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FCC RELEASES REPORT ON QUALITY OF SERVICE OF INCUMBENT LOCAL EXCHANGE CARRIERS

Washington, D. C. – The FCC has released a report entitled *Quality of Service of Incumbent Local Exchange Carriers*. This report summarizes quality of service data for 2003 submitted by major incumbent local exchange carriers (regional Bell operating companies and Sprint), as well as smaller price-cap incumbent local exchange carriers. The data are presented separately for each operating entity and include measures of service quality provided to residential and business 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 2003:

- Overall, the percent of switches with outages in the major incumbent holding companies has steadily declined over the past 5 years.
- Average complaints per million lines were comparable for all individual major incumbent holding companies in 2003 following declines for the past two reporting periods.
- Smaller carriers on average had consistently longer installation intervals than major incumbent carriers, but had comparable average repair intervals.
- Average residential installation intervals declined or remained the same for all but one major incumbent holding company, while residential repair intervals increased for all but one major incumbent holding company
- This year's summary report includes data from all reporting incumbent local exchange carriers for the first time.

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 Best Copy and Printing, Inc. at (202) 488-5300. 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 Jonathan Kraushaar of the Industry Analysis and Technology Division, Wireline Competition Bureau at (202) 418-0947, 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.

QUALITY OF SERVICE OF INCUMBENT LOCAL EXCHANGE CARRIERS

DECEMBER 2004

Industry Analysis and Technology Division
Wireline Competition Bureau
Federal Communications Commission



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Quality of Service of Incumbent Local Exchange Carriers

Introduction

This report summarizes various kinds of service quality data filed by the regional Bell operating companies (BOCs), Sprint and other price-cap regulated incumbent local exchange carriers for calendar year 2003. 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 incumbent local exchange carriers that are regulated as price-cap carriers. The Commission summarizes these data and periodically publishes a report on quality of service trends.¹ 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 Bureau² to establish a monitoring program that would provide a basis for detecting adverse trends in BOC 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 include non-BOC carriers that have elected to be subject to price-cap regulation.³ These carriers are

1 The last report, which covered data for 2002, was released in February 2004. See Industry Analysis and Technology Division, Wireline Competition Bureau, Federal Communications Commission, *Quality of Service of the Local Operating Companies* (February, 2004). This report can be found on the Commission's website at www.fcc.gov/wcb/stats under the file name QUAL02.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.

3 Policy and Rules Concerning Rates for Dominant Carriers, CC Docket No. 87-313, Second Report and

known as non-mandatory price-cap carriers and most of them are much smaller than the BOCs. Second, it included service quality reports in the Automated Reporting Management Information System (ARMIS).⁴ Finally, the Commission ordered significant changes to the kinds of data these carriers had to report.⁵ Following these developments, the Commission released service quality summary reports in February 1993, March 1994, March 1996, September 1998, December 1999, December 2001, January 2003, and February 2004 that focused on the largest reporting companies.⁶ This year's summary report includes data from all reporting price-cap companies for the first time.⁷

In 1996, pursuant to requirements in the Telecommunications Act of 1996,⁸ the Commission reduced the frequency of data reporting for all reports to annual submissions.⁹ In May 1997, relevant definitions were clarified further. These changes have been reflected in filed data starting with the 1997 calendar year. The raw data are now filed annually in April of each year.

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 BOCs. 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 The following smaller non-mandatory price-cap companies that file ARMIS 43-05 data are being included in this summary for the first time: Alltel Corp., Century Tel., Cincinnati Bell, Citizens, Citizens Frontier, Iowa Telecom, and Valor Telecommunications. Sprint, the largest of the non-mandatory price-cap companies, has been included in prior summaries.
- 8 Telecommunications Act of 1996, Pub. L. No. 104-104, 110 Stat. 56.
- 9 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.¹⁰ Tables in this year's report include data from the regional BOCs, Sprint and all other reporting incumbent local exchange carriers.¹¹ Tables 1(a) through 1(f) cover data for the regional BOCs, or mandatory price-cap companies, and tables 2(a) through 2(c), which were added this year, cover data for smaller non-mandatory price-cap companies. These companies report quality of service data at a study area level which generally represents operations within a given state. Although the companies provide selected company aggregate data, the tables of this report contain summary data recalculated by FCC staff as the composite aggregate of all study areas for each listed entity. This report also includes a fairly extensive summary of data about individual switching outages, including outage durations and numbers of lines affected, for which no company calculated summaries are provided. Switch outage data have also been aggregated to the company level for inclusion in the tables.

The company-level quality of service data included in Tables 1(a)-1(f) and Tables 2(a)-2(c) of this report 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.¹²

In the case of outage data summarized in Tables 1(b), 1(c), 2(b), and 2(c), we calculate a number of useful statistics from raw data records for individual switches with outages lasting more than two minutes. These statistics include the total number of events lasting more than two minutes,

10 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. The data are also available from Best Copy and Printing, Inc at (202) 488-5300. 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.

11 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, Ameritech, and SNET are shown separately despite the merger of SBC and Pacific Telesis in April 1997, SBC and SNET in October 1998, and SBC and Ameritech in October 1999.

12 Although companies have prepared their own company composites, we have recalculated a number of them from study area data for presentation in the tables 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 multiplying the average installation interval at the individual study area level by the number of orders in that study area, summing the results for all study areas, and then dividing that sum by the total number of orders.

the average outage duration, the average number of outages per hundred switches, the average number of outages per million access lines, and the 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.

The tables contained in this report cover data for 2003. Tables 1(a) and 2(a) provide 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. Tables 1(b) and 2(b) show switch downtime and trunk servicing data. Tables 1(c) and 2(c) show outage data by cause. Table 1(d) presents the percentages of residential, small business and large business customers indicating dissatisfaction with BOC installations, repairs and business offices, as determined by BOC customer perception surveys.¹³ Table 1(e) shows the underlying survey sample sizes.

This 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 the tables, this report contains 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 residential installation commitments met, residential installation intervals, residential repair dissatisfaction, and residential initial out-of-service repair intervals, respectively. Chart 8 has been added this year to display trends among the larger price-cap carriers in the percentage of switches with outages. 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.

This year, we begin to chart the performance of the smaller price-cap carriers on selected quality of service indicators including numbers of trouble reports, repair intervals and installation intervals. These indicators were selected for charting because they are generally less volatile than the others, thus allowing better comparison with similar trended data from the larger companies. (In the cases where we chart both large and small company performance, the larger companies are tracked on the chart with an 'A' designation, e.g., Chart 7A, while the smaller companies are tracked on the chart with a 'B' designation, e.g., Chart 7B.) Filed data are available only for the past one or two years for several of the smaller companies, which accounts for the truncated trend lines in some of the reports.

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(a), 1(b), 1(c), 2(a), 2(b), and 2(c) were prepared can be found in Appendix A of this report. Tables 1(d) and 1(e) were prepared from data filed only by the BOCs in the ARMIS 43-06 report. The statistics presented in Tables 1(d) and 1(e) are

13 Customer satisfaction data collected in the 43-06 report and summarized in Tables 1d and 1e is required to be reported only by the mandatory price-cap carriers.

straightforward and reflect the data in the format filed. Complete data descriptions are available in several Commission orders.¹⁴

Qualifications

This report presents data submitted by the carriers in the 2004 ARMIS filings covering calendar year 2003. The following discussion provides general qualifications on the use of data presented in this report. These relate to inconsistencies that may be observed in various versions of the data; variations in service quality measurements that may occur over time for reasons other than changes in company performance and their effect on trend analysis; proper interpretation of outage data; and the overall impact of external factors on company performance and 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, some inaccuracies or inconsistencies in the data may still remain that could become apparent when users subject the data to further analysis or compare it with data from other sources. Some common problems may be discovered in connection with the data presented here. In particular, Commission staff has recalculated holding company totals or data composites appearing in the accompanying tables, and these might not match company-filed totals or composites.¹⁵ 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. In addition, companies frequently file revised data to eliminate errors and other irregularities. These revisions may not be available in time to include in this report, or may not be used for other reasons.¹⁶

Except in the calculation of company composites, we have not, in most cases, deleted or adjusted data.¹⁷ 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 four to five months of the initial filing.¹⁸ It is expected that the

14 See supra note 9.

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

16 For example, revised data may introduce an inconsistency with the data of both prior and subsequent years.

17 For example, the data indicate that BellSouth Residential Installation Commitments Met remained at nearly 100 percent for 3 reporting periods. The data shown are rounded to the nearest tenth of a percent.

18 This year there has been a significant amount of late re-filed data which has continued past the end of September. While we have attempted to include much of this data we generally cannot be sure that all the charts and tables reflect revisions as of the same date, particularly when some companies re-file selected data after to the normal cutoff date for preparation of this report. In some cases revisions do not affect data items presented in this report. Most of the data contained in the charts and tables of this report typically reflect data revisions received through September.

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, trend analysis may uncover adverse trends in complaint levels of significant duration. These can serve as warning indicators 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.¹⁹

Variations 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. 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.²⁰ It appears that at least some of these changes have not been reported to the Commission. These factors tend to limit the number of years of reliable 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

19 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).

20 For example SBC reports changes for 2003 in its complaint data which were designed to normalize disparate reporting methodologies in its Ameritech region. Resulting declines in complaint levels are at least partially attributable to these changes which involved elimination of several complaint data reporting subcategories previously included by Ameritech. At our request the company restated 2002 data for Ameritech to conform to new procedures that were introduced for the 2003 data collection and reporting. The restated data was not formally filed as a revision but would have shown 43.9 residential complaints per million residential lines and 15.9 business complaints per million business lines. This would have resulted in an average of 29.9 complaints per million lines instead of the 213.4 complaints per million lines shown for the year 2002 Chart 1. Although improvement in 2003 is still indicated, the improvement appears to be more modest if we assume that SBC's procedural change took place in 2002 instead of 2003.

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.

Outage statistics should be considered in context. For example, a statistic representing 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 a statistic representing 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 outage line-minutes per event and per 1,000 access lines.

Finally, 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.

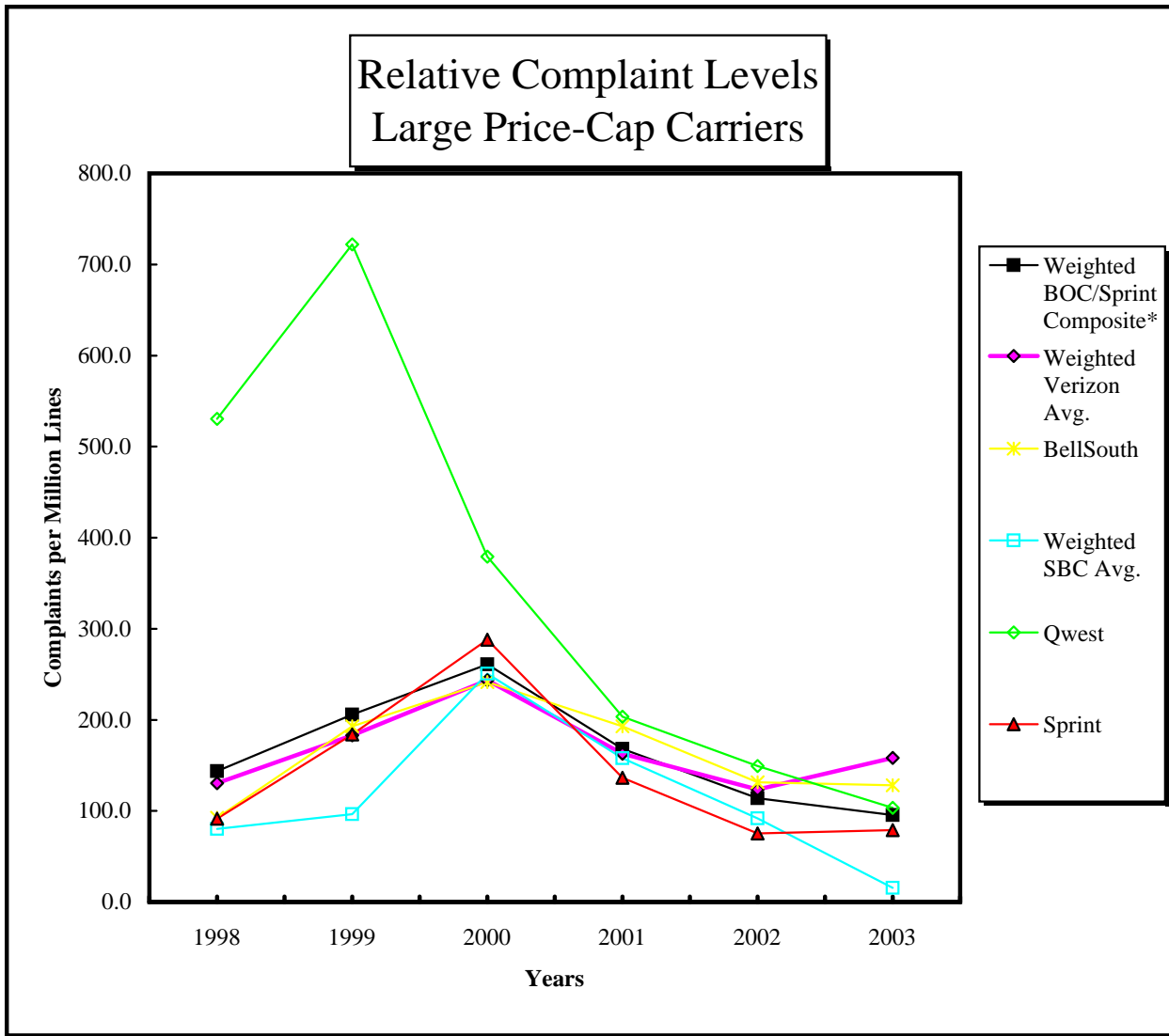
General Observations and Conclusions

This report tracks the multi-year performance of large and small price-cap carriers on key quality of service parameters. This year's data show that the longer term trend toward improved complaint levels among all the individual larger price-cap companies observed in the 2001 and 2002 data did not continue in 2003. The data on installation intervals and associated customer satisfaction levels showed stable or improved performance this year for all but one of the larger price-cap companies. However, the data for residential repair intervals showed declining performance for all but one large price-cap company. Increased repair intervals appeared in conjunction with increases in the number of reported initial trouble reports for three of the charted larger price-cap carriers. Nonetheless, residential customer dissatisfaction associated with repairs increased for only one of those carriers. In summary, the measures of performance of the larger price-cap carriers trended in this report showed small but mixed performance changes for the reporting companies; however, these companies appear for the most part to have performed better on installations than on repairs.

This report included charts highlighting trends in installation intervals, repair intervals and trouble reports for the smaller price-cap companies for the first time. The trended data from these companies' own rollups show typically longer average installation intervals and higher trouble report levels than for the larger carriers; however, repair intervals are typically about comparable, on average, to the larger carriers.

This report also examined trends in switch outages and found that, despite the somewhat erratic characteristics of outages, the composite aggregate percentage of switches with outages for Sprint and the BOCs has steadily declined over the past five or six years. Visibility of outage data in the tables of this report may have contributed to the long-term trend observed in the data.

Chart 1

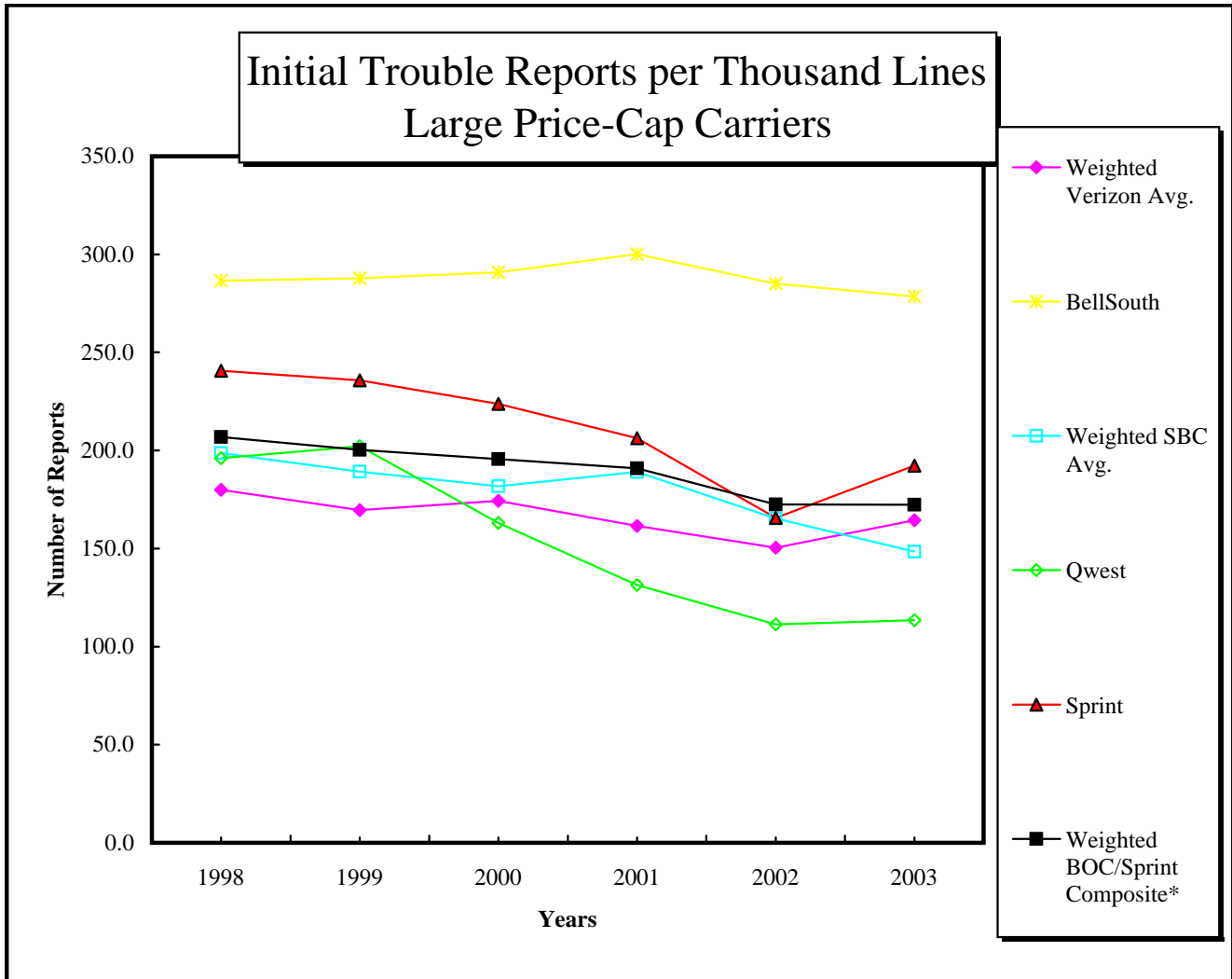


**Average of Residential and Business Complaints per Million Access Lines
(Using Calculated Composites from Tables)**

ARMIS 43-05 Report	1998	1999	2000	2001	2002	2003
BellSouth	92.6	192.9	241.6	192.8	131.6	128.0
Qwest	530.6	722.1	379.2	203.4	149.2	103.6
SBC Ameritech	127.8	178.4	613.3	382.8	213.4	13.3
SBC Pacific	32.6	36.1	39.2	19.6	12.5	10.7
SBC Southwestern	38.1	28.6	28.1	23.9	17.0	13.4
SBC SNET	326.8	323.0	326.4	231.6	186.6	87.1
Verizon GTE	129.5	86.1	106.8	80.1	60.3	79.1
Verizon North	177.3	205.0	237.0	169.2	107.4	85.7
Verizon South	94.4	240.2	354.6	222.1	185.6	277.1
Sprint	91.7	183.9	287.9	136.5	75.3	79.1
Weighted BOC/Sprint Composite*	143.6	205.8	260.9	168.1	113.8	95.3

*Weighted composite is calculated using access line counts.

Chart 2A

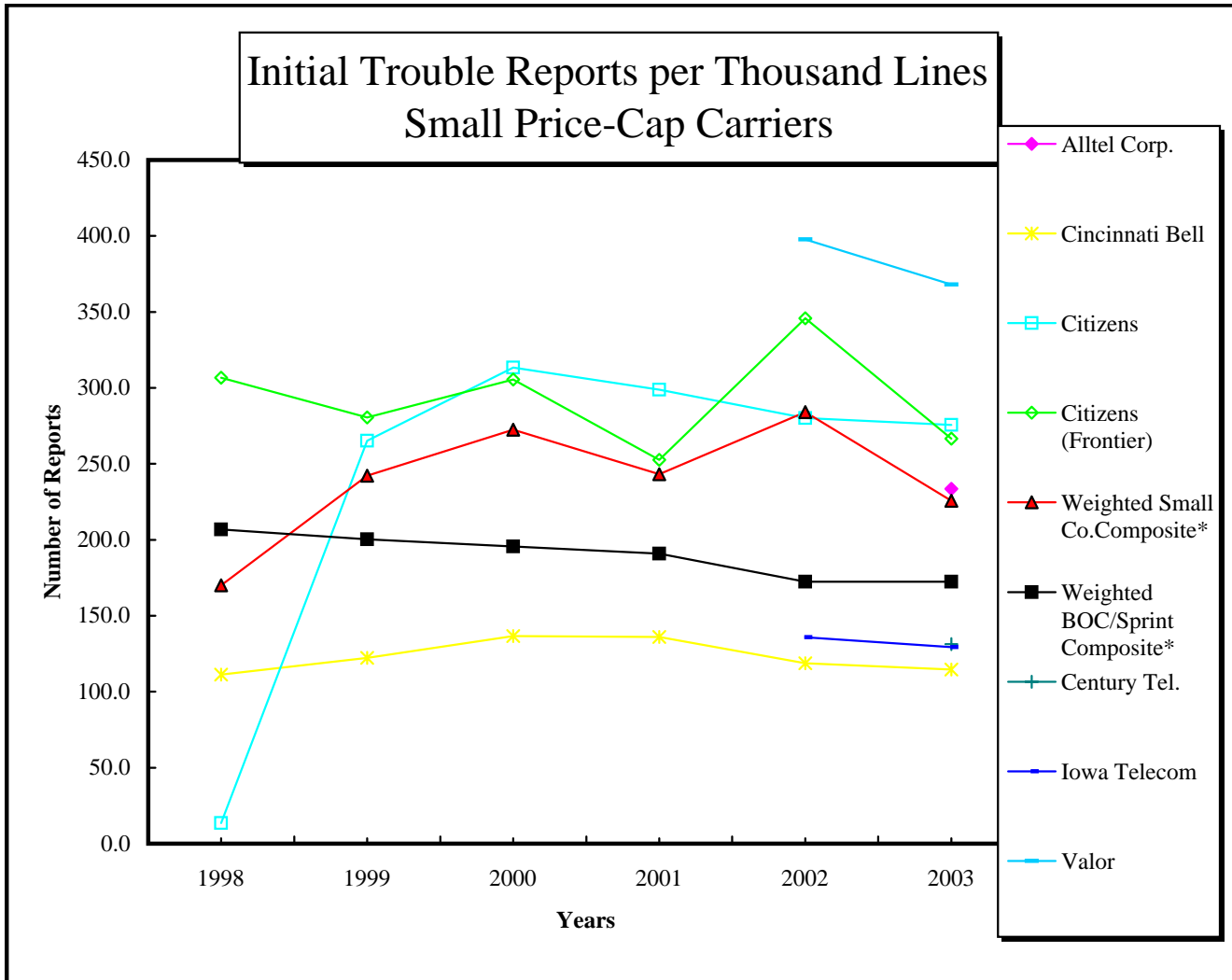


**Initial Total Trouble Reports per Thousand Lines (Residence + Business)
(Using Calculated Composites)**

ARMIS 43-05 Report	1998	1999	2000	2001	2002	2003
BellSouth	286.5	287.8	290.9	300.1	285.0	278.5
Qwest	196.0	202.2	163.0	131.4	111.4	113.4
SBC Ameritech	216.9	208.3	177.5	200.4	171.4	149.7
SBC Pacific	155.7	153.3	157.7	146.8	129.0	119.4
SBC Southwestern	223.9	205.1	212.8	222.1	197.8	175.4
SBC SNET	205.2	195.9	194.0	195.6	173.2	180.3
Verizon GTE	201.9	173.7	177.1	164.5	143.9	153.0
Verizon North	190.7	182.6	194.7	179.1	175.1	191.0
Verizon South	154.6	156.1	156.2	145.5	135.8	152.2
Sprint	240.7	235.8	223.7	206.3	165.6	192.2
Weighted BOC/Sprint Composite*	206.8	200.3	195.6	190.9	172.5	172.4

* Weighted composite is calculated using access line counts.

Chart 2B

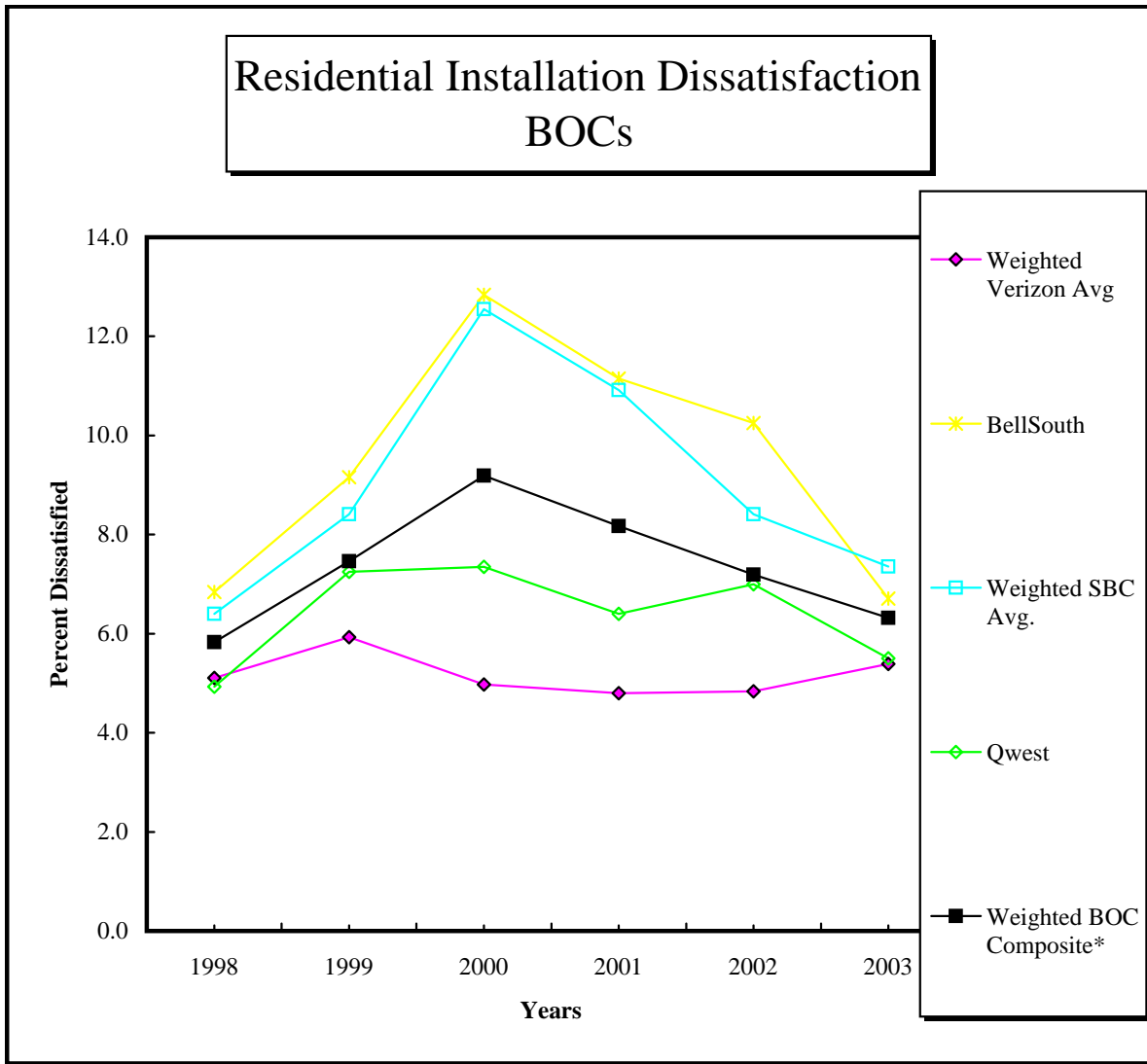


**Initial Total Trouble Reports per Thousand Lines (Residence + Business)
(Using Calculated Composites)**

ARMIS 43-05 Report	1998	1999	2000	2001	2002	2003
Alltel Corp.						233.5
Cincinnati Bell	111.2	122.3	136.6	136.0	118.7	114.6
Citizens	13.5	265.3	313.3	298.9	280.2	275.7
Citizens (Frontier)	306.7	280.5	305.6	252.6	345.8	266.6
Century Tel.						131.4
Iowa Telecom					135.9	129.4
Valor					397.7	368.0
Weighted BOC/Sprint Composite*	206.8	200.3	195.6	190.9	172.5	172.4
Weighted Small Co. Composite*	170.1	242.2	272.5	243.1	284.0	225.8

* Weighted composite is calculated using access line counts.

Chart 3

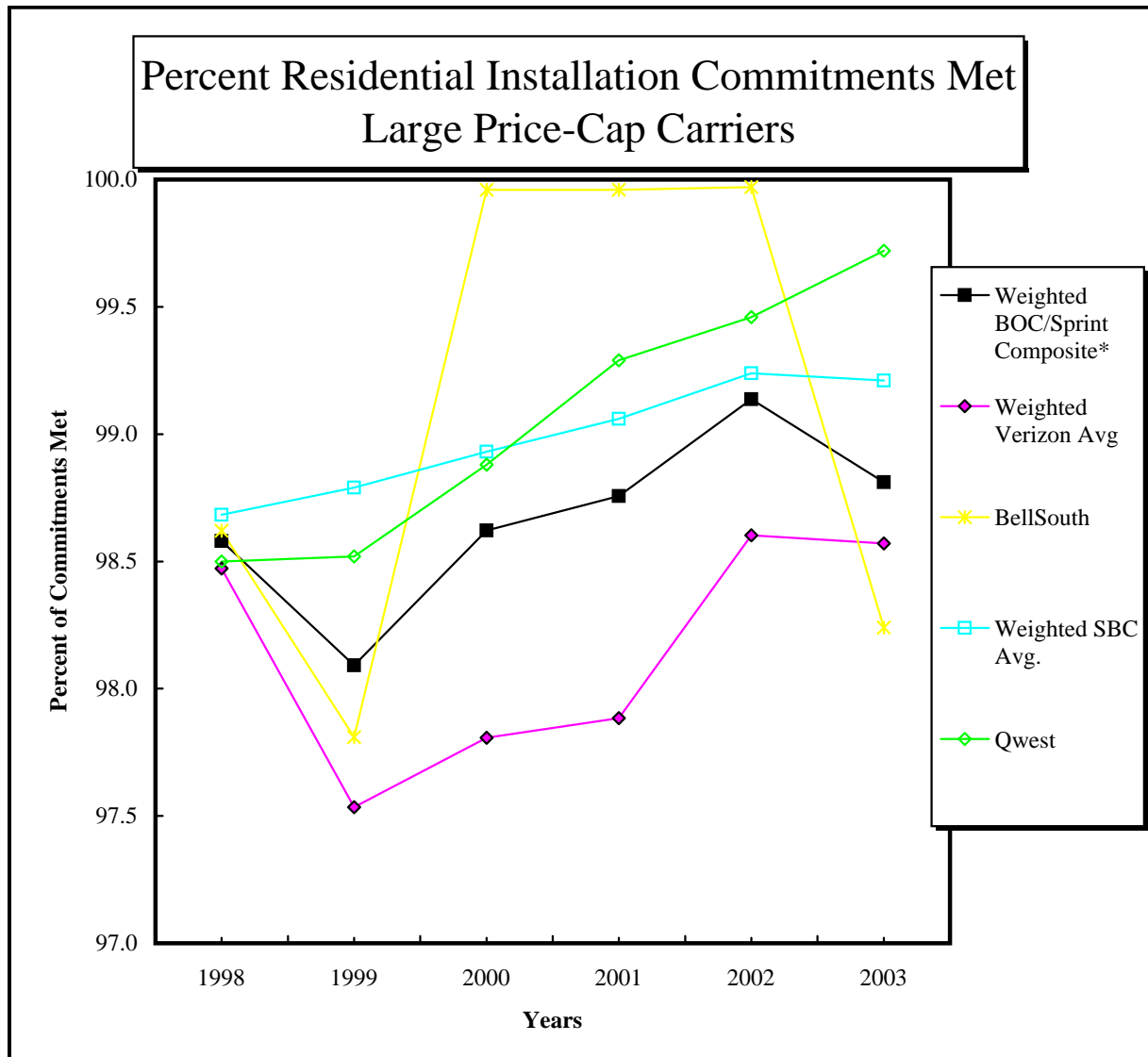


(Calculated From Company Provided Composites)
(Using Company Provided Composites)

ARMIS 43-06 Report	1998	1999	2000	2001	2002	2003
BellSouth	6.8	9.2	12.8	11.2	10.3	6.7
Qwest	4.9	7.3	7.4	6.4	7.0	5.5
SBC Ameritech	7.6	7.7	16.4	15.5	10.7	8.1
SBC Pacific	7.2	10.8	13.5	8.8	6.4	6.1
SBC Southwestern	5.0	5.7	6.8	8.0	8.1	7.9
SBC SNET		14.2	11.6	8.3	7.3	7.6
Verizon GTE	7.4	7.4	4.4	4.8	4.1	3.5
Verizon North (Combined with Verizon South)						
Verizon South	4.1	5.3	5.2	4.8	5.2	6.2
Weighted BOC Composite*	5.8	7.5	9.2	8.2	7.2	6.3

*Weighted composite is calculated using access line counts.

Chart 4

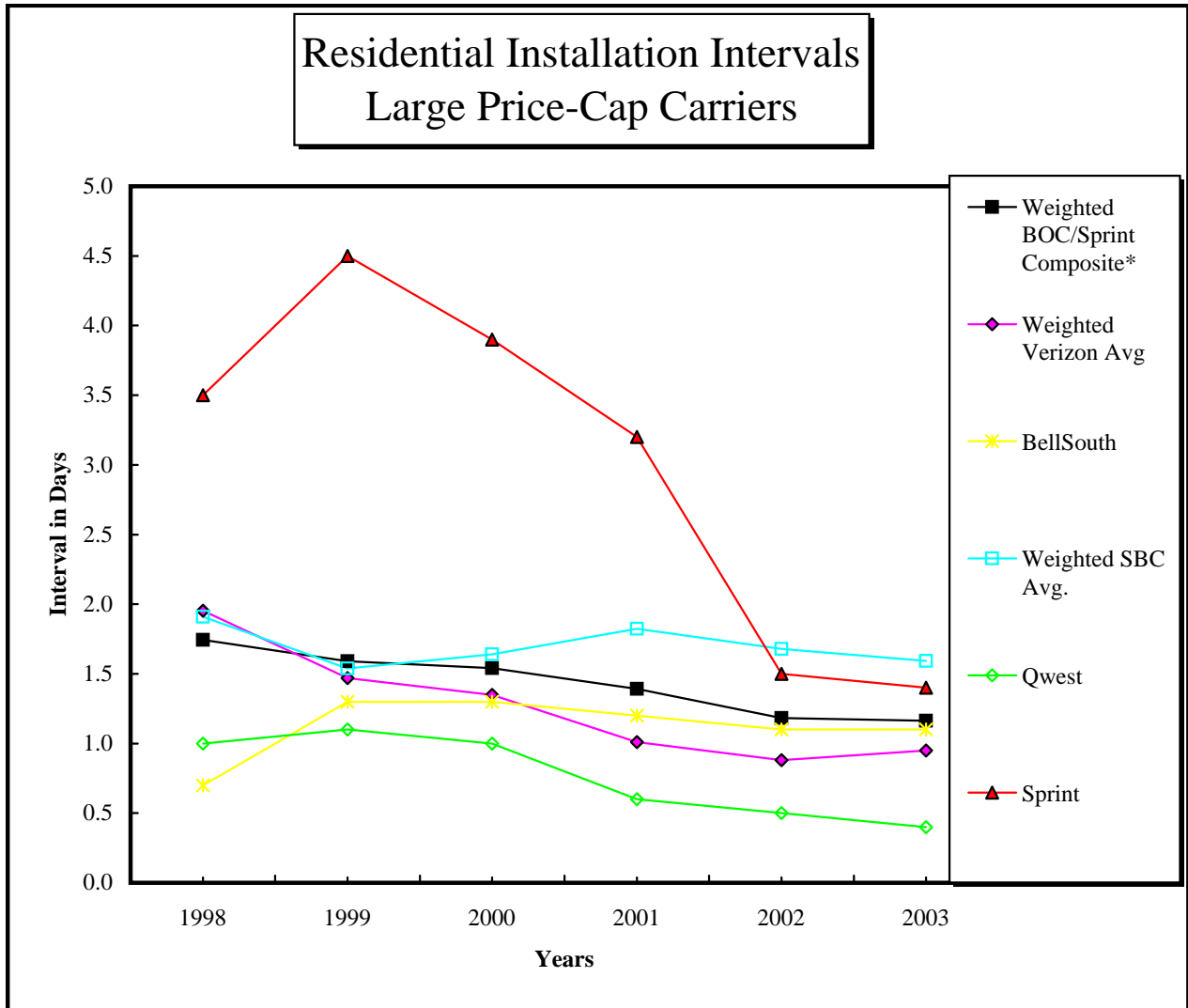


Percent Installation Commitments Met -- Residential Services
(Using Company Provided Composites)

ARMIS 43-05 Report	1998	1999	2000	2001	2002	2003
BellSouth	98.6	97.8	100.0	100.0	100.0	98.2
Qwest	98.5	98.5	98.9	99.3	99.5	99.7
SBC Ameritech	98.8	99.0	98.9	98.8	99.1	98.9
SBC Pacific	98.8	99.0	99.1	99.5	99.6	99.6
SBC Southwestern	98.9	98.6	98.8	98.8	98.9	99.1
SBC SNET	95.0	96.7	98.9	100.0	100.0	99.5
Verizon GTE	98.4	95.6	96.2	95.5	98.5	98.3
Verizon North (Combined with Verizon South)						
Verizon South	98.5	98.4	98.5	98.9	98.7	98.7
Sprint	98.5	98.0	97.7	98.8	98.2	97.5
Weighted BOC/Sprint Composite*	98.6	98.1	98.6	98.8	99.1	98.8

*Weighted composite is calculated using access line counts.

Chart 5A

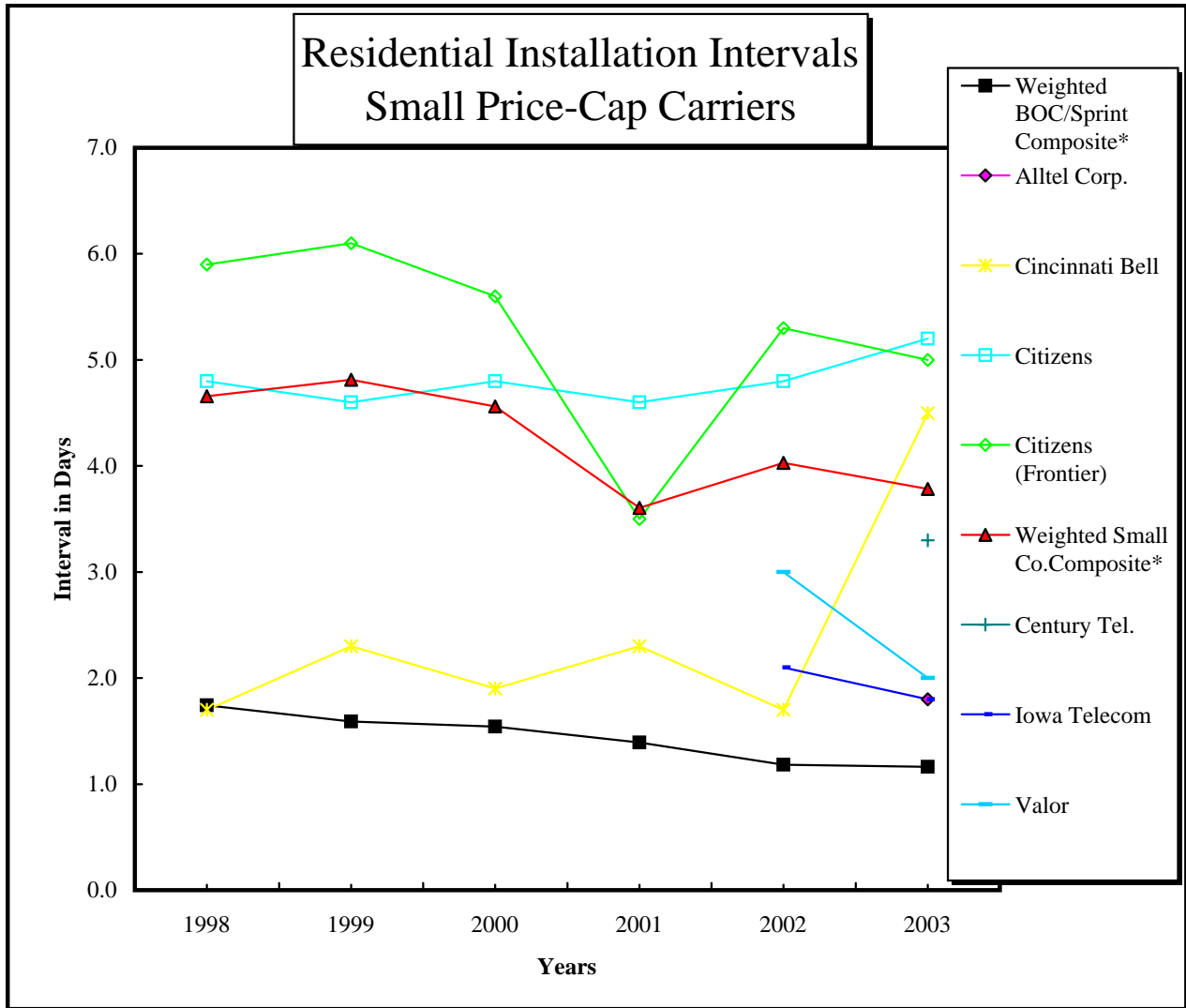


Average BOC Residential Installation Interval in Days
(Using Company Provided Composites)

ARMIS 43-05 Report	1998	1999	2000	2001	2002	2003
BellSouth	0.7	1.3	1.3	1.2	1.1	1.1
Qwest	1.0	1.1	1.0	0.6	0.5	0.4
SBC Ameritech	2.2	2.1	2.1	2.0	2.1	1.5
SBC Pacific	2.2	1.5	1.8	1.3	1.2	1.5
SBC Southwestern	0.7	0.8	0.8	2.2	1.8	1.9
SBC SNET	5.4	2.1	2.2	1.8	1.0	1.0
Verizon GTE	3.0	1.4	1.0	0.8	0.6	0.6
Verizon North (Combined with Verizon South)						
Verizon South	1.5	1.5	1.5	1.1	1.0	1.1
Sprint	3.5	4.5	3.9	3.2	1.5	1.4
Weighted BOC/Sprint Composite*	1.7	1.6	1.5	1.4	1.2	1.2

* Weighted composite is calculated using access line counts.

Chart 5B

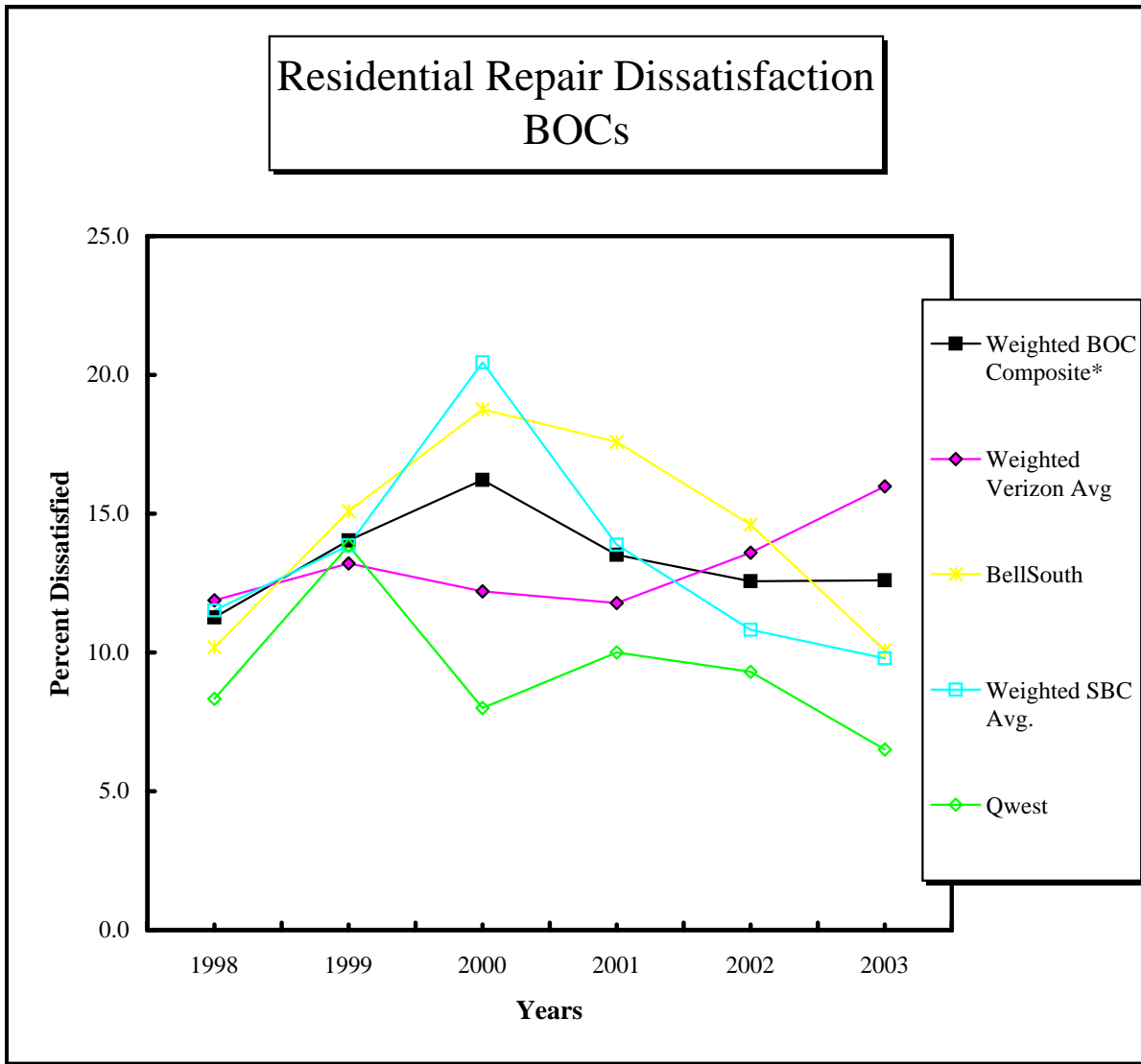


**Average BOC Residential Installation Interval in Days
(Using Company Provided Composites)**

ARMIS 43-05 Report	1998	1999	2000	2001	2002	2003
Alltel Corp.						1.8
Cincinnati Bell	1.7	2.3	1.9	2.3	1.7	4.5
Citizens	4.8	4.6	4.8	4.6	4.8	5.2
Citizens (Frontier)	5.9	6.1	5.6	3.5	5.3	5.0
Century Tel.						3.3
Iowa Telecom					2.1	1.8
Valor					3.0	2.0
Weighted BOC/Sprint Composite*	1.7	1.6	1.5	1.4	1.2	1.2
Weighted Small Co.Composite*	4.7	4.8	4.6	3.6	4.0	3.8

* Weighted composite is calculated using access line counts.

Chart 6

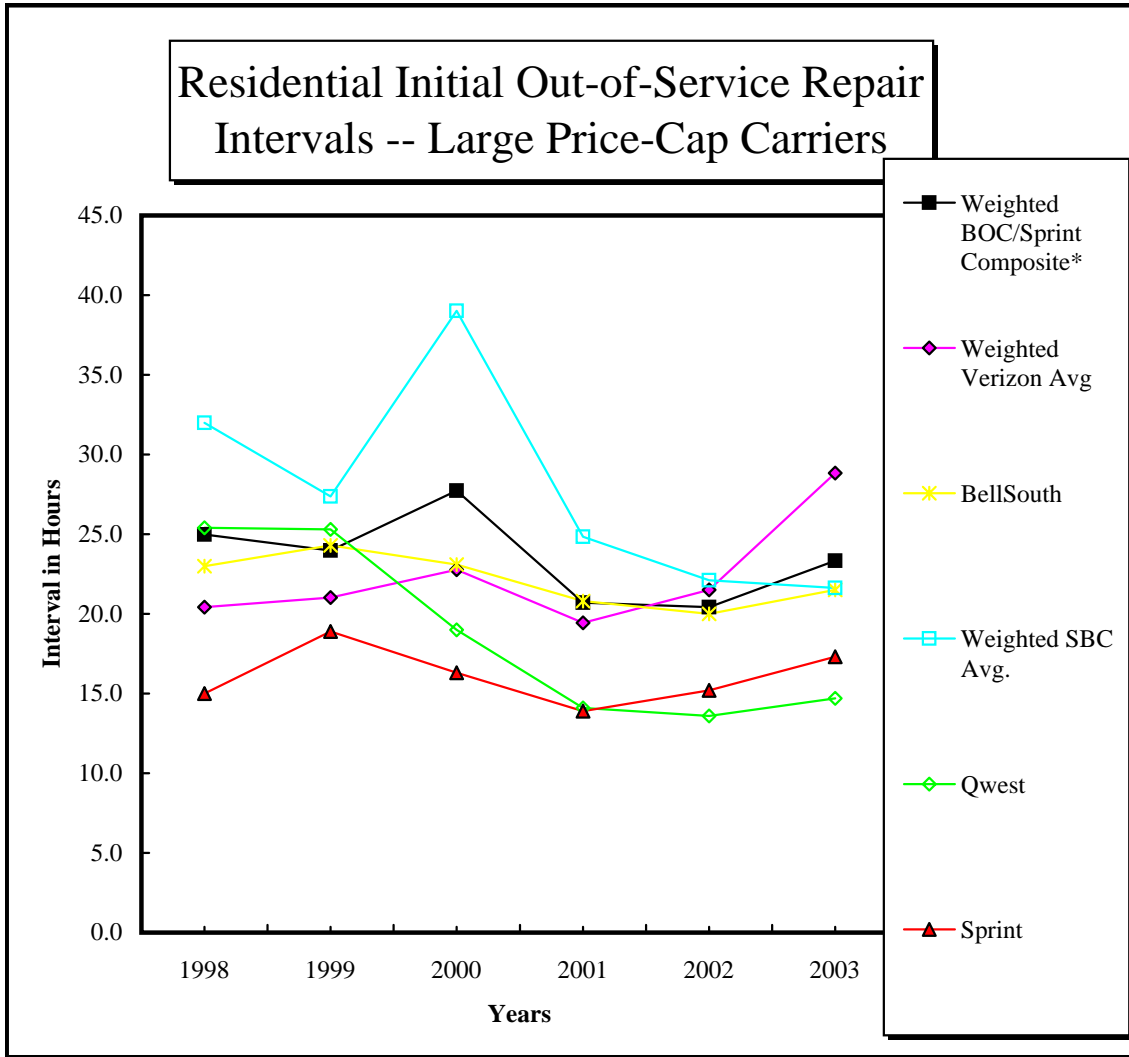


**Percent Dissatisfied -- BOC Residential Repairs
(Using Company Provided Composites)**

ARMIS 43-06 Report	1998	1999	2000	2001	2002	2003
BellSouth	10.2	15.1	18.8	17.6	14.6	10.1
Qwest	8.3	13.9	8.0	10.0	9.3	6.5
SBC Ameritech	12.4	15.4	26.5	19.2	14.6	11.4
SBC Pacific	15.6	15.8	23.6	10.0	7.3	7.6
SBC Southwestern	7.6	7.9	9.6	11.7	9.6	9.9
SBC SNET		25.8	18.7	14.2	14.5	11.9
Verizon GTE	11.0	11.6	9.4	10.1	11.9	11.2
Verizon North (Combined with Verizon South)						
Verizon South	12.8	14.8	15.0	13.4	15.3	20.8
Weighted BOC Composite*	11.3	14.0	16.2	13.5	12.6	12.6

* Weighted composite is calculated using access line counts.

Chart 7A

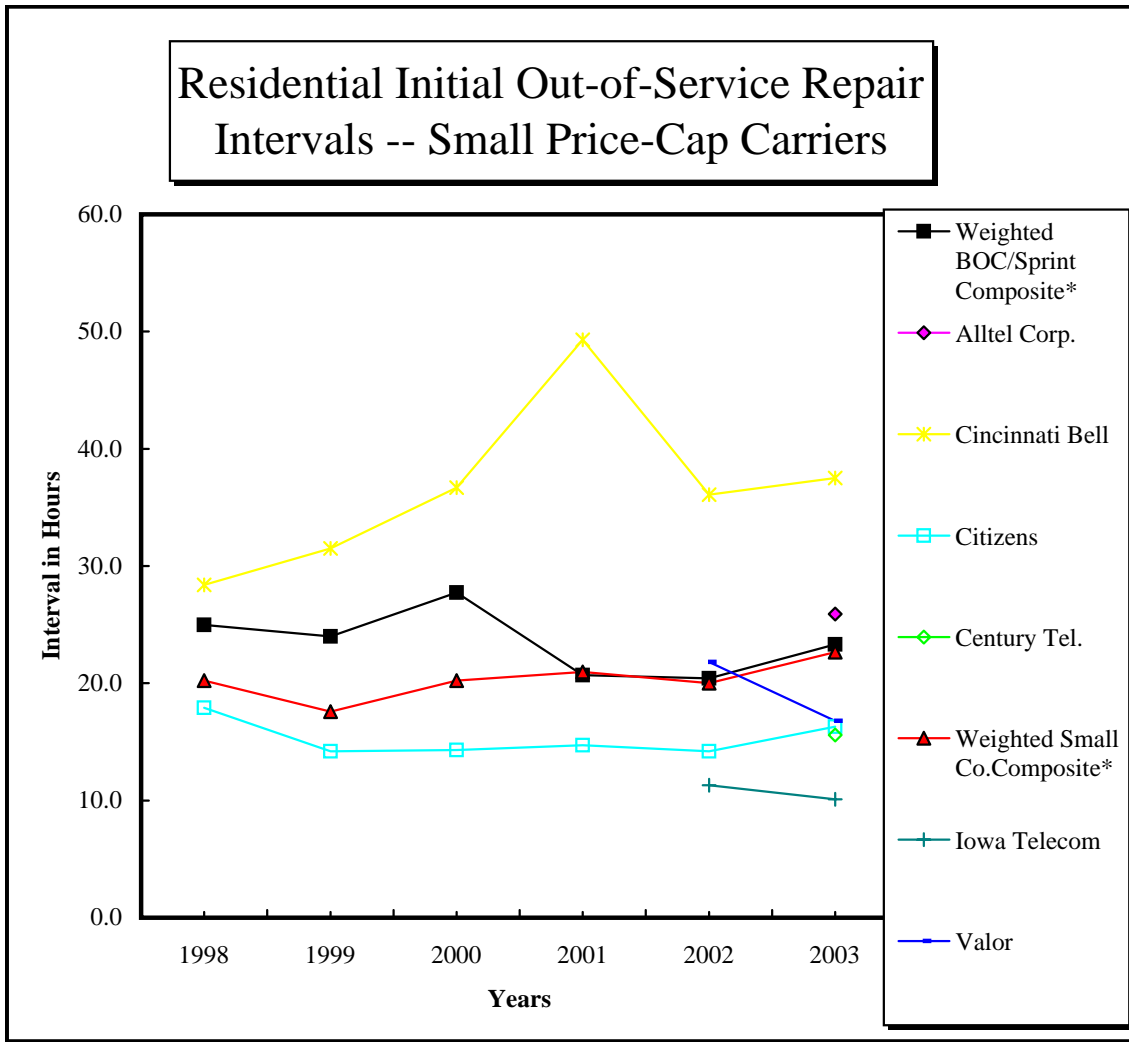


Average Initial Out-of-Service Repair Interval in Hours -- Residential Services (Using Company Provided Composites)

ARMIS 43-05 Report	1998	1999	2000	2001	2002	2003
BellSouth	23.0	24.3	23.1	20.8	20.0	21.5
Qwest	25.4	25.3	19.0	14.1	13.6	14.7
SBC Ameritech	23.7	21.7	49.0	22.7	18.9	16.8
SBC Pacific	49.5	37.7	42.1	26.8	25.9	25.8
SBC Southwestern	22.4	20.9	23.2	24.9	21.0	22.1
SBC SNET	32.1	39.2	38.2	27.2	27.4	26.7
Verizon GTE	14.9	14.1	13.0	13.5	15.5	15.7
Verizon North (Combined with Verizon South)						
Verizon South	22.8	24.0	27.0	22.0	24.1	34.5
Sprint	15.0	18.9	16.3	13.9	15.2	17.3
Weighted BOC/Sprint Composite*	25.0	24.0	27.7	20.7	20.4	23.3

* Weighted composite is calculated using access line counts.

Chart 7B

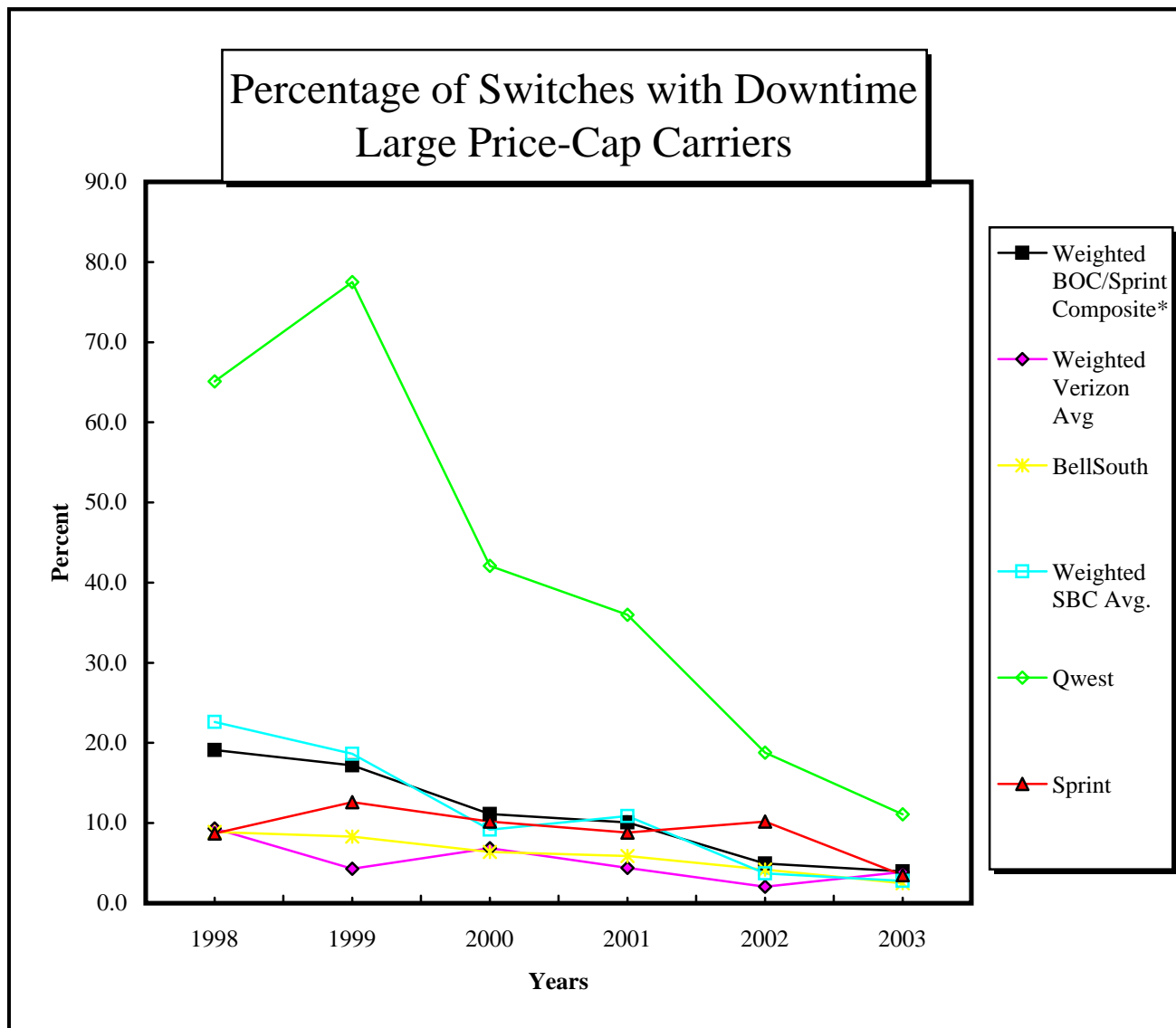


**Average Initial Out-of-Service Repair Interval in Hours -- Residential Services
(Using Company Provided Composites)**

ARMIS 43-05 Report	1998	1999	2000	2001	2002	2003
Alltel Corp.						25.9
Cincinnati Bell	28.4	31.5	36.7	49.3	36.1	37.5
Citizens	17.9	14.2	14.3	14.7	14.2	16.3
Citizens (Frontier)	21.9	16.9	20.7	16.4	17.7	28.1
Century Tel.						15.6
Iowa Telecom					11.3	10.1
Valor					21.8	16.8
Weighted BOC/Sprint Composite*	25.0	24.0	27.7	20.7	20.4	23.3
Weighted Small Co.Composite*	20.2	17.6	20.2	21.0	20.0	22.7

* Weighted composite is calculated using access line counts.

Chart 8



Percentage of Switches with Downtime (Using Company Provided Composites)

ARMIS 43-05 Report	1998	1999	2000	2001	2002	2003
BellSouth	8.9	8.3	6.4	5.9	4.2	2.5
Qwest	65.1	77.5	42.1	36.0	18.8	11.1
SBC Ameritech	37.3	23.3	3.7	3.4	4.5	1.7
SBC Pacific	13.7	16.2	10.1	15.4	2.3	3.3
SBC Southwestern	15.9	17.2	12.0	10.3	4.3	3.9
SBC SNET	12.9	7.9	28.8	42.3	4.4	0.6
Verizon GTE	7.7	3.4	2.9	1.6	1.3	2.7
Verizon North (Combined with Verizon South)						
Verizon South	10.0	4.7	8.6	5.6	2.4	4.4
Sprint	8.7	12.6	10.2	8.8	10.2	3.5
Weighted BOC/Sprint Composite*	19.1	17.2	11.1	10.1	5.0	4.0

*Weighted composite is calculated using access line counts.

**Table 1(a):
Installation, Maintenance, & Customer Complaints
Mandatory Price-Cap Company Comparison -- 2003**

	BellSouth	Qwest	SBC Ameritech	SBC Pacific	SBC Southwestern	SBC SNET	Verizon North	Verizon South	Verizon GTE
Access Services Provided to Carriers-- Switched Access									
Percent Installation Commitments Met	100.0	99.6	77.5	96.9	89.5	40.8	98.3	98.5	95.0
Average Installation Interval (days)	18.2	15.8	43.6	34.3	27.2	19.2	26.8	23.5	25.7
Average Repair Interval (hours)	0.5	1.5	6.5	17.9	5.2	0.7	3.9	6.3	10.5
Access Services Provided to Carriers -- Special Access									
Percent Installation Commitments Met	99.8	98.4	96.0	99.1	98.3	95.2	88.1	89.7	92.4
Average Installation Interval (days)	12.0	9.2	17.4	17.2	17.0	17.5	23.9	17.8	19.6
Average Repair Interval (hours)	3.2	2.8	4.3	3.5	3.1	3.6	7.9	4.4	18.2
Local Services Provided to Res. and Business Customers									
Percent Installation Commitments Met	97.3	99.6	98.9	99.5	99.0	99.5	98.5	98.7	98.5
Residence	98.2	99.7	98.9	99.6	99.1	99.5	98.6	98.8	98.8
Business	90.1	98.8	98.2	99.2	98.3	98.9	97.5	97.1	96.0
Average Installation Interval (days)	1.4	0.4	1.5	1.7	2.0	1.3	1.1	1.5	0.6
Residence	1.1	0.4	1.5	1.5	1.9	1.0	1.0	1.4	0.5
Business	1.8	1.2	1.7	3.3	2.4	3.3	2.3	2.3	1.9
Avg. Out of Svc. Repair Interval (hours)	19.7	14.6	16.4	23.6	20.9	26.6	32.6	31.1	18.4
Total Residence	21.5	14.7	16.9	25.8	22.1	26.7	34.8	33.9	19.9
Total Business	10.6	13.8	14.1	13.0	14.4	26.1	23.7	16.0	11.2
Initial Trouble Reports per Thousand Lines									
Total MSA	278.5	113.4	149.7	119.4	175.4	180.3	191.0	152.2	153.0
Total Non MSA	269.3	112.8	147.7	115.8	160.7	177.7	196.1	149.5	146.7
Total Residence	334.0	115.8	173.9	231.9	253.5	232.5	159.2	183.3	176.2
Total Business	320.4	134.7	212.6	166.3	226.9	228.2	232.2	200.5	175.9
Troubles Found per Thousand Lines	168.1	65.0	59.6	47.9	77.6	77.0	109.9	68.0	99.5
Repeat Troubles as a Pct. of Trouble Rpts.	166.8	86.5	106.7	100.9	133.2	96.0	135.9	112.8	127.3
	19.0%	19.5%	16.6%	10.4%	13.5%	17.5%	22.2%	20.4%	13.7%
Residential Complaints per Million Res. Access Lines									
	200.0	147.7	22.6	18.9	20.2	113.2	133.9	498.3	113.8
Business Complaints per Million Business Access Lines									
	56.0	59.4	3.9	2.4	6.5	61.0	37.6	55.8	44.4

* Please refer to text for notes and data qualifications.

**Table 1(b):
Switch Downtime & Trunk Blocking
Mandatory Price-Cap Company Comparison -- 2003**

	BellSouth	Qwest	SBC Ameritech	SBC Pacific	SBC Southwestern	SBC SNET	Verizon North	Verizon South	Verizon GTE
Total Access Lines in Thousands	22,206	14,277	18,309	16,693	14,670	2,173	16,818	21,185	16,366
Total Trunk Groups	3,361	3,206	1,003	1,263	741	NA	788	891	1,566
Total Switches	1,629	1,322	1,439	779	1,658	161	1,292	1,336	3,143
Switches with Downtime									
Number of Switches	40	147	25	26	65	1	63	53	86
As a percentage of Total Switches	2.5%	11.1%	1.7%	3.3%	3.9%	0.6%	4.9%	4.0%	2.7%
Average Switch Downtime in seconds per Switch*									
For All Events (including events over 2 minutes)	24.0	69.4	3.4	0.3	52.8	7.5	244.3	26.1	397.2
For Unscheduled Events Over 2 Minutes	23.0	60.8	2.6	0.0	51.7	7.5	210.4	25.3	396.9
For Unscheduled Downtime More than 2 Minutes									
Number of Occurrences or Events	23	23	11	0	18	1	24	13	96
Events per Hundred Switches	1	2	1	0	1	1	2	1	3
Events per Million Access Lines	1	2	1	0	1	0	1	1	6
Average Outage Duration in Minutes	27	58	6	NA	79	20	189	43	217
Average Lines Affected per Event in Thousands	15.9	13.3	21.5	NA	24.1	25.7	25.9	27.8	2.9
Outage Line-Minutes per Event in Thousands	326.7	303.1	117.8	NA	475.7	513.0	5,044.0	812.0	289.1
Outage Line-Minutes per 1,000 Access Lines	338.4	488.3	70.7	0.0	583.7	236.1	7,198.0	498.3	1,696.0
For Scheduled Downtime More than 2 Minutes									
Number of Occurrences or Events	0	18	2	0	1	0	3	0	2
Events per Hundred Switches	0.0	1.4	0.1	0.0	0.1	0.0	0.2	0.0	0.1
Events per Million Access Lines	0.00	1.26	0.11	0.00	0.07	0.00	0.18	0.00	0.12
Average Outage Duration in Minutes	NA	5.1	6.5	NA	4.7	NA	11.3	NA	5.5
Avg. Lines Affected per Event in Thousands	NA	8.7	4.7	NA	82.3	NA	14.7	NA	7.2
Outage Line-Minutes per Event in Thousands	NA	33.8	30.0	NA	386.9	NA	100.3	NA	39.3
Outage Line-Minutes per 1,000 Access Lines	0.0	42.6	3.3	0.0	26.4	0.0	17.9	0.0	4.8
% Trunk Grps. Exceeding Blocking Objectives	2.41%	1.90%	0.00%	0.40%	0.54%	NA	0.76%	1.91%	0.32%
* Aggregate downtime divided by total number of company switches. Please refer to text for notes and data qualifications.									

**Table 1(c):
Switch Downtime Causes -- Outages more than 2 Minutes in Duration
Mandatory Price-Cap Company Comparison -- 2003**

	BellSouth	Qwest	SBC Ameritech	SBC Pacific	SBC Southwestern	SBC SNET	Verizon North	Verizon South	Verizon GTE
Total Number of Outages									
1. Scheduled	0	18	2	0	1	0	3	0	2
2. Proced. Errors -- Telco. (Inst./Maint.)	0	0	0	0	1	0	1	1	8
3. Proced. Errors -- Telco. (Other)	6	1	0	0	2	0	0	0	0
4. Procedural Errors -- System Vendors	2	1	2	0	2	0	0	0	4
5. Procedural Errors -- Other Vendors	0	1	0	0	1	0	0	2	1
6. Software Design	2	2	4	0	3	0	2	5	5
7. Hardware design	3	0	3	0	0	0	0	0	0
8. Hardware Failure	7	13	1	0	9	1	11	2	37
9. Natural Causes	0	0	0	0	0	0	1	2	9
10. Traffic Overload	0	0	0	0	0	0	0	0	0
11. Environmental	0	0	1	0	0	0	2	0	3
12. External Power Failure	2	4	0	0	0	0	7	1	26
13. Massive Line Outage	0	0	0	0	0	0	0	0	1
14. Remote	0	1	0	0	0	0	0	0	2
15. Other/Unknown	1	0	0	0	0	0	0	0	0
Total Outage Line-Minutes per Thousand Access Lines									
1. Scheduled	0.0	42.6	3.3	0.0	26.4	0.0	17.9	0.0	4.8
2. Proced. Errors -- Telco. (Inst./Maint.)	0.0	0.0	0.0	0.0	44.8	0.0	5.9	106.4	60.2
3. Proced. Errors -- Telco. (Other)	68.7	10.2	0.0	0.0	41.2	0.0	0.0	0.0	0.0
4. Procedural Errors -- System Vendors	18.5	21.3	27.0	0.0	14.4	0.0	0.0	0.0	37.9
5. Procedural Errors -- Other Vendors	0.0	45.6	0.0	0.0	29.8	0.0	0.0	68.4	59.1
6. Software Design	7	14	20	0	74	0	611	32	133
7. Hardware design	3.1	0.0	20.2	0.0	0.0	0.0	0.0	0.0	0.0
8. Hardware Failure	50.6	273.6	1.3	0.0	379.5	236.1	548.6	28.1	462.1
9. Natural Causes	0.0	0.0	0.0	0.0	0.0	0.0	0.6	247.7	646.6
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	7	0	0	0	92	0	32
12. External Power Failure	188.8	122.8	0.0	0.0	0.0	0.0	5,939.1	15.3	229.0
13. Massive Line Outage	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9
14. Remote	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	34.0
15. Other/Unknown	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* Please refer to text for notes and data qualifications.									

**Table 1(d):
Company Comparison -- 2003 Customer Perception Surveys**

Mandatory Price-Cap Companies:	BellSouth	Qwest	SBC Ameritech	SBC Pacific	SBC Southwestern	SBC SNET	Verizon North	Verizon South	Verizon GTE
Percentage of Customers Dissatisfied									
Installations:									
Residential	6.71%	5.49%	8.09%	6.07%	7.88%	7.56%	6.40%	5.79%	4.21%
Small Business	8.94%	10.94%	12.33%	7.43%	9.12%	7.64%	10.97%	10.24%	7.81%
Large Business	6.80%	NA	9.42%	6.49%	7.81%	NA	2.63%	1.84%	2.30%
Repairs:									
Residential	10.08%	6.45%	11.45%	7.59%	9.93%	11.91%	21.95%	20.39%	12.69%
Small Business	8.24%	8.33%	11.62%	6.36%	6.58%	9.25%	15.97%	10.43%	9.38%
Large Business	6.62%	NA	8.91%	5.07%	5.97%	NA	5.85%	1.55%	2.25%
Business Office:									
Residential	8.68%	1.78%	9.62%	5.49%	9.10%	7.75%	7.47%	7.25%	6.90%
Small Business	14.52%	3.93%	10.04%	6.83%	7.05%	9.75%	8.25%	8.36%	8.58%
Large Business	8.92%	NA	5.69%	3.61%	5.06%	NA	6.09%	4.45%	9.73%
* Please refer to text for notes and data qualifications									

**Table 1(e):
Company Comparison -- 2003 Customer Perception Surveys**

Mandatory Price-Cap Companies:	BellSouth	Qwest	SBC Ameritech	SBC Pacific	SBC Southwestern	SBC SNET	Verizon North	Verizon South	Verizon GTE
Sample Sizes -- Customer Perception Surveys									
Installations:									
Residential	37,912	20,755	10,626	10,657	10,794	4,667	20,189	17,420	23,290
Small Business	41,930	8,345	10,455	10,851	10,601	2,370	18,939	17,342	21,747
Large Business	9,969	0	4,052	3,313	2,797	0	807	954	564
Repairs:									
Residential	30,546	11,863	10,695	12,524	10,792	2,393	20,195	17,438	21,976
Small Business	45,120	7,125	10,644	11,226	10,733	1,199	20,075	17,268	21,938
Large Business	7,829	0	4,134	3,513	2,829	0	710	824	489
Business Office:									
Residential	42,183	20,511	21,212	23,811	23,997	2,982	10,434	10,713	14,950
Small Business	11,744	8,228	20,294	23,530	17,476	1,005	3,794	4,460	4,779
Large Business	482	0	4,570	2,232	3,521	0	613	738	401
* Please refer to text for notes and data qualifications									

**Table 2(a):
Installation, Maintenance, & Customer Complaints
Non-Mandatory Price-Cap Company Comparison -- 2003**

	Alltel	Century Tel.	Cincinnati	Citizens	Citizens Frontier	Iowa	Sprint	Valor
Access Services Provided to Carriers-- Switched Access								
Percent Installation Commitments Met	89.8	89.0	100.0	93.0	92.6	66.2	91.5	94.0
Average Installation Interval (days)	15.3	13.8	15.3	30.0	9.3	14.8	10.9	25.7
Average Repair Interval (hours)	4.9	25.8	NA	NA	2.8	11.3	2.9	NA
Access Services Provided to Carriers -- Special Access								
Percent Installation Commitments Met	90.4	85.3	100.0	89.7	77.5	63.9	95.5	98.2
Average Installation Interval (days)	11.8	13.8	13.9	17.7	20.5	13.8	10.1	15.6
Average Repair Interval (hours)	4.6	12.3	2.7	21.0	24.0	11.4	4.5	3.4
Local Services Provided to Res. and Business Customers								
Percent Installation Commitments Met	97.4	98.4	99.9	96.5	76.7	98.8	97.1	97.7
Residence	97.7	98.3	99.9	96.7	77.6	98.7	97.5	97.7
Business	95.2	75.9	99.8	95.8	71.1	98.0	94.2	97.7
Average Installation Interval (days)	1.9	3.6	2.1	5.5	4.8	1.9	1.6	2.0
Residence	1.9	3.3	4.5	5.2	5.0	1.8	1.4	2.0
Business	2.7	4.6	1.8	7.6	3.8	2.7	2.7	2.0
Avg. Out of Svc. Repair Interval (hours)	24.8	15.3	58.1	16.1	28.0	9.8	17.1	16.4
Total Residence	25.9	15.7	37.6	16.3	28.1	10.1	17.3	16.9
Total Business	16.9	13.8	20.1	14.3	27.7	7.6	15.7	13.3
Initial Trouble Reports per Thousand Lines								
Total MSA	233.5	131.4	114.6	275.7	266.6	129.4	192.2	368.0
Total Non MSA	227.1	121.5	114.6	NA	279.1	129.8	172.7	291.9
Total Residence	240.2	140.0	NA	275.7	252.0	129.3	230.7	434.1
Total Business	294.3	147.5	143.3	313.6	300.8	146.4	231.7	433.6
Troubles Found per Thousand Lines	92.2	80.8	47.3	155.8	185.8	70.1	87.7	182.5
Repeat Troubles as a Pct. of Trouble Rpts.	180.7	107.6	104.1	230.8	218.2	114.9	127.3	348.1
	22.5%	22.7%	16.1%	15.2%	13.2%	16.7%	20.5%	11.9%
Residential Complaints per Million Res. Access Lines								
	326.4	746.6	383.3	537.5	184.7	25.1	110.0	271.3
Business Complaints per Million Bus. Access Lines								
	62.9	324.7	110.5	141.9	100.6	0.0	47.9	173.5
* Please refer to text for notes and data qualifications								

**Table 2(b):
Switch Downtime & Trunk Blocking
Non-Mandatory Price-Cap Company Comparison -- 2003**

	Alltel	Century Tel.	Cincinnati	Citizens	Citizens Frontier	Iowa	Sprint	Valor
Total Access Lines in Thousands	793	626	968	1,379	971	257	7,776	529
Total Trunk Groups	108	232	99	262	273	109	570	213
Total Switches	243	187	85	207	185	273	1,331	292
Switches with Downtime								
Number of Switches	22	3	20	8	44	24	47	26
As a percentage of Total Switches	9.1%	1.6%	23.5%	3.9%	23.8%	8.8%	3.5%	8.9%
Average Switch Downtime in seconds per Switch *								
For All Events (including events over 2 minutes)	2,830.8	357.8	279.2	137.4	1,009.1	411.8	211.7	1,150.3
For Unscheduled Events Over 2 Minutes	2,830.8	357.8	0.0	115.9	964.9	411.8	181.4	1,150.3
For Unscheduled Downtime More than 2 Minutes								
Number of Occurrences or Events	29	3	0	4	22	24	33	33
Events per Hundred Switches	11.9	1.6	0.0	1.9	11.9	8.8	2.5	11.3
Events per Million Access Lines	36.57	4.79	0.00	2.90	22.67	93.51	4.24	62.38
Average Outage Duration in Minutes	395.3	371.7	NA	100.0	135.2	78.1	121.9	169.6
Average Lines Affected per Event in Thousands	3.6	6.4	NA	4.6	5.1	0.5	8.0	1.8
Outage Line-Minutes per Event in Thousands	862.7	3,450.4	NA	545.1	2,961.9	27.4	1,564.6	240.5
Outage Line-Minutes per 1,000 Access Lines	31,553.1	16,525.2	0.0	1,581.4	67,142.1	2,558.8	6,640.0	15,000.3
For Scheduled Downtime More than 2 Minutes								
Number of Occurrences or Events	0	0	0	4	3	0	12	0
Events per Hundred Switches	0.0	0.0	0.0	1.9	1.6	0.0	0.9	0.0
Events per Million Access Lines	0.00	0.00	0.00	2.90	3.09	0.00	1.54	0.00
Average Outage Duration in Minutes	NA	NA	NA	18.5	40.0	NA	23.9	NA
Avg. Lines Affected per Event in Thousands	NA	NA	NA	3.1	1.5	NA	17.5	NA
Outage Line-Minutes per Event in Thousands	NA	NA	NA	48.8	55.4	NA	125.1	NA
Outage Line-Minutes per 1,000 Access Lines	0.0	0.0	0.0	141.6	171.2	0.0	193.0	0.0
% Trunk Grps. Exceeding Blocking Objectives	0.00%	0.00%	18.18%	0.00%	0.00%	0.00%	1.93%	0.47%
* Aggregate downtime divided by total number of company switches. Please refer to text for notes and data qualifications.								

**Table 2(c):
Switch Downtime Causes -- Outages More than 2 Minutes in Duration
Non-Mandatory Price-Cap Company Comparison -- 2003**

	Alltel	Century Tel.	Cincinnati	Citizens	Citizens Frontier	Iowa	Sprint	Valor
Total Number of Outages								
1. Scheduled	0	0	0	4	3	0	12	0
2. Proced. Errors -- Telco. (Inst./Maint.)	4	0	0	0	0	4	11	7
3. Proced. Errors -- Telco. (Other)	2	3	0	0	0	0	1	0
4. Procedural Errors -- System Vendors	0	0	0	0	0	0	0	20
5. Procedural Errors -- Other Vendors	0	0	0	1	1	0	0	1
6. Software Design	1	0	0	1	0	1	1	0
7. Hardware design	0	0	0	0	0	0	0	0
8. Hardware Failure	11	0	0	0	8	16	4	0
9. Natural Causes	7	0	0	1	2	1	3	1
10. Traffic Overload	0	0	0	0	0	0	0	2
11. Environmental	0	0	0	0	0	0	0	0
12. External Power Failure	0	0	0	1	5	0	4	2
13. Massive Line Outage	1	0	0	0	5	2	2	0
14. Remote	1	0	0	0	1	0	3	0
15. Other/Unknown	2	0	0	0	0	0	4	0
Total Outage Line-Minutes per Thousand Access Lines								
1. Scheduled	0.0	0.0	0.0	141.6	171.2	0.0	193.0	0.0
2. Proced. Errors -- Telco. (Inst./Maint.)	6,048.8	0.0	0.0	0.0	0.0	168.4	3,580.0	2,837.4
3. Proced. Errors -- Telco. (Other)	1,222.2	16,525.2	0.0	0.0	0.0	0.0	0.2	0.0
4. Procedural Errors -- System Vendors	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10,583.3
5. Procedural Errors -- Other Vendors	0.0	0.0	0.0	854.8	9.8	0.0	0.0	428.6
6. Software Design	784	0	0	69	0	92	9	0
7. Hardware design	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8. Hardware Failure	7,012.8	0.0	0.0	0.0	398.4	1,553.6	28.9	0.0
9. Natural Causes	13,160.8	0.0	0.0	44.7	469.9	92.1	2,332.1	54.1
10. Traffic Overload	0.0	0.0	0.0	0.0	0.0	0.0	0.0	971.1
11. Environmental	0	0	0	0	0	0	0	0
12. External Power Failure	0.0	0.0	0.0	612.7	66,021.2	0.0	360.8	125.8
13. Massive Line Outage	11.3	0.0	0.0	0.0	189.9	652.5	145.4	0.0
14. Remote	3,034.2	0.0	0.0	0.0	52.9	0.0	46.0	0.0
15. Other/Unknown	278.6	0.0	0.0	0.0	0.0	0.0	137.3	0.0
* Please refer to text for notes and data qualifications								

Appendix A – Description of Key Elements in Tables 1(a)-1(c) and 2(a)-2(c):

This Appendix contains descriptions of key data elements that appear in Tables 1(a)-1(c) and 2(a)-2(c) 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.¹ The data descriptions also indicate those data elements that have been included in Charts 1-8.

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.²

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.³

¹ 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.

² 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).

³ 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 lines⁴ and service subcategories for switched access, high-speed special access, and all special access.⁵ 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. 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.)⁶

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.⁷

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.⁸

⁴ See ARMIS 43-05 report row 145 columns f and i or af and ai.

⁵ See ARMIS 43-05 report rows 115 and 121, column a and c or aa and ac.

⁶ 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 or ai 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.

⁷ 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.

⁸ 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.⁹

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.¹⁰ 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.¹¹

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.¹²

11. Unscheduled Downtime Over 2 Minutes per Occurrence

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

¹⁰ 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.

¹¹ 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.

¹² 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).

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.¹³

12. Scheduled Downtime Over 2 Minutes per Occurrence

This item is determined as in item 11, above, except that it consists of scheduled occurrences.¹⁴

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.¹⁵

¹³ 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).

¹⁴ 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.

¹⁵ 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, December 2004*

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