February 26, 1993

### FCC RELEASES REPORT ON QUALITY OF SERVICE

The FCC has released a report entitled "Quality of Service for the Local Operating Companies Aggregated to the Holding Company Level."

This report updates and expands on two previous reports issued on quality of service in June 1990 and July 1991 and now summarizes data submitted by the Bell Operating Companies, the GTE companies, the Contel companies and the United companies on their quality of service. Much of the data has only been filed since 1991 and heretofore was available to the public only in disaggregated form. Because of the voluminous nature of the paper filings, it has been made available to the public in machine-readable form on the Federal-State Link electronic bulletin board operated by the Industry Analysis Division. The bulletin board can be reached by dialing (202) 632-1361 from an appropriately equipped personal computer.

Included in the report is selected data that has been trended for seven quarters between the first quarter of 1991 and the third quarter of 1992. In addition, customer perception survey data and dial tone delay data from the previous reports are included.

This report is available in the reference room maintained by the Common Carrier Bureau's Industry Analysis Division at 1250 23rd Street, N.W., Plaza Level. Copies may be purchased by calling ITS, Inc. at (202) 857-3800.

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Quality of Service for the Local Operating Companies

Aggregated to the Holding Company Level

By Jonathan M. Kraushaar

Common Carrier Bureau -- Industry Analysis Division

Federal Communications Commission

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## 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.

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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 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 transmision 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 suggesions 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

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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

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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
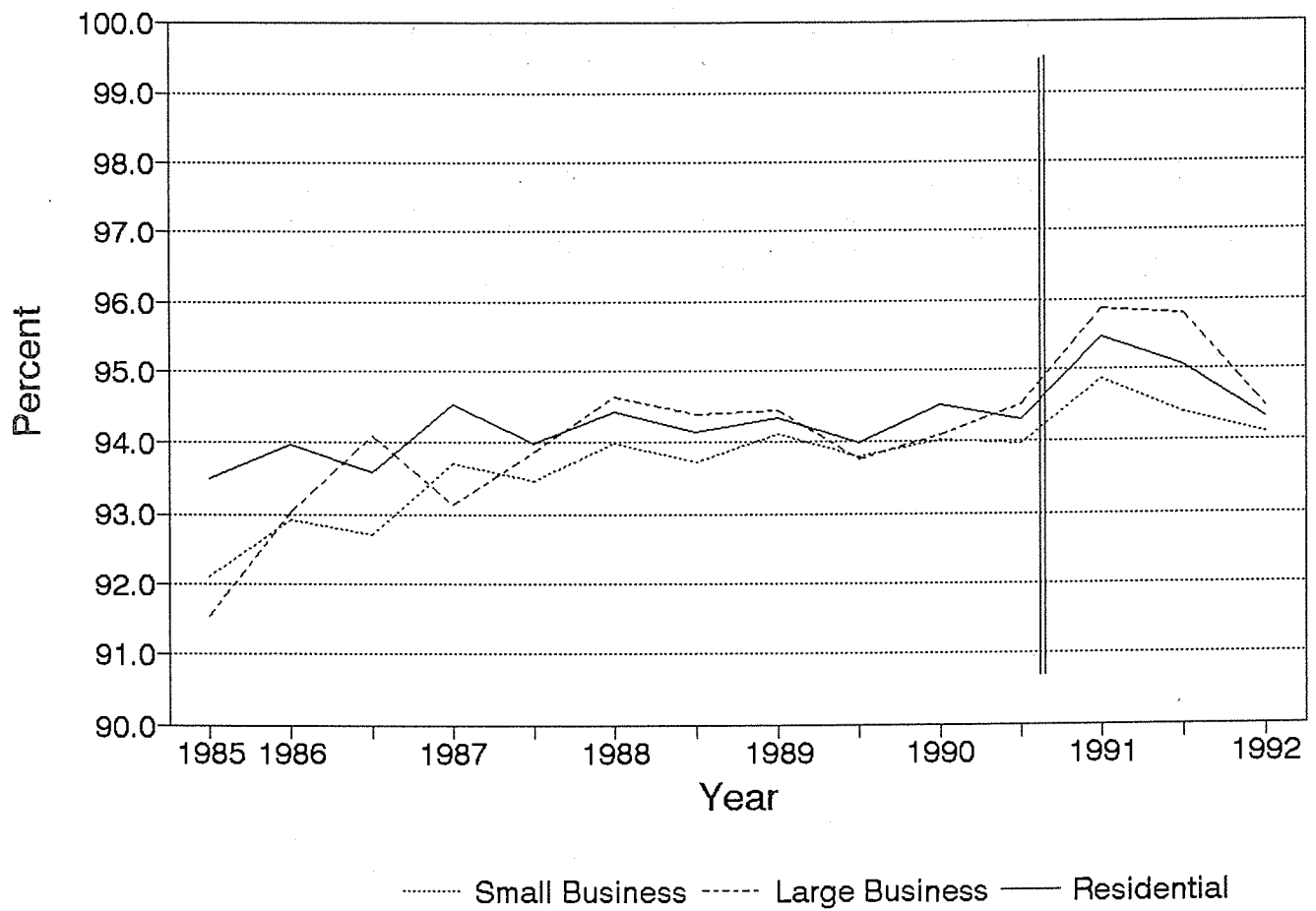
# Dial Tone Response
**Percent of Offices Meeting Standards**

## Table 1:  Percent of Customers Satisfied -- Residential

| Company/Year | 1985 | 1986 | | 1987 | | 1988 | | 1989 | | 1990 | | 1991 | | 1992 |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | | 1 H | 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 | 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 | 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 | 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 1 H | 2 H | 1987 1 H | 2 H | 1988 1 H | 2 H | 1989 1 H | 2 H | 1990 1 H | 2 H | 1991 1 H | 2 H | 1992 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 1 H | 2 H | 1987 1 H | 2 H | 1988 1 H | 2 H | 1989 1 H | 2 H | 1990 1 H | 2 H | 1991 1 H | 2 H | 1992 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'91 | 2Q'91 | 3Q'91 | 4Q'91 | 1Q'92 | 2Q'92 | 3Q'92 |
|---|---|---|---|---|---|---|---|
| **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 | 81 |
| Outage Line-Minutes per Thousand Access Lines | 111 | 271 | 148 | 500 | 434 | 103 | 124 |
| Pct. Trunk Grps. Exceeding Blocking Obj. 3 Months | 0.05% | 0.14% | 0.13% | 0.25% | 0.23% | 0.04% | 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 Failure | 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 Failure | 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 Failure | 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 Failure | 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'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'91 | 3Q'91 | 4Q'91 | 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'91 | 3Q'91 | 4Q'91 | 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 form 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

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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.  Intial 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.

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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

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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.