1.6
ACCESS SERVICES PROVIDED TO CARRIERS -- SPECIAL ACCESS							
Percent Installation Commitments Met	99.8%	99.9%	99.4%	99.8%	99.8%	99.9%	99.8%
Average Missed Installation (days)	0.1	1.6	1.8	5.2	3.0	3.4	5.0
Average Repair Interval (hours)	2.2	2.4	2.4	2.2	2.2	2.2	2.3
LOCAL SERVICES PROVIDED TO RESIDENTIAL AND BUSINESS CUSTOMERS							
Percent Installation Commitments Met	99.6%	99.6%	99.5%	99.6%	99.7%	99.7%	99.6%
Residence	99.6%	99.6%	99.6%	99.6%	99.7%	99.7%	99.7%
Business	99.4%	99.4%	99.3%	99.5%	99.4%	99.4%	99.3%
Average Missed Installation (days)	2.8	2.8	2.8	3.0	3.0	2.7	3.2
Residence	2.7	2.5	2.8	2.6	2.8	2.5	2.7
Business	3.4	3.3	2.8	3.6	2.4	2.2	2.8
Trouble Reports per Thousand Lines	68.1	85.7	78.0	69.1	54.6	79.4	71.6
Total MSA	NA	NA	NA	NA	66.4	78.7	70.9
Total Non MSA	NA	NA	NA	NA	64.2	86.1	78.8
Total Residence	97.8	123.6	113.0	100.1	78.3	96.7	89.1
Total Business	7.5	8.5	7.8	7.4	40.9	43.1	35.4
Troubles Found per Thousand Lines	51.0	66.0	59.2	52.1	34.7	58.1	45.2
Repeat Troubles as a Pct. of Trouble Reports	10.2%	10.1%	9.8%	10.1%	11.5%	9.5%	14.6%
Total Residence	10.3%	10.1%	9.8%	10.1%	9.8%	9.7%	15.0%
Total Business	9.7%	10.0%	10.0%	9.8%	8.3%	8.5%	12.7%
Customer Complaints per Million Access Lines							
Residential	4.2	5.0	2.9	2.3	2.8	2.6	5.2
Business	1,001.7	712.2	2.2	1.1	0.9	0.7	1.7

Please refer to text for notes and data qualifications

Table 5 (b): Ameritech -- Switch Downtime & Trunk Blocking

Reporting Period:	1Q'91	2Q'91	3Q'91	4Q'91	1Q'92	2Q'92	3Q'92
Total Access Lines in Thousands	16,586	16,584	16,772	16,825	16,634	16,658	16,780
Total Trunk Groups	1,207	1,176	1,172	1,146	1,153	1,146	1,143
Total Switches	1,396	1,368	1,384	1,420	1,422	1,440	1,443
Switches with Downtime							
Number of Switches	41	45	105	245	138	205	271
As a percentage of Total Switches	2.9%	3.3%	7.6%	17.3%	9.7%	14.2%	18.8%
Average Switch Downtime in seconds per Switch							
For All Occurrences	5.9	22.6	28.1	56.0	63.0	66.1	204.2
For Unscheduled Occurrences More than 2 Min.	1.5	17.4	13.4	38.3	55.6	50.3	173.3
For Unscheduled Downtime More than 2 Minutes							
Number of Occurrences	11	20	43	28	37	44	68
Occurrences per Million Access Lines	0.66	1.21	2.56	1.66	2.22	2.64	4.05
Average Outage Duration in Minutes	3.2	19.8	7.2	32.4	35.6	27.5	61.3
Average Lines Affected per Occurrence in Thousands	25.5	35.1	24.1	13.8	7.0	7.2	14.2
Outage Line-Minutes per Occurrence in Thousands	75	756	149	275	332	156	1,122
Outage Line-Minutes per Thousand Access Lines	50	912	381	458	739	412	4,546
For Scheduled Downtime More than 2 Minutes							
Number of Occurrences	32	38	84	63	32	71	118
Occurrences per Million Access Lines	1.93	2.29	5.01	3.74	1.92	4.26	7.03
Average Outage Duration in Minutes	3.2	3.2	4.0	3.6	3.0	3.4	4.3
Average Lines Affected per Occurrence in Thousands	38.6	25.2	19.6	19.5	21.1	20.5	10.9
Outage Line-Minutes per Occurrence in Thousands	93	80	74	70	57	63	47
Outage Line-Minutes per Thousand Access Lines	180	184	369	262	109	269	328
Pct. Trunk Grps. Exceeding Blocking Obj. 3 Months	0.66%	0.51%	0.68%	0.09%	0.17%	0.26%	0.35%

Please refer to text for notes and data qualifications

Table 5 (c): Ameritech -- Switch Downtime Causes

	REPORTING PERIOD:				1Q'92	2Q'92	3Q'92
	1Q'91	2Q'91	3Q'91	4Q'91			
TOTAL NUMBER OF OUTAGES							
1. Scheduled	NA	NA	NA	NA	32	71	118
2. Procedural Errors -- Telco. (Install./Maint.)	NA	NA	NA	NA	2	1	1
3. Procedural Errors -- Telco. (Other)	NA	NA	NA	NA	3	0	2
4. Procedural Errors -- System Vendors	NA	NA	NA	NA	2	1	4
5. Procedural Errors -- Other Vendors	NA	NA	NA	NA	1	1	1
6. Software Design	NA	NA	NA	NA	2	4	8
7. Hardware Design	NA	NA	NA	NA	1	1	0
8. Hardware Failure	NA	NA	NA	NA	7	12	33
9. Acts of G-d	NA	NA	NA	NA	4	1	0
10. Traffic Overload	NA	NA	NA	NA	0	0	1
11. Environmental	NA	NA	NA	NA	0	1	0
12. External Power Failure	NA	NA	NA	NA	0	0	0
13. Massive Line Outage	NA	NA	NA	NA	0	0	0
14. Remote	NA	NA	NA	NA	12	13	13
15. Other/Unknown	NA	NA	NA	NA	3	9	5
TOTAL OUTAGE LINE-MINUTES PER THOUSAND ACCESS LINES							
1. Scheduled	NA	NA	NA	NA	109.3	269.3	327.8
2. Procedural Errors -- Telco. (Install./Maint.)	NA	NA	NA	NA	5.2	2.6	10.4
3. Procedural Errors -- Telco. (Other)	NA	NA	NA	NA	8.0	0.0	543.8
4. Procedural Errors -- System Vendors	NA	NA	NA	NA	216.6	4.5	21.0
5. Procedural Errors -- Other Vendors	NA	NA	NA	NA	1.6	1.7	1.2
6. Software Design	NA	NA	NA	NA	1.6	3.6	246.5
7. Hardware design	NA	NA	NA	NA	0.3	13.3	0.0
8. Hardware Failure	NA	NA	NA	NA	168.8	320.6	3,639.1
9. Acts of G-d	NA	NA	NA	NA	26.2	3.0	0.0
10. Traffic Overload	NA	NA	NA	NA	0.0	0.0	43.4
11. Environmental	NA	NA	NA	NA	0.0	2.4	0.0
12. External Power Failure	NA	NA	NA	NA	0.0	0.0	0.0
13. Massive Line Outage	NA	NA	NA	NA	0.0	0.0	0.0
14. Remote	NA	NA	NA	NA	310.0	43.8	33.9
15. Other/Unknown	NA	NA	NA	NA	1.1	16.7	6.4

Please refer to text for notes and data qualifications

Table 6 (a): Bell Atlantic -- Installation, Maintenance, & Customer Complaints

Reporting Period:	1Q'91	2Q'91	3Q'91	4Q'91	1Q'92	2Q'92	3Q'92
ACCESS SERVICES PROVIDED TO CARRIERS -- SWITCHED ACCESS							
Percent Installation Commitments Met	100.0%	100.0%	99.9%	100.0%	99.5%	99.6%	99.6%
Average Missed Installation (days)	2.8	17.5	0.6	NA	4.1	13.1	5.4
Average Repair Interval (hours)	4.3	2.8	5.8	2.3	1.9	3.6	2.7
ACCESS SERVICES PROVIDED TO CARRIERS -- SPECIAL ACCESS							
Percent Installation Commitments Met	99.1%	100.0%	99.6%	99.8%	99.7%	99.5%	99.7%
Average Missed Installation (days)	7.4	2.8	2.6	1.9	1.6	2.0	4.1
Average Repair Interval (hours)	2.0	2.1	2.0	2.0	1.8	1.8	1.9
LOCAL SERVICES PROVIDED TO RESIDENTIAL AND BUSINESS CUSTOMERS							
Percent Installation Commitments Met	100.0%	100.0%	99.7%	99.8%	99.8%	99.8%	99.6%
Residence	100.0%	100.0%	99.8%	99.8%	99.8%	99.8%	99.7%
Business	100.0%	100.0%	99.7%	99.7%	99.7%	99.7%	99.4%
Average Missed Installation (days)	4.6	3.7	3.5	4.5	3.3	4.1	3.3
Residence	4.3	3.5	3.4	3.8	3.8	5.1	2.6
Business	5.1	3.9	3.3	7.7	2.7	4.4	5.0
Trouble Reports per Thousand Lines	70.5	76.1	86.0	69.5	64.9	72.2	79.8
Total MSA	NA	NA	NA	69.9	65.8	72.8	79.1
Total Non MSA	NA	NA	NA	64.9	55.4	65.7	87.4
Total Residence	80.7	86.1	102.2	80.7	76.0	85.5	97.2
Total Business	50.9	50.5	55.0	48.0	44.5	47.7	47.6
Troubles Found per Thousand Lines	65.3	70.5	79.7	64.2	60.1	67.4	65.2
Repeat Troubles as a Pct. of Trouble Reports	7.9%	7.8%	7.8%	7.9%	7.4%	8.0%	8.2%
Total Residence	7.4%	7.2%	7.4%	7.4%	6.9%	7.4%	7.7%
Total Business	9.3%	9.9%	9.4%	9.6%	9.1%	9.9%	10.0%
Customer Complaints per Million Access Lines							
Residential	19.9	18.1	18.0	11.6	12.6	11.5	13.1
Business	10.0	11.0	8.2	7.2	6.4	6.1	5.9

Please refer to text for notes and data qualifications

Table 6 (b): Bell Atlantic -- Switch Downtime & Trunk Blocking

Reporting Period:	1Q'91	2Q'91	3Q'91	4Q'91	1Q'92	2Q'92	3Q'92
Total Access Lines in Thousands	17,482	17,481	17,481	17,481	17,750	17,750	17,750
Total Trunk Groups	1,340	1,378	1,368	1,330	1,342	1,343	1,335
Total Switches	1,357	1,357	1,357	1,357	1,404	1,404	1,404
Switches with Downtime							
Number of Switches	172	210	110	88	145	133	77
As a percentage of Total Switches	12.7%	15.5%	8.1%	6.5%	10.3%	9.5%	5.5%
Average Switch Downtime in seconds per Switch							
For All Occurrences	55.3	127.5	16.1	8.4	67.6	57.1	40.1
For Unscheduled Occurrences More than 2 Min.	38.9	114.5	9.5	5.2	61.1	52.7	33.8
For Unscheduled Downtime More than 2 Minutes							
Number of Occurrences	26	39	15	9	29	31	29
Occurrences per Million Access Lines	1.49	2.23	0.86	0.51	1.63	1.75	1.63
Average Outage Duration in Minutes	33.8	66.4	14.3	13.1	49.3	39.8	27.3
Average Lines Affected per Occurrence in Thousands	14.7	14.7	10.1	23.7	17.9	27.5	22.9
Outage Line-Minutes per Occurrence in Thousands	263	778	93	204	286	1,052	408
Outage Line-Minutes per Thousand Access Lines	391	1,735	80	105	467	1,838	667
For Scheduled Downtime More than 2 Minutes							
Number of Occurrences	90	62	21	10	28	13	43
Occurrences per Million Access Lines	5.15	3.55	1.20	0.57	1.58	0.73	2.42
Average Outage Duration in Minutes	3.4	3.5	4.4	3.0	3.3	4.2	3.0
Average Lines Affected per Occurrence in Thousands	20.4	12.1	16.6	14.8	17.0	19.6	30.8
Outage Line-Minutes per Occurrence in Thousands	68	43	88	40	51	77	93
Outage Line-Minutes per Thousand Access Lines	349	153	106	23	80	57	225
Pct. Trunk Grps. Exceeding Blocking Obj. 3 Months	0.30%	0.44%	0.51%	0.08%	0.00%	0.37%	0.45%

Please refer to text for notes and data qualifications

Table 6 (c): Bell Atlantic – Switch Downtime Causes

	REPORTING PERIOD:							
	1Q'91	2Q'91	3Q'91	4Q'91	1Q'92	2Q'92	3Q'92	
TOTAL NUMBER OF OUTAGES								
1. Scheduled	NA	NA	NA	NA	28	13	43	
2. Procedural Errors – Telco. (Install./Maint.)	NA	NA	NA	NA	5	5	4	
3. Procedural Errors – Telco. (Other)	NA	NA	NA	NA	0	2	2	
4. Procedural Errors – System Vendors	NA	NA	NA	NA	3	6	4	
5. Procedural Errors – Other Vendors	NA	NA	NA	NA	2	1	0	
6. Software Design	NA	NA	NA	NA	7	7	10	
7. Hardware Design	NA	NA	NA	NA	0	0	0	
8. Hardware Failure	NA	NA	NA	NA	8	5	6	
9. Acts of G-d	NA	NA	NA	NA	0	1	3	
10. Traffic Overload	NA	NA	NA	NA	0	1	0	
11. Environmental	NA	NA	NA	NA	0	0	0	
12. External Power Failure	NA	NA	NA	NA	0	0	0	
13. Massive Line Outage	NA	NA	NA	NA	0	0	0	
14. Remote	NA	NA	NA	NA	0	1	0	
15. Other/Unknown	NA	NA	NA	NA	4	2	0	
TOTAL OUTAGE LINE-MINUTES PER THOUSAND ACCESS LINES								
1. Scheduled	NA	NA	NA	NA	80.3	56.5	224.6	
2. Procedural Errors – Telco. (Install./Maint.)	NA	NA	NA	NA	101.8	164.1	184.6	
3. Procedural Errors – Telco. (Other)	NA	NA	NA	NA	0.0	608.1	89.9	
4. Procedural Errors – System Vendors	NA	NA	NA	NA	4.0	325.5	57.8	
5. Procedural Errors – Other Vendors	NA	NA	NA	NA	21.4	44.5	0.0	
6. Software Design	NA	NA	NA	NA	95.7	284.4	127.9	
7. Hardware design	NA	NA	NA	NA	0.0	0.0	0.0	
8. Hardware Failure	NA	NA	NA	NA	205.5	252.1	86.6	
9. Acts of G-d	NA	NA	NA	NA	0.0	116.4	120.2	
10. Traffic Overload	NA	NA	NA	NA	0.0	32.6	0.0	
11. Environmental	NA	NA	NA	NA	0.0	0.0	0.0	
12. External Power Failure	NA	NA	NA	NA	0.0	0.0	0.0	
13. Massive Line Outage	NA	NA	NA	NA	0.0	0.0	0.0	
14. Remote	NA	NA	NA	NA	0.0	1.0	0.0	
15. Other/Unknown	NA	NA	NA	NA	38.8	9.1	0.0	

Please refer to text for notes and data qualifications

Table 7 (a): BellSouth -- Installation, Maintenance, & Customer Complaints

Reporting Period:	1Q'91	2Q'91	3Q'91	4Q'91	1Q'92	2Q'92	3Q'92
ACCESS SERVICES PROVIDED TO CARRIERS -- SWITCHED ACCESS							
Percent Installation Commitments Met	99.3%	99.9%	100.0%	99.9%	99.8%	99.8%	99.9%
Average Missed Installation (days)	0.2	1.3	NA	3.2	0.3	1.5	2.0
Average Repair Interval (hours)	1.7	2.1	2.0	2.5	2.0	2.4	2.3
ACCESS SERVICES PROVIDED TO CARRIERS -- SPECIAL ACCESS							
Percent Installation Commitments Met	99.5%	99.6%	99.7%	99.5%	99.3%	99.5%	98.9%
Average Missed Installation (days)	6.6	6.0	4.5	3.0	3.7	2.8	3.7
Average Repair Interval (hours)	3.0	3.2	3.3	3.4	3.0	3.2	4.4
LOCAL SERVICES PROVIDED TO RESIDENTIAL AND BUSINESS CUSTOMERS							
Percent Installation Commitments Met	97.9%	98.1%	97.8%	98.3%	98.8%	98.9%	98.6%
Residence	98.0%	98.2%	97.8%	98.4%	98.7%	98.9%	98.5%
Business	97.1%	97.4%	97.2%	97.8%	98.9%	99.1%	98.8%
Average Missed Installation (days)	6.8	7.2	6.9	7.4	6.7	6.7	7.0
Residence	7.0	7.5	7.1	7.7	7.1	7.2	7.3
Business	5.5	5.9	5.4	5.6	5.5	5.1	5.8
Trouble Reports per Thousand Lines	83.8	105.3	110.9	84.8	79.4	87.2	119.5
Total MSA	NA	NA	NA	NA	80.0	85.5	118.7
Total Non MSA	NA	NA	NA	NA	81.0	94.9	122.8
Total Residence	96.0	121.7	128.4	97.0	90.6	100.0	138.7
Total Business	54.3	65.4	68.1	55.0	51.9	55.8	72.4
Troubles Found per Thousand Lines	59.3	75.2	78.7	57.7	53.6	59.2	80.3
Repeat Troubles as a Pct. of Trouble Reports	11.0%	12.2%	13.0%	12.1%	11.6%	11.4%	13.4%
Total Residence	11.1%	12.2%	13.1%	12.1%	11.6%	11.3%	13.5%
Total Business	10.6%	12.0%	12.6%	12.0%	11.5%	11.7%	13.0%
Customer Complaints per Million Access Lines							
Residential	31.2	49.3	49.3	35.1	29.5	32.8	38.0
Business	19.8	23.0	27.7	22.0	20.3	16.9	18.8

Please refer to text for notes and data qualifications

Table 7 (b): BellSouth -- Switch Downtime & Trunk Blocking

Reporting Period:	1Q'91	2Q'91	3Q'91	4Q'91	1Q'92	2Q'92	3Q'92
Total Access Lines in Thousands	17,755	17,755	17,755	17,755	18,202	18,201	18,201
Total Trunk Groups	2,019	2,117	2,353	2,422	2,558	2,645	2,836
Total Switches	1,662	1,662	1,662	1,662	1,666	1,666	1,666
Switches with Downtime							
Number of Switches	58	72	100	148	117	145	116
As a percentage of Total Switches	3.5%	4.3%	6.0%	8.9%	7.0%	8.7%	7.0%
Average Switch Downtime in seconds per Switch							
For All Occurrences	73.5	71.7	90.6	98.3	160.1	122.8	852.5
For Unscheduled Occurrences More than 2 Min.	65.1	58.2	84.3	81.4	126.7	117.7	847.8
For Unscheduled Downtime More than 2 Minutes							
Number of Occurrences	43	33	58	55	52	79	83
Occurrences per Million Access Lines	2.42	1.86	3.27	3.10	2.86	4.34	4.56
Average Outage Duration in Minutes	42.0	48.9	40.3	41.0	67.7	41.4	283.6
Average Lines Affected per Occurrence in Thousands	9.8	14.5	9.1	8.7	9.8	13.1	12.5
Outage Line-Minutes per Occurrence in Thousands	209	726	262	187	580	377	425
Outage Line-Minutes per Thousand Access Lines	507	1,350	856	580	1,658	1,636	1,937
For Scheduled Downtime More than 2 Minutes							
Number of Occurrences	6	13	38	93	56	40	28
Occurrences per Million Access Lines	0.34	0.73	2.14	5.24	3.08	2.20	1.54
Average Outage Duration in Minutes	38.3	28.2	4.5	5.0	16.4	3.0	4.5
Average Lines Affected per Occurrence in Thousands	16.7	15.5	19.9	17.2	15.1	17.7	17.0
Outage Line-Minutes per Occurrence in Thousands	329	371	69	95	141	47	31
Outage Line-Minutes per Thousand Access Lines	111	271	148	500	434	103	104
Pct. Trunk Grps. Exceeding Blocking Obj. 3 Months	0.05%	0.14%	0.13%	0.25%	0.23%	0.01%	0.00%

Please refer to text for notes and data qualifications

Table 7 (c): BellSouth -- Switch Downtime Causes

	REPORTING PERIOD:							
	1Q'91	2Q'91	3Q'91	4Q'91	1Q'92	2Q'92	3Q'92	
TOTAL NUMBER OF OUTAGES								
1. Scheduled	NA	NA	NA	NA	56	40	28	
2. Procedural Errors -- Telco. (Install./Maint.)	NA	NA	NA	NA	4	8	1	
3. Procedural Errors -- Telco. (Other)	NA	NA	NA	NA	7	14	16	
4. Procedural Errors -- System Vendors	NA	NA	NA	NA	2	4	6	
5. Procedural Errors -- Other Vendors	NA	NA	NA	NA	0	0	0	
6. Software Design	NA	NA	NA	NA	21	15	13	
7. Hardware Design	NA	NA	NA	NA	0	2	1	
8. Hardware Failure	NA	NA	NA	NA	9	30	33	
9. Acts of G-d	NA	NA	NA	NA	0	2	8	
10. Traffic Overload	NA	NA	NA	NA	1	0	2	
11. Environmental	NA	NA	NA	NA	0	1	1	
12. External Power Failure	NA	NA	NA	NA	0	0	1	
13. Massive Line Outage	NA	NA	NA	NA	0	0	0	
14. Remote	NA	NA	NA	NA	8	3	0	
15. Other/Unknown	NA	NA	NA	NA	0	0	1	
TOTAL OUTAGE LINE-MINUTES PER THOUSAND ACCESS LINES								
1. Scheduled	NA	NA	NA	NA	434.1	103.1	123.9	
2. Procedural Errors -- Telco. (Install./Maint.)	NA	NA	NA	NA	1,158.9	253.4	24.8	
3. Procedural Errors -- Telco. (Other)	NA	NA	NA	NA	155.9	241.2	80.6	
4. Procedural Errors -- System Vendors	NA	NA	NA	NA	6.6	485.7	7.2	
5. Procedural Errors -- Other Vendors	NA	NA	NA	NA	0.0	0.0	0.0	
6. Software Design	NA	NA	NA	NA	223.3	82.1	75.1	
7. Hardware design	NA	NA	NA	NA	0.0	56.0	61.7	
8. Hardware Failure	NA	NA	NA	NA	64.9	503.4	681.5	
9. Acts of G-d	NA	NA	NA	NA	0.0	2.0	729.1	
10. Traffic Overload	NA	NA	NA	NA	22.8	0.0	190.6	
11. Environmental	NA	NA	NA	NA	0.0	7.6	75.8	
12. External Power Failure	NA	NA	NA	NA	0.0	0.0	10.2	
13. Massive Line Outage	NA	NA	NA	NA	0.0	0.0	0.0	
14. Remote	NA	NA	NA	NA	25.3	4.9	0.0	
15. Other/Unknown	NA	NA	NA	NA	0.0	0.0	0.3	

Please refer to text for notes and data qualifications

Table 8 (a): NYNEX -- Installation, Maintenance, & Customer Complaints

Reporting Period:	1Q'91	2Q'91	3Q'91	4Q'91	1Q'92	2Q'92	3Q'92
ACCESS SERVICES PROVIDED TO CARRIERS -- SWITCHED ACCESS							
Percent Installation Commitments Met	99.8%	99.9%	100.0%	99.9%	99.9%	100.0%	99.8%
Average Missed Installation (days)	5.6	1.5	1.4	0.6	2.4	0.5	6.7
Average Repair Interval (hours)	0.8	0.9	1.8	1.1	1.0	0.7	0.8
ACCESS SERVICES PROVIDED TO CARRIERS -- SPECIAL ACCESS							
Percent Installation Commitments Met	99.2%	99.2%	99.4%	99.1%	99.2%	99.4%	99.6%
Average Missed Installation (days)	6.2	4.3	4.3	5.1	4.2	3.2	4.2
Average Repair Interval (hours)	6.8	6.2	6.2	5.5	5.5	5.6	5.9
LOCAL SERVICES PROVIDED TO RESIDENTIAL AND BUSINESS CUSTOMERS							
Percent Installation Commitments Met	97.9%	98.4%	97.8%	97.9%	98.3%	98.7%	98.5%
Residence	98.0%	98.6%	97.9%	98.1%	98.5%	98.8%	98.7%
Business	97.3%	97.3%	97.1%	96.9%	97.5%	98.1%	97.6%
Average Missed Installation (days)	5.5	5.0	5.2	5.7	4.7	4.3	4.3
Residence	5.4	5.1	5.0	5.9	4.9	4.2	4.1
Business	5.7	4.8	5.6	5.0	4.5	4.8	4.9
Trouble Reports per Thousand Lines	79.8	118.5	140.4	116.3	100.7	113.8	121.9
Total MSA	NA	NA	NA	NA	97.6	111.6	125.8
Total Non MSA	NA	NA	NA	NA	120.6	127.6	96.9
Total Residence	87.4	131.8	159.5	129.3	111.6	127.0	138.3
Total Business	60.7	85.2	92.8	83.8	73.6	80.9	81.0
Troubles Found per Thousand Lines	79.8	87.3	108.9	91.0	78.0	89.3	93.8
Repeat Troubles as a Pct. of Trouble Reports	0.0%	14.4%	12.5%	11.9%	11.3%	11.1%	13.0%
Total Residence	0.0%	14.5%	12.5%	11.9%	11.2%	11.0%	12.9%
Total Business	0.0%	14.3%	12.6%	12.2%	11.6%	11.7%	13.6%
Customer Complaints per Million Access Lines							
Residential	150.3	145.4	131.6	109.2	127.2	125.3	142.3
Business	87.3	101.3	80.8	85.1	94.2	96.7	81.1

Please refer to text for notes and data qualifications

Table 8 (b): NYNEX -- Switch Downtime & Trunk Blocking

Reporting Period:	1Q'91	2Q'91	3Q'91	4Q'91	1Q'92	2Q'92	3Q'92
Total Access Lines in Thousands	14,629	14,629	14,629	14,629	14,779	14,780	14,780
Total Trunk Groups	1,176	1,127	1,078	1,035	988	963	932
Total Switches	1,164	1,157	1,128	1,126	1,311	1,315	1,321
Switches with Downtime							
Number of Switches	208	195	190	222	155	257	180
As a percentage of Total Switches	17.9%	16.9%	16.8%	19.7%	11.8%	19.5%	13.6%
Average Switch Downtime in seconds per Switch							
For All Occurrences	49.6	88.7	43.2	78.2	29.5	50.6	106.1
For Unscheduled Occurrences More than 2 Min.	30.3	66.5	27.6	49.7	10.4	17.3	88.8
For Unscheduled Downtime More than 2 Minutes							
Number of Occurrences	24	24	26	23	16	40	37
Occurrences per Million Access Lines	1.64	1.64	1.78	1.57	1.08	2.71	2.50
Average Outage Duration in Minutes	24.5	53.4	20.0	40.5	14.2	9.5	52.9
Average Lines Affected per Occurrence in Thousands	27.0	15.7	21.4	22.8	16.1	18.6	12.0
Outage Line-Minutes per Occurrence in Thousands	320	406	333	827	294	135	491
Outage Line-Minutes per Thousand Access Lines	525	666	591	1,299	318	365	1,230
For Scheduled Downtime More than 2 Minutes							
Number of Occurrences	103	86	72	99	82	118	82
Occurrences per Million Access Lines	7.04	5.88	4.92	6.77	5.55	7.98	5.55
Average Outage Duration in Minutes	3.1	3.6	3.2	4.8	4.4	5.5	3.8
Average Lines Affected per Occurrence in Thousands	26.4	24.3	23.6	27.1	29.3	25.2	27.4
Outage Line-Minutes per Occurrence in Thousands	81	82	75	118	121	93	86
Outage Line-Minutes per Thousand Access Lines	572	481	368	800	670	745	477
Pct. Trunk Grps. Exceeding Blocking Obj. 3 Months	0.00%	0.98%	2.23%	0.48%	0.71%	0.83%	1.18%

Please refer to text for notes and data qualifications

Table 8 (c): NYNEX -- Switch Downtime Causes

	REPORTING PERIOD:							
	1Q'91	2Q'91	3Q'91	4Q'91	1Q'92	2Q'92	3Q'92	
TOTAL NUMBER OF OUTAGES								
1. Scheduled	NA	NA	NA	NA	82	118	82	
2. Procedural Errors -- Telco. (Install./Maint.)	NA	NA	NA	NA	1	5	1	
3. Procedural Errors -- Telco. (Other)	NA	NA	NA	NA	0	0	5	
4. Procedural Errors -- System Vendors	NA	NA	NA	NA	1	1	3	
5. Procedural Errors -- Other Vendors	NA	NA	NA	NA	1	0	0	
6. Software Design	NA	NA	NA	NA	1	7	3	
7. Hardware Design	NA	NA	NA	NA	0	1	0	
8. Hardware Failure	NA	NA	NA	NA	7	16	13	
9. Acts of G-d	NA	NA	NA	NA	0	0	0	
10. Traffic Overload	NA	NA	NA	NA	0	0	0	
11. Environmental	NA	NA	NA	NA	1	2	0	
12. External Power Failure	NA	NA	NA	NA	0	0	0	
13. Massive Line Outage	NA	NA	NA	NA	0	5	0	
14. Remote	NA	NA	NA	NA	1	0	5	
15. Other/Unknown	NA	NA	NA	NA	3	3	7	
TOTAL OUTAGE LINE-MINUTES PER THOUSAND ACCESS LINES								
1. Scheduled	NA	NA	NA	NA	670.1	745.0	476.7	
2. Procedural Errors -- Telco. (Install./Maint.)	NA	NA	NA	NA	50.6	122.5	0.6	
3. Procedural Errors -- Telco. (Other)	NA	NA	NA	NA	0.0	0.0	148.9	
4. Procedural Errors -- System Vendors	NA	NA	NA	NA	10.2	4.7	404.6	
5. Procedural Errors -- Other Vendors	NA	NA	NA	NA	0.3	0.0	0.0	
6. Software Design	NA	NA	NA	NA	7.3	14.1	20.9	
7. Hardware design	NA	NA	NA	NA	0.0	1.0	0.0	
8. Hardware Failure	NA	NA	NA	NA	247.2	148.0	577.8	
9. Acts of G-d	NA	NA	NA	NA	0.0	0.0	0.0	
10. Traffic Overload	NA	NA	NA	NA	0.0	0.0	0.0	
11. Environmental	NA	NA	NA	NA	0.6	17.7	0.0	
12. External Power Failure	NA	NA	NA	NA	0.0	0.0	0.0	
13. Massive Line Outage	NA	NA	NA	NA	0.0	37.8	0.0	
14. Remote	NA	NA	NA	NA	0.2	0.0	67.8	
15. Other/Unknown	NA	NA	NA	NA	2.1	18.8	9.3	

Please refer to text for notes and data qualifications

Table 9 (a): Pacific Telesis -- Installation, Maintenance, & Customer Complaints

Reporting Period:	1Q'91	2Q'91	3Q'91	4Q'91	1Q'92	2Q'92	3Q'92
ACCESS SERVICES PROVIDED TO CARRIERS -- SWITCHED ACCESS							
Percent Installation Commitments Met	99.8%	99.3%	99.4%	99.8%	98.7%	99.0%	99.6%
Average Missed Installation (days)	24.3	5.0	7.1	6.2	6.3	4.9	3.8
Average Repair Interval (hours)	2.5	2.6	1.9	2.2	2.2	4.4	2.1
ACCESS SERVICES PROVIDED TO CARRIERS -- SPECIAL ACCESS							
Percent Installation Commitments Met	99.7%	99.9%	99.8%	99.7%	99.6%	98.9%	98.8%
Average Missed Installation (days)	2.7	4.6	1.9	2.4	4.3	3.8	3.2
Average Repair Interval (hours)	4.4	4.2	4.3	4.2	4.0	4.0	4.8
LOCAL SERVICES PROVIDED TO RESIDENTIAL AND BUSINESS CUSTOMERS							
Percent Installation Commitments Met	99.6%	99.7%	99.6%	99.6%	99.5%	99.5%	99.4%
Residence	99.6%	99.7%	99.6%	99.6%	99.5%	99.5%	99.4%
Business	99.8%	99.7%	99.8%	99.7%	99.5%	99.4%	99.4%
Average Missed Installation (days)	5.3	4.5	4.3	4.5	4.1	4.5	4.6
Residence	4.9	4.2	4.1	4.3	4.1	3.8	3.6
Business	8.1	6.0	6.0	5.9	4.1	5.7	6.7
Trouble Reports per Thousand Lines	68.4	52.4	55.0	54.6	69.3	52.4	53.3
Total MSA	NA	NA	NA	4039.9	68.7	51.5	52.7
Total Non MSA	NA	NA	NA	692.8	81.5	71.7	67.1
Total Residence	83.5	59.9	63.4	65.0	84.6	60.7	61.1
Total Business	44.1	40.4	41.4	37.9	43.0	38.1	40.0
Troubles Found per Thousand Lines	52.6	39.2	41.0	41.1	54.6	39.7	40.6
Repeat Troubles as a Pct. of Trouble Reports	14.1%	13.8%	14.3%	14.6%	15.5%	14.0%	14.0%
Total Residence	13.5%	12.7%	13.1%	13.7%	15.1%	13.1%	12.9%
Total Business	15.8%	16.6%	17.0%	16.9%	16.8%	16.5%	16.8%
Customer Complaints per Million Access Lines							
Residential	2.2	3.5	1.8	1.2	2.1	1.1	2.1
Business	0.4	1.4	0.2	0.2	0.6	1.3	0.6

Please refer to text for notes and data qualifications

Table 9 (b): Pacific Telesis – Switch Downtime & Trunk Blocking

Reporting Period:	1Q'91	2Q'91	3Q'91	4Q'91	1Q'92	2Q'92	3Q'92
Total Access Lines in Thousands	13,362	13,362	13,362	13,362	14,379	14,381	14,385
Total Trunk Groups	991	842	1,133	1,102	1,114	1,111	1,178
Total Switches	826	826	838	847	845	845	855
Switches with Downtime							
Number of Switches	91	74	52	101	126	292	143
As a percentage of Total Switches	11.0%	9.0%	6.2%	11.9%	14.9%	34.6%	16.7%
Average Switch Downtime in seconds per Switch							
For All Occurrences	197.1	163.8	68.6	122.7	97.9	264.9	45.2
For Unscheduled Occurrences More than 2 Min.	163.4	8,010.1	50.2	84.7	0.0	154.3	33.0
For Unscheduled Downtime More than 2 Minutes							
Number of Occurrences	17	19	14	10	0	13	8
Occurrences per Million Access Lines	1.27	1.42	1.05	0.75	0.00	0.90	0.56
Average Outage Duration in Minutes	132.3	5,803.8	50.1	119.5	NA	167.2	58.8
Average Lines Affected per Occurrence in Thousands	22.1	0.0	29.6	7.9	NA	47.7	24.1
Outage Line-Minutes per Occurrence in Thousands	1,915	0	430	1,780	NA	1,746	1,394
Outage Line-Minutes per Thousand Access Lines	2,436	0	451	1,332	NA	1,578	775
For Scheduled Downtime More than 2 Minutes							
Number of Occurrences	54	1	38	91	100	1	34
Occurrences per Million Access Lines	4.04	0.07	2.84	6.81	6.95	0.07	2.36
Average Outage Duration in Minutes	7.4	2.5	6.8	5.9	10.0	10.0	3.5
Average Lines Affected per Occurrence in Thousands	6.8	0.3	17.4	13.1	19.0	5.5	24.3
Outage Line-Minutes per Occurrence in Thousands	67	1	129	94	190	55	92
Outage Line-Minutes per Thousand Access Lines	270	0	367	638	1,323	4	217
Pct. Trunk Grps. Exceeding Blocking Obj. 3 Months	0.10%	0.12%	0.09%	0.00%	0.00%	0.00%	0.08%

Please refer to text for notes and data qualifications

Table 9 (c): Pacific Telesis -- Switch Downtime Causes

	REPORTING PERIOD:			1Q'91	2Q'91	3Q'91	4Q'91	1Q'92	2Q'92	3Q'92
TOTAL NUMBER OF OUTAGES										
1. Scheduled				NA	NA	NA	NA	100	1	34
2. Procedural Errors -- Telco. (Install./Maint.)				NA	NA	NA	NA	0	6	2
3. Procedural Errors -- Telco. (Other)				NA	NA	NA	NA	0	1	1
4. Procedural Errors -- System Vendors				NA	NA	NA	NA	0	1	1
5. Procedural Errors -- Other Vendors				NA	NA	NA	NA	0	0	0
6. Software Design				NA	NA	NA	NA	0	18	1
7. Hardware Design				NA	NA	NA	NA	0	0	0
8. Hardware Failure				NA	NA	NA	NA	0	12	2
9. Acts of G-d				NA	NA	NA	NA	0	0	0
10. Traffic Overload				NA	NA	NA	NA	0	1	0
11. Environmental				NA	NA	NA	NA	0	1	0
12. External Power Failure				NA	NA	NA	NA	0	0	0
13. Massive Line Outage				NA	NA	NA	NA	0	0	0
14. Remote				NA	NA	NA	NA	0	0	0
15. Other/Unknown				NA	NA	NA	NA	0	0	1
TOTAL OUTAGE LINE-MINUTES PER THOUSAND ACCESS LINES										
1. Scheduled				NA	NA	NA	NA	1,323.3	3.8	217.1
2. Procedural Errors -- Telco. (Install./Maint.)				NA	NA	NA	NA	0.0	411.2	13.5
3. Procedural Errors -- Telco. (Other)				NA	NA	NA	NA	0.0	23.9	402.2
4. Procedural Errors -- System Vendors				NA	NA	NA	NA	0.0	91.5	333.7
5. Procedural Errors -- Other Vendors				NA	NA	NA	NA	0.0	0.0	0.0
6. Software Design				NA	NA	NA	NA	0.0	717.2	1.0
7. Hardware design				NA	NA	NA	NA	0.0	0.0	0.0
8. Hardware Failure				NA	NA	NA	NA	0.0	275.6	15.9
9. Acts of G-d				NA	NA	NA	NA	0.0	0.0	0.0
10. Traffic Overload				NA	NA	NA	NA	0.0	15.4	0.0
11. Environmental				NA	NA	NA	NA	0.0	43.4	0.0
12. External Power Failure				NA	NA	NA	NA	0.0	0.0	0.0
13. Massive Line Outage				NA	NA	NA	NA	0.0	0.0	0.0
14. Remote				NA	NA	NA	NA	0.0	0.0	0.0
15. Other/Unknown				NA	NA	NA	NA	0.0	0.0	9.0

Please refer to text for notes and data qualifications

Table 10 (a): Southwestern Bell -- Installation, Maintenance, & Customer Complaints

Reporting Period:	1Q'91	2Q'91	3Q'91	4Q'91	1Q'92	2Q'92	3Q'92
ACCESS SERVICES PROVIDED TO CARRIERS -- SWITCHED ACCESS							
Percent Installation Commitments Met	99.0%	99.0%	99.4%	98.3%	98.5%	98.0%	98.2%
Average Missed Installation (days)	11.4	5.7	6.5	3.5	9.7	10.2	6.8
Average Repair Interval (hours)	1.1	1.5	10.9	10.5	2.7	2.1	NA
ACCESS SERVICES PROVIDED TO CARRIERS -- SPECIAL ACCESS							
Percent Installation Commitments Met	99.4%	99.4%	99.5%	99.5%	99.8%	99.4%	98.8%
Average Missed Installation (days)	6.1	5.0	2.8	4.6	5.2	3.4	4.0
Average Repair Interval (hours)	3.0	10.5	9.6	9.0	8.5	2.5	2.8
LOCAL SERVICES PROVIDED TO RESIDENTIAL AND BUSINESS CUSTOMERS							
Percent Installation Commitments Met	99.2%	99.4%	99.3%	99.4%	99.4%	99.4%	99.4%
Residence	99.3%	99.5%	99.4%	99.5%	99.5%	99.5%	99.5%
Business	98.5%	98.8%	98.6%	98.7%	98.8%	98.7%	98.6%
Average Missed Installation (days)	8.1	7.0	6.8	6.8	6.6	6.5	9.3
Residence	8.7	7.1	6.9	6.8	6.2	6.5	10.1
Business	5.5	6.6	6.7	6.7	7.7	6.3	6.6
Trouble Reports per Thousand Lines	72.6	86.3	84.0	76.8	69.5	77.1	74.4
Total MSA	NA	NA	NA	63.5	54.0	57.3	57.3
Total Non MSA	NA	NA	NA	135.6	144.5	172.4	156.7
Total Residence	82.4	99.0	96.8	88.9	79.9	89.6	86.4
Total Business	47.2	53.2	50.7	45.4	43.0	44.9	43.5
Troubles Found per Thousand Lines	55.4	66.3	64.6	58.8	53.9	59.9	58.2
Repeat Troubles as a Pct. of Trouble Reports	9.3%	9.5%	9.6%	9.2%	9.5%	8.8%	9.2%
Total Residence	9.4%	9.6%	9.7%	9.3%	9.7%	8.9%	9.4%
Total Business	8.7%	8.9%	9.0%	8.6%	8.7%	8.3%	8.7%
Customer Complaints per Million Access Lines							
Residential	10.7	13.0	10.6	8.0	10.6	11.2	15.2
Business	5.3	9.5	9.5	6.9	5.5	6.1	10.1

Please refer to text for notes and data qualifications

Table 10 (b): Southwestern Bell -- Switch Downtime & Trunk Blocking

Reporting Period:	1Q'91	2Q'91	3Q'91	4Q'91	1Q'92	2Q'92	3Q'92
Total Access Lines in Thousands	12,055	12,055	12,055	12,055	12,357	12,357	12,357
Total Trunk Groups	2,137	2,114	2,050	1,982	1,938	1,944	1,825
Total Switches	1,350	1,350	1,350	1,350	1,356	1,356	1,356
Switches with Downtime							
Number of Switches	11	231	262	212	327	458	242
As a percentage of Total Switches	0.8%	17.1%	19.4%	15.7%	24.1%	33.8%	17.8%
Average Switch Downtime in seconds per Switch							
For All Occurrences	31.8	83.3	53.9	117.1	31.8	121.6	40.3
For Unscheduled Occurrences More than 2 Min.	31.8	18.8	36.0	102.0	18.8	103.6	17.7
For Unscheduled Downtime More than 2 Minutes							
Number of Occurrences	11	16	23	19	53	58	49
Occurrences per Million Access Lines	0.91	1.33	1.91	1.58	4.29	4.69	3.97
Average Outage Duration in Minutes	65.1	26.5	35.2	120.8	8.0	40.4	8.2
Average Lines Affected per Occurrence in Thousands	11.3	5.8	7.1	11.5	10.1	8.3	10.3
Outage Line-Minutes per Occurrence in Thousands	547	213	185	327	76	189	97
Outage Line-Minutes per Thousand Access Lines	499	283	352	515	328	885	384
For Scheduled Downtime More than 2 Minutes							
Number of Occurrences	0	57	62	54	47	54	58
Occurrences per Million Access Lines	0.00	4.73	5.14	4.48	3.80	4.37	4.69
Average Outage Duration in Minutes	NA	6.5	4.2	4.3	3.1	3.7	4.5
Average Lines Affected per Occurrence in Thousands	NA	19.2	22.2	13.6	17.9	15.3	19.6
Outage Line-Minutes per Occurrence in Thousands	NA	129	82	43	48	67	84
Outage Line-Minutes per Thousand Access Lines	NA	612	423	193	183	291	395
Pct. Trunk Grps. Exceeding Blocking Obj. 3 Months	0.80%	0.80%	1.41%	1.26%	0.72%	1.08%	1.32%

Please refer to text for notes and data qualifications

Table 10 (c): Southwestern Bell -- Switch Downtime Causes

	REPORTING PERIOD:							
	1Q'91	2Q'91	3Q'91	4Q'91	1Q'92	2Q'92	3Q'92	
TOTAL NUMBER OF OUTAGES								
1. Scheduled	NA	NA	NA	NA	47	54	58	
2. Procedural Errors -- Telco. (Install./Maint.)	NA	NA	NA	NA	3	6	4	
3. Procedural Errors -- Telco. (Other)	NA	NA	NA	NA	1	2	0	
4. Procedural Errors -- System Vendors	NA	NA	NA	NA	0	1	0	
5. Procedural Errors -- Other Vendors	NA	NA	NA	NA	0	2	2	
6. Software Design	NA	NA	NA	NA	45	29	29	
7. Hardware Design	NA	NA	NA	NA	0	2	0	
8. Hardware Fallure	NA	NA	NA	NA	4	7	13	
9. Acts of G-d	NA	NA	NA	NA	0	3	0	
10. Traffic Overload	NA	NA	NA	NA	0	0	1	
11. Environmental	NA	NA	NA	NA	0	0	0	
12. External Power Fallure	NA	NA	NA	NA	0	0	0	
13. Massive Line Outage	NA	NA	NA	NA	0	2	0	
14. Remote	NA	NA	NA	NA	0	4	0	
15. Other/Unknown	NA	NA	NA	NA	0	0	0	
TOTAL OUTAGE LINE-MINUTES PER THOUSAND ACCESS LINES								
1. Scheduled	NA	NA	NA	NA	182.8	290.8	395.1	
2. Procedural Errors -- Telco. (Install./Maint.)	NA	NA	NA	NA	5.7	125.7	75.9	
3. Procedural Errors -- Telco. (Other)	NA	NA	NA	NA	3.6	5.5	0.0	
4. Procedural Errors -- System Vendors	NA	NA	NA	NA	0.0	2.8	0.0	
5. Procedural Errors -- Other Vendors	NA	NA	NA	NA	0.0	23.5	9.2	
6. Software Design	NA	NA	NA	NA	163.4	91.6	57.8	
7. Hardware design	NA	NA	NA	NA	0.0	4.3	0.0	
8. Hardware Fallure	NA	NA	NA	NA	155.0	326.9	157.1	
9. Acts of G-d	NA	NA	NA	NA	0.0	40.7	0.0	
10. Traffic Overload	NA	NA	NA	NA	0.0	0.0	84.2	
11. Environmental	NA	NA	NA	NA	0.0	0.0	0.0	
12. External Power Fallure	NA	NA	NA	NA	0.0	0.0	0.0	
13. Massive Line Outage	NA	NA	NA	NA	0.0	102.4	0.0	
14. Remote	NA	NA	NA	NA	0.0	162.1	0.0	
15. Other/Unknown	NA	NA	NA	NA	0.0	0.0	0.0	

Please refer to text for notes and data qualifications

Table 11 (a): US West -- Installation, Maintenance, & Customer Complaints

Reporting Period:	1Q'91	2Q'91	3Q'91	4Q'91	1Q'92	2Q'92	3Q'92
ACCESS SERVICES PROVIDED TO CARRIERS -- SWITCHED ACCESS							
Percent Installation Commitments Met	87.0%	91.4%	91.8%	93.2%	86.7%	88.8%	85.7%
Average Missed Installation (days)	26.8	26.5	19.4	24.5	7.4	15.2	8.8
Average Repair Interval (hours)	3.7	7.7	10.6	8.1	5.0	3.5	6.4
ACCESS SERVICES PROVIDED TO CARRIERS -- SPECIAL ACCESS							
Percent Installation Commitments Met	96.2%	96.7%	94.8%	96.0%	95.0%	95.9%	95.5%
Average Missed Installation (days)	12.4	13.9	17.1	12.2	17.5	15.9	10.6
Average Repair Interval (hours)	8.7	8.6	8.4	6.6	7.3	7.5	8.5
LOCAL SERVICES PROVIDED TO RESIDENTIAL AND BUSINESS CUSTOMERS							
Percent Installation Commitments Met	98.7%	98.6%	98.5%	98.4%	98.7%	98.6%	98.1%
Residence	98.9%	98.8%	98.7%	98.5%	98.9%	98.8%	98.3%
Business	97.5%	97.5%	97.3%	97.4%	97.6%	97.6%	96.9%
Average Missed Installation (days)	13.5	11.0	11.5	12.5	12.6	11.8	12.1
Residence	12.1	10.5	10.7	10.5	11.3	11.4	11.5
Business	14.7	12.5	13.6	18.1	15.9	13.2	13.9
Trouble Reports per Thousand Lines	69.3	65.4	70.8	59.3	54.5	60.2	66.6
Total MSA	NA	NA	NA	NA	52.8	56.4	62.3
Total Non MSA	NA	NA	NA	NA	59.6	71.8	79.7
Total Residence	79.6	72.1	77.8	65.3	59.2	66.7	74.3
Total Business	43.6	48.6	53.4	44.3	43.0	44.3	47.5
Troubles Found per Thousand Lines	56.9	52.5	56.1	46.6	42.8	47.9	53.0
Repeat Troubles as a Pct. of Trouble Reports	10.5%	14.2%	15.3%	14.3%	13.5%	13.6%	14.3%
Total Residence	10.2%	13.9%	14.7%	13.9%	12.9%	13.2%	13.9%
Total Business	11.4%	15.6%	17.3%	15.7%	15.3%	15.2%	15.9%
Customer Complaints per Million Access Lines							
Residential	32.4	39.5	45.3	49.9	50.2	55.8	74.7
Business	14.4	21.9	18.6	21.1	22.0	16.6	22.0

Please refer to text for notes and data qualifications

Table 11 (b): US West – Switch Downtime & Trunk Blocking

Reporting Period:	1Q'91	2Q'91	3Q'91	4Q'91	1Q'92	2Q'92	3Q'92
Total Access Lines In Thousands	12,576	12,576	12,576	12,576	12,886	12,888	12,888
Total Trunk Groups	3,810	3,819	3,678	3,525	3,412	3,335	3,146
Total Switches	1,778	1,774	1,777	1,775	1,824	1,819	1,829
Switches with Downtime							
Number of Switches	118	144	91	97	85	242	140
As a percentage of Total Switches	6.6%	8.1%	5.1%	5.5%	4.7%	13.3%	7.7%
Average Switch Downtime in seconds per Switch							
For All Occurrences	130.8	120.6	61.1	43.4	132.4	78.6	53.3
For Unscheduled Occurrences More than 2 Min.	39.6	111.1	40.3	35.5	130.6	71.7	41.9
For Unscheduled Downtime More than 2 Minutes							
Number of Occurrences	5	25	8	14	35	40	14
Occurrences per Million Access Lines	0.40	1.99	0.64	1.11	2.72	3.10	1.09
Average Outage Duration in Minutes	234.8	131.3	149.3	75.1	113.4	54.3	91.3
Average Lines Affected per Occurrence in Thousands	4.7	12.6	15.6	20.3	9.9	15.5	14.6
Outage Line-Minutes per Occurrence in Thousands	1,111	2,094	1,307	1,459	919	567	554
Outage Line-Minutes per Thousand Access Lines	442	4,162	831	1,624	2,496	1,761	601
For Scheduled Downtime More than 2 Minutes							
Number of Occurrences	0	0	0	0	0	1	54
Occurrences per Million Access Lines	0.00	0.00	0.00	0.00	0.00	0.08	4.19
Average Outage Duration in Minutes	NA	NA	NA	NA	NA	10.0	5.1
Average Lines Affected per Occurrence in Thousands	NA	NA	NA	NA	NA	5.5	7.4
Outage Line-Minutes per Occurrence in Thousands	NA	NA	NA	NA	NA	55	32
Outage Line-Minutes per Thousand Access Lines	NA	NA	NA	NA	NA	4	133
Pct. Trunk Grps. Exceeding Blocking Obj. 3 Months	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Please refer to text for notes and data qualifications

Table 11 (c): US West -- Switch Downtime Causes

	REPORTING PERIOD:				1Q'92	2Q'92	3Q'92
	1Q'91	2Q'91	3Q'91	4Q'91	1Q'92	2Q'92	3Q'92
TOTAL NUMBER OF OUTAGES							
1. Scheduled	NA	NA	NA	NA	0	1	54
2. Procedural Errors -- Telco. (Install./Maint.)	NA	NA	NA	NA	4	6	1
3. Procedural Errors -- Telco. (Other)	NA	NA	NA	NA	0	1	1
4. Procedural Errors -- System Vendors	NA	NA	NA	NA	2	1	1
5. Procedural Errors -- Other Vendors	NA	NA	NA	NA	0	0	2
6. Software Design	NA	NA	NA	NA	11	18	1
7. Hardware Design	NA	NA	NA	NA	4	0	0
8. Hardware Failure	NA	NA	NA	NA	9	12	5
9. Acts of G-d	NA	NA	NA	NA	0	0	0
10. Traffic Overload	NA	NA	NA	NA	0	1	0
11. Environmental	NA	NA	NA	NA	0	1	0
12. External Power Failure	NA	NA	NA	NA	3	0	0
13. Massive Line Outage	NA	NA	NA	NA	0	0	0
14. Remote	NA	NA	NA	NA	1	0	0
15. Other/Unknown	NA	NA	NA	NA	1	0	3
TOTAL OUTAGE LINE-MINUTES PER THOUSAND ACCESS LINES							
1. Scheduled	NA	NA	NA	NA	0.0	4.3	132.6
2. Procedural Errors -- Telco. (Install./Maint.)	NA	NA	NA	NA	452.2	458.9	18.3
3. Procedural Errors -- Telco. (Other)	NA	NA	NA	NA	0.0	26.6	22.5
4. Procedural Errors -- System Vendors	NA	NA	NA	NA	50.0	102.0	246.2
5. Procedural Errors -- Other Vendors	NA	NA	NA	NA	0.0	0.0	147.0
6. Software Design	NA	NA	NA	NA	974.5	800.3	0.3
7. Hardware design	NA	NA	NA	NA	498.6	0.0	0.0
8. Hardware Failure	NA	NA	NA	NA	444.5	307.5	107.8
9. Acts of G-d	NA	NA	NA	NA	0.0	0.0	0.0
10. Traffic Overload	NA	NA	NA	NA	0.0	17.2	0.0
11. Environmental	NA	NA	NA	NA	0.0	48.5	0.0
12. External Power Failure	NA	NA	NA	NA	51.8	0.0	0.0
13. Massive Line Outage	NA	NA	NA	NA	0.0	0.0	0.0
14. Remote	NA	NA	NA	NA	9.1	0.0	0.0
15. Other/Unknown	NA	NA	NA	NA	15.4	0.0	59.2

Please refer to text for notes and data qualifications

Table 12 (a): Contel Companies -- Installation, Maintenance, & Customer Complaints

Reporting Period:	1Q'91	2Q'91	3Q'91	4Q'91	1Q'91	2Q'92	3Q'92
ACCESS SERVICES PROVIDED TO CARRIERS -- SWITCHED ACCESS							
Percent Installation Commitments Met	99.7%	99.7%	99.2%	99.5%	98.6%	92.3%	99.5%
Average Missed Installation (days)	1.7	0.4	1.6	4.5	1.8	5.2	1.3
Average Repair Interval (hours)	1.4	1.6	1.6	NA	NA	NA	NA
ACCESS SERVICES PROVIDED TO CARRIERS -- SPECIAL ACCESS							
Percent Installation Commitments Met	99.9%	99.6%	99.4%	99.0%	98.1%	96.8%	98.3%
Average Missed Installation (days)	0.7	1.5	4.6	2.3	2.3	3.3	2.9
Average Repair Interval (hours)	NA	NA	NA	NA	NA	NA	NA
LOCAL SERVICES PROVIDED TO RESIDENTIAL AND BUSINESS CUSTOMERS							
Percent Installation Commitments Met	NA	NA	99.8%	99.8%	99.8%	99.7%	98.9%
Residence	99.7%	99.8%	99.8%	99.8%	99.8%	99.8%	99.0%
Business	NA	NA	99.6%	99.7%	99.7%	99.4%	98.5%
Average Missed Installation (days)	NA	NA	4.0	3.9	2.9	5.2	3.8
Residence	NA	NA	3.3	4.0	2.5	2.9	3.4
Business	NA	NA	6.0	3.9	3.3	5.4	5.0
Trouble Reports per Thousand Lines	41.8	51.7	47.7	40.1	33.9	35.3	43.6
Total MSA	NA	NA	NA	37.2	33.8	31.8	38.6
Total Non MSA	NA	NA	NA	41.5	34.1	37.0	45.8
Total Residence	41.8	51.7	46.2	34.8	31.9	33.7	43.0
Total Business	NA	NA	53.8	63.3	43.1	42.9	46.3
Troubles Found per Thousand Lines	36.0	45.7	40.2	34.9	28.1	29.3	34.4
Repeat Troubles as a Pct. of Trouble Reports	6.9%	6.5%	5.7%	6.8%	6.3%	5.0%	5.6%
Total Residence	6.9%	6.5%	6.4%	8.3%	7.1%	5.6%	6.0%
Total Business	NA	NA	3.1%	3.2%	3.6%	3.2%	3.8%
Customer Complaints per Million Access Lines							
Residential	29.1	10.6	2.3	5.4	12.5	22.5	29.8
Business	14.2	4.1	7.7	5.7	28.5	8.0	19.6

Please refer to text for notes and data qualifications

Table 12 (b): Contel Companies -- Switch Downtime & Trunk Blocking

Reporting Period:	1Q'91	2Q'91	3Q'91	4Q'91	1Q'91	2Q'92	3Q'92
Total Access Lines in Thousands	2,688	2,657	2,716	2,755	2,731	2,760	2,791
Total Trunk Groups	0	0	221	654	880	779	786
Total Switches	3,194	3,217	3,240	1,591	1,591	1,623	1,600
Switches with Downtime							
Number of Switches	619	690	734	235	198	166	184
As a percentage of Total Switches	19.4%	21.4%	22.7%	14.8%	12.4%	10.2%	11.5%
Average Switch Downtime in seconds per Switch							
For All Occurrences	398.5	450.3	445.8	155.7	92.0	112.9	339.5
For Unscheduled Occurrences More than 2 Min.	177.2	214.4	213.3	129.2	49.4	82.1	323.4
For Unscheduled Downtime More than 2 Minutes							
Number of Occurrences	175	186	235	99	67	51	65
Occurrences per Million Access Lines	65.10	70.00	86.52	35.93	24.53	18.48	23.29
Average Outage Duration in Minutes	53.9	61.8	49.0	34.6	19.6	43.5	132.7
Average Lines Affected per Occurrence in Thousands	1.8	1.3	1.5	1.9	0.8	1.0	0.8
Outage Line-Minutes per Occurrence in Thousands	58	48	61	63	11	43	82
Outage Line-Minutes per Thousand Access Lines	3,756	3,384	5,235	2,255	264	787	1,919
For Scheduled Downtime More than 2 Minutes							
Number of Occurrences	228	238	251	94	70	57	35
Occurrences per Million Access Lines	84.82	89.57	92.42	34.12	25.63	20.65	12.54
Average Outage Duration in Minutes	18.2	7.8	10.1	7.0	15.1	13.4	9.2
Average Lines Affected per Occurrence in Thousands	3.6	2.9	2.6	2.6	1.0	1.8	1.5
Outage Line-Minutes per Occurrence in Thousands	24	18	15	16	19	33	9
Outage Line-Minutes per Thousand Access Lines	2,003	1,603	1,344	534	483	677	114
Pct. Trunk Grps. Exceeding Blocking Obj. 3 Months	NA	NA	0.00%	0.00%	0.00%	1.03%	1.91%

Please refer to text for notes and data qualifications

Table 12 (c): Contel Companies -- Switch Downtime Causes

	REPORTING PERIOD:				1Q'91	2Q'92	3Q'92
TOTAL NUMBER OF OUTAGES							
1. Scheduled	NA	NA	NA	NA	70	57	35
2. Procedural Errors -- Telco. (Install./Maint.)	NA	NA	NA	NA	2	3	6
3. Procedural Errors -- Telco. (Other)	NA	NA	NA	NA	0	0	1
4. Procedural Errors -- System Vendors	NA	NA	NA	NA	0	0	4
5. Procedural Errors -- Other Vendors	NA	NA	NA	NA	3	0	3
6. Software Design	NA	NA	NA	NA	1	17	16
7. Hardware Design	NA	NA	NA	NA	0	0	0
8. Hardware Failure	NA	NA	NA	NA	41	23	18
9. Acts of G-d	NA	NA	NA	NA	2	4	9
10. Traffic Overload	NA	NA	NA	NA	0	2	0
11. Environmental	NA	NA	NA	NA	0	1	6
12. External Power Failure	NA	NA	NA	NA	4	0	1
13. Massive Line Outage	NA	NA	NA	NA	0	1	0
14. Remote	NA	NA	NA	NA	14	0	1
15. Other/Unknown	NA	NA	NA	NA	0	0	0
TOTAL OUTAGE LINE-MINUTES PER THOUSAND ACCESS LINES							
1. Scheduled	NA	NA	NA	NA	482.7	677.5	114.3
2. Procedural Errors -- Telco. (Install./Maint.)	NA	NA	NA	NA	4.0	9.5	97.6
3. Procedural Errors -- Telco. (Other)	NA	NA	NA	NA	0.0	0.0	5.2
4. Procedural Errors -- System Vendors	NA	NA	NA	NA	0.0	0.0	8.8
5. Procedural Errors -- Other Vendors	NA	NA	NA	NA	12.6	0.0	219.5
6. Software Design	NA	NA	NA	NA	1.5	57.6	155.5
7. Hardware design	NA	NA	NA	NA	0.0	0.0	0.0
8. Hardware Failure	NA	NA	NA	NA	147.9	304.6	259.9
9. Acts of G-d	NA	NA	NA	NA	7.4	43.5	821.1
10. Traffic Overload	NA	NA	NA	NA	0.0	1.0	0.0
11. Environmental	NA	NA	NA	NA	0.0	1.3	342.6
12. External Power Failure	NA	NA	NA	NA	73.3	0.0	1.7
13. Massive Line Outage	NA	NA	NA	NA	0.0	369.4	0.0
14. Remote	NA	NA	NA	NA	17.4	0.0	7.6
15. Other/Unknown	NA	NA	NA	NA	0.0	0.0	0.0

Please refer to text for notes and data qualifications

Table 13 (a): GTE Companies -- Installation, Maintenance, & Customer Complaints

Reporting Period:	1Q'91	2Q'91	3Q'91	4Q'91	1Q'91	2Q'92	3Q'92
ACCESS SERVICES PROVIDED TO CARRIERS -- SWITCHED ACCESS							
Percent Installation Commitments Met	96.7%	97.0%	97.1%	97.6%	98.1%	98.1%	98.0%
Average Missed Installation (days)	5.1	3.5	3.7	4.1	2.9	6.8	4.4
Average Repair Interval (hours)	8.3	8.2	9.6	7.8	3.8	2.8	5.6
ACCESS SERVICES PROVIDED TO CARRIERS -- SPECIAL ACCESS							
Percent Installation Commitments Met	97.4%	98.2%	98.3%	98.8%	99.1%	98.4%	98.2%
Average Missed Installation (days)	14.5	8.4	7.1	4.8	5.3	6.1	3.0
Average Repair Interval (hours)	6.9	5.7	5.1	5.4	5.2	5.7	6.2
LOCAL SERVICES PROVIDED TO RESIDENTIAL AND BUSINESS CUSTOMERS							
Percent Installation Commitments Met	95.9%	96.4%	96.0%	96.3%	98.2%	97.5%	97.8%
Residence	96.3%	96.8%	96.5%	96.9%	98.3%	97.7%	97.9%
Business	94.0%	94.4%	93.4%	93.0%	97.6%	95.9%	97.4%
Average Missed Installation (days)	5.9	4.5	3.4	2.8	3.2	2.6	2.2
Residence	6.1	4.3	2.9	2.8	2.9	2.5	2.3
Business	6.4	5.6	4.0	3.3	3.7	3.1	2.8
Trouble Reports per Thousand Lines	72.5	72.8	69.6	58.8	61.1	60.2	65.6
Total MSA	NA	NA	NA	56.1	62.2	57.1	59.0
Total Non MSA	NA	NA	NA	64.5	58.8	66.6	84.5
Total Residence	77.6	78.3	75.5	64.7	66.9	66.9	73.7
Total Business	55.1	54.4	49.9	40.8	43.0	39.6	41.2
Troubles Found per Thousand Lines	53.2	54.0	57.5	48.4	43.3	45.8	51.3
Repeat Troubles as a Pct. of Trouble Reports	14.8%	14.8%	11.1%	10.0%	15.1%	10.0%	10.7%
Total Residence	14.8%	14.8%	11.2%	10.0%	15.3%	10.0%	10.7%
Total Business	14.8%	14.8%	10.7%	10.0%	14.5%	9.9%	10.5%
Customer Complaints per Million Access Lines							
Residential	14.6	16.4	18.4	16.5	14.8	15.9	17.8
Business	12.5	17.0	17.7	15.3	16.1	11.8	14.7

Please refer to text for notes and data qualifications

Table 13 (b): GTE Companies – Switch Downtime & Trunk Blocking

Reporting Period:	1Q'91	2Q'91	3Q'91	4Q'91	1Q'91	2Q'92	3Q'92
Total Access Lines in Thousands	12,193	12,201	12,419	12,576	12,679	12,752	12,861
Total Trunk Groups	1,555	1,482	1,481	1,506	1,522	1,512	1,518
Total Switches	2,685	2,694	2,699	2,697	2,744	2,812	2,840
Switches with Downtime							
Number of Switches	550	484	398	293	330	466	387
As a percentage of Total Switches	20.5%	18.0%	14.7%	10.9%	12.0%	16.6%	13.6%
Average Switch Downtime in seconds per Switch							
For All Occurrences	95.3	92.8	132.5	95.8	82.9	99.1	86.0
For Unscheduled Occurrences More than 2 Min.	72.7	75.7	117.2	83.6	57.7	72.2	72.7
For Unscheduled Downtime More than 2 Minutes							
Number of Occurrences	139	151	135	87	52	69	65
Occurrences per Million Access Lines	11.40	12.38	10.87	6.92	4.10	5.41	5.05
Average Outage Duration in Minutes	23.4	22.5	39.1	43.2	50.8	49.0	53.0
Average Lines Affected per Occurrence in Thousands	14.0	12.7	7.0	10.7	5.8	6.1	5.8
Outage Line-Minutes per Occurrence in Thousands	264	190	213	120	207	288	180
Outage Line-Minutes per Thousand Access Lines	3,011	2,346	2,320	832	847	1,557	911
For Scheduled Downtime More than 2 Minutes							
Number of Occurrences	87	61	62	57	63	61	40
Occurrences per Million Access Lines	7.14	5.00	4.99	4.53	4.97	4.78	3.11
Average Outage Duration in Minutes	8.0	8.7	7.6	7.2	15.0	15.2	8.8
Average Lines Affected per Occurrence in Thousands	14.8	16.8	12.2	9.1	8.7	9.9	12.6
Outage Line-Minutes per Occurrence in Thousands	150	182	88	102	106	173	107
Outage Line-Minutes per Thousand Access Lines	1,071	907	437	464	526	828	334
Pct. Trunk Grps. Exceeding Blocking Obj. 3 Months	0.13%	0.13%	0.00%	0.00%	0.00%	0.07%	0.00%

Please refer to text for notes and data qualifications

Table 13 (c): GTE Companies -- Switch Downtime Causes

	REPORTING PERIOD:				1Q'91	2Q'92	3Q'92
TOTAL NUMBER OF OUTAGES							
1. Scheduled	NA	NA	NA	NA	63	61	40
2. Procedural Errors -- Telco. (Install./Maint.)	NA	NA	NA	NA	1	5	7
3. Procedural Errors -- Telco. (Other)	NA	NA	NA	NA	2	1	0
4. Procedural Errors -- System Vendors	NA	NA	NA	NA	0	1	0
5. Procedural Errors -- Other Vendors	NA	NA	NA	NA	1	3	3
6. Software Design	NA	NA	NA	NA	3	19	16
7. Hardware Design	NA	NA	NA	NA	0	0	0
8. Hardware Failure	NA	NA	NA	NA	34	32	31
9. Acts of G-d	NA	NA	NA	NA	2	2	1
10. Traffic Overload	NA	NA	NA	NA	0	0	0
11. Environmental	NA	NA	NA	NA	0	5	6
12. External Power Failure	NA	NA	NA	NA	1	0	0
13. Massive Line Outage	NA	NA	NA	NA	1	0	1
14. Remote	NA	NA	NA	NA	7	1	0
15. Other/Unknown	NA	NA	NA	NA	0	0	0
TOTAL OUTAGE LINE-MINUTES PER THOUSAND ACCESS LINES							
1. Scheduled	NA	NA	NA	NA	525.9	828.0	333.8
2. Procedural Errors -- Telco. (Install./Maint.)	NA	NA	NA	NA	3.6	30.9	82.6
3. Procedural Errors -- Telco. (Other)	NA	NA	NA	NA	55.8	1.8	0.0
4. Procedural Errors -- System Vendors	NA	NA	NA	NA	0.0	30.8	0.0
5. Procedural Errors -- Other Vendors	NA	NA	NA	NA	113.6	24.5	10.7
6. Software Design	NA	NA	NA	NA	103.7	107.5	127.4
7. Hardware design	NA	NA	NA	NA	0.0	0.0	0.0
8. Hardware Failure	NA	NA	NA	NA	536.4	1,240.8	584.0
9. Acts of G-d	NA	NA	NA	NA	4.6	15.5	13.6
10. Traffic Overload	NA	NA	NA	NA	0.0	0.0	0.0
11. Environmental	NA	NA	NA	NA	0.0	40.8	71.2
12. External Power Failure	NA	NA	NA	NA	0.3	0.0	0.0
13. Massive Line Outage	NA	NA	NA	NA	3.2	0.0	21.4
14. Remote	NA	NA	NA	NA	26.2	64.4	0.0
15. Other/Unknown	NA	NA	NA	NA	0.0	0.0	0.0

Please refer to text for notes and data qualifications

Table 14 (a): United Companies -- Installation, Maintenance, & Customer Complaints

Reporting Period:	1Q'91	2Q'91	3Q'91	4Q'91	1Q'92	2Q'92	3Q'92
ACCESS SERVICES PROVIDED TO CARRIERS -- SWITCHED ACCESS							
Percent Installation Commitments Met	99.4%	99.9%	98.9%	99.8%	99.3%	99.7%	99.0%
Average Missed Installation (days)	NA	NA	NA	NA	NA	NA	NA
Average Repair Interval (hours)	NA	0.9	2.5	2.1	2.3	1.6	1.6
ACCESS SERVICES PROVIDED TO CARRIERS -- SPECIAL ACCESS							
Percent Installation Commitments Met	99.7%	99.4%	99.1%	86.1%	99.4%	99.0%	99.3%
Average Missed Installation (days)	NA	NA	NA	NA	NA	NA	NA
Average Repair Interval (hours)	5.0	2.9	2.4	3.1	3.6	3.3	3.2
LOCAL SERVICES PROVIDED TO RESIDENTIAL AND BUSINESS CUSTOMERS							
Percent Installation Commitments Met	98.8%	99.1%	99.0%	99.2%	99.2%	99.2%	99.0%
Residence	98.9%	99.1%	99.1%	99.3%	99.2%	99.3%	99.1%
Business	98.4%	98.5%	98.3%	98.5%	98.8%	98.7%	98.5%
Average Missed Installation (days)	12.3	7.5	8.0	8.9	14.1	8.0	6.7
Residence	13.5	7.5	7.8	8.5	15.6	7.9	6.5
Business	11.2	7.9	8.6	10.2	11.9	9.0	7.7
Trouble Reports per Thousand Lines	63.7	69.6	72.4	62.1	58.8	63.1	76.9
Total MSA	NA	NA	NA	NA	NA	NA	NA
Total Non MSA	NA	NA	NA	NA	NA	NA	NA
Total Residence	65.0	71.5	74.8	64.2	60.5	65.4	80.5
Total Business	59.0	62.3	63.8	55.0	52.7	55.0	64.0
Troubles Found per Thousand Lines	47.5	52.8	54.6	45.6	42.9	47.4	58.1
Repeat Troubles as a Pct. of Trouble Reports	9.0%	9.1%	9.9%	9.0%	8.4%	8.5%	9.6%
Total Residence	9.5%	9.7%	10.4%	9.5%	8.7%	8.9%	10.2%
Total Business	6.7%	7.0%	7.7%	7.2%	7.1%	6.6%	7.2%
Customer Complaints per Million Access Lines							
Residential	15.5	15.9	12.7	12.6	14.0	8.7	15.4
Business	20.8	17.4	18.2	11.2	15.6	16.4	12.9

Please refer to text for notes and data qualifications

Table 14 (b): United Companies -- Switch Downtime & Trunk Blocking

Reporting Period:	1Q'91	2Q'91	3Q'91	4Q'91	1Q'92	2Q'92	3Q'92
Total Access Lines in Thousands	3,980	4,002	4,017	4,073	4,105	4,146	4,168
Total Trunk Groups	2,092	2,101	2,050	1,973	1,755	1,760	1,707
Total Switches	962	971	983	995	1,007	1,346	1,360
Switches with Downtime							
Number of Switches	71	77	88	86	130	187	143
As a percentage of Total Switches	7.4%	7.9%	9.0%	8.6%	12.9%	13.9%	10.5%
Average Switch Downtime in seconds per Switch							
For All Occurrences	107.2	211.9	170.0	133.3	241.3	137.2	165.8
For Unscheduled Occurrences More than 2 Min.	87.9	204.5	151.2	95.0	216.3	113.9	154.8
For Unscheduled Downtime More than 2 Minutes							
Number of Occurrences	37	41	52	42	73	100	107
Occurrences per Million Access Lines	9.30	10.24	12.94	10.31	17.78	24.12	25.67
Average Outage Duration in Minutes	38.1	80.7	47.6	37.5	49.7	25.5	32.8
Average Lines Affected per Occurrence in Thousands	6.8	4.0	4.9	3.8	2.6	2.3	3.8
Outage Line-Minutes per Occurrence in Thousands	157	285	131	114	68	59	77
Outage Line-Minutes per Thousand Access Lines	1,464	2,920	1,701	1,179	1,206	1,429	1,989
For Scheduled Downtime More than 2 Minutes							
Number of Occurrences	37	10	38	43	77	83	51
Occurrences per Million Access Lines	9.30	2.50	9.46	10.56	18.76	20.02	12.24
Average Outage Duration in Minutes	4.1	4.2	6.8	5.8	5.2	5.6	4.5
Average Lines Affected per Occurrence in Thousands	12.7	14.3	12.3	12.2	6.6	4.0	5.7
Outage Line-Minutes per Occurrence in Thousands	52	73	56	75	29	21	22
Outage Line-Minutes per Thousand Access Lines	483	181	533	787	536	428	265
Pct. Trunk Grps. Exceeding Blocking Obj. 3 Months	0.00%	0.67%	0.44%	0.35%	0.23%	0.17%	0.41%

Please refer to text for notes and data qualifications

Table 14 (c): United Companies -- Switch Downtime Causes

	REPORTING PERIOD:			1Q'91	2Q'91	3Q'91	4Q'91	1Q'92	2Q'92	3Q'92
TOTAL NUMBER OF OUTAGES										
1. Scheduled				NA	NA	NA	NA	77	83	51
2. Procedural Errors -- Telco. (Install./Maint.)				NA	NA	NA	NA	11	5	11
3. Procedural Errors -- Telco. (Other)				NA	NA	NA	NA	0	2	0
4. Procedural Errors -- System Vendors				NA	NA	NA	NA	0	3	12
5. Procedural Errors -- Other Vendors				NA	NA	NA	NA	1	2	0
6. Software Design				NA	NA	NA	NA	30	57	45
7. Hardware Design				NA	NA	NA	NA	0	0	1
8. Hardware Failure				NA	NA	NA	NA	11	15	14
9. Acts of G-d				NA	NA	NA	NA	3	8	11
10. Traffic Overload				NA	NA	NA	NA	1	0	0
11. Environmental				NA	NA	NA	NA	0	0	0
12. External Power Failure				NA	NA	NA	NA	4	2	3
13. Massive Line Outage				NA	NA	NA	NA	0	0	0
14. Remote				NA	NA	NA	NA	0	4	3
15. Other/Unknown				NA	NA	NA	NA	12	2	7
TOTAL OUTAGE LINE-MINUTES PER THOUSAND ACCESS LINES										
1. Scheduled				NA	NA	NA	NA	535.9	427.7	264.8
2. Procedural Errors -- Telco. (Install./Maint.)				NA	NA	NA	NA	170.7	76.7	278.5
3. Procedural Errors -- Telco. (Other)				NA	NA	NA	NA	0.0	1.3	0.0
4. Procedural Errors -- System Vendors				NA	NA	NA	NA	0.0	181.1	103.5
5. Procedural Errors -- Other Vendors				NA	NA	NA	NA	203.8	159.2	0.0
6. Software Design				NA	NA	NA	NA	87.1	268.2	220.3
7. Hardware design				NA	NA	NA	NA	0.0	0.0	61.6
8. Hardware Failure				NA	NA	NA	NA	241.3	356.7	629.9
9. Acts of G-d				NA	NA	NA	NA	27.8	347.3	484.9
10. Traffic Overload				NA	NA	NA	NA	8.7	0.0	0.0
11. Environmental				NA	NA	NA	NA	0.0	0.0	0.0
12. External Power Failure				NA	NA	NA	NA	386.9	17.9	31.6
13. Massive Line Outage				NA	NA	NA	NA	0.0	0.0	0.0
14. Remote				NA	NA	NA	NA	0.0	17.0	40.6
15. Other/Unknown				NA	NA	NA	NA	80.0	3.4	138.4

Please refer to text for notes and data qualifications

APPENDIX A

Items Monitored by the ARMIS 43-05 Filing

The raw data received by the Commission in the new ARMIS 43-05 filings is grouped into the following sections that are referred to as "tables." This data is available to the public on an electronic bulletin board system referred to in the text of the report. A special spreadsheet "template" file, which can be downloaded from the bulletin board along with the data, is available to view the data in tabular format with appropriate headings and data labels.

Table 1 --

This group of data covers interexchange switched, high speed special and all special access services

1. Total Number of Orders or Circuits -- Total installation orders or circuits for the reporting period
2. Percent Commitments Met -- Percentage of total installation orders met by the commitment date
3. Average Missed Commitment in days -- Average interval in calendar days between the commitment date and the day of service for all commitments not met during the reporting period
4. Total Trouble Reports -- Total number of circuit specific trouble reports during the current reporting period
5. Average Repair interval -- Average interval in hours to the nearest tenth from the time of the reporting carrier's receipt of the trouble report to the time of acceptance by the complaining interexchange carrier or customer.

Table 2--

This group of data covers local service installations for residence and business customers subcategorized by MSA (Metropolitan Statistical Area or area including at least one city with 50,000 population or urbanized area of 50,000 population in an area of at least 100,000 population) and non MSA

1. Installation Orders -- Local Service orders or circuits

2. Percent Commitments Met -- Percentage of service orders completed by commitment date
3. Average Missed Commitment -- average interval in days from commitment date to provision of service
4. Total Access Lines -- All classifications of local access lines including individual lines, party lines, PBX and Centrex access, coin access, foreign exchange, and WATS access
5. Initial Trouble Reports -- Complaints concerning service quality made by customers or users to local exchange carrier
6. Repeat Trouble Reports -- Trouble reports remaining unresolved within 30 days of the initial trouble report
7. No Trouble Found -- Trouble report investigation finding no discernible problem

Table 3 --

Trunk group blockage preventing call completion

1. Total Trunk Groups -- Total common trunk groups between local exchange carrier end office and access tandem carrying feature group B, C, or D access traffic for which the reporting carrier is responsible
2. Groups Measured -- Common trunk groups measured during current reporting period
3. Groups Exceeding Servicing Threshold for Three Months -- number of Common trunk groups exceeding access tariff measured blocking threshold (usually 2% for equal access and 3% for non equal access trunks) for 3 or more consecutive months
4. Groups Exceeding Servicing Threshold for One Month -- Number of common trunks exceeding access tariff measured blocking threshold for current month
5. Groups Exceeding Design Blocking Objectives for Three Months Common trunk groups exceeding equipment design blocking objectives (.5% to 1% during time-consistent busy hour of busy season) for 3 or more consecutive months.

Table 4 --

Total Switch Downtime -- Time when call processing capability for an end office is lost, number of incidents of less than 2 minutes duration, number of switches experiencing downtime, and number and percent of incidents of less than 2 minutes duration not scheduled.

1. Categorized by MSA and Non MSA
2. Categorized by Switch Size: under 1,000 lines, 1,000 to 4,999 lines, 5,000 to 9,999 lines, 10,000 to 19,999 lines and over 20,000 lines

Table 4a --

Itemized occurrences of more than 2 minutes duration downtime

1. Explanation -- cause of downtime or scheduled, unscheduled
2. Switch identification -- CLLI or commn language identification of switch
3. Access Lines -- Access Lines served by switched and affected
4. MSA -- y if in MSA, n if not in MSA
5. Duration -- duration of outage in minutes to nearest tenth

Table 5 --

Service Quality Complaints -- Service complaints made to federal or state regulatory agencies categorized by MSA, Non MSA and total

1. Business access lines in thousands
2. Federal complaints business users
3. State complaints business users
4. Residential access lines in thousands
5. Federal complaints residential users
6. State complaints residential users

APPENDIX B

Observations, Notes, and Data Qualifications

This report is primarily designed to facilitate a focus on data quality and to enable both the Commission and the companies to improve on the massive ARMIS data collection and evaluation process. While many obvious problems have been identified and corrected, the data presented here is subject to future updating which may correct errors identified by this process. The author wishes to thank the companies and Commission staff for assisting in this process to date and making this report possible, especially considering the magnitude of the effort.

While it is premature to draw any conclusions about data trends with only seven quarters of data submitted to date, several observations can be made. It should be clearly understood that these observations are tentative at this point since the reliability of the data is subject to further review. Presenting the data here should provide a basis for gaining a better understanding of the data and should assist the companies in improving the quality of their data.

Because of the relatively short time span and limited number of data points, it is useful at this stage to examine typical ranges of some of the composite levels reported over the seven ARMIS 43-05 data measurements included in this report. This provides some feel for the typical levels of the reported items and is presented here to assist in further understanding the data. The reader is cautioned that the ranges presented below did not result from an in depth analysis of the data and that some of the ranges may be distorted by data from individual companies.

Companies nationwide appear to typically experience about 70 to 80 troubles per thousand access lines with residences experiencing nearly twice the trouble rate as businesses. About 9% to 12% of the trouble reports tend to be associated with repeat occurrences. Businesses appear to experience a slightly higher repeat trouble rate than residences.

Nationwide in a typical 3 month period about 1,500 to 2,500 switching machines representing roughly 10% to 15% of the total switches tend to experience outages. Of these there tend to be 400 to 600 incidents of outages lasting more than 2 minutes. A parameter developed to compare the impact of these outages is line-minutes per thousand access lines. The number of lines involved in each outage is multiplied by 1,000 times the outage duration and summed over all occurrences and then divided by the number of access lines. The concept of line-minutes is best understood by the following numerical example. A figure of 9,000 line-minutes would be produced if a total of 9,000 lines were out of service for 1 minute or if 900 lines were out of service for ten minutes. From

data submitted to date this has typically resulted in up to 1,500 line-minutes per thousand access lines during a representative quarter. Unscheduled outage line-minutes tend to be significantly higher than the level of scheduled outage line-minutes. Isolated outage levels of more than 2,000 line-minutes per thousand access lines have been noted in the data.

From the data one can see that installations not provided by a commitment date are typically completed up to 7 days late. However, fewer than 2% of all installations tend to be in this category. For repair of access service the companies tend to respond within 5 hours for switched access services and within 6 hours for special access services. Response times in the 1 to 3 hour range frequently appear in the data. Data for customer complaints to regulatory agencies tends to vary widely by company. Residential complaints typically appear to be higher than business complaints. Finally, less than about 0.5% of trunk groups tend to exceed the blocking objectives for the 3 month measurement period.

While the new quality of service reporting in the ARMIS 43-05 filings resolves many of the concerns associated with the data summarized in earlier quality of service reports and represents an improvement of the reporting requirements, the user of this data should be aware of several pitfalls in its use.

First, and most important, one should be aware that this data is very new. Although many problems with the data have already been identified and corrected through the many correction filings by the carriers, there are still potential flaws in the data that will only become apparent when users subject the data to further analysis or compare it to other sources. The process by which the data is checked should improve over time as the Commission and the companies progress over a normal learning curve. Although the data has been subject to an initial screening by the Commission, a number of data flaws that have not yet been corrected have been made evident by preparation of the data in this form. Holding company totals or composites and in some cases trended data items have been calculated by the Commission in a consistent manner from the filed data. Some of these data items may not necessarily match company filed totals or composites. This is primarily due to different weighting methods. In addition, the carriers have updated their earlier filings numerous times. The data presented here reflects the latest updates filed with the Industry Analysis Division as of January 1993. The reader should therefore be aware that it is possible that some of the problems evident in the data presented here have already been corrected.

Second, although much thought has gone into the definitions of the data items, some erroneous or omitted responses have been identified. Some of these have resulted from an improper reading of the instructions or a misunderstanding of the data definitions. Many of these errors have been corrected by updated filings. In a few instances data from subsequent quarters may reflect the

correction or omission. Some of the errors may be in the process of being corrected or may not be evident until one performs further analysis with the data. We expect this report to assist elimination of errors which were not identified by earlier screenings or which can only be identified by the companies themselves. We therefore have generally not deleted or adjusted suspect data. The process of data correction should follow a normal learning curve and be resolved over time as such problems are identified and corrected.

Third, although the Commission has gone to some lengths to standardize the data items, one should not be lulled into the assumption that comparable data items for different companies are exactly the same. Different companies may have different procedures for collecting and presenting the data which may affect the quality and meaning of the data provided to the Commission. Earlier quality summary reports have cautioned against direct comparisons between companies, and have suggested that comparisons should only be made on the basis of trends. While this still holds to some extent, an attempt to remove indexing and preprocessing of data as much as possible should somewhat alleviate this problem. Nonetheless, caution should be exercised when attempting to make direct comparisons.

Finally, one should be cautious in responding too quickly to glitches or apparent sudden changes in the data especially before getting a sense of the data. Reliability data is expected to be somewhat more erratic than the other data items. Even here, longer term patterns may be identifiable which could assist the companies in gaining a better insight into any identified problems. Such insights should lead to more cost effective solutions. Although the fact that the data is now being collected on a quarterly basis permits observation of problems sooner, it also may lead an observer to draw conclusions prematurely. For example, data errors or company responses requiring more than one quarter to be implemented may result in apparent abnormalities which in fact are normal occurrences. As more experience is gained in looking at the data one should eventually be able to recognize anomalies from normal seasonal patterns and other patterns in the data reflecting the companies' normal response in maintaining adequate service to customers. As noted in earlier quality reports, one should still view the data in the context of trend analysis and consider internal company response times in dealing with problems.

The data presented here is available on a more detailed study area basis, usually a state or a portion of a state. Further analysis supplemented with data from state regulatory commissions may be needed to address the existence of localized problems. It is hoped that this report will assist in identifying errors or problems with the data and will ultimately result in improvements in the data collection and validation process.