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**Federal Communications Commission**  
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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).

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## **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 2002 submitted by major incumbent local operating companies, which collectively serve about 90% of the incumbents' access lines. The data are presented separately for each operating entity and 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 are highlights of some key quality of service indicators for 2002:

- Average overall complaints per million lines declined for the second year in a row from approximately 167 in 2001 to about 113 in 2002.
- Initial overall holding company trouble report levels declined from about 191 reports per thousand lines in 2001 to about 173 reports per thousand lines in 2002.
- In 2002, the level of customer dissatisfaction with residential repairs declined for all but one reporting holding company, and the level of customer dissatisfaction with residential installations declined for two out of the four reporting holding companies.
- Average residential installation intervals for individual operating entities ranged from a low of 0.5 business days to a high of 2.1 business days in 2002, as compared to a low of 0.6 business days and a high of 3.2 business days 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.

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.

News about the Federal Communications Commission can also be found at the Commission's web site [www.fcc.gov](http://www.fcc.gov)

# QUALITY OF SERVICE OF THE LOCAL OPERATING COMPANIES

FEBRUARY 2004

Industry Analysis and Technology Division  
Wireline Competition Bureau  
Federal Communications Commission



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# Quality of Service Report

## Introduction

This report summarizes various kinds of service quality data filed by the regional Bell Companies and Sprint (incumbent local exchange carriers) for calendar year 2002. The data track the quality of service provided to both retail customers (business and residential) and access customers (interexchange carriers).

The Federal Communications Commission (FCC or Commission) does not impose service quality standards on communications common carriers. Rather, the Commission annually monitors quality of service data submitted by major incumbent local operating companies that collectively serve about 90% of the incumbents' access lines. The Commission summarizes these data and periodically publishes a report on quality of service trends.<sup>1</sup> The tables included in this report present comparative data on key company performance indicators. These include objective indicators of installation and maintenance performance, switch outages and trunk blocking performance. The tables also present data on customer perceptions of service, as well as the level of consumer complaints. A number of indicators are charted over time to present a multi-year view.

## 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>2</sup> to establish a monitoring program that would provide a basis for detecting adverse trends in network service quality. Subsequently, the Bureau modified the service quality reporting requirements to reduce unnecessary paperwork and to ensure that needed information would be provided in a uniform format. Initially, the data were received twice yearly. The data collected for 1989 and 1990 formed the basis for FCC summary reports published in June 1990 and July 1991, respectively, highlighting five basic elements of quality of service data collected at that time.

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

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1 The last report was released in January 2003, which covered data for 2001. *See* Industry Analysis and Technology Division, Wireline Competition Bureau, Federal Communications Commission, *Quality of Service of the Local Operating Companies* (January, 2003). This report can be found on the Commission's website at [www.fcc.gov/wcb/stats](http://www.fcc.gov/wcb/stats) under the file name QUAL01.ZIP.

2 As the result of a reorganization in March 2002, the Wireline Competition Bureau now performs Common Carrier Bureau functions described in this report. In this report, references to the Common Carrier Bureau apply to activities prior to the above date.

include non-Bell carriers that have elected to be subject to price-cap regulation.<sup>3</sup> These carriers are also known as non-mandatory price-cap carriers and most of them are much smaller. Second, it included service quality reports in the Automated Reporting Management Information System (ARMIS).<sup>4</sup> Finally, the Commission ordered significant changes to the kinds of data these carriers had to report.<sup>5</sup> Following these developments, the Commission released service quality summary reports in February 1993, March 1994, March 1996, September 1998, December 1999, December 2001, and January 2003 focusing on the largest companies.<sup>6</sup>

In 1996, pursuant to requirements in the Telecommunications Act of 1996,<sup>7</sup> the Commission reduced the frequency of data reporting for all reports 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 raw data are now filed annually in April of each year.

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3 *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.

4 *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 level which generally represents operations within a given state.

5 *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.

6 The reports have included data from the mandatory price cap companies and the largest non-mandatory carriers, GTE and Sprint. GTE is now a part of Verizon, a mandatory price cap carrier. Non-mandatory carriers are not required to file customer satisfaction data that appears in the ARMIS 43-06 report.

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

8 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).

## The Data

The data presented in this report summarize the most recent ARMIS 43-05 and 43-06 carrier reports.<sup>9</sup> Tables in this report include data from the regional Bell companies and Sprint.<sup>10</sup> These companies report quality of service data that have been aggregated to a study area level which generally represents operations within a given state. Reporting companies also provide a fairly extensive amount of raw data about individual switching outages, including outage durations and number of lines affected.

The company-level quality of service data presented in Tables 1-5 are derived by calculating sums or weighted averages of data reported at the study area level. In particular, where companies report study area information in terms of percentages or average time intervals, this report presents company composites that are calculated by weighting the percentage or time interval figures from all study areas within that company. For example, we weight the percent of commitments met by the corresponding number of orders provided in the filed data.<sup>11</sup>

In the case of outage data summarized in Tables 2 and 3, we calculate a number of useful statistics from raw data records for individual switches with outages lasting more than 2 minutes. These statistics include the total number of events lasting more than 2 minutes, average outage duration, average number of outages per hundred switches, average number of outages per million access lines, and average outage line-minutes per thousand access lines and per event. Outage line-minutes is a measure that combines both duration and number of lines affected in a single parameter. We derive 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 divide the resulting sum by the total number of thousands of access lines or of events to obtain average outage line-minutes per access line and average outage line minutes per event respectively.

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9 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/eafs](http://www.fcc.gov/wcb/eafs). The data are also available from Qualex International, at (202) 863-2893. A number of prior-year data summary reports are available through the FCC's Reference Information Center (Courtyard Level) at 445 12th Street, SW, Washington, D.C. 20554.

10 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.

11 Although companies have prepared their own company composites, we have recalculated a number of them from study area data to assure that company averages are calculated in a consistent manner. We weight data involving percentages or time intervals in order to arrive at consistent composite data shown in the tables. 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.

The tables contained in this report cover data for 2002. Table 1 provides installation, maintenance and customer complaint data. The installation and maintenance data are presented separately for local services provided to end users and access services provided to interexchange carriers. Table 2 shows switch downtime and trunk servicing data. Table 3 shows outage data by cause. Table 4 presents the percentages of residential, small business and large business customers indicating dissatisfaction with Bell Operating Company (BOC) installations, repairs and business offices, as determined by BOC customer perception surveys. Table 5 shows the underlying survey sample sizes.

The Quality of Service Report displays data elements that have remained roughly comparable over the past few years. Such data are useful in identifying and assessing trends. In addition to Tables 1 through 5, this report contains seven charts that highlight company trends for the last 6 years. Charts 1 through 7 graphically illustrate trends in complaint levels, initial trouble reports, residential installation dissatisfaction, percent of installation commitments met, residential installation intervals, residential repair dissatisfaction, and residential initial out-of-service repair intervals, respectively. Data for Sprint, the largest non-mandatory price cap company, is included only in those charts displaying ARMIS 43-05 data that it is required to file.

More detailed information on the raw data from which this report has been developed may be found on the Commission's ARMIS web page cited earlier. Descriptions of the raw ARMIS 43-05 source data items from which Tables 1-3 were prepared can be found in Appendix A of this report. Tables 4 and 5 were prepared from data filed only by the Bell Operating Companies in the ARMIS 43-06 report. The statistics presented in Tables 4 and 5 are straightforward and reflect the data in the format it was filed. Complete data descriptions are available in several Commission orders.<sup>12</sup>

### Qualifications

This report presents data submitted by the carriers in the 2003 ARMIS filings covering calendar year 2002. 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. 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 or inconsistencies in the data that could become apparent when users subject the data to further analysis or compare it with data from other sources. Common problems that may be discovered in connection with the data presented here result from differences in aggregation methodologies used to derive company composites, errors including data irregularities, or data revisions that either could not be used or were not available in time for use in this report. In particular, Commission staff has recalculated

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12     *See supra* note 8.

holding company totals or data composites appearing in the accompanying tables, and these might not match company-filed totals or composites.<sup>13</sup> Such differences are primarily due to variations in the way we and the reporting company derive the data element, for example, in the use of percentages or average intervals that require weighting in the calculations.

Except in the calculation of company composites, we have not, in most cases, deleted or adjusted data.<sup>14</sup> Instead, the companies are annually provided feedback on suspected problems with their data, and they are given an opportunity to re-file. Re-filed data appears in this summary if it is received in time for inclusion in this report. Typically this report is presented so that it can include the effects of re-filed data within five or six months of the initial filing. It is expected that the process of data correction will continue as problems are further identified and corrected.

Because measurements of any particular quality of service indicator may fluctuate over time, considering data trends over time in a group of measurements can be an effective tool in evaluating longer-term company and industry performance. Consideration of trends may also provide insight into typical lead times that might be needed to correct certain problems once they have been identified. In addition, 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, 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.

Users conducting trend analysis of the data should be aware that variations in service quality measurements can occur over time for reasons other than changes in company performance. In particular, data definitions must be properly and consistently interpreted. The Commission has, on occasion, provided clarifications when it became apparent that reporting companies had interpreted reporting requirements inconsistently.<sup>15</sup>

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13 Data presented in the charts are company-filed composites, except where noted.

14 For example, the data indicate that BellSouth Residential Installation Commitments Met have been at nearly 100 percent over the past 3 reporting periods. The data shown are rounded to the nearest tenth of a percent.

15 For example, because of data problems resulting from the various classifications of trouble reports, the Commission addressed problems relating to subtleties in the definitions associated with the terms "initial" and "repeat" trouble reports. See *Policy and Rules Concerning Rates for Dominant Carriers*, CC Docket No. 87-313, Memorandum Opinion and Order, 12 FCC Rcd 8115, 8133, para. 40 (1997); *Policy and Rules Concerning Rates for Dominant Carriers*, AAD No. 92-47, Memorandum Opinion and Order, 8 FCC Rcd 7474, 7478, para. 26, 7487-7549, Attachment (1993); *Revision of ARMIS Annual Summary Report (FCC Report 43-01) et al.*, AAD 95-91, Order, 12 FCC Rcd 21831, 21835, para. 10 (1997) (introducing reporting of "subsequent" troubles). This issue was discussed at greater length in a prior summary report. See Industry Analysis Division, Common Carrier Bureau, Federal Communications Commission, *Quality of Service for the Local Operating Companies Aggregated to the Holding Company Level* (March 1996).

Changes in service quality measurements over time may also occur as a result of changes in a company's internal data collection procedures or measurement technology.<sup>16</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 regulators.

With respect to individual measures of company performance, 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. For these measures, in particular, data interpretation must consider longer term trends and take into consideration filing intervals and lag times in data filing and preparation.

Finally, 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 each out of service for five minutes. To provide a basis of comparison of performance of companies having different switch size characteristics, we present a grouping of outage statistics that include the outage line-minutes per event and per 1,000 access lines.

### General Observations

This year's data shows industry-wide improvement in customer complaint levels for the second consecutive year. Prior to this period, complaint levels had shown longer-term deterioration. The data also indicate industry-wide improvement in the number of troubles reported per thousand lines. A number of other measures trended in this report each show modest improvement for most of the reporting companies. However, despite the backdrop of generally favorable industry-wide performance, the data also show declining performance for one or two holding companies in each of the following areas: percentage of residential installation commitments met, residential repair intervals, and residential customer dissatisfaction associated with installations and repairs.

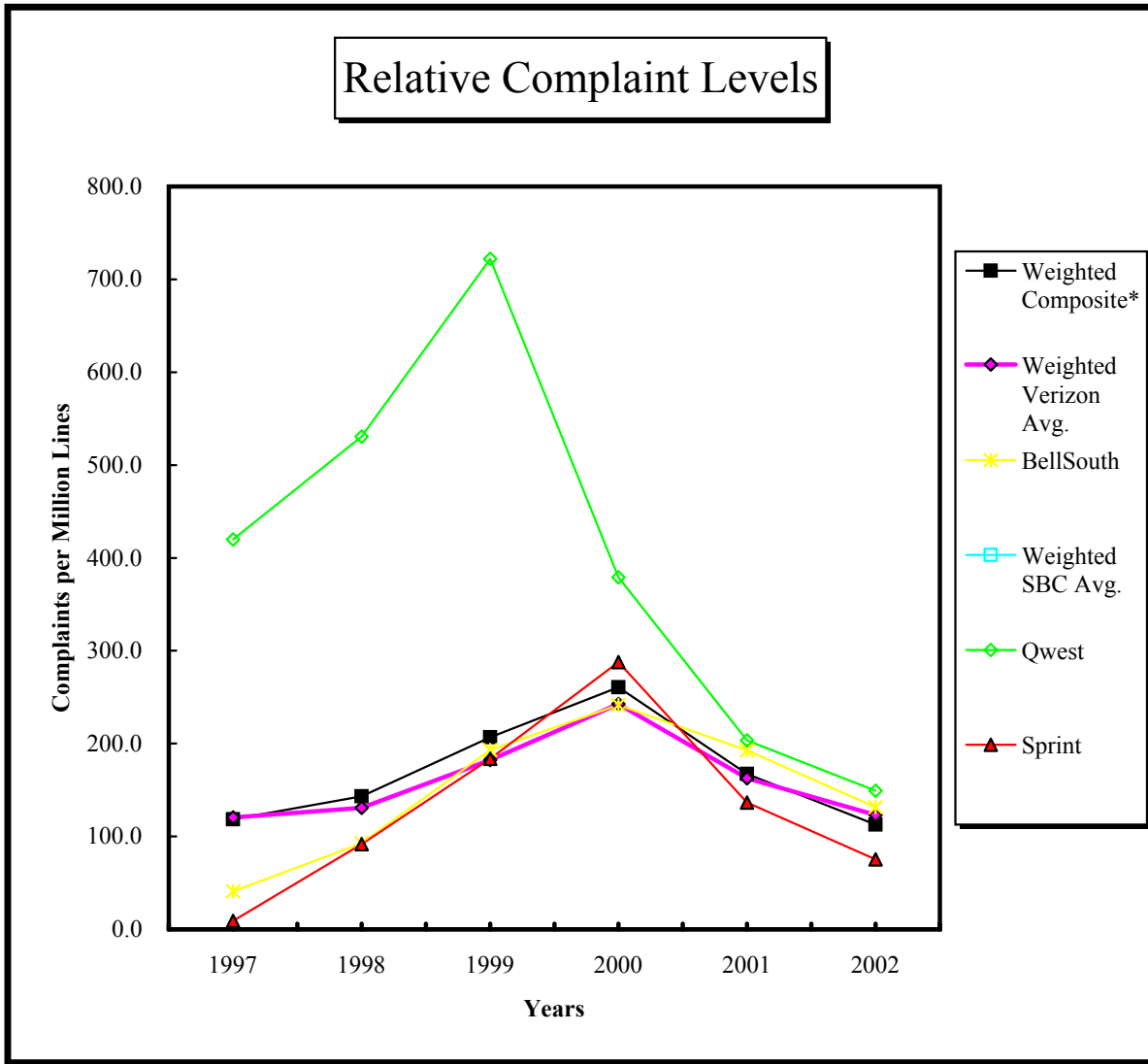
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16 For those interested in trending customer perception data in this report with that available in prior Reports it should be noted that Bell Atlantic, for example, reported changes to its customer perception surveys that were reflected in its post-1990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



As indicated in last year's report, it is important in looking at the overall characteristics of the data to consider external factors affecting the industry as a whole such as general economic conditions, the level of competitive activity, or changes in regulation in evaluation of the data. With changing external conditions, future data will likely provide a better understanding of the impact of these external factors on measured quality of service results.

Chart 1

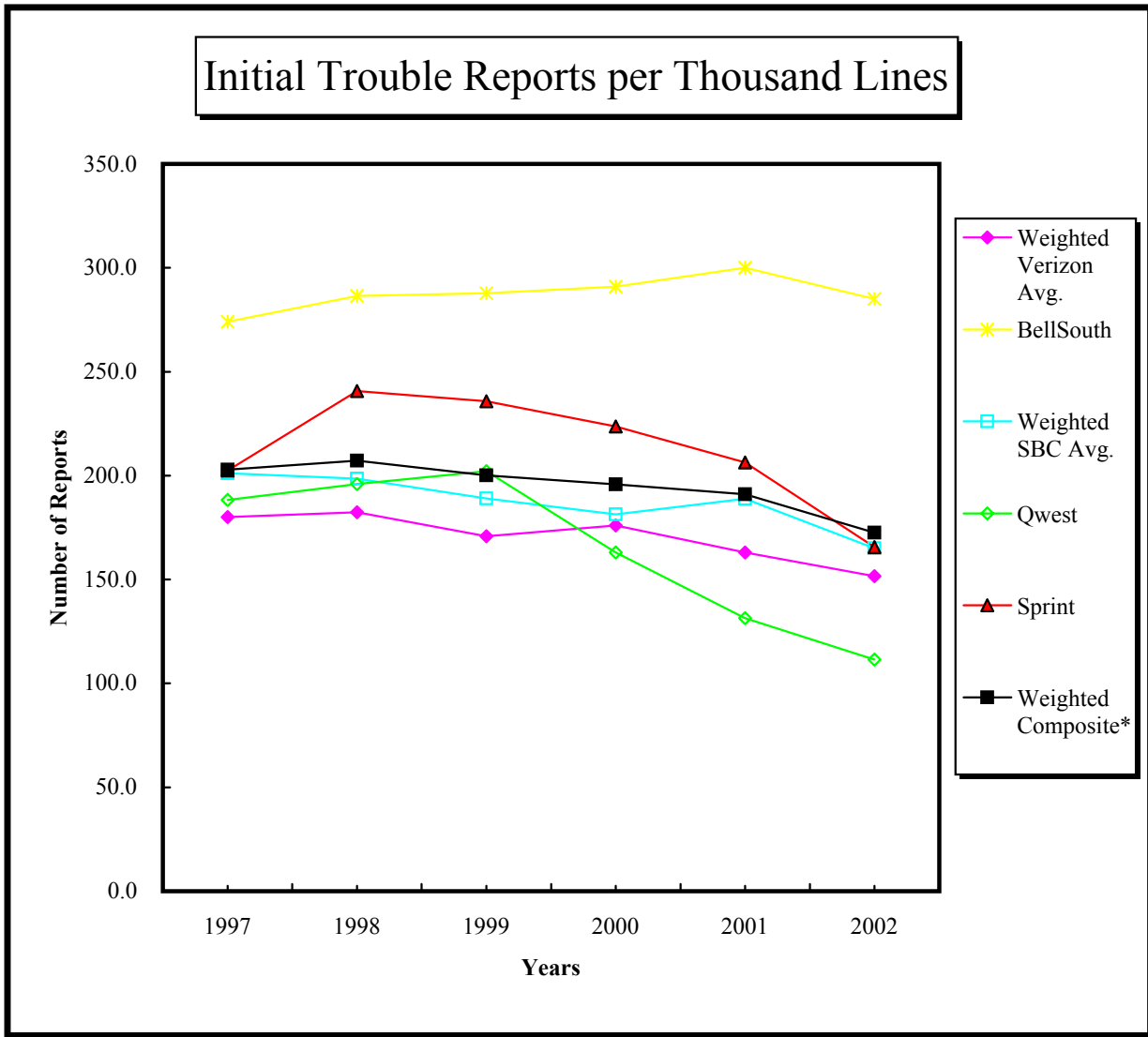


Average of Residential and Business Complaints per Million Access Lines  
(Using Calculated Composites from Tables)

ARMIS 43-05 Report	1997	1998	1999	2000	2001	2002
BellSouth	40.8	92.6	192.9	241.6	192.8	131.6
Qwest	420.0	530.6	722.1	379.2	203.4	149.2
SBC Ameritech	145.3	127.8	178.4	613.3	382.8	213.4
SBC Pacific	33.8	32.6	36.1	39.2	19.6	12.5
SBC Southwestern	38.4	38.1	28.6	28.1	23.9	17.0
Verizon GTE	85.1	129.5	86.1	106.8	80.1	60.3
Verizon North	216.8	177.3	205.0	237.0	169.2	107.4
Verizon South	69.7	94.4	240.2	354.6	222.1	185.6
Sprint	9.1	91.7	183.9	287.9	136.5	75.3
Weighted Composite*	118.5	143.3	206.8	260.7	167.4	112.8

\* Industry weighted composite is calculated using access line counts.

Chart 2

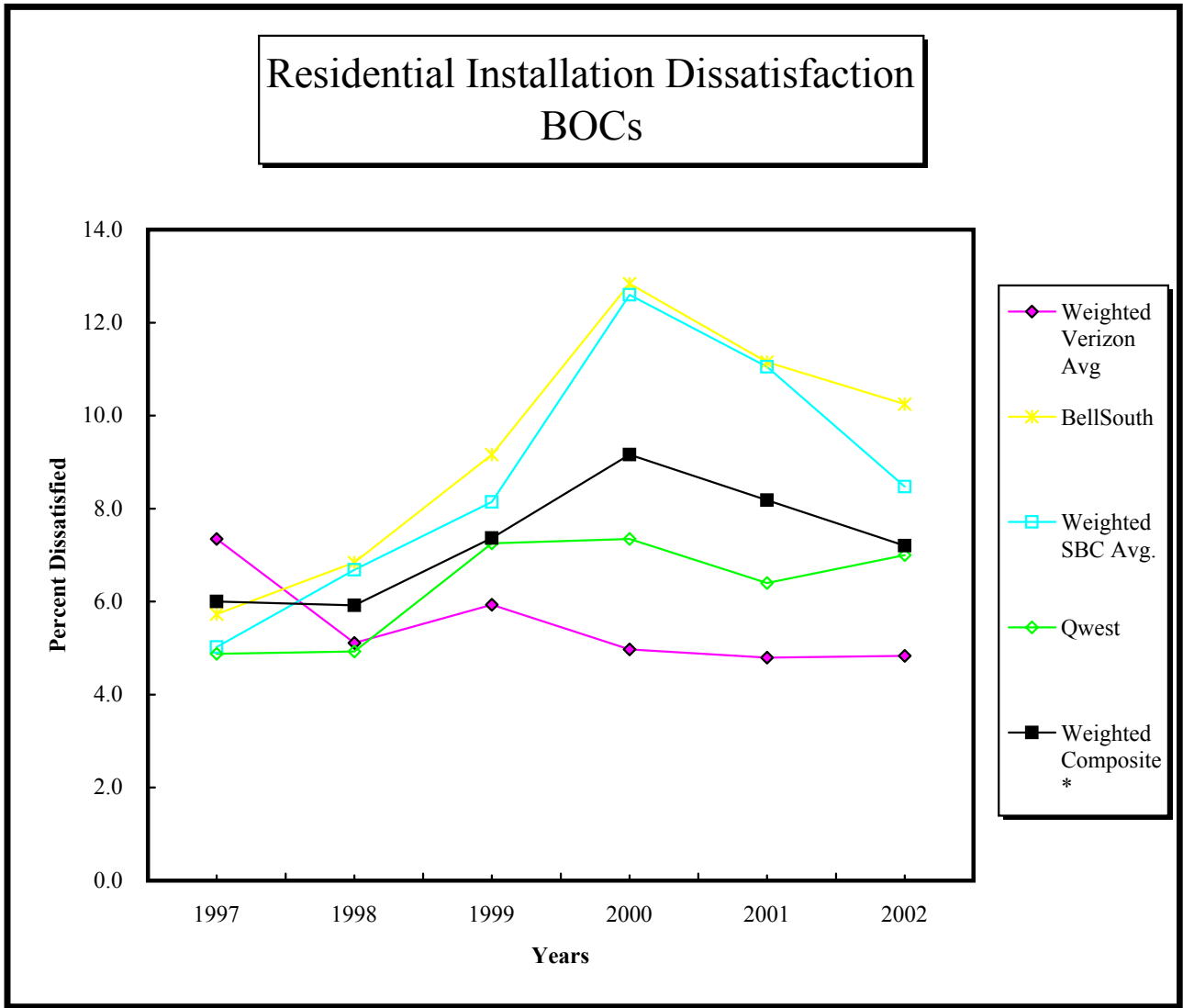


Initial Trouble Reports per Thousand Lines  
(Using Calculated Composites from Tables)

ARMIS 43-05 Report	1997	1998	1999	2000	2001	2002
BellSouth	274.1	286.5	287.8	290.9	300.1	285.0
Qwest	188.3	196.0	202.2	163.0	131.4	111.4
SBC Ameritech	205.3	216.9	208.3	177.5	200.4	171.4
SBC Pacific	156.7	155.7	153.3	157.7	146.8	129.0
SBC Southwestern	241.4	223.9	205.1	212.8	222.1	197.8
Verizon GTE	186.8	201.9	173.7	177.1	164.5	143.9
Verizon North	187.4	190.7	182.6	194.7	179.1	175.1
Verizon South	166.1	154.6	156.1	156.2	145.5	135.8
Sprint	202.5	240.7	235.8	223.7	206.3	165.6
Weighted Composite*	202.8	207.2	200.1	195.8	191.1	172.5

\* Industry weighted composite is calculated using access line counts.

**Chart 3**

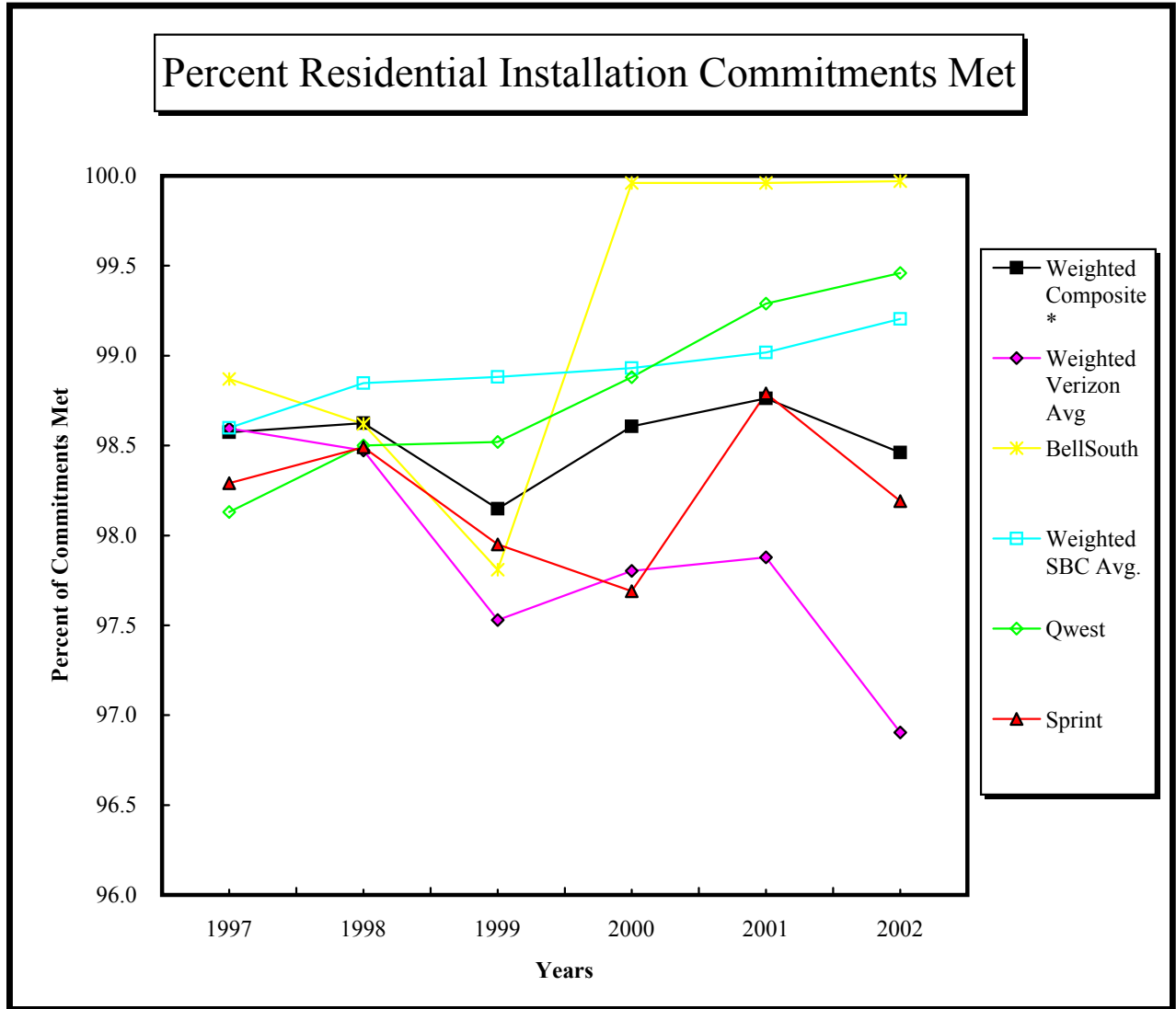


**Percent Dissatisfied -- BOC Residential Installations  
(Using Company Provided Composites)**

ARMIS 43-06 Report	1997	1998	1999	2000	2001	2002
BellSouth	5.7	6.8	9.2	12.8	11.2	10.3
Qwest	4.9	4.9	7.3	7.4	6.4	7.0
SBC Ameritech	5.4	7.6	7.7	16.4	15.5	10.7
SBC Pacific	4.2	7.2	10.8	13.5	8.8	6.4
SBC Southwestern	5.5	5.0	5.7	6.8	8.0	8.1
Verizon GTE	7.8	7.4	7.4	4.4	4.8	4.1
Verizon North (Combined with Verizon South)						
Verizon South	7.2	4.1	5.3	5.2	4.8	5.2
Weighted Composite*	6.0	5.9	7.4	9.2	8.2	7.2

\* Industry weighted composite is calculated using access line counts.

Chart 4

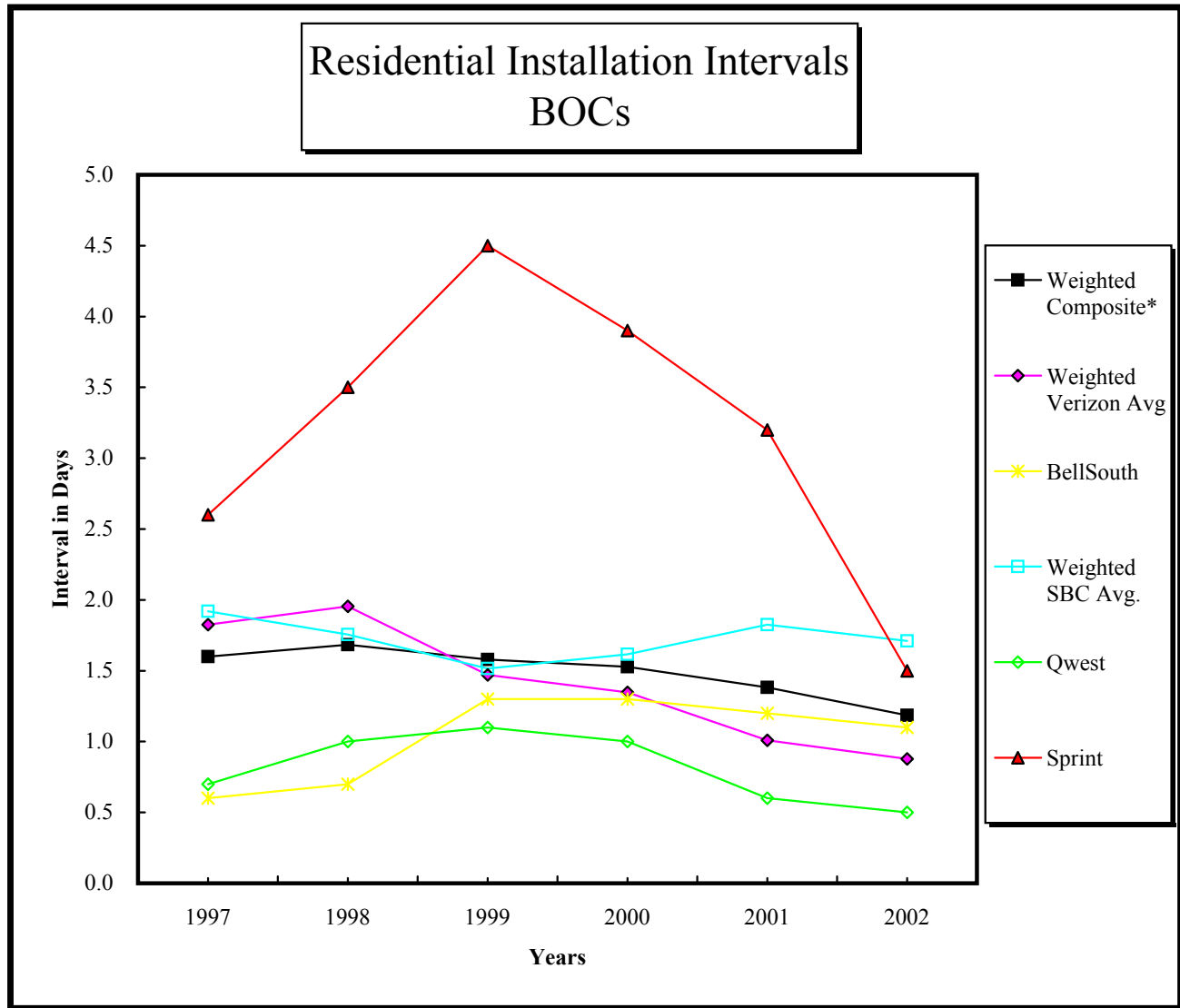


Percent Installation Commitments Met -- Residential Services  
(Using Company Provided Composites)

ARMIS 43-05 Report	1997	1998	1999	2000	2001	2002
BellSouth	98.9	98.6	97.8	100.0	100.0	100.0
Qwest	98.1	98.5	98.5	98.9	99.3	99.5
SBC Ameritech	98.6	98.8	99.0	98.9	98.8	99.1
SBC Pacific	98.3	98.8	99.0	99.1	99.5	99.6
SBC Southwestern	98.9	98.9	98.6	98.8	98.8	98.9
Verizon GTE	98.6	98.4	95.6	96.2	95.5	92.9
Verizon North (Combined with Verizon South)						
Verizon South	98.6	98.5	98.4	98.5	98.9	98.7
Sprint	98.3	98.5	98.0	97.7	98.8	98.2
Weighted Composite*	98.6	98.6	98.1	98.6	98.8	98.5

\* Industry weighted composite is calculated using access line counts.

Chart 5

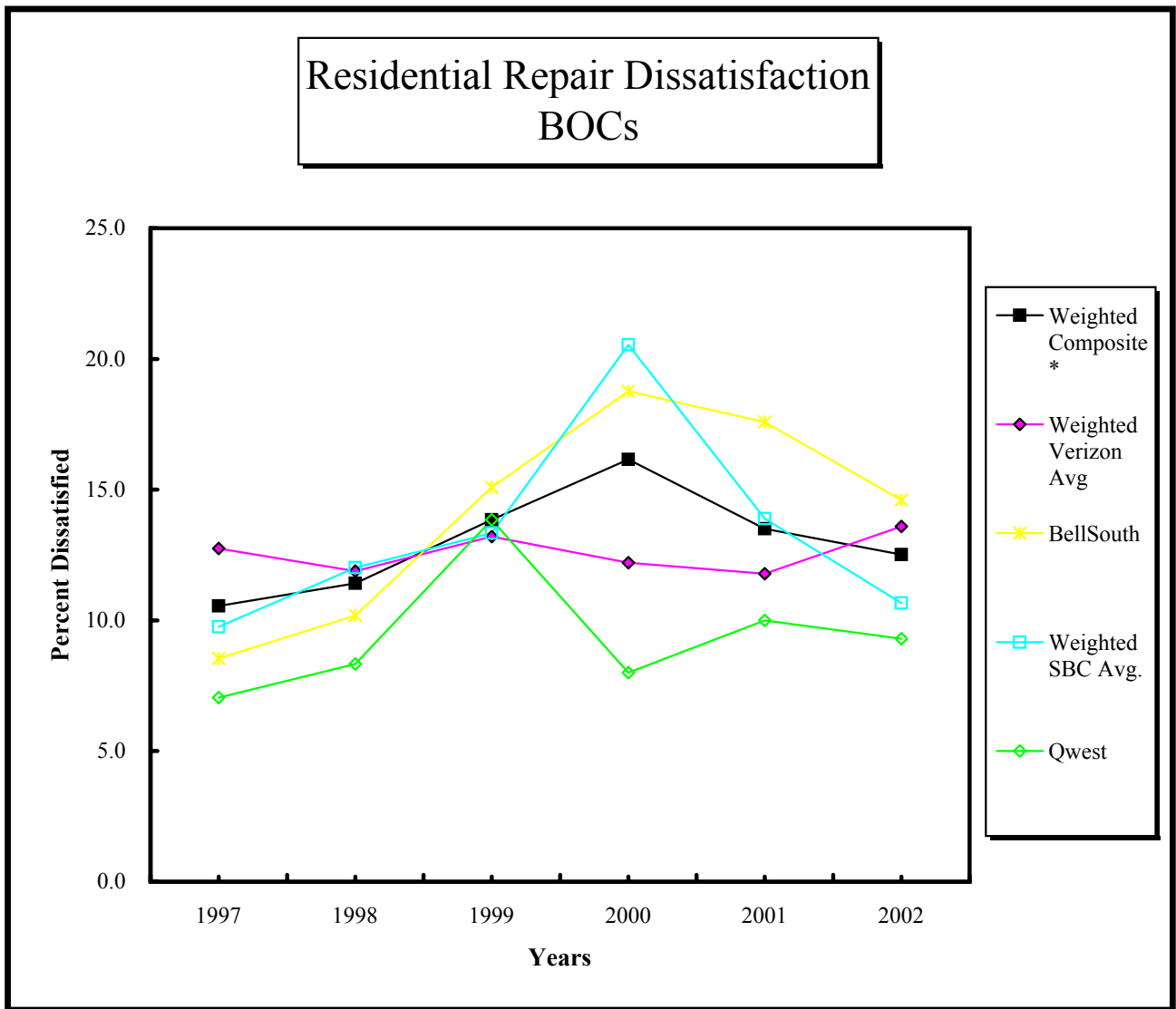


Average BOC Residential Installation Interval in Days  
(Using Company Provided Composites)

ARMIS 43-05 Report	1997	1998	1999	2000	2001	2002
BellSouth	0.6	0.7	1.3	1.3	1.2	1.1
Qwest	0.7	1.0	1.1	1.0	0.6	0.5
SBC Ameritech	2.1	2.2	2.1	2.1	2.0	2.1
SBC Pacific	2.8	2.2	1.5	1.8	1.3	1.2
SBC Southwestern	0.7	0.7	0.8	0.8	2.2	1.8
Verizon GTE	2.8	3.0	1.4	1.0	0.8	0.6
Verizon North (Combined with Verizon South)						
Verizon South	1.4	1.5	1.5	1.5	1.1	1.0
Sprint	2.6	3.5	4.5	3.9	3.2	1.5
Weighted Composite*	1.6	1.7	1.6	1.5	1.4	1.2

\* Industry weighted composite is calculated using access line counts.

Chart 6

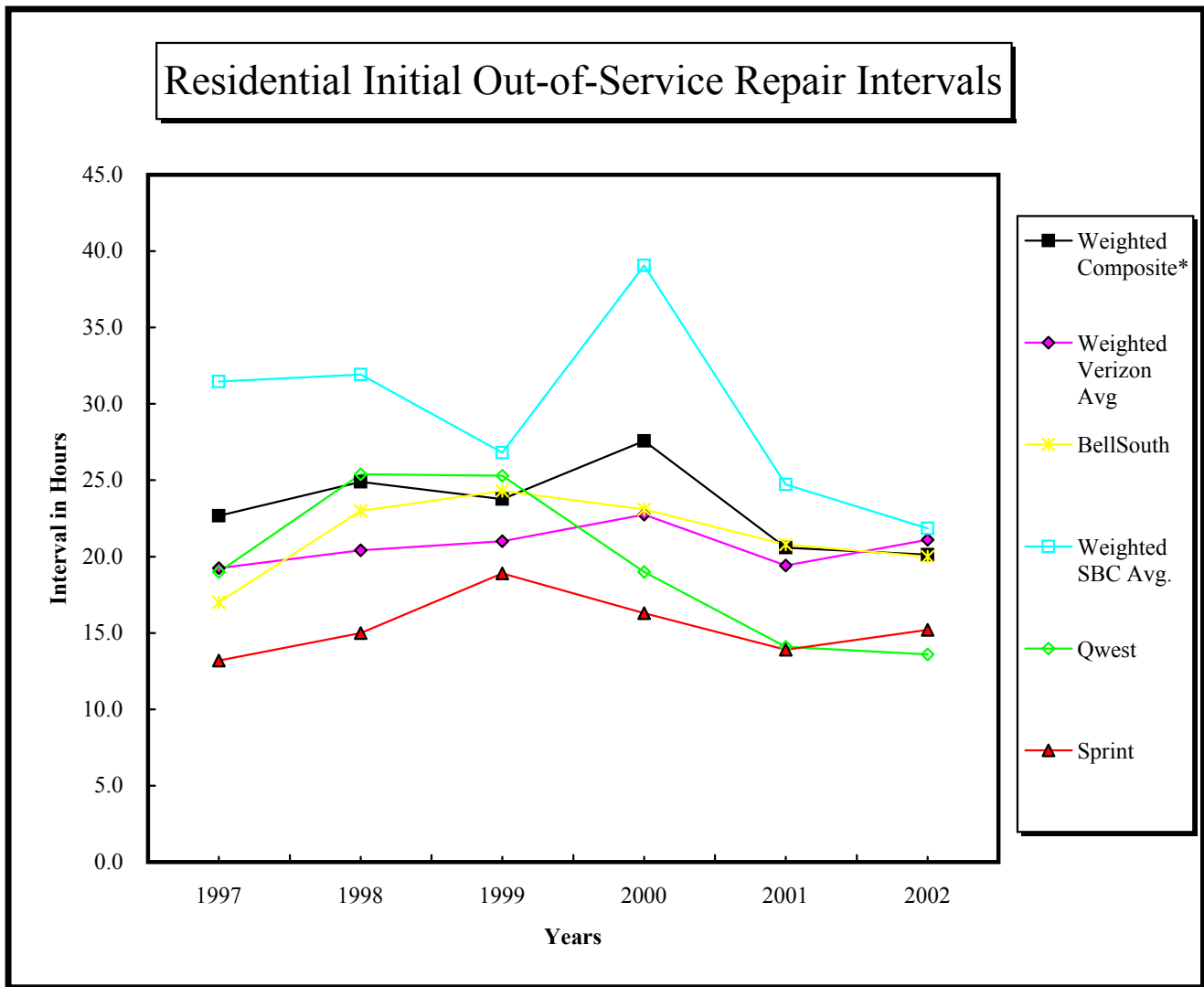


Percent Dissatisfied -- BOC Residential Repairs  
(Using Company Provided Composites)

ARMIS 43-06 Report	1997	1998	1999	2000	2001	2002
BellSouth	8.5	10.2	15.1	18.8	17.6	14.6
Qwest	7.1	8.3	13.9	8.0	10.0	9.3
SBC Ameritech	10.4	12.4	15.4	26.5	19.2	14.6
SBC Pacific	10.6	15.6	15.8	23.6	10.0	7.3
SBC Southwestern	8.0	7.6	7.9	9.6	11.7	9.6
Verizon GTE	11.8	11.0	11.6	9.4	10.1	11.9
Verizon North (Combined with Verizon South)						
Verizon South	13.7	12.8	14.8	15.0	13.4	15.3
Weighted Composite*	10.6	11.4	13.9	16.2	13.5	12.5

\* Industry weighted composite is calculated using access line counts.

Chart 7



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

ARMIS 43-05 Report	1997	1998	1999	2000	2001	2002
BellSouth	17.0	23.0	24.3	23.1	20.8	20.0
Qwest	19.0	25.4	25.3	19.0	14.1	13.6
SBC Ameritech	25.4	23.7	21.7	49.0	22.7	18.9
SBC Pacific	46.5	49.5	37.7	42.1	26.8	25.9
SBC Southwestern	22.1	22.4	20.9	23.2	24.9	21.0
Verizon GTE	15.0	14.9	14.1	13.0	13.5	14.2
Verizon North (Combined with Verizon South)						
Verizon South	21.1	22.8	24.0	27.0	22.0	24.1
Sprint	13.2	15.0	18.9	16.3	13.9	15.2
Weighted Composite*	22.7	24.9	23.8	27.6	20.6	20.1

\* Industry weighted composite is calculated using access line counts.



**Table 1**  
**Company Comparison**  
**Installation, Maintenance and Customer Complaints**  
**2002**

	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	100.0	98.5	85.2	90.5	85.1	98.7	98.7	91.2	93.8
Average Installation Interval (days)	19.1	12.7	43.3	28.3	31.7	29.7	23.0	25.5	16.5
Average Repair Interval (hours)	0.7	1.7	22.3	16.6	13.5	2.6	3.2	10.4	2.8
<b>Access Services Provided To Carriers -- Special Access</b>									
Percent Installation Commitments Met	99.9	96.9	98.1	85.3	89.6	88.4	94.6	90.5	92.9
Average Installation Interval (days)	13.1	10.8	15.2	28.7	12.7	25.2	17.1	20.5	9.9
Average Repair Interval (hours)	3.0	2.4	4.0	3.4	3.2	8.1	3.3	14.6	4.7
<b>Local Services Provided to Residential and Business Customers</b>									
Percent Installation Commitments Met	100.0	99.4	99.0	99.5	98.8	98.6	98.5	98.7	97.8
Residence	100.0	99.5	99.1	99.6	98.9	98.6	98.7	98.9	98.2
Business	99.9	98.6	98.3	98.9	97.9	97.8	96.7	96.8	94.9
Average Installation Interval (days)	1.2	0.6	2.1	1.4	1.9	1.1	1.3	0.6	1.7
Residence	1.1	0.5	2.1	1.2	1.8	1.0	1.2	0.4	1.5
Business	1.7	1.4	2.6	2.7	2.3	1.8	2.4	1.7	2.6
Average Out-of- Service Repair Interval (hours)	18.4	13.6	18.6	23.5	19.9	23.8	21.6	14.3	15.1
Total Residence	20.0	13.6	18.9	25.9	21.0	25.1	22.9	15.5	15.2
Total Business	10.6	13.5	17.2	12.1	13.5	18.9	15.2	9.3	13.7
<b>Initial Trouble Reports per Thousand Lines</b>									
Total MSA	285.0	111.4	171.4	129.0	197.8	175.1	135.8	143.9	165.6
Total Non MSA	267.5	110.5	170.5	126.8	186.2	182.1	132.7	138.2	148.0
Total Residence	381.2	115.1	181.4	179.9	255.3	133.1	172.3	165.0	200.6
Total Business	327.3	134.1	221.2	168.8	272.6	245.0	178.5	165.2	202.3
Troubles Found per Thousand Lines	173.9	61.2	79.1	58.9	78.2	81.8	65.1	95.0	69.0
Repeat Troubles as a Percent of Trouble Reports	161.3	76.2	118.7	106.2	141.7	125.9	102.9	122.0	93.0
	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.1	0.2
<b>Residential Complaints per Million Residential Access Lines</b>									
	203.8	169.1	324.4	20.4	26.8	166.9	312.5	86.7	110.3
<b>Business Complaints per Million Business Access Lines</b>									
	59.3	129.3	102.4	4.6	7.1	47.9	58.6	33.8	40.2
* Please refer to text for notes and data qualifications.									

**Table 2**  
**Company Comparison**  
**Switch Downtime & Trunk Blocking**  
**2002**

	BellSouth	Qwest	SBC Ameritech	SBC Pacific	SBC Southwest	Verizon North	Verizon South	Verizon GTE	Sprint
<b>Total Access Lines in Thousands</b>	22,955	15,682	19,151	17,248	15,294	17,442	21,368	16,894	7,953
<b>Total Trunk Groups</b>	3,577	3,378	1,111	1,581	802	826	1,005	1,669	7,436
<b>Total Switches</b>	1,637	1,337	1,455	778	1,652	1,279	1,344	3,164	1,563
<b>Switches with Downtime</b>									
Number of Switches	68	252	65	32	71	34	28	42	136
As a percentage of Total Switches	4.2%	18.8%	4.5%	4.1%	4.3%	2.7%	2.1%	1.3%	8.7%
<b>Average Switch Downtime in seconds per Switch*</b>									
For All Events (including events over 2 Minutes)	97.8	95.0	36.6	4.2	49.0	36.3	31.2	118.0	460.8
For Unscheduled Events Over 2 Minutes	90.3	78.0	29.5	3.2	44.7	33.6	30.3	21.8	381.1
<b>For Unscheduled Downtime More Than 2 Minutes</b>									
Number of Occurrences or Events	34	42	25	8	11	26	13	13	71
Events per Hundred Switches	2.1	3.1	1.7	1.0	0.7	2.0	1.0	0.4	4.5
Events per Million Access Lines	1.48	2.68	1.31	0.46	0.72	1.49	0.61	0.77	8.93
Average Outage Duration in Minutes per Event	72.4	41.4	28.6	5.1	111.8	27.6	52.2	88.4	139.8
Average Lines Affected per Event in Thousands	21.7	6.3	28.1	37.5	23.8	23.7	22.2	5.1	12.3
Outage Line-Minute per Event in Thousands	777.3	218.7	644.9	171.9	2,900.1	483.1	163.6	234.1	1,896.0
Outage Line-Minute per 1,000 Access Lines	1,151.3	585.7	841.9	79.7	2,085.8	720.1	99.5	180.1	16,925.4
<b>For Scheduled Downtime More Than 2 Minutes</b>									
Number of Occurrences or Events	5	51	20	0	7	3	3	0	64
Events per Hundred Switches	0.3	3.8	1.4	0.0	0.4	0.2	0.2	0.0	4.1
Events per Million Access Lines	0.22	3.25	1.04	0.00	0.46	0.17	0.14	0.00	8.05
Average Outage Duration in Minutes per Event	29.3	4.0	7.1	NA	14.3	10.7	2.3	NA	32.4
Average Lines Affected per Event in Thousands	7.4	11.2	20.0	NA	52.3	20.8	23.6	NA	9.9
Outage Line-Minute per Event in Thousands	99.9	53.3	136.4	NA	243.6	203.9	55.6	NA	364.7
Outage Line-Minute per 1,000 Access Lines	21.8	173.4	142.5	0.0	111.5	35.1	7.8	0.0	2,934.9
<b>% Trunk Groups Exceeding Blocking Objectives</b>	2.60%	2.19%	8.37%	1.45%	0.25%	3.63%	8.26%	0.06%	0.15%

\*Aggregate downtime divided by total number of company switches. Please refer to text for notes and data qualifications.

**Table 3**  
**Company Comparison**  
**Switch Downtime Causes -- Outages More than 2 Minutes in Duration**  
**2002**

	BellSouth	Qwest	SBC Ameritech	SBC Pacific	SBC Southwest	Verizon North	Verizon South	Verizon GTE	Sprint
<b>Total Number of Outages More than 2 Minutes</b>									
1. Scheduled	5	51	20	0	7	3	3	0	64
2. Procedural Errors -- Telco. (Inst./Maint.)	0	0	0	0	4	3	1	1	20
3. Procedural Errors -- Telco. (Other)	5	7	1	1	0	0	0	0	0
4. Procedural Errors -- System Vendors	4	4	1	0	1	2	0	0	1
5. Procedural Errors -- Other Vendors	0	1	0	0	2	1	2	1	1
6. Software Design	10	2	13	0	3	7	2	0	3
7. Hardware design	1	0	9	0	0	0	0	0	0
8. Hardware Failure	8	25	1	6	0	12	5	8	13
9. Natural Causes	1	0	0	0	1	1	1	0	3
10. Traffic Overload	0	0	0	0	0	0	0	0	0
11. Environmental	0	0	0	0	0	0	0	0	2
12. External Power Failure	4	3	0	0	0	0	2	3	9
13. Massive Line Outage	0	0	0	0	0	0	0	0	3
14. Remote	0	0	0	0	0	0	0	0	9
15. Other/Unknown	1	0	0	1	0	0	0	0	7
<b>Total Outage Line-Minutes per Thousand Access Lines</b>									
1. Scheduled	21.8	173.4	142.5	0.0	111.5	35.1	7.8	0.0	2,934.9
2. Procedural Errors -- Telco. (Inst./Maint.)	0.0	0.0	0.0	0.0	1,661.7	186.1	8.7	15.8	224.3
3. Procedural Errors -- Telco. (Other)	25.0	146.5	7.7	10.0	0.0	0.0	0.0	0.0	0.0
4. Procedural Errors -- System Vendors	211.0	28.3	3.3	0.0	7.0	24.3	0.0	0.0	264.7
5. Procedural Errors -- Other Vendors	0.0	84.6	0.0	0.0	390.1	0.5	0.5	5.6	9.6
6. Software Design	767.0	3.0	747.8	0.0	24.6	394.4	23.4	0.0	2,061.1
7. Hardware design	3.7	0.0	76.5	0.0	0.0	0.0	0.0	0.0	0.0
8. Hardware Failure	78.4	180.7	6.7	47.9	0.0	114.7	17.7	137.2	2,446.6
9. Natural Causes	5.5	0.0	0.0	0.0	2.5	0.1	21.6	0.0	7,190.4
10. Traffic Overload	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11. Environmental	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	60.6
12. External Power Failure	45.4	142.5	0.0	0.0	0.0	0.0	27.6	21.5	1,941.4
13. Massive Line Outage	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,725.9
14. Remote	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	972.7
15. Other/Unknown	15.3	0.0	0.0	21.9	0.0	0.0	0.0	0.0	28.2

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

**Table 4**  
**Company Comparison**  
**2002 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	10.25	7.17	10.67	6.35	8.12	5.26	5.07	4.36
Small Business	9.58	15.93	11.85	6.30	8.87	9.20	8.16	7.69
Large Business	7.33	9.80	10.69	5.55	6.44	1.84	2.73	4.79
<b>Repairs:</b>								
Residential	14.60	9.30	14.57	7.25	9.63	15.96	14.62	12.36
Small Business	8.49	11.82	12.81	5.61	6.76	11.89	9.53	9.05
Large Business	6.67	9.00	11.67	4.08	5.90	4.39	2.98	4.42
<b>Business Office:</b>								
Residential	12.26	3.63	13.23	5.96	8.88	6.78	5.71	6.20
Small Business	14.26	7.09	12.48	5.79	7.67	7.67	8.73	9.04
Large Business	9.00	3.80	10.99	5.88	6.67	2.21	6.86	5.73

\* Please refer to text for notes and data qualifications. (Qwest Large Business data is available only as a company composite, not by study area.)

**Table 5**  
**Company Comparison**  
**2002 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	27,226	7,086	10,693	10,742	7,899	20,440	18,597	22,434
Small Business	31,351	3,542	10,477	10,515	7,240	18,590	18,385	18,332
Large Business	8,496	1,160	3,355	3,206	2,660	837	1,104	313
<b>Repairs:</b>								
Residential	27,948	2,267	10,722	12,615	10,819	20,349	18,550	18,523
Small Business	34,260	513	10,745	10,358	10,719	20,323	18,116	22,439
Large Business	7,929	1,069	3,710	3,063	2,726	780	925	294
<b>Business Office:</b>								
Residential	41,753	7,086	21,409	23,834	38,342	10,851	13,622	14,462
Small Business	11,106	3,542	20,787	21,294	4,823	5,308	5,683	5,500
Large Business	400	1,160	3,454	4,681	2,639	660	845	227

\* Please refer to text for notes and data qualifications. (Qwest Large Business is available only as a company composite, not by study area.)

## Appendix A – Description of Key Elements in Tables 1-3

This Appendix contains descriptions of key data elements that appear in Tables 1-3 of the Quality of Service Report. These data elements are derived from raw source data submitted by carriers in the ARMIS 43-05 reports. Row and column numbers of the raw source data associated with each data element are included in footnotes to the data descriptions below.<sup>1</sup> The data descriptions also indicate those data elements that have been included in Charts 1-7.

### 1. Percent of Installation Commitments Met

This item represents the 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>2</sup>

### 2. Average Installation Interval (in days)

This item represents the 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>3</sup>

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<sup>1</sup> For ARMIS rows 110-121 in the raw 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. In the raw data 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 beginning 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>2</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).

<sup>3</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.

### 3. Average Repair Interval (in hours)

This item represents the 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>4</sup> This customer feedback data is extracted from the ARMIS 43-06 report composite filings.

### 4. Initial Trouble Reports per Thousand Access Lines

This item is 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.)<sup>5</sup>

### 5. Found or Verified Troubles per Thousand Access Lines

This item is 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>6</sup>

### 6. Repeat Troubles as a percent of Initial Trouble Reports

This item is 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>7</sup>

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<sup>4</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>5</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 line filing instructions were changed in 1997 to require reporting in whole numbers rather than in thousands.

<sup>6</sup> Data shown is from 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>7</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. This item is subcategorized by MSA, non-MSA, residence, and business.

## 7. Complaints per Million Access Lines

This item represents the number of residential and business customer complaints, per million access lines, reported to state or federal regulatory bodies during the reporting period.<sup>8</sup>

## 8. Number of Access Lines, Trunk Groups and Switches

This item represents the number of in-service access lines, trunk groups, and switches, as shown in the ARMIS 43-05 report.<sup>9</sup> Trunk groups only include common trunk groups between Incumbent 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 in the raw carrier data filings has been reported in whole numbers.

## 9. Switches with Downtime

This item represents the number of network switches experiencing downtime and the percentage of the total number of company network switches experiencing downtime.<sup>10</sup>

## 10. Average Switch Downtime in Seconds per Switch

This item represents (1) the total switch downtime divided by the total number of company network switches and (2) the total switch downtime for outages longer than 2 minutes divided by the total number of switches. Results for average overall switch downtime are shown in seconds per switch.<sup>11</sup>

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<sup>8</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>9</sup> The item presents the count of in-service access lines included on row 140, column j or 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. It appears that at least some of the companies have included UNE-P quantities with the access line data in the 43-05 report.

<sup>10</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.

<sup>11</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).



## 11. Unscheduled Downtime Over 2 Minutes per Occurrence

This item presents several summary statistics including, (1) the number of occurrences of more than 2 minutes in duration that were unscheduled, (2) the number of occurrences per million access lines, (3) the average number of minutes per occurrence, (4) the average number of lines affected per occurrence, (5) the average number of line-minutes per occurrence in thousands, and (6) 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>12</sup>

## 12. Scheduled Downtime Over 2 Minutes per Occurrence

This item is determined as in item 11, above, except that it consists of scheduled occurrences.<sup>13</sup>

## 13. Percent of Trunk Groups Meeting Design Objectives

This data item provides the percentage of trunk groups exceeding the design blocking objectives (typically 0.5 percent for trunk groups that include feature group D and 1.0 percent for other trunk groups) for three or more consecutive months. The trunk groups measured and reported are interexchange access facilities. These represent only a small portion of the total trunk groups in service.<sup>14</sup>

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<sup>12</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>13</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>14</sup> These data are shown as the sum of rows 189 and 190, column ak divided by row 180 column ak.

## Customer Response

**Publication:** *Quality of Service of the Local Operating Companies, February 2004*

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