

Before The
POSTAL RATE COMMISSION
WASHINGTON, D.C. 20268-0001

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Postal Rate and Fee Changes, 2000

Docket No. R2000-1

RESPONSE OF THE UNITED STATES POSTAL SERVICE
WITNESS CRUM TO ADVO INTERROGATORIES
(ADVO/USPS-T27-1-5, 7)

The United States Postal Service hereby provides the response of witness Crum to the following interrogatories of Advo, Inc.: ADVO/USPS-T27-1-5, 7, filed on February 22, 2000. Interrogatory ADVO/USPS-T27-6 has been redirected to Postal Service witness Bozzo.

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

Respectfully submitted,

UNITED STATES POSTAL SERVICE

By its attorneys:

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March 7, 2000

**U.S. POSTAL SERVICE WITNESS CHARLES L. CRUM
RESPONSE TO INTERROGATORIES
OF ADVO**

ADVO/USPS-T27-1. With respect to the "BMC Realization Factor" identified as an input in LR I-175, Attachment D - Table 16, please provide the following:

- (a) An explanation of its original purpose.
- (b) An explanation of what it represents and how it has been used, in addition to the ratemaking analyses.
- (c) An explanation of what it represents in your analyses.
- (d) An explanation of how it was calculated.
- (e) When it was calculated.

RESPONSE

a. As described in the testimony of witness Byrne (Docket No. R84-1, USPS-T-14, page 38), "The 'realization' measurement of efficiency at a BMC is calculated as the total direct labor hours earned for all mail processing operations divided by total direct labor hours clocked for the same operations over the same time period."

b. Please see my response to part (a).

c. In my analysis, it scales down estimated cost savings at BMCs only. As stated in the testimony of witness Acheson (Docket No. MC95-1, Exhibit USPS-T-9F, page 1), "Because engineering standards were used to estimate the time needed for each operation, the following factors were multiplied times the weighted-average time (and thus cost) per container/facility to align the result with postal costs as determined by the CRA: a P, F, and D factor of 1.15, a mail processing overhead factor of 1.2841, an appropriate piggyback factor from USPS LR-MCR-9, a **BMC realization factor (.9713) for application to BMC**

**U.S. POSTAL SERVICE WITNESS CHARLES L. CRUM
RESPONSE TO INTERROGATORIES
OF ADVO**

costs only, and an FY 1995 clerk/mailhandler average hourly wage rate (\$24.06) that is multiplied by a premium pay factor (.957518) and divided by 60 (the minutes in an hour)."

- d. The factor was calculated in Table A-2 of LR-F-151 in Docket No. R94-1.
- e. It was calculated based on data in 1993.

**U.S. POSTAL SERVICE WITNESS CHARLES L. CRUM
RESPONSE TO INTERROGATORIES
OF ADVO**

ADVO/USPS-T27-2. With respect to the MTM productivities presented in Attachment E Tables 5, 6, and 7, please provide the following:

- (a) An explanation of their original purpose.
- (b) An explanation of how they have been used, in addition to the ratemaking analyses.
- (c) An explanation of how they were measured.
- (d) When they were calculated.
- (e) Confirmation that the productivities have not been changed since they were measured. If this is incorrect, please identify when each has been changed and describe how it was changed.

RESPONSE

a. Witness Acheson first used MTM productivities to estimate the nontransportation savings of Standard Mail (A) dropship in Docket No. MC95-1. As stated in Library Reference MCR-27 in that docket, "Most of these MTM productivities were used in the pallet and sack models that were relied upon by the Commission to recommend pallet discounts in Docket No. MC91-3 (see Exhibit USPS-2C in that docket)." Page 5 of witness Acheson's testimony in Docket No. MC91-3 further refers to Docket No. R87-1, Tr.9/5729-30, 5782-84, and 5911-13, and Tr. 29/22309-24 for a more complete description.

b. I am not sure exactly how (or if) those specifically referenced numbers have been used by the Postal Service outside of the ratemaking process. Describing Methods Time Measurement (MTM) in general, the Industrial Engineering Handbook has said that the uses to which that tool has been put are almost infinite in scope.

**U.S. POSTAL SERVICE WITNESS CHARLES L. CRUM
RESPONSE TO INTERROGATORIES
OF ADVO**

- c. Please refer to the transcript references cited in the response to part (a).
- d. The time figures were developed by the Office of Industrial Engineering in the early 1970's. Witness Acheson applied the appropriate standard time to the components of the operations in the mail flow models in his testimony (USPS-T-12) in Docket No. R87-1.
- e. Confirmed.

**U.S. POSTAL SERVICE WITNESS CHARLES L. CRUM
RESPONSE TO INTERROGATORIES
OF ADVO**

ADVO/USPS-T27-3. Please explain why it is appropriate to apply the BMC Realization Factor to the MTM productivities in the BMC models.

RESPONSE

Please see my response to ADVO/USPS-T27-1(c).

**U.S. POSTAL SERVICE WITNESS CHARLES L. CRUM
RESPONSE TO INTERROGATORIES
OF ADVO**

ADVO/USPS-T27-4. For the Personal Needs, Fatigue and Delay (PF&D) Factor, please provide the following:

- (a) An explanation of the original purpose for its measurement.
- (b) An explanation of how it has been used, in addition to the ratemaking analyses.
- (c) An explanation of what it represents in your analyses.
- (d) An explanation of how it was measured.
- (e) When it was calculated.

RESPONSE

a. As explained in Docket No. R87-1 (USPS-T-12, page 21), the MTM productivity "is a 'model' time that is based on standard industrial engineering times estimated for the individual mail processing operations included in each model. It is not expected that this or other total weighted standard times computed by the models will actually be achieved by Postal Service mail processing personnel; therefore, an upward adjustment to the model times is needed to account for the workforce's personal needs, fatigue, and delay (PF and D)."

b. As stated in witness Acheson's response to OCA/USPS-T12-46 in Docket No. R87-1 (Tr. 9/5785), "the inclusion of this allowance is common practice in the development of a work standard and is generally used in the Postal Service's Office of Industrial Engineering. As far back as the 1960's, when the Postal Service used Basic Motion Time (BMT) Study as the means to develop work standards in all mail processing operations, 15 percent was routinely added to

**U.S. POSTAL SERVICE WITNESS CHARLES L. CRUM
RESPONSE TO INTERROGATORIES
OF ADVO**

BMT time standards because that factor was considered the norm to correct for miscellaneous delays."

This standard 15 percent is also common across other industries. For example, in the text Motion and Time Study (Benjamin W. Niebel, 1982), it states that "in typical metal trade and related operations, the allowance for personal, unavoidable, and fatigue delays usually approximates 15 percent." (Docket No. R87-1, Tr. 29/22331).

- c. Please see my response to part (a).
- d. Please see my response to part (b).
- e. As it is a standard that developed in the Industrial Engineering field, I am not aware exactly when it was "calculated". Please see my responses to parts (a) and (b).

**U.S. POSTAL SERVICE WITNESS CHARLES L. CRUM
RESPONSE TO INTERROGATORIES
OF ADVO**

ADVO/USPS-T27-5. With respect to the Van-Ty-Smith (USPS-T-17, Table 1) mail processing variabilities that you use to adjust the MTM productivities in LR I-175, please confirm:

(a) A variability of less than one means average unit costs decline as units of the cost driver increase. If you cannot, please explain why not.

(b) Declining average unit costs can occur when there is either: (a) fixed cost in the cost pool and marginal cost is constant; or (b) there is no fixed cost but declining marginal unit costs; or (c) both fixed cost and declining marginal unit costs. If you cannot confirm, please explain why not.

RESPONSE

a. Confirmed, assuming that the term "average unit costs" refers to the result of dividing total cost in a cost pool by the number of units of the cost pool's cost driver.

b. Confirmed that each circumstance listed in the interrogatory would lead to declining "average unit cost," interpreting the term as in the response to part (a), at least over some range of output. The listed circumstances do not encompass all situations in which average cost would decline with increases in output. For example, if the marginal cost curve is "u-shaped" (i.e., decreases over some range of output and then increases over another), average cost will decrease over any range of output for which average cost exceeds marginal cost, whether or not marginal cost is decreasing.

**U.S. POSTAL SERVICE WITNESS CHARLES L. CRUM
RESPONSE TO INTERROGATORIES
OF ADVO**

ADVO/USPS-T27-7. In your analyses, you adjust the MTM productivity (unit time) by the (relevant) cost pool variability so that productivity increases when variability decreases (i.e., time to handle a unit decreases with variability). For those cost pools with a variability less than one, this treatment reduces unit operational cost and dropship cost avoidance. For each of the MTM productivities (unit times) listed in LR I-175, Attachment E, Tables 5, 6, and 7, (and unadjusted by the USPS-T-17 variabilities) please explain fully:

- (a) Why you do not consider the unit time to represent a constant marginal unit cost.
- (b) Whether you consider the unit time to include some measure of (unavoidable) fixed cost.
- (c) Whether you believe the unit time reflects declining marginal unit cost.

RESPONSE

a. The implication of adjusting the MTM productivity by the relevant volume-variability factor is that, other things equal, "marginal" productivity increases when the volume variability decreases, i.e., the marginal time to handle a unit decreases with the volume-variability factor other things equal. The effect of the productivity adjustment, other things equal, is to reduce dropship cost avoidance relative to the case of 100 percent volume-variability (or any other higher degree of volume-variability).

The MTM productivities are developed such that they represent average rather than "marginal" productivities. That is, the productivities do not account for the degree(s) of volume-variability of the activities from which they are derived. The higher adjusted productivity reflects the fact that the costs of activities with reduced (or zero) variabilities will not be fully avoidable. Please see U.S. Postal Service response to ADVO/USPS-T27-6(c).

**U.S. POSTAL SERVICE WITNESS CHARLES L. CRUM
RESPONSE TO INTERROGATORIES
OF ADVO**

Also, as stated in my response to ADVO/USPS-T27-1(C), the MTM productivities (after adjustment by the necessary factors) were originally intended to be consistent with CRA costs. In cases prior to Docket No. R97-1, the models assumed mail processing volume-variability to equal 100 percent so no adjustment was necessary and adjusted productivities equaled unadjusted productivities.

b. I do not consider the fully unadjusted productivities presented in Attachment E based on MTM time standards alone to include fixed cost elements (defining "fixed" as relative to container being acted upon). I believe the actual activity productivities that these productivities estimate do include some measure of fixed cost and I adjust for that in Attachment D, Tables 1-15 through the use of the PF & D factor, for example. This concept of fixity is distinct from the CRA concept of volume-variability. I apply the relevant cost pool volume-variability factor to the unadjusted MTM productivities in Attachment E in an attempt to make those productivities consistent with the CRA mail processing volume-variability treatment and account for the presence of non-volume-variable (or less than 100 percent volume-variable) activities.

The technical definition of "fixed" in MTM language gets at the standard time that is not variable based on the length of the trip (refer to Docket No. MC95-1, USPS-LR-MCR-27, pages 24-25).

c. I do not believe that, all else equal, MTM productivities unadjusted by any volume-variability factor would result in or reflect declining marginal unit cost.

**U.S. POSTAL SERVICE WITNESS CHARLES L. CRUM
RESPONSE TO INTERROGATORIES
OF ADVO**

Please also note that declining average costs can occur, at least over some range of output, with decreasing, constant, or increasing marginal cost. See my response to ADVO/USPS-T27-5(b).

DECLARATION

I, Charles L. Crum, declare under penalty of perjury that the foregoing answers are true and correct, to the best of my knowledge, information, and belief.



CHARLES L. CRUM

Dated: 7 MARCH 2000

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.


Richard T. Cooper

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March 7, 2000