DOCKET SECTION

BEFORE THE
POSTAL RATE COMMISSION

POSTAL RATE AND FEE CHANGES, 1997	:	DOCKET NO. R97-1

ANSWERS OF UNITED PARCEL SERVICE WITNESS KEVIN NEELS TO INTERROGATORIES OF UNITED STATES POSTAL SERVICE (USPS/UPS-T1-1 through 32)

(February 5, 1998)

Pursuant to the Commission's Rules of Practice, United Parcel Service ("UPS") hereby serves and files the responses of UPS witness Kevin Neels to interrogatories USPS/UPS-T1-1 through 32 of the United States Postal Service.

Respectfully submitted,

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ANSWER OF UNITED PARCEL SERVICE
WITNESS NEELS TO INTERROGATORY OF
THE UNITED STATES POSTAL SERVICE

USPS/UPS-T1-1. Do you consider yourself to be a professional econometrician?

Response to USPS/UPS-T1-1. Yes.

ANSWER OF UNITED PARCEL SERVICE
WITNESS NEELS TO INTERROGATORY OF
THE UNITED STATES POSTAL SERVICE

USPS/UPS-T1-2. In what disciplines do you hold your B.A. and Ph.D. degrees?

Response to USPS/UPS-T1-2. My B.A. is in Government. My Ph.D. is in Urban and Regional Theory.

ANSWER OF UNITED PARCEL SERVICE
WITNESS NEELS TO INTERROGATORY OF
THE UNITED STATES POSTAL SERVICE

USPS/UPS-T1-3. Please refer to Workpaper III. Please refer to the single unnumbered page in the workpaper. Please provide definitions for the following undefined terms listed in the workpaper:

(a) Bf

(b) Bd

(c) Var(Xit - XMean)

(d) Var(Xit - Xit-1)

(e) T

(f) Numerator

(g) Denominator

(h) Beta

(i) Variance

(j) Bf-Beta

Response to USPS/UPS-T1-3.

(a) βf is the fixed effects estimate of β.

(b) βd is the first difference estimate of β.

(c) Var(Xit - Xmean) is the variance of piece handlings around site means.

(d) Var(Xit-Xit-1) is the variance of the difference between current and lagged piece handlings.

(e) T is defined in footnote 5 of the single unnumbered page in WP III.

(f) Numerator indicates the expression in the top portion of a simple fraction.

(g) Denominator indicates the expression in the bottom portion of a simple fraction.

(h) Beta is the "Errors in Variables" estimate of β.

(i) Variance is the variance of the measurement error in volume.

(j) Bf-Beta is the difference between the fixed effects estimate of β and the "Errors in Variables" estimate of β.

ANSWER OF UNITED PARCEL SERVICE
WITNESS NEELS TO INTERROGATORY OF
THE UNITED STATES POSTAL SERVICE

USPS/UPS-T1-4. Please refer to Workpaper III. Please refer to the single unnumbered page in the workpaper. There are a series of numbers listed under the column entitled "Bd." For example, for the row entitled "Manual Letter Sorting" the number is "0.7586." The only citation in footnote 2 is "Bradley, WP I". Please provide an exact citation to Bradley Workpaper WP-1 for each of the 11 numbers listed in the column entitled "Bd."

Response to USPS/UPS-T1-4. The citation in footnote 2 is incorrect. These numbers were generated by computer programs attempting to reproduce Bradley's first difference estimator as described in his testimony on page 82, equation (20). Because I did not have copies of the computer programs and data sets he used for his calculations, I was not able to reproduce his results exactly. Copies of the programs used to produce the numbers shown in Workpaper III and the output they generated are being produced as Library Reference UPS-LR-2.

ANSWER OF UNITED PARCEL SERVICE
WITNESS NEELS TO INTERROGATORY OF
THE UNITED STATES POSTAL SERVICE

USPS/UPS-T1-5. Please refer to Workpaper III. Please refer to the single unnumbered page in the workpaper. There are a series of numbers listed under the column entitled "Bf." For example, for the row entitled "Manual Letter Sorting" the number is "0.6266". The only citation in footnote 2 is "Bradley, WP I". Please provide an exact citation to Bradley Workpaper WP-1 for each of the 11 numbers listed in the column entitled "Bf."

Response to USPS/UPS-T1-5. The citation in footnote 2 is incorrect. These numbers were generated by computer programs attempting to reproduce Bradley's fixed effects estimator as described in his testimony on page 81, equation (17). Because I did not have copies of the computer programs and data sets he used for these calculations, I was not able to reproduce his results exactly. Copies of the programs used to produce the numbers shown in Workpaper III and the output they generated are being produced as Library Reference UPS-LR-2.

ANSWER OF UNITED PARCEL SERVICE
WITNESS NEELS TO INTERROGATORY OF
THE UNITED STATES POSTAL SERVICE

USPS/UPS-T1-6. Please refer to Workpaper III. Please refer to the single unnumbered page in the workpaper. There are a series of numbers listed under the column entitled "Var(Xit - XMean)." For example, for the row entitled "Manual Letter Sorting" the number is "0.0716". The only citation in footnote 2 is "Bradley, WP I". Please provide an exact citation to Bradley Workpaper WP-1 for each of the 11 numbers listed in the column entitled "Var(Xit - Xmean)."

Response to USPS/UPS-T1-6. The citation in footnote 2 is incorrect. These numbers were generated by computer programs attempting to reproduce Bradley's consistent estimator of β as described in his testimony on page 82, equation (22). Because I did not have copies of the computer programs and data sets he used for these calculations, I was not able to reproduce his results exactly. Copies of the programs used to produce the numbers shown in Workpaper III and the output they generated are being produced as Library Reference UPS-LR-2.

ANSWER OF UNITED PARCEL SERVICE
WITNESS NEELS TO INTERROGATORY OF
THE UNITED STATES POSTAL SERVICE

USPS/UPS-T1-7. Please provide a list of all Postal Rate Commission Opinions and Recommended Decisions that you reviewed prior to preparing your written testimony. If you reviewed only part(s) of a document, please provide page numbers for each part that you reviewed.

Response to USPS/UPS-T1-7. At a point in the past prior to preparation of my testimony and for an unrelated project, I had reviewed Postal Rate Commission Opinions relating to purchased transportation. I did not retain those documents, and am unable now to provide exact citations.

ANSWER OF UNITED PARCEL SERVICE
WITNESS NEELS TO INTERROGATORY OF
THE UNITED STATES POSTAL SERVICE

USPS/UPS-T1-8. Please refer to Workpaper III. Please refer to the single unnumbered page in the workpaper. There are a series of numbers listed under the column entitled "Var(Xit - Xit-1)." For example, for the row entitled "Manual-Letter Sorting" the number is "0.0327". The only citation in footnote 2 is "Bradley, WP 1". Please provide an exact citation to Bradley Workpaper WP-1 for each of the 11 numbers listed in the column entitled "Var(Xit - Xit-1)."

Response to USPS/UPS-T1-8. The citation in footnote 2 is incorrect. These numbers were generated by computer programs attempting to reproduce Bradley's consistent estimator of β as described in his testimony on page 82, equation (22). Because I did not have copies of the computer programs and data sets he used for these calculations, I was not able to reproduce his results exactly. Copies of the programs used to produce the numbers shown in my Workpaper III and the output they generated are being produced as Library Reference UPS-LR-2.

ANSWER OF UNITED PARCEL SERVICE
WITNESS NEELS TO INTERROGATORY OF
THE UNITED STATES POSTAL SERVICE

USPS/UPS-T1-9. Please refer to Workpaper III. Please refer to the single unnumbered page in the workpaper.

(a) There is apparently a formula listed in footnote 6. Please provide a mathematical representation of this formula along with a definition for each term used in the formula.

(b) There is apparently a formula listed in footnote 7. Please provide a mathematical representation of this formula along with a definition for each term used in the formula.

(c) There is apparently a formula listed in footnote 9. Please provide a mathematical representation of this formula along with a definition for each term used in the formula.

(d) There is apparently a formula listed in footnote 9. Please provide a mathematical representation of this formula along with a definition for each term used in the formula.

Response to USPS/UPS-T1-9. Footnotes 6 through 9 on the single unnumbered page in WP III refer to the errors in variables analysis discussed by Postal Service witness Bradley, in USPS-T-14 at pages 80 through 84, as well as by me in my testimony at pages A1-A5 of Appendix A. Footnotes 6 through 9 are used successively to arrive at consistent estimators of Beta (the true estimate of volume variability) that

are free of measurement error and the variance of the measurement error. Referring to page 65 in Hsiao, Analysis of Panel Data, equations 3.9.8 and 3.9.9, or to page 82 equation 22 of Witness Bradley's testimony, it follows that:

(a) Footnote 6 represents part of the fraction that calculates the consistent estimator of Beta. In particular, it represents the numerator or first term of the expression. Each term is clearly defined by Witness Bradley, USPS-T-14, pages 80-83, in Analysis of Panel Data by Hsiao, and in my response to USPS/UPS-T1-3, 4, 5, 6, and 8.

(b) Footnote 7 represents part of the fraction that calculates the consistent estimator of Beta. In particular, it represents the denominator or second term of the expression. Each term is clearly defined by Witness Bradley, USPS-T-14, pages 80-83, in Analysis of Panel Data by Hsiao, and in my response to USPS/UPS-T1-3, 4, 5, 6, and 8.

(c) Footnote 8 describes the expression that calculates the consistent estimator of Beta by dividing the numerator by the denominator. Each term is clearly defined by Witness Bradley, USPS-T-14, pages 80-83, in Analysis of Panel Data by Hsiao, and in my response to USPS/UPS-T1-3, 4, 5, 6, and 8.

(d) Footnote 9 is the equation that solves for the variance of the error in the measurement of volume. Each term is clearly defined by Witness Bradley, USPS-T-14,

pages 80-83, in Analysis of Panel Data by Hsiao, and in my response to USPS/UPS-T1-3, 4, 5, 6, and 8.

ANSWER OF UNITED PARCEL SERVICE
WITNESS NEELS TO INTERROGATORY OF
THE UNITED STATES POSTAL SERVICE

USPS/UPS-T1-10. Please refer to Workpaper III. Please refer to the single unnumbered page in the workpaper. Please provide the source for the number "81" which is listed in the column entitled "T".

Response to USPS/UPS-T1-10. The source is identified in footnote [5] of the single unnumbered page of Workpaper III. The backup calculations are contained in Library Reference UPS-LR-2.

ANSWER OF UNITED PARCEL SERVICE
WITNESS NEELS TO INTERROGATORY OF
THE UNITED STATES POSTAL SERVICE

USPS/UPS-T1-11. For the purposes of this question, assume that the data for a particular site (a unique IDNUM) has the following pattern: continuous data for 5 periods, a one-period break, continuous data for 25 periods, a three period break, continuous data for 45 periods.

(a) In your proposed method of using "all useable data," how many observations from this site would be included in a fixed effects regression?

(b) Would you consider the data for this site to be continuous or discontinuous?

Response to USPS/UPS-T1-11.

(a) 70. By taking fully into account the specific lag structure created by the breaks in the data, one could in principle increase the number of useable observations to 72.

(b) Discontinuous.

ANSWER OF UNITED PARCEL SERVICE
WITNESS NEELS TO INTERROGATORY OF
THE UNITED STATES POSTAL SERVICE

USPS/UPS-T1-12. Please refer to your Workpaper IV at the program log entitled "wpivmd.log." Please refer to page 30 of the log:

(a) Please confirm that the following code appears on page 30. If the code is not correct, please provide the correct code.

```
DATA LAGSET;
RETAIN RUN 0;
SET OPER;
IF (IDNUM NE IDNUM1) THEN RUN = RUN+1;
ELSE (IF DIFAP NOT IN (1,88) AND (IDNUM-IDNUM1)) THEN RUN=RUN+1;
RUN;
```

(b) Please provide definitions for the variables "RUN", "IDNUM1", and "DIFAP".

(c) Please document each line of code by describing what operation you intended the code to perform.

Response to USPS/UPS-T1-12.

(a) No, the code is not on page 30 of wpivmd.log, but it is on other pages.

(b) RUN: ID number for a continuous string of observations within a site

IDNUM1: The value of the variable IDNUM in the previous observation

DIFAP: The difference between FYAP and FYAP1 (see FYAP1 definition below)

(c) DATA LAGSET;: Begins a data step for a data set titled LAGSET.

RETAIN RUN 0;: Initializes the variable RUN at 0 and causes RUN to retain its value from one iteration of the DATA step to the next.

SET OPER;: Reads observations from the data set OPER.

IF (IDNUM NE IDNUM1) THEN RUN=RUN+1;: Increases the value of the RUN variable if the site changes.

ELSE (IF DIFAP NOT IN (1,88) AND (IDNUM=IDNUM1) THEN RUN=RUN+1;: This statement increases the value of the RUN variable within a site's data if there is a break in the series.

RUN;: Executes the above data step.

ANSWER OF UNITED PARCEL SERVICE
WITNESS NEELS TO INTERROGATORY OF
THE UNITED STATES POSTAL SERVICE

USPS/UPS-T1-13. Please refer to the program "wpivmd.sas" contained in your Workpaper IV. Please provide definitions of the following variables that are contained in the program. Please provide both a mathematical and an intuitive definition for each variable:

(a) idnum1

(b) fyap1

(c) difap

(d) n3

(e) ri1

(f) ri2

(g) rin1

(h) rin2

(i) frstid

Response to USPS/UPS-T1-13.

(a) IDNUM1: The value of the variable IDNUM in the previous observation

(b) FYAP1: The value of the variable FYAP in the previous observation

(c) DIFAP: The difference between FYAP and FYAP1 (FYAPt-FYAPt-1)

Note: The following variables in (d)-(h) are integers and are defined in wpivmd.sas

(d) N3: Total number of runs

(e) RI1: First observation for run i in OLS section

(f) RI2: Last observation for run i in OLS section

(g) RIN1: First observation for run i in AR1 section

(h) RIN2: Last observation for run i in AR1 section

(i) FRSTID: The variable IDNUM

ANSWER OF UNITED PARCEL SERVICE
WITNESS NEELS TO INTERROGATORY OF
THE UNITED STATES POSTAL SERVICE

USPS/UPS-T1-14. Please refer to Table 5 on page 32 of your testimony. Please refer to the column entitled "All Useable Observations."

(a) For each row in the table, there is a percentage provided. For each row in the table, please provide the number of observations used in estimating that percentage.

(b) Please confirm that you discarded some data in estimating these percentages. If you did not confirm, please explain the source of the numbers of observations provided in part a above.

(c) If you did discard some data, please provide, for each estimated equation, the number of observations discarded and the reasons for discarding the data.

(d) If you did discard data, for each estimated equation implied by Table 5 please provide a complete mapping from the data frame to the number of observations used in estimating the equation. That is, please provide the number of observations deleted for each individual reason listed in response to subpart (c) above.

ANSWER OF UNITED PARCEL SERVICE
WITNESS NEELS TO INTERROGATORY OF
THE UNITED STATES POSTAL SERVICE

Response to USPS/UPS-T1-14.

(a)	# of Obs. Used [1]
BCS Sorting	25,964
OCR Sorting	20,981
LSM Sorting	22,873
FSM Sorting	21,203
Manual Letter Sorting	28,164
Manual Flat Sorting	28,020
Manual Parcel Sorting	24,058
Manual Priority Mail Sorting	21,318
SPBS - Priority Mail Sorting	3,591
SPBS - Non Priority Mail Sorting	6,620
Cancellation and Mail Prep	25,462
Opening - Pref Mail	20,438
Opening - Bulk Business Mail	18,429
Pouching	18,115
Platform	20,266
Sack Sorting Machine	2,073
Primary Parcel Sorting Machine	2,073
Secondary Parcel Sorting Machine	2,046
Irregular Parcel Post	1,997
Sack Opening Unit	1,864
Non Machinable Outsides	2,073
Platform	2,073
Floor Labor	2,073

[1] UPS-T-1 WP-IV

(b) - (c) Not confirmed. Only missing values were removed. These were not "usable" data.

(d) N/A

ANSWER OF UNITED PARCEL SERVICE
WITNESS NEELS TO INTERROGATORY OF
THE UNITED STATES POSTAL SERVICE

USPS/UPS-T1-15. *Suppose that a data set had 15 observations.* Suppose that one of the data points was known to contain erroneous data. Would it be appropriate to drop that data point from the econometric regression? Please explain fully.

Response to USPS/UPS-T1-15. The hypothetical posed by this question provides no background information about the regression, the data set, or the nature of the error that is known to be present. The absence of such background information makes the question difficult to answer. In general, it is better to have accurate data than erroneous data. Hence, it may well be appropriate to delete the erroneous observation. However, empirical studies often have to rely on data that are not perfectly accurate, and so the presence of error does not necessarily imply that deletion of the observation is appropriate. The hypothetical situation indicates that the observation is known to be in error, but does not indicate whether anything is known about the magnitude or the direction of the error. These factors may have some bearing on the decision whether or not to include the data point in the regression, especially since the data set that is available for the analysis is very small. Other factors might also be relevant. These could include: whether the error infects a dependent or an independent variable; whether or not the remaining data points are known to be error free; and the nature of the process that caused the error.

ANSWER OF UNITED PARCEL SERVICE
WITNESS NEELS TO INTERROGATORY OF
THE UNITED STATES POSTAL SERVICE

USPS/UPS-T1-16. Please refer to page 30, line 1 of your testimony where you discuss the estimation of seasonal effects.

(a) Suppose that data are collected at the accounting period frequency with 13 observations per year. Suppose that one wishes to estimate a translog econometric regression for a single mail processing site by regressing the variable ln(hours) on the variable ln(TPH) and ln(MANR). Please confirm that it would be impossible to estimate "accurate seasonal effects" for that site with only 13 observations. If you do not confirm, please explain how "accurate seasonal effects" could be estimated for the single site using only 13 observations.

(b) Please provide what you believe to be the minimum number of observations required to accurately estimate seasonal effects for an individual site when the data are collected on an accounting period frequency.

Response to USPS/UPS-T1-16.

(a) Confirmed.

(b) This question cannot be answered precisely because it fails to specify the degree of accuracy sought in the seasonal effect estimates. Furthermore, the relationship between the number of observations and the accuracy of the estimated seasonal effects will depend upon the values of the independent variables and the variance of the residual error term. For the same sample size, different sets of

independent variable values may yield different degrees of accuracy in the estimation of seasonal effects.

The question postulates a two variable translog cost function. I assume because they are not mentioned that this model contains no lagged values of hours, time trends, or other variables. Such a model will contain 6 estimated coefficients. The addition of season dummy variables will add another 12 coefficients to the model. Thus, the minimum number of observations needed to estimate ANY seasonal effects would be 19 observations. Such a regression would have only one degree of freedom, and would be unlikely to provide accurate estimates of any of the coefficients. The accuracy of the estimated seasonal effects will then be an increasing function of the sample size. Without information about the level of estimation accuracy required, the values of the independent variables, and the variance of the residual error term, it is impossible to calculate the minimum number of observations needed "to accurately estimate seasonal effects."

ANSWER OF UNITED PARCEL SERVICE
WITNESS NEELS TO INTERROGATORY OF
THE UNITED STATES POSTAL SERVICE

USPS/UPS-T1-17. Please provide a list of all studies containing econometric analyses that you performed.

Response to USPS/UPS-T1-17. In answering this interrogatory I have relied upon my memory and such records as I have. I cannot confirm that the list is complete. I have interpreted "performed" to mean that I made the detailed technical decisions regarding the design and conduct of the analysis.

HASE Deterioration Rate Studies – As part of the Housing Assistance Supply Experiment I conducted studies aimed at the econometric measurement of the deterioration rate of housing capital.

HASE Capital Index – As part of the Housing Assistance Supply experiment I conducted econometric studies relating the quantity of residential capital present to the hedonic attributes of the structure.

ATM Transactions Demand – In support of an expert witness testifying on behalf of a financial institution I conducted econometric studies of the demand for automated teller machine transactions.

Trident Base Economic Impacts – As part of an effort to measure the economic impacts of the opening of the Trident Missile nuclear submarine base in Kings Bay, Georgia, I conducted econometric analyses of the relationship between employment growth and exogenous income transfers.

**ANSWER OF UNITED PARCEL SERVICE
WITNESS NEELS TO INTERROGATORY OF
THE UNITED STATES POSTAL SERVICE**

Direct Mail Response Analysis – I conducted econometric analyses of response rates to direct mail fund raising appeals as part of an effort to devise ways of targeting future mailings to higher response probability households.

Wood Product Price Relationships – As part of an effort to define geographic markets in a merger case I conducted econometric analyses of relationships between prices for wood products in different geographic regions.

Urban Family Budget Study – To provide a way of measuring cross-sectional price differentials between areas not directly covered by BLS surveys I conducted an econometric analysis of cross-sectional and intertemporal variations in BLS's estimated budgets for an urban family of four.

Retail Computer Sales – To support expert testimony in a commercial dispute involving retail computer outlets I conducted econometric studies of trends in monthly sales in individual retail computer stores.

Pay Per View Video Pricing – To assist a supplier of pay per view in-hotel movies services in the development of a pricing strategy I designed a pricing experiment and conducted a series of econometric analyses of the response of buy rates to the experimental price changes.

Instant Camera Demand – To support expert testimony regarding damages in a patent infringement lawsuit involving instant cameras I conducted a

series of econometric studies of instant camera demand in the U.S. and in six foreign markets.

Instant Film Demand – To support expert testimony regarding damages in a patent infringement lawsuit involving instant cameras I conducted a series of econometric studies of instant film demand in the U.S. and in six foreign markets.

Regional Economic Indicator Trends – To support expert testimony in a legal proceeding involving a financial institution I conducted an econometric study of trends over time in a number of regional economic indicators.

Big Six Partner Tenure – To support expert testimony in an employment lawsuit involving a Big Six accounting firm I conducted an econometric study of duration of partner tenure.

Value of Commercial Time Slots – To support expert testimony in an antitrust lawsuit involving the broadcast industry I conducted econometric studies relating the prices charged for commercial time slots on network television to audience demographics.

Stewart Airport Trans Hudson Rail Service Demand – To assess the likely demand for a proposed new rail link to Stewart Airport in New York I conducted an econometric study of the response of travel demand to changes in prices and service levels for alternative transportation modes.

Petroleum Products Pipeline – As part of a petroleum products pipeline rate case I conducted econometric studies of factors influencing variations in shipment volumes.

Time of Day Demand Modeling – As part of an investigation of demand for work travel from New Jersey to Manhattan I conducted econometric studies of the effects of changes in congestion and travel time on the distribution of travel demand across the peak commuter period.

Modal Split Demand Modeling – As part of an investigation of demand for work travel from New Jersey to Manhattan I conducted econometric studies of the effects of changes in fares and service levels on travelers' choices between auto, bus, and rail alternatives.

Facility Choice Demand Modeling – As part of an investigation of demand for work travel from New Jersey to Manhattan I conducted econometric studies of the effects of congestion and travel time on travelers' choices of routes.

Station Choice Modeling – As part of an investigation of demand for work travel from New Jersey to Manhattan I conducted econometric studies of the effects of travel times, fare, and access options on travelers' choices of rail stations.

Transit Benefits Study – As part of an effort to measure the welfare benefits of the availability of transit service I conducted an econometric analysis of market research data exploring consumers' choices of travel modes to work.

ANSWER OF UNITED PARCEL SERVICE
WITNESS NEELS TO INTERROGATORY OF
THE UNITED STATES POSTAL SERVICE

Auto Demand Modeling – As part of work conducted in connection with litigation regarding allegations of theft of intellectual property I conducted econometric analyses of automobile demand.

High Speed Rail Demand – As part of an effort to assess future demand for a proposed high speed rail project I directed econometric analyses of market research data regarding travelers' choices of travel modes for intercity trips.

Effects of Urban Form on Travel Demand – As part of a research project to measure the effects of urban development patterns on travel behavior I conducted a series of econometric studies examining choices of modes to work, trip frequency, trip length, and other aspects of urban travel behavior.

Determinants Of Urban Traffic Volumes – As part of an effort to evaluate the plausibility of traffic forecasts for a metropolitan region and the highway construction plans based upon them I conducted a cross-sectional econometric analysis of the determinants of trip frequency, trip length, and auto usage.

Studies of Patient Population Dynamics – As part of a study of likely future markets for a medical device manufacturer I conducted econometric studies of disease incidence, prevalence and mortality for a list of conditions potentially treatable using the company's products.

ANSWER OF UNITED PARCEL SERVICE
WITNESS NEELS TO INTERROGATORY OF
THE UNITED STATES POSTAL SERVICE

Orphan Drug Pricing Study – As part of a project to develop a pricing strategy for a new orphan drug I conducted a descriptive econometric study of factors influencing the introduction price for new orphan drugs.

Post AMI Complications – To support the development of an economic model of the value of diagnostic testing in heart attack patients I conducted econometric studies of the likelihood of developing complications in the weeks following a heart attack.

Post AMI Patient Population Studies – To support the development of an economic model of the value of diagnostic testing in heart attack patients I conducted a series of econometric studies of the characteristics of heart attack patients.

Diagnostic Accuracy in the Detection of Coronary Artery Disease – I conducted an econometric analysis of the relative accuracy of alternative techniques for diagnosing the presence of coronary artery disease.

Effects of Repair Behavior on Housing Deterioration and Quality – In a line of research funded by the U.S. Department of Housing and Urban Development and the U.S. Department of Energy I developed an econometric model based upon a generalized Leontieff production function relating the quantity of residential capital present to the quantity or capital carried over from the prior time period and the volume of new repair and upgrading inputs supplied in the current period.

ANSWER OF UNITED PARCEL SERVICE
WITNESS NEELS TO INTERROGATORY OF
THE UNITED STATES POSTAL SERVICE

Rental Housing Repair Behavior – In a line of research funded by the U.S. Department of Housing and Urban Development and the U.S. Department of Energy I developed an econometric model relating expenditures for repairs and upgrading to landlord demographics and the estimated marginal value product of incremental repair inputs.

Rental Housing Services Production Functions – As part of the Housing Assistance Supply Experiment and for completion of the requirements for receipt of my Ph.D. I estimated a translog production function relating current housing services production to inputs of land, residential capital, energy, and other operating inputs.

Housing Resale Model – For a state Realtor association I developed en econometric model of the determinants of sales volumes for existing single family houses.

Heating Oil Price Studies – To support the development of expert testimony in a legal dispute regarding allegations of manipulation of the heating oil market I conducted econometric studies of heating oil prices and prices on the heating oil futures market.

Residential Energy Demand – As part of the Housing Assistance Supply Experiment I conducted econometric studies of the determinants of residential energy demand.

ANSWER OF UNITED PARCEL SERVICE
WITNESS NEELS TO INTERROGATORY OF
THE UNITED STATES POSTAL SERVICE

Travel Agent Booking Behavior – I conducted a series of econometric studies relating the shares of individual travel agency sales achieved by the various air carriers to their quality of service, sales efforts, and travel agent incentive agreements.

Effects of CRS Display Bias on Airline Bookings – To support expert testimony in a commercial dispute I conducted econometric analyses of the determinants of CRS booking levels on two domestic airlines.

Aviation Activity Forecasts – As part of an effort to develop an airport system plan I conducted econometric analyses of the determinants of growth in air carrier enplanements and departures and general aviation operations.

Airport Access Demand – As part of an effort to develop new airport access services I conducted econometric analyses of market research data on the choice of access mode by air passengers.

Time Series Analyses of the Effects of CRS Display Bias – To support the development of expert testimony in an antitrust case involving airline computerized reservation systems I conducted a time series econometric analysis of the effects of CRS display bias on one of the parties to the case.

Analyses of Advance Booking Behavior – To support the development of expert testimony in an antitrust case involving airline computerized reservation systems I conducted econometric analyses of how far in advance of flight time reservations are made by air passengers.

ANSWER OF UNITED PARCEL SERVICE
WITNESS NEELS TO INTERROGATORY OF
THE UNITED STATES POSTAL SERVICE

Determinants of Airline Market Share – To support the development of expert testimony in an antitrust case involving airline computerized reservation systems I conducted econometric analyses of the determinants of airline market shares.

Effect of Bankruptcy on Airline Bookings – As part of work performed in connection with an antitrust case involving the domestic airline industry I conducted econometric analyses of the effects that declarations of bankruptcy have had on bookings for the bankrupt carriers.

Metropolitan Area Economic Growth – As part of a university research project I conducted econometric studies of the factors influencing the long term economic growth of the Boston Metropolitan area.

ANSWER OF UNITED PARCEL SERVICE
WITNESS NEELS TO INTERROGATORY OF
THE UNITED STATES POSTAL SERVICE

USPS/UPS-T1-18. Please provide a list of all studies containing econometric analyses that you directed but did not perform.

Response to USPS/UPS-T1-18. In answering this interrogatory I have relied upon my memory and such records as I have. I cannot confirm that the list is complete. I have interpreted "directed" to mean that I worked with an assistant who contributed substantially to technical decisions regarding the design and conduct of the analysis.

Disposable Diaper Sales – To support expert testimony in a commercial dispute involving disposable diapers I directed an econometric analysis of scanner data on sales of different brands and lines of disposable diapers.

Effects of Sales Force Behavior on Medical Device Sales – To support expert testimony in a commercial lawsuit involving a new medical device I directed econometric studies of the effects of sales effort on the penetration rate of the new technology through the target physician audience.

Analysis of Business Jet Resale Prices – To support the development of expert testimony in an antitrust case involving the business jet market I directed econometric analyses of trends in resale prices for business jet aircraft.

Analysis of Airline Pricing Behavior – To support the development of expert testimony in an antitrust case involving the domestic airline industry I directed econometric analyses of airline pricing behavior at the fare basis code level.

ANSWER OF UNITED PARCEL SERVICE
WITNESS NEELS TO INTERROGATORY OF
THE UNITED STATES POSTAL SERVICE

Hedonic Automobile Price Analysis - As part of work conducted in connection with litigation regarding allegations of theft of intellectual property I directed econometric analyses relating automobile prices to automobile features.

ANSWER OF UNITED PARCEL SERVICE
WITNESS NEELS TO INTERROGATORY OF
THE UNITED STATES POSTAL SERVICE

USPS/UPS-T1-19. Please provide a description and documentation of all alternative analyses you considered but did not use in your testimony.

Response to USPS/UPS-T1-19. I considered an alternative analysis in which the lagged value of total piece handlings was replaced by the lagged value of hours logged in for the activity. Documentation for this alternative analysis is contained in Library Reference UPS-LR-3.

ANSWER OF UNITED PARCEL SERVICE
WITNESS NEELS TO INTERROGATORY OF
THE UNITED STATES POSTAL SERVICE

USPS/UPS-T1-20. Please refer to page 5, line 9 of your testimony where you refer to the "Commission's well-established determination that mail processing costs are fully volume variable."

(a) Please provide the exact citations to Postal Rate Commission Opinions and Recommended Decisions that determined that mail processing costs are fully volume variable.

(b) Please provide copies of all studies of the variability of mail processing labor costs that you reviewed in preparation of your testimony.

Response to USPS/UPS-T1-20.

(a) In past decisions, the Commission has consistently treated mail processing costs as 100 percent variable. This is evident from the tables entitled "Comparison of Costs Attributed by Cost Segment and Component" contained in Appendix D, page 1 of 4 in Docket Nos. R94-1, R90-1, and R87-1 where mail processing labor costs are clearly shown to be 100 percent attributable.

(b) I have examined Witness Bradley's Direct Testimony and Workpapers, as well as the published article by him cited on page 41 of his Direct Testimony. Since I assume that he already has these materials, I have not enclosed copies.

ANSWER OF UNITED PARCEL SERVICE
WITNESS NEELS TO INTERROGATORY OF
THE UNITED STATES POSTAL SERVICE

USPS/UPS-T1-21. Please refer to Table 1 on page 7 of your testimony. Please provide the number of observations used to estimate each of the volume variability estimates provided in that table.

Response to USPS/UPS-T1-21. The following numbers of observations were taken directly from wpimd.lst, wpima.lst, wpibd.lst, and wpiba.lst:

BCS:	25,964
OCR:	20,981
LSM:	22,873
FSM:	21,203
MANL:	28,164
MANF:	28,020
MANPAR:	24,058
MANPRI:	21,318
SPBSP:	3,591
SPBSNP:	6,620
CNCL:	25,462
OPNPRF:	20,438
OPNBBM:	18,429
POUCH:	18,115

ANSWER OF UNITED PARCEL SERVICE
WITNESS NEELS TO INTERROGATORY OF
THE UNITED STATES POSTAL SERVICE

PLAT:	20,266
SSM:	2,073
PSM:	2,073
SPS:	2,046
IPP:	1,997
SOU:	1,864
NMO:	2,073
PLAT:	2,073
ALLIED:	2,073

ANSWER OF UNITED PARCEL SERVICE
WITNESS NEELS TO INTERROGATORY OF
THE UNITED STATES POSTAL SERVICE

USPS/UPS-T1-22. Please refer to page 10, line 9 of your testimony where you state:

> While one might argue that the schedule of wage rates is determined largely by general labor market conditions rather than mail volume, the same cannot be said for the mix of types of time.

(a) Please provide your understanding of the process by which wages for United States Postal Service mail processing workers are set.

(b) Please provide your understanding how often this wage schedule is changed.

(c) Are you familiar with the terms "clerk" and "mailhandler"? If you are familiar with these terms, please provide your understanding of each.

(d) Do you understand how the Postal Service staffs its mail processing operations? If you answer is anything but an unqualified no, please provide all documents that you relied upon to form your understanding.

Response to USPS/UPS-T1-22.

(a) I understand that wages are set through collective bargaining between the Postal Service and the union representing postal workers.

(b) I understand that the schedule changes every few years when new labor agreements are reached. It may also change over the life of a specific agreement as a result of periodic cost of living increases.

(c) My familiarity with the terms "clerks" and "mailhandlers" comes from USPS LR-H-1, Chapter 3, Page 3-1, Section 3.0:

> This work includes mail processing, window service, and administrative and support activities that are performed in post offices and in more specialized and centralized mail processing centers by clerks and mailhandlers. Whereas clerk work occurs in all components in this segment, mailhandler work is mainly mail processing work and involves loading, unloading, and moving mail.

(d) I have some understanding of how the Postal Service staffs its mail processing operations. The sources I have relied upon include Witness Bradley's Direct Testimony and the transcript of his cross-examination. I assume that these documents are available to him, and that it is unnecessary to provide copies of them.

ANSWER OF UNITED PARCEL SERVICE
WITNESS NEELS TO INTERROGATORY OF
THE UNITED STATES POSTAL SERVICE

USPS/UPS-T1-23. Suppose that a BCS mail processing activity is in long run equilibrium. Now suppose that there is a sustained increase in mail volume flowing through that activity. Please confirm that the Postal Service is more likely to use overtime labor in its short run response to the volume increase that in its long run response to the volume increase. If you do not confirm, please explain how the Postal Service would be more likely to use overtime labor in its long run response than in its short run response.

Response to USPS/UPS-T1-23. I am not sufficiently familiar with the staffing practices of the Postal Service to offer a firm opinion on what it would do in this hypothetical situation. As a general proposition, I would expect that an employer would be more likely to use overtime labor in the short run than in the long run. I have encountered instances, however, in which employers have felt that it was more economical to incur overtime expenses even over the long run rather than incur the benefit costs associated with the hiring of new workers. I have also noted that employers have been willing to incur overtime expenses for extended periods of time when they lacked confidence that the volume increase they were experiencing would persist indefinitely. Your hypothetical postulate of a "sustained" volume increase would seem to exclude these latter reactions, however.

ANSWER OF UNITED PARCEL SERVICE
WITNESS NEELS TO INTERROGATORY OF
THE UNITED STATES POSTAL SERVICE

USPS/UPS-T1-24. Please refer to page 12 of your testimony. Please confirm that it is your testimony that the number of times a piece is handled is a function of volume.

Response to USPS/UPS-T1-24. Not confirmed. I have testified that this is a possibility, and that Bradley has provided no evidence either to confirm it occurs or to confirm that it does not occur.

ANSWER OF UNITED PARCEL SERVICE
WITNESS NEELS TO INTERROGATORY OF
THE UNITED STATES POSTAL SERVICE

USPS/UPS-T1-25. Please refer to page 33, line 3 where you refer to the term "scientific method." Please provide a precise definition of that term.

Response to USPS/UPS-T1-25. Webster's Third New International Dictionary 2033 (1993) defines the term scientific method as: "[T]he principles and procedures used in the systematic pursuit of intersubjectively accessible knowledge and involving as necessary conditions the recognition and formulation of a problem, the collection of data through observation and if possible experiment, the formulation of hypotheses, and the testing and confirmation of the hypotheses formulated."

ANSWER OF UNITED PARCEL SERVICE
WITNESS NEELS TO INTERROGATORY OF
THE UNITED STATES POSTAL SERVICE

USPS/UPS-T1-26. Please refer to pages 46-49 of USPS-T-13 and Table 15 on page 50, of USPS-T-13 (copies attached).

(a) Please confirm that there are two sets of variabilities presented in that table. If you do not confirm, please indicate how many sets of variabilities are presented.

(b) Please confirm that the first set of variabilities are based upon a set of data before some unusual observations are eliminated. If you do not confirm please explain.

(c) Please confirm that the second set of variabilities are based upon a set of data after some unusual observations are eliminated. If you do not confirm, please explain.

(d) Please confirm that the approach that you espouse in your testimony of using "all useable data" and avoiding "subjective judgement calls" would require recommending use of the first set of variabilities (based upon the large data set) as opposed to the second set of variabilities (with the unusual observations deleted). If you do not confirm, please explain your justification for recommending the use of the second set of variabilities.

ANSWER OF UNITED PARCEL SERVICE
WITNESS NEELS TO INTERROGATORY OF
THE UNITED STATES POSTAL SERVICE

Response to USPS/UPS-T1-26.

(a) Confirmed.

(b) Confirmed.

(c) Confirmed.

(d) Not necessarily confirmed. I note that the situation to which this interrogatory refers differs in some important respects from that which I criticized in my testimony.

In USPS-T-13 Witness Bradley made inquiries to determine why the observations in question appear to be unusual, and as a result he knows why they differ from the bulk of the observations. In USPS-T-14 he appears to know nothing about the excluded observations other than that they are outliers within his data set. It is not necessarily inappropriate to decide to conduct an econometric analysis of cost variability for contracts involving the transportation of items other than, for example, baby chicks, to exclude contracts for the transportation of baby chicks, and to then apply the estimated variabilities to expenditures for the transportation of items other than baby chicks. Excluding observations on the basis of such specific criteria is quite different from excluding them simply because they look like outliers.

Another important difference has to do with the amount of data eliminated from the analysis. The numbers of observations eliminated in Table 15 of USPS-T-13 are at most a few dozen, and in the worst case amount to less than ten percent of the

original data set. In USPS-T-14, however, the eliminations amount to as much as 30 to 40 percent of the original data set. I believe in general that one needs to have a reason for dropping data from an analysis. I also believe, however, that this need is especially pressing when one wishes to drop a lot of the data, as Witness Bradley has done in USPS-T-14.

ANSWER OF UNITED PARCEL SERVICE
WITNESS NEELS TO INTERROGATORY OF
THE UNITED STATES POSTAL SERVICE

USPS/UPS-T1-27. Please refer to your testimony at page 34 where you discuss the complexity of the time trend in USPS-T-14.

(a) Are you familiar with the econometric term "segmented trend"? If so, please provide a mathematical definition of the term.

(b) Are you familiar with the econometric term "shifting trend"? If so, please provide a mathematical definition of the term.

(c) Are you familiar with the term "broken trend"? If so, please provide a mathematical definition of the term.

Response to USPS/UPS-T1-27.

(a) Not as a precisely defined econometric term.

(b) Not as a precisely defined econometric term.

(c) Not as a precisely defined econometric term.

ANSWER OF UNITED PARCEL SERVICE
WITNESS NEELS TO INTERROGATORY OF
THE UNITED STATES POSTAL SERVICE

USPS/UPS-T1-28. Please refer to Figure 4 on page 37 of your testimony. The only documentation of that figure is the note that says "Source: WP VI."

(a) Please confirm that there are no plots or listings of data presented in your Workpaper VI. If you do not confirm, please provide exact citations where the data listings or plots are included in your Workpaper VI.

(b) Please confirm that Figure 4 was not produced by the SAS program listed in Workpaper VI, entitled, "wpvimd.sas." If you do not confirm, please provide the exact code that generates Figure 4. Also, please show where Figure 4 appears in the SAS listing.

(c) Please provide, in electronic format, the data points that were plotted in Figure 4.

(d) The program in your Workpaper VI appears to create a data set entitled, "trend.csv." Please provide a copy of the data set along with appropriate documentation.

Response to USPS/UPS-T1-28.

(a) Confirmed.

(b) The SAS program contained in Workpaper VI produced the plotting points for Figure 4. The program did not do the actual plotting. Figure 4 was generated from the plotting points produced by the SAS program using Freelance Version 96.

(c) Trend.csv, provided as Library Reference UPS-LR-4 in response to part (d), contains the data used to create the plot.

(d) See Library Reference UPS-LR-4. The columns for the data set trend.csv are activity, FYAP, and TREND as seen in the PUT statement in wpvimd.sas. The calculations for the TREND variable are clearly defined in wpvimd.sas, with the fixed effect coefficients being those provided in Bradley's workpapers.

ANSWER OF UNITED PARCEL SERVICE
WITNESS NEELS TO INTERROGATORY OF
THE UNITED STATES POSTAL SERVICE

USPS/UPS-T1-29. Please refer to Figure 3 on page 36 of your testimony. The only documentation of that figure is the note that says "Source: WP VI."

(a) Please confirm that there are no plots or listings of data presented in your Workpaper VI. If you do not confirm, please provide exact citations where the data listings or plots are included in your Workpaper VI.

(b) Please confirm that Figure 3 was not produced by the SAS program listed in Workpaper VI, entitled, "wpvimd.sas." If you do not confirm, please provide the exact code that generates Figure 3. Also, please show where Figure 3 appears in the SAS listing.

(c) Please provide, in electronic format, the data points that were plotted in Figure 3.

Response to USPS/UPS-T1-29.

(a) Confirmed.

(b) The SAS program calculated the plotting points for Figure 3, but did not do the actual plotting. Figure 3 was generated from the plotting points produced by the SAS program using Freelance Version 96.

(c) Provided in data set trend.csv.

ANSWER OF UNITED PARCEL SERVICE
WITNESS NEELS TO INTERROGATORY OF
THE UNITED STATES POSTAL SERVICE

USPS/UPS-T1-30. Please provide electronic versions of the following programs.

(a) WPIMD.SAS

(b) WPIMA.SAS

(c) WPIBD.SAS

(d) WPIBA.SAS

(e) WPIIIMD.SAS

(f) WPIVMD.SAS

(g) WPIVMA.SAS

(h) WPIVBD.SAS

(i) WPIVBA.SAS

(j) WPVMD.SAS

(k) WPVIMD.SAS

Response to USPS/UPS-T1-30. This has already been provided as Library Reference UPS-LR-1.

ANSWER OF UNITED PARCEL SERVICE
WITNESS NEELS TO INTERROGATORY OF
THE UNITED STATES POSTAL SERVICE

USPS/UPS-T1-31. Please provide an electronic version of the spreadsheet entitled "WPIII.XLS."

Response to USPS/UPS-T1-31. This has already been provided as Library Reference UPS-LR-1.

ANSWER OF UNITED PARCEL SERVICE
WITNESS NEELS TO INTERROGATORY OF
THE UNITED STATES POSTAL SERVICE

USPS/UPS-T1-32. Please refer to Table I of your testimony.

(a) Please confirm that this table is based upon what you call a "cross-sectional" data set. If you do not confirm, please explain.

(b) Please confirm that the cross-sectional values are found by calculating the average values for the variables like HOURS, MANR and TPH for each site. If you do not confirm, please explain how the cross-sectional values are formed.

(c) Please confirm that on lines 4-5 of page 6 you state: "I have rerun Bradley's cross-sectional analysis on a data set that uses all of the data." If you do not confirm, please explain.

(d) Please refer to page 17, lines 11-22. Please confirm that you claim that the MODS data includes multiple instances in which there is only a single observation for a site for a given mail processing activity. If you do not confirm, please explain the statement on lines 17 and 18 of page 16: "There are, for example, hundreds of instances in which a site reports piece handlings for a specific activity for only a single period."

(e) Please confirm that this means that some of the observations used in the cross sectional analysis presented are based upon a single observation, while others are based upon more than 100 observations. If you do not confirm, please explain.

(f) Please provide the number of observations that went into forming the average value for each of the cross-sectional observations used to estimate the Table 1 variabilities for:

(1) BCS Sorting

(2) OCR Sorting

(3) LSM Sorting

(4) Manual Letter Sorting

(5) Manual Flat Sorting

(6) Manual Parcel Sorting

(7) Manual Priority Mail Sorting

(8) SPBS Priority Mail Sorting

(9) SPBS Non Priority Mail Sorting

(10) Cancellation and Mail Prep

(11) Opening - Pref Mail

(12) Opening - BBM

(13) Pouching

(14) Platform

Response to USPS/UPS-T1-32.

(a) Confirmed.

(b) Confirmed.

(c) Confirmed.

(d) Confirmed.

(e) Confirmed.

(f) See Library Reference UPS-LR-5.

lowest calculated chi-square statistic is for the intra-BMC cost account. Its value is 6.0137. The critical value for the chi-square distribution with one degree of freedom at the 95 percent level is 3.481.

Table 14
Chi Square Tests for Significance of the Region Dummy Variables

Equation	Degrees of Freedom	Calculated χ^2 Statistic
Box Route	7	1,053.37
Intra-City	1	9.98
Intra-SCF Van	10	334.47
Intra-SCF Trailer	6	142.97
Inter-SCF Van	6	37.93
Inter-SCF Trailer	6	68.66
Intra-BMC	1	6.01
Inter-BMC	4	12.35
Plant Load	5	55.33

F. Accounting for Unusual Observations

The HCSS replaced the system of paper contracts. Because of availability of data in electronic form, the current variability analysis did not require collecting and keypunching the data from more than two thousand hard copy contracts. This allowed a more complete data set to be constructed and allowed more detailed analyses to be performed. However, the absence of hard copy contracts precluded review of the specific characteristics of each contract cost segment. This raises the possibility that some of the contract cost segments

may be atypical of the general cost-generating function.

To investigate this possibility, I manually reviewed the data used in each of the econometric equations presented above. That review revealed that there are a small number of observations in each account category that seem to be quite different from the other observations.

These observations are different along the following dimensions. They have:

a. Extremely low annual cost;

b. Extremely low annual CFM;

c. Extremely short or long (for the account) route length;

d. Extremely low annual miles;

e. Extremely low or high cost per CFM;

f. Extremely low or high cost per mile.

The existence of these observations raises a difficult problem. The fact they are different does not imply that they are necessarily wrong or contain incorrect data. Yet, if their characteristics are not common to the general population, their inclusion in the econometric equation *could* cloud the identification of the true cost variability.[20]

Eliminating data from an analysis should only be done with great caution. On

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[20] A request was made to the DNO's to provide feedback on these contracts. The DNO's were asked to verify the information, submit any corrected information or provide an explanation of the unusual nature of the contracts. Review of those response shows that these contracts do indeed contain some unusual circumstances like the transportation of baby chicks, the use of windsled transportation, short-length plant load contracts and low cost, "as needed" contracts. See Library Reference H-181, Responses Concerning Unusual Observations in the HCSS Data Set.

one hand, there should always be a presumption for using valid observations, even if the values for a particular observation are not typical of the rest of the data. On the other hand, if the data are from special cases, or do include data entry errors, their use could, potentially, lead to misleading results.

Finally, there is the issue of identifying what are "unusual" observations, a process which should always be done *before* the effect on the estimated equations is known. In addition, care should be taken that only truly unrepresentative observations are removed.

After examining the data and identifying the small number of unusual observations in each cost pool, I re-estimated all of the econometric equations. The complete results are presented in Workpaper WP-7, but a summary of those results is presented in Table 15.

In five cases, Box Route, Intra-City, Intra-SCF trailers, Inter-SCF trailers, and inter-BMC, the elimination of these observations did not affect the results. In these cases, the new estimated variability was within 2 percentage points of the old estimated variability. Elimination of the unusual observations is not important in these cases. The remaining four cases, Intra-SCF vans, Inter-SCF vans, Intra-BMC, and Plant Load, were quite different because elimination of a small number of observations has a large impact. In each case, the estimated variability rises by a large amount. The most extreme case was the intra-SCF van category where the elimination of 30 observations out of 5,464 observations caused the variability to rise by 10.5 percentage points. In addition, in three of these four cases, the fit of the equation was significantly improved by eliminating

the unusual observations. In the last case, the fit was improved but not by a large amount.

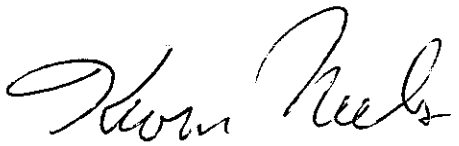
Although both the previously reported results and these results have merit, I recommend that the Commission use the variabilities calculated on the data set with the unusual observations removed. My judgment is based upon three factors: the great difference between the characteristics of the omitted observations and the rest of the data, the material increase in certain of the variabilities from omitting the observations, and the material increase in the goodness of fit of several equations from omitting the observations.

Table 15
Effects of Eliminating a Small Number of Unusual Observations

	# Of Observations			R^2			Variabilities		
Category	Before	After	Change	Before	After	Change	Before	After	Change
Box Route	5,503	5,474	-29	0.7341	0.7184	-0.0157	27.76%	29.51%	1.75%
Intra-City	421	385	-36	0.6100	0.8274	0.2174	63.52%	64.88%	1.36%
Intra-SCF Vans	5,464	5,434	-30	0.7772	0.8515	0.0743	51.04%	61.51%	10.47%
Intra-SCF Trailers	570	559	-11	0.8604	0.8514	-0.0090	86.34%	87.73%	1.39%
Inter-SCF Vans	997	982	-15	0.6311	0.8437	0.2126	56.90%	65.74%	8.84%
Inter-SCF Trailers	683	669	-14	0.9420	0.9073	-0.0347	93.49%	95.34%	1.85%
Intra-BMC	344	328	-16	0.8597	0.9520	0.0923	93.21%	97.43%	4.22%
Inter-BMC	177	172	-5	0.9727	0.9473	-0.0254	94.85%	94.88%	0.03%
Plant Load	510	476	-34	0.6948	0.8790	0.1842	87.84%	94.66%	6.82%

DECLARATION

I, Kevin Neels, hereby declare under penalty of perjury that the foregoing answers are true and correct to the best of my knowledge, information, and belief.

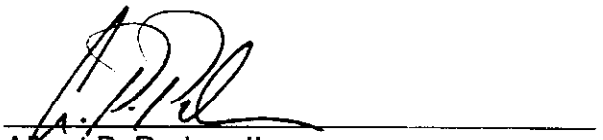


Kevin Neels

Dated: February 4, 1998

CERTIFICATE OF SERVICE

I hereby certify that I have this date served the foregoing document in accordance with section 12 of the Commission's Rules of Practice.



Albert P. Parker, II

Dated: February 5, 1998
Philadelphia, PA