



# NEWS

News media Information 202 / 418-0500  
Fax-On-Demand 202 / 418-2830  
Internet: <http://www.fcc.gov>  
<ftp.fcc.gov>

**Federal Communications Commission**  
**445 12th Street, S.W.**  
**Washington, D. C. 20554**

---

This is an unofficial announcement of Commission action. Release of the full text of a Commission order constitutes official action. See MCI v. FCC, 515 F 2d 385 (D.C. Circ 1974).

---

FOR IMMEDIATE RELEASE:  
January 30, 2003

NEWS MEDIA CONTACT:  
Michael Balmoris 202-418-0253  
Email: [mbalmori@fcc.gov](mailto:mbalmori@fcc.gov)

## **FCC RELEASES REPORT ON QUALITY OF SERVICE OF LOCAL PHONE COMPANIES**

Washington, D. C. – The FCC has released a report entitled *Quality of Service of the Local Operating Companies*. This report summarizes quality of service data for 2001 submitted by major incumbent local operating companies, which collectively serve about 90% of the nation's access lines. The data include measures of service quality provided to business and residential end-user customers, as well as service quality provided to access customers, namely interexchange carriers.

The following is a summary of some key quality of service indicators for 2001 and 2000:

- In virtually all areas of measured performance highlighted in the report, most companies improved in 2001 compared to 2000.
- Average residential installation intervals for individual companies ranged from a low of 0.6 business days to a high of 3.2 business days in 2001, an improvement from a low of 0.8 business days and a high of 3.9 business days in 2000.
- Average initial out-of-service residential repair intervals for individual companies ranged from a low of 13.5 hours to a high of 26.8 hours in 2001, an improvement compared to a low of 13.0 hours and a high of 49.0 hours in 2000.
- For companies included in this report, the average complaint level declined from approximately 250 complaints per million lines in 2000 to approximately 150 complaints per million lines in 2001.

The report is available for reference in the FCC's Reference Information Center, Courtyard Level, 445 12th Street, S.W. Copies may be purchased by calling Qualex International at (202) 863-2893. The report can be downloaded from the **FCC-State Link** Internet site at <http://www.fcc.gov/wcb/stats> on the World Wide Web.

-- FCC --

For additional information, contact the Industry Analysis and Technology Division, Wireline Competition Bureau at (202) 418-0940, or for users of TTY equipment, call 202-418-0484.

# QUALITY OF SERVICE OF THE LOCAL OPERATING COMPANIES

JANUARY 2003

Industry Analysis and Technology Division  
Wireline Competition Bureau  
Federal Communications Commission



---

This report was authored by Jonathan M. Kraushaar of the Industry Analysis and Technology Division of the FCC's Wireline Competition Bureau. The author can be reached at (202) 418-0947; e-mail address: [jkrausha@fcc.gov](mailto:jkrausha@fcc.gov); TTY: (202) 418-0484. This report is available for reference in the FCC's Reference Information Center, Courtyard Level, 445 12th Street, S.W. Copies may be purchased by calling Qualex International at (202) 863-2893. The report can be downloaded [file name QUAL01.PDF or QUAL01.ZIP] from the **FCC-State Link** internet site at <http://www.fcc.gov/wcb/stats> on the World Wide Web.

## Introduction

This report summarizes various kinds of service quality data filed by certain incumbent local exchange telephone companies for calendar year 2001. The data track both the quality of service provided to retail customers (business and residential) and to access customers (interexchange companies).<sup>1</sup>

The Federal Communications Commission (FCC or Commission) does not impose service quality standards on communications common carriers. Rather, the Commission annually monitors data submitted by incumbent carriers that collectively serve about 90% of the nation's access lines and periodically publishes this report on quality of service trends.<sup>2</sup> The data contained in this report provide a summary of recent quality of service indicators including customer-initiated trouble reports and company responses. This report publishes information about company performance and statistics about company responsiveness to network failures and associated consumer complaints. We include, in the charts and tables following the text, comparative data about various service parameters including installation, maintenance, switch downtime, and trunk blocking, along with associated customer perception data.

## Background

At the end of 1983, anticipating AT&T's imminent divestiture of its local operating companies, the Commission directed the Common Carrier Bureau<sup>3</sup> to establish a monitoring program that would provide a basis for detecting adverse trends in network service quality. Throughout 1985, the Bureau modified the service quality reporting requirements to reduce unnecessary paperwork and to ensure that needed information would be provided in a more uniform format. The data were received semiannually, typically in March and August, and formed the basis for FCC summary reports published in June 1990 and July 1991.

---

<sup>1</sup> In 2001 the Commission sought comment on whether to modify service quality reporting requirements. *2000 Biennial Regulatory Review -- Telecommunications Service Quality Reporting Requirements*, CC Docket No. 00-229, Notice of Proposed Rulemaking, 15 FCC Rcd 22113 (2000); *Performance Measurements and Standards for Interstate Access Services et al.*, CC Docket No. 01-321 et al., Notice of Proposed Rulemaking, 16 FCC Rcd 20896 (2001).

<sup>2</sup> The last report was released in late 2001, which covered data for 1999 and 2000. See Industry Analysis Division, Common Carrier Bureau, Federal Communications Commission, *Quality of Service of the Local Operating Companies* (rel. Dec. 5, 2001).

<sup>3</sup> As the result of a reorganization in March 2002, Common Carrier Bureau functions described in this report are now performed by the Wireline Competition Bureau. In this report, references to the Common Carrier Bureau apply to activities prior to the above date.

With the implementation of price-cap regulation for certain local exchange carriers, the Commission made several major changes to the service quality monitoring program beginning with reports filed in 1991. First, the Commission expanded the class of companies filing reports to include non-Bell carriers subject to price-cap regulation.<sup>4</sup> Second, the Commission included service quality reports in the Automated Reporting Management Information System (ARMIS).<sup>5</sup> Third, the Commission ordered significant changes to the kinds of data these carriers had to report.<sup>6</sup> Following these developments, the Commission released service quality summary reports in February 1993, March 1994, March 1996, September 1998, December 1999, and December 2001.

In 1996, pursuant to requirements in the Telecommunications Act of 1996,<sup>7</sup> the Commission reduced the frequency of the filed data from quarterly to annual submissions.<sup>8</sup> In May 1997, relevant definitions were clarified further. These changes have been reflected starting with data covering the 1997 calendar year.

### The Data

The source data used in preparing this report may be useful for further investigation and can be readily extracted from the ARMIS 43-05 and 43-06 tables on the online database maintained on the FCC website at [www.fcc.gov/wcb/armis/db](http://www.fcc.gov/wcb/armis/db). The data are also available from Qualex International, at (202) 863-2893. This data summary report is available in the FCC's Reference

---

<sup>4</sup> *Policy and Rules Concerning Rates for Dominant Carriers*, CC Docket No. 87-313, Second Report and Order, 5 FCC Rcd 6786, 6827-31 (1990) (*LEC Price Cap Order*) (establishing the current service quality monitoring program and incorporating the service quality reports into the ARMIS program), Erratum, 5 FCC Rcd 7664 (1990), *modified on recon.*, 6 FCC Rcd 2637 (1991), *aff'd sub nom.*, *Nat'l Rural Telecom Ass'n v. FCC*, 988 F.2d 174 (D.C. Cir. 1993). The incumbent local exchange carriers that are rate of return regulated are not subject to federal service quality reporting requirements.

<sup>5</sup> *LEC Price Cap Order*, 5 FCC Rcd at 6827-30. The ARMIS database includes a variety of mechanized company financial and infrastructure reports in addition to the quality-of-service reports. Most data are available disaggregated to a study area or state level.

<sup>6</sup> *Id.*; *Policy and Rules Concerning Rates for Dominant Carriers*, CC Docket No. 87-313, Memorandum Opinion and Order, 6 FCC Rcd 2974 (1991) (*Service Quality Order*), *recon.*, 6 FCC Rcd 7482 (1991). Previously the Common Carrier Bureau had collected data on five basic service quality measurements from the Bell Operating Companies. These were customer satisfaction levels, dial tone delay, transmission quality, on time service orders, and percentage of call blocking due to equipment failure.

<sup>7</sup> *Telecommunications Act of 1996*, Pub. L. No. 104-104, 110 Stat. 56.

<sup>8</sup> Orders implementing filing frequency and other reporting requirement changes associated with implementation of the Telecommunications Act of 1996 are as follows: *Implementation of the Telecommunications Act of 1996: Reform of Filing Requirements and Carrier Classifications*, CC Docket No. 96-193, Order and Notice of Proposed Rulemaking, 11 FCC Rcd 11716 (1996); *Revision of ARMIS Quarterly Report (FCC Report 43-01) et al.*, CC Docket No. 96-193, Order, 11 FCC Rcd 22508 (1996); *Policy and Rules Concerning Rates for Dominant Carriers*, CC Docket No. 87-313, Memorandum Opinion and Order, 12 FCC Rcd 8115 (1997); *Revision of ARMIS Annual Summary Report (FCC Report 43-01) et al.*, AAD No. 95-91, Order, 12 FCC Rcd 21831 (1997).

Information Center (Courtyard Level) at 445 12th Street, SW, Washington, D.C. 20554.

The data presented in this report summarize the most recent ARMIS 43-05 and 43-06 carrier reports. The tables accompanying this report highlight many of the data elements now received by the Commission. Tables include data from each major holding company of the regional Bell companies, along with GTE which is now part of Verizon, and Sprint.<sup>9</sup>

The data items summarized in the tables are based on information aggregated by the companies on a study area or state basis as well as a fairly extensive amount of raw data about switching outages, including outage durations and number of lines affected. A number of useful measures were calculated from these raw data records such as outage line-minutes per access line and average outage duration.

The data summarized in the tables of this report contain sums, or weighted averages, of data reported at the state or study area level of aggregation. Such data are useful in assessing overall trends. Where information is reported in terms of percentages or average time intervals, data presented in the tables are based on a composite of individual study area data that are calculated by weighting the percentage or time interval figures. For example, we weight the percent of commitments met by the corresponding number of orders provided in the filed data.<sup>10</sup>

The key items contained in the tables are summarized in greater detail in Appendix A. Installation, maintenance and customer complaint data are shown in Tables 1a and 2a, and switch downtime and trunk servicing data are shown in Tables 1b and 2b. Installation and maintenance data are presented separately for services provided to end users and for interexchange carrier access facilities. Outage data categorized by cause are shown in Table 1c and 2c. Customer perception data are contained in Tables 1d and 2d and the associated survey sample sizes are contained in Tables 1e and 2e. The tables cover data for 2001. Six charts are included in this report which highlight company trends. Chart 1 summarizes trends in complaint levels, Chart 2 summarizes trends in initial trouble reports, Chart 3 summarizes trends in residential installation dissatisfaction,

---

<sup>9</sup> In February 1992, United Telecommunications Inc. became Sprint Corporation (Local Division); and in March 1993, Sprint Corporation acquired Centel Corporation. Bell Atlantic and NYNEX merged in August 1997, and then merged with GTE in 2000. Verizon Communications is shown separately for GTE, Verizon North (the former NYNEX companies), and Verizon South (the former Bell Atlantic Companies). SBC, Pacific Telesis and Ameritech are shown separately despite the merger of SBC and Pacific Telesis in April 1997 and SBC and Ameritech in October 1999.

<sup>10</sup> Company composite data were typically recalculated on a consistent basis from study area data, particularly to assure that averages are calculated in a consistent manner. Although the companies have prepared their own company rollups, we have discovered various inconsistencies or inaccuracies in some of these company-prepared composites. We have therefore weighted data involving percentages or time intervals in order to arrive at the more consistent composite data shown in the tables and expect that the companies will want to review their procedures for preparing composites. Parameters used for weighting in this report were appropriate for the composite being calculated and were based on the raw data filed by the carriers but are not necessarily shown in the tables. For example, we calculate composite installation interval data by summing the individual study area results multiplied by the number of installation orders reported for each study area and then dividing the result by the total number of orders.

Chart 4 summarizes trends in the percentage of installation commitments met, Chart 5 summarizes trends in residential installation intervals, and Chart 6 summarizes trends in residential repair dissatisfaction. Some of the companies presented in these charts exhibit trends continuing for 2 or more years.<sup>11</sup>

### Qualifications and Analysis

This report presents data submitted by the carriers in the 2002 ARMIS filings covering calendar year 2001. This data does not include service quality information relating to services provided over facilities leased or contracted by other entities as unbundled network elements. As in past reports, the following discussion provides general qualifications for using the quality of service data.

Overall, we caution readers to be aware of potential methodological shortcomings and inconsistencies associated with use of the service quality data presented in this report. First, carriers periodically revise submitted data if problems are discovered. Data presented here reflect valid updates available as of September 2002. Second, although the data are subject to screening by Commission staff, and certain problems have been corrected in carrier-submitted revised filings, there may still remain some inaccuracies in the data that could become apparent when users subject the data to further analysis or compare it with data from other sources.

Third, except where noted, Commission staff has recalculated holding company totals or data composites, and these might not match company-filed totals or composites.<sup>12</sup> This is primarily due to calculation variations regarding, *e.g.*, percentages or average intervals that require weighting in the calculations. We caution the reader that some of the problems that may be discovered in connection with the data presented here resulted from differences in aggregation methodologies, errors including data irregularities, or data revisions that either could not be used or were not available in time for use in this report.<sup>13</sup>

---

<sup>11</sup> Chart 1 data is from ARMIS 43-05 report, rows 330-332 and 320-322, column da.

Chart 2 data is from ARMIS 43-05 report, row 141, column aj.

Chart 3 data is from ARMIS 43-06 report, row 40, column ac.

Chart 4 data is from ARMIS 43-05 report, row 132 column aj.

Chart 5 data is from ARMIS 43-05 report, row 134, column af.

Chart 6 data is from ARMIS 43-06 report, row 60, column ac.

<sup>12</sup> Recent Commission orders have modified definitions in the data collection process in an attempt to remove perceived ambiguities. We note, however, that because the tables in this report contain many items whose composites are calculated as weighted sums or averages, we have recalculated a number of company composites associated with the tables in this report to improve consistency. Where available, data in the charts, were compiled directly from company filed composites or were drawn from data in the attached tables as noted.

<sup>13</sup> We have noted in some cases that total access lines as reported in the last column of row 140 does not

Fourth, outage measurements should be considered in context. For example, the average number of lines affected per event would tend to favor a company with a larger number of smaller or remote switches with lower line counts per switch, while the average outage duration might favor a company with larger switches. Thus, using the average number of lines per event measurement, one 25,000 line switch that is out of service for five minutes would appear to have a greater service impact than ten 2,500 line switches that are out of service for five minutes. That is why we present a grouping of outage measurements that include the outage line-minutes per event and per 1,000 access lines. We have also added the number of outages per switch as another metric for measuring a company's performance.

Except in the calculation of company composites, we have not, in most cases, deleted or adjusted data.<sup>14</sup> It is expected that the process of data correction will continue as problems are further identified and corrected. In this year's report, the average out of service repair interval was added to the tables. Unlike data in Chart 7 which used company calculated composites, the data in the tables were recalculated from individual study area data using a technique of weighted averages.

This report presents data that reflect several different ways of measuring switch outages, including line-minutes-per-access line and line-minutes-per-event. Outage line-minutes is a measure that combines both duration and number of lines affected in a single parameter. We derived this parameter from the raw data by multiplying the number of lines involved in each outage by the duration of the outage and summing the resulting values. We then divided the resulting sum by the total number of access lines or events to obtain average outage line-minutes per access line and outage line minutes per event respectively. Because outage measurements tend to exhibit more variability than other measurements, we have shown in the tables several ways of presenting the results. Improvements in responding to outages by some of the reporting companies may be associated with efforts to improve switch reliability, including working with manufacturers to replace poorly performing switches and to improve performance of existing ones.

Because performance within any single data category may fluctuate over time, evaluating a given company's performance by looking at data trends in more than one measurement is an effective way to evaluate performance which can account for the typical lead times that might be needed to correct certain problems. In a regime of annual reporting, adverse trends in complaint levels of significant duration can serve as a warning indicator of problems, particularly where problem areas are not included in the more objective measurements. For these reasons, and because data are now filed annually rather than quarterly at the Federal level, we recommend the use of trend analysis of service quality and complaint data along with pattern analysis to get a holistic assessment of a company's overall performance.

---

agree with the sum of the first column entry of rows 320 and 330. Variations in access line and switch counts may affect normalized outage data reported in the tables. In some instances irregularities inherent in the underlying data at the study area level may have resulted in other undetected errors in the calculated composites.

<sup>14</sup> For example, we note in Chart 4 that Bell South Residential Installation Commitments Met have been at nearly 100 percent over the past 2 years. The data shown are rounded to the nearest tenth of a percent.

Finally, one of the measurements for which service quality data are collected is the number of service affecting troubles reported by customers. Because of the various classifications of trouble reports, the Commission's May 1997 Order addressed problems relating to subtleties in the definitions associated with the terms "initial" and "repeat" trouble reports.<sup>15</sup> This and other issues were addressed in an October 1993 Order modifying filing requirements and were the subject of further clarification and expansion in subsequent orders leading to the reporting of a new category of recurring trouble reports.<sup>16</sup>

We note that changes in service quality measurements also may be dictated by changes in technology and that the companies themselves periodically may change their internal measurement procedures, from which regulatory data are drawn, adding difficulty to analyzing measurements over time.<sup>17</sup> In some cases procedural changes in the data measurement and collection process may be subtle enough so that they are not immediately noticeable in the data. Significant changes in company data collection procedures, however, usually result in noticeable and abrupt changes in the data. It appears that at least some of these changes are not reported to the Commission. These factors tend to limit the number of years of data available to track service quality trends and may affect the frequency and availability of summary reports that are prepared by the Commission. Although the Commission has made every effort to standardize and rationalize data reporting over the years, given the number of changes to the reporting regimes and predictable future changes, one should not assume exact comparability on all measurements for data sets as they are presented year by year. In spite of all of the foregoing, deteriorating or improving service quality trends that persist for more than a year or two usually become obvious and can provide a critical record for state and local regulators.

It is our experience that service reliability and to a lesser extent customer satisfaction data are, by their nature, subject to greater volatility than other types of company data. As a general rule, one should be cautious about interpreting individual measurements until one develops a sense of what the data measurements disclose about company performance. Because data tends to fluctuate from year to year, data interpretation must take into consideration filing intervals and lag times in data filing and preparation. This year's data exhibits improvement in

---

<sup>15</sup> This issue was addressed in prior Commission orders. *Policy and Rules Concerning Rates for Dominant Carriers*, CC Docket No. 87-313, Memorandum Opinion and Order, 12 FCC Rcd 8115, 8133 (1997); *Revision of ARMIS Annual Summary Report (FCC Report 43-01) et al.*, AAD No. 95-91, Order, 12 FCC Rcd 21831, 21835 (1997); Federal Communications Commission, Industry Analysis Division, *Quality-of-Service for the Local Operating Companies Aggregated to the Holding Company Level*, released March 22, 1996 (mimeo 60268).

<sup>16</sup> *Policy and Rules Concerning Rates for Dominant Carriers*, AAD No. 92-47, Memorandum Opinion and Order, 8 FCC Rcd 7474, para. 26 and attachments (1993); *Revision of ARMIS Annual Summary Report (FCC Report 43-01) et al.*, AAD 95-91, 12 FCC Rcd 21831 (introducing reporting of "subsequent" troubles).

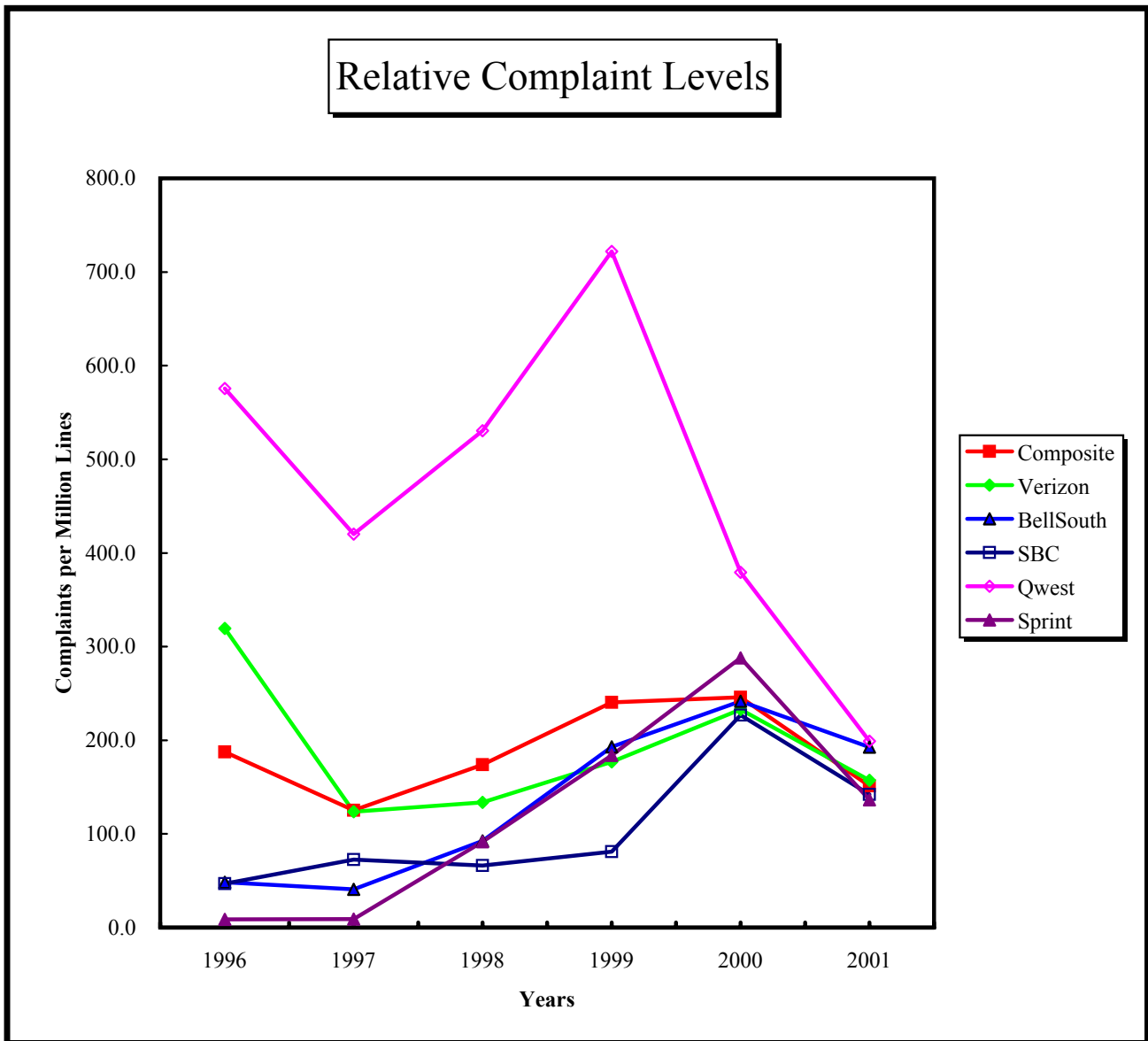
<sup>17</sup> For those interested in trending customer perception data in this report with that available in prior Reports it should be noted that Bell Atlantic, for example, reported changes to its customer perception surveys that were reflected in its post-1990 data, and Pacific Telesis had noted changes effective in January 1992.



customer feedback measurements that previously revealed longer term deterioration. It also shows modest improvement in some of the objective measurements. These objective measurements include trouble reports, commitments met, and installation/repair intervals.

Because there appears to be widespread improvement this year in a number of elements shown in the charts, these improvements may be due to factors affecting the industry as a whole, such as general economic conditions, the level of competitive activity, or changes in regulation. It will thus be important to continue to monitor quality of service in the future to determine whether the improvements noted this year are the beginning of a favorable trend or a short term aberration.

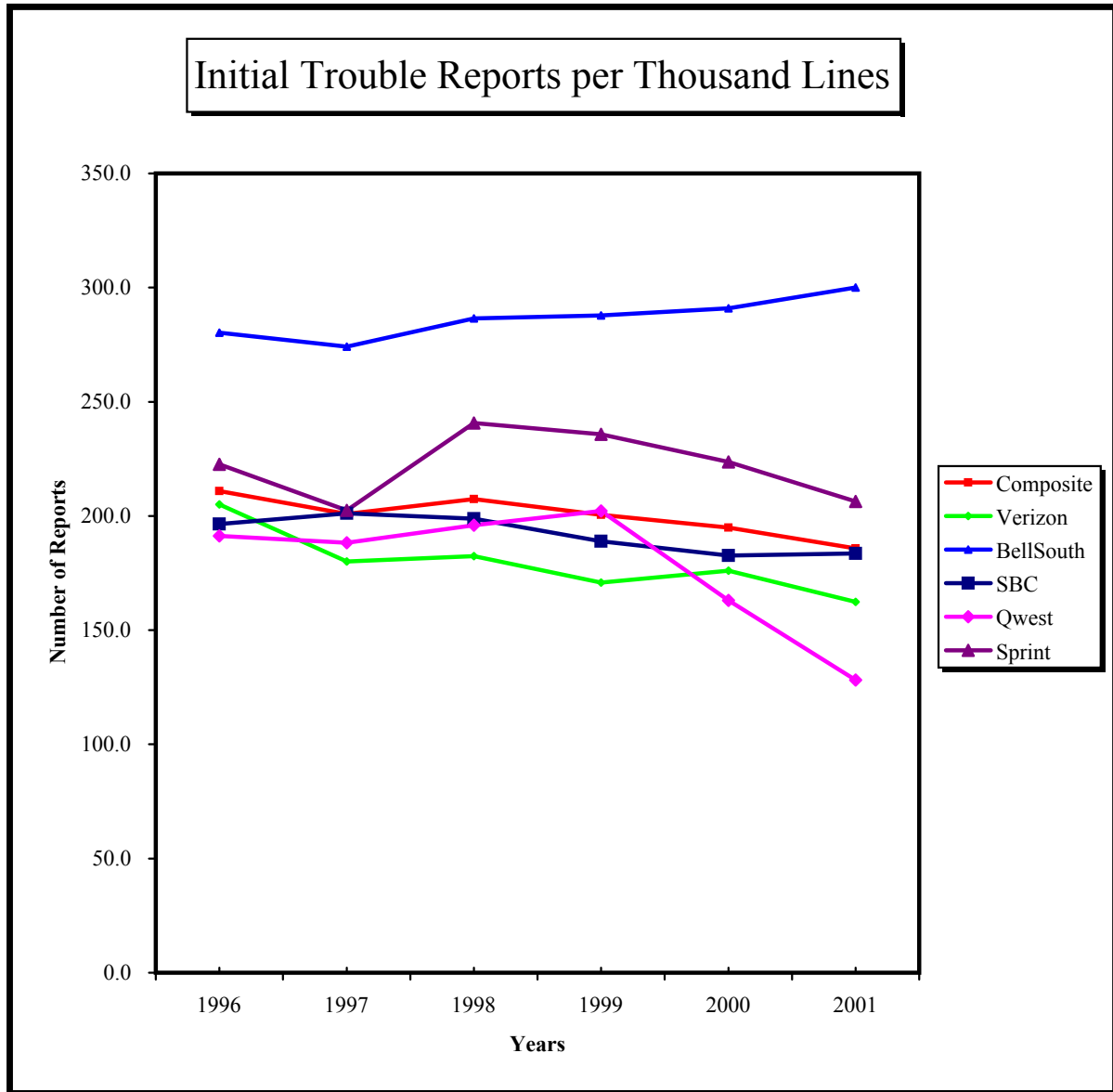
Chart 1



Average of Residential and Business Complaints per Million Access Lines  
(Using Calculated Composites from Tables)

	1996	1997	1998	1999	2000	2001
BellSouth	48.5	40.8	92.6	192.9	241.6	192.8
Qwest	575.6	420.0	530.6	722.1	379.2	199.0
SBC Ameritech	101.7	145.3	127.8	178.4	613.3	382.8
SBC Pacific	9.3	33.8	32.6	36.1	39.2	19.6
SBC Southwestern	29.9	38.4	38.1	28.6	28.1	23.9
Verizon GTE	126.3	85.1	129.5	86.1	106.8	80.1
Verizon North	763.5	216.8	177.3	205.0	237.0	169.2
Verizon South	68.6	69.7	94.4	240.2	354.6	222.1
Sprint	8.7	9.1	91.7	183.9	287.9	136.5

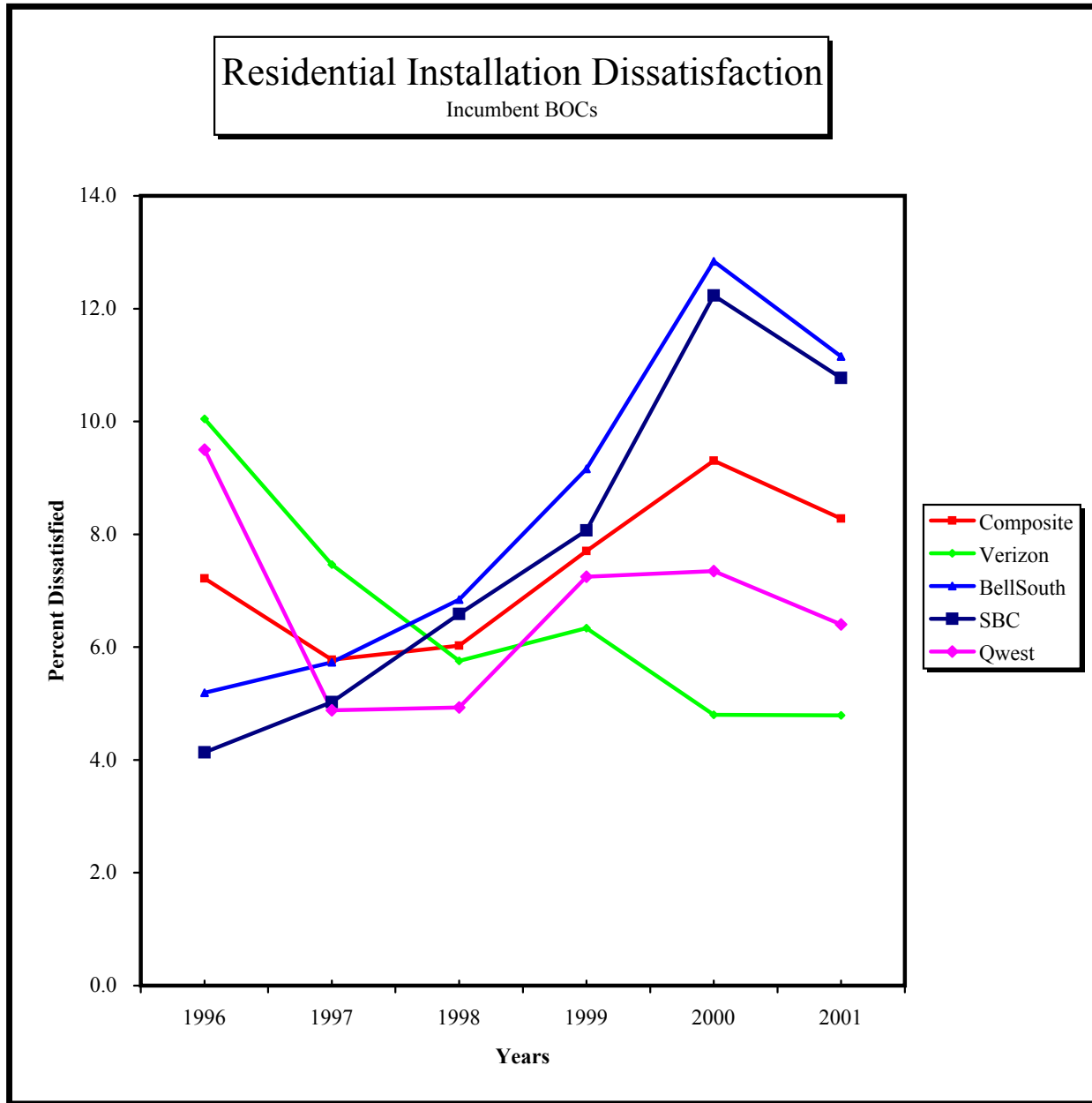
Chart 2



Average Initial Trouble Reports  
(Using Calculated Composites from Tables)

	1996	1997	1998	1999	2000	2001
BellSouth	280.3	274.1	286.5	287.8	290.9	300.1
Qwest	191.2	188.3	196.0	202.2	163.0	128.2
SBC Ameritech	218.9	205.3	216.9	208.3	177.5	191.8
SBC Pacific	126.3	156.7	155.7	153.3	157.7	146.8
SBC Southwestern	244.3	241.4	223.9	205.1	212.8	212.3
Verizon GTE	201.0	186.8	201.9	173.7	177.1	162.6
Verizon North	237.7	187.4	190.7	182.6	194.7	179.1
Verizon South	176.4	166.1	154.6	156.1	156.2	145.5
Sprint	222.6	202.5	240.7	235.8	223.7	206.3

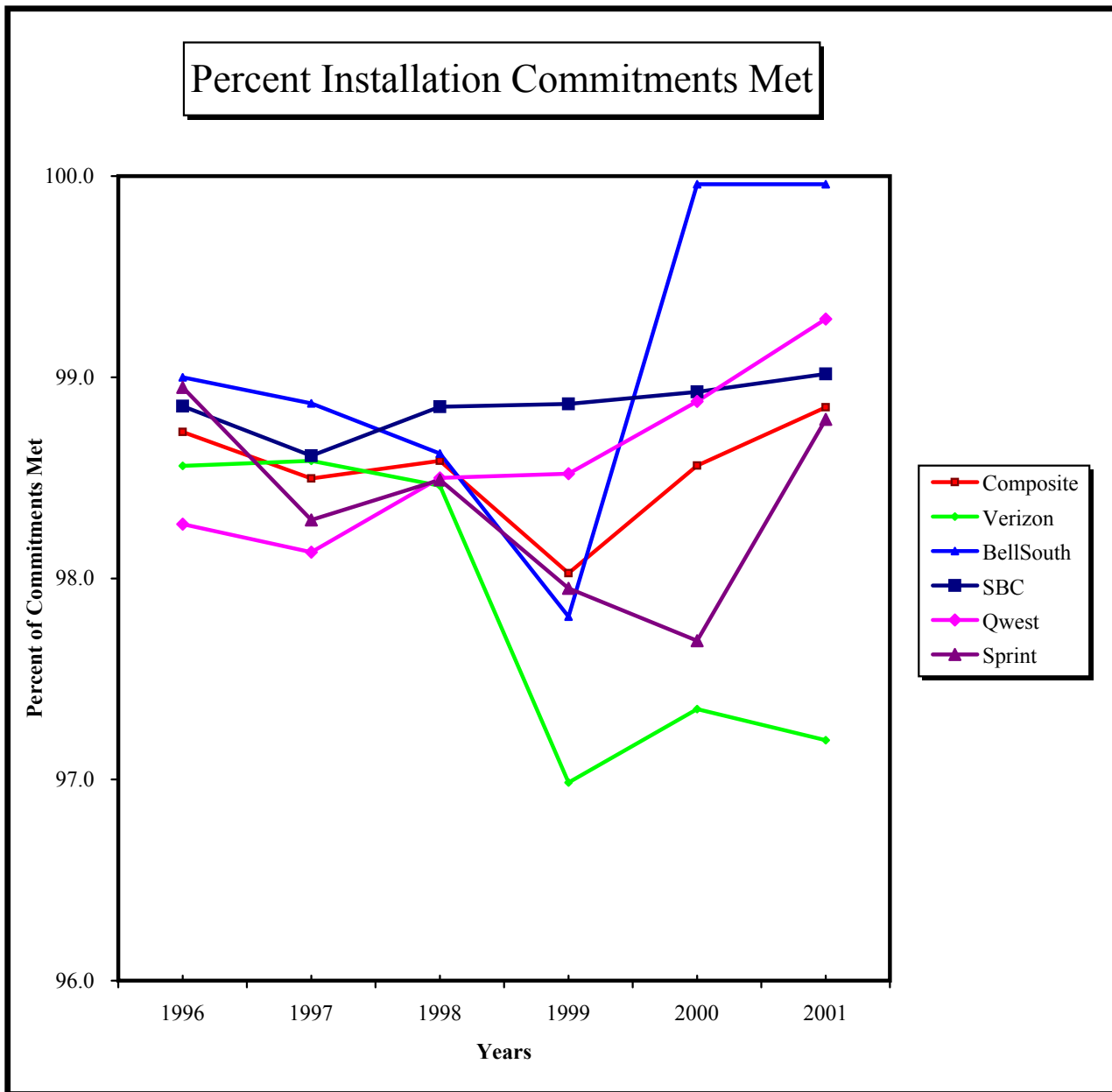
**Chart 3**



**Percent Dissatisfied -- Residential Installations  
(Using Company Provided Composites)**

	1996	1997	1998	1999	2000	2001
BellSouth	5.2	5.7	6.8	9.2	12.8	11.2
Qwest	9.5	4.9	4.9	7.3	7.4	6.4
SBC Ameritech	3.5	5.4	7.6	7.7	16.4	15.5
SBC Pacific	3.1	4.2	7.2	10.8	13.5	8.8
SBC Southwestern	5.8	5.5	5.0	5.7	6.8	8.0
Verizon GTE	7.5	7.8	7.4	7.4	4.4	4.8
Verizon North	14.1	(Combined with Verizon South)				
Verizon South	8.5	7.2	4.1	5.3	5.2	4.8

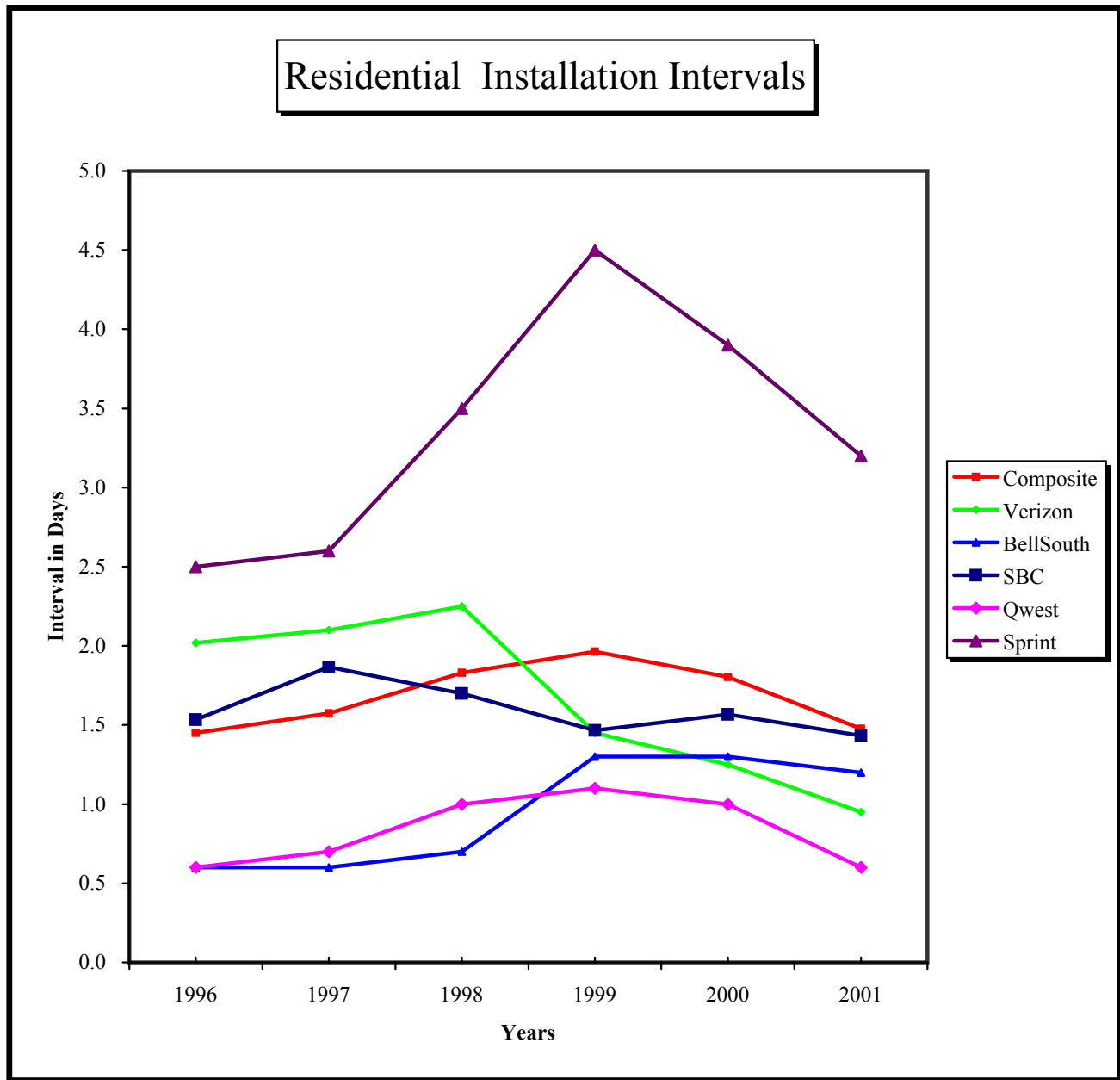
Chart 4



Percent Installation Commitments Met -- Residential Services  
(Using Company Provided Composites)

	1996	1997	1998	1999	2000	2001
BellSouth	99.0	98.9	98.6	97.8	100.0	100.0
Qwest	98.3	98.1	98.5	98.5	98.9	99.3
SBC Ameritech	98.4	98.6	98.8	99.0	98.9	98.8
SBC Pacific	99.0	98.3	98.8	99.0	99.1	99.5
SBC Southwestern	99.1	98.9	98.9	98.6	98.8	98.8
Verizon GTE	98.2	98.6	98.4	95.6	96.2	95.5
Verizon North	98.3	(Combined with Verizon South)				
Verizon South	99.2	98.6	98.5	98.4	98.5	98.9
Sprint	99.0	98.3	98.5	98.0	97.7	98.8

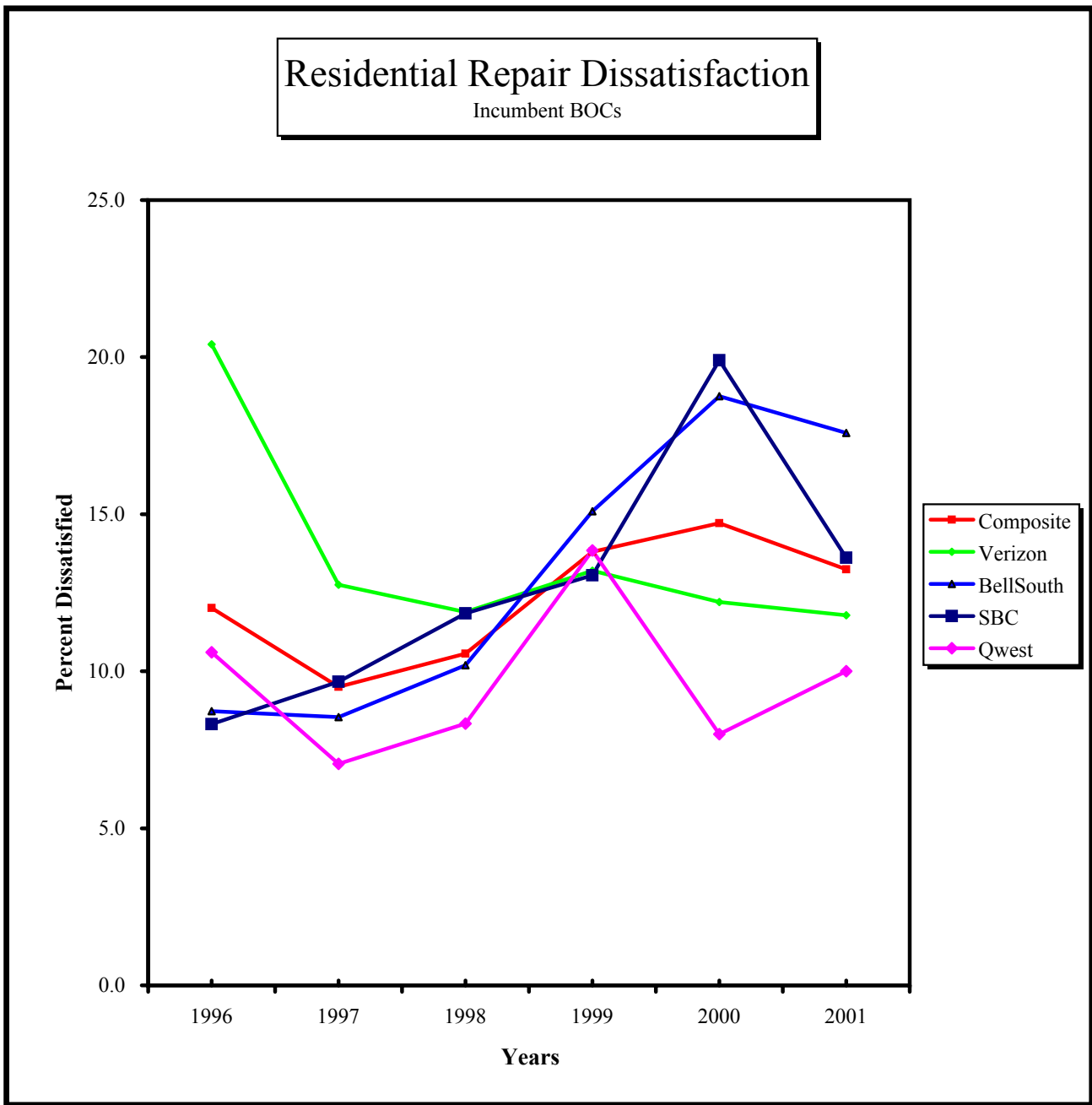
Chart 5



**Average Installation Interval -- Local Services  
(Using Company Provided Composites)**

	1996	1997	1998	1999	2000	2001
BellSouth	0.6	0.6	0.7	1.3	1.3	1.2
Qwest	0.6	0.7	1.0	1.1	1.0	0.6
SBC Ameritech	2.0	2.1	2.2	2.1	2.1	2.0
SBC Pacific	1.9	2.8	2.2	1.5	1.8	1.3
SBC Southwestern	0.7	0.7	0.7	0.8	0.8	1.0
Verizon GTE	2.6	2.8	3.0	1.4	1.0	0.8
Verizon North	2.0	(Combined with Verizon South)				
Verizon South	1.5	1.4	1.5	1.5	1.5	1.1
Sprint	2.5	2.6	3.5	4.5	3.9	3.2

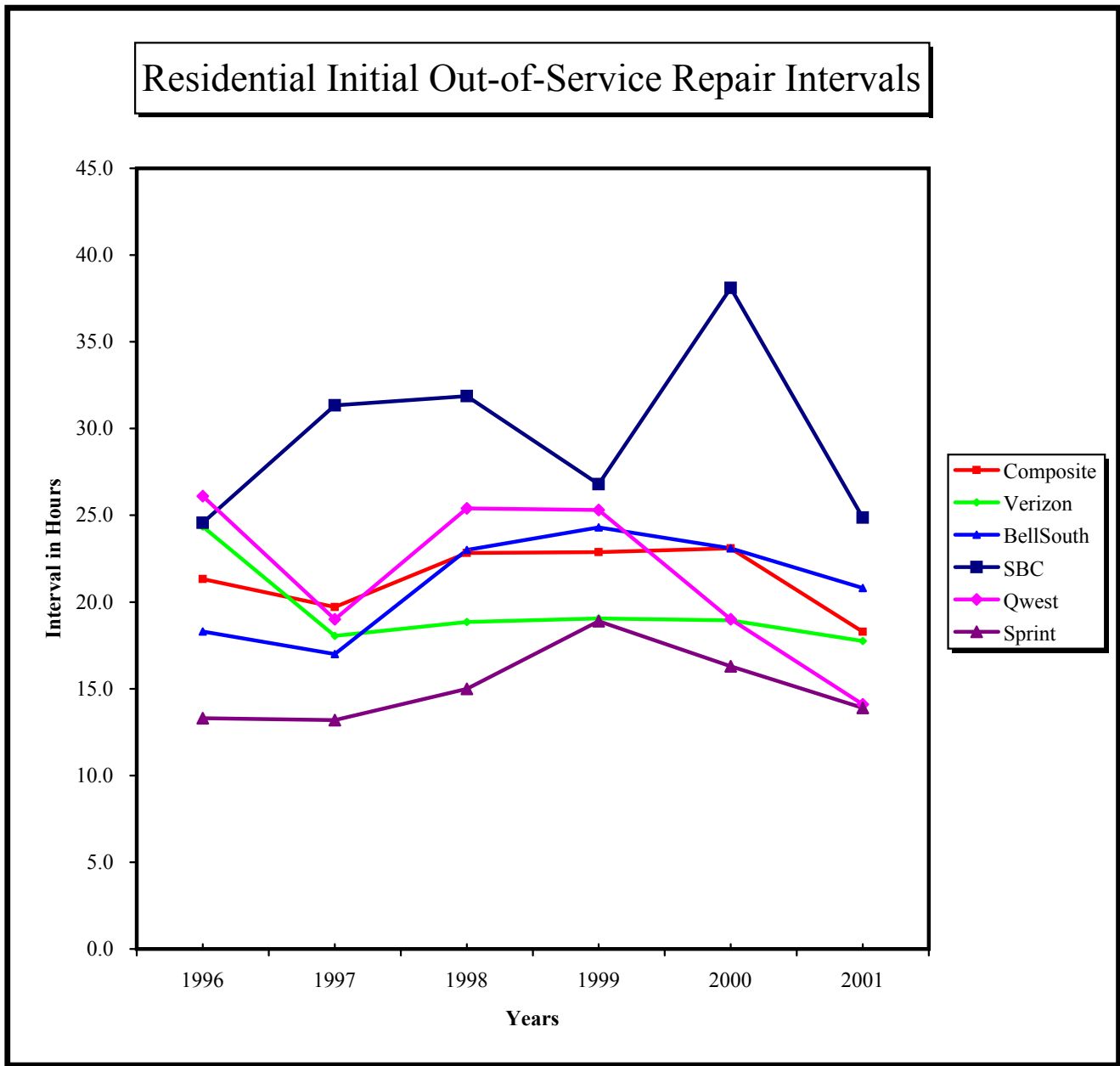
**Chart 6**



**Percent Dissatisfied -- Residential Repairs  
(Using Company Provided Composites)**

	1996	1997	1998	1999	2000	2001
BellSouth	8.7	8.5	10.2	15.1	18.8	17.6
Qwest	10.6	7.1	8.3	13.9	8.0	10.0
SBC Ameritech	9.1	10.4	12.4	15.4	26.5	19.2
SBC Pacific	7.4	10.6	15.6	15.8	23.6	10.0
SBC Southwestern	8.4	8.0	7.6	7.9	9.6	11.7
Verizon GTE	12.8	11.8	11.0	11.6	9.4	10.1
Verizon North	27.3	(Combined with Verizon South)				
Verizon South	21.1	13.7	12.8	14.8	15.0	13.4

Chart 7



Average Initial Out-of-Service Repair Interval -- Residential Services  
(Using Company Provided Composites)

	1996	1997	1998	1999	2000	2001
BellSouth	18.3	17.0	23.0	24.3	23.1	20.8
Qwest	26.1	19.0	25.4	25.3	19.0	14.1
SBC Ameritech	26.8	25.4	23.7	21.7	49.0	22.9
SBC Pacific	29.1	46.5	49.5	37.8	42.1	26.8
SBC Southwestern	17.8	22.1	22.4	20.9	23.2	24.9
Verizon GTE	17.5	15.0	14.9	14.1	13.0	13.5
Verizon North	28.1	(Combined with Verizon South)				
Verizon South	27.5	21.1	22.8	24.0	24.9	22.0
Sprint	13.3	13.2	15.0	18.9	16.3	13.9



**Table 1(a)**  
**Company Comparison**  
**Installation, Maintenance and Customer Complaints**  
**As of December 31, 2001**

	BellSouth	Qwest	SBC Ameritech	SBC Pacific	SBC Southwest	Verizon North	Verizon South	Verizon GTE	Sprint
<b>Access Services Provided to Carriers - Switched Access</b>									
Percent Installation Commitments Met	99.5	92.9	91.8	80.6	73.7	96.6	92.4	96.0	91.0
Average Installation Interval (days)	29.5	16.1	52.4	26.9	40.3	60.8	48.0	26.3	15.4
Average Repair Interval (hours)	0.9	3.2	24.3	15.7	52.5	3.0	5.2	13.1	5.9
<b>Access Services Provided To Carriers -- Special Access</b>									
Percent Installation Commitments Met	96.3	95.0	92.2	74.6	86.8	77.1	84.8	92.4	90.3
Average Installation Interval (days)	17.5	15.1	15.3	20.7	13.9	32.4	23.9	22.7	14.3
Average Repair Interval (hours)	3.4	2.7	5.8	3.9	4.7	13.1	3.0	12.8	6.7
<b>Local Services Provided to Residential and Business Customers</b>									
Percent Installation Commitments Met	99.9	99.2	98.7	99.4	98.7	98.7	99.0	98.1	98.5
Residence	100.0	99.3	98.8	99.5	98.8	98.8	99.0	98.3	98.8
Business	99.9	98.5	97.3	98.6	98.1	98.0	98.5	96.1	95.9
Average Installation Interval (days)	1.3	0.8	2.1	1.5	1.0	1.0	1.4	0.8	3.5
Residence	1.3	0.6	2.1	1.3	1.0	0.9	1.3	0.6	3.2
Business	1.7	2.3	3.0	2.9	1.0	1.6	2.6	1.8	5.2
Average Out-of- Service Repair Interval (hours)	19.2	14.1	22.7	24.2	23.6	20.5	22.1	14.2	13.7
Total Residence	20.8	14.1	22.9	26.8	24.9	21.1	23.1	15.2	13.9
Total Business	11.5	14.1	21.6	12.5	17.2	18.3	18.0	9.3	13.0
<b>Initial Trouble Reports per Thousand Lines</b>									
Total MSA	300.1	128.2	191.8	146.8	212.3	179.1	145.5	164.5	206.3
Total Non MSA	283.6	128.3	192.3	144.7	199.2	182.0	146.9	157.3	202.3
Total Residence	391.8	128.0	186.1	197.9	275.2	159.3	129.6	187.9	214.3
Total Business	342.8	158.5	250.4	191.2	278.2	210.3	183.2	191.4	245.0
Troubles Found per Thousand Lines	187.7	66.7	86.8	70.1	93.5	117.0	76.7	103.0	104.6
Repeat Troubles as a Percent of Trouble Reports	159.5	83.8	122.8	115.6	140.8	129.0	102.5	136.9	124.0
	21.3%	28.3%	30.5%	15.8%	16.7%	19.9%	20.1%	13.4%	14.2%
<b>Residential Complaints per Million Residential Access Lines</b>									
	279.0	282.6	587.5	31.5	32.4	212.7	384.9	109.3	197.6
<b>Business Complaints per Million Business Access Lines</b>									
	106.5	115.3	178.0	7.7	15.4	125.7	59.3	50.8	75.3

\* Please refer to text for notes and data qualifications.

**Table 1(b)**  
**Company Comparison**  
**Switch Downtime & Trunk Blocking**  
**As of December 31, 2001**

	BellSouth	Qwest	SBC Ameritech	SBC Pacific	SBC Southwest	Verizon North	Verizon South	Verizon GTE	Sprint
<b>Total Access Lines in Thousands</b>	23,756	17,070	20,074	17,788	15,842	18,269	22,313	18,503	8,087
<b>Total Trunk Groups</b>	3,628	3,183	1,137	1,856	1,140	1,046	950	1,987	5,555
<b>Total Switches</b>	1,642	1,354	1,451	779	1,662	1,284	1,338	3,327	1,335
<b>Switches with Downtime</b>									
Number of Switches	97	488	160	137	172	61	85	52	139
As a percentage of Total Switches	5.9%	36.0%	11.0%	17.6%	10.3%	4.8%	6.4%	1.6%	8.8%
<b>Average Switch Downtime in seconds per Switch</b>									
For All Events	94.1	217.8	64.9	4.1	342.8	2612.9	31.3	87.1	291.1
For Unscheduled Events Over 2 Minutes	89.2	132.0	36.7	1.9	332.9	2608.9	28.9	87.0	180.8
<b>For Unscheduled Downtime More Than 2 Minutes</b>									
Number of Occurrences or Events	58	79	37	6	14	35	31	48	42
Events per Hundred Switches	3.5	5.8	2.5	0.8	0.8	2.7	2.3	1.4	3.1
Events per Million Access Lines	2.44	4.63	1.84	0.34	0.88	1.92	1.39	2.59	5.19
Average Outage Duration in Minutes	42.1	37.7	24.0	4.0	658.6	1595.1	20.8	100.5	91.8
Average Lines Affected per Event in Thousands	12.4	7.8	19.0	40.9	32.4	17.6	26.4	6.3	12.5
Outage Line-Minute per Event in Thousands	265.5	319.9	344.2	137.8	19,692.1	57,458.8	241.6	395.1	742.4
Outage Line-Minute per 1,000 Access Lines	648.1	1,480.5	634.5	46.5	17,402.6	110,082.4	335.7	1,025.0	3,855.7
<b>For Scheduled Downtime More Than 2 Minutes</b>									
Number of Occurrences or Events	6	141	36	1	15	11	3	0	77
Events per Hundred Switches	0.4	10.4	2.5	0.1	0.9	0.9	0.2	NA	5.7
Events per Million Access Lines	0.25	8.26	1.79	0.06	0.95	0.60	0.13	NA	9.52
Average Outage Duration in Minutes	10.7	9.1	17.9	4.0	5.9	5.8	2.7	NA	35.3
Average Lines Affected per Event in Thousands	4.7	5.8	19.6	4.3	51.6	33.8	22.3	NA	10.2
Outage Line-Minute per Event in Thousands	33.3	61.0	361.3	17.2	267.5	127.5	55.2	NA	654.7
Outage Line-Minute per 1,000 Access Lines	8.4	504.0	648.0	1.0	253.3	76.8	7.4	NA	6,233.3
<b>% Trunk Groups Exceeding Blocking Objectives</b>	8.85%	2.80%	3.17%	1.51%	0.44%	3.92%	5.37%	0.15%	0.90%
* Please refer to text for notes and data qualifications.									

**Table 1(c)**  
**Company Comparison**  
**Switch Downtime Causes**  
**As of December 31, 2001**

	BellSouth	Qwest	SBC Ameritech	SBC Pacific	SBC Southwest	Verizon North	Verizon South	Verizon GTE	Sprint
<b>Total Number of Outages</b>									
1. Scheduled	6	141	36	1	15	11	3	0	77
2. Procedural Errors -- Telco. (Inst./Maint.)	0	1	1	0	1	4	2	4	3
3. Procedural Errors -- Telco. (Other)	4	4	3	1	0	0	2	1	4
4. Procedural Errors -- System Vendors	10	2	7	1	2	2	7	1	4
5. Procedural Errors -- Other Vendors	0	12	2	0	1	0	1	4	2
6. Software Design	11	6	2	0	1	1	9	6	3
7. Hardware design	8	0	0	0	0	0	0	0	0
8. Hardware Failure	13	28	18	2	5	10	5	18	13
9. Natural Causes	1	0	2	0	3	0	2	6	2
10. Traffic Overload	0	1	0	0	0	0	0	0	0
11. Environmental	0	0	0	0	1	0	0	0	1
12. External Power Failure	7	22	0	0	0	4	0	8	0
13. Massive Line Outage	0	1	0	1	0	0	0	0	3
14. Remote	1	2	0	0	0	0	0	0	4
15. Other/Unknown	3	0	2	1	0	14	3	0	3
<b>Total Outage Line-Minutes for Thousand Access Lines</b>									
1. Scheduled	8.4	504.0	648.0	1.0	253.3	76.8	7.4	0.0	3,116.6
2. Procedural Errors -- Telco. (Inst./Maint.)	0.0	5.4	19.8	0.0	0.6	84.4	9.7	51.7	385.9
3. Procedural Errors -- Telco. (Other)	20.4	58.8	20.5	13.9	0.0	0.0	30.0	13.9	225.8
4. Procedural Errors -- System Vendors	36.7	75.9	38.0	3.0	223.6	14.9	89.0	194.4	64.1
5. Procedural Errors -- Other Vendors	0.0	17.7	16.1	0.0	218.0	0.0	0.4	91.4	99.4
6. Software Design	160.9	39.1	17.8	0.0	4.1	4.6	49.7	180.1	73.7
7. Hardware design	78.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8. Hardware Failure	95.3	89.5	310.2	19.7	107.2	124.6	68.2	320.9	230.9
9. Natural Causes	21.6	0.0	204.1	0.0	12,005.2	0.0	17.2	92.1	50.3
10. Traffic Overload	0.0	173.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11. Environmental	0.0	0.0	0.0	0.0	4,843.9	0.0	0.0	0.0	3.2
12. External Power Failure	110.0	951.2	0.0	0.0	0.0	124.9	0.0	80.5	0.0
13. Massive Line Outage	0.0	68.1	0.0	0.7	0.0	0.0	0.0	0.0	620.0
14. Remote	113.7	1.8	0.0	0.0	0.0	0.0	0.0	0.0	38.6
15. Other/Unknown	10.6	0.0	8.0	9.1	0.0	109,729.1	71.5	0.0	136.1

\* Please refer to text for notes and data qualifications.

**Table 1(d)**  
**Company Comparision**  
**2001 Customer Perception Surveys**

	BellSouth	Qwest	SBC Ameritech	SBC Pacific	SBC Southwest	Verizon North	Verizon South	Verizon GTE
<b>Percentage of Customers Dissatisfied</b>								
<b>Installations:</b>								
Residential	11.15	6.38	15.48	8.52	7.99	5.11	4.51	4.92
Small Business	9.36	14.72	14.68	8.48	10.38	10.68	8.97	7.44
Large Business	7.99	NA	17.88	9.01	6.74	4.93	6.64	4.79
<b>Repairs:</b>								
Residential	17.59	9.95	19.22	9.95	11.67	13.84	13.03	12.21
Small Business	9.91	9.85	15.72	6.86	8.42	11.79	10.95	10.24
Large Business	6.97	NA	18.22	5.76	6.22	7.08	6.20	6.43
<b>Business Office:</b>								
Residential	13.20	3.22	15.59	8.05	8.40	7.41	6.19	7.99
Small Business	12.95	6.68	15.72	7.14	9.38	9.45	9.94	9.33
Large Business	7.73	NA	20.99	10.15	8.41	4.49	8.89	10.13

\* Please refer to text for notes and data qualifications.

**Table 1(e)**  
**Company Comparison**  
**2001 Customer Perception Surveys**

	BellSouth	Qwest	SBC Ameritech	SBC Pacific	SBC Southwest	Verizon North	Verizon South	Verizon GTE
<b>Sample Sizes -- Customer Perception Surveys</b>								
<b>Installations:</b>								
Residential	22,992	6,714	11,542	12,630	10,059	19,128	18,673	25,202
Small Business	17,931	4,192	10,893	11,929	10,011	17,286	18,487	21,991
Large Business	5,782	NA	3,051	2,329	2,312	1,136	1,129	1,127
<b>Repairs:</b>								
Residential	23,237	1,508	11,432	12,954	11,400	19,097	18,668	25,112
Small Business	19,346	465	11,478	11,478	11,295	19,022	18,397	23,636
Large Business	6,052	NA	3,691	2,084	2,865	1,115	1,049	1,088
<b>Business Office:</b>								
Residential	38,991	6,714	24,794	24,572	22,594	11,107	14,780	16,518
Small Business	10,710	4,192	21,813	21,913	21,490	4,023	6,089	12,801
Large Business	673	NA	2,479	591	2,663	869	855	819
* Please refer to text for notes and data qualifications.								

## Appendix A – Description of Key Elements in the Tables:

This report displays a number of data elements that have remained roughly comparable over the past few years. More detailed information on the raw data from which this report has been developed is contained on the Commission's website for the ARMIS database noted above. In addition, complete data descriptions are available in several Commission Orders.<sup>1</sup> The following descriptions are tied to Tables 1a-1e and 2a-2e which follow the text of this report. The row numbers and columns associated with the raw source data in the ARMIS 43-05 report are included in the footnotes to the descriptions below.<sup>2</sup>

### 1. Percent of Installation Commitments Met

Percent of installations that were met by the date promised by the company to the customer. It is presented separately for residential and business customers' local service. Trends for this data are summarized using company provided composites in the accompanying charts.<sup>3</sup>

---

<sup>1</sup> Orders implementing filing frequency and other reporting requirement changes associated with implementation of the Telecommunications Act of 1996 are as follows: *Implementation of the Telecommunications Act of 1996: Reform of Filing Requirements and Carrier Classifications*, Order and Notice of Proposed Rulemaking, 11 FCC Rcd 11716 (1996); *Revision of ARMIS Quarterly Report (FCC Report 43-01) et al.*, Order, 11 FCC Rcd 22508 (1996); *Policy and Rules Concerning Rates for Dominant Carriers*, Memorandum Opinion and Order, 12 FCC Rcd 8115 (1997); *Revision of ARMIS Annual Summary Report (FCC Report 43-01) et al.*, Order, 12 FCC Rcd 21831 (1997).

<sup>2</sup> For ARMIS rows 110-121 in the raw machine readable data sets, column a or aa is the first column; for rows 130 to 151, column d or ad is the first column; for rows 180 to 190, column k or ak is the first column; for rows 200 to 214, column n or an is the first column; for rows 220 to 319 and 333-500, column t is the first column; and for rows 320 to 332, column aa or da is the first column. The companies also file printed copies of their submissions where rows 110-121 are designated as Table I, rows 130-170 are designated as Table II, rows 180-190 are designated as Table III, rows 200-214 are designated as Table IV, rows 220-319 and 333-500 are designated as Table IV-A, and rows 320-332 are designated as Table V. Note that some of the row numbers in the data such as rows 142, 143 and 160 do not appear in numerical order. In addition to definitional wording changes, most of which are minor, rows 111, 131, 160 and 170 (missed installations for customer reasons and subsequent trouble reports) have been added with the 1997 data; however, not all companies have populated the added rows. Many column designations have also been changed and most column labels are now preceded by the letter "a". The reader should note that there are variations in numbers of switches and access lines in the various ARMIS reports that may lead to inconsistencies when comparing data sources; however, these variations are not believed to be significant enough to alter the observations made in this report. Because the entire row and column descriptions and definitions for each year in question are too voluminous to reproduce here, the reader should refer to the relevant Commission Order referenced in a prior footnote describing requirements for the specific data year of interest.

<sup>3</sup> See ARMIS 43-05 report row 132, columns f and i or af and ai, respectively, and access services provided to carriers (row 112, columns a and c or aa and ac).

## 2. Average Installation Interval (in days)

Average interval (in days) between the installation service order and completion of installation. Trended data for this ARMIS 43-05 report data are highlighted in the accompanying charts along with trended customer installation dissatisfaction data from the ARMIS 43-06 report, using company provided composites.<sup>4</sup>

## 3. Average Repair Interval (in hours)

Average time (in hours) for the company to repair access lines and service subcategories for switched access, high-speed special access, and all special access. Trended repair interval data are highlighted in the accompanying charts. These data are extracted directly from company provided ARMIS 43-05 report composites. In addition, results from company conducted surveys relating to customer repair dissatisfaction are presented using company provided composites.<sup>5</sup> This customer feedback data is extracted from the ARMIS 43-06 report composite filings.

## 4. Initial Trouble Reports per Thousand Access Lines

Calculated as the total count of trouble reports reported as "initial trouble reports," divided by the number of access lines in thousands. (Note that multiple calls within a 30 day period associated with the same problem are counted as a single initial trouble, and the number of access lines reported and used in the calculation is the total number of access lines divided by 1,000.) The aggregate initial trouble report indicator has remained in a range between 150 and 225 for most companies as shown in trended data in the accompanying charts.<sup>6</sup>

---

<sup>4</sup> Installation interval is shown separately for receipt of access service provided to carriers (ARMIS 43-05 report row 114, column a and c or aa and ac) and for residential and business customers' local service (row 134, columns f and i or af and ai, respectively). Data on intervals for missed installations (rows 113 and 133) were replaced by average interval described above.

<sup>5</sup> See ARMIS 43-05 report row 121, column a and c or aa and ac. We have presented customer response data on repairs in this report.

<sup>6</sup> This item is subcategorized by Metropolitan Statistical Areas (MSA) (the sum of ARMIS 43-05 report row 141, column d or ad and row 141, column g or ag divided by the sum of row 140, column d or ad and row 140, column g or ag); non-MSA (the sum of row 141, column e or ae and row 141, column h or ah divided by the sum of row 140, column e or ae and row 140, column h or ah); residence (row 141, column f or af divided by row 140, column f or af); and business (row 141, column i divided by row 140, column i or ai). Note that access lines for data filed in 1997 were requested in whole numbers, but were requested in thousands for prior years.

5. Found or Verified Troubles per Thousand Access Lines

Calculated as the number of verified troubles divided by access lines divided by 1000. Only those trouble reports for which the company identified a problem are included.<sup>7</sup>

6. Repeat Troubles as a percent of Initial Trouble Reports

Calculated as the number of initial trouble reports cleared by the company that recur, or remain unresolved, within 30 days of the initial trouble report, divided by the number of initial trouble reports as described above.<sup>8</sup>

7. Complaints per Million Access Lines

The number of residential and business customer complaints, per million access lines, reported to state or federal regulatory bodies during the reporting period. Some increasing trends can be noted in this data as shown in Chart 1 included in the report.<sup>9</sup>

8. Number of Access Lines, Trunk Groups and Switches

The number of in-service access lines shown in the ARMIS 43-05 report.<sup>10</sup> Trunk groups only include common trunk groups between Local Exchange Carrier (ILEC) access tandems and ILEC end offices. When comparing current data herein with data in prior reports the reader should note that access lines were reported in thousands in pre 1997 data submissions. Starting with 1997 data submissions access line information has been requested in whole numbers.

9. Switches with Downtime

Number of network switches experiencing downtime and the percentage of the total number of company network switches experiencing downtime.<sup>11</sup>

---

<sup>7</sup> Data shown is ARMIS report 43-05 row 141, column j or aj less row 143, column j or aj divided by row 140, column j or aj.

<sup>8</sup> Data shown is ARMIS 43-05 report row 142, column j or aj divided by row 141, column j or aj. This measure provides a measure of the effectiveness of the company in resolving troubles at the outset. Subcategorized by MSA, non-MSA, residence, and business. (Also refer to the discussion of data qualifications that follows.)

<sup>9</sup> Total residence complaints are calculated as the sum of ARMIS 43-05 report row 331, column aa and row 332, column aa; total business complaints are calculated as the sum of row 321, column aa or da and row 322, column aa or da.

<sup>10</sup> aj, trunk groups included on row 180, column k or ak, and switches included as the sum of row 200, column n or an and row 201, column n or an or the sum of row 210, column n or an through row 214, column n or an.

<sup>11</sup> See ARMIS 43-05 report row 210, column o or ao through row 214, column o or ao or the sum of row 200, column o or ao and row 201, column o or ao.



## 10. Average Switch Downtime in Seconds per Switch

Total switch downtime divided by the total number of company network switches indicates the average switch downtime in seconds per switch.<sup>12</sup>

## 11. Unscheduled Downtime Over 2 Minutes per Occurrence

Number of occurrences of more than 2 minutes in 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 data represents total outage line-minutes. This number was divided by the total number of access lines to provide line-minutes-per-access-line, and, by the number of occurrences, to provide the line-minutes-per-occurrence. This categorizes the normalized magnitude of the outage in two ways and provides a 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.<sup>13</sup>

## 12. Scheduled Downtime Over 2 Minutes per Occurrence

Determined as in item 11, above, except that it consists of scheduled occurrences.<sup>14</sup>

## 13. Percent of Trunk Groups Meeting Design Objectives

This data item provides the percentage of trunk groups exceeding an industry standard for blocking over the reporting interval. The trunk groups measured and reported are interexchange access facilities. These represent only a small portion of the total trunk groups in service.<sup>15</sup>

---

<sup>12</sup> These Data are shown for all occurrences (the sum of ARMIS 43-05 report row 200, column p or ap and row 201, column p or ap, multiplied by 60 and divided by the sum of row 200, column n or an and row 201, column n or an) and for unscheduled occurrences greater than 2 minutes (data derived from rows 220 through 319 and rows 333 through 500, columns t through z in the source data divided by the sum of rows 200 and 201, column n or an).

<sup>13</sup> These items are derived from ARMIS 43-05 report data in rows 220 through 319 and 333 through 500, columns t through z, in the source data).

<sup>14</sup> These items are derived from data contained on ARMIS 43-05 report rows 220 through 319, and rows 333 through 500, columns t through z, in the source data.

<sup>15</sup> These data are shown as the sum of ARMIS 43-05 report rows 189 and 190, column k, divided by row 180, column k for 1995 data and the sum of rows 189 and 190, column ak divided by row 180 column ak starting with 1996 data.

## Customer Response

**Publication:** *Quality of Service of the Local Operating Companies, January 2003*

You can help us provide the best possible information to the public by completing this form and returning it to the Industry Analysis and Technology Division of the FCC's Wireline Competition Bureau.

1. Please check the category that best describes you:

- press
- current telecommunications carrier
- potential telecommunications carrier
- business customer evaluating vendors/service options
- consultant, law firm, lobbyist
- other business customer
- academic/student
- residential customer
- FCC employee
- other federal government employee
- state or local government employee
- Other (please specify)

2. Please rate the report:	Excellent	Good	Satisfactory	Poor	No opinion
Data accuracy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Data presentation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Timeliness of data	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Completeness of data	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Text clarity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Completeness of text	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. Overall, how do you rate this report?	Excellent	Good	Satisfactory	Poor	No opinion
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. How can this report be improved?

5. May we contact you to discuss possible improvements?

Name:

Telephone #:

To discuss the information in this report, contact: 202-418-0940 or for users of TTY equipment, call 202-418-0484		
Fax this response to	or	Mail this response to
202-418-0520		FCC/IATD Mail Stop 1600 F Washington, DC 20554