BEFORE THE
POSTAL RATE COMMISSION
WASHINGTON, D.C. 20268–0001

POSTAL RATE AND FEE CHANGES, 1997	Docket No. R97–1

RESPONSE OF UNITED STATES POSTAL SERVICE WITNESS BRADLEY
TO INTERROGATORIES OF UNITED PARCEL SERVICE
(UPS/USPS-T13-25-30)

The United States Postal Service hereby provides responses of witness Bradley to the following interrogatories of United Parcel Service: UPS/USPS-T13-25, 26, 27 (a) and (c), 29, and 30 filed on August 25, 1997. Interrogatory UPS/USPS-T13-27(b) was redirected to the Postal Service. Also, witness Bradley has followed UPS's numbering conventions, so there is no UPS/USPS-T13-28 because UPS did not include a number 28 in this set.

Each interrogatory is stated verbatim and is followed by the response.

Respectfully submitted,

UNITED STATES POSTAL SERVICE

By its attorneys:

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September 8, 1997

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to
Interrogatories of United Parcel Service

UPS/USPS-T13-25. In reference to your response to FGFSA/USPS-T13-25, please provide the HCRID number for each contract in your sample of highway contracts that does not specify round-trip transportation, where "round-trip" denotes a route that begins and ends at the same location. If this information is not available, please provide your best estimate of the proportion of contracts in each category (Box Route, Intra-City, etc.) that are not round-trip contracts.

UPS/USPS-T13-25 Response:

The requested information is not available. I am not able to provide a numerical estimate,

but I would think that the frequency is small.

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UPS/USPS-T13-26. In reference to your response to UPS/USPS-T13-10, please indicate what statistical test or tests are appropriate to apply in distinguishing the variabilities of different pools of contracts.

(a) Did you apply any of these tests in connection with your adjustments for within account heterogeneity, as described at pages 35 to 41 of your direct testimony? Please provide a complete description of all such tests, and your conclusions concerning the most appropriate segregation of contracts for each pool of contracts.

UPS/USPS-T13-26 Response:

In my response to UPS/USPS-T13-10, I compared the variability from my testimony for intra-BMC contracts of 97.4% with the variability calculated from your proposed splitting of the power only and regular intra-BMC contracts. That second variability is 96.9%. Because of the extremely small difference between these two numbers, I felt that there was no statistical test required. However, if one would like to perform a statistical test, one could calculate a t-test for the null hypothesis that the original variability of 97.4% is statistically different from the combined variability of 96.9%. Specifically, consider the following null hypothesis:

$$H_o: \beta_S = \beta_c,$$

where β_s is the variability calculated on the split sets of contracts and β_c is the variability calculated on the combined data set. To test this hypothesis, one can calculate a t-

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statistic:

$$t = \frac{\beta_s - \beta_c}{\sigma_{\beta_s}}.$$

In calculating the standard error of the split variability, one must recognize that the split variability is the weighted combination of the estimated variabilities from the individual equations:

$$\beta_s = \theta_{s1}\beta_{s1} + \theta_{s2}\beta_{s2}$$

where the θ_i are the cost weights. To find the standard error of β_s one first finds the variance. The variance can be calculated with the formula for the variance of a sum:

$$V(aX + bY) = a^2\sigma^2_X + b^2\sigma^2_Y + 2ab\sigma_{XY}$$

where a and b are parameters and X and Y are the random variables. In the current application, the two random variables, the β_i, are independent; otherwise, they should not be estimated separately. Their covariance can be set to zero. Application of this formula thus yields the following expression for the standard error of the split variability:

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$$\sigma_{\beta_s} = \sqrt{\theta^2_{s1}\,\sigma^2_{\beta_{s1}} + \theta^2_{s2}\,\sigma^2_{\beta_{s2}}}$$

The information necessary to calculate this standard error is presented in my response to UPS/USPS-T13-10. The weights are the relative cost pools presented on page 2 of UPS/USPS-T13-10 and the variances can be extracted from the attachment to that interrogatory response. Substitution of the individual pieces into the t-statistic formula yields a calculated t-statistic of -0.2715 which is far below the critical value of 1.96. The null hypothesis of no difference in the variabilities cannot be rejected.

(a) I did not have to calculate the t-statistics. Inspection of the relevant variabilities and standard errors reveals that the null hypothesis of equality of the variabilities would be rejected in both cases.

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UPS/USPS-T13-27. Referring to pages 33 and 34 of your testimony, please provide responses to the following:

a. Identify the HCRID number for each of the 77 annual contracts (as distinguished from the 611 per-trip contracts);

b. Provide a complete summary of the terms and conditions under which the Postal Service contracts for plant-load transportation, including any differences in per-trip vs. annual contract specifications;

c. Explain why per-trip plant-load contracts are not inherently 100% volume variable;

d. Provide the results of any statistical tests you have run to determine the relative variability of per-trip vs. annual plant load contracts, including a description of all such tests, test results, and your conclusions.

UPS/USPS-T13-27 Response:

a. As shown in Table 2 on page 17 of my testimony, the account number for plant load annual contracts is 53134.

b. This part of the interrogatory has been redirected.

c. Just because a contract specifies payment on a per-trip basis does not mean that it cannot include the effect of economies of scale. Plant load contracts that anticipate a large number of trips per year can be bid at a rate associated with a large annual contract. To the extent that plant load transportation is subject to economies of scale, the cost per cubic foot-mile on these relatively large plant load

contracts could be below the cost per cubic foot-mile on relatively small plant load contracts.

d. I have not performed the statistical tests referred to in the question for three reasons. First, the estimated plant load variability is 94.66%, which is consistent with other tractor trailer variabilities. Second, I have no reason to believe that a difference in method of payment would cause a difference in the variability. Third, there are only a small number of plant-load annual contracts. I am skeptical that an accurate variability can be estimated for this small set of contracts alone.

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UPS/USPS-T13-29. Referring to Exhibit USPS-13B of your testimony, please explain whether it is more or less appropriate to use annual cubic foot miles instead of HCSS accrued costs in weighting the subaccount split variabilities.

UPS/USPS-T13-29 Response:

I would recommend using accrued costs as I have shown in Exhibit USPS-13B. The accrued cost for the entire account is the sum of the accrued cost for the subaccount cost pools:

$$C = C_1 + C_2$$

The volume variable cost for the cost pool is also just the sum of the volume variable costs for the subaccount cost pools:

$$VVC = VVC_1 + VVC_2$$

The volume variable cost for the account is defined as the accrued cost multiplied by the (unknown) elasticity ϵ.

$$VVC = C\epsilon.$$

Similarly, for each of the subaccount cost pools, the volume variable costs are the product of the subaccount cost pool accrued cost timed the subaccount estimated variability:

$$VVC_i = C_i \epsilon_i, \quad i = 1, 2.$$

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UPS/USPS-T13-30. Referring to pages 5 and 6 of your testimony, and Exhibit USPS-13B, please explain why it would not be preferable to evaluate overall Inter-SCF variability at the overall, mean values of the data for both vans and trailers together instead of using separate mean values for evaluating variability for each of the two regression equations.

UPS/USPS-T13-30 Response:

Calculation of the variability requires evaluation of the *equation* at its sample mean. If there were a single equation for the inter-SCF account, then that equation should be evaluated at the sample mean for all of the data for the account. Because there are now two equations for the account, each with their own supporting data set, each equation should be evaluated at its own sample mean.

DECLARATION

I, Michael D. Bradley, declare under penalty of perjury that the foregoing answers are true and correct, to the best of my knowledge, information, and belief.

Michael D Bradley

Dated: Sept. 8, 1997

CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing document upon all participants of record in this proceeding in accordance with section 12 of the Rules of Practice.

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