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

COMPLAINT OF TIME WARNER INC. ET AL.
CONCERNING PERIODICALS RATES

Docket No. C2004-1

DIRECT TESTIMONY OF HALSTEIN STRALBERG ON BEHALF OF TIME WARNER INC., CONDÉ NAST PUBLICATIONS, A DIVISION OF ADVANCED MAGAZINE PUBLISHERS INC., NEWSWEEK, INC., THE READER'S DIGEST ASSOCIATION, INC. AND TV GUIDE MAGAZINE GROUP, INC. CONCERNING PERIODICALS COSTS

April 26, 2004

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INTRODUCTORY NOTE: CHANGES TO PROFERRED TESTIMONY OF 1/12/04--MAIL FLOW MODEL CORRECTIONS

Since the filing of my original proffered testimony as an attachment to the Time Warner et al. Complaint on January 12, I have become aware of the need for two corrections in the mail flow model I used to estimate mail processing unit costs. Both concern my adaptation of the R2001-1 Periodicals mail flow model (LR-J-61) to replace the LR-I-332's use of the corresponding R2000-1 model (LR-I-90).

The overall impact of the two corrections on estimated unit costs and on the rates proposed by witness Mitchell is small. However, the corrections do increase the cost differences between SCF/3-digit presort and ADC presort and between (AFSM-100) machinable and non-machinable flats. The corrections are described briefly below.

The first correction is necessary because the original model omits some 3–digit piece sorting preformed on pieces with an original ADC bundle presort level and some ADC and 3-digit sorting performed on pieces with an original MADC bundle presort, resulting in an understatement of the costs of mail with ADC and MADC presort.

The second correction concerns the productivity rate assumed for manual incoming secondary flats piece sorting. The assumptions used by the Postal Service in R2000-1 were very different from those used in R2001-1. The R2000-1 model assumed a manual productivity of 846 pieces per workhour for incoming secondary sort performed in non-FSM facilities, including stations, branches and associate offices, where a large portion of incoming secondary flat sorting is still performed. It assumed a much lower rate, 457 per workhour, for manual incoming secondary performed in FSM facilities. Furthermore, it assumed that only 26.1% of manual incoming secondary is performed in FSM-facilities. The R2001-1 model, on the other hand, made no similar distinction, assuming instead that all manual incoming secondary flats sorting is performed at an average productivity rate of only 422 pieces per workhour, as indicated by the FY2000

MODS data.[1]

Since manual incoming secondary is a high volume operation, the two sets of assumptions lead to very different estimates of total costs. Noticing the large difference, I experimented with different values of the assumed manual rate. The file I used in my original analysis for this testimony had a value of 670 pieces per workhour for manual incoming secondary flats sorting. That is close to a weighted average of the values used in R2000-1 and results in total Periodicals piece sorting costs that are close to the costs indicated by CRA data for flats piece sorting operations, as explained in my testimony.

However, in order to be consistent with the Postal Service's mail flow and cost assumptions in R2001-1, the productivity rate for manual incoming secondary should be reduced to 422. That has the effect of sharply increasing the estimated total piece sorting costs. Whereas my original analysis concluded that there was no need to apply a CRA adjustment to piece sorting costs, it now becomes necessary to use one for piece sorting costs as well as bundle, sack and pallet costs. Applying the appropriate adjustment factor, as is done in the revised version of spreadsheet CRAAdjust.xls, results in the unit cost estimates shown in my revised Exhibit B.[2]

Even allowing for changes in the mail processing environment, the assumptions regarding manual incoming secondary productivity used in R2000-1 and R2001-1 are so different that it would appear they cannot both be true. To my knowledge, there has been no national study to determine the true productivity rate for manual flats sorting that is performed in associate offices, stations and branches. Given that I had more

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[1] Under the volume variability assumptions used by the in R2000-1, the two marginal productivity rates for manual incoming secondary become respectively 908 and 592 pieces per workhour. Applying the Postal Service R2001-1 volume variability assumption gives a marginal productivity rate of 594 pieces per workhour in the Postal Service's R2001-1 model. My model, however, uses PRC volume variability assumptions.

[2] The modified CRA adjustment factors, as shown in spreadsheet CRAAdjust.xls, are 0.7825 for piece sorting and 0.8687 for all other modeled mail processing operations.

success in matching the CRA costs at piece operations by assuming the higher manual rate, combined with the fact that the MODS productivity (FY2000) of 422 pieces per workhour reflects only the manual sorting performed at the plants, it seems likely that manual sorting generally is performed much faster in delivery unit offices (AO's and stations/branches) than in the big processing plants. Nevertheless, consistency with R2001-1 assumptions requires use of the lower manual rate.

These two corrections are reflected in a revised version of my Exhibit B, containing estimated mail processing unit costs. They did not require any additional changes to the proffered testimony filed on January 12, and I have made no other changes to that testimony. A revised version of the Excel spreadsheets in TW et al. LR-1 is being filed simultaneously with this testimony.

AUTOBIOGRAPHICAL SKETCH

My name is Halstein Stralberg. I am a consultant to Time Warner on issues related to distribution of magazines through the postal system. Until June 1999 I was a principal at Universal Analytics, Inc. (UAI), a management consulting firm in Torrance, California. and manager of its Operations Research Division.

My academic background is in mathematics, with a master's degree from the University of Oslo, Norway in 1963. I received a bachelor's degree in mathematics, physics and astronomy at the University of Oslo in 1961. Most of my professional experience is in the area of management science and operations research. I have directed and performed 30 years of postal related studies as well as management studies for other clients in government and private industry, including production scheduling and control, corporate planning and finance, investment analysis, design and optimization of transportation systems, health care and computer system design.

I have previously presented 19 pieces of testimony before this Commission on a variety of postal costing and rate design issues: two rebuttal testimonies on behalf of the Postal Service in Docket R80-1; four testimonies on behalf of Time Inc. in R87-1; four on behalf of Time Warner Inc. in R90-1; one in MC91-3; two in R94-1; two in MC95-1; two in R97-1 and two in R2000-1.

Since 1987 most of my work has been in support of Time Warner's participation in postal rate cases. Besides presentation of testimony, I have advised Time Warner on a variety of postal issues and directed the development of computer models for analysis of postal costs and rate design. I participated actively as a member of the joint industry/USPS Periodicals Review Team whose report and recommendations are included in LR-I-193 of Docket No. R2000-1, as an industry representative in an MTAC data collection on bundle breakage (LR-I-297) and recently in a USPS/Time Warner task force to evaluate the feasibility of tailoring the preparation of Periodicals mailings to the processing methods and sort schemes used in each postal facility.

From 1973 until 1987, I directed UAI's efforts under several contracts with the U.S. Postal Service. My activities under these contracts included:

- Design and development of the Mail Processing Cost Model (MPCM), a weekly staffing and scheduling computer program for postal facilities, with an annualized extension (AMPCM), using linear programming for long term staffing planning in a postal facility.

- An extensive data collection in 18 postal facilities designed to (1) establish a Postal Service data base on mail arrival rates and mail attributes affecting costs (subclass, shape, indicia, presort, container method, etc.), and (2) develop the model input data needed to apply MPCM for each facility.
- The "Study of Commercial Mailing Programs" under the Long Range Classification Study Program. This study involved a detailed cost and market evaluation of several rate and classification concepts, including various presort concepts, destinating SCF discounts for second class, plant loading and barcoding of preprinted envelopes.
- A BMC cost analysis which resulted in the establishment of the Inter/Intra-BMC parcel post rate differential in R80-1.
- Numerous simulation studies requested by USPS management.

My two testimonies on behalf of the Postal Service in R80-1 addressed the Intra/Inter BMC cost analysis and Dr. Merewitz's use of MPCM to analyze peak load costs.

I conducted a number of classes and seminars on the use of MPCM for Postal Service employees and interested outside parties. I have made extensive visits, including many multiple repeat visits, to over 40 USPS mail processing facilities and have observed all aspects of mail processing operations on all tours, as well as methods of mail collection, acceptance and transportation, and various ongoing postal data collection systems. I estimate that in total I have spent more than 2000 hours on site in postal facilities.

Besides my postal activities, I directed a study for the department of Health and Human Services of the impact of alternative regulatory policies used by state Medicaid agencies, which included an extensive data gathering effort and multiple regression analysis to determine factors influencing utilization and cost in the Medicaid program.

Before joining UAI I was an Operations Research Analyst at the Service Bureau Corporation (IBM), where I performed several large-scale simulation studies, including a design analysis of the Dallas/Fort Worth Airport's people mover system and simulations to improve design and response time in large interactive computer systems.

As Operations Research Analyst at Norsk Hydro, a Norwegian petrochemical company, my work included design, development and implementation of factory production scheduling systems, studies of transportation and distribution systems and risk analysis of investment decisions.

For three years I was assistant Professor of Mathematics at the University of Oslo.

I. PURPOSE OF TESTIMONY

My testimony develops a set of unit costs and corresponding volumes for Outside County Periodicals flats, flats bundles and containers that will make possible a more cost based rate design than the one in effect today. I believe rates developed on the basis of this information, as described in the testimony of witness Mitchell, will give both large and small mailers incentives to improve their mail preparation and entry practices, thus reducing Periodicals postal costs.

The costs and volumes I develop are consistent with PRC costing methodology and with the TY03 after rates assumptions used by the Commission in its R2001-1 Opinion and Recommended Decision. This allows witness Mitchell to develop a revenue neutral restructuring of Periodicals rates.

My analysis is based on R2001-1 costs because those are the latest costs of record. Use of more recent cost and volume data, which the Postal Service may already possess, may change my unit cost estimates somewhat, but I do not believe it would substantially alter the major conclusion arrived at both by myself and by Mitchell, namely that a cost based restructuring of Periodicals rates today is both feasible and highly desirable.

II. SUMMARY

To develop unit costs I use a methodology similar to that employed by the Postal Service to develop the model described in USPS LR-I-332 from Docket No. R2000-1. The mail flow spreadsheets included with this testimony look similar to those used in LR-I-332. My estimates are updated, however, to reflect the wage rates, piggyback factors, productivity rates, mail flow assumptions and PRC costing methodology used to develop TY03 costs in R2001-1. And whereas LR-I-332 identified all normal flats processing costs as being either per-pallet, per-sack, per-bundle or per-piece costs, I show that some of these costs are actually related to the weight, or bulk, of the mail and are more appropriately described as per-pound costs. Section V describes all modifications I made to the original model assumptions.

My results are summarized in Exhibits A and B. Exhibit A contains an expanded set of TY03 after rates billing determinants for Outside County Periodicals, corresponding to the mail categories for which I have estimated unit costs. Table A1 shows the estimated number of sacks and pallets per container presort level and entry point. Table A2 shows the number of packages (bundles) by bundle presort level, container type (sack or pallet) and container presort level, and Table A3 shows the number of Outside County flats pieces by container and bundle presort level, container type, machinability and whether or not the pieces are pre-barcoded.[3] Exhibit B contains the corresponding mail processing unit costs. For example, Table B1 contains the estimated TY03 unit costs for each category of sacks and pallets in Table A1, etc.

Section III below discusses the major cost causing characteristics of a Periodicals flats mailing and explains why it is important that postal rates recognize these characteristics and their impact on USPS costs. I also explain why the flawed assumption inherent in today's rate design, namely that costs depend only on the number of pieces and the number of pounds, combined with other constraints, sends many incorrect signals to the mailers, resulting in Periodicals postal costs being much higher than they need to be.

Section IV describes the development of an expanded set of Periodicals billing determinants used by Mitchell. Section V describes the development of unit costs. Library reference TW et al. 1 contains the various spreadsheets used in my analysis.

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[3] I use the term "presort level" in this testimony to refer both to the arrangement of individual pieces within a mailer prepared bundle (package) and the arrangement of bundles (packages) in a mailer prepared sack or pallet. Generally, a finer presort reduces postal costs by allowing the mail to bypass some sorting operations and in some cases to bypass intermediate facilities. DMM section M011.1.2 defines all presort levels recognized by the Postal Service. The ones relevant to my testimony are: carrier route, 5-digit, 3-digit/SCF, ADC and Mixed ADC (MADC). I have combined the 3-digit and SCF presort levels into one category because the cost differential between them is small and in many cases zero, and because the LR-I-332 model in fact assigns exactly the same costs to the two.

III. COST CHARACTERISTICS OF PERIODICALS FLATS MAILINGS

Traditional rate design implicitly assumes that Periodicals costs are incurred on either a per-piece or a per-pound basis. Considerable arguments have been made before this Commission regarding which costs are piece related and which are pound related. However, as explained in the following, some costs are neither.

Periodicals flats are prepared by mailers in presorted bundles and usually placed either in sacks or on pallets provided by the Postal Service. The Postal Service must perform various handlings on these sacks/pallets, often including transfers through multiple facilities, until they are emptied of their contents and can be recycled for further use. The Postal Service then must handle the bundles that were emptied out of the sacks and pallets, until the bundles have been opened – after which it must handle the individual pieces that were inside the bundles through additional sorting and delivery operations.

Costs incurred handling sacks and pallets are better thought of as per-sack and per-pallet costs than as per-piece or per-pound costs. Similarly, costs incurred in sorting bundles are best thought of as per-bundle costs. Recognizing the characteristics of sacks, pallets and bundles that affect postal costs, as well as the characteristics of individual pieces that affect costs, and pricing these items in accordance with costs will remove anomalies in the current rate structure and provide mailers with much better pricing signals.

This section discusses the Periodicals costs that are associated with sacks, pallets, bundles and pieces, as well as costs that are mostly weight related.

1. Sacks

Sack related costs include the cost of sorting sacks, either on mechanized sack sorters or manually, loading and unloading sacks from trucks, moving them across postal platforms and workroom floors, opening sacks, shaking out their contents, putting aside empty sacks and recycling them for further use by mailers. Generally, these costs depend on the number of sacks being handled, each sack's presort level and where it is

entered into the system relative to its final destination. The number of pieces inside a sack has little impact on the cost of handling it.

A cost based rate design should include per-sack charges that are consistent with the actual costs of handling sacks, which generally vary from $1 to over $3 each. Such charges would, in my opinion, quickly reduce the fairly widespread practice among Periodicals mailers of sending sacks with only one or a few pieces in them through the postal system. A cost based sack charge may not seem unreasonable if the sack contains 40 pieces, but it would present a strong disincentive to mailing a sack with only one piece.[4]

2. Pallets

Pallets incur costs as they are moved on or off trucks, across platforms and across the workroom floor to the bundle sorting area where the pallet's contents are distributed. If the bundle sorting operation is mechanized, the pallet is "dumped" by a mechanized pallet dumper. Finally, empty pallets, like empty sacks, are recycled for additional use by mailers.

Use of pallets generally causes fewer costs than if the flats are entered in sacks. And pallets with finer presort (e.g., 5-digit pallets) cause fewer bundle handling costs than less presorted pallets. But because mailers may have a limited quantity of mail to a given 5-digit or 3-digit zone, pallets with finer presort may also end up having less volume. To avoid having to handle too many small pallets, the Postal Service imposes minimum weight requirements. For destination entered pallets, the current minimum is 250 pounds. But some facility managers have indicated that they would be happy to

[4] With appropriate pricing, there is no need to prohibit this practice. A mailer may have a good reason (e.g., service related) for mailing a single piece or a few pieces in a separate sack. If given correct price signals that require them to bear the costs of choosing such practices, however, chances are that mailers will avoid such practices in almost all cases. It is important to note that the practice of mailing sacks with only one or two pieces in them is not at all limited to small mailers. In fact, I have become aware that it occurs frequently among very large mailers, including Time Inc.

receive 5-digit pallets containing considerably fewer than 250 pounds, because such pallets can be transferred directly to the DDU and require much less bundle sorting than 3-digit or ADC pallets.

In this case I present per-bundle costs that vary with the presort level of the pallet the bundles come on, and witness Mitchell proposes that bundles be priced accordingly. That by itself could lead to many more pallets than there are today, especially in the absence of pallet minimums, as mailers would find it advantageous to split current 3-digit pallets into smaller 5-digit pallets and current ADC pallets into smaller 3-digit or SCF pallets. But the proposal also includes pricing the pallets themselves in accordance with actual costs, which again vary with the pallet's presort level and where it is entered into the postal system. This way the mailers themselves will be able to figure out how far to go in producing pallets with finer presort, by weighing the higher price of using more smaller pallets against the lower bundle prices that result from finer pallet presort levels.

3. Bundles

The Postal Service's current mail flow models, which are used to estimate cost savings produced by presortation and pre-barcoding, do recognize certain costs associated with bundle sorting. But they translate those costs into per-piece costs, dividing them by the average number of pieces per bundle. As a result, even if these models are otherwise accurate, the presort savings they calculate are accurate only for bundles with the average number of pieces, and even then actual savings from putting pieces in a presorted bundle depend on whether those pieces would have been sorted by an AFSM-100 machine or manually had they not been in the bundle, on whether they are pre-barcoded or not, etc.

To avoid receiving bundles with too few pieces, where the added costs of handling the bundle might outweigh the piece sorting costs avoided by the bundling, the Postal Service establishes minimum numbers of pieces that presorted bundles must contain.

The current bundle minimums are six pieces for Periodicals flats and ten for Standard flats. Postal officials have been known to argue that both minimums should be raised.[5] But whatever new bundle minimum is imposed, the one thing we can be sure of is that it will not be optimal for all circumstances. The "optimal" bundle minimum may depend on whether the pieces are machinable, whether they are pre-barcoded, presort level of the bundle, whether it is entered on a pallet or in a sack, and other factors.[6]

I believe therefore that the Postal Service would be better off simplifying its ever more complicated mail preparation regulations, abandoning current minimums and simply letting mailers figure out how many bundles to make by pricing both bundles and pieces in accordance with actual costs. To assist in the development of such a pricing structure, I have estimated the per-bundle costs for each combination of bundle and container presort level, as well as the piece handling costs for different presort levels and piece characteristics.

In reviewing the bundle related costs indicated by the model, I noticed that many of those costs in fact do not depend on the number of bundles but rather on the bulk of the bundles. Since bulk is more closely correlated with weight, I believe such costs are more appropriately called weight related. These "weight related" bundle costs occur when a hamper or other USPS container, after being filled with bundles in a bundle sorting operation, is moved either to another bundle sort or to a piece sorting operation, in either the same facility or a different facility. As in LR-I-332, my model assumes that such USPS containers hold an average of 52.45 bundles each, and uses this to translate the costs of moving the containers into "per-bundle" costs. However, these

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[5] In a December 11, 2003 Federal Register notice, 68 Fed. Reg. 69066, the Postal Service proposes raising to 15 the minimum number of pieces for certain categories of 5-digit Standard flats bundles.

[6] By "optimal bundle minimum" I mean the minimum number of pieces at which making up an extra bundle would save postal costs. Assume, for example, that a 5-digit bundle containing 30 pieces is placed on a 3-digit pallet. Some of the 30 pieces are to the same carrier route. How many pieces must there be to the same carrier route before it is worthwhile making a separate carrier route bundle? The answer to this question depends on a number of factors, including sorting technology and whether the pieces have a barcode.

postal containers are generally moved when they are full. They will fill up faster if the flats are thick or there are many flats per bundle. These costs are therefore primarily determined by cube, which tends to vary in closer proportion with weight than with the number of pieces or bundles, and so it is more appropriate to classify them as per-pound costs.

In the AFSM-100 environment, non-carrier route flats bundles are taken to a “prepping” operation where the bundles are broken and pieces placed on “ergo carts” in a manner designed to facilitate subsequent loading into the AFSM-100. This operation is currently referred to as MODS operation 035. It tends to be performed also for flats that will not be sorted on the AFSM-100. In the pre-AFSM-100 environment, the process of cutting flats bundles and preparing the pieces for sorting was often integrated into the piece sorting operations and indistinguishable from piece sorting.

I unfortunately do not have access to any productivity estimates for the MODS 035 operation. Nor was this operation or any equivalent operation included in the LR-I-332 model from which I have developed my current model of flats mail flows. Nor is there any reference to it in the flats mail flow model described in LR-J-61, which was used in R2001-1 to set flats presort and automation discounts. The bundle unit costs shown in Exhibit B therefore do not include the 035 costs. Had I been able to include those costs, the costs of the non-carrier route flats categories in Exhibit B would have been higher relative to the carrier route categories.

4. Flats Pieces

Current Periodicals rate design takes into account whether non-carrier route flats are pre-barcoded. It also recognizes four presort levels (carrier route, 5-digit, 3-digit and basic). Not recognized is machinability of the mail pieces, even though machinability has become much more important with the advent of the AFSM-100. In this testimony, “machinable” refers to machinability on an AFSM-100. Magazines thicker than 3/4 inch would, for example, be considered non-machinable.

The presort rate levels currently recognized are a confusing mix, referring sometimes to

the presort level of a bundle and sometimes to the presort level of the container the bundle is presented in. For palletized flats, the presort rate level is defined by the bundle presort; the presort level of the pallet is ignored, even though it has a major impact on postal costs. For sacked mail, the presort rate level is defined by the bundle presort for barcoded flats and by the sack presort for non-barcoded flats.[7]

It leads to much more cost based rates, and is conceptually simpler, to recognize all meaningful combinations of bundle and container presort level, container type, machinability and pre-barcoding. Tables A3 and B3 illustrate all the categories of piece characteristics for which I am presenting estimates of volumes and unit costs.[8]

The piece handling costs I estimate refer only to mail processing. Additional per-piece costs are incurred in the delivery function. I also have not attempted to model costs of forwarding or other handlings that do not occur in the normal flow of most flats through the postal system. Note that costs related to bundle sorting are not included in my piece related costs.

LR-I-332 also estimates the costs of bundle breakage and presents them as per-bundle costs. I have defined them instead as per-piece costs. Most of the extra costs incurred when a bundle breaks prematurely are due to the additional piece sorting required for the previously bundled pieces. Since these costs are proportional to the number of

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[7] The inconsistent definitions of presort rate categories have led to some striking rate anomalies. Here is, perhaps, one of the worst. Consider a 5-digit flats bundle in an ADC sack. If the flats are pre-barcoded, their presort level is determined by the bundle presort, i.e., it is 5-digit and they pay the 5-digit automation rate (22.6 cents/piece). If the flats are not barcoded, their presort level is determined by the sack presort, i.e., it is basic, and they pay the non-automation basic rate of 37.3 cents/piece. Their reward for barcoding is therefore 14.7 cents/piece, even though the Commission approved a barcode discount for basic flats of only 4.8 cents/piece. Moreover, the actual cost differential between barcoded and non-barcoded pieces in this example is 0.3 cents if the pieces are non-machinable, and about 1.3 cents if they are machinable. See Table B3a.

[8] These categories were present also in the Postal Service's R2000-1 and R2001-1 mail flow models. But in both cases the USPS witnesses combined the more detailed set of categories into the much more limited number representing current presort/automation rate levels.

pieces that were in the broken bundles, rather than the number of broken bundles, I consider them to be per-piece costs.

Some of the per-piece costs calculated by my model, and in LR-I-332, are incurred while moving pieces between piece sorting operations and to the DDU. These movements typically involve rolling containers that are filled up with flats trays and moved when they are full. Since thick flats fill up trays and rolling containers faster than thin flats, these costs are more appropriately viewed as weight related. Exhibit B identifies these weight related "per-piece" costs separately. Witness Mitchell does not use them in his design of piece rates, since they are more appropriately covered by pound rates.

5. Weight Related Costs

Which Periodicals costs are piece related and which are pound related has been debated for a long time and never fully resolved. Since R87-1 the Commission has required 60% of regular rate Periodicals revenue to come from the piece rates, based on an assumption that approximately 60% of the costs are piece related.[9]

Having concluded that some costs are related neither to pieces nor pounds but rather to the sacks, pallets and bundles into which a flats mailing is prepared, and that a portion of the postal revenues should be derived from charges on these items, it is necessary to determine how the remaining costs can most properly be divided between pieces and pounds.

First, it should be noted that, for Periodicals, bulk (measured in cubic feet) is probably much more of a cost driver than weight. It is the bulk that consumes space on trucks and in trays, hampers and other containers used to transport these flats. The faster that trays, hampers and other containers are filled up, the sooner they must be

[9] Since the merger of the three Outside County subclasses in Docket No. R2000-1, the assumption that 60% of costs are piece related is applied to the combined subclass, whereas before it was applied to regular rate Periodicals.

removed and replaced. However, since density (weight/cube) is fairly uniform, at least among magazines, it is reasonable to continue to treat pounds, rather than cubic feet, as a major cost driver.

Transportation costs are generally considered pound related. Delivery costs clearly are affected both by weight and by the number of pieces delivered. Regarding mail processing costs, I pointed out in the two preceding sections that more than half of the costs that the mail flow model identifies as per-bundle costs would more appropriately be considered weight related, and that a portion of the per-piece costs identified by the model are also, strictly speaking, more weight than piece related.

Section V.6 presents an analysis that indicates approximately 30% of the Outside County revenues should come from pound rates when the rates include cost based per-sack, per-pallet and per-bundle charges.

IV VOLUME ESTIMATES

This section explains the development of estimates of TY03 after rates volumes of Outside County sacks, pallets, bundles and pieces, as summarized in Exhibit A. The main data source used to develop the piece volumes in Table A3, the bundle volumes in Table A2 and the number of containers by container type and presort level, is the mail characteristics study reported in USPS LR-I-87, which USPS witnesses also used both in R2000-1 and R2001-1. To estimate numbers of sacks and pallets by entry point as well as presort level, I relied on the entry point study described in LR-J-114 and used by USPS witnesses in Docket No. R2001-1.

I normalized the LR-I-87 survey results to be consistent with the TY03 after rates billing determinants used by the Commission in its R2001-1 rate design. After letter shaped pieces are separated out, the process used is essentially the same as that applied by witness Miller (USPS-T-24, LR-J-61) in Docket No. R2001-1. It can be described (though Miller did not explicitly express it this way) as using a set of multipliers that relate billing determinant volumes of existing presort/automation rate categories to the corresponding volumes computed from unadjusted survey results. I was able to extend

the use of these multipliers to bundle and container counts from the mail characteristics survey.

The process outlined above was performed separately for regular rate and nonprofit Periodicals. The results were then extrapolated to also include Classroom publications. Finally, to produce the container volumes in Table A1, my estimates of sacks and pallets by presort level, obtained in this manner, were used to normalize the container counts by entry point obtained from LR-J-114.

Spreadsheet 'VolumesTY03AR.xls' performs the volume estimates summarized above. The following describes my methodology in more detail.

1. Billing Determinants For Non-Letters

Because witness Mitchell handles the small volume of Periodicals that are letter shaped separately, the volumes in Exhibit A refer to non-letters only. According to the Commission's R2001-1 Opinion, the total TY03 after rates volume for Outside County Periodicals is about 9.1 billion,. According to the shape related proportions indicated in LR-J-81, 4.38%, or approximately 399 million pieces, are letters. That leaves 8.7 billion flats and parcels. The number of parcel shaped Periodicals pieces is very small, and since no separate model exists for them, I treat my flats mail flow model as applicable to all non letter shaped pieces.[10]

The number of letter shaped pieces receiving automation discounts for each subclass and presort rate level is known from the billing determinants. Mitchell uses this information to estimate a complete set of billing determinants for letter shaped pieces. Subtracting the letter volumes from the corresponding totals gives non-letter billing determinants, to which I normalized the survey results from LR-I-87.

[10] LR-J-81 is the PRC costing version (according to the Postal Service's interpretation of PRC costing) of LR-J-53 in Docket No. R2001-1. Both library references develop test year per-shape mail processing unit costs in each MODS/PIRS based cost pool. I used the LR-J-81 costs for Outside County Periodicals to perform a "CRA adjustment" to my unit cost estimates, as described below in Section V.5.

2. Non-Letter Piece Volumes

My starting point for estimating non-letter piece volumes is Tables 6 (regular rate) and 7 (nonprofit) in LR-I-87. I extracted from the original survey tables a set of "scenario" volumes, where each "scenario" represents a combination of container type, container presort, bundle presort and piece characteristics (machinability and pre-barcoding). From combinations of these "scenario" volumes I created sums that correspond to the seven main current piece rate categories for which billing determinants are available.[11] Dividing actual billing determinant volumes by these summed scenario volumes gives a set of multiplying factors, shown for regular rate and nonprofit in the table below.

As the table shows, the mail characteristics survey appears to have underestimated considerably the volume of non-automation basic in both regular rate and nonprofit, requiring large corrective factors for this rate category, while it appears to have overestimated the volume of carrier route presorted flats in both subclasses.

Table 1: Multiplying Factors That Adjust Survey Results To Billing Determinants

Rate Category	Regular Rate	Nonprofit
Non-automation Basic	2.268833	2.169982
Non-automation 3-Digit	1.567001	0.447340
Non-automation 5-Digit	1.684180	0.686931
Carrier Route	0.908587	0.749931
Automation Basic	0.930705	1.688308
Automation 3-Digit	1.014220	1.055454
Automation 5-Digit	0.847260	1.056143

No survey data exist for classroom publications, but there are billing determinants. My volume estimates are extended to this subclass by applying a third set of multiplying factors to the combined regular rate and nonprofit survey volumes.

[11] See spreadsheet pages 'Vols-Per Reg' and 'Vols-Per Non'. Use of the term "scenario" to describe this division of the Periodicals flats volume was introduced in the testimony of witness Yacobucci (USPS-T-25) in R2000-1.

3. Bundle Volumes

The LR-I-87 mail characteristics survey provided counts of bundles per bundle presort level, container type and container presort level. It also classified bundles as auto or non-auto. This allows each cell of bundle counts to be associated with one and only one of the rate categories in Table 1. I could therefore use the same set of multiplying factors used for piece counts to adjust bundle counts to the billing determinants.[12]

Bundle counts are contained in LR-I-87's tables 9 (regular rate) and 12 (nonprofit). From these I extracted another tabulation, with organization similar to LR-I-87's tables 6 (regular) and 7 (nonprofit) for the piece counts, in order to apply the multiplying factors to bundle counts.

4. Container Volumes By Entry Point

Tables 14 (regular rate) and 15 (nonprofit) in LR-I-87 list, for various categories of sacks and pallets, the estimated number of containers of each type and corresponding numbers of pieces. Assuming no change in the number of pieces per container and using the TY03 after rates number of pieces in each category, I could then estimate the TY03 number of containers of each type and presort level, for each subclass. The total number of containers used to enter Periodicals flats was estimated to be 111.756 million, including 3.127 million pallets and 108.629 million sacks, as shown in Table 2.[13]

The next step was to break down the volumes of sacks and pallets at each presort level by the eight entry point categories used in LR-J-114:

(1) DDU (destinating delivery unit);

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[12] More recently the Postal Service has begun to accept bundles that mix barcoded and non-barcoded flats together, but at the time the survey was performed bundles were required to be classified as either auto or non-auto.

[13] Both the mail characteristics survey (LR-I-87) and entry point survey (LR-J-114) showed more pallets and fewer sacks than Table 2 indicates. The reason appears to be that both surveys tended to under-sample the very small mailings that use mostly sacks, and to over-sample large mailings that are mostly palletized.

(2) DSCF (destinating sectional center facility);
(3) DADC (destinating area distribution center);
(4) DBMC (destinating BMC);
(5) OBMC (originating BMC – when different from the DBMC);
(6) OADC (originating ADC – when different from the DADC);
(7) OSCF (originating SCF - when different from the DSCF); and
(8) OAO (originating associate office or station – when different from the DDU).

Table 2: Estimated TY03 After Rates Outside County Container Counts

Container	Presort	Regular Rate	Nonprofit	Classroom	Total
Pallets	5-D	343,262	52,098	1,719	397,079
	3-D/SCF	1,785,584	238,612	10,288	2,034,485
	ADC	605,092	85,925	4,696	695,714
Total Pallets		2,733,938	376,635	16,703	3,127,277
Sacks	CR	4,654,313	1,398,182	26,886	6,079,382
	CRS	10,461,858	962,654	48,222	11,472,734
	5-D	37,053,094	5,427,540	249,642	42,730,277
	3-D/SCF	27,097,352	3,296,416	297,762	30,691,530
	ADC	11,308,787	1,362,476	187,730	12,858,993
	MADC	4,185,519	530,665	80,036	4,796,220
Total Sacks		94,760,925	12,977,933	890,277	108,629,135
Total All Containers		97,494,863	13,354,569	906,981	111,756,412

The LR-J-114 entry point study also provides information on the locations of the originating facilities relative to the destinating facilities. For example, if a pallet or sack was entered at the OAO, the survey recorded whether the location of the OAO was: (1) within the service area of the destinating SCF (DSCF); (2) within the service area of the DADC, but outside that of the DSCF; (3) within the service area of the DBMC, but outside that of the DADC; or (4) outside the DBMC service area. Similarly, when entry occurred at the OSCF, one of the last three of these possibilities was recorded, and when it occurred at the OADC, one of the last two was recorded. Exhibit C shows the composition of the origin entries for each type of sack and pallet. I made use of this information to modify some LR-I-332 mail flow assumptions, as described in Section V.

A few comments may be useful at this point on current dropship patterns revealed by the entry point study.

It is probably not surprising that pallets are generally dropshipped to a far larger extent

than sacks. As can be deduced from the figures in Table A1, about 47.5% of all pallets are entered at a destinating facility (DBMC, DADC, DSCF or DDU), versus only 24.1% of sacks. On the other hand, when pallets are entered at origin, the originating facility is usually (85%) outside the DBMC service area, i.e., the origin is far away from the destinating facility. When sacks are entered at origin, however, about 26% are actually entered within the DBMC service area and many are entered even closer, e.g., at a nearby SCF or AO. These sacks, with relatively short transportation by the mailer, could avoid substantial postal costs. For example, of the about six million carrier route (CR) sacks that are entered at the originating facility, more than 60% originate within the service area of the DADC. A significant proportion of the 5-digit sacks entered at origin are also in fact entered close to their destinating facility. One hopes that stronger dropship incentives would cause more of these sacks (if not to convert to pallets) at least to be taken to some destinating facility, thereby reducing the traffic on postal platforms.

V THE COST MODEL

The mail flow model used to calculate the unit cost estimates in Exhibit B is similar to the LR-I-332 model developed by the Postal Service and Christensen Associates during Docket No. R2000-1. LR-I-332's purpose was to estimate the reduction in Periodicals mail processing costs that could be expected from various changes in mail preparation requirements. It was designed to follow the flow of Periodicals flats entered with all relevant combinations of bundle and container presort, either in sacks or on pallets, from the time the mail is entered at a postal facility until it has been handed to the carriers who will deliver it. It identifies all processing costs incurred by these flats as either per-pallet, per-sack, per-bundle or per-piece, and produces a comprehensive set of unit cost estimates.

The development of LR-I-332 began during R2000-1 as a cooperative industry/USPS effort to try to limit the Periodicals rate increase. Because of the rapid growth in Periodicals processing costs since the previous rate case, on top of years of large, unexplained increases before that, another large increase seemed inevitable. Industry representatives agreed to certain changes in mail preparation that were expected to

reduce processing costs. There was a need for a new model to estimate what those savings would be, in order to make it possible to project test year Periodicals costs.

I participated in the earlier stages of LR-I-332's development as an industry expert. I discussed the project with the developers in face-to-face meetings and several phone conferences and I provided several suggestions that were incorporated in the model. In reviewing the final product while preparing this testimony, I concluded that the modeling approach used in LR-I-332 is well suited for developing the types of cost based rates that are being proposed in this case, but that a number of substantial changes to the model were needed, including the following:

- wage rates and piggyback costs from TY01 of R2000-1 were changed to TY03 of R2001-1;
- the model was changed to use PRC costing methodology;
- the R2000-1 modeling assumptions for flats piece sorting were changed to the R2001-1 assumptions, which include a more dominant role for the AFSM-100 machines;
- mail flow assumptions for containers entered at origin facilities were modified in accordance with the LR-J-114 entry point data;
- some costs categorized in the original model as per-bundle were re-categorized as per-piece, and other costs originally categorized as per-bundle or per-piece were re-categorized as primarily weight related.
- a CRA adjustment was applied to the modeled costs to make them correspond to TY03 after rates mail processing costs for non-letter Periodicals.

All of these changes have been made in the model prepared for this testimony and are described below in further detail, following an overview of the model's organization.

1. Model Overview

The model consists of a series of interlinked Excel spreadsheets, included in Library Reference TW et al. 1.[14]

[14] The original model included some spreadsheets used only to carry out four parametric

Most of the model mail flow analysis is contained in 16 spreadsheets, each of which corresponds to a particular container type (sack or pallet) and a particular type of entry point. The naming convention is 'pallet_bb_' or 'sack_bb_' followed by a three or four letter abbreviation for the type of entry point, followed by '.xls'. For example, 'pallet_bb_dadc.xls' is the model for pallets entered at the destinating ADC. There are eight such spreadsheets for sacks and eight for pallets.[15]

In LR-I-332, each of the 16 spreadsheets contained large amounts of data common to all of them, including piggyback factors, wage rates, productivity rates, conversion factors, etc. A consequence of hard-coding so many numbers in so many different places is that it becomes very cumbersome to make model changes. To facilitate changes I use a new spreadsheet, called 'cost_variables.xls', that contains various types of data and calculations common to the 16 model spreadsheets. This makes it possible to make changes in one place, rather than 16.

The original model also contained essentially duplicative calculations of per-piece and per-bundle costs in all 16 spreadsheets. It turns out that all the necessary piece related and bundle related unit costs can be computed using just one sack and one pallet model spreadsheet. I therefore made all the changes I needed to make for piece and bundle related costs in spreadsheets 'pallet_bb_oao.xls' and 'sack_bb_oao.xls.' The piece and bundle related flows in the 14 other spreadsheets were removed. However, all 16 spreadsheets are needed to analyze the costs of containers at different entry points.

Other linked spreadsheets included in the library reference are:

Costs_Volumes.xls	Extracts and tabulates the volume data contained in Exhibit A and the unit costs in Exhibit B. Also determines total costs implied by the calculated unit costs

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"scenario" analyses relevant to the R2000-1 estimates of the Periodicals revenue requirement but of no relevance to my present analysis.

[15] LR-I-332 uses a similar naming convention except that each spreadsheet name is preceded by 'method_', e.g., 'method_ pallet_bb_dadc.xls'.

VolumesTY03ar.xls	Calculates the billing determinants contained in Exhibit A and the entry point statistics in Exhibit C
Cost_Variables.xls	Miscellaneous input data and calculations
FlatsR01Modified.xls	Estimates piece sorting costs under R2001-1 assumptions
Bundleprod.xls	Sorting productivity in manual bundle sorting operations
CRAAdjust.xls	Performs CRA adjustment
LbPercentage.xls	Identifies Weight Related Costs

2. Estimates Of Piece Sorting Costs

The estimated per-piece costs include two main components:

(1) the "pure" piece sorting costs incurred at various manual, mechanized and automated piece sorting operations; and

(2) certain other costs incurred in transporting pieces that have already passed through at least one piece sort to subsequent piece sorts (if necessary) and to the DDU, until the pieces have been given to the carriers, who will then sequence and deliver them.

The first category of per-piece costs is in turn composed of two parts: (a) the piece sorting costs incurred in the absence of premature bundle breakage; and (b) the additional costs incurred when certain bundles break prematurely, which typically leads to additional piece sorting costs. For example, when a 5-digit bundle breaks in a 3-digit (incoming primary) bundle sort, the individual pieces from that bundle must be sent to an incoming primary sort, instead of being able to pass directly to the incoming secondary (5-digit) sort. The piece sorting costs related to bundle breakage were defined as "per-bundle" costs in LR-I-332. However, I define them as per-piece costs since they are determined not by the number of bundles that are broken but by the number of pieces in the bundles that are broken.

In Exhibit B, my estimates of "pure" piece sorting costs are shown in Table B3a. Witness Mitchell uses these costs in his design of Outside County piece rates.

The second cost category can be viewed as more weight related than piece related, since the costs are determined more by physical bulk than by the number of pieces. They are tabulated in Table B3b. While I computed these costs on a per-piece basis,

witness Mitchell did not use them in his design of piece rates. Table B3c contains the sum of the two piece related cost categories.

The LR-I-332 developers tried to be consistent with the piece and bundle related cost data contained in the Periodicals mail flow model in LR-I-90, presented in R2000-1 by witness Yacobucci (USPS-T-25). They used his model, assuming no bundle breakage, to run 48 different "scenarios," pasting relevant cost and flow data for piece sorting operations under each scenario into a new table and making the resulting modified model, which is referred to by the 16 model spreadsheets, a part of LR-I-332. The spreadsheet was called 'flats_costs_model_modify.xls.' I have replaced it with 'FlatsR01Modified.xls', which reflects R2001-1 assumptions regarding flow and cost of piece sorting, including the more prominent role of the AFSM-100.

I developed 'FlatsR01Modified.xls' by starting with the Periodicals flats model in USPS LR-J-61, introduced in R2001-1 by witness Miller (USPS-T-24). I set the assumed bundle breakage rate to zero. Unlike the R2000-1 model, the R2001-1 model is not structured around the 48 "scenarios." However, the cost of "pure" piece sorting (assuming no bundle breakage) depends only on bundle presort level and the characteristics of the individual pieces, not on the container the bundle came in. As a consequence, it is really necessary to develop the cost and flow information only for 16 separate scenarios. I used Miller's flow model to create separate models for flats arriving in, respectively, MADC, ADC, 3-digitd/SCF and 5-digit bundles. Each model is on a spreadsheet page that calculates the cost and flow information for the four combinations of machinability/non-machinability and barcoding/no barcoding. The results are linked to a spreadsheet page named 'piece facility downflows,' laid out exactly as in LR-I-332.

The modeling of bundle breakage costs in the R2000-1 flats model was severely flawed, as I pointed out in my direct testimony in that docket.[16] The LR-I-332

[16] The Commission agreed and used an alternative flats model that I had developed, with a different treatment of bundle breakage costs, as the basis for setting flats presort and automation discounts. PRC Op. R2000-1, ¶¶ 5648-5652.

developers appear to have recognized this and to have created a sharply different model, including the use of the package integrity data obtained from an MTAC data collection summarized in LR-I-297. The R2001-1 flats model, however, while incorporating some LR-I-297 data, is also severely flawed in its assumptions.[17] I therefore used the original LR-I-332 method to calculate bundle breakage costs.

3. Estimates Of Per-Bundle Costs

Bundle sorting is either mechanized or manual. Mechanized bundle sorting is performed mostly at the SPBS (small parcel and bundle sorter) machines that come in a variety of configurations. Some facilities also use the older LIPS machines for that purpose. MODS productivity rates are measured at the SPBS/LIPS. For manual bundle sorting, the only available productivity data are from special surveys, such as the one described in LR-I-88 and used by USPS witnesses in the last two rate cases.[18]

But having measured overall productivity rates at these operations is not sufficient for our purposes, because those productivity rates represent other work besides the actual bundle sorting, such as opening sacks and shaking out their contents onto a moving belt, disposing of the sacks, dumping pallets, etc. Since shaking out sacks generally takes much more time per bundle than dumping a pallet, the productivity rates at an SPBS operation can be expected to vary considerably with the mixture of sacked and palletized mail that it processes. Since our objective is to separate sack, pallet and bundle costs, it becomes necessary to identify "pure" mechanized and manual bundle

[17] For example, the R2001-1 flats model (LR-J-61) fails to recognize the difference between mechanized and manual sorting of palletized bundles. In manual sorting from a pallet, the bundles are not dumped onto a belt but lifted from the pallet and thrown directly into the containers for which they are intended. Since these bundles face no risk of being broken until they land in the intended container, which represents a higher presort level than the pallet from which sortation is being made, any bundle breakage at that point will result in less and often no additional piece sorting. In the case of carrier route bundles being sorted manually from a 5-digit pallet, the bundles will get to the carriers, who have to break the bundles anyway, so that there are no bundle breakage costs. Docket No. R2001-1, Tr. 2179.

[18] Docket No. R2000-1, USPS-T-25, at 7 and Docket No. R2001-1, USPS-T-24, at 1.

sorting productivities, by excluding the component that consists of sack and pallet handling. Additionally, employees at bundle sorting operations spend time replacing containers that have been filled with sorted bundles with new, empty containers and taking the full containers to the next operation. These costs, while clearly bundle related, depend more on the bulk of the bundles than the number of bundles.

The task is therefore to isolate the "pure" bundle sorting productivity, i.e., the part of bundle sorting that varies only with the number of bundles, not with the number of sacks or pallets or with the bulk of the mail. For mechanized bundle sorting, the task was addressed in the original LR-I-332 development, and I am using that result in the present model. The task does not appear to have been addressed for manual bundle sorting, and I have developed an analysis for that purpose, as described below.

a. Mechanized Bundle Sorting.

The Postal Service's R2000-1 flats model indicated an overall productivity of 223 bundles per workhour, based on LR-I-88. That was reduced to 201 under Yacobucci's bundle breakage assumption and raised to 313 under the Postal Service's SPBS volume variability assumption. The R2001-1 flats model uses a MODS based productivity of 243.41 bundles per hour (or 367, assuming 66% volume variability). [19]

Analysis by the LR-I-332 team, based on LR-I-88, indicated that 43.41% of mechanized bundle sorting hours are spent actually sorting bundles. I am using that estimate together with the 243.41 overall productivity estimate from R2001-1, giving a "pure" mechanized bundle sorting productivity of 560.75 bundles per workhour.

b. Manual Bundle Sorting

The R2000-1 flats model indicates that, according to LR-I-88, the manual productivity,

[19] Curiously, examination of the LR-I-88 spreadsheet 'mechprod.xls' shows that use of all observations from that survey would give an overall productivity of 246, very close to the R2001-1 result. The lower (223 bundles per hour) estimate was obtained by excluding all observations with productivity over 380 bundles per hour.

before applying volume variability, was 178 bundles per hour for MADC, ADC and 3-D/SCF containers, 409 for 5-D containers and only 99 for "CR Containers." LR-I-332 used those estimates after applying USPS volume variability factors.

As confirmed in the answer to a Time Warner interrogatory, the estimate for "CR-Containers" actually refers to handling of carrier route sacks, not to bundle sorting. Docket No. R2000-1, Tr. 1461-62. It is inappropriate to use it to represent bundle costs in a model that treats sack handling costs separately. While a CR sack is likely to undergo sack sorting, which contributes to the per-sack costs, the bundles in it do not need any sorting, because they are already at the carrier when the sack is opened. In fact, 5-D, 3-D/SCF, ADC and MADC are the only types of bundle sort that need to be addressed.

As confirmed in the answer to another R2000-1 Time Warner interrogatory (Tr. 1468-69), LR-I-88 really shows that bundle sorting productivity varies a great deal between MADC, ADC and 3-D/SCF containers. This correction was adopted in the R2001-1 USPS flats model.

In order to isolate the "pure" bundle sorting productivity at each container presort level, I followed the principle that activities that are separately identified in the model should not also be included in the bundle sorting productivity, since that would amount to counting the same activity twice.

Let me illustrate this with the case of MADC bundle sorting, applied to the bundles that come in MADC sacks. According to Table A2, there are 29,243,276 such Outside County bundles per year. With an overall productivity of only 76 bundles per workhour, this sortation would take a total of 383,494 hours. But the operation includes, for example, shaking out 4,796,220 sacks and disposing of those sacks afterwards. Those operations, applying the productivity rates assumed for them, would take respectively 48,252 and 29,075 workhours. After subtracting these hours as well as hours for moving containers of sorted bundles to other operations, replacing those with empty containers and removing the empty containers that the sacks came in, all of which are separately identified in the model, the hours remaining for actual bundle sorting are

241,368, which indicates a “pure” bundle sorting productivity of 121.

Similarly derived estimates for ADC, 3-D/SCF and 5-D manual bundle sort are 369, 455 and 505 bundles per hour. The estimates are developed in spreadsheet ‘bundleprod.xls’.

c. Impact of Bundle Breakage

Although, as stated earlier, I treat the costs associated with bundle breakage as per-piece costs, breakage does have an impact on the estimated per-bundle costs. When a bundle breaks prematurely, it spends less time in the system as a bundle, leading to lower per-bundle costs, as well as higher per-piece costs. Because bundles that come in sacks have a much higher probability of breaking, the result is that for corresponding combinations of container and bundle presort, the per-bundle costs are slightly lower for sacked bundles. For example, a 5-digit bundle in an ADC sack is estimated to cost 51.56 cents, whereas the same bundle on an ADC pallet costs 54.84 cents under this methodology.[20] This should not be interpreted as meaning that putting bundles in sacks is less costly; the reverse is true when piece handling and container handling costs are also taken into account.

Because witness Mitchell’s “bundle tree” rate design assumes that piece sorting costs depend only on the bundle presort level and not on the container the bundle came in, and that bundle costs depend only on the container presort, not the type of container, he does not capture the distinctions described above. Ideally, the fact that sacks cause more breakage than pallets should be reflected in higher per-sack costs; however my present model puts those added costs as per-piece costs.

[20] See Table B2c. The comparison refers to total bundle costs, including weight related costs. When container and bundle presort levels coincide, pieces in a bundle that breaks do not lose any sortation and bundle costs are the same whether the bundle came from a sack or pallet. For this reason, 3-digit bundles in 3-digit containers and ADC bundles in ADC containers cost the same whether the container is a sack or a pallet. See Docket No. R2001-1, Tr. 2168.

d. Weight Related Bundle Costs

A substantial portion of the costs identified by the model as "per-bundle" are related to activities such as placing empty containers (e.g., hampers, APC's) at a bundle sorting operation to receive sorted bundles, removing those containers when they are full and taking them to a subsequent operation or to the platform and onto a truck to another facility. These costs are converted to per-bundle costs by assuming that the containers used (called OWC's in the model spreadsheets) contain an average of 52.45 bundles. In reality, of course, the number of bundles in a full container depends on the number of pieces per bundle and on the size of those pieces. I refer to those costs as weight related bundle costs and identify them separately. Witness Mitchell excludes the weight related bundle costs in his rate design. In Exhibit B, Table B2a contains the per-bundle costs that Mitchell uses to develop per-bundle rates. Table B2b contains the weight related bundle costs and Table B2c the sum of the two sets of costs.

4. Estimates Of Per-Sack And Per-Pallet Costs

The cost of handling sacks and pallets depends on entry point and the container presort level. The model determines sack/pallet unit costs by: (1) identifying the types of postal facilities that handle Periodicals sacks and pallets; (2) identifying the various processing operations performed on sacks and pallets in each type of facility and determining the unit cost of each operation; and (3) determining the probability that a sack or pallet with given presort level and entry point will pass through each type of facility and each type of operation.

a. Facility Types

Periodicals sacks and pallets may be handled in one or more of the eight types of entry facility listed in Section IV.4. LR-I-332 represents the same categories of facilities, but calls them transfer hubs (THs) rather than BMCs. Some USPS testimonies in previous proceedings before this Commission have also referred to Periodicals transfer hubs.[21]

[21] See testimonies of witness Acheson, Dockets No. R87-1 (USPS-T-12) and MC91-3 (USPS-

The reason for this inconsistent terminology appears to be that to avoid mixing Periodicals and Standard mail, both of which arrive at BMCs, the Postal Service often directs Periodicals to separate BMC annexes – facilities that mainly crossdock sacks and pallets but do little or no further processing. I believe there are also cases where Periodicals bypass the BMC altogether and are instead taken to a nearby general mail facility (GMF). The term "transfer hub" appears to have been intended to show that Periodicals arriving at a BMC are not always processed in the BMC main facility. However, postal officials have stressed that a separate network of Periodicals transfer hubs does not exist.

I have assumed that Periodicals handling at BMCs consists only of cross docking pallets and sorting and dispatching of sacks. No Periodicals sacks or pallets are assumed opened at BMCs. Except for mixed ADC (MADC) sacks, whose contents are typically distributed at the OADC, I assume, as does LR-I-332, that all sorting of Periodicals bundles and flats pieces occurs at the DADC, the DSCF or the DDU.

In this case witness Mitchell proposes separate rates for sacks and pallets entered at the DBMC that are lower than the rates proposed for sacks and pallets entered at origin facilities. The proposed rates are based on the unit cost estimates in Table B1. The separate DBMC rates would apply to entry at facilities that the Postal Service designates for DBMC entry of Periodicals. As discussed above, this might not always be the main BMC facility.

b. Container Operations Costs

In LR-I-332, each of the 8 sack and 8 pallet spreadsheets computes a set of container operations costs. Since an operation costs the same regardless of how frequently it is performed on a container with given entry point and presort level, the operations cost calculations are exactly the same in all 8 sack related spreadsheets, and similarly in all 8 pallet related spreadsheets. To avoid having to repeat every change in operations

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T-2). On the other hand, witness Crum, Docket No. R2001-1 (USPS-T-27) refers to Periodicals sacks and pallets being handled at BMCs.

costs eight times, I moved the spreadsheet pages ‘sack operations costs’ and ‘pallet operations costs’ into spreadsheet ‘cost_variables.xls’ and linked each sack/pallet model to the calculations in that spreadsheet.

The operations cost spreadsheet pages list a series of operations that may be performed on sacks or pallets in each type of facility. The per-sack or per-pallet unit cost is computed for each operation using the estimated productivity rate (units/workhour), conversion factor if the unit handled is something other than sacks (pallets) and TY03 wage rates, piggyback factors and premium pay factors.

LR-I-332 uses productivity rates for container handling operations from several different sources:

1. LR-H-132, describing a survey of 6 BMC’s to update some of the productivity rates from witness Byrne’s R84-1 testimony.

2. Byrne’s R84-1 testimony, USPS-T-14, describing a study at the Philadelphia BMC, the San Francisco BMC and the Buffalo ASF/SCF.

3. PIRS – the BMC workhour and volumes recording system; and

4. the Planning Guidelines (PGL), developed using industrial engineering methods.

I use most of the productivity rates that LR-I-332 uses, except that they are modified by PRC, rather than USPS, assumptions of volume variability. Described below are some of the changes I made in assumptions about productivity rates and container operations costs, other than changes related to wages, piggyback factors and volume variability.

- <u>Unloading At Entry Facilities</u>. LR-I-332 container flows start with the containers already at the platform of the entry facility. But the containers did not get there by themselves. Generally, mailings entered at SCF’s or BMC’s are unloaded onto the platform by USPS employees, adding to their costs. At delivery units (AO’s, stations and branches) unloading is generally done by the mailers. I added unloading at the entry point facility when that facility is an SCF, ADC or BMC.

- Pallet Cross Docking. LR-I-332 assumes that 6.7 pallets are cross docked per workhour. But this is based on BMC data, BMC's being large facilities with large distances between inbound and outbound docks. Cross docking at most SCF's should be faster. LR-I-332 also estimates that 8.5 pallets/hour are transferred from the platform to the bundle sorting operation. This figure comes from the testimony of Byrne, who gave it as an average BMC/SCF cross docking productivity. He measured 9.5 pallets per hour at Buffalo, a large SCF and the only one he studied. I am using 9.5 pallets/workhour for cross docking at SCF's and ADC's, as well as for bringing pallets to the bundle sorting area. For cross docking at BMC's I use the 8.5 pallets/hour estimate. The BMC annexes where Periodicals often are cross docked are smaller than the BMC main facilities, with shorter distances between inbound and outbound platforms.

- Pallets That Are Sorted Manually. LR-I-332 recognizes the cost of "dumping" a pallet at a mechanized bundle sorting operation – a fairly time consuming affair because the dumping must occur slowly enough not to overwhelm the belt with bundles or cause unnecessary bundle breakage. However, there are also some costs associated with making a pallet ready for manual bundle sorting, such as removing the plastic wrapping material used to keep bundles in place during transport. I introduced an operation for breaking a pallet for manual sorting, based on an industrial engineering standard used by USPS witness Acheson in his R87-1 and MC91-3 pallet testimonies.[22]

- Operations at AO's, Stations and Branches. Applying productivity rate assumptions developed at the much larger SCF's and BMC's to small delivery units can give a distorted picture of the workhours needed at the smaller offices.

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[22] Acheson's estimate assumed that to open a pallet one had to cut the metal bands holding in place the hard (usually wooden) top that used to be placed on pallets carrying Periodicals or Standard flats. Today, most pallets are secured by plastic wrapping instead of a hard top, and opening a pallet involves just cutting through the plastic wrapping and removing it, generally a faster operation than the one Acheson analyzed. However, Acheson's productivity rate is the only one I am aware of that represents getting a pallet ready for manual bundle sorting.

For example, moving a pallet from the platform to a bundle sort operation can be time consuming and costly at a large facility. When a 5-digit pallet is unloaded at a DDU, the distance it must be moved from the platform to the bundle sorting operation is only a few feet, and I assume it to be part of the unloading operation. The same applies to rolling containers of sacks that arrive at the DDU.

- Containers Entered at AO's. When a pallet is entered at an originating associate office (OAO), LR-I-332 assumes it is cross-docked before being loaded onto a van to the next facility. But the cross-docking productivity used assumes that the pallet will be moved across a large area from inbound to outbound platform. At an AO the inbound and outbound platform is the same and the "cross-docking" can be rolled into the operation of loading the pallet.

  Similarly, when sacks are entered at the OAO, LR-I-332 assumes they are sorted, then moved in an in-house container to the outbound dock, then loaded onto a truck. My assumption is that the sacks are not sorted at the OAO, just passed on to the upstream facility, and that they do not need to be moved to the outbound dock since they already are there.

Even with the changes described above, it is possible that the productivity rates used tend to underestimate the cost of some operations and overestimate the cost of others. For example, productivity rates derived from industrial engineering, such as those in the PGL, refer to ideal conditions and therefore may not be achieved in practice. For this reason, I may have underestimated the cost of operations such as shaking out a sack. See Docket No. R2000-1, Witness Eggleston's response to Time Warner Interrogatory TW-T26-2b. On the other hand, I may have overestimated the costs of some pallet operations at non-BMC facilities, particularly cross docking. [23]

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[23] My estimate that 9.5 pallets are cross docked per workhour is based on Byrne's survey at the Buffalo SCF, which is larger than most SCF's. I haven't been to that facility recently, but at the time when Byrne's survey was done, the incoming and outgoing platforms were on opposite sides of the building, requiring one to cross through the workroom floor in order to transfer

c. Container Downflows

Container downflows define the flow of containers between the eight types of facilities, or entry points, listed earlier. Determining the downflow is reasonably straightforward once a container reaches a destinating facility. For example, from a destinating BMC a container with ADC presort will flow to the DADC, while three-digit and SCF containers flow to the DSCF. Five digit containers may flow to either the DADC or the DSCF, although some of them may flow directly to the DDU. And whether they go to the DADC or DSCF, they will go from there to the DDU.

From more remote entry points, there are more possible paths that a container can follow. It appears that the LR-I-332 developers must have made some fairly arbitrary assumptions about the flow of containers from entry points OAO, OSCF and OADC. For example, if a 5-digit container is entered at the originating associate office (OAO), its next facility could be either the OSCF, OADC, OBMC, DBMC, DADC, DSCF or DDU – a total of seven possibilities. LR-I-332 assumes the probability of each to be exactly one seventh, or 14.286 percent. For 3-digit containers, there are six possible flows from the OAO, and the probability of each was assumed to be exactly one sixth, or 16.667%. These do not appear to be empirically based estimates.

With the entry point data described in LR-J-114, more information is available than when LR-I-332 was developed. Take for example the case of OAO entry. Clearly, the subsequent flow depends on the OAO's location relative to the destinating facility. It might be in the service area of the same SCF as the DDU, i.e., close by, a definite possibility in the case of local publications. Or, it might be in the service area of the DADC but not the DSCF, or in the service area of the DBMC, but not the DADC, or it may be in the service area of another BMC, i.e., OBMC. From LR-J-114 it is possible to determine the probability of each alternative, for each sack or pallet presort level.

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pallets from one side to the other. And the BMC based productivity rates for loading and unloading pallets (respectively 12.7 and 11.6 pallets per workhour) are much slower than the rates indicated by the PGL (40.5 and 42.6 pallets per workhour). These discrepancies may be one reason why the CRA adjustment described in Section V.5 required a downward adjustment in sack, pallet and bundle cost estimates.

Exhibit C shows the distributions of originating entry point types among types of service area. For example, when a 5-digit pallet is entered at the OAO, the OAO is either in the service area of the DSCF (26.36%) or at least the service area of the DADC (73.64%). Roughly similar numbers apply for carrier route sacks entered at the OAO, although some entries are in more remote AO's.

When the OAO is in the DSCF service area, I assume that the next facility is the DSCF and that from there the container (if it is a 5-digit container) flows to the DDU.[24] If the OAO is in the DADC area, I assume that 50% goes to the DADC and 50% to the DSCF.

The table labeled 'Container Flows Between Facility Types' in spreadsheet 'VolumesTY03AR.xls' contains my assumptions of downflows from the OAO, OSCF and OADC, under each possible assumption regarding the service area in which these facilities are located. Combined with the LR-J-114 data described above, this allows computation of the combined downflow from OAO, OSCF and OADC entry facilities, for each combination of container type and container presort level. I relied on LR-I-332 assumptions regarding the downflows from OBMC, DBMC, DADC and DSCF.

One would naturally think of the OAO as the facility most remote from the mail's final destination, followed by the OSCF, etc. But because OAO entered mail contains a high component that is entered close to the destination (e.g., in the DSCF or DADC service area), the estimated costs of some container type/presort combinations are actually lower for OAO entry than for OSCF, OADC and OBMC entry. For example, a 5-digit pallet entered at the OAO is estimated at $26.55, versus $30.72 under DBMC entry and $37.62 under OBMC entry, as can be seen from Table B1.

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[24] I assume that the flow from an originating AO is always to its SCF. If the mail could be sent to other facilities from the AO, there would have to be multiple transportation links from the AO and, at least in the case of sacks, the AO would need to sort outgoing sacks, a function I believe is normally left to upstream facilities. The LR-I-332 assumption that 14% would flow from the OAO directly to the DDU therefore seems unlikely to be true. On the other hand, the SCF serving the AO may be an ADC, so the flow from OAO could be to OSCF or to OADC.

5. CRA Adjustment

Applying projected TY03 after rates non-letter Outside County mail volumes to the pallet, sack, bundle and piece unit costs indicated by my model results in total costs somewhat higher than indicated by corresponding CRA based projections. I therefore performed a CRA adjustment, as described below. The calculations are performed in spreadsheet 'CRAAdjust.xls'.

In USPS LR-J-81 (R2001-1), spreadsheet 'shp03prc.xls' contains the PRC version of the projected test year mail processing unit costs per shape, subclass and MODS/PIRS cost pool. For Outside County Periodicals, the unit costs over all cost pools, including piggyback costs, are $0.06727 for letters, $0.13274 for flats and $3.2788 for parcels. When test year volumes are applied, projected total mail processing costs are $1,232 million, of which $27 million are for letters and $1,205 million for non-letters.

My model is designed to represent the flow of presorted flats through the postal system. There is no separate model for parcel shaped Periodicals. But whereas letters are treated separately in Mitchell's rate design, the non-letter rates must cover the total costs incurred by both flats and parcels. It is therefore appropriate to compare costs indicated by the model with the CRA costs for flats and parcels combined.

However, not all of the $1,205 million CRA based non-letter costs are related to the normal flow through the system of sacks, pallets, bundles and pieces that the model represents. I therefore excluded from the comparison $90.2 million corresponding to costs incurred at 18 MODS based cost pools. The $47 million in forwarding costs (MODS operation LD49) represent the biggest portion of excluded costs.

Subtracting the $90 million from the $1,205 million total, I conclude that the model, with TYAR volumes applied, should indicate costs equal to $1,115 million. The model actually gives a total of $1,213 million, requiring an 8.1% downward adjustment. However, I do not believe it would be appropriate to apply this adjustment uniformly to all model costs, for reasons explained below.

The model generates $425 million in piece sorting costs, not including the costs of

moving sorted pieces between operations or between facilities that I have identified as weight related piece costs. I estimated the CRA based piece sorting costs by adding up the costs at MODS/PIRS operations that represent piece sorting. They came to $431 million, slightly more than the model generated piece sorting costs. This would seem to indicate that the modeled piece sorting costs should be increased by about 1.4%, while the remaining modeled costs should be reduced by a much larger percentage. Since the modeled piece sorting costs in fact are very close to the CRA costs, and some judgment is involved in determining precisely which CRA costs to compare them with, I did not adjust them. The required adjustment factor for per-bundle, per-sack and per-pallet unit costs then comes to 0.875, representing a 12.5% downward adjustment.

The unit costs shown in Exhibit B are the adjusted costs that form the basis for witness Mitchell's rate design. Spreadsheet 'Costs_Volumes.xls' contains both the adjusted and unadjusted costs.

Modeled Cost Pools

This section describes my reasoning in selecting the MODS/PIRS cost pools to include in the comparison with (1) total modeled costs; and (2) modeled piece sorting costs.

Mail processing CRA costs are based on IOCS sampled observations of the activities of clerks and mailhandlers. Since R97-1, these costs are estimated by cost pools defined by the MODS and PIRS systems. There are many apparent contradictions in the MODS/IOCS data. Clerks may be recorded as sorting flats at a letter or parcel sorting operation, or sorting letters or parcels at a flats operation, etc. Or they may be recorded as handling Periodicals flats at operations where Periodicals flats do not belong, e.g., operations dedicated to Express mail, or international mail.

One can form different theories about what these aberrations mean. For example, the CRA data show $526,915 spent sorting Periodicals flats at OCR's, which are used only for letter mail. The corresponding IOCS observations may reflect flats actually being handled at an OCR, or an employee logged into an OCR operation temporarily handling flats, or simply IOCS recording errors. Since there is no way to know for certain how

these questions should be resolved, some reasonable assumptions are needed in order to perform the type of CRA adjustment discussed here.

I assumed, first of all, that employees were handling flats when IOCS recorded that they were handling flats, even though they may have been recorded at the same time as working at letter or parcel operations. Similarly, I assumed that employees were handling letters or parcels when recorded as handling those shapes by IOCS. The same assumption appears to underlie the shape based costs in LR-J-81.

Second, I assumed that observations taken at the following cost pools do not represent modeled processing activities and should be excluded from our comparisons:

- Forwarding (LD49);
- Acceptance (LD79);
- Priority;
- Express Mail;
- Business Reply;
- Mailgrams;
- Registry;
- Rewrap;
- Intl;
- Misc.;
- Support; and
- LD48 administrative functions

There are cost pools corresponding to Express, Registry and Misc. both in MODS and Non-MODS offices. The LD48 includes four different cost pools. Altogether, that brings to 18 the number of excluded pools.

Third, I counted as piece sorting related all costs recorded as flats or parcels handled at pools for flats piece sorting (FSM, FSM-1000, MANF) and letters piece sorting (BCS, BCS/DBCS, OCR, LSM, MANL).[25] A further assumption was needed regarding the

[25] I did not count as piece sort related the costs at pools associated with parcel sorting (e.g., PSM, SSM, Mecparc, Manp). Most of the Outside County costs at these operations are shown

Function 4 (stations and branches) operations LD41, LD42, LD43 and LD44. These pools include various allied operations, such as unloading of sacks and pallets and bundle sorting, as well as piece sorting. Analysis of IOCS tallies at these pools in R2000-1 and R2001-1 indicates that roughly half are piece sorting costs and I assumed that to be the case also for Periodicals flats.

Excluding all of the 18 cost pools listed above from the comparison between CRA and modeled costs may have led to estimates of bundle, sack and pallet costs that are somewhat too conservative. For example, a total of $17.2 million in flats and parcel costs are associated with cost pools "Misc" in MODS and Non-MODS offices. Misc activities could include many of the operations on pieces, bundles, sacks and pallets that I am modeling, as well as costs not modeled. And when employees were recorded as handling Periodicals flats in operations where Periodicals do not belong at all (e.g., Express, mailgrams, etc.), it is possible that the employees were clocked into those operations but in reality performing one of the modeled activities. Excluding fewer cost pools from the comparison would increase the unit cost estimates in Tables B1 and B2.

6. Estimating The Proportion Of Periodicals Costs That Are Pound Related

The total TY03 after rates costs attributable to Outside County Periodicals are $2,404.808 million. After the CRA adjustment described above, the total costs related to user prepared sacks and pallets, together with non-weight related bundle costs, are $500.44 million, or 20.81% of the total costs. Based on this information, witness Mitchell develops sack, pallet and bundle charges that represent roughly the same percentage of the total revenue requirement.[26]

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as occurring for flats rather than parcels, and I believe it is more likely that such operations would be used to sort bundles of flats than individual flats.

[26] All dollar amounts in this section refer to TY03 after rates costs based on PRC costing methodology and before adding contingency. Calculations are performed in spreadsheet 'LbPercentage.xls' in LR TW-et-al.1. PRC Op. R2001-1, Corrected Appendix F gives the costs per subclass and cost segment. Spreadsheet 'pigty03.xls', in R2001-1 PRC library reference 6, contains applicable piggyback factors per cost segment and subclass.

Under traditional rate design, 60% of the revenue requirement is derived from the piece rates and 40% from the pound rates. But with the new cost based rate elements for sacks, pallets and bundles, it is necessary to derive only slightly less than 80% of the revenue requirement from piece and pound charges. Witness Mitchell was faced with the question of exactly which percentage of the costs it would be reasonable to derive from the pound rates.

Since many postal operations are affected to some degree both by the number of pieces handled and the weight of those pieces, it may never be possible to determine with absolute precision which portion of the overall costs are primarily weight related. However, the analysis presented below leads me to conclude that it would be reasonable and consistent with the concept of cost based rates to derive 30% of the Outside County revenues from pound rates, when 20+ percent are derived from sack, pallet and bundle charges. My analysis identifies about 25% of the costs that are clearly weight related and shows that there must be additional weight related costs both in delivery and in mail processing.

Transportation costs are generally incurred on a cube or weight related basis and are pound rather than piece related. Outside County costs from Cost Segment 14 (purchased transportation) and Segment 8 (vehicle service drivers) are respectively $342.758 million and $45.144 million. The Segment 8 costs must be increased by a factor of 1.589 to include piggyback costs. This gives total transportation related costs equal to $414.498 million.

In addition, as described earlier, my analysis identifies certain bundle and piece related costs that in fact vary not with the number of bundles or pieces but with their cube/weight. After the CRA adjustment, those costs are, respectively, $128.185 million and $50.987 million. Adding them to the transportation costs gives identifiable weight related costs equal to $593.830 million, or 24.69% of total Outside County costs.

But the total weight related costs must be higher, for the following reasons:

(1) delivery costs clearly must have some weight related component; and

(2) even piece sorting costs are to some extent affected by the weight of the

pieces sorted.

Total delivery costs attributed to Outside County Periodicals, with piggyback costs, are $743.054 million. I don't know what percentage of these costs is weight/cube related, but clearly the percentage is greater than zero. Costs related to loading delivery vehicles, walking a park and loop route, etc. seem likely to depend on weight more than on the number of pieces.[27] Let us assume, for example, that delivery costs overall are 17% weight related. That would add $126.32 million to the weight related costs and make them almost exactly 30% of the total.

Furthermore, even the costs of piece sorting, which so far we have assumed to occur strictly on a per-piece basis, do have a weight related component. Take for example the sorting of flats on an AFSM-100. This machine is typically staffed by five clerks: three that feed flats into the machines and two that sweep trays of sorted flats and replace them. The thicker the flats are, the faster those trays fill up, so that the sweep side costs of the AFSM-100 operation are affected by weight to a substantial extent. Similarly, there is bound to be some component of manual flats sorting that is affected by the thickness of the flats being sorted.

Based on these considerations, although I cannot determine precisely the proportion of either delivery costs or piece sorting costs that are weight related, I believe it is reasonable to consider at least 30% of Outside County Periodicals costs as weight related, when 20.81% are considered to be per-sack, per-pallet and per-bundle costs.

VI. CONCLUSIONS

I have presented a set of unit cost estimates that reflect, as accurately as possible with available data, how Periodicals mail processing costs vary with the number of pieces, bundles, sacks and pallets, as well as with the piece characteristics, bundle and container presort levels and container entry points relative to the destinating facility. I

[27] Rural carrier contracts are determined by counts of letters and flats, which would indicate that rural delivery costs are piece related. However, it seems likely that the carriers would demand a re-negotiation if those flats were suddenly twice as heavy.

have also identified the piece and bundle related costs that are most appropriate to consider as weight related.

This information provides a foundation for the development of Periodicals postal rates that are truly cost based and therefore can give mailers the most accurate price signals. Postal rates consistent with this information, such as the rates presented by witness Mitchell, will give mailers strong incentives to prepare their mail in a manner that reduces the Postal Service's costs of handling it. In particular, such rates will provide strong disincentives to certain long established but costly practices, such as forcing the Postal Service to handle sacks with only one or a few pieces in them.

Establishment of postal rates based on these unit costs will present significant challenges and opportunities to large and small mailers, to their printers and to developers of mail preparation software, to prepare and enter Periodicals in a way that minimizes the combined total costs to mailers and the Postal Service.

Development of my cost model started with the model described in LR-I-332 that was developed by the Postal Service, with some input from the Periodicals industry, during the Docket No. R2000-1 proceedings. To my knowledge, that model represented the first serious attempt to identify and measure all the major mail characteristics, except address quality, that affect the cost of processing a Periodicals mailing. In addition to updates in accordance with the cost, volume and mail flow assumptions adopted in Docket No. R2001-1 that form the basis for the rates currently in effect, I have identified and corrected various imperfections in the original model, as documented in the preceding pages.

No model is better than the data it is based on, and I did not have perfect data. Following the practice established by USPS witnesses in recent rate cases, I addressed the problem of imperfect data, in the aggregate, by a "CRA adjustment" that assures that the total Periodicals processing costs predicted by the model are consistent with TY03 after rates CRA costs.

Processing methods and mailer practices are changing continually. The data I have

used are several years old, and I have no doubt that the model could be improved by use of more recent data which the Postal Service may already possess. However, I believe that with updates based on the newest available data this model can continue to be a suitable and accurate tool for the determination of unit costs and the development of truly cost based Periodicals rates.

OUTSIDE COUNTY NON-LETTERS EXPANDED BILLING DETERMINANTS

FOR R2001-1 TEST YEAR (FY2003) AFTER RATES VOLUMES

Table A1: Outside County Sack & Pallet Counts By Entry Point & Container Presort

Container		Entry Point							
Type	Presort	DDU	DSCF	DADC	DTH	OTH	OADC	OSCF	OAO
Sacks	MADC	0	0	0	0	224,884	2,200,448	1,708,869	662,019
	ADC	0	0	422,139	78,776	1,424,488	5,366,765	4,925,537	641,288
	3-D/SCF	0	2,226,350	988,599	231,660	2,787,181	11,203,943	11,600,477	1,653,319
	5-d	309,522	11,224,523	2,518,589	202,342	1,770,182	9,622,411	14,581,714	2,500,994
	5-d CR	282,439	2,960,878	936,374	53,947	186,875	1,954,406	4,591,924	505,890
	CR	507,057	2,784,291	404,755	8,960	50,796	305,983	618,825	1,398,715
Pallets	ADC	0	0	71,306	10,201	74,720	272,412	236,724	30,351
	3-D/SCF	0	827,316	207,650	56,942	135,881	467,350	314,639	24,706
	5-Digit	44,443	245,000	18,099	4,308	14,846	26,038	43,955	389

Table A2: Estimated Counts Of Bundles By Bundle & Container Presort Level

Bundle	**Sacks**						**Pallets**		
Presort	**MADC**	**ADC**	**SCF/3-D**	**5-Digit**	**5-D CR**	**CR**	**ADC**	**3D-SCF**	**5-Digit**
MADC	9,639,244								
ADC	9,914,650	15,172,444					1,486,740		
3-D	5,814,701	17,787,700	50,694,240				13,520,311	11,666,063	
5-D	3,874,680	6,589,924	41,427,415	71,933,516			43,716,582	93,469,264	2,070,635
CR					38,115,686	8,243,936	13,055,749	179,625,021	21,465,550
Total	29,243,276	39,550,069	92,121,655	71,933,516	38,115,686	8,243,936	71,779,382	284,760,348	23,536,185

Table A3: Piece Counts By Bundle & Container Presort Level And Piece Characteristics:

Bundle Level	Piece Type	Sacks						Pallets		
		MADC	ADC	3-D	5-D	5-D CR	CR	ADC	3-D	5-D
MADC	NBC/NM	52,102,794								
	NBC/M	33,504,438								
	BC/NM	9,761,968								
	BC/M	28,720,921								
ADC	NBC/NM	19,061,366	57,620,772					2,590,905		
	NBC/M	34,625,721	39,295,246					5,119,522		
	BC/NM	9,646,521	19,938,480					1,418,346		
	BC/M	28,338,964	41,608,848					4,123,317		
3d	NBC/NM	16,120,706	24,764,255	156,901,102				20,001,049	24,815,933	
	NBC/M	10,705,336	22,826,894	76,128,804				20,152,286	39,882,698	
	BC/NM	6,353,327	46,784,622	170,299,566				58,237,066	35,906,692	
	BC/M	13,345,362	70,021,502	455,003,855				147,832,565	100,780,613	
5d	NBC/NM	10,912,188	12,350,855	43,397,518	216,206,791			20,102,894	52,591,277	666,942
	NBC/M	7,842,429	25,890,816	64,435,146	59,589,693			47,099,126	124,254,921	11,565,506
	BC/NM	713,971	3,205,328	54,744,526	371,968,417			129,428,996	240,368,395	835,143
	BC/M	2,177,572	9,429,278	202,827,640	169,630,150			327,279,486	883,656,105	7,202,595
CR	NM					285,547,287	134,258,757	32,911,822	304,715,641	50,269,303
	M					78,097,471	0	99,283,008	2,270,153,403	450,741,732
Total Pieces:		283,933,583	373,736,896	1,223,738,157	817,395,051	363,644,758	134,258,757	915,580,388	4,077,125,678	521,281,221
					Sacked:		3,196,707,203	Palletized:		5,513,987,287
								Total TY03:		8,710,694,490

OUTSIDE COUNTY NON-LETTERS - MAIL PROCESSING UNIT COSTS OF HANDLING PIECES, BUNDLES, SACKS AND PALLETS

ADJUSTED TO R2001-1 TEST YEAR (FY2003) CRA COSTS UNDER PRC COSTING METHODOLOGY

Table B1: Unit Costs Of Sack/Pallet Handling By Entry Point & Container Presort

Container		Entry Point							
Type	Presort	DDU	DSCF	DADC	DBMC	OBMC	OADC	OSCF	OAO
Sacks	MADC						$1.20	$2.01	$1.88
	ADC			$1.29	$2.37	$2.91	$3.35	$3.25	$3.24
	3-d		$1.29	$2.02	$2.37	$2.98	$3.36	$3.21	$2.75
	5-d	$0.93	$1.73	$2.10	$2.78	$3.29	$3.58	$3.39	$2.57
	5-d CR	$0.93	$1.73	$2.10	$2.78	$2.98	$3.39	$3.23	$2.44
	CR	$0.93	$1.73	$2.10	$2.78	$2.98	$3.50	$3.03	$2.31
Pallets	ADC			$13.67	$26.90	$33.65	$41.09	$40.87	$47.91
	SCF/3D		$13.67	$25.72	$26.90	$35.41	$41.07	$40.26	$42.26
	5D	$1.57	$17.05	$24.58	$30.46	$37.30	$44.38	$43.07	$26.32

Table B2a: Per-Bundle Unit Costs By Bundle & Container Presort Level - Excludes Weight Related Bundle Costs - Used In Mitchell's Rate Design

Bundle	Sacks						Pallets		
Presort	MADC	ADC	SCF/3-D	5-Digit	5-D CR	CR	ADC	3D-SCF	5-Digit
MADC	$0.2595								
ADC	$0.3180	$0.1038					$0.1038		
3-Digit	$0.3447	$0.1649	$0.1055				$0.1707	$0.1055	
5-Digit	$0.3740	$0.1940	$0.1730	$0.0000			$0.2034	$0.1799	$0.0900
CR					$0.0874	$0.0000	$0.2132	$0.1921	$0.0874

Table B2b: Weight Related Per-Bundle Unit Costs By Bundle & Container Presort Level

Bundle	Sacks						Pallets		
Presort	MADC	ADC	SCF/3-D	5-Digit	5-D CR	CR	ADC	3D-SCF	5-Digit
MADC	$0.0953								
ADC	$0.4431	$0.0847					$0.0847		
3-Digit	$0.5516	$0.2974	$0.0847				$0.3165	$0.0847	
5-Digit	$0.5853	$0.3173	$0.2252	$0.0379			$0.3404	$0.2417	$0.0379
CR					$0.0000	$0.0000	$0.3248	$0.2465	$0.0000

Table B2c: Total Per-Bundle Unit Costs, By Bundle & Container Presort Level, Including Weight Related Costs

Bundle	Sacks						Pallets		
Presort	MADC	ADC	SCF/3-D	5-Digit	5-D CR	CR	ADC	3D-SCF	5-Digit
MADC	$0.3549								
ADC	$0.7611	$0.1885					$0.1885		
3-Digit	$0.8963	$0.4623	$0.1902				$0.4872	$0.1902	
5-Digit	$0.9593	$0.5113	$0.3982	$0.0379			$0.5438	$0.4216	$0.1279
CR					$0.0874	$0.0000	$0.5380	$0.4386	$0.0874

Table B3a: Unit Piece Processing Costs By Bundle & Container Presort Level & Piece Characteristics
Excludes Weight Related Costs - Used In Mitchell's Rate Design

Bundle	Piece	Sacks						Pallets		
Level	Type	MADC	ADC	3-D	5-D	5-D CR	CR	ADC	3-D	5-D
MADC	NBC/NM	$0.2909								
	NBC/M	$0.1615								
	BC/NM	$0.2432								
	BC/M	$0.1212								
ADC	NBC/NM	$0.1813	$0.1694					$0.1694		
	NBC/M	$0.1284	$0.1237					$0.1237		
	BC/NM	$0.1538	$0.1439					$0.1439		
	BC/M	$0.0999	$0.0963					$0.0963		
3d	NBC/NM	$0.1712	$0.1580	$0.1565				$0.1566	$0.1565	
	NBC/M	$0.1174	$0.1114	$0.1100				$0.1101	$0.1100	
	BC/NM	$0.1482	$0.1372	$0.1361				$0.1362	$0.1361	
	BC/M	$0.0925	$0.0879	$0.0868				$0.0868	$0.0868	
5d	NBC/NM	$0.1120	$0.0936	$0.0897	$0.0814			$0.0830	$0.0819	$0.0814
	NBC/M	$0.0780	$0.0682	$0.0648	$0.0585			$0.0598	$0.0589	$0.0585
	BC/NM	$0.1061	$0.0910	$0.0879	$0.0814			$0.0827	$0.0818	$0.0814
	BC/M	$0.0650	$0.0573	$0.0546	$0.0496			$0.0506	$0.0499	$0.0496
CR	NM					$0.0000	$0.0000	$0.0027	$0.0010	$0.0000
	M					$0.0000	$0.0000	$0.0020	$0.0007	$0.0000

Table B3b: Unit Piece Processing Costs By Bundle & Container Presort Level & Piece Characteristics
Weight Related Costs Only

Bundle Level	Piece Type	Sacks						Pallets		
		MADC	ADC	3-D	5-D	5-D CR	CR	ADC	3-D	5-D
MADC	NBC/NM	$0.0502								
	NBC/M	$0.0497								
	BC/NM	$0.0502								
	BC/M	$0.0497								
ADC	NBC/NM	$0.0343	$0.0343					$0.0343		
	NBC/M	$0.0324	$0.0324					$0.0324		
	BC/NM	$0.0343	$0.0343					$0.0343		
	BC/M	$0.0323	$0.0323					$0.0323		
3d	NBC/NM	$0.0260	$0.0289	$0.0260				$0.0289	$0.0260	
	NBC/M	$0.0260	$0.0289	$0.0260				$0.0289	$0.0260	
	BC/NM	$0.0260	$0.0289	$0.0260				$0.0289	$0.0260	
	BC/M	$0.0260	$0.0289	$0.0260				$0.0289	$0.0260	
5d	NBC/NM	$0.0000	$0.0000	$0.0035	$0.0000			$0.0000	$0.0032	$0.0000
	NBC/M	$0.0000	$0.0000	$0.0035	$0.0000			$0.0000	$0.0032	$0.0000
	BC/NM	$0.0000	$0.0000	$0.0035	$0.0000			$0.0000	$0.0032	$0.0000
	BC/M	$0.0000	$0.0000	$0.0035	$0.0000			$0.0000	$0.0032	$0.0000
CR	NM					$0.0000	$0.0000	$0.0000	$0.0000	$0.0000
	M					$0.0000	$0.0000	$0.0000	$0.0000	$0.0000

Table B3c: Unit Piece Processing Costs By Bundle & Container Presort Level & Piece Characteristics
Includes Weight Related Piece Handling Costs

Bundle	Piece	Sacks						Pallets		
Level	Type	MADC	ADC	3-D	5-D	5-D CR	CR	ADC	3-D	5-D
MADC	NBC/NM	$0.3411								
	NBC/M	$0.2112								
	BC/NM	$0.2935								
	BC/M	$0.1709								
ADC	NBC/NM	$0.2156	$0.2037					$0.2037		
	NBC/M	$0.1608	$0.1561					$0.1561		
	BC/NM	$0.1882	$0.1782					$0.1782		
	BC/M	$0.1322	$0.1286					$0.1286		
3d	NBC/NM	$0.1972	$0.1869	$0.1824				$0.1855	$0.1824	
	NBC/M	$0.1434	$0.1403	$0.1359				$0.1390	$0.1359	
	BC/NM	$0.1742	$0.1661	$0.1621				$0.1651	$0.1621	
	BC/M	$0.1184	$0.1168	$0.1127				$0.1157	$0.1127	
5d	NBC/NM	$0.1120	$0.0936	$0.0932	$0.0814			$0.0830	$0.0851	$0.0814
	NBC/M	$0.0780	$0.0682	$0.0683	$0.0585			$0.0598	$0.0621	$0.0585
	BC/NM	$0.1061	$0.0910	$0.0914	$0.0814			$0.0827	$0.0850	$0.0814
	BC/M	$0.0650	$0.0573	$0.0581	$0.0496			$0.0506	$0.0531	$0.0496
CR	NM					$0.0000	$0.0000	$0.0027	$0.0010	$0.0000
	M					$0.0000	$0.0000	$0.0020	$0.0007	$0.0000

SERVICE TERRITORY OF ORIGINATING FACILITIES, FOR CONTAINERS ENTERED AT ORIGIN

Table C1: Service Territory Of OAO, For Containers Entered At OAO

	DSCF	DADC	DTH	OTH
MADC SACK	0.00%	0.00%	0.00%	100.00%
ADC SACK	0.00%	11.76%	6.25%	81.99%
3DG/SCF SACK	17.51%	20.68%	9.67%	52.14%
5DG SACK	37.15%	28.42%	9.21%	25.23%
5DG RTS SACK	28.52%	46.62%	1.96%	22.90%
CR SACK	25.70%	54.65%	15.55%	4.11%
ADC PALLET	0.00%	0.00%	5.70%	94.30%
3DG/SCF PALLET	5.77%	1.77%	0.00%	92.46%
5DG PALLET	26.36%	73.64%	0.00%	0.00%

Table C2: Service Territory Of OSCF, For Containers Entered At OSCF

	DADC	DTH	OTH
MADC SACK	0.00%	0.00%	100.00%
ADC SACK	5.01%	7.96%	87.03%
3DG/SCF SACK	11.02%	5.90%	83.08%
5DG SACK	20.74%	14.14%	65.12%
5DG RTS SACK	24.99%	15.38%	59.63%
CR SACK	49.66%	3.02%	47.32%
ADC PALLET	6.95%	4.22%	88.83%
3DG/SCF PALLET	10.04%	12.08%	77.88%
5DG PALLET	19.87%	5.67%	74.46%

Table C3: Service Territory Of OADC, For Containers Entered At OADC

	DTH	OTH
MADC SACK	0.00%	100.00%
ADC SACK	13.29%	86.71%
3DG SACK	15.88%	84.12%
5DG SACK	34.87%	65.13%
5DG RTS SACK	50.14%	49.86%
CR SACK	32.59%	67.41%
ADC PALLET	13.64%	86.36%
3DG PALLET	20.83%	79.17%
5DG PALLET	20.95%	79.05%

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 § 12 of the rules of practice.

s/_____
Timothy L. Keegan

April 26, 2004
Washington, D.C.