### 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 MCGRANE TO INTERROGATORIES OF
VAL-PAK DEALERS' ASSOCIATION, INC., VAL-PAK DIRECT MARKETING
SYSTEMS, INC., AND CAROL WRIGHT PROMOTIONS, INC.
(VP-CW/USPS-ST44—1-22)

The United States Postal Service hereby provides responses of witness McGrane to the following interrogatories of Val-Pak Dealers' Association, Inc., Val-Pak Direct Marketing Systems, Inc., and Carol Wright Promotions, Inc.: VP-CW/USPS-ST44—1–22, filed on November 3, 1997.

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

Respectfully submitted,

UNITED STATES POSTAL SERVICE

By its attorneys:

Daniel J. Foucheaux, Jr. Chief Counsel, Ratemaking

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475 L'Enfant Plaza West, S.W. Washington, D.C. 20260–1137 (202) 268–2997; Fax –5402 November 10, 1997

VP-CW/USPS-ST44-1. Please refer to Exhibit USPS-44B (a/k/a LR-H-182), study of Standard A costs by weight increment.

- a. Please explain the extent of your responsibility for the design of the study. To the extent that you were not solely responsible for the study design, did primary responsibility rest with Christensen Associates or with the Postal Service?
- b. Please explain the extent of your responsibility for execution of the study.

- a. I was primarily responsible for the design and execution of the study. Feedback was sought and incorporated from both the Postal Service and other members of Christensen Associates' staff.
- b. See response to (a).

VP-CW/USPS-ST44-2. Please explain your understanding of the theory that underlies the use of IOCS tallies to study the effect of weight on mail processing costs of Standard A mail.

### RESPONSE:

The theory that underlies the use of IOCS tallies to study the effect of weight on mail processing costs is the same theory that underlies the use of IOCS tallies to study the effect of class and subclass on mail processing costs. The IOCS is designed to estimate the cost associated with time spent by various types of employees performing different functions (see USPS-T-12, page 1). For clerks and mailhandlers engaged in mail processing work, the term "functions" most commonly refers to handling mail of particular subclasses or with other characteristics recorded by the data collectors. Since the weight of mail is a recorded characteristic in IOCS, the cost of clerk and mailhandler time spent on mail at each increment of weight can be estimated. This can be compared to mail volume estimates for each weight increment to compute unit costs.

VP-CW/USPS-ST44-3. Please explain any theory which you personally have about how weight affects the cost of Standard A mailpieces, especially mail processing costs, and indicate the type of data or evidence that you would consider most appropriate to investigate and document your own theory. In your response, please discuss the possibility of using any methodology of which you are aware, including but not limited to computer simulation studies, time and motion studies, mail flow models, statistical studies using data other than IOCS tallies, etc. (i.e. do not limit your response to a study based on IOCS tallies).

#### RESPONSE:

I will attempt to condense into a few paragraphs my understanding of the relationship between mail piece weight and cost, particularly mail processing costs. This is based upon my experience over the past six years of studying this subject. With regard to mail processing costs, these can be separated into two general groups of activities: distribution and non-distribution. Distribution is the act of sorting either pieces or bundles to the transportation or delivery scheme of the office, while non-distribution labor includes activities such as loading and unloading vehicles, opening containers and items, moving mail from location to location within the plant.

Distribution has increasingly become mechanized and automated over the last ten years. Local spikes in unit cost occur at weight ranges where pieces become incompatible with the machine technology and manual labor is substituted. I believe that two examples of such spikes are letter-shaped mail between 3 and 4 ounces and flat-shaped mail under 2 ounces.

Non-distribution activities share the following characteristics: they are generally performed on mail grouped into items or containers, and they are generally manual operations. Costs for non-distribution labor activities are generally in proportion to the number of items or containers that are handled in a particular operation, for example,

RESPONSE OF UNITED STATES POSTAL SERVICE WITNESS MCGRANE TO INTERROGATORIES OF VAL-PAK MARKETING SYSTEMS, ET AL. the number of pallets that are unloaded from a trailer. While it may be tempting to deduce that these costs should vary proportionally with mail piece weight, this is not necessarily the case, because weight can influence the manner in which Standard (A) pieces are made up, and ultimately handled in nondistribution activities. Specifically, for a given address list, as mail piece weight increases, the ability to make more finely presorted items and containers increases.

Consider 150 two-ounce flat-shaped pieces in a 3-digit sack, and assume that it is made up of three 50 piece bundles for each of three 5-digit zones. The mail in the sack weighs 18.75 pounds. Now increase the weight of the mail pieces to 5 ounces. Three 5-digit sacks, each with 15.63 pounds of mail are now required to be made. Mail processing costs are reduced. With the former 3-digit sack, the sack would be opened, three bundles sorted, these and these bundles re-sacked for transportation to the delivery unit. The 5-digit sacks are simply sorted for transportation to the delivery unit. Further savings are realized in most plant situations because the sawtooth or donut where the 5-digit sacks are sorted is usually located on or adjacent to the dock. The bundle sorting operation is often located at some distance from the dock, requiring more labor to move the mail from and to the dock.

A similar argument applies to pallet makeup, since required pallet makeup is based upon weight. Indeed, the savings for palletized mail are even clearer, because the cost savings between cross-docking three pallets versus breaking down and bundle sorting one pallet is greater. Consider a 3-digit pallet with 50 carrier-route bundles for each of three 5-digit zones, with each bundle weighing 4 pounds and the pallet weighing 600 pounds. This pallet will be broken down in the SCF, each bundle sorted

RESPONSE OF UNITED STATES POSTAL SERVICE WITNESS MCGRANE TO INTERROGATORIES OF VAL-PAK MARKETING SYSTEMS, ET AL. to the appropriate 5-digit zone, and the resulting mail moved back to the dock for transportation to the delivery unit. Triple the weight of each piece in the bundles, and now three 5-digit pallets, each weighing 600 pounds can be made. Clearly, the cost of crossdocking three pallets is less than the cost of breaking down and sorting 150

bundles and moving this mail to and from the bundle sorting operation.

To study these effects, we attempted to develop a computer simulation of the mail processing costs of a static mailing list as the mail piece weight was increased. The general design of the simulation was to develop the bundle and container profile of a mailing at varying weight increments and then to use the Postal Service's mail flow models to model the piece and bundle distribution costs at each of the weight increments.

This effort was not entirely successful, primarily because several key pieces of information were not available. These include the machinability of the mail pieces by weight increment, the automation compatibility of pieces by weight increment, the effect of weight of bundle on bundle distribution costs (time & motion study), the effect of weight on manual piece distribution (time & motion study), up to date information on the costs of crossdocking/sorting containers, the collection of address lists that could be used to proxy the entire Standard (A) mailstream, the makeup of bundles and containers at each weight increment, and the types of containers used at each weight increment.

Given the difficulties we encountered in following the computer simulation/mailflow model approach, I believe that a time sampling system, such as IOCS, is the preferred method to study the effect of mail piece weight on cost. The

IOCS has the appealing characteristic of sampling all clerk and mailhandler activities, whereas current mailflow models only cover distribution and a subset of non-distribution activities in a simplified manner. Computer simulation could be used to support and explain the results of the time sampling study, but much more information than is currently available would have to collected.

VP-CW/USPS-ST44-4. Please refer to Exhibit USPS-44B (LR-H-182), Tables 3-6, cost by ounce increment for Standard A Mail.

- a. For the mail processing costs, Segment 3.1, shown in these four tables, please indicate within each table, for each ounce increment, the number of IOCS tallies underlying the costs shown.
- b. What is the minimum number of tallies needed for a reliable estimate of costs within a single one-ounce cell? What is the maximum variance that is acceptable for an estimate to be considered reliable?
- c. Please confirm that the IOCS mail processing tallies which you used for this study have a field which indicates whether the clerk or mailhandler tallied was handling (i) a piece of mail, (ii) an item, or (iii) a container. If you do not confirm, please provide a list showing all information contained on IOCS mail processing tallies provided to Christensen Associates for this study.
- d. Assuming that information described in preceding part c is available, for each of these four tables please provide a breakdown of the mail processing tallies in each ounce increment showing whether the person tallied was handling (i) a piece, (ii) an item, or (iii) a container.

- a. See Attachment.
- b. There is no single minimum number of tallies or maximum variance for an estimate in this context. The acceptable standard depends upon the application for which the data are used.
- c. Confirmed.
- d. See Attachment.

# Attachment 1 to VP-CWAISPS-ST44-4. Number of FY96 IOCS Tailies by Weight increment and Field 9213 Response

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VP-CW/USPS-ST44-5. When an IOCS mail processing tally used for the study in USPS-44B (LR-H-182) recorded a clerk or mailhandler as handling an item, please confirm that the item could be a concon, bundle, pallet, pouch, sack, or tray. If the preceding list includes anything not classified as an item, or excludes anything that may also be classified as an item, please specify.

#### RESPONSE:

Confirmed. There is also an "other item" category. Please see Library Reference H-49, page 88.

VP-CW/USPS-ST44-6. When an IOCS mail processing tally used for the study in USPS-44B recorded a clerk or mailhandler as handling an item, and a weight was also recorded on the tally, please explain how you interpreted and treated the recorded weight. Specifically, did you interpret and treat the weight as (i) a single piece of mail (e.g., the top piece), (ii) the item itself (e.g., a bundle), or (iii) something else? Regardless of your answer, please explain the rationale.

### RESPONSE:

The recorded weight is that of an individual piece of mail. For a clerk or mailhandler handling an item, the weight of a single piece of mail is recorded when either the top-piece rule is applied, or the item contains identical mail. See item 12-10 on page 88 of Library Reference H-49. As for any other direct tally with valid weight information, the tally dollar value for item tallies with direct activity codes are accumulated in the matrix with activity code, weight increment, and cost pool dimensions. The distribution of accumulated direct tally dollar value by weight increment is used as the distribution key for the variable mail processing costs by cost pool. For mail in identical items, the rationale is that all of the pieces in the item have the same weight. For items where the top-piece rule was applied, the rationale is that the piece is randomly selected by the top-piece rule, and represents the other pieces in the item.

VP-CW/USPS-ST44-7. Assume that one or more of the IOCS mail processing tallies used for the study in USPS-44B recorded a clerk or mailhandler as handling an item, and the weight recorded on the tally is less than one ounce.

- a. What items handled by the Postal Service weigh less than one ounce?
- b. Did you interpret the weight (under 1 ounce) recorded on the tally to refer to a piece of Standard A mail, or to the item itself?
- c. How were such tallies used in the study in USPS-44B (LR-H-182)?

- a. The weight recorded by the IOCS is for a single piece of mail. No information is collected on the weight of items.
- b. A piece.
- c. See response to VP-CW/USPS-ST44-6.

VP-CW/USPS-ST44-8. Assume that one or more of the IOCS mail processing tallies used for the study in USPS-44B (LR-H-182) recorded a clerk or mailhandler as handling an item, and the weight recorded on the tally is between 10 and 16 ounces.

- a. What items handled by the Postal Service weigh between 10 and 16 ounces? Please explain your answer.
- b. Did you interpret the 10 to 16 ounce weight recorded on the tally to refer to a piece of Standard A mail, or to the item itself? Please explain your answer.
- c. How were such tallies used in the study in USPS-44B (LR-H-182)?

#### RESPONSE:

a - c. See response to VP-CW/USPS-ST44-7.

VP-CW/USPS-ST44-9. Assume that one or more of the IOCS mail processing tallies used for the study in USPS-44B (LR-H-182) recorded a clerk or mailhandler as handling an item, and the weight recorded on the tally was more than 16 ounces.

- a. Would you agree that the weight (more than 16 ounces) recorded on the tally cannot refer to a piece of Standard A mail? Please explain any disagreement.
- b. How were such tallies used in the study in USPS-44B (LR-H-182)? If any tallies were deleted or ignored on account of the weight recorded on the tally, please provide a full explanation concerning the treatment of all such tallies when preparing the study in LR-H-182.

- a. Pieces more than 16 ounces do not meet the requirements for Standard (A) mail.
- b. Tallies with recorded weight of greater than 16 ounces were excluded from the distribution of direct tally dollar value by weight increment. This exclusion occurs as a result of the "windx" function returning a zero value in the programs windxmod.f, windxbmc.f, and windxnmod.f as shown at pages C15, C17, and C19 of Exhibit USPS-44B.

VP-CW/USPS-ST44-10. When an IOCS direct mail processing tally used for the study in USPS-44B (LR-H-182) recorded a clerk or mailhandler as handling a container, please confirm that the container could be an APC, a hamper a nutting cart, or an OTR. If the preceding list includes anything not classified as a container, or excludes anything that is classified as a container, please specify.

#### **RESPONSE:**

Containers also include ERMCs, Postal Paks, utility carts, wiretainers, "multiple items not in a container", and "other containers". Please see Library Reference H-49, page 91.

VP-CW/USPS-ST44-11. When an IOCS direct mail processing tally used for the study in USPS-44B (LR-H-182) recorded a clerk or mailhandler as handling a container, and a weight was recorded on the tally, please explain how you interpreted and treated the recorded weight. Did you treat the weight as referring to (i) a single piece of mail (e.g., the top piece), (ii) the item itself (e.g., a bundle), or (iii) something else? Please explain the rationale for whatever treatment it was accorded.

#### RESPONSE:

The recorded weight is that of a representative piece of mail. See item 12-26 on page 92 of Library Reference H-49. Note that the only time that questions 22 and 23 are answered (and a direct tally will result) for an observation of a clerk or mailhandler handling a container is when the container contains identical mail. Such tallies are treated as any other direct tally as described in the response to VP-CW/USPS-ST44-6. The rationale is that all the mail pieces in a container of identical mail will have the same weight.

VP-CW/USPS-ST44-12. Assume that an IOCS mail processing tally used for the study in USPS-44B recorded a clerk or mailhandler as handling a container, and the weight recorded on the tally is less than one pound.

- a. What containers handled by the Postal Service weigh less than one pound? Please explain your answer.
- b. Did you interpret the weight (under 1 pound) recorded on the tally to refer to a piece of Standard A mail, or to an item in the container (e.g., a bundle or tray of mail)? Please explain your answer.
- c. How were such tallies used in the study in USPS-44B (LR-H-182)?

- a. The weight recorded in the IOCS is for a single piece of mail. No information is collected on the weight of containers.
- b. A piece.
- c. See response to VP-CW/USPS-ST44-11.

VP-CW/USPS-ST44-13. Assume that an IOCS mail processing tally used for the study in USPS-44B recorded a clerk or mailhandler as handling a container, and the weight recorded on the tally exceeded 16 ounces. Did the study of the relationship between weight and cost in LR-H-182 treat this tally as being in the 15 to 16 ounce category, were such tallies discarded, or were they utilized in some other way? Please explain.

#### RESPONSE:

See response to VP-CW/USPS-ST44-9(b).

VP-CW/USPS-ST44-14. At the outset of the study in USPS-44B, how many mail processing IOCS tallies were you provided for each of the Tables 3-6?

### **RESPONSE:**

The starting point for the study was the complete FY96 IOCS dataset, available in Library Reference H-23. The counts of the direct tallies underlying Tables 3-6 of Exhibit USPS-44B are shown in the attachment to the response for VP-CW/USPS-ST44-4.

VP-CW/USPS-ST44-15. Please provide a plain language description of all editing procedures that you used to distinguish and separate any IOCS tallies considered inappropriate or unusable for a study designed to determine the effect of weight on cost of Standard A mail.

- a. What criteria were used to establish that a tally was minimally acceptable?
- b. If no such editing was undertaken, please explain why it was not considered necessary.
- c. Please provide a copy of any edit program(s) used by Christensen Associates in the execution of the study contained in LR-H-182.

#### RESPONSE:

Each Standard (A) Mail direct tally was checked to see if a valid piece weight was recorded.

- a. If a) the tally had a non-zero weight recorded, and b) the tally had a weight of less than or equal to 16 ounces recorded, then the tally was used; any remaining tallies were not used.
- b. Not applicable.
- c. See response to VP-CW/USPS-ST44-9(b).

#### VP-CW/USPS-ST44-16.

- a. From the original set of IOCS mail processing tallies provided by the Postal Service, how many were deleted or identified as questionable by your editing or scrubbing procedures?
- b. Of the original set of IOCS mail processing tallies for Standard A Mail provided by the Postal Service, how many had a recorded weight of greater than 16 ounces?
- c. Of those mail processing tallies that had a recorded weight in excess of 16 ounces, how many were (i) single pieces, (ii) items, and (iii) containers?

- a) Of the 18,306 direct Standard (A) Mail mail processing tallies considered for this analysis, 304 were eliminated because they were counted item tallies and had no weight information, and 21 were eliminated because they had a weight of greater than 16 ounces recorded.
- b) See the response to subpart (a).
- c) (l). 7 (ii). 14 (iii). 0

VP-CW/USPS-ST44-17. Please provide (i) a copy of all mail processing tallies used in the study in LR-H-182; (ii) a complete explanation as to the format (e.g., database, spreadsheet); (iii) any instructions necessary to read the tallies in a PC; and (iv) an explanation of the information contained in each field.

### **RESPONSE:**

The IOCS tally data were provided as Library Reference H-23. See the hardcopy documentation to H-23 for file format and field content information. The fields used in LR-H-182 are shown at page D2 of Exhibit USPS-44B.

#### VP-CW/USPS-ST44-18. Please refer to LR-H-111.

- a. Please confirm that this study purports to document the relationship between weight and cost for (i) transportation costs, and (ii) certain dock handling costs. If you do not confirm, please explain your answer, and provide your interpretation of the purpose and nature of LR-H-111.
- b. To what extent does the inclusion of Segment 14 costs in USPS-44B (LR-H-182) replicate the study in LR-H-111?
- c. According to the study in LR-H-111, drop shipment avoids weight-related costs. Please explain how the study in USPS-44B controlled for drop shipment and the obvious effect that drop shipment has on weight-related costs.

- a. Not confirmed. Library Reference H-111 estimates the costs avoided by Standard
   (A) mail that are entered at certain nodes in the Postal Service transportation
   network, for the purpose of calculating discounts for destination entry.
- b. Inclusion of segment 14 costs in Exhibit USPS-44B does not replicate the study in LR-H-111. Exhibit USPS-44B estimates the relationship between weight and attributable cost, while Library Reference H-111 estimates the cost avoidance due to destination entry.
- c. See the response to ADVO/USPS-28.

VP-CW/USPS-ST44-19. For the database of IOCS mail processing tallies used for the study in USPS-44B (LR-H-182), how many were (i) direct tallies, (ii) mixed tallies, and (iii) indirect tallies? Please explain what information recorded on the tally distinguishes between the three preceding possibilities.

### RESPONSE:

Only direct tallies were used in the study. These are tallies having a Standard Mail (A) direct activity code, of which there were 18,306. See Library Reference H-1, Appendix B, for a list of activity codes.

VP-CW/USPS-ST44-20. Assume that an IOCS mail processing tally used for the study in USPS-44B (LR-H-182) recorded a clerk or mailhandler as handling an individual piece of Standard A Mail, and the weight recorded on the tally was more than one pound. Please explain how all such tallies were treated in the study of the relationship between weight and cost in LR-H-182.

### RESPONSE:

See the response to VP-CW/USPS-ST44-9(b).

VP-CW/USPS-ST44-21. Did any Standard A mixed mail tallies used for the study in USPS-44B (LR-H-182) have a weight recorded on them?

- a. Unless your answer is an unqualified negative, please explain what the recorded weight represents; e.g., top piece, average weight of counted pieces, etc.
- b. Please explain how mixed mail tallies were used in the study on the relationship between weight and cost.

#### RESPONSE:

Mixed-mail tallies were not used for the study in Exhibit USPS-44B.

- a. My understanding is that weight is not recorded for mixed-mail tallies.
- b. Mixed mail tallies were not used for the development of mail processing costs in this study. Mixed mail tally costs were distributed to direct mail tally costs for window service and city carrier in-office costs by the LIOCATT process. See Appendix B of Exhibit USPS-44B for an explanation of the programs used for this process.

VP-CW/USPS-ST44-22. Please explain whether the number of mail processing IOCS tallies that were used for the study in USPS-44B equals the number of mail processing tallies that were used to distribute mail processing costs to the four subclasses of Standard A Mail. If they were not equal, for each subclass please indicate (i) the number of tallies used to distribute mail processing costs, (ii) the number of tallies used to study the weight-cost relationship, and (iii) explain all reasons why not every tally used to distribute mail processing costs was used to study the effect of weight in cost.

#### RESPONSE:

I assume that this question is referring to the distribution of costs to subclass as shown in Table 5 of witness Degen's testimony (USPS-T-12). The number of tallies is not equal because the study in Exhibit USPS-44B only used direct tallies, whereas the distribution in witness Degen's study was constructed using all mail processing tallies.

- i. This is impossible to calculate, since mixed-mail and not-handling-mail tallies cannot be associated with a single subclass. The number of Standard (A) Mail direct mail processing tallies is 18,306. The number of mixed-mail and non-handling-mail tallies by cost pool is shown at Tr. 12/6227-6228.
- ii. See the attachment to the response to VP-CW/USPS-ST44-4.
- iii. The only tallies with weight information are direct tallies. The mixed-mail and non-handling-mail distribution methodology described by witness Degen in USPS-T-12 does not specify rules for distributing tallies without weights to weight increment.

### **DECLARATION**

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

11/10/97

Michael R. McGrane

Date

### **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.

Anthony F. Alverno

475 L'Enfant Plaza West, S.W. Washington, D.C. 20260–1137 November 10, 1997