

# Exhibit A

## **Overview of Statistical Process on Overearnings**

AT&T conducted three analyses of the relationship between LEC projected rates of return and LEC actual rates of return. These analyses, outlined below, indicate that NECA, Virgin Islands Telephone Corporation, ALLTEL of Arkansas, Florida, Missouri, New York and Oklahoma, John Staurulakis Incorporated, and Concord Telephone Company consistently produced rates of return that exceeded the targeted rate of return.

AT&T first graphed the differences between the projected annual rates of return and the actual rate of return reported by the LEC. A simple visual look at the data clearly indicates that certain LECs, including NECA (and others, see Exhibit A) consistently generated rates of return that exceed 11.25%. The visual test is also used to determine whether additional statistical tests are necessary. The additional tests outlined below, test whether it is likely that the projected revenue requirement would consistently achieve returns greater than 11.25%.

The first test is intended to evaluate whether a LEC's rate of return projections are unbiased. An unbiased process would be expected to produce returns that are both above and below the target return, which is 11.25%. The initial test evaluates the likelihood that a set of forecasts would be expected to consistently exceed or under estimate an actual level. Of the LECs analyzed four under forecast their switched rate of return over all periods for which data was available and six under forecast their special rate of return

over all periods.<sup>1</sup> This data indicates that some LECs produced returns that exceeded the target rate of return in more years than chance would reasonably allow. The probability that a LEC would set its rates to exceed the target rate 10 periods in a row is  $(1/2)^{10}$ . For example, NECA exceeded its traffic sensitive target rate of return in all 10 years that AT&T studied. The probability that an unbiased process, that is, one that would project rates of return on the average at the 11.25% target is only  $(1/2)^{10}$ , or 0.03%.

To better understand whether the forecasts are biased and to derive an estimate of the expected bias AT&T also tested the difference of the means. Specifically, AT&T looked at the differences between the actual rates of return and the targeted rate. In the absence of bias these differences should not statistically differ from zero. The test hypothesis is that the average difference between two means is zero.<sup>2</sup> The t-statistic calculated from

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<sup>1</sup> AT&T used the final data from FCC Form 492 where available to obtain the returns for each period when the LEC provided each year's return. Where the data was not provided by year AT&T derived the annual data. Specifically, the returns for the odd years were taken from the 492 reports filed on or about March 31<sup>st</sup> of each even year, e.g., 1999 returns were taken from the report filed in 2000. The even year return data was calculated based on the difference between the operating revenues, expenses and average net investment on the final form 492 (which includes two years' data) and the report that contains only the annual data.

<sup>2</sup> The t-test is performed on the differences between the observed rates of return and the target return,  $d_i$ . The average of the differences,  $D$ , and then the average's standard deviation,  $s_D$ , are found. The standard deviation of the average differences is found by first calculating the standard deviation of the differences,

$$s_d = \sqrt{\sum(d_i - D) / (n-1)} ,$$

and then calculating the corresponding standard deviation of the average of the differences,  $s_D$ ,

$$s_D = s_d / \sqrt{n} ,$$

The t-statistic is calculated using the formula,

$$t = D / s_D .$$

the sample data can then be compared to the critical values of the one-tailed t-distribution at the 90% and 95% confidence levels. If the calculated t-statistic exceeds a critical value, then bias is likely with probability of the confidence level. As shown in Exhibit A, AT&T has calculated t-statistics that exceed these critical values for several LECs. This indicates that these LECs have a systematic upward bias in their projection process.

The t-tests provide a formal statistical confirmation of the visual view that some LECs consistently develop projected returns that exceed the authorized level. Further the t-test strengthens the evidence resulting from the simple test on the direction (over or under) of the projected rates of return.

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This statistic is compared to the statistical t-distribution with degrees of freedom equal to the number of observation minus 1.

**Demonstration of Projection Bias  
Rate of Return Companies  
Switched Access**

Exhibit A-2

A Company	B # of Observations	Test 1		D Probability of (# Observed in Column C) or Less < 0	E Average Rate of Return	F Standard Deviation of the Average Rate of Return	Test 2			I Significant Outlier
		C # of Observations < 11.25%					G Calculated t-statistic	H Critical t-statistic at 95% Confidence Level		
NECA	10	0		0.10%	12.85%	0.002961	5.397034	1.833		Yes
Alltel-Missouri	9	0		0.20%	13.66%	0.007315	3.291634	1.860		Yes
Alltel-New York	9	2		1.95%	14.38%	0.013505	2.314403	1.860		Yes
JSI - Concord	9	1		1.95%	17.85%	0.015948	4.139718	1.860		Yes

NOTES: Column D is the probability that the number of actual observations less than 0, or less than that number, are all less than 0.

For example, for Alltel-New York, the number of observations less than 0 is 2. The probability that 2 or less observations are less than 0, for an unbiased process, is given by the equation:

$$\Pr(2 \text{ or less observations} < 0) = \sum_{i=0}^2 \binom{9}{i} (0.5)^9 = (1/2)^9 \{1 + 9 + 36\} = 46 / 512 = 0.0898.$$

Column E is the simple average of a LEC's rate of return. The average is derived by simply summing the Switched Access return identified for each observation and dividing by the number of observations.

**Demonstration of Projection Bias  
Rate of Return Companies  
Special Access**

Exhibit A-3

Company	Test 1			Test 2				
	B # of Observations	C # of Obs. < 11.25%	D Probability of (C) or less Obs < 0	E Average Rate of Return	F Standard Deviation of the Average Rate of Return	G Calculated t-statistic	H Critical t-statistic at 95% Confidence Level	I Significant Outlier
A Virgin Islands	7	0	0.78%	16.91%	0.011934	4.745051	1.943	Yes
Alitel Arkansas	6	0	1.56%	12.54%	0.003942	3.276442	2.015	Yes
Alitel Florida	9	3	18.36%	16.31%	0.026534	1.907833	1.860	Yes
Alitel Missouri	9	1	1.95%	14.98%	0.013101	2.850525	1.860	Yes
Alitel Oklahoma	9	2	1.95%	15.88%	0.020998	2.202888	1.860	Yes
JSI - Concord	NOTES: Colu	1	1.95%	28.11%	0.036932	4.565197	1.860	Yes

NOTES: Column D is the probability that the number of actual observations less than 0, or less than that number are all less than 0.  
For example, for Alitel-Oklahoma, the number of observations less than 0 is 2. The probability that 2 or

$$Pr(2 \text{ or less observations} < 0) = \sum_{i=1}^2 \binom{9}{i} (0.5)^9 = \left(\frac{1}{2}\right)^9 \{1 + 9 + 36\} = 46 / 512 = 0.0898.$$

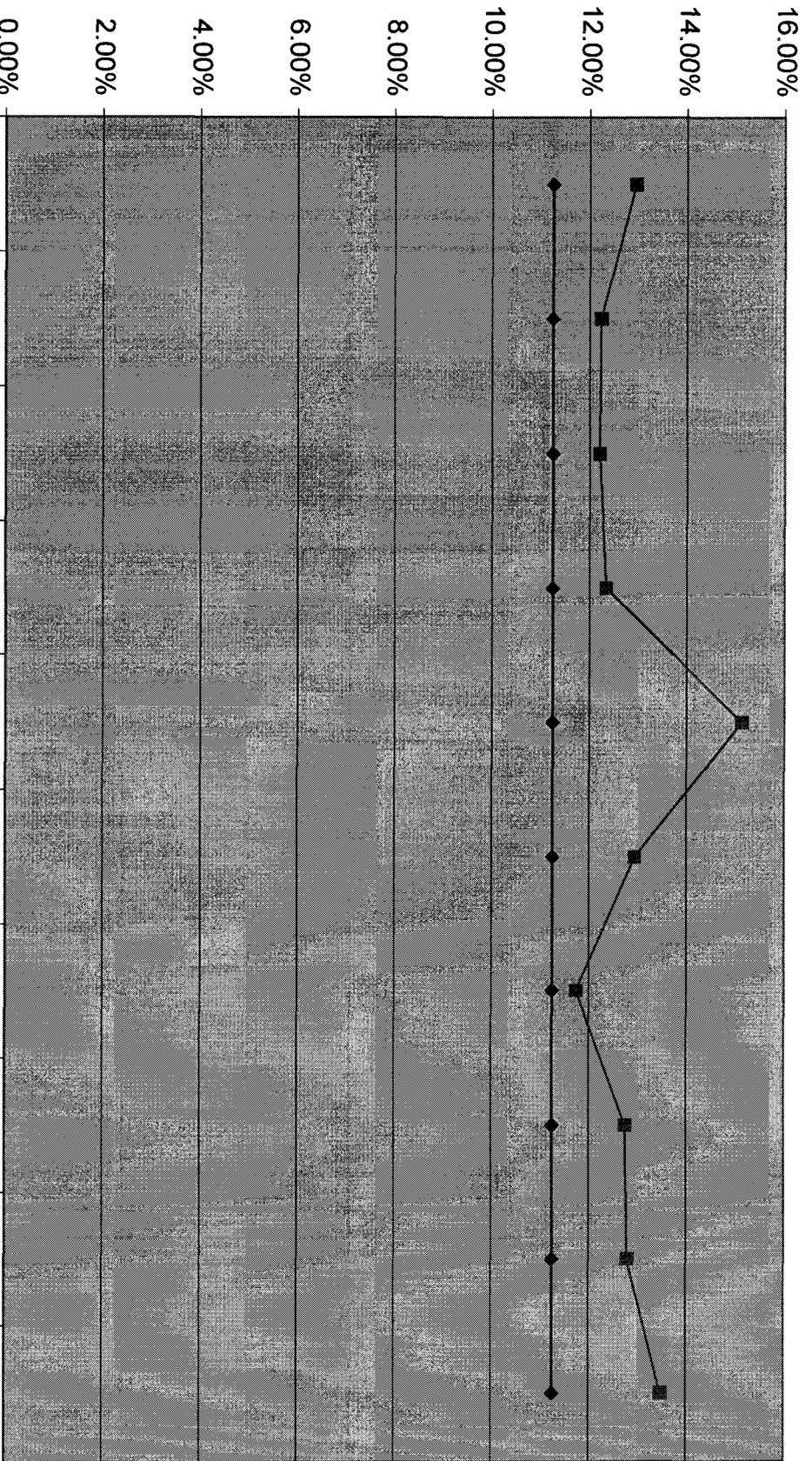
Column E is the simple average of the rates of return for each observation and dividing by the number of observations.

Column E is the simple average of a LECs rate of return. The average is derived by simply summing the Special Access return identified for each observation and dividing by the number of observations.

# NECA Rate-of-Return

(FCC form 492 data)

Exhibit A-4

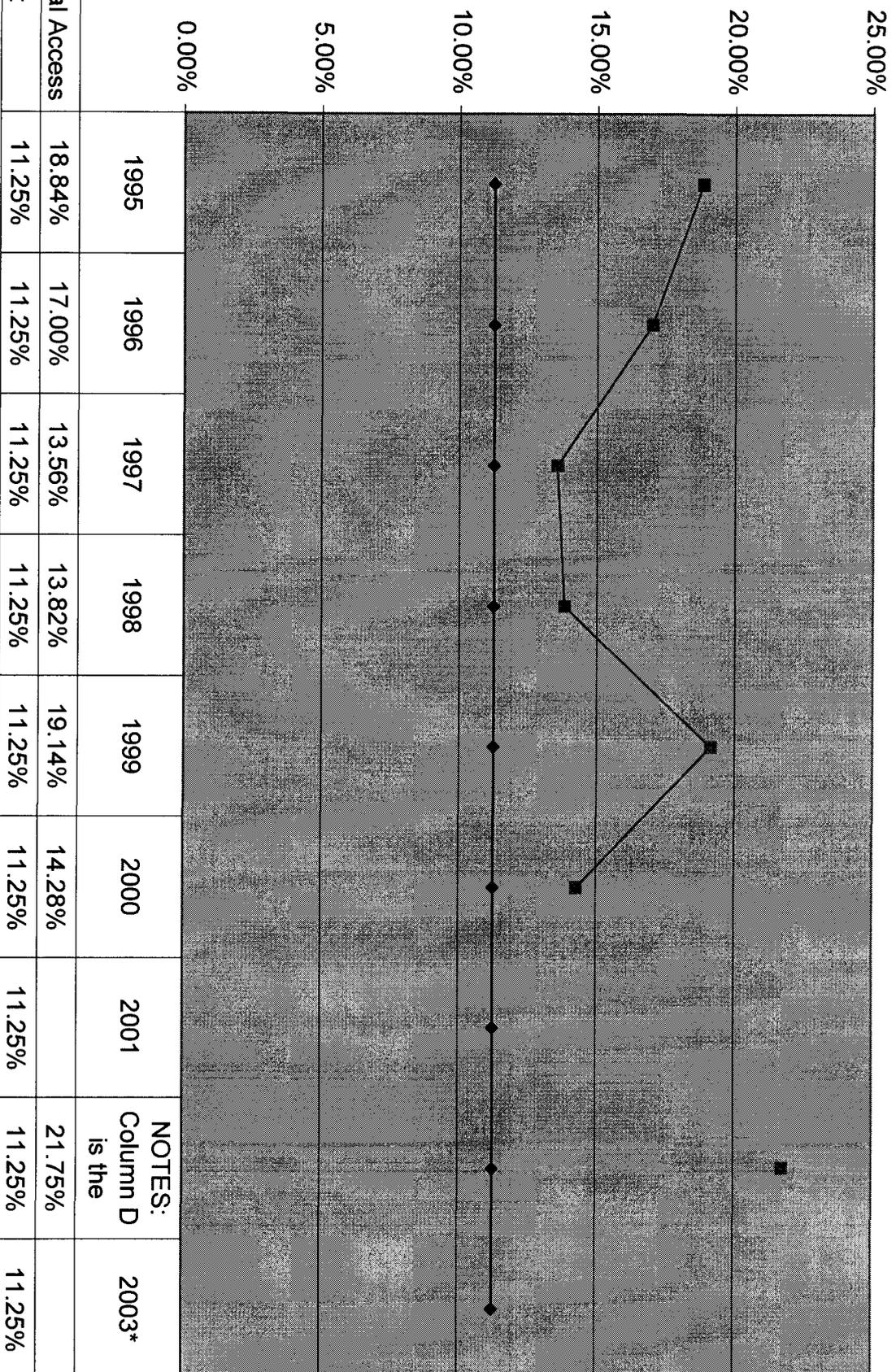


1993-1994	1995	1996	1997	1998	1999	2000	NOTES: Column D is the	2002	2003*
12.94%	12.23%	12.20%	12.34%	15.12%	12.93%	11.73%	12.74%	12.78%	13.47%
11.25%	11.25%	11.25%	11.25%	11.25%	11.25%	11.25%	11.25%	11.25%	11.25%

\* Preliminary 492 Form

## Virgin Islands Rate-of-Return (FCC form 492 data)

Exhibit A-5

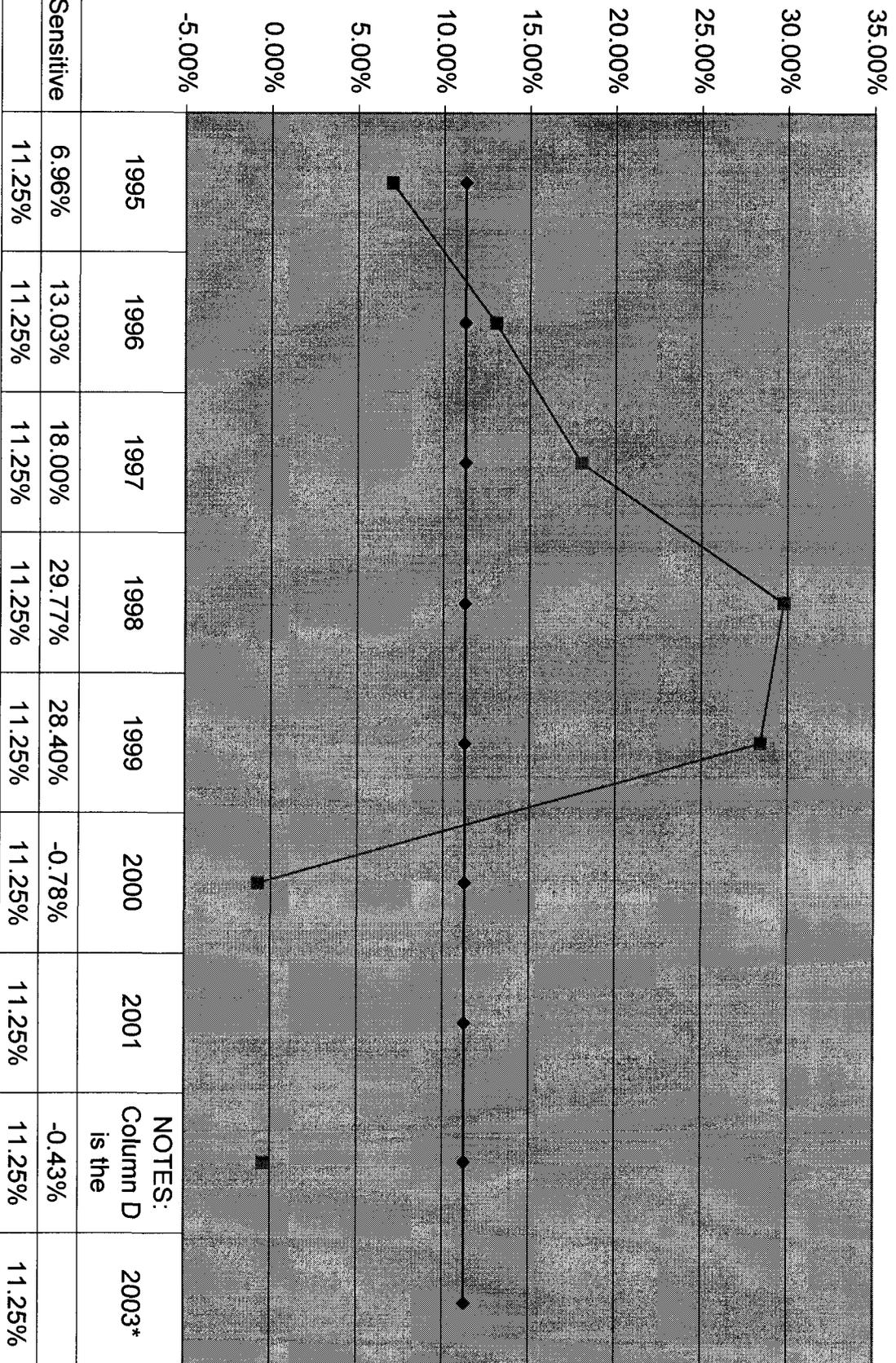


\* Preliminary 492 Form

NOTES:  
Column D  
is the

## Virgin Islands Rate-of-Return (FCC form 492 data)

Exhibit A-6

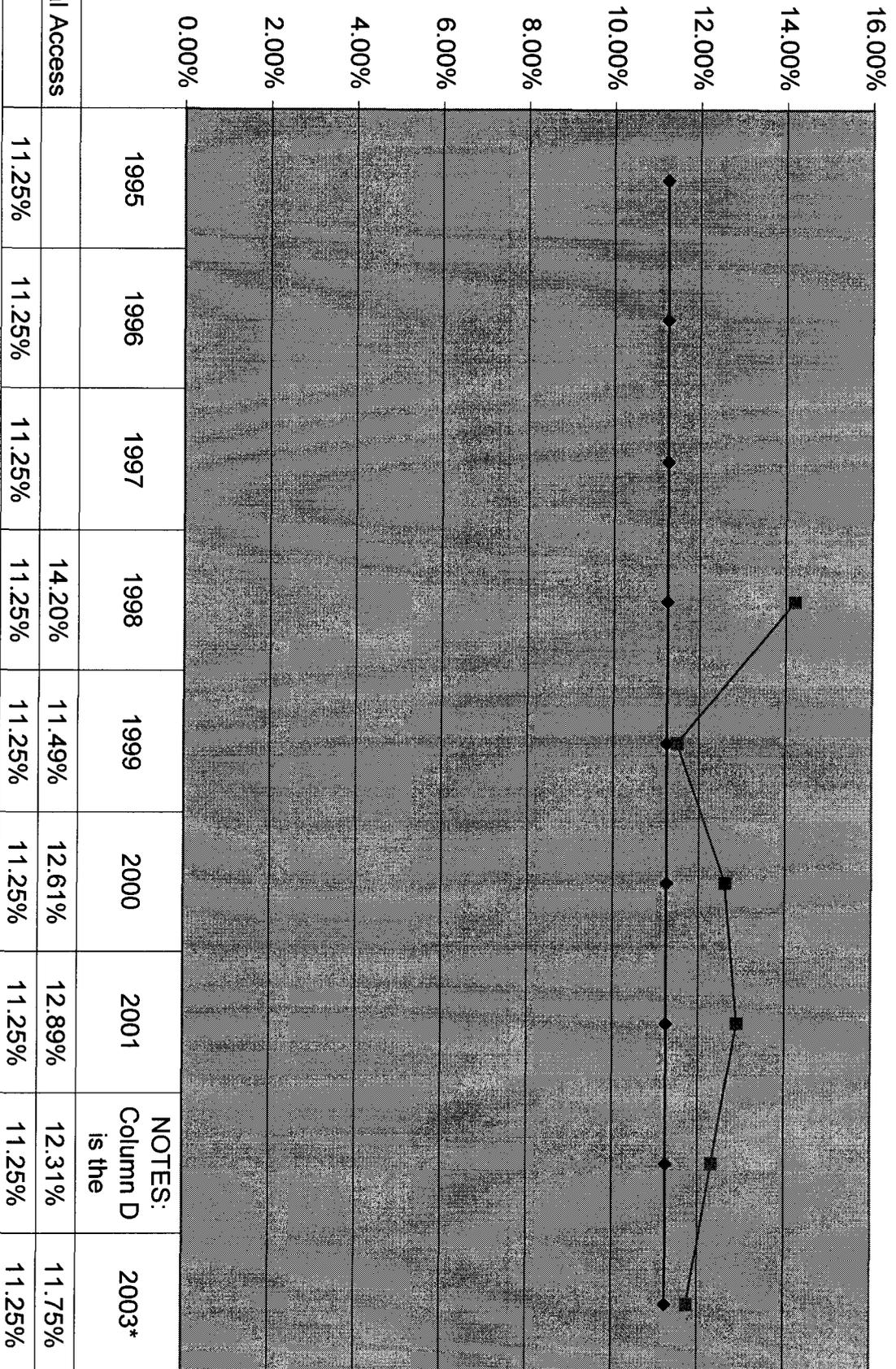


NOTES:  
Column D  
is the

\* Preliminary 492 Form

## Alltel Arkansas Rate-of-Return (FCC form 492 data)

Exhibit A-7

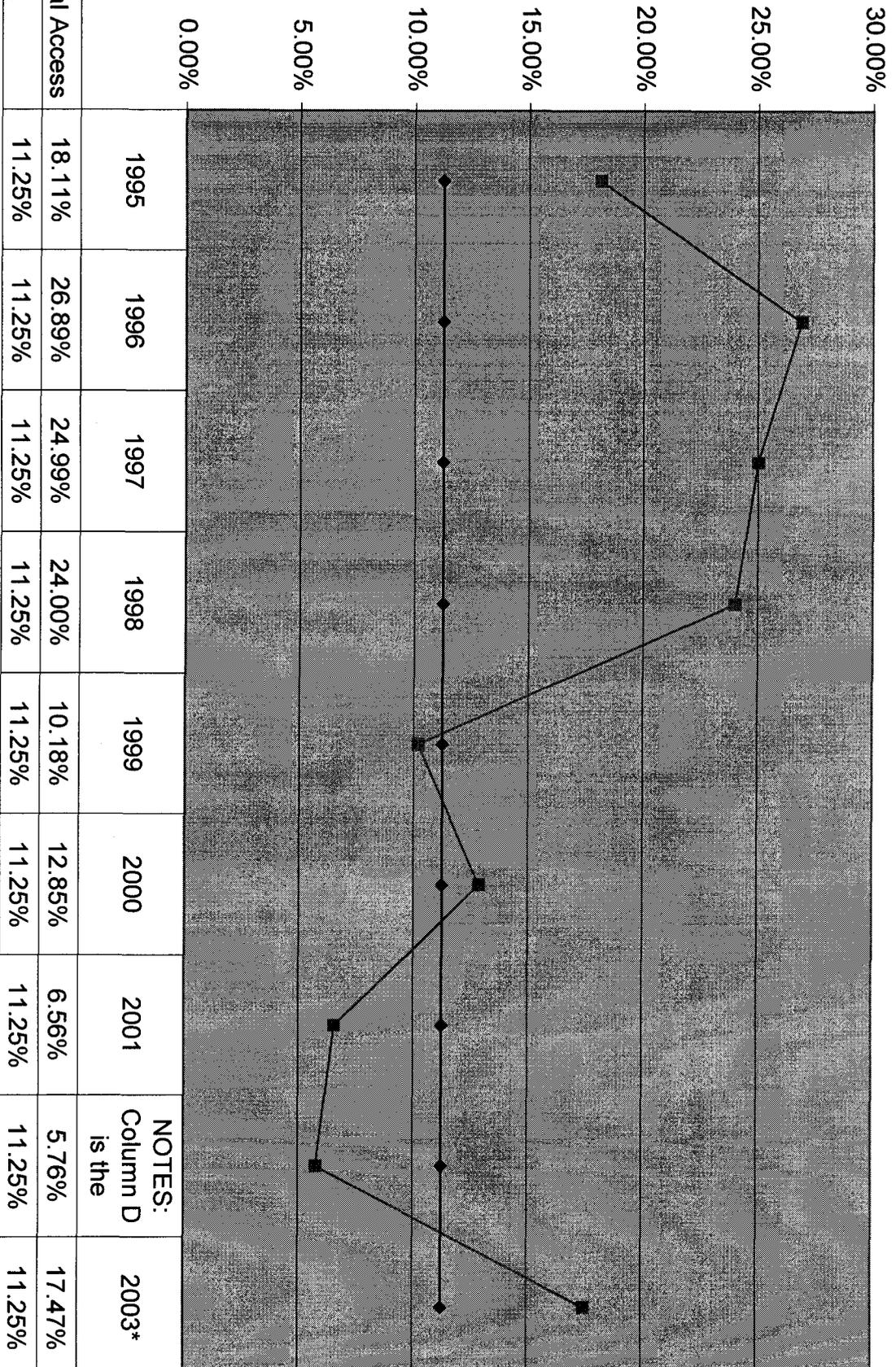


\* Preliminary 492 Form

NOTES:  
Column D  
is the

## Alltel Florida Rate-of-Return (FCC form 492 data)

Exhibit A-8

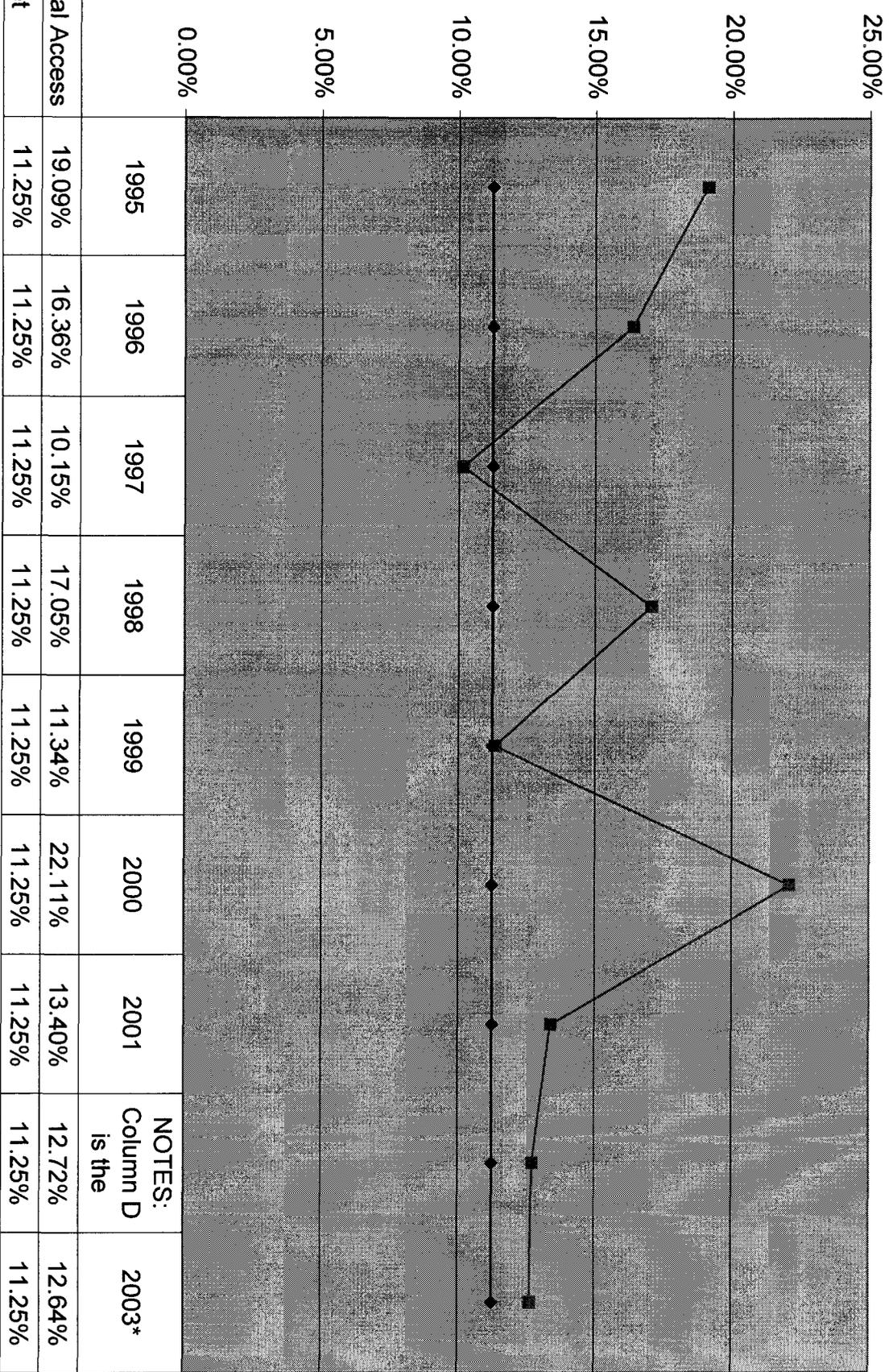


NOTES:  
Column D  
is the

\* Preliminary 492 Form

## Alltel Missouri Rate-of-Return (FCC form 492 data)

Exhibit A-9

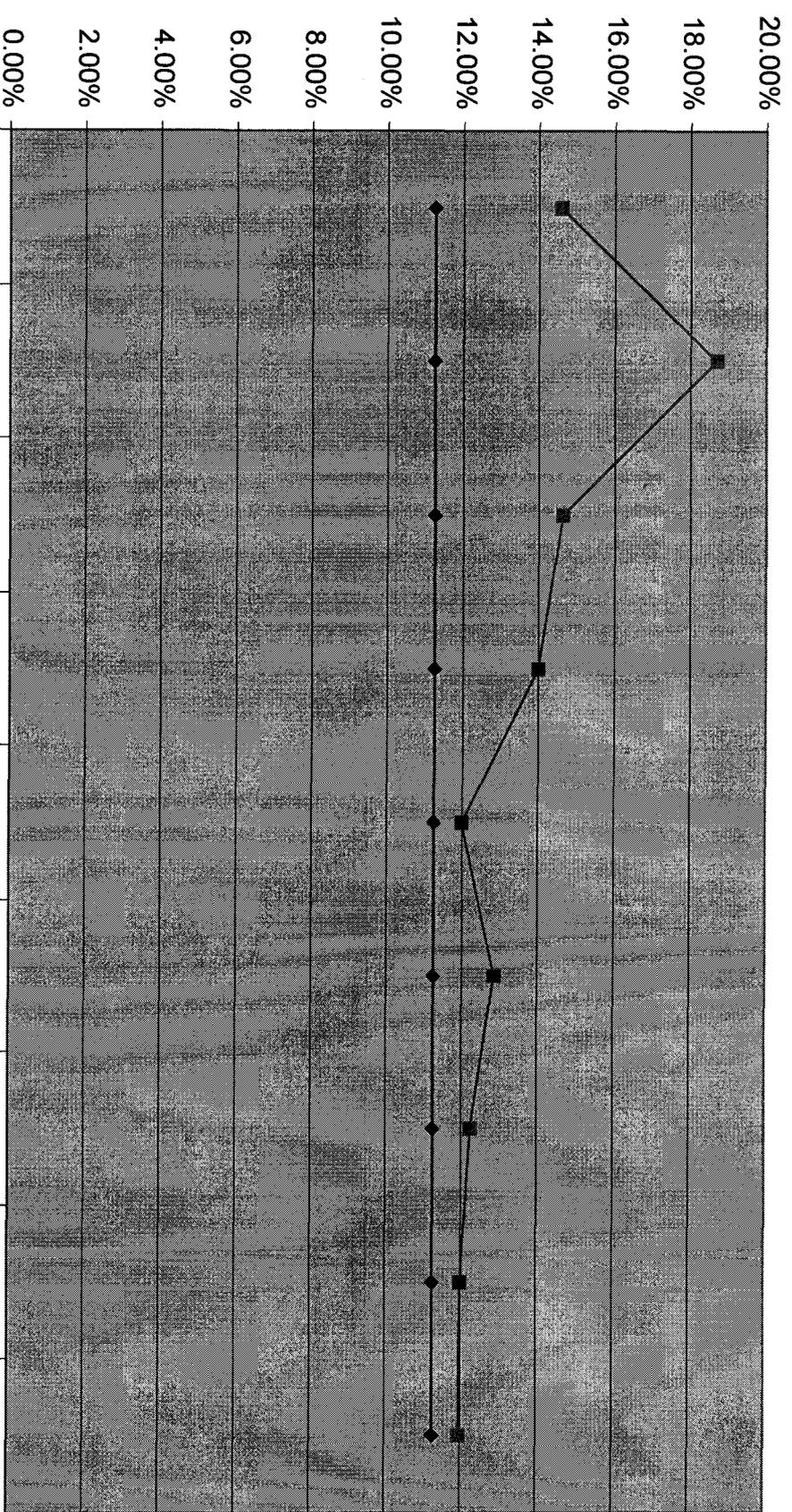


NOTES:  
Column D  
is the

\* Preliminary 492 Form

## Alltel Missouri Rate-of-Return (FCC form 492 data)

Exhibit A-10

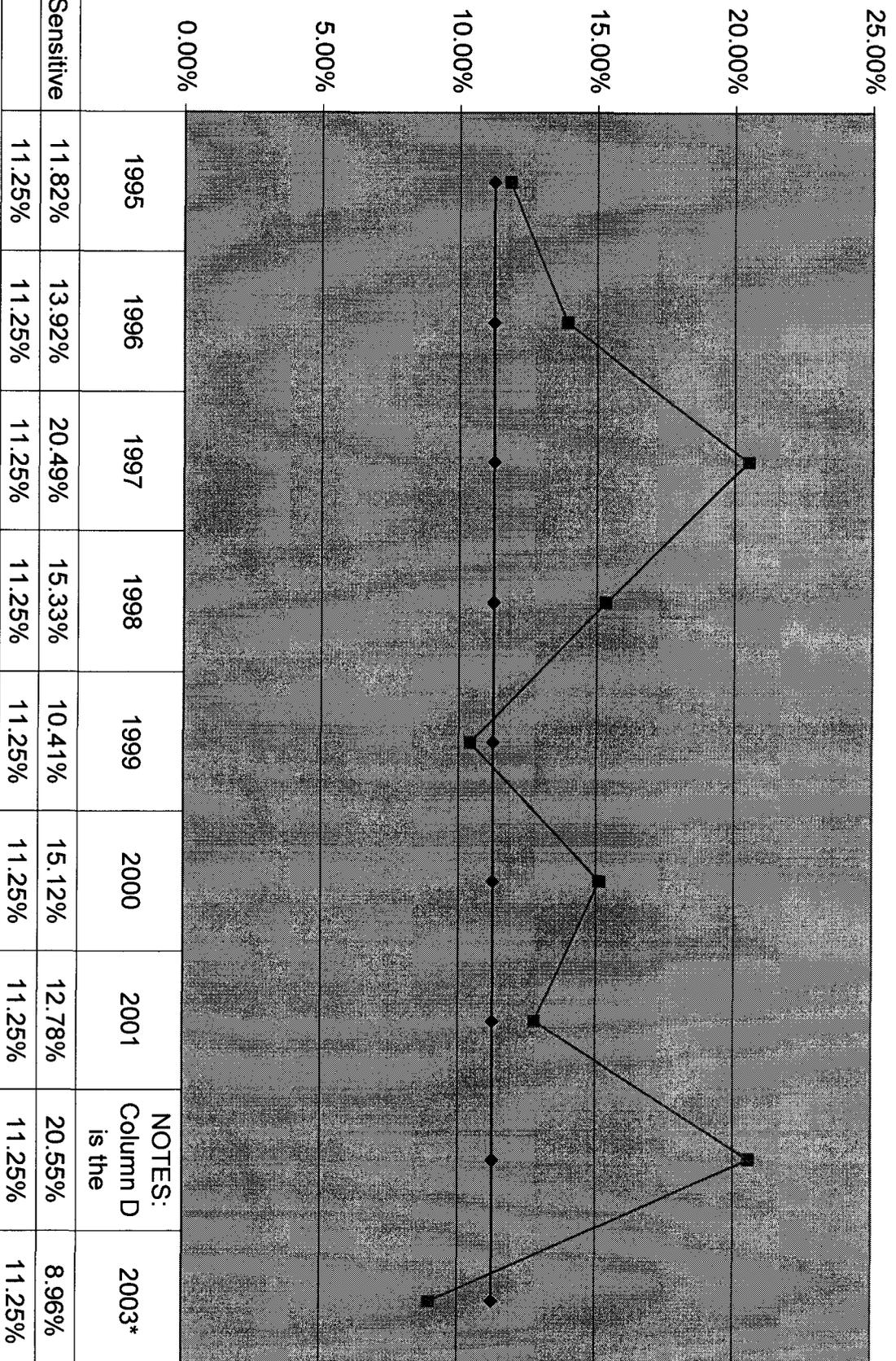


	1995	1996	1997	1998	1999	2000	2001	NOTES: Column D is the	2003*
■ Traffic Sensitive	14.59%	18.70%	14.63%	13.99%	11.99%	12.85%	12.24%	11.99%	11.94%
◆ Target	11.25%	11.25%	11.25%	11.25%	11.25%	11.25%	11.25%	11.25%	11.25%

\* Preliminary 492 Form

## Alltel New York Rate-of-Return (FCC form 492 data)

Exhibit A-11

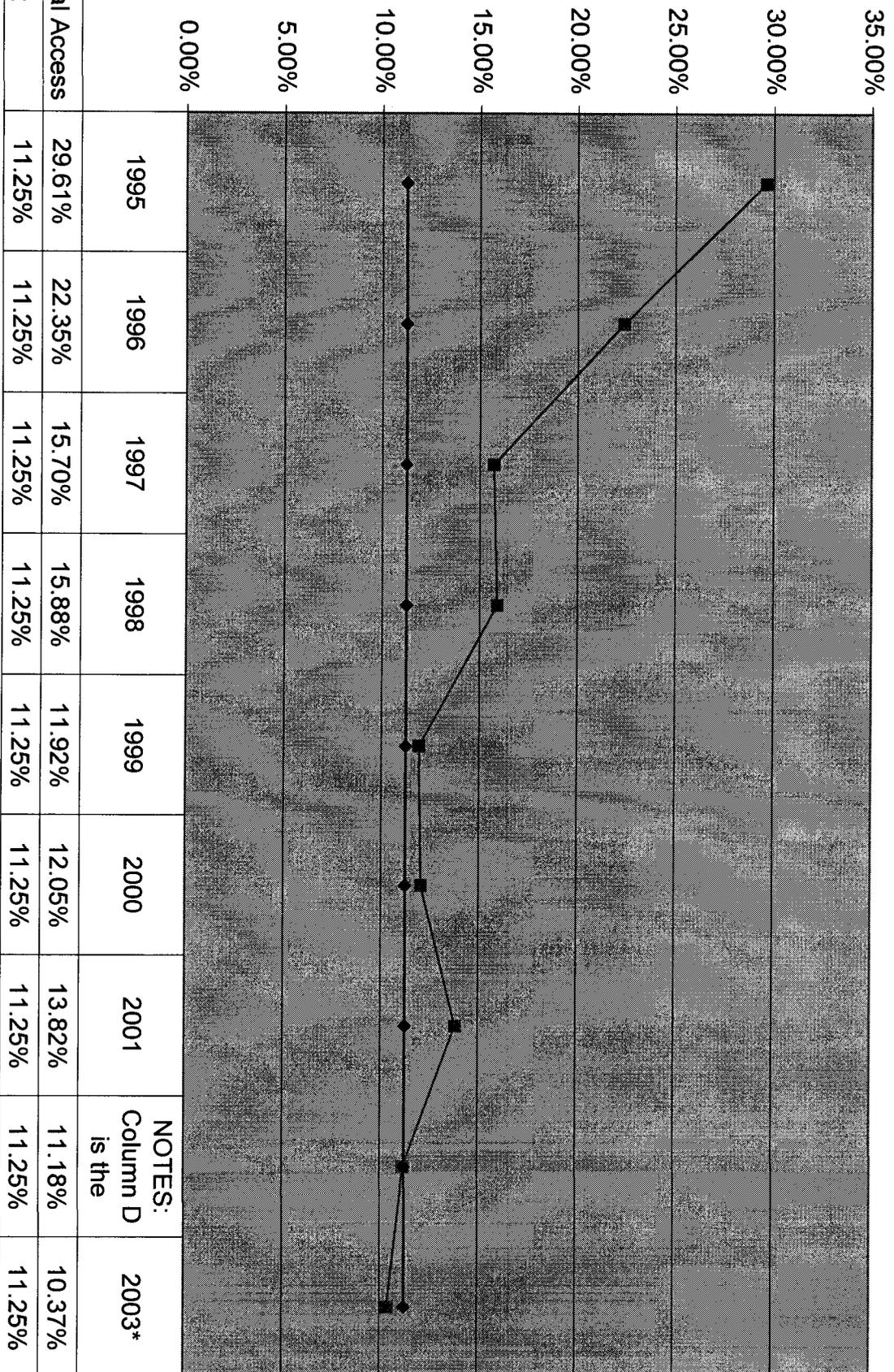


\* Preliminary 492 Form

NOTES:  
Column D  
is the  
2003\*

## Alltel Oklahoma Rate-of-Return (FCC form 492 data)

Exhibit A-12

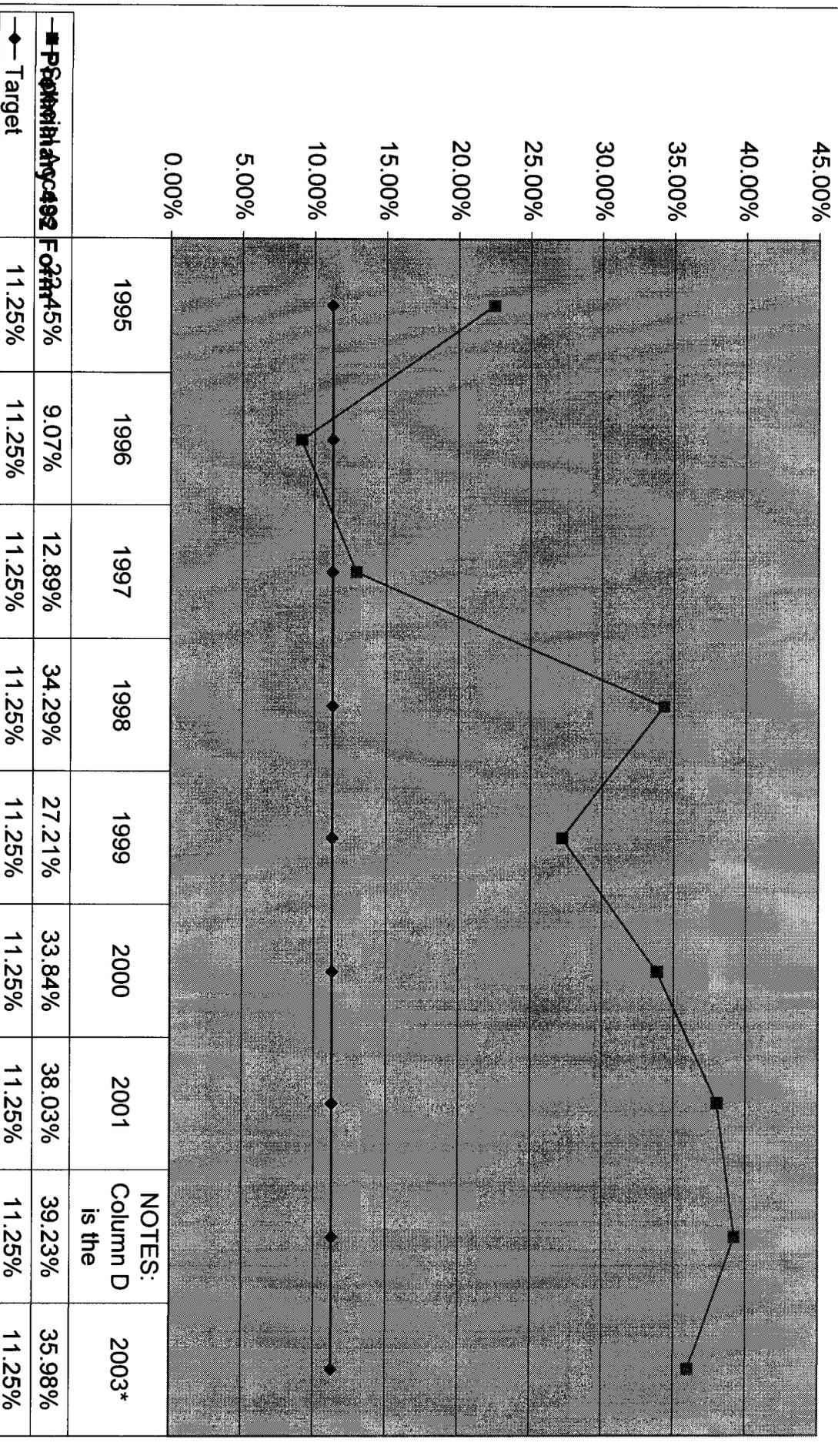


NOTES:  
Column D  
is the

\* Preliminary 492 Form

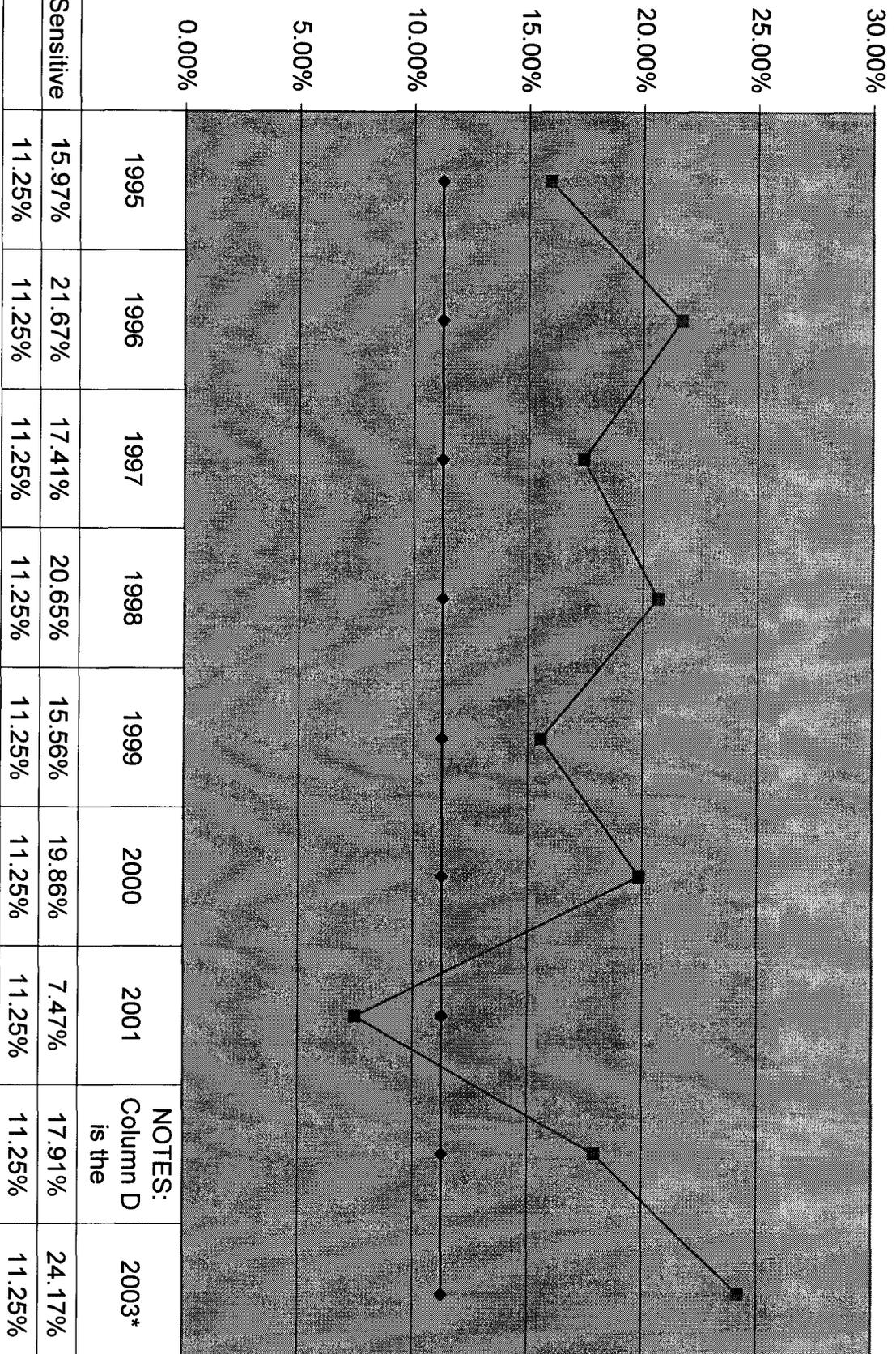
## JSI - Concord Rate-of-Return (FCC form 492 data)

Exhibit A-13



## JSI - Concord Rate-of-Return (FCC form 492 data)

Exhibit A-14



NOTES:  
Column D  
is the

\* Preliminary 492 Form

## Exhibit B

## 2003 Period Rate-of-Return Over Earnings

(Dollar Amounts in Thousands)

March 2004 FCC Form 492 Data Results

A	B	C	D	E	F = C + E	G	H
Company Name/Group or Consultant	Special Access Rate-of-Return %	Special Access Over Earning \$s with 35% Federal Income Tax Gross-up	Traffic Sensitive Rate-of-Return %	Traffic Sensitive Over Earning \$s with 35% Federal Income Tax Gross-up	Sub-Total of Overearnings in Specials and Traffic Sensitive Baskets	March Total Rate-of-Return % (Including Common Line)	March Total Over Earning \$s (Including Common Line) with 35% Federal Income Tax Gross-up
Chillicothe	44.26%	\$953	15.96%	\$61	\$1,014	18.36%	\$1,214
Virgin Island/Vitelco	43.06%	\$727	23.46%	\$1,232	\$1,959	15.88%	\$1,959
NECA	17.08%	\$26,394	13.47%	\$23,786	\$50,180	13.05%	\$83,174
Alltel AR	11.74%	\$18	18.14%	\$798	\$817	13.36%	\$1,216
Alltel FL	17.45%	\$339	10.73%	\$0	\$339	13.48%	\$523
Alltel Missouri	12.65%	\$57	11.96%	\$20	\$77	12.46%	\$353
Alltel NY	13.89%	\$282	8.98%	\$0	\$282	12.47%	\$443
Alltel OK	10.37%	\$0	11.70%	\$6	\$6	11.97%	\$159
TXU	31.79%	\$1,981	24.70%	\$471	\$2,452	15.11%	\$2,452
Fort Bend Telephone CO./TXU	123.46%	\$1,232	19.19%	\$498	\$1,729	14.42%	\$1,729
Concord/JSI	35.98%	\$1,734	24.17%	\$517	\$2,251	18.59%	\$2,251
Farmers/JSI	22.41%	\$536	9.07%	\$0	\$536	11.95%	\$536
Horry/JSI	25.52%	\$1,115	4.40%	\$0	\$1,115	11.01%	\$1,115
Warwick Valley */JSI	11.66%	\$0	14.58%	\$200	\$200	13.05%	\$204
Odin Telephone Exchange Inc.	43.66%	\$70	-3.90%	\$0	\$70	8.92%	\$70
El Paso Telephone Co.	67.21%	\$52	27.08%	\$23	\$75	25.56%	\$78
Coastal Utilities Inc.	33.17%	\$1,095	13.90%	\$136	\$1,231	17.55%	\$1,231

**TOTAL**

**\$64,333**

**\$98,708**

\* Company has their own common line rate, and is not part of the NECA Common Line Pool.

**NECA's Cumulative Returns Continue to Exceed 11.25%****NECA SPECIAL ACCESS**

492 Reported Returns

A	B	C	D
Monitoring period	First Reported Year	Second Reported Year	Final Reported Value
1995/1996	12.46%	12.17%	11.41%
1997/1998	11.42%	8.92%	9.69%
1999/2000	15.53%	14.01%	11.48%
2001/2002	17.76%	14.52%	12.57%
2003	17.08%		

**NECA SWITCHED ACCESS**

492 Reported Returns

A	B	C	D
Monitoring period	First Reported Year	Second Reported Year	Final Reported Value
1995/1996	12.23%	12.64%	12.22%
1997/1998	12.34%	14.06%	13.67%
1999/2000	12.93%	12.53%	12.34%
2001/2002	12.74%	12.62%	12.76%
2003	13.47%		

NOTE: NECA Reports pool results for the first year of a monitoring period once (Column B). The NECA 492 filed in March of the odd years provides a preliminary cumulative result for the two year period (Column C). The 492 filed in September contains the final cumulative value (Column D).